

Wheatland Tube Co. Schedule 10 Pipe

Table-1

Schedule 10 (A-135, Gr. A) 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 1/4	0.109	1.442	1.660	1.632	0.53	1.81	0.71	0.16	0.19	0.55	2.52	15	288
1 1/2	0.109	1.682	1.900	2.221	0.61	2.08	0.96	0.25	0.26	0.63	3.04	15	296
2	0.109	2.157	2.375	3.652	0.78	2.64	1.58	0.50	0.42	0.80	4.22	15	313
2 1/2	0.120	2.635	2.875	5.450	1.04	3.53	2.36	0.99	0.69	0.97	5.90	15	338
3	0.120	3.260	3.500	8.343	1.27	4.33	3.62	1.82	1.04	1.20	7.95	15	369
4	0.120	4.260	4.500	14.246	1.65	5.61	6.18	3.96	1.76	1.55	11.79	15	427
5	0.134	5.295	5.563	22.009	2.28	7.77	9.55	8.43	3.03	1.92	17.32	15	510
6	0.134	6.357	6.625	31.723	2.73	9.29	13.76	14.40	4.35	2.30	23.05	15	596

Table-2

Table 9.1.1.6.1(a) Section Modulus Required (minimum) for Trapeze Member In ³								
Nominal Diameter of Schedule 10, (A135, Gr. A) Pipe Being Supported								
Span of Trapeze 'a' ↓	1 ¼ In.	1 ½ In.	2 In.	2 ½ In.	3 In.	4 In.	5 In.	6 In.
	Section Modulus Required (Minimum)							
1'-6"	0.09	0.09	0.09	0.10	0.11	0.13	0.15	0.18
2'-0"	0.12	0.12	0.13	0.14	0.15	0.17	0.20	0.24
2'-6"	0.14	0.15	0.16	0.17	0.18	0.21	0.25	0.30
3'-0"	0.17	0.18	0.19	0.20	0.22	0.26	0.31	0.36
4'-0"	0.23	0.24	0.25	0.27	0.30	0.34	0.41	0.48
5'-0"	0.29	0.30	0.31	0.34	0.37	0.43	0.51	0.60
6'-0"	0.35	0.35	0.38	0.41	0.44	0.51	0.61	0.71
7'-0"	0.40	0.41	0.44	0.47	0.52	0.60	0.71	0.83
8'-0"	0.46	0.47	0.50	0.54	0.59	0.68	0.82	0.95
9'-0"	0.52	0.53	0.56	0.61	0.66	0.77	0.92	1.07
10'-0"	0.58	0.59	0.63	0.68	0.74	0.85	1.02	1.19

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

ZONE OF INFLUENCE LOAD CAPACITY (Lb) AT THE CENTER OF THE SPAN Lateral Sway Brace Spacing (Ft)^a on Schedule 10, (A135, Gr. A) Pipe, (Fy = 30 ksi)^f					
Pipe Diameter (In)	20^b	25^b	30^c	35^c	40^d
1 1/4	180	144	118	101	85
1 1/2	242	194	159	136	114
2	391	313	257	220	184
2 1/2	640	512	419	359	301
3	970	776	635	545	456
4	1640	1312	1075	921	772
5	2821	2257	1849	1585	1327
6^e	4048	3238	2653	2274	1904

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 A135, Gr. A 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, Schedule 10, (A135, Gr. A) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' 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°
1 ¼	0.53	0.55	4'-6"	11705	3107	4393	5381
1 ½	0.61	0.63	5'-3"	11705	3587	5073	6213
2	0.78	0.80	6'-6"	11705	4539	6418	7861

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, Schedule 10, (A135, Gr. A) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' 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°
1 ¼	0.53	0.55	9'-0"	3730	990	1400	1714
1 ½	0.61	0.63	10'-6"	3730	1143	1616	1980
2	0.78	0.80	13'-0"	3730	1446	2045	2505

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, Schedule 10, (A135, Gr. A) Pipe							
Pipe Diameter NPS In.	Metal Area 'Am' In²	Radius of Gyration 'r' 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°
1 ¼	0.53	0.55	13'-6"	1658	440	622	762
1 ½	0.61	0.63	15'-9"	1658	508	718	880
2	0.78	0.80	20'-0"	1658	643	909	1113