

STORM SEWER HYDRAULICS

STORM SEWER HYDRAULICS
BAX ENGINEERING CO., INC.

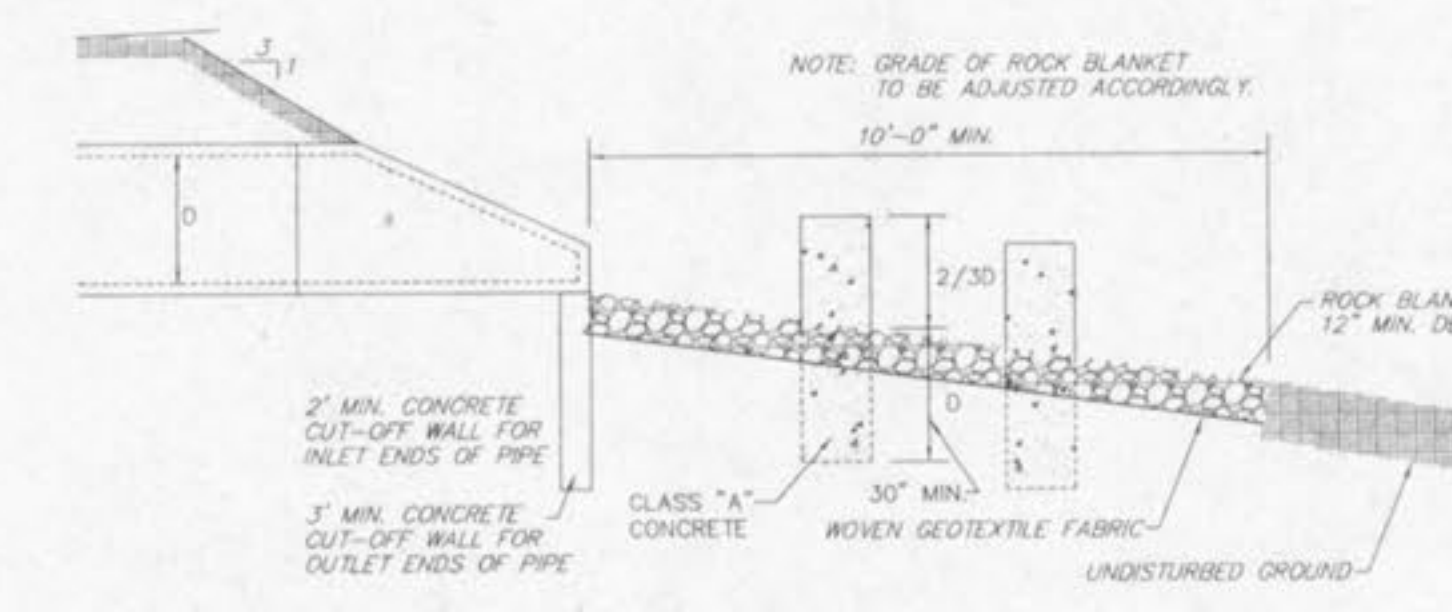
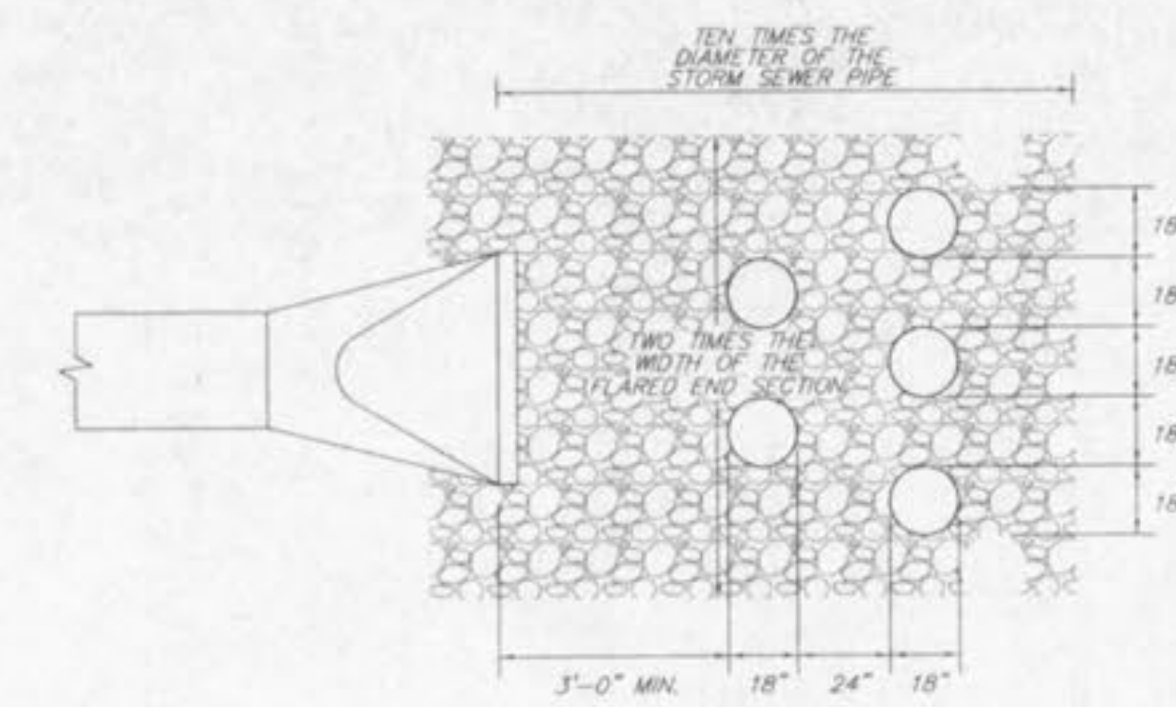
Job Name: WATERBURY
Prepared by: JVS
Checked by: RF
Date: 02/17/99
Revised: 04/17/00

Str. Type	Upper Number	Lower Number	Len. in	Q c.f.s.	Total Q c.f.s.	Pipe Size in	Const. in	V in	Vh in	Q x Vh	Hyd. Grade	Flow Line Elevation		Top of Structure Elevation	Free Board	Hydraulic Grade Line		Frict. Loss	Curve Loss	Junc. Loss	Entr. Loss	Turn Angle (5 deg)	Turn Loss	Capacity c.f.s.	D/Exp.	Normal Depth Ft.
												Upper	Lower			Upper	Lower									
T	12	11	177	4.91	4.91	12	5.00	6.25	0.61	2.98	1.90	531.70	522.05	536.50	538.50	4.24	532.26	524.53	3.36	0.32	0.61	45	0.29	7.97	0.62	0.56
AI	11	10	303	2.86	7.77	15	5.00	6.33	0.62	4.84	1.45	522.65	521.65	528.90	526.90	3.97	523.93	523.21	0.72	0.43	0.21	35	0.25	9.14	0.85	0.88
CI	10	9	19	1.33	9.10	15	4.00	7.42	0.85	7.77	1.98	521.45	520.69	528.90	526.90	5.09	522.32	521.94	0.38	0.21	0.00	5	0.05	12.92	0.75	0.80
CI	9	8	160	0.55	9.65	15	4.00	7.86	0.96	9.27	2.23	520.49	514.09	526.90	518.50	4.96	521.29	515.42	0.57	0.00	0.00	60	0.53	12.92	0.99	0.80
AI	8	7	27	0.96	10.61	15	7.00	7.86	0.96	9.27	2.23	513.99	514.09	526.90	518.50	3.08	514.59	513.25	0.60	0.00	0.00	17	0.09	17.09	0.56	0.66

NOTE: AI=Area Inlet, MH=Manhole, I=Inlet Structure, CI=Curb Inlet, BCI=Double Curb Inlet, SCI=Stepped Curb Inlet, TP=Tangent Point, EP=End of Pipe, OS=Outfall Structure
m=0.013 For RCP, 0.024 For CMP. For Drainage Areas, P.I. & Bypass. See Drainage Area Map.

Revised 04-17-00 City & DCSD Comments
Revised 05-30-00 City Comments
Revised 06-27-00 City Comments

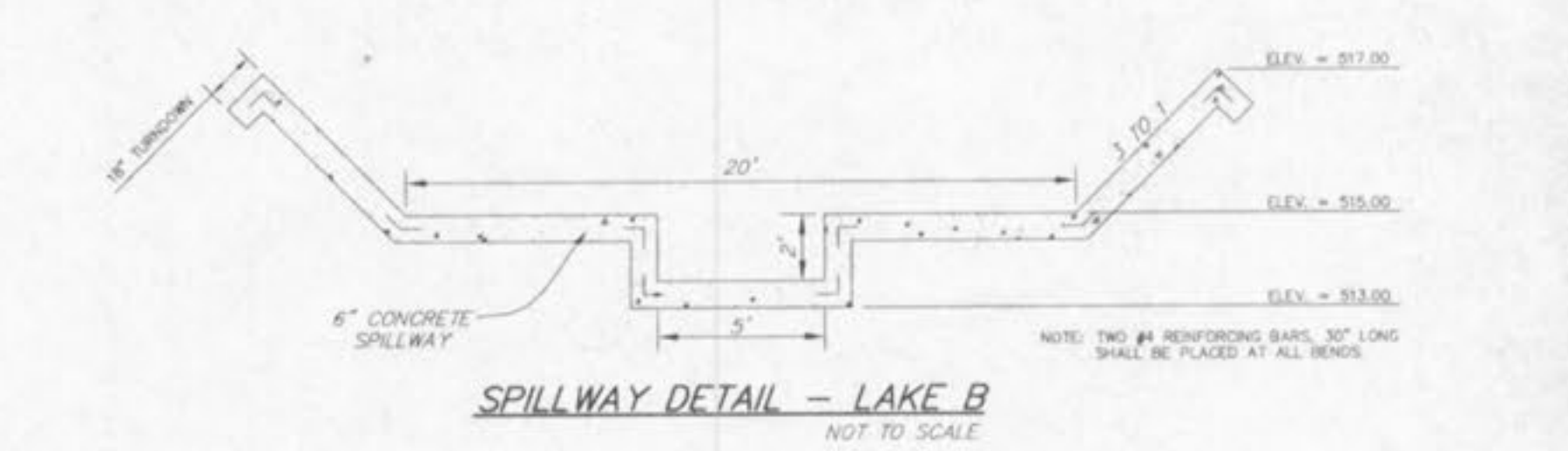
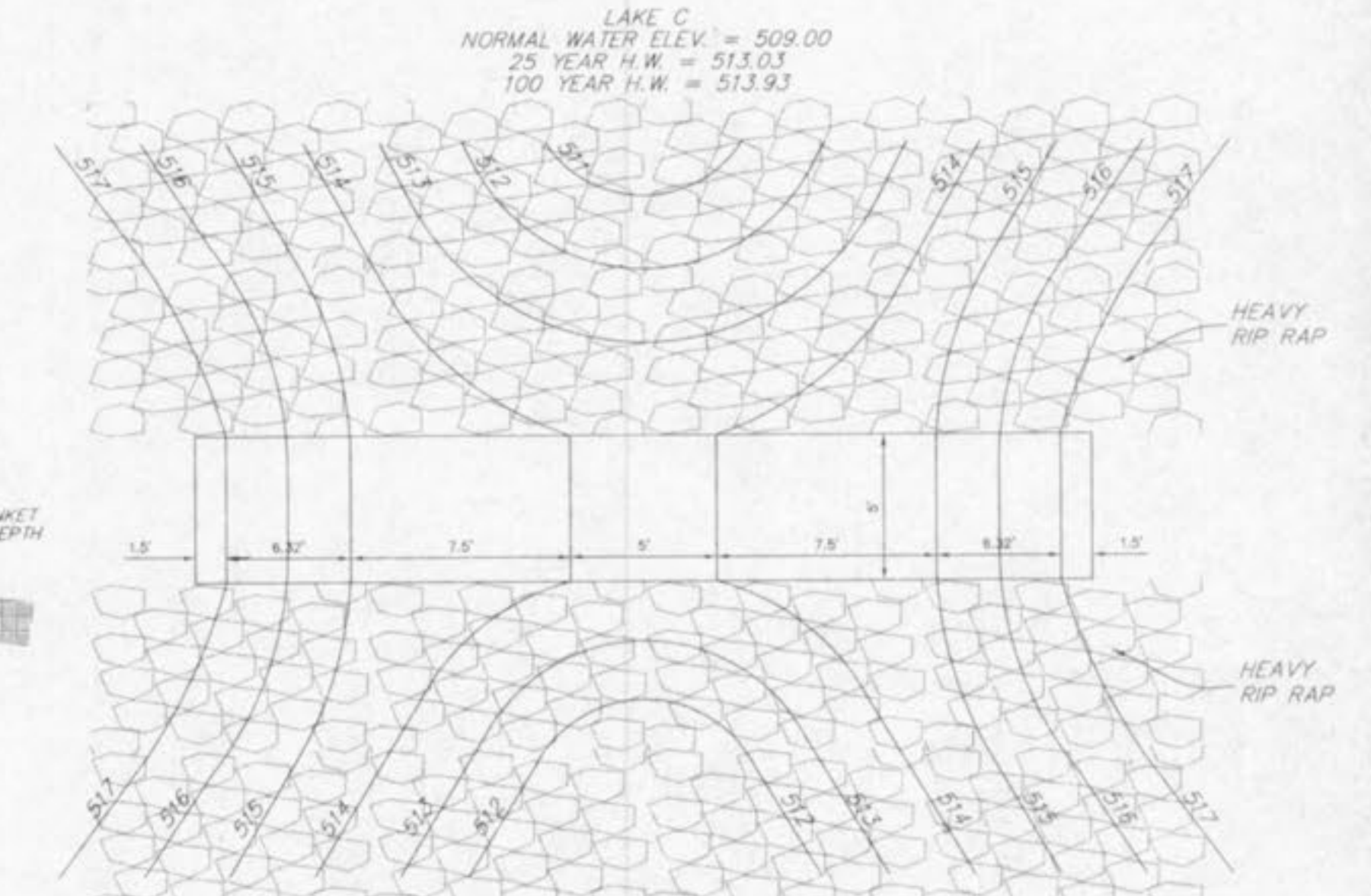
HYDRAULICS/DETAILS
WATERBURY
February 28, 2000 98-0713C



ENERGY DISSIPATORS

INLET CAPACITIES

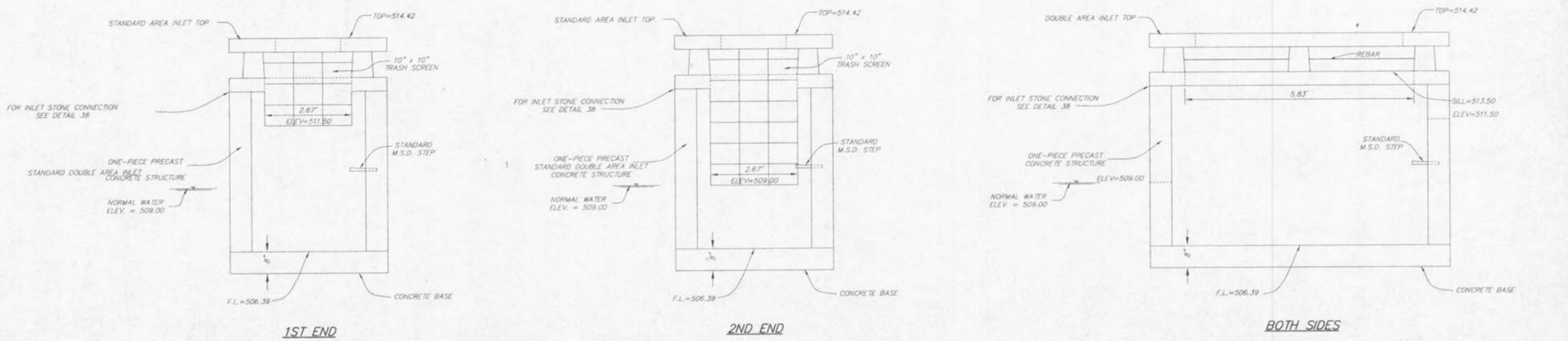
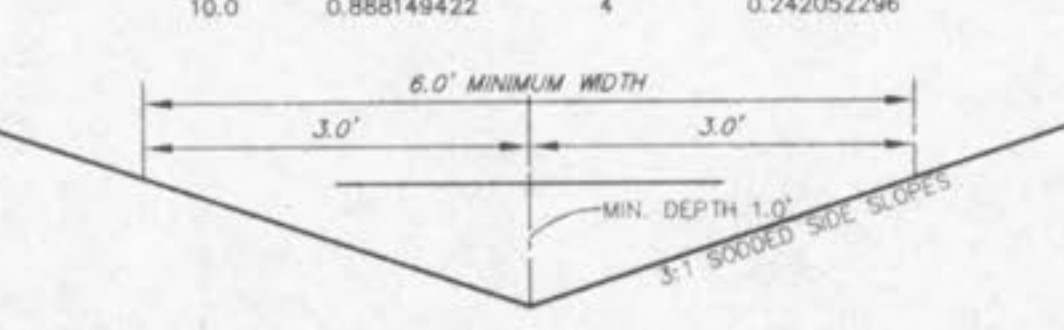
Structure	Street Grade	Capacity	Inflow	Bypass
CI 2	Low	4.00	2.32	-
CI 3	Low	4.00	2.49	-
CI 9	Low	4.00	0.55	-
CI 10	Low	4.00	1.33	-
CI 22	1.08%	2.25	0.20	-
CI 23	6%	0.50	0.29	-
CI 24	6%	0.50	0.44	-
CI 26	Low	4.00	0.58	-
CI 27	Low	4.00	0.32	-
CI 29	Low	4.00	0.25	-
CI 30	Low	4.00	0.46	-
CI 32	Low	4.00	3.63	-
CI 33	Low	4.00	3.07	-
CI 34	1%	2.29	1.51	-
CI 41	1%	2.29	0.58	-
CI 42	1%	2.29	0.32	-
CI 45	1.5%	2.11	0.58	-
CI 46	1.5%	2.11	0.61	-
CI 48	3%	1.57	0.46	-
CI 49	3%	1.57	0.78	-
CI 50	2%	1.93	0.61	-
CI 51	2%	1.93	0.61	-
CI 52	2%	1.93	0.49	-
CI 53	2%	1.93	0.49	-
CI 55	1.5%	2.11	1.33	-
CI 56	2%	1.93	0.75	-
CI 57	2%	1.93	0.38	-
CI 58	1.5%	2.11	0.67	-
CI 59	1.5%	2.11	1.77	-



TYPICAL YARD SWALE

Maximum Discharge (Q) = 4.00 cfs
Maximum Velocity (V) = 4.00 ft/sec
N = 0.030 (grass)
Maximum side slopes = 3 (horizontal) : 1 (vertical)

Longitudinal Slope (%)	Discharge (cfs)	Velocity (ft/sec)	Depth (ft)
0.5	1.88481682	0.838852789	0.736818511
1.0	2.4572734	0.646843926	0.599490621
2.0	3.118668934	0.54088907	0.457535601
3.0	3.71000035	0.457535601	0.399060898
4.0	3.51071886	0.355491209	0.321613971
5.0	2.51206592	0.294422173	0.242052296
6.0	1.91099329	0.242052296	-
7.0	1.516488	-	-
8.0	1.24128556	-	-
9.0	1.04021299	-	-
10.0	0.888149422	-	-



OVERFLOW STRUCTURE #61 DETAIL
(NOTE: NO BRICK ALLOWED) NOT TO SCALE