

Figure 1

To select the appropriate uncompressed seal width, compute M_{tot} and use the chart below. The chart is based on a maximum compression of 50% at T_{max} , a maximum tension of 10% at T_{min} , and a maximum sawed joint opening of 3 1/2" at T_{min} .

$$M_{tot} = \text{Total Movement Normal to Joint} = \alpha \times L \times 12 \times \Delta_T \times \sin \theta$$

Where:

$$\alpha = \text{Coefficient of Thermal Expansion (per } ^\circ\text{F)} = \begin{cases} 6.0 \times 10^{-6} & \text{for concrete superstructures} \\ 6.5 \times 10^{-6} & \text{for steel superstructures} \end{cases}$$

L = Length of Superstructure Expanding (feet)

$$\Delta_T = T_{max} - T_{min} = \begin{cases} 105^\circ - 20^\circ = 85^\circ & \text{for concrete superstructures} \\ 110^\circ - 10^\circ = 100^\circ & \text{for steel superstructures} \end{cases}$$

θ = Skew Angle of Joint (degrees)

$$M_{tot} = \begin{cases} 0.00612 \times L \times \sin \theta & \text{for concrete superstructures} \\ 0.00780 \times L \times \sin \theta & \text{for steel superstructures} \end{cases}$$

M_{tot}	E_w	$W @ 90^\circ\text{F}$	$W @ 60^\circ\text{F}$	$W @ 45^\circ\text{F}$	J
$M_{tot} \leq 1.000''$	2"	1 9/16" - C_{90}	1 9/16"	1 9/16" + C_{45}	1"
$1.000'' < M_{tot} \leq 1.250''$	2 1/2"	1 15/16" - C_{90}	1 15/16"	1 15/16" + C_{45}	1 1/4"
$1.250'' < M_{tot} \leq 1.500''$	3"	2 5/16" - C_{90}	2 5/16"	2 5/16" + C_{45}	1 1/2"
$1.500'' < M_{tot} \leq 1.750''$	3 1/2"	2 11/16" - C_{90}	2 11/16"	2 11/16" + C_{45}	1 3/4"

E_w = Width of uncompressed seal

$W @ 45^\circ, 60^\circ, 90^\circ\text{F}$ = Sawed joint opening, to be shown on plans; see Figure 1

J = Formed joint opening; see Figure 1

$$C_{90} = (30 / \Delta_T) \times M_{tot}$$

$$C_{45} = (15 / \Delta_T) \times M_{tot}$$

Foam Joint Seals for Concrete and Steel Superstructures

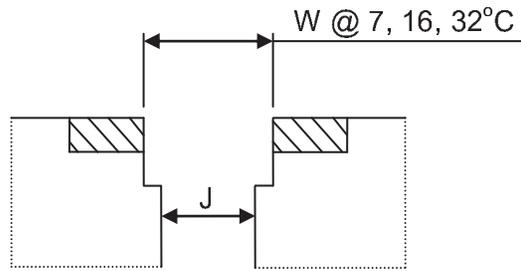


Figure 1

To select the appropriate uncompressed seal width, compute M_{tot} and use the chart below. The chart is based on a maximum compression of 50% at T_{max} , a maximum tension of 10% at T_{min} , and a maximum sawed joint opening of 89mm at T_{min} .

$$M_{tot} = \text{Total Movement Normal to Joint} = \alpha \times L \times \Delta_T \times \sin \theta$$

Where:

$$\alpha = \text{Coefficient of Thermal Expansion (per } ^\circ\text{C)} = \begin{cases} 10.8 \times 10^{-6} & \text{for concrete superstructures} \\ 11.7 \times 10^{-6} & \text{for steel superstructures} \end{cases}$$

L = Length of Superstructure Expanding (mm)

$$\Delta_T = T_{max} - T_{min} = \begin{cases} 41^\circ - (-7^\circ) = 48^\circ & \text{for concrete superstructures} \\ 43^\circ - (-12^\circ) = 55^\circ & \text{for steel superstructures} \end{cases}$$

θ = Skew Angle of Joint (degrees)

$$M_{tot} = \begin{cases} 0.00052 \times L \times \sin \theta & \text{for concrete superstructures} \\ 0.00064 \times L \times \sin \theta & \text{for steel superstructures} \end{cases}$$

M_{tot}	E_w	$W @ 32^\circ\text{C}$	$W @ 16^\circ\text{C}$	$W @ 7^\circ\text{C}$	J
$M_{tot} \leq 25\text{mm}$	50mm	40mm – C_{32}	40mm	40mm + C_7	25mm
$25\text{mm} < M_{tot} \leq 32\text{mm}$	65mm	50mm – C_{32}	50mm	50mm + C_7	32mm
$32\text{mm} < M_{tot} \leq 38\text{mm}$	75mm	60mm – C_{32}	60mm	60mm + C_7	38mm
$38\text{mm} < M_{tot} \leq 45\text{mm}$	90mm	70mm – C_{32}	70mm	70mm + C_7	45mm

E_w = Width of uncompressed seal

$W @ 7^\circ, 16^\circ, 32^\circ\text{C}$ = Sawed joint opening, to be shown on plans; see Figure 1

J = Formed joint opening; see Figure 1

$$C_{32} = (16 / \Delta_T) \times M_{tot}$$

$$C_7 = (9 / \Delta_T) \times M_{tot}$$

Foam Joint Seals for Concrete and Steel Superstructures

FIGURE 6 – 43 M