

## Wheatland Tube Co. WST Pipe

### Table-1

WST (A-795-E) Pipe Properties													
Pipe NPS In.	Pipe 't' In.	Pipe ID 'd' In.	Pipe OD 'D' In.	Inside Area 'Ai' In <sup>2</sup>	Metal Area 'Am' In <sup>2</sup>	Wt Per ft. 'w <sub>1</sub> ' Lb.	Wt of Water. 'w <sub>2</sub> ' Lb.	Moment of Inertia 'I' In <sup>4</sup>	Section Mod. 'S' In <sup>3</sup>	Radius of Gyration 'r' In	Weight 'w' Lb/Ft w <sub>1</sub> + w <sub>2</sub>	Hanger Span Ft. (max)	Trapeze Load P Lb. = w+250
3/4	0.065	0.920	1.050	0.66	0.20	0.68	0.29	0.02	0.05	0.35	0.97	15	265
1	0.065	1.185	1.315	1.10	0.26	0.87	0.48	0.05	0.08	0.44	1.35	15	270
1 1/4	0.065	1.530	1.660	1.84	0.33	1.11	0.80	0.10	0.13	0.56	1.90	15	279
1 1/2	0.065	1.770	1.900	2.46	0.37	1.27	1.07	0.16	0.17	0.65	2.34	15	285
2	0.065	2.245	2.375	3.96	0.47	1.60	1.72	0.31	0.27	0.82	3.32	15	300

### Table-2

Table 9.1.1.6.1(a) Section Modulus Required (minimum) for Trapeze Member In <sup>3</sup>					
Nominal Diameter of WST (A135, Gr. A or A795-E) Pipe Being Supported					
Span of Trapeze 'a' ↓	3/4 In.	1 In.	1 1/4 In.	1 1/2 In.	2 In.
	Section Modulus Required (Minimum)				
1'-6"	0.08	0.08	0.08	0.09	0.09
2'-0"	0.11	0.11	0.11	0.11	0.12
2'-6"	0.13	0.14	0.14	0.14	0.15
3'-0"	0.16	0.16	0.17	0.17	0.18
4'-0"	0.21	0.22	0.22	0.23	0.24
5'-0"	0.26	0.27	0.28	0.29	0.30
6'-0"	0.32	0.32	0.33	0.34	0.36
7'-0"	0.37	0.38	0.39	0.40	0.42
8'-0"	0.42	0.43	0.45	0.46	0.48
9'-0"	0.48	0.49	0.50	0.51	0.54
10'-0"	0.53	0.54	0.56	0.57	0.60

The Table is based on a maximum allowable bending stress of 15 ksi and a mid-span concentrated load from a the span of water-filled pipe specified in NFPA 13, Sec. 9.2.2.1, plus 250 lb.



**Wheatland Tube**  
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**Wheatland Tube Co. WST Pipe  
Table-3**

<b>ZONE OF INFLUENCE LOAD CAPACITY (Lb) AT THE CENTER OF THE SPAN Lateral Sway Brace Spacing (Ft)<sup>a</sup> on WST (A135, Gr. A or A795-E) Pipe, (Fy = 30 ksi)<sup>f</sup></b>					
<b>Pipe Diameter (In)</b>	<b>20<sup>b</sup></b>	<b>25<sup>b</sup></b>	<b>30<sup>c</sup></b>	<b>35<sup>c</sup></b>	<b>40<sup>d</sup></b>
<b>1</b>	71	57	46	40	33
<b>1 ¼</b>	116	93	76	65	55
<b>1 ½</b>	155	124	101	87	73
<b>2<sup>e</sup></b>	247	198	162	139	116

**Notes:**

- <sup>a</sup> The tables for the maximum load  $F_{pw}$  in zone of influence are based on specific configurations of mains and branch lines.
- <sup>b</sup> Assumes branch lines at center of pipe span and near each support.
- <sup>c</sup> Assumes branch lines at third-points of pipe span and near each support.
- <sup>d</sup> Assumes branch lines at quarter-points of pipe span and near each support.
- <sup>e</sup> Larger diameter pipe may be used when justified by engineering analysis.
- <sup>f</sup> ASTM A135/A-795-E has Yield Strength  $F_y = 30$  ksi. Effect on overall stresses in the pipe due to operational stresses is not considered.

**Table-4  
Sway Brace Load Capacity (Ref. NFPA 13, Section 9.3.5.8.7 (a))**

<b>Maximum Horizontal Loads For Sway Brace with <math>kl/r = 100</math> for steel brace <math>F_y = 30</math>ksi WST (A135, Gr. A or A795-E) Pipe</b>							
<b>Pipe Diameter NPS In.</b>	<b>Metal Area 'Am' In<sup>2</sup></b>	<b>Radius of Gyration 'r' In</b>	<b>Maximum Length for <math>kl/r = 100</math> Ft</b>	<b>Fa Allowable Compressive Stress, psi</b>	<b>Max. Horizontal Load Lb.</b>		
					<b>Angle From 30° - 44°</b>	<b>Angle From 45° - 59°</b>	<b>Angle From 60° - 90°</b>
<b>1</b>	0.26	0.44	3'-6"	11705	1493	2111	2586
<b>1 ¼</b>	0.33	0.56	4'-6"	11705	1905	2694	3300
<b>1 ½</b>	0.37	0.65	5'-3"	11705	2192	3099	3796
<b>2</b>	0.47	0.82	6'-6"	11705	2759	3902	4779

**Sway Brace Load Capacity (Ref. NFPA 13, Section 9.3.5.8.7 (b))**

<b>Maximum Horizontal Loads For Sway Brace with <math>kl/r = 200</math> for steel brace <math>F_y = 30</math>ksi WST (A135, Gr. A or A795-E) Pipe</b>							
<b>Pipe Diameter NPS In.</b>	<b>Metal Area 'Am' In<sup>2</sup></b>	<b>Radius of Gyration 'r' In</b>	<b>Maximum Length for <math>kl/r = 200</math> Ft</b>	<b>Fa Allowable Compressive Stress, psi</b>	<b>Max. Horizontal Load Lb.</b>		
					<b>Angle From 30° - 44°</b>	<b>Angle From 45° - 59°</b>	<b>Angle From 60° - 90°</b>
<b>1</b>	0.26	0.44	7'- 0"	3730	476	673	824
<b>1 ¼</b>	0.33	0.56	9'- 0"	3730	607	858	1051
<b>1 1/2</b>	0.37	0.65	10'- 6"	3730	698	988	1210
<b>2</b>	0.47	0.82	13'- 0"	3730	879	1243	1523

**Sway Brace Load Capacity (Ref. NFPA 13, Section 9.3.5.8.7 (c))**

<b>Maximum Horizontal Loads For Sway Brace with <math>kl/r = 300</math> for steel brace <math>F_y = 30</math>ksi WST (A135, Gr. A or A795-E) Pipe</b>							
<b>Pipe Diameter NPS In.</b>	<b>Metal Area 'Am' In<sup>2</sup></b>	<b>Radius of Gyration 'r' In</b>	<b>Maximum Length for <math>kl/r = 300</math> Ft</b>	<b>Fa Allowable Compressive Stress, psi</b>	<b>Max. Horizontal Load Lb.</b>		
					<b>Angle From 30° - 44°</b>	<b>Angle From 45° - 59°</b>	<b>Angle From 60° - 90°</b>
<b>1</b>	0.26	0.44	11'- 0"	1658	211	299	366
<b>1 1/4</b>	0.33	0.56	14'- 0"	1658	270	381	467
<b>1 1/2</b>	0.37	0.65	16'- 0"	1658	310	439	538
<b>2</b>	0.47	0.82	20'- 0"	1658	391	553	677