WBA Single Support Bar Modular

Moderate to large movement bridge expansion joint system

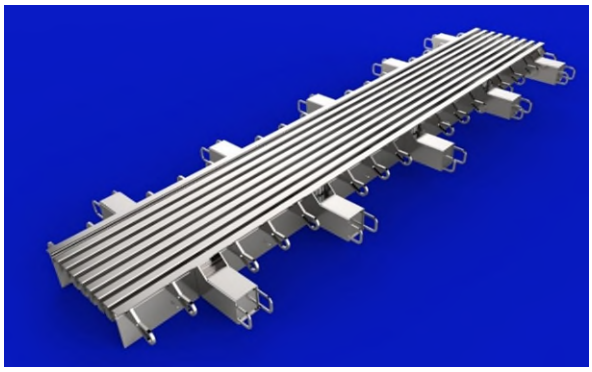


Figure 1: WBA single support bar modular

DESCRIPTION:

The WBA Single Support Bar Modular Expansion Joint is designed to accommodate moderate to large bridge movements. With 40+ years of field history, the WBA SSB modular system has been implemented worldwide on hundreds of structures, including dozens of signature structures.

Features	Benefits
High load capacity polyurethane bearings with PTFE sliding surfaces	Polyurethane provides the properties of high load capacity & high resilience required for decades of large vehicular load impacts. The low coefficient of friction PTFE (Teflon) surfaces slide on polished mirror stainless surfaces to allow for smooth opening & closing movement.
System precompression	Structural load support members remain under precompression via support box & yoke springs to ensure well-controlled response to vehicle tire impacts.
A stiffening spring counterforce equidistance system	As joint is opened, the equidistance spring compresses, becoming extremely stiff at full compression. Maximum equidistance is achieved at maximum opening, preventing seals from over extending (Figure 8).
Laboratory & field proven	Acme products, later to become WBA, provided the first modular installation in the US. Thousands of WBA SSB modular joints ranging from 6” to 54” of movement have been installed since then. These expansion joints have undergone extensive testing, including AASHTO Appendix 19 fatigue, opening movement vibration, & seal pushout tests.
Machined seal lugs	For tight fitting leak-proof seals, cavities are machined into the centerbeams – a long term solution superior to systems that rely chiefly on adhesives to achieve water-tight conditions.
Large movement ranges	Standard joints available in 3” (80mm) movement increments with no upper limit in size (Table 1).
High joint skew & racking capabilities	MSB SSB Strip seals coupled with tight fitting seal lugs allow for excellent seal performance even under high joint skew & racking (transverse movement) conditions. WBA SSB modular seals can accommodate +/-50% of the longitudinal movement capacity in the transverse direction.

Watson Bowman Acme
95 Pineview Drive
Amherst, NY 14228
phone: 716-691-7566
fax: 716-691-9239
watsonbowmanacme.com

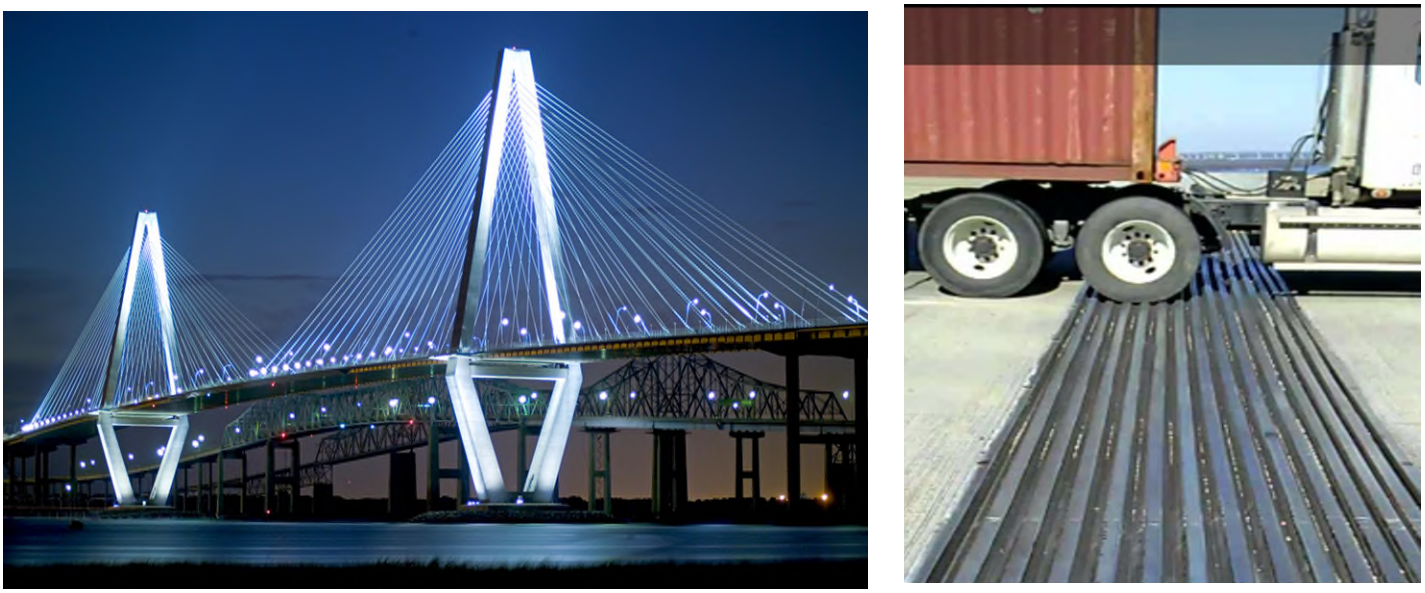
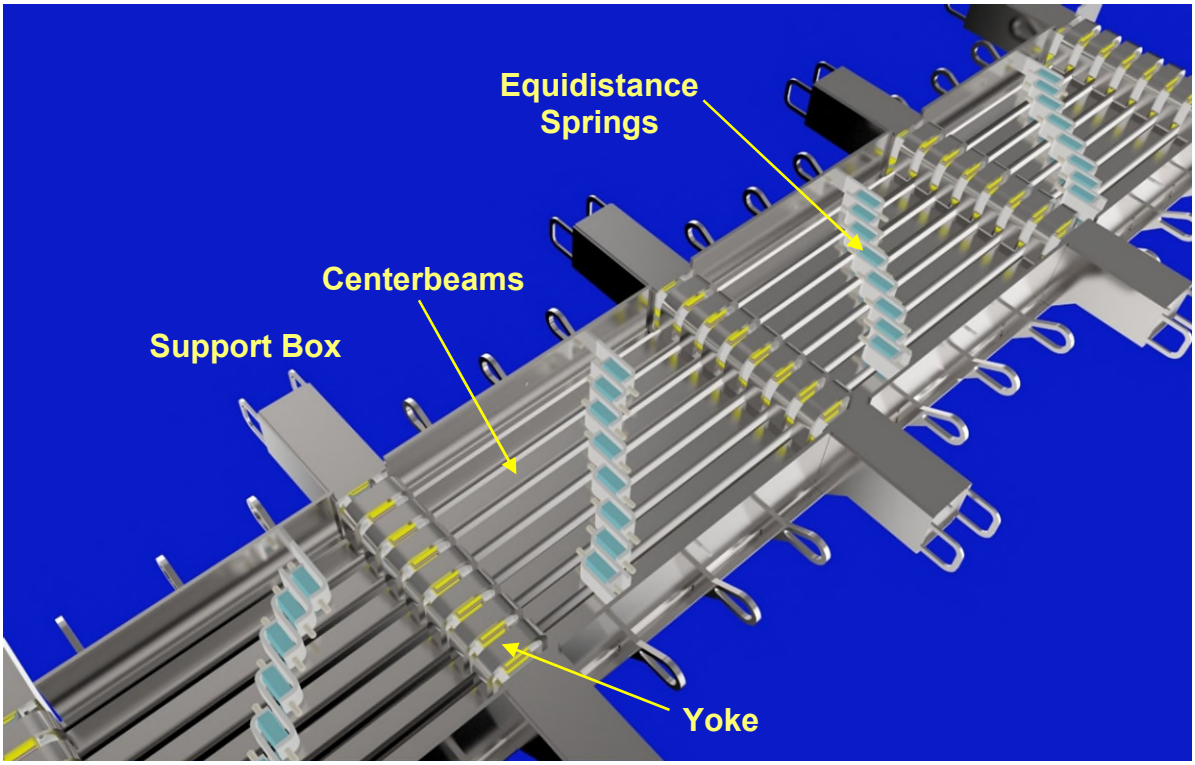


Figure 2: The Arthur Ravenel Bridge, Charleston SC, incorporates 54" SSB joints

Main Components

Main components include Centerbeams, Seals, Support Boxes and Support Bars, Support Box Bearings and Springs, Yokes, and Equidistance Springs (Figure 3).



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phone: 716-691-7566
fax: 716-691-9239
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Figure 3: Some of the main components on the WBA single support bar system.

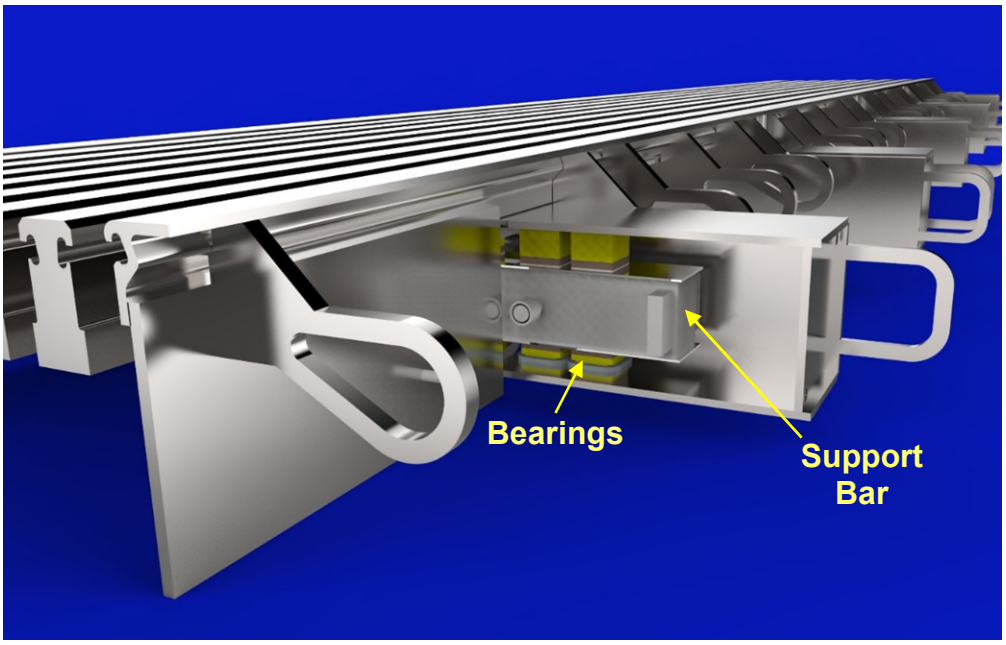
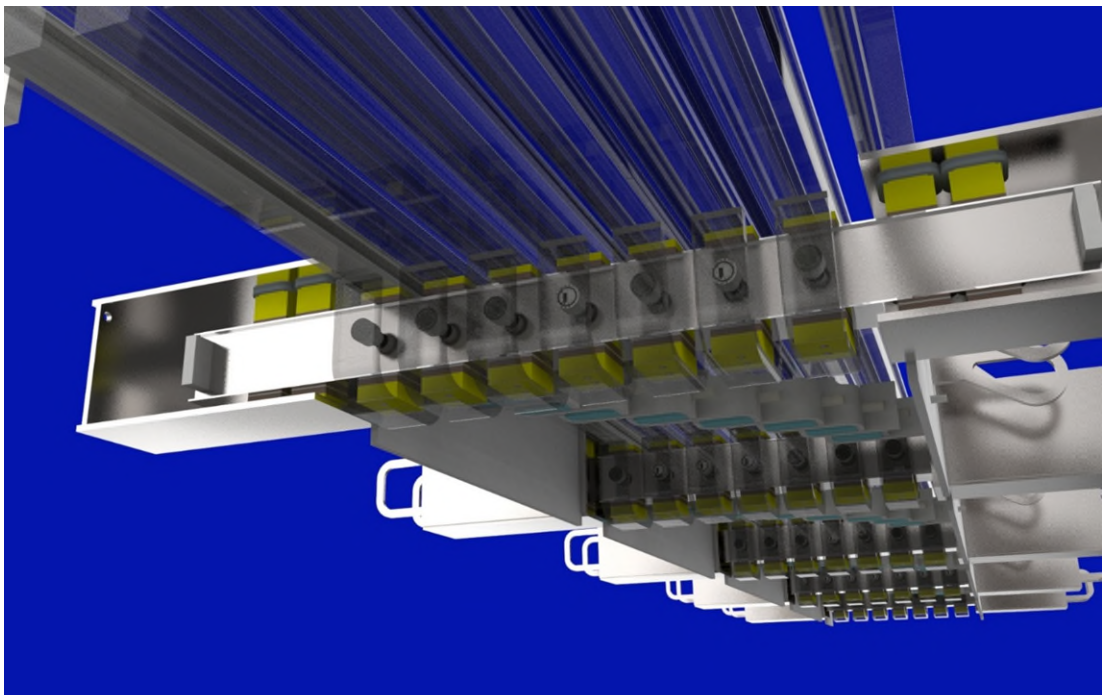


Figure 4: Support Box polyurethane bearings help absorb impact loads (Seals not shown)



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fax: 716-691-9239
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Figure 5: Bearings and springs (yellow elements) provide control and shock absorption for the system.

Figure 6: Equidistance springs installed, support bars ready to be strapped on with yokes

Figure 7: The WBA counterforce equidistance system optimizes joint performance by providing minimal spring force when the joint is closed and maximum spring force when the joint is open (seals not shown).

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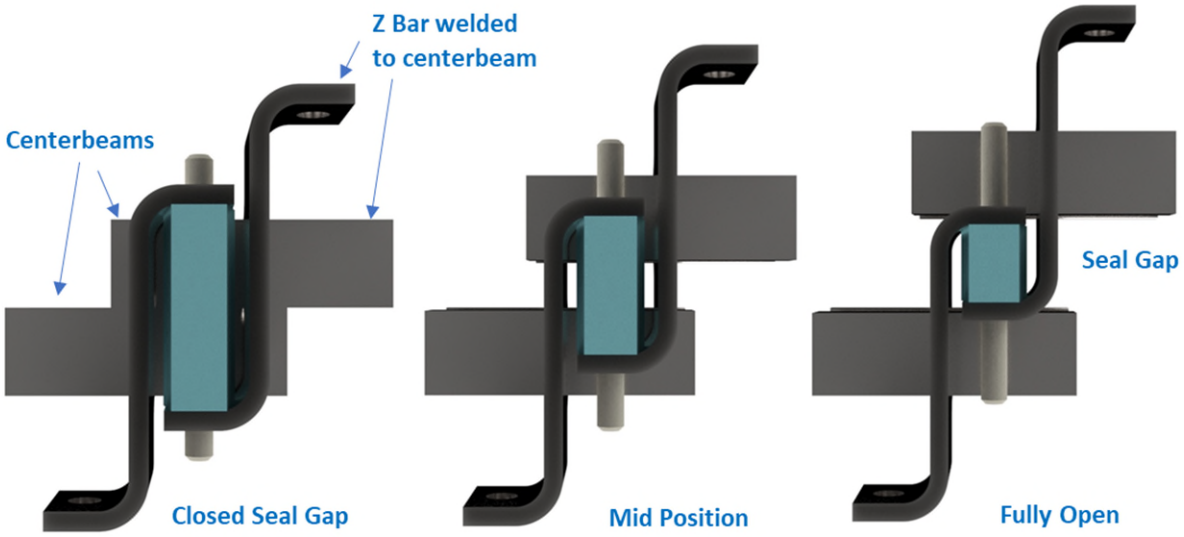
watsonbowmanacme.com



Sizes and Dimensions

Standard WBA SSB modular joints are supplied in 3” movement increments, with joint size designated by movement, for example B600 for 6” movement and B3600 for 36” movement. Table 1 and Figure 8 contain dimension details. Dimensions vary according to load, support box seat concrete consolidation method, structure reinforcement details, low height requirements, etc., and thus may vary from what is listed.

Table 1: Blockout Dimensions (actual dimensions may vary)

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phone: 716-691-7566
fax: 716-691-9239
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Number of Seals	Movement	Min Joint Gap (G)	Mid Joint Gap (G)	Max Joint Gap (G)	Blockout Width (W)	Blockout Depth (H)
2	6.00	2.50	5.50	20.50	17	12.00
3	9.00	5.00	9.50	32.00	18	12.00
4	12.00	7.50	13.50	43.50	20	12.00
5	15.00	10.00	17.50	55.00	21	12.00
6	18.00	12.50	21.50	66.50	23	12.00
7	21.00	15.00	25.50	78.00	24	12.50
8	24.00	17.50	29.50	89.50	26	12.50
9	27.00	20.00	33.50	101.00	27	12.50
10	30.00	22.50	37.50	112.50	29	12.50
11	33.00	25.00	41.50	124.00	30	12.50
12	36.00	27.50	45.50	135.50	32	12.50
13	39.00	30.00	49.50	147.00	33	13.00
14	42.00	32.50	53.50	158.50	35	13.00
15	45.00	35.00	57.50	170.00	36	13.00
16	48.00	37.50	61.50	181.50	38	13.50
17	51.00	40.00	65.50	193.00	39	13.50
18	54.00	42.50	69.50	204.50	41	13.50
19	57.00	45.00	73.50	216.00	42	14.00
20	60.00	47.50	77.50	227.50	44	14.00
21	63.00	50.00	81.50	239.00	45	14.50
22	66.00	52.50	85.50	250.50	47	14.50

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Amherst, NY 14228
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watsonbowmanacme.com

Figure 8: Joint Blockout

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