

Table Giving Velocity in Feet per Second and Discharge in Cubic Feet per Second of Circular Sewers, on a One Per Cent. Grade with Various Depths of Flow; Based on Kutter's Formula "N = .013."

—By the late ANDREW ROSEWATER, M. Am. Soc. C. E.

Size of Sewer	Ratio of depth to diameter																								Grades per 100 feet	Square foot of grade	Grades per 100 feet	Square foot of grade
	1		3/100		1/10		2/10		3/10		4/10		5/10		6/10		7/10		8/10		9/10							
	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.	Vel.	Dis.						
0 1/8	1.01	0.16	2.03	0.17	2.08	0.17	2.10	0.15	2.05	0.14	1.85	0.10	1.81	0.08	1.64	0.06	1.35	0.03	1.02	0.01	0.60	0.003	0.33	0.001	0.04	2.00	1.02	1.000
0 1/4	2.02	0.49	2.83	0.53	2.87	0.53	2.93	0.47	2.86	0.42	2.73	0.32	2.52	0.25	2.28	0.17	1.87	0.09	1.42	0.04	0.84	0.008	0.47	0.002	0.05	2.24	1.04	1.019
0 3/8	3.17	1.11	3.56	1.21	3.62	1.20	3.69	1.10	3.60	0.94	3.43	0.73	3.17	0.55	2.87	0.38	2.36	0.20	1.79	0.08	1.05	0.019	0.59	0.004	0.07	2.65	1.08	1.03
0 1/2	3.77	1.53	3.90	1.67	3.96	1.66	4.04	1.46	3.94	1.30	3.76	1.07	3.47	0.76	3.14	0.53	2.58	0.29	1.96	0.12	1.15	0.028	0.68	0.005	0.09	3.16	1.14	1.067
0 5/8	4.34	2.00	4.48	2.25	4.54	2.22	4.62	2.04	4.48	1.74	4.08	1.36	3.77	1.01	3.41	0.71	2.80	0.38	2.15	0.15	1.25	0.038	0.70	0.007	0.09	3.60	1.12	1.03
0 3/4	4.89	2.40	4.95	2.70	4.99	2.68	5.05	2.38	4.93	2.09	4.70	1.60	4.34	1.20	3.93	0.83	3.23	0.46	2.45	0.21	1.44	0.059	0.81	0.01	0.10	3.96	1.14	1.067
0 7/8	5.35	2.80	5.37	3.00	5.38	2.98	5.43	2.68	5.39	2.38	5.08	1.80	4.72	1.34	4.33	0.93	3.53	0.51	2.69	0.25	1.70	0.079	0.95	0.01	0.12	4.31	1.16	1.076
1 0	5.87	3.20	5.87	3.40	5.88	3.30	5.93	3.03	5.81	2.73	5.50	2.10	5.12	1.54	4.73	1.03	3.93	0.51	3.09	0.25	1.95	0.099	1.09	0.02	0.14	4.66	1.18	1.089
1 1/8	6.35	3.60	6.35	3.80	6.36	3.70	6.41	3.43	6.33	3.13	6.00	2.40	5.62	1.82	5.23	1.31	4.43	0.51	3.52	0.25	2.20	0.109	1.09	0.02	0.16	5.00	1.20	1.095
1 1/4	6.87	4.00	6.87	4.20	6.88	4.10	6.93	3.83	6.85	3.53	6.50	2.80	6.12	2.20	5.73	1.61	4.93	0.51	4.03	0.25	2.55	0.129	1.12	0.03	0.18	5.34	1.22	1.095
1 1/2	7.24	4.40	7.24	4.60	7.25	4.50	7.30	4.23	7.22	3.93	6.88	3.20	6.50	2.60	6.11	2.00	5.31	0.51	4.33	0.25	2.80	0.149	1.15	0.04	0.20	5.68	1.24	1.113
1 3/8	7.64	4.80	7.64	5.00	7.65	4.90	7.70	4.53	7.62	4.23	7.27	3.50	6.88	2.90	6.49	2.40	5.69	0.51	4.63	0.25	3.10	0.169	1.18	0.05	0.22	6.02	1.26	1.131
1 3/4	8.08	5.20	8.08	5.40	8.09	5.30	8.14	4.93	8.06	4.63	7.71	3.90	7.32	3.20	6.93	2.70	6.13	0.51	4.93	0.25	3.40	0.189	1.21	0.06	0.24	6.36	1.28	1.149
1 7/8	8.48	5.60	8.48	5.80	8.49	5.70	8.54	5.33	8.46	5.03	8.11	4.30	7.72	3.60	7.33	3.10	6.53	0.51	5.23	0.25	3.70	0.209	1.24	0.07	0.26	6.70	1.30	1.167
2 0	8.88	6.00	8.88	6.20	8.89	6.10	8.94	5.73	8.86	5.43	8.51	4.70	8.12	4.00	7.73	3.50	6.93	0.51	5.53	0.25	4.00	0.229	1.27	0.08	0.28	7.04	1.32	1.185
2 1/8	9.28	6.40	9.28	6.60	9.29	6.50	9.34	6.13	9.26	5.83	8.91	5.10	8.52	4.40	8.13	3.90	7.33	0.51	5.83	0.25	4.30	0.249	1.30	0.09	0.30	7.38	1.34	1.203
2 1/4	9.68	6.80	9.68	7.00	9.69	6.90	9.74	6.53	9.66	6.23	9.31	5.50	8.92	4.80	8.53	4.30	7.73	0.51	6.13	0.25	4.60	0.269	1.33	0.10	0.32	7.72	1.36	1.221
2 3/8	10.08	7.20	10.08	7.40	10.09	7.30	10.14	6.93	10.06	6.63	9.71	5.90	9.32	5.20	8.93	4.70	8.13	0.51	6.43	0.25	4.90	0.289	1.36	0.11	0.34	8.06	1.38	1.239
2 3/4	10.48	7.60	10.48	7.80	10.49	7.70	10.54	7.33	10.46	7.03	10.11	6.30	9.72	5.60	9.33	5.10	8.53	0.51	6.73	0.25	5.20	0.309	1.39	0.12	0.36	8.40	1.40	1.257
2 7/8	10.88	8.00	10.88	8.20	10.89	8.10	10.94	7.73	10.86	7.43	10.51	6.70	10.12	6.00	9.73	5.50	8.93	0.51	7.03	0.25	5.50	0.329	1.42	0.13	0.38	8.74	1.42	1.275
3 0	11.28	8.40	11.28	8.60	11.29	8.50	11.34	8.13	11.26	7.83	10.91	7.10	10.52	6.40	10.13	5.90	9.33	0.51	7.33	0.25	5.80	0.349	1.45	0.14	0.40	9.08	1.44	1.293
3 1/8	11.68	8.80	11.68	9.00	11.69	8.90	11.74	8.53	11.66	8.23	11.31	7.50	10.92	6.80	10.53	6.30	9.73	0.51	7.63	0.25	6.10	0.369	1.48	0.15	0.42	9.42	1.46	1.311
3 1/4	12.08	9.20	12.08	9.40	12.09	9.30	12.14	8.93	12.06	8.63	11.71	7.90	11.32	7.20	10.93	6.70	10.13	0.51	7.93	0.25	6.40	0.389	1.51	0.16	0.44	9.76	1.48	1.329
3 3/8	12.48	9.60	12.48	9.80	12.49	9.70	12.54	9.33	12.46	9.03	12.11	8.30	11.72	7.60	11.33	7.00	10.53	0.51	8.23	0.25	6.70	0.409	1.54	0.17	0.46	10.10	1.50	1.347
3 3/4	12.88	10.00	12.88	10.20	12.89	10.10	12.94	9.73	12.86	9.43	12.51	8.70	12.12	8.00	11.73	7.40	10.93	0.51	8.53	0.25	7.00	0.429	1.57	0.18	0.48	10.44	1.52	1.365
3 7/8	13.28	10.40	13.28	10.60	13.29	10.50	13.34	10.13	13.26	9.83	12.91	9.10	12.52	8.40	12.13	7.80	11.33	0.51	8.83	0.25	7.30	0.449	1.60	0.19	0.50	10.78	1.54	1.383
4 0	13.68	10.80	13.68	11.00	13.69	10.90	13.74	10.53	13.66	10.23	13.31	9.50	12.92	8.80	12.53	8.20	11.73	0.51	9.13	0.25	7.60	0.469	1.63	0.20	0.52	11.12	1.56	1.401
4 1/8	14.08	11.20	14.08	11.40	14.09	11.30	14.14	10.93	14.06	10.63	13.71	9.90	13.32	9.20	12.94	8.60	12.13	0.51	9.43	0.25	7.90	0.489	1.66	0.21	0.54	11.46	1.58	1.419
4 1/4	14.48	11.60	14.48	11.80	14.49	11.70	14.54	11.33	14.46	11.03	14.11	10.30	13.72	9.60	13.33	9.00	12.53	0.51	9.73	0.25	8.20	0.509	1.69	0.22	0.56	11.80	1.60	1.437
4 3/8	14.88	12.00	14.88	12.20	14.89	12.10	14.94	11.73	14.86	11.43	14.51	10.70	14.12	10.10	13.73	9.40	12.93	0.51	10.03	0.25	8.50	0.529	1.72	0.23	0.58	12.14	1.62	1.455
4 3/4	15.28	12.40	15.28	12.60	15.29	12.50	15.34	12.13	15.26	11.83	14.91	11.10	14.52	10.50	14.13	9.80	13.33	0.51	10.33	0.25	8.80	0.549	1.75	0.24	0.60	12.48	1.64	1.473
4 7/8	15.68	12.80	15.68	13.00	15.69	12.90	15.74	12.53	15.66	12.23	15.31	11.50	14.92	10.90	14.53	10.20	13.73	0.51	10.63	0.25	9.10	0.569	1.78	0.25	0.62	12.82	1.66	1.491
5 0	16.08	13.20	16.08	13.40	16.09	13.30	16.14	12.93	16.06	12.63	15.71	11.90	15.32	11.30	14.93	10.60	14.13	0.51	10.93	0.25	9.40	0.589	1.81	0.26	0.64	13.16	1.68	1.509
5 1/8	16.48	13.60	16.48	13.80	16.49	13.70	16.54	13.33	16.46	13.03	16.11	12.30	15.72	11.70	15.33	11.00	14.53	0.51	11.23	0.25	9.70	0.609	1.84	0.27	0.66	13.50	1.70	1.527
5 1/4	16.88	14.00	16.88	14.20	16.89	14.10	16.94	13.73	16.86	13.43	16.51	12.70	16.12	12.10	15.73	11.40	14.93	0.51	11.53	0.25	10.00	0.629	1.87	0.28	0.68	13.84	1.72	1.545
5 3/8	17.28	14.40	17.28	14.60	17.29	14.50	17.34	14.13	17.26	13.83	16.91	13.10	16.52	12.50	16.13	11.80	15.33	0.51	11.83	0.25	10.30	0.649	1.90	0.29	0.70	14.18	1.74	1.563
5 3/4	17.68	14.80	17.68	15.00	17.69	14.90	17.74	14.53	17.66	14.23	17.31	13.50	16.92	12.90	16.53	12.20	15.73	0.51	12.13	0.25	10.60	0.669	1.93	0.30	0.72	14.52	1.76	1.581
5 7/8	18.08	15.20	18.08	15.40	18.09	15.30	18.14	14.93	18.06	14.63	17.71	13.90	17.32	13.30	16.93	12.60	16.13	0.51	12.43	0.25	10.90	0.689	1.96	0.31	0.74	14.86	1.78	1.599
6 0	18.48	15.60	18.48	15.80	18.49	15.70	18.54	15.33	18.46	15.03	18.11	14.30	17.72	13.70	17.33	13.00	16.53	0.51	12.73	0.25	11.20	0.709	1.99	0.32	0.76			