Flow of Water Through Schedule 40 Steel Pipes (continued)

DISCHARGE		PRESSURE DROP PER 100 FEET AND VELOCITY IN SCHEDULE 40 PIPE FOR WATER AT 60°F															
Gallons per Minute	Cubic Ft. per Second	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)	Velocity (Ft. per Sec.)	Pressure Drop (PSI)
		10"		12"								5"		6"		8"	
700	1.560	2.85	0.112	2.01	0.047			---	---	---	---	11.23	3.43	7.78	1.35	4.49	0.343
750	1.671	3.05	0.127	2.15	0.054	14"		---	---	---	---	12.03	3.92	8.33	1.55	4.81	0.392
800	1.782	3.25	0.143	2.29	0.061			---	---	---	---	12.83	4.43	8.88	1.75	5.13	0.443
850	1.894	3.46	0.160	2.44	0.068	2.02	0.042	---	---	---	---	13.64	5.00	9.44	1.96	5.45	0.497
900	2.005	3.66	0.179	2.58	0.075	2.13	0.047	---	---	---	---	14.44	5.58	9.99	2.18	5.77	0.554
950	2.117	3.86	0.198	2.72	0.083	2.25	0.052			---	---	15.24	6.21	10.55	2.42	6.09	0.613
1000	2.228	4.07	0.218	2.87	0.091	2.37	0.057	16"		---	---	16.04	6.84	11.10	2.68	6.41	0.675
1100	2.451	4.48	0.260	3.15	0.110	2.61	0.068			---	---	17.65	8.23	12.22	3.22	7.05	0.807
1200	2.674	4.88	0.306	3.44	0.128	2.85	0.800	2.18	0.042	---	---	---	---	13.33	3.81	7.70	0.948
1300	2.896	5.29	0.355	3.73	0.150	3.08	0.093	2.36	0.048	---	---	---	---	14.43	4.45	8.33	1.11
1400	3.119	5.70	0.409	4.01	0.171	3.32	0.107	2.54	0.055					15.55	5.13	8.98	1.28
1500	3.342	6.10	0.466	4.30	0.195	3.56	0.122	2.72	0.063	18"				16.66	5.85	9.62	1.46
1600	3.565	6.51	0.527	4.59	0.219	3.79	0.138	2.90	0.071					17.77	6.61	10.26	1.65
1800	4.010	7.32	0.663	5.16	0.276	4.27	0.172	3.27	0.088	2.58	0.050			19.99	8.37	11.54	2.08
2000	4.456	8.14	0.808	5.73	0.339	4.74	0.209	3.63	0.107	2.87	0.060	20"		22.21	10.3	12.82	2.55
2500	5.570	10.17	1.24	7.17	0.515	5.93	0.321	4.54	0.163	3.59	0.091					16.03	3.94
3000	6.684	12.20	1.76	8.60	0.731	7.11	0.451	5.45	0.232	4.30	0.129	3.46	0.075	24"		19.24	5.59
3500	7.798	14.24	2.38	10.03	0.982	8.30	0.607	6.35	0.312	5.02	0.173	4.04	0.101			22.44	7.56
4000	8.912	16.27	3..08	11.47	1.27	9.48	0.787	7.26	0.401	5.74	0.222	4.62	0.129	3.19	0.052	25.65	9.80
4500	10.03	18.31	3.87	12.90	1.60	10.67	0.990	8.17	0.503	6.46	0.280	5.20	0.162	3.59	0.065	28.87	12.2
5000	11.14	20.35	7.71	14.33	1.95	11.85	1.21	9.08	0.617	7.17	0.340	5.77	0.199	3.99	0.079	---	---
6000	13.37	24.41	6.74	17.20	2.77	14.23	1.71	10.89	0.877	8.61	0.483	6.93	0.280	4.79	0.111	---	---
7000	15.60	28.49	9.11	20.07	3.74	16.60	2.31	12.71	1.18	10.04	0.652	8.08	0.376	5.59	0.150	---	---
8000	17.82	---	---	22.93	4.84	18.96	2.99	14.52	1.51	11.47	0.839	9.23	0.488	6.38	0.192	---	---
9000	20.05	---	---	25.79	6.09	21.34	3.76	16.34	1.90	12.91	1.05	10.39	0.608	7.18	0.242	---	---
10,000	22.28	---	---	28.66	7.46	23.71	4.61	18.15	2.34	14.34	1.28	11.54	0.739	7.98	0.294	---	---
12,000	26.74	---	---	34.40	10.7	28.45	6.59	21.79	3.33	17.21	1.83	13.85	1.06	9.58	0.416	---	---
14,000	31.19	---	---	---	---	33.19	8.89	25.42	4.49	20.08	2.45	16.16	1.43	11.17	0.562	---	---
16,000	35.65	---	---	---	---	---	---	29.05	5.83	22.95	3.18	18.47	1.85	12.77	0.723	---	---
18,000	40.10	---	---	---	---	---	---	32.68	7.31	25.82	4.03	20.77	2.32	14.36	0.907	---	---
20,000	44.56	---	---	---	---	---	---	36.31	9.03	28.69	4.93	23.08	2.86	15.96	1.12	---	---

For pipe lengths other than 100 feet, the pressure drop is proportional to the length. Thus, for 50 feet of pipe, the pressure drop is approximately one half the value given in the table - - or 300 feet, three times the given value, etc.

For calculations for pipe other than Schedule 40, see explanation on page 161.

Velocity is a function of the cross sectional flow area; thus, it is constant for a given flow rate and is independent of pipe length.

Extracted from Technical Paper No. 410, Flow of Fluids, with permission of Crane Co.