PART PLAN AT ABUTMENT
FOR SQUARE OR LOW SKEWED (15° OR LESS) BRIDGES WITH DECOUPLING AND STEEL RETAINER

FOR SECTION X-X SEE SHEET 2/5.

END OF SUPERSTRUCTURE
WITHOUT CURBS OR PARAPETS

STEEL DROP STRIP, SEE STANDARD BRIDGE DRAWING, NOT INCLUDED WITH EXPANSION JOINT FOR PAYMENT.

NOTE: WHERE THE TOTAL WIDTH OUT TO OUT OF BOX BEAMS IS EQUAL TO THE BRIDGE ROADWAY WIDTH, JOINT ARMOR SHALL BE OF SUITABLE WIDTH TO ALLOW FOR FIT-UP OF BEAMS. SEE FORMULA FOR LENGTH L.

\[ L = \frac{(N-1)(\cos \theta) + N(W)}{12} \]

\( L = \) LENGTH OF JOINT, EDGE TO EDGE OF DECK (FEET)
\( N = \) NUMBER OF BEAMS
\( W = \) NOMINAL WIDTH OF BEAMS (INCHES)
\( \theta = \) SKEW ANGLE OF JOINT

END ABUTMENT AND SUPERSTRUCTURE JOINT ARMOR AT BOX BEAMS ON CURVES OR PARAPETS


d - 1½" THREADS RODS WITH TWO HEX NUTS SET IN Prestressed BOX BEAMS DURING CASTING OPERATIONS.
PLAN AT ABUTMENT

FOR SKEWED BRIDGES OVER 15°

WITH REFLECTOR PARAPET RAILING

DETAIL B

SEE SHEET 1-7 FOR DEFINITION OF "A".

SECTION 4-A AND SECTION B-B.  SECTION 4-A AND SECTION 5-B ARE SIMILAR FOR SQUARE AND SKEWED BRIDGES EXCEPT FOR THE CONCRETE FORMING AT THE EDGE OF THE PARAPET.

THE CONCRETE FORMING AT THE EDGE OF SQUARE AND SKEWED BRIDGES EXCEPT FOR SECTION A-A AND SECTION B-B.  SECTION SEE SHEET 1-5 FOR DEFINITION OF "A".

FINISH CONCRETE SURFACE EITHER FLUSH WITH OR A MAX. OF 1" ABOVE JOINT ARMOR.

TYP.

2-6 STRIP SEAL GLAND

A = ASPHALT CONCRETE WEARING SURFACE THICKNESS (OR COMPOSITE SLAB THICKNESS) AT NOTCH.

B = 5" NOTCH FOR 17" BEAMS OR 7" NOTCH FOR 21" THRU 42" BEAMS.

C = A + B - 4" (SHALL BE SHOWN ON THE PROJECT PLANS)

D = A + B - 6"  (IF DIM. "D" IS LESS THAN 3", A BED OF NON-SHRINK GROUT, CMS 705.22, SHALL BE PLACED AND COMPACTED UNDER EACH PLATE "B" AFTER FINAL VERTICAL ADJUSTMENT.)

VERTICAL ADJUSTMENT.)

AND COMPACTED UNDER EACH PLATE "B" AFTER FINAL NON-SHRINK GROUT, CMS 705.22, SHALL BE PLACED.

E = A + B - 6"  (IF DIM. "E" IS LESS THAN 3", A BED OF NON-SHRINK GROUT, CMS 705.22, SHALL BE PLACED AND COMPACTED UNDER EACH PLATE "B" AFTER FINAL VERTICAL ADJUSTMENT.)

SECTION X-X

© = DIMENSION "X" SHALL BE DETERMINED FROM TABLE "E", TABLE "C" OR TABLE "D" ON SHEET 1-7 FOR SECTION A-A AND B-B
**Legend**

1. This is the actual distance from the centerline of joint to the thermal neutral point of the superstructure measured along the centerline of roadway. This dimension shall be a maximum of 200' for 60° skew, 342' for 45° skew, 385' for 30° skew, and 427' for 0°. The thermal neutral point of the superstructure is that point which has zero horizontal movement during temperature changes.

2. This distance for expansion joints having skew angles of 0° or less is the actual distance to the thermal neutral point of the superstructure along the centerline of roadway. This distance will vary based on the skew angle and the temperature at which the joint is to be installed.

3. This is the joint opening dimension "A" required at the time of construction. Joint armor installation shall not be less than 1". If the joint opening is less than this dimension, the joint shall be designed to accommodate the anticipated joint opening at the time of joint installation.

4. Minimum joint opening dimension "A" at time of seal gland installation shall not be less than 1". Joint opening shall be reduced if the joint opening is less than this dimension.

**Example**

Given: Distance from centerline of joint to the thermal neutral point of the superstructure measured along the centerline of roadway is 287.5'.

Find: Required strip seal gland size and the joint opening required at the time of joint installation.

Solution:

1. Enter Table A at 287.5' and find that the required strip seal gland size is 4".
2. Enter Table B at 287.5' and find that the joint opening required at time of installation is 3.86".

Note: Step (b) required only at time of construction.

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**Table A**

<table>
<thead>
<tr>
<th>Distance (')</th>
<th>Strip Seal Gland Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-200</td>
<td>3&quot;</td>
</tr>
<tr>
<td>201-300</td>
<td>4&quot;</td>
</tr>
<tr>
<td>301-400</td>
<td>5&quot;</td>
</tr>
</tbody>
</table>

**Table B**

<table>
<thead>
<tr>
<th>Distance (')</th>
<th>Joint Opening (')</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-200</td>
<td>1&quot;</td>
</tr>
<tr>
<td>201-300</td>
<td>1.5&quot;</td>
</tr>
<tr>
<td>301-400</td>
<td>2&quot;</td>
</tr>
</tbody>
</table>

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**Legends**

- Joint armor: 3" seal gland
- Joint opening: 1" minimum
- Joint installation temperature: 65°F

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**Side Bar**

- 3" x 1" steel retainer
- Anchor plate
- Plate ends
- Top of slab
- Steel retainer
- Joint armor side anchor plate
- Plate "A" 1/2" thick
- Place "A" 1/2" thick placed parallel with beam centerline

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**Diagram**

- View E-E
- Section Y-Y
**GENERAL NOTES:**

**STRIP SEALS:** Furnish extruded polyurethane premixed liquid materials in separate components as shown on the drawings and as specified by the seal manufacturer. See construction procedure for application.

**JOINTS IN STRIP SEALS:** Furnish seals in one continuous piece unless otherwise approved by the engineer.

**SEAL RETAINERS:** Furnish solid steel retainer, as specified by the seal manufacturer, see construction procedure for application.

**LUBRICANT-ADHESIVE:** Furnish a one-part moisture curing polyurethane compound meeting the requirements of ASTM D395 and as specified by the seal manufacturer. See construction procedure for application.

**CONSTRUCTION PROCEDURE:**

1. Place joint assembly so the two (2) 1½" x 4¼" x 5/8" angles remain parallel, to each other and perpendicular to the roadway gradient.

2. For structures with a composite concrete wearing surface, place the strip expansion joints in the span adjacent to the abutment prior to the placement of abutment backwall concrete.

3. Set abutment expansion joint width to dimension "A" until four hours prior to the day's peak ambient temperature. See project plans for dimension "A".

4. Place the backwall concrete during stable or rising ambient temperatures. Conclude placement at 1:00 immediately before the day's peak ambient temperature.

5. Hand place and vibrate concrete under joint anchorage to achieve complete consolidation.

6. Loosen any temporary joint armor supports after initial set of the concrete, preferably not later than two hours after conclusion of the placement. Supports shall be adjustable in the field to support the concrete.

7. For structures with a non-composite asphalt wearing surface, the armor bar holes shall be 2" diameter, same size as at the expansion bearings with a dimension of 4.5 ksi at any ambient temperature.

**SEAL INSTALLATION:**

1. Examine the retainer for soilage or defects that can damage the seal prior to seal installation. Repair defects.

2. Not more than 24 hours prior to seal installation, blast the retainer interior for size 8" commercial blast cleaning, without damaging adjacent coating. Remove all blasting media from the retainer.

3. Clean all surfaces of the seal with methyl ketone (MVK) or other manufacturer specified solvent using clean disposable cloths. Maintain the surface cleanliness until installation.

4. Immediately before applying the lubricant-adhesive, blowing surfaces must be clean, dry and warmer. Blowing surfaces must be maintained in this condition until the seal is installed. Liberally apply the lubricant-adhesive to both the retainer and the seal using the manufacturer's specified methods for complete and uniform coverage.

5. Install the seal with equipment and procedure specified by the manufacturer. Expansion of the joint shall be allowed for by the gap in the seal. The gap in the seal must be controlled by the installation techniques described. Change in dimensions caused by installation methods will be cause for rejection.

6. Remove excess lubricant-adhesive after installation.

**PROJECT PLANS:** All project plans shall show the seal system.