

INSIDE PIPE DIA.	1/4 FULL			1/2 FULL			3/4 FULL			FULL		
	DISCH. CFS	SLOPE		DISCH. CFS	SLOPE		DISCH. CFS	SLOPE		DISCH. CFS	SLOPE	
		n=.013	n=.024		n=.013	n=.024		n=.013	n=.024		n=.013	n=.024
6	.096	.0160	.0530	.25	.0077	.0260	.39	.0060	.0210	.50	.0077	.0260
8	.22	.0091	.0320	.55	.0045	.0160	.89	.0035	.0120	1.10	.0045	.0160
10	.27	.0079	.0270	.68	.0039	.0140	1.10	.0031	.0110	1.36	.0039	.0140
12	.38	.0062	.0220	.98	.0031	.0110	1.58	.0024	.0081	1.96	.0031	.0110
15	.61	.0046	.0160	1.54	.0023	.0077	2.46	.0018	.0060	3.08	.0023	.0077
18	.87	.0036	.0130	2.21	.0018	.0061	3.55	.0014	.0047	4.42	.0018	.0061
21	1.18	.0030	.0100	3.01	.0015	.0050	4.84	.0012	.0039	6.02	.0015	.0050
24	1.54	.0025	.0084	3.94	.0012	.0042	6.32	.0009	.0032	7.88	.0012	.0042
30	2.40	.0019	.0062	6.15	.0009	.0031	9.88	.0007	.0024	12.30	.0009	.0031
36	3.45	.0016	.0049	8.85	.0007	.0024	14.20	.0006	.0019	17.70	.0007	.0024
42	4.70	.0013	.0040	12.00	.0006	.0020	19.40	.0005	.0015	24.00	.0006	.0020
48	6.15	.0010	.0033	15.70	.0005	.0017	25.20	.0005	.0013	31.40	.0005	.0017
54	7.80	.0009	.0029	19.90	.0004	.0014	32.00	.0004	.0011	39.80	.0004	.0014
60	9.60	.0008	.0025	24.50	.0004	.0013	39.50	.0003	.0010	49.00	.0004	.0013
72	13.80	.0006	.0020	35.40	.0003	.0010	56.90	.0003	.0008	70.80	.0003	.0010
84	18.80	.0005	.0016	48.10	.0003	.0008	77.40	.0002	.0006	96.20	.0003	.0008
96	24.60	.0004	.0013	63.00	.0002	.0007	101.00	.0002	.0005	126.00	.0002	.0007
108	31.10	.0004	.0012	79.50	.0002	.0006	128.00	.0002	.0005	159.00	.0002	.0006
120	38.40	.0003	.0010	98.30	.0002	.0005	158.00	.0002	.0004	197.00	.0002	.0005

n VALUES FOR MANNING'S FORMULA

MINIMUM SLOPES REQUIRED FOR SEWERS TO
MAINTAIN SELF-CLEANSING VELOCITY OF 2.5
FT. PER SECOND
(SLOPE IN FT. PER FT.)

REFERENCES:
"CONCRETE PIPE NEWS" 1955

MINNEAPOLIS DESIGN REFERENCE
NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		MINIMUM SLOPES FOR 2.5 FT. PER SEC.	STANDARD PLATE NO. SEWR-6015
	DRAWN: DCD	DATE: 12/02		
	APPROVED: HRS	DATE: 1/07		