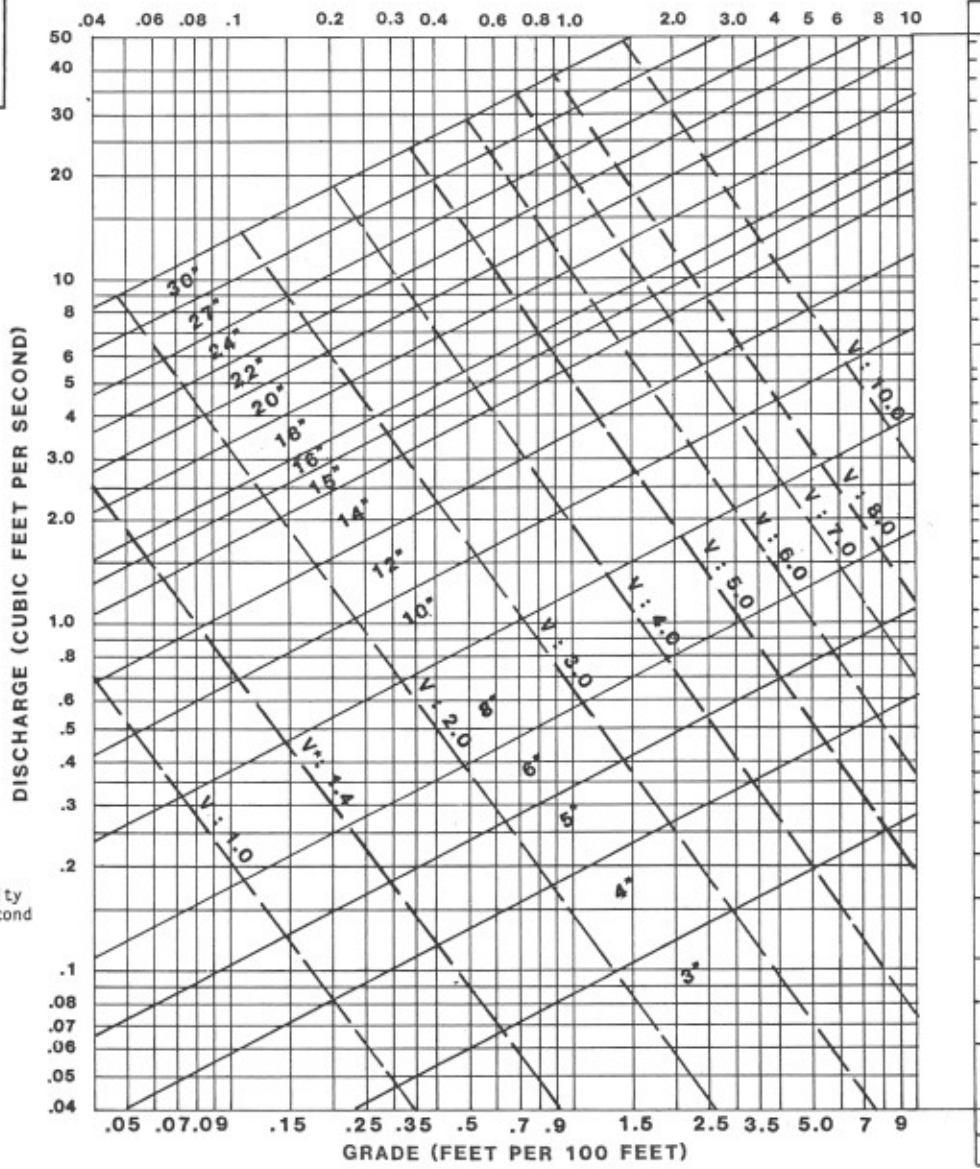
REFERENCE

MANNING'S ROUGHNESS

"n" = 0.013



* V equals velocity in feet per second

ACRES DRAINED							
4500	3000		1500				
4000	2500	2000		1000	500	400	
3500			1200	900	450	350	300
3000	2000	1500	1000	800	400	300	250
			900	700	350		
2500		1200	800	600	300	250	200
	1500						180
2000		1000	700	500	250	200	160
	1200	900	600	450		180	140
1500	1000	800	500	400	200	160	120
	900	700	450	350	160	140	
1200	800	600	400	300	140	120	100
1000	700	500	350	250	120	100	80
900	600	450	300			90	
800	500	400		200	100	80	70
700	450	350	250	180	90	70	60
600	400	300	200	160	80	60	50
500	350	250	180	140	70		
450	300		160	120	60	50	45
400	250	200	140	100	50	45	40
350		180	120	90	45	40	30
300	200	160	100	80	40	35	25
	180	140	90	70	35	30	
250	160	120	80	60	30	25	20
200	140	100	70	50	25	20	
180	120	90	60	45			15
160	100	80	50	40	20	15	
140	90	70	45	35			
120	80	60	40	30	15		10
100	70	50	35	25		10	8
90	60	45	30			8	7
80	50	40	25	20	10	7	6
70	45	35			8	6	5
60	40	30	20	15	7	5	
50	35	25			6		4
40	30		15		5	4	3
45	25	20		10	4	3	
35				8			
30	20	15	10	7	3		2
25	15		8	6	2	2	
20		10	6	5			
15	10	8	5	4			1
	8	6	4	3		1	
10	7	5					
	6		3				
8	5	4		2	1		
6	4	3	2				
1/4"	3/8"	1/2"	3/4"	1"	2"	2.5"	3"
DRAINAGE COEFFICIENT							

Exhibit IN - 8 - 4

CHART FOR DETERMINING REQUIRED SIZE OF SMOOTH RIGID DRAINAGE TILE