

## Wheatland Tube Co. GL Pipe

### Table-1

GL (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
1	0.106	1.103	1.315	0.96	0.40	1.37	0.41	0.07	0.11	0.43	1.78	15	277
1 1/4	0.106	1.448	1.660	1.65	0.52	1.76	0.71	0.16	0.19	0.55	2.47	15	287
1 1/2	0.106	1.688	1.900	2.24	0.60	2.03	0.97	0.24	0.25	0.64	3.00	15	295
2	0.111	2.153	2.375	3.64	0.79	2.68	1.58	0.51	0.43	0.80	4.26	15	314

### Table-2

Table 9.1.1.6.1(a) Section Modulus Required for Trapeze Member In <sup>3</sup>				
Nominal Diameter of GL (A-795-E) Pipe Being Supported				
Span of Trapeze 'a' ↓	1 in.	1 ¼ In.	1 ½ In.	2 In.
	Section Modulus Required (Minimum)			
1'-6"	0.08	0.09	0.09	0.09
2'-0"	0.11	0.11	0.12	0.13
2'-6"	0.14	0.14	0.15	0.16
3'-0"	0.17	0.17	0.18	0.19
4'-0"	0.22	0.23	0.24	0.25
5'-0"	0.28	0.29	0.30	0.31
6'-0"	0.33	0.34	0.35	0.38
7'-0"	0.39	0.40	0.41	0.44
8'-0"	0.44	0.46	0.47	0.50
9'-0"	0.50	0.52	0.53	0.57
10'-0"	0.55	0.57	0.59	0.63

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.



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### Table-3

<b>ZONE OF INFLUENCE LOAD CAPACITY (Lb) AT THE CENTER OF THE SPAN</b>					
<b>Lateral Sway Brace Spacing (Ft)<sup>a</sup> on GL (A-795-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>	105	84	69	59	49
<b>1 ¼</b>	176	141	115	99	83
<b>1 ½</b>	236	189	155	133	111
<b>2<sup>e</sup></b>	398	318	261	223	187

**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 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</b>							
GL Pipe Diameter NPS In.	Metal Area 'Am' In <sup>2</sup>	Radius of Gyration 'Rg' In	Maximum Length for $Kl/r = 100$ Ft	Fa Allowable Compressive. Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
<b>1</b>	0.40	0.43	3'-6"	11705	2355	3330	4079
<b>1 ¼</b>	0.52	0.55	4'-6"	11705	3027	4280	5243
<b>1 ½</b>	0.60	0.64	5'-3"	11705	3495	4941	6052
<b>2</b>	0.79	0.80	6'-6"	11705	4618	6530	7998

#### 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</b>							
GL Pipe Diameter NPS In.	Metal Area 'Am' In <sup>2</sup>	Radius of Gyration 'Rg' In	Maximum Length for $Kl/r = 200$ Ft	Fa Allowable Compressive. Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
<b>1</b>	0.40	0.43	7' - 0"	3730	750	1061	1300
<b>1 ¼</b>	0.52	0.55	9' - 0"	3730	965	1364	1671
<b>1 ½</b>	0.60	0.64	10' - 6"	3730	1113	1574	1929
<b>2</b>	0.79	0.80	13' - 0"	3730	1471	2081	2549

#### 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</b>							
GL Pipe Diameter NPS In.	Metal Area 'Am' In <sup>2</sup>	Radius of Gyration 'Rg' In	Maximum Length for $Kl/r = 300$ Ft	Fa Allowable Compressive. Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
<b>1</b>	0.40	0.43	10' - 9"	1658	334	472	578
<b>1 ¼</b>	0.52	0.55	13' - 9"	1658	429	606	742
<b>1 ½</b>	0.60	0.64	15' - 9"	1658	495	700	857
<b>2</b>	0.79	0.80	20' - 0"	1658	654	925	1133