Chapter 11 - Structural Repairs

SECTION 07
ROADWAY JOINT REPAIRS
(SR-JT)
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 01
RETAINER BAR
(SR-JT(RB))
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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

'TABLE IS GIVEN FOR REFERENCE PURPOSES ONLY. IF THE OPENING IN THE FIELD IS FOUND TO VARY MORE THAN 1/4" AT ASSOCIATED TEMPERATURE THE ENGINEER SHALL CONTACT THE DESIGN ENGINEER FOR GUIDANCE.'

Notes:
1. Seals up to 3" wide, uncompressed, shall be one piece for the full length of seal (no joints).
2. Seal(s) greater than 3" wide may have one splice per joint if the length of the joint exceeds 50'. Splice shall be at least 15' from the gutter line.
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 02

POURABLE SEALS

(SR-JT(PS))
Pourable Joint Construction Notes:

1. Remove existing expansion joint material.
2. Prepare the joint surface by removing all residue (existing sealant or primer) utilizing sandblasting or grinding.
3. Blow all dust and debris from the expansion joint ensuring that the compressor air line has an oil trap.
4. Grind smooth any irregularities in the existing joint surfaces to receive the new silicone rubber sealant. Sand blast to near white metal.
5. Pack the open joint with SOF Rod Backer rod to achieve approximately 25% compression.
6. Prime the expansion joint with PPG Metal Hide One-Pac Inorganic Zinc Rich Primer or approved equal.
7. Seal joint with Dow Corning 902 RCS Self-Leveling Silicone Rubber Sealant or approved equal in accordance with the manufacturer’s recommendations.
Pourable Joint Construction Notes:

1. Remove existing expansion joint material.
2. Prepare the joint surface by removing all residue (existing sealant or primer) utilizing sandblasting or grinding.
3. Blow all dust and debris from the expansion joint ensuring that the compressor air line has an oil trap.
4. At the engineer's discretion, repair the concrete irregularities that would prevent proper adhesion of the new silicone rubber sealant to the existing joint surfaces. The irregularities shall be repaired with trowel grade mortar as per Section 902.11.
5. Pack the open joint with SOF Rod Backer rod to achieve approximately 25% compression.
6. Prime the expansion joint with Dow Corning P5200 primer or approved equal.
7. Seal joint with Dow Corning 902 RCS Self-Leveling Silicone Rubber Sealant or approved equal in accordance with the manufacturer's recommendations.
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 03

SILICONE JOINT SEALS
(SR-JT(SJ))
Preformed Silicone Joint Seal Installation Procedure:

1. Remove existing expansion joint material.
2. Prepare the joint surface by removing all residue (existing sealant or primer) utilizing sandblasting, wire brushing, or other mechanical methods approved by the manufacturer.
3. Sandblast the inside vertical face of the joint interface. Steel surfaces must be sandblasted to 'near white'.
4. Blow all dust and debris from the expansion joint ensuring that the compressor air line has an oil trap.
5. Wipe clean both sides of the vertical face of the open joint as well as the proposed length of preformed silicone seal with denatured alcohol.
6. Install foam backer rods perpendicular to the joint, spaced on 12” centers.
7. Apply the primer to the vertical face of the joint interface and allow the proper dry time per the manufacturer’s recommendations. Note: Once the primer is applied, the adhesive and seal shall be installed the same day.
8. Install the first ½” diameter bead of silicone adhesive to both sides of the vertical face of the joint interface. This bead of adhesive and seal shall be limited to 5’ installation increments to prevent premature adhesive cure. The adhesive shall be placed as defined below the top of the joint elevation.
9. See contract plans for the type and size of preformed silicone seal required. Insert the seal above the first bead to the manufacturer’s recommended joint recess depth. Continually check and adjust this depth by hand.
10. Apply the second bead of silicone adhesive per the manufacturer’s recommendation to the seal serrations and tool the locking adhesive at least twice with a tongue depressor to ensure complete contact with the joint face.

Preformed Silicone Joint Seal Notes:

1. The minimum allowable installation temperature shall be 40°F and rising ambient air temperature.
2. Refer to manufacturer’s specifications on the procedure to cut and splice the preformed silicone joint seal when needed (i.e., traffic barriers, curbs, joint not able to be placed continuously due to traffic, etc.)
DETAIL A

Scale: None

PREFORMED SILICONE JOINT SEAL

Existing roadway angle joint

SECTION

DATE:

STATE HIGHWAY ADMINISTRATION

DEPARTMENT OF TRANSPORTATION

STATE OF MARYLAND

SHEET

OF

APPROVAL

Scale: 3"=1'-0"

OFFICE OF STRUCTURES

DIRECTOR

OFFICE OF STRUCTURES

DIRECTOR

STRUCTURAL REPAIRS

Proposed preformed silicone joint installed per manufacturer's recommendations

Locking adhesive placed at recommended depth

Apply a top bead of locking adhesive along each side of the silicone joint seal, to the top of the serrations, and no higher

Proposed preformed silicone joint seal

Top bead of locking adhesive.

Existing roadway angle joint

Existing deck surface

Proposed preformed silicone joint installed per manufacturer's recommendations

Top bead of locking adhesive.

Location

Joint Opening

Movement Rating

Seal Size

Recess

<table>
<thead>
<tr>
<th>Location</th>
<th>40°</th>
<th>50°</th>
<th>60°</th>
<th>70°</th>
<th>80°</th>
<th>90°</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PREFORMED SILICONE JOINT SEAL

STATE OF MARYLAND

DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

OFFICE OF STRUCTURES

PREFORMED SILICONE JOINT SEALS WITH PRIMER FOR EXISTING BRIDGE DECKS WITH ARMORED JOINTS (JOINT OPENING < 4")

DETAIL NO. SR-JT(SJ)-101

SHEET 2 OF 2
Preformed Silicone Joint Seal Notes:

1. The minimum allowable installation temperature shall be 40°F and rising ambient air temperature.
2. Installation of the joint seal must take place the same day as the sandblasting and joint preparation.
3. Refer to manufacturer’s specifications on the procedure to cut and splice the preformed silicone joint seal when needed (i.e. traffic barriers, curbs, joint not able to be placed continuously due to traffic, etc.)

Preformed Silicone Joint Seal Installation Procedure:

1. Remove existing expansion joint material.
2. Prepare the joint surface by removing all debris and residue (existing sealant or primer) utilizing wire brushing, or other mechanical methods approved by the manufacturer.
3. Roughen the inside vertical faces of the joint interfaces that will receive the new preformed silicone joint seal and remove and repair all unsound concrete. Roughening can be done by sandblasting, wire brushing, or other mechanical methods approved of by the manufacturer.
4. Blow all dust and debris from the expansion joint ensuring that the compressor air line has an oil trap.
5. Wipe clean both sides of the vertical face of the open joint as well as the proposed length of preformed silicone seal with denatured alcohol.
6. Install foam backer rods perpendicular to the joint, spaced on 12” centers.
7. Apply the primer to the vertical face of the joint interface and allow the proper dry time per the manufacturer’s recommendations. Note: Once the primer is applied, the adhesive and seal shall be installed the same day.
8. Install the first 1/2” diameter bead of silicone adhesive to both sides of the vertical face of the joint interface. This bead of adhesive and seal shall be limited to 5’ installation increments to prevent premature adhesive cure. The adhesive shall be placed as defined below the top of the joint elevation.
9. See contract plans for the type and size of preformed silicone seal required. Insert the seal above the first bead to the manufacturer’s recommended joint recess depth. Continually check and adjust this depth by hand.
10. Apply the second bead of silicone adhesive per the manufacturer’s recommendation to the seal serrations and tool the locking adhesive at least twice with a tongue depressor to ensure complete contact with the joint face.
PREFORMED SILICONE JOINT SEAL

LOCATION

<table>
<thead>
<tr>
<th>Location</th>
<th>Joint Opening</th>
<th>Movement Rating</th>
<th>Seal Size</th>
<th>Recess</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40°</td>
<td>50°</td>
<td>60°</td>
<td>70°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION
Scale: 3"=1'-0"

APPLICATION

Apply a top bead of locking adhesive along each side of the silicone joint seal, to the top of the serrations, and no higher.

DETAIL A
Scale: None

MATERIALS

Proposed preformed silicone joint seal

Locking adhesive

Existing backwall

Existing deck surface

Proposed preformed silicone joint installed per manufacturers recommendations

See DETAIL A
NOTES:
1. Backer rods shall be cut so it fits tightly and provides support to the new seal during installation. The pieces of foam backer rod shall be spaced a minimum of every 12”.
2. For details on the installation of silicone joint seals for armored joints, refer to SR-JT-201.
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 04
PARAPET CURB SEALS (SR-JT(PCS))
INSTALLING PARAPET/CURB JOINT SEALS FOR EXISTING BRIDGE DECKS WITH NON-ARMORED JOINTS

**SECTION A-A**

Pourable Joint Construction Notes:

1. Prepare the joint surface by removing all residue (existing sealant or primer) utilizing sandblasting or grinding.
2. Blow all dust and debris from the expansion joint ensuring that the compressor air line has an oil trap.
3. At the engineer's discretion, repair the concrete irregularities that would prevent proper adhesion of the new silicone rubber sealant to the existing joint surfaces. The irregularities shall be repaired with trowel grade mortar as per Section 902.11.
4. Pack the open joint with SOF Rod Backer rod to achieve approximately 25% compression.
5. Prime the expansion joint with Dow Corning P5200 primer or approved equal.
6. Seal joint with Dow Corning 888 Silicone Joint Sealant or approved equal in accordance with the manufacturer’s recommendations.

**SECTION B-B**

<table>
<thead>
<tr>
<th>Location</th>
<th>Joint Opening</th>
<th>Movement Rating</th>
<th>Seal Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>40°</td>
<td>50°</td>
<td>60°</td>
<td>70°</td>
</tr>
<tr>
<td>Full-Height Curb</td>
<td>Seal as necessary to assure that after insertion and compression that a good tight fit is provided.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recess per the manufacturer's recommendations (1/2&quot; min.).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Refer to SR-JT(SJ)-101, SR-JT(SJ)-102 and SR-JT(SJ)-103 for installation of preformed silicone joint.

**PREFORMED SILICONE JOINT SEAL**
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 05

ROADWAY ANGLE
(SR-JT(RA))
PROPOSED - ROADWAY JOINT REPAIRS

1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSOR(DR)-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.

Notes:

SL"orr 1%" dia. dia. stud, and plug weld. Spacing from edge of angle may be increased to allow for existing reinforcing and shear connectors.

1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSOR(DR)-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.

Notes:

SR-JT(RA)-101 ROADWAY ANGLE REPAIR DETAILS (DECK - ARMORED JOINT)
**EXISTING ROADWAY JOINT**

Scale: 1/2” = 1'-0"

Remove existing concrete to accommodate the new 3/4" dia. studs, shown in Roadway Joint Repairs detail.

Drill 1” dia. hole, insert stud, and plug weld. Spacing from edge of angle may be increased to allow for existing reinforcing and shear connectors.

Reposition existing transverse bars as necessary to accommodate new shear studs (typ).

Rapid hardening concrete

#5 bar (typ.)

1” minimum clearance

3/4” dia. x 8” long studs @ 12” c/c

**PROPOSED - ROADWAY JOINT REPAIRS**

Scale: 1/2” = 1'-0"

1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSOR-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.
1. **EXISTING ROADWAY JOINT**
   - Scale: \(\frac{1}{2}'' = 1'-0''\)
   - Drill 1'' dia. hole, insert stud, and plug weld.
   - Spacing from edge of angle may be increased to allow for existing reinforcing and shear connectors.

2. **PROPOSED - ROADWAY JOINT REPAIRS**
   - Scale: \(\frac{1}{2}'' = 1'-0''\)
   - Reposition existing transverse bars as necessary to accommodate new shear studs (typ.)
   - 1'' minimum clearance
   - Existing stirrup (typ.) @ 12'' ± c/c
   - \(\frac{3}{4}''\) dia. x 8'' long studs @ 12'' c/c

Notes:
1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSIOR-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.
Notes:
1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSDRJ-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.
**EXISTING ROADWAY JOINT**

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

- Existing roadway seal retainer angle
- Existing compression seal
- Existing roadway seal retainer angle
- Field weld if existing weld is broken (typ.)

**PROPOSED - ROADWAY JOINT REPAIRS**

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

- Rapid hardening concrete
- Existing joint angles
- #5 bar (typ.)

- Existing 3/4" dia. x 8" long studs @ 12" c/c
- Proposed 3/4" dia. x 8" long studs @ 12" c/c
- Staggered

**NOTES:**
1. Existing studs not shown for clarity in Roadway Joint Repairs detail.
2. For roadway angles to be replaced, use Detail No. SUP-SSDR-101 for welding new angle to existing.
3. Concrete shall be in accordance with 902.14.

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

**ROADWAY ANGLE REPAIR DETAILS**
(Backwall - Armored Joint - Approach Side)

**APPROVAL:**

**STATE HIGHWAY ADMINISTRATION**
**OFFICE OF STRUCTURES**

**DATE:** 06/28/2017

**VERSION:** 1.0

**DETAIL NO.** SR-JT(RA)-105

**SHEET OF 1**
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 06

FINGER JOINT REPAIRS (SR-JT(FJ))
Replace missing, sheared, or rusted bolts (typ.)

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

Existing 4" x 3" x 1/2" roadway angle (typ.)

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

TYPICAL SECTION BETWEEN STRINGERS (ABUTMENT-SPAN SHOWN) (SPAN-SPAN SIMILAR)

PLAN AT ROADWAY LEVEL
Scale: 1/2" = 1'-0"

Notes:
1. For SECTION A-A, see Sheet No. 1 of 2.
2. 4" finger is parallel to the direction of superstructure movement.
INSTALLATION NOTES:

1. Engineer shall determine if the support angle beneath the finger plate shall be sounded for voids. If voids are found, drill through the support angle and inject epoxy into any voids found.

2. Engineer shall determine if the flatness of both finger plates needs modification. If modification is needed, engineer will determine procedure to correct the issue. Refer to plans for details.

After the above items are cleared then:

1. Replace all sheared or rusted off bolts of good condition finger dam roadway joints with new ⅝” dia. A325 bolts galvanized. All galvanized material shall be off-vented a minimum of 24 days before installation.

A. If existing bolt head is deteriorated, extract the bolt by welding an A325 heavy hex nut onto the existing bolt shaft and use a ⅝” commercial impact wrench to remove.

B. If existing bolts can not be removed, then drill out and tap threads into the finger plate support angle and the welded nuts(s) below the support angle so a ⅝” dia. A325 bolt galvanized can be installed the length to be determined in the field. Concrete removal shall be limited and repaired with Type II rapid hardening concrete as approved by the engineer.

2. Add galvanized lock washer to new bolt provided the top of the bolt, when installed, will be ⅛” below the top of the finger dam roadway plate. If ⅛” dimension can not be maintained, do not add lock washer.

3. Fill the entire countersunk area around each bolt with silicone sealant.

4. Clean the trough under the finger dam.

Note:
For details of drainage trough, see Detail No. SUP-JT(DT)-201.
Chapter 11 - Structural Repairs

Section 07 – Roadway Joint Repairs

SUB-SECTION 07

DRAINAGE TROUGH
(SR-JT(DT))
Notes:
1. All steel shall be galvanized ASTM A 709 Grade 36 or 50.
2. Trough shall conform to 911.11.
3. Trough cross slope shall be a minimum of 1" per foot for finger joints. All other joints shall follow the grade of the end diaphragms or 1/4" per foot slope whichever is greater.
4. All hardware shall be stainless steel Type 304.
5. Drilled holes for threaded rods shall be 1/8" larger.
6. Grout shall conform to 902.11(c).
7. Downspout shall be non-perforated Polyvinyl Chloride (PVC) SCH. 80 pipe conforming to section 905.01.

```
Top of deck

Existing roadway joint

Varies

Existing seat angle (Typ.)

6" x 4" x 3/8"
support angle, length to be determined in the field (Typ.)
See sheet 2

3/8" x 2" clamp plate. Length to match new angle
6" x 4" x 3/8" (Typ.)

New trough full length of joint.
Pull trough tight around end of stringer web (Typ.).

1/2" threaded rod with a minimum working load tension of 2000 lb, spaced at 2'-0" max.

4 1/2" bolt. Space evenly in each bay with a maximum spacing of 2'-0". Tack weld bolt head to angle prior to galvanizing. (Typ.)
```

TROUGH DETAIL BETWEEN BEAMS AT PIER

Scale; 1/2" = 1'-0"
$\frac{1}{8}'' \times 2''$ long slotted hole located at a maximum spacing of 2'-0'' and 1'-0'' from each end of the support angle (Typ.).

$\frac{1}{2}''$ bolts evenly spaced in each bay with a maximum spacing of 2'-0'' (Typ.).

Cut new 6'' x 4'' x $\frac{3}{8}''$ support angle so that it does not interfere with the seat angle and lays flush against the bottom of the concrete diaphragm. (Typ.)

Pull trough tight around end of stringer web (Typ.).

Existing bearing stiffener (Typ.).

$\frac{3}{8}'' \times 2''$ clamp plate length to match new support angle 6'' x 4'' $\frac{3}{8}''$ (Typ.).

Tack weld bolt head to angle prior to galvanizing. (Typ.)

Existing web of interior stringer

Note: Existing seat angle not shown for clarity.
Note:
1. For location of downspout refer to the General Plan and Elevation.
2. Refer to SUP-SC-401 for splash block requirements.
**SECTION C-C**

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

New 6" x 4" x 3/8" support angle (Typ.)

3/8" x 2" clamp plate length to match 6" x 4" x 3/8" support angle (Typ.)

Underside of deck

4 1/2"

(Typ.)

Existing bearing stiffener (Typ.)

6" x 6" x 3/8" x 3" long clip angle (bend angle to accommodate slope). Bolt to support angle and existing web using 1/2" bolts. (Typ.)

1/2"

1/2"

2 1/2"

1/4"

New 1/4" thick trough

Captain's name

Director of Structures

STATE OF MARYLAND

DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

OFFICE OF STRUCTURES

DRAINAGE TROUGH DETAIL AT PIER
FOR EXISTING STRUCTURE

DETAIL NO. SR-JT(DT)-101

SHEET 4 OF 8
Note:
Existing seat angle not shown for clarity.
DRAINAGE TROUGH DETAIL AT PIER FOR EXISTING STRUCTURE

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

Steel angle secured with 2-1/2" nuts, bolts, and washers see Angle Detail below.

3/4" threaded rod (4'-0" long max.) grouted 6" min. with nuts and washers as shown.

DOWNSPOUT DETAIL FOR PIER CAPS

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

8" PVC downspout pipe

Fiberglass catch basin, for details see Detail No. SUP-JT(DT)-101.

Slope as steep as possible

3/8" x 2" strap, attach with 2 - 1/2" expansion bolts with a 4" min. embedment (Typ.).

9/16" hole for 1/2" bolts.

13/16" hole for 3/4" rod

ANGLE DETAIL

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

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

DRAINAGE TROUGH DETAIL AT PIER FOR EXISTING STRUCTURE

DETAIL NO. SR-JT(DT)-101 SHEET 6 OF 8
Bottom of pier cap

New support angle 6'' x 4'' x 3/8'' attached to bottom of end diaphragm.

Existing Stiffener (Typ.)
Cut bottom of trough 2'' from end so trough excess hangs down evenly into drain pipe.

Steel clamp braced by 1/2'' threaded rods grouted 4'' min.

ALTERNATE DOWNSPOUT DETAIL AT PIER
Scale: 3/8'' = 1'-0"

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

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

DRAINAGE TROUGH DETAIL AT PIER FOR EXISTING STRUCTURE

DETAIL NO. SR-JT(DT)-101 SHEET 7 OF 8
Note:
Length of support angle to be determined in the field.
New 3/4" x 2" clamp plate, length to be determined in the field. See sheet 2.

1/2" threaded rod with a minimum working load tension of 2000 lb. Space evenly in each bay with a maximum spacing of 1'-6".(Typ.)

1/4" thick trough full length of joint, pull trough tight around end of stringer web. (Typ.)

Existing bearing stiffener (Typ.)

Existing seat angle (Typ.)

New 3/8" x 2" clamp plate. Length to be determined in the field. See sheet 2.

Existing beam web

Existing abutment backwall

Bead of silicone sealer

Notes:
1. All steel shall be galvanized ASTM A 709 Grade 36.
2. Trough shall conform to 911.11.
3. Trough cross slope shall be a minimum of 1" per foot for finger joints. All other joints shall follow the grade of the end diaphragms or 1/4" per foot slope whichever is greater.
4. All hardware shall be stainless steel Type 304.
5. Drilled holes for threaded rods shall be 1/2" larger.
6. Grout shall conform to 902.11(c).
7. Downspout shall be non-perforated Polyvinyl Chloride (PVC) SCH. 80 pipe conforming to 905.01.
8. Silicone sealer shall conform to 911.01.01.
**SECTION A-A**

**Note:**
Existing seat angle not shown for clarity.

**SCALE:** 1/2" = 1'-0"
**Downspout Detail Between Beams at Abutment**

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

- **Fiberglass Catch Basin**: For details see Detail No. SUP-JT(DT)-101.
- **Support Angle at Downspout**: See sheet 6 for details.
- **Existing Seat Angle**: (Typ.)
- **Bottom of Deck**
- **New Support Angle**: 6" x 4" x 3/8" installed at a constant slope toward drain pipe.
- **New Support Angle**: 6" x 4" x 3/8" installed 1'-0" past top of slope protection.
- **Existing Stiffener**: (Typ.)
- **8" PVC Downspout Pipe**: To be attached to the abutment and abutment backwall with 3/8" x 2" straps and 1/2" expansion bolts as shown.
- **Top of Slope Protection**
- **Note**: Extend downspout 1'-0" past top of slope protection.

**Design Details**

- **New 1/4" Thick Trough**: Cut bottom of trough 2" from end so trough excess hangs down evenly into drain pipe.
- **Exterior Stringer**
- **Interior Stringer**
- **New Support Angle**: 6" x 4" x 3/8" attached to bottom of end diaphragm.
SECTION C-C

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

- Bottom of deck
- 6" x 4" x 3/8" support angle
- Exterior face of stringer web

SECTION D-D

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

- Backwall
- 3/8" x 2" clamp plate length to match 6" x 4" x 3/8" support angle
- New 1/4" thick trough

Details:

- New 6" x 4" x 3/8" support angle
- 1/4" thick trough
- 6" x 6" x 3/8" x 3" long angle clip angle, bolt to support angle and existing stringer web using 1/2" bolts.
- 1/2" expansion bolt with minimum working load tension of 2000 lb.
- 1/2" threaded rod grouted 4" min. located 6" from end of support angle
- 3/8" x 2" clamp plate
- Bead of silicone sealer
- Tack weld bolt head to angle prior to galvanizing
- Bead of silicone sealer
- 1/2" x 2" bolt in catch basin
- Backwall
- 3/8" x 2" clamp plate
- Catch basin
- New 1/4" thick trough

OFFICE OF STRUCTURES
DIRECTOR

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

DRAINAGE TROUGH DETAIL AT ABUTMENT FOR EXISTING STRUCTURE

DETAIL NO. SR-JT(DT)-201

APPROVAL

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

DATE: 06/28/2017

REVISIONS

1.0

SHEET 4 OF 7
Note:
Existing interior seat angle not shown for clarity.

* On skewed bridges, these dimensions shall be adjusted as necessary to clear the stringer end bearing stiffeners.
Note:
Length to be determined in the field.

*When installed on the exterior, adjust to miss the elbow by 1\(\frac{1}{2}\)\(''\).
New support angle 6" x 4" x 1/8" installed at constant cross slope toward drain pipe. Trim horizontal leg to clear PVC pipe.

Bottom of existing concrete end diaphragm.

New support angle 6" x 4" x 1/8" attached to bottom of end diaphragm.

New 1/4" thick trough

Existing Stiffener (Typ.)

Fiberglass catch basin, for details see Detail No. SUP-JT(DT)-101

8" PVC downspout pipe to be attached to the abutment and the abutment backwall with 3/8" x 2" straps and 1/2" expansion bolts as shown.

3/8" x 2" strap, with 2 - 1/2" expansion bolts with 4" min. embedment (Typ.).

Top of slope protection

DRAINAGE TROUGH DETAIL AT ABUTMENT

Scale: 1/8" = 1'-0"
1. Apply silicone caulk along overlapped section.
2. The overlaps in the trough shall follow the direction of flow.
3. Reuse existing trough and clamp plate holes for the splice section of trough.