April 17, 2000

MEMORANDUM TO GROUP LEADERS AND CONSULTANTS

SUBJECT: Evazote Joints

The use of evazote joints may be used on structures with 20 degrees or less skew. The joint shall be sized and detailed on the joint sheet (see Detail "B"). The size of the joint shall be determined by using the attachments. The joints are to be paid for as Compression Joint Seal, LF.

Randy R. Cannon, P. E.
Bridge Design Engineer

cc: Assistant Bridge Design Engineers
    Bridge Construction Engineer

File: PC/JLC
To select the appropriate uncompressed seal width, compute $M_{tot}$ and enter chart below. The chart is based on a minimum compression of 25% @ 30° F, a maximum compression of 60% @ 100° F and a maximum joint opening of 3 1/2" @ 20° F.

$$M_{tot} = \text{Total Movement Normal to Joint} = 1.5 \times (6 \times 10^{-6}) \times L \times 12 \times 80^\circ \times \cos \theta$$

$$= 0.00864 \times L \times \cos \theta$$

Where:
1. $5 = \text{a factor to account for end rotation due to creep and shrinkage}$
2. $6 \times 10^{-6} = \text{coefficient of thermal expansion, per } ^\circ \text{F}$
3. $L = \text{length of superstructure expanding, feet}$
4. $80^\circ \text{F} = \text{range of temperature for concrete superstructure, (20^\circ \text{F to 100^\circ F)}}$
5. $\theta = \text{skew angle of joint, degrees}$

<table>
<thead>
<tr>
<th>$M_{tot}$</th>
<th>$W \text{ (Seal)}$</th>
<th>$W @ 60^\circ$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M_{tot} \leq 1.125&quot;$</td>
<td>2 13/16&quot;</td>
<td>1 11/16&quot;</td>
</tr>
<tr>
<td>$1.125&quot; &lt; M_{tot} \leq 1.250&quot;$</td>
<td>3 1/8&quot;</td>
<td>1 7/8&quot;</td>
</tr>
<tr>
<td>$1.250&quot; &lt; M_{tot} \leq 1.375&quot;$</td>
<td>3 7/16&quot;</td>
<td>2 1/16&quot;</td>
</tr>
<tr>
<td>$1.375&quot; &lt; M_{tot} \leq 1.500&quot;$</td>
<td>3 3/4&quot;</td>
<td>2 1/4&quot;</td>
</tr>
<tr>
<td>$1.500&quot; &lt; M_{tot} \leq 1.625&quot;$</td>
<td>4 1/16&quot;</td>
<td>2 7/16&quot;</td>
</tr>
<tr>
<td>$1.625&quot; &lt; M_{tot} \leq 1.750&quot;$</td>
<td>4 3/8&quot;</td>
<td>2 5/8&quot;</td>
</tr>
</tbody>
</table>

$W = \text{Width of uncompressed Evazote seal}$

**EVAZOTE JOINT SEALS FOR CONCRETE SUPERSTRUCTURE**
To select the appropriate uncompressed seal width, compute $M_{tot}$ and enter chart below. The chart is based on a minimum compression of 25% @ 30° F, a maximum compression of 60% @ 120° F and a maximum joint opening of 3 1/2" @ 0° F.

$$M_{tot} = \text{Total Movement Normal to Joint} = 1.25 \times (6.5 \times 10^{-6}) \times L \times 12 \times 120° \times \cos \theta$$

$$= 0.0117 \times L \times \cos \theta$$

Where:
1. $1.25 = \text{a factor to account for end rotation due to creep and shrinkage}$
2. $6.5 \times 10^{-6} = \text{coefficient of thermal expansion, per ° F}$
3. $L = \text{length of superstructure expanding, feet}$
4. $120° = \text{range of temperature for steel superstructure, (0° F to 120° F )}$
5. $\theta = \text{skew angle of joint, degrees}$

<table>
<thead>
<tr>
<th>$M_{tot}$</th>
<th>W (Seal)</th>
<th>W @ 60°</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M_{tot} \leq 1.313''$</td>
<td>2 13/16''</td>
<td>1 13/16''</td>
</tr>
<tr>
<td>$1.313'' &lt; M_{tot} \leq 1.458''$</td>
<td>3 1/8''</td>
<td>2''</td>
</tr>
<tr>
<td>$1.458'' &lt; M_{tot} \leq 1.604''$</td>
<td>3 7/16''</td>
<td>2 3/16''</td>
</tr>
<tr>
<td>$1.604'' &lt; M_{tot} \leq 1.750''$</td>
<td>3 3/4''</td>
<td>2 3/8''</td>
</tr>
<tr>
<td>$1.750'' &lt; M_{tot} \leq 1.896''$</td>
<td>4 1/16''</td>
<td>2 9/16''</td>
</tr>
</tbody>
</table>

$W = \text{Width of uncompressed Evazote seal}$

**EVAZOTE JOINT SEALS FOR STEEL SUPERSTRUCTURE**
EVAZOTE SEALS

The product is designed to be compatible with a variety of construction materials and fillers. The joints must be properly sealed to ensure a watertight connection. The following guidelines must be followed for each joint):

1. Ensure all surfaces are clean and free from debris.
2. Apply the sealant uniformly and in a consistent manner.
3. Allow the sealant to cure at the recommended temperature and humidity.
4. Ensure the sealant is not exposed to direct sunlight or extreme temperatures.

FIELD BUTT WELD DETAIL

NOTES FOR EXPANSION JOINTS

- The joint must be designed to accommodate the expected movement of the structure.
- The joint must be properly sealed to prevent the entry of water.
- The joint must be designed to resist the forces exerted by the structure.
- The joint must be properly reinforced to prevent failure.

PART PLAN - EXPANSION JOINT

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- The joint must be properly sealed to prevent the entry of water.
- The joint must be designed to resist the forces exerted by the structure.
- The joint must be properly reinforced to prevent failure.

DETAIL "B"