

Wheatland Tube Co. Mega-Flow Pipe

Table-1

Mega Flow (A-795-E) Pipe Properties													
Pipe NPS In.	Pipe 't' In.	Pipe ID 'd' In.	Pipe OD 'D' In.	Inside Area 'Ai' In ²	Metal Area 'Am' In ²	Wt Per ft. 'w ₁ ' Lb.	Wt of Water. 'w ₂ ' Lb.	Moment of Inertia 'I' In ⁴	Section Mod. 'S' In ³	Radius of Gyration 'r' In	Weight 'w' Lb/Ft w ₁ + w ₂	Hanger Span Ft. (max)	Trapeze Load P Lb. = w+250
1 ¼	0.065	1.530	1.660	1.84	0.33	1.11	0.80	0.10	0.13	0.56	1.91	15	279
1 ½	0.080	1.740	1.900	2.38	0.46	1.56	1.03	0.19	0.20	0.64	2.59	15	289
2	0.080	2.215	2.375	3.85	0.58	1.96	1.67	0.38	0.32	0.81	3.63	15	304
2 ½	0.084	2.707	2.875	5.75	0.74	2.50	2.50	0.72	0.50	0.99	5.00	15	325
3	0.092	3.316	3.500	8.63	0.98	3.35	3.74	1.43	0.82	1.21	7.09	15	356
4	0.092	4.316	4.500	14.62	1.27	4.33	6.34	3.10	1.38	1.56	10.67	15	410
6	0.115	6.395	6.625	32.10	2.35	8.00	13.93	12.46	3.76	2.30	21.93	15	579

Table-2

Table 9.1.1.6.1(a) Section Modulus Required for Trapeze Member In³							
Nominal Diameter of Mega Flow (A-795-E) Pipe Being Supported							
Span of Trapeze 'a' ↓	1 ¼ In.	1 ½ In.	2 In.	2 ½ In.	3 In.	4 In.	6 In.
	Section Modulus Required (Minimum)						
1'-6"	0.08	0.09	0.09	0.10	0.11	0.12	0.17
2'-0"	0.11	0.12	0.12	0.13	0.14	0.16	0.23
2'-6"	0.14	0.14	0.15	0.16	0.18	0.21	0.29
3'-0"	0.17	0.17	0.18	0.19	0.21	0.25	0.35
4'-0"	0.22	0.23	0.24	0.26	0.29	0.33	0.46
5'-0"	0.28	0.29	0.30	0.32	0.36	0.41	0.58
6'-0"	0.33	0.35	0.37	0.39	0.43	0.49	0.69
7'-0"	0.39	0.40	0.43	0.45	0.50	0.57	0.81
8'-0"	0.45	0.46	0.49	0.52	0.57	0.66	0.93
9'-0"	0.50	0.52	0.55	0.58	0.64	0.74	1.04
10'-0"	0.56	0.58	0.61	0.65	0.71	0.82	1.16

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.



Contact: Greg Maurer, Manager Technical Services & Quality Assurance
1 Council Avenue, P.O. Box 608, Wheatland, PA 16161
Ph: (724)-342-6851 Ext. 1250

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Table-3

ZONE OF INFLUENCE LOAD CAPACITY (Lb) AT THE CENTER OF THE SPAN					
Lateral Sway Brace Spacing (Ft)^a on Mega Flow (A-795-E) Pipe, (Fy = 30 ksi)^f					
Pipe Diameter (In)	20^b	25^b	30^c	35^c	40^d
1 ¼	116	93	76	65	55
1 ½	186	149	122	105	88
2	298	239	195	168	140
2 ½	465	372	305	261	219
3	762	609	499	428	358
4	1281	1025	840	720	603
6 ^e	3504	2803	2297	1968	1648

Notes:

^a The tables for the maximum load F_{pw} in zone of influence are based on specific configurations of mains and branch lines.

^b Assumes branch lines at center of pipe span and near each support.

^c Assumes branch lines at third-points of pipe span and near each support.

^d Assumes branch lines at quarter-points of pipe span and near each support.

^e Larger diameter pipe may be used when justified by engineering analysis.

^f 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))

Maximum Horizontal Loads For Sway Brace with $kl/r = 100$ for steel brace $F_y = 30$ksi Mega-Flow (A-795-E) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' In	Maximum Length for $Kl/r = 100$ Ft-In.	Fa Allowable Compressive Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
1 ¼	0.33	0.56	4'-6"	11705	1905	2694	3300
1 ½	0.46	0.64	5'-3"	11705	2676	3783	4634
2	0.58	0.81	6'-6"	11705	3374	4771	5844

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

Maximum Horizontal Loads For Sway Brace with $kl/r = 200$ for steel brace $F_y = 30$ksi Mega-Flow (A-795-E) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' In	Maximum Length for $Kl/r = 200$ Ft-In	Fa Allowable Compressive Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
1 ¼	0.33	0.56	9' - 0"	3730	607	858	1051
1 ½	0.46	0.64	10' - 6"	3730	853	1205	1477
2	0.58	0.81	13' - 0"	3730	1075	1520	1862

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

Maximum Horizontal Loads For Sway Brace with $kl/r = 300$ for steel brace $F_y = 30$ksi Mega-Flow (A-795-E) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' In	Maximum Length for $Kl/r = 300$ Ft-In.	Fa Allowable Compressive Stress, psi	Max. Horizontal Load Lb.		
					Angle From 30° - 44°	Angle From 45° - 59°	Angle From 60° - 90°
1 1/4	0.33	0.56	13' - 9"	1658	270	381	467
1 1/2	0.46	0.64	15' - 9"	1658	379	536	656
2	0.58	0.81	20' - 0"	1658	478	676	828