

**DETENTION BASIN SIZING FOR SOJOURN PLAZA
FOR THE CITY OF CARROLLTON**

PROJECT: Addition - Sojourn Plaza
 PARAMETER: Pond Allowable Outflow = 328.92 cfs
 Pond Actual Outflow = 305.00 cfs
 DATE: 04/29/99

MODIFIED RATIONAL METHOD FOR SIZING DETENTION BASINS

EXISTING CONDITIONS	Q ₁₀₀ OFFSITE (NON-DETAINED FLOW)	Q ₁₀₀ SITE (DETAINED FLOW)	Q ₁₀₀ TOTAL OFFSITE AND ONSITE
Area*	38.60 Acres	13.86 Acres	52.46 Acres
Cumulative C _f CA	34.62	9.53	44.15
Time of Concentration*	15.50 Min	7.45 Min	15.50 Min
Rainfall Intensity	7.45 in/hr	7.45 in/hr	7.45 in/hr
Allowable Flow (Qd)			328.92 cfs

DEVELOPED CONDITIONS	Q ₁₀₀ OFFSITE (NON-DETAINED FLOW)	Q ₁₀₀ SITE (DETAINED FLOW)	Q ₁₀₀ TOTAL OFFSITE AND ONSITE
Area*	38.60 Acres	13.86 Acres	52.46 Acres
Cumulative CA	34.62	13.86	48.48
Time of Concentration (Tcd)*	15.50 Min	7.45 Min	15.50 Min
Rainfall Intensity	7.45 in/hr	7.45 in/hr	7.45 in/hr
Developed Flow			361.18 cfs

A	B	C	(A-C)*60	(Qd)(Tcd+A)/2(60)	Storage
Dur (Min)	Intensity	Flow	Inflow	Outflow	
5.0	10.50	509.04	152,112	187,575	34,863
10.0	8.82	427.59	256,656	233,325	23,231
15.0	7.62	364.57	328,113	279,075	49,038
20.0	6.80	329.06	395,597	324,825	70,772
25.0	6.20	300.58	450,884	370,575	80,289
30.0	5.74	278.28	500,895	416,325	84,570
35.0	5.20	252.10	529,402	462,075	67,327
40.0	5.00	242.40	581,790	507,825	73,938
45.0	4.80	232.70	609,911	553,575	74,728
50.0	4.40	213.31	639,936	599,325	40,611
55.0	4.10	198.77	655,934	645,075	10,859
60.0	3.90	189.07	680,959	690,825	-10,166
65.0	3.65	186.05	727,927	736,575	-8,649
70.0	3.65	178.95	743,198	782,325	-39,127
75.0	3.45	167.26	752,652	828,075	-75,423
80.0	3.30	159.98	767,923	873,825	-105,902
85.0	3.20	155.14	791,194	919,575	-123,381
90.0	3.10	150.29	811,555	965,325	-153,770

Volume = 84,570 CF
 AC. FT.
 Volume Provided = 84,683 CF
 AC. FT.

**BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE**

April 30, 1999
 SOJOURN PLAZA OFFICE CENTER - OMP99206
 DETENTION POND
 RELEASE BOX CULVERT

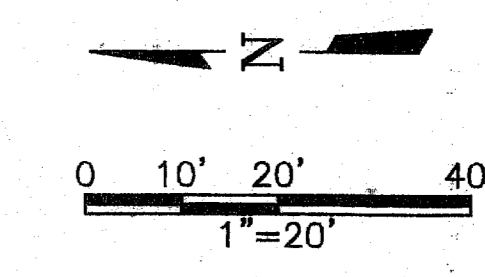
PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Culvert Span (Width of Opening) (feet)	10.00
Culvert Rise (Height of Opening) (feet)	5.00
PHWA Chart Number (8,9,10,11,12 or 13)	10
Scale Number on Chart (Type of Culvert Entrance)	1
Manning's Roughness Coefficient (n-value)	0.0120
Entrance Loss Coefficient of Culvert Opening	0.50
Culvert Length (feet)	33.9
Culvert Slope (feet per foot)	0.0050

PROGRAM RESULTS:

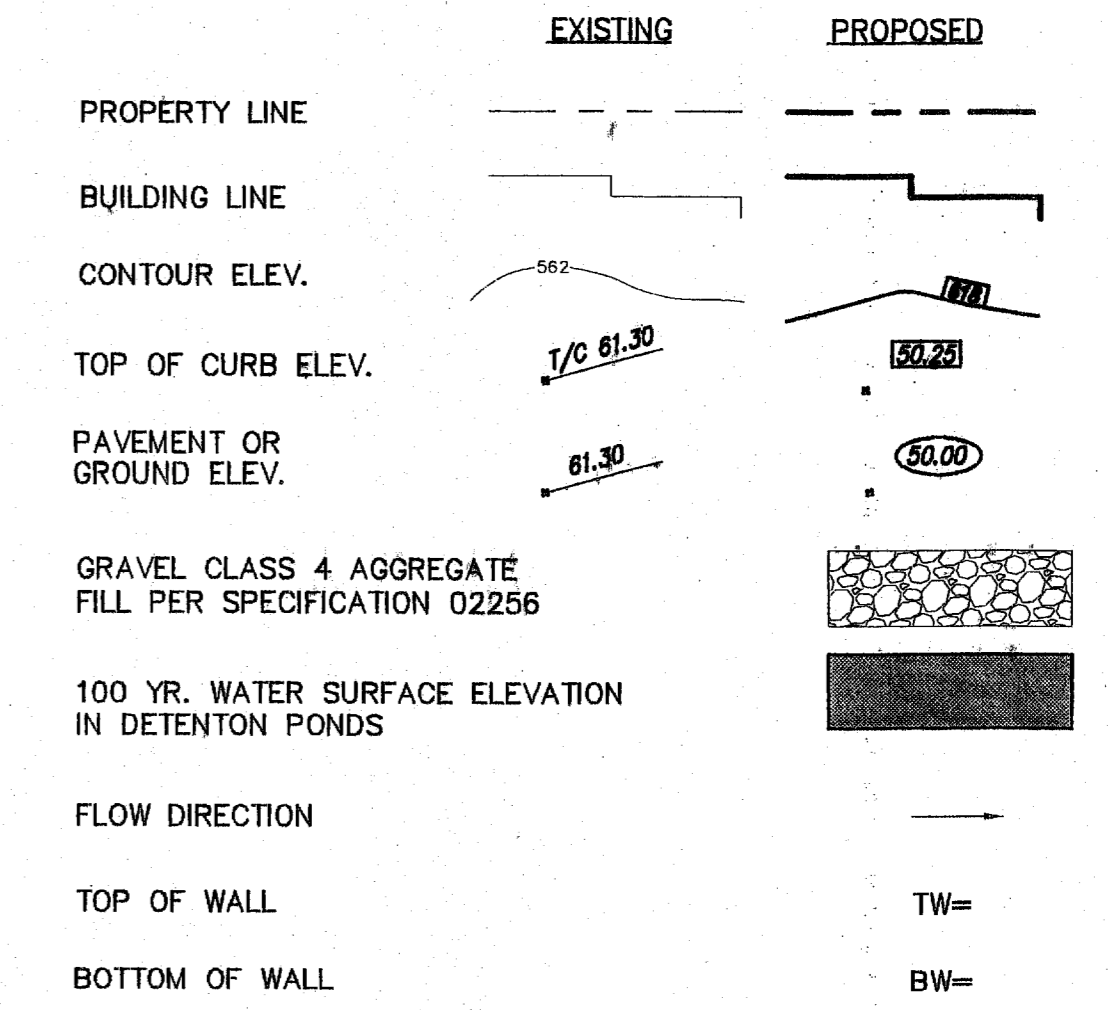
Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
305.0	7.19	5.03	7.93	2.48	3.07	5.00
						6.10

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BENCHMARK:
 SQUARE CUT ON INLET AT S.W. CORNER OF SOJOURN
 DR. AND ADDISON RD. ELEV. 641.95

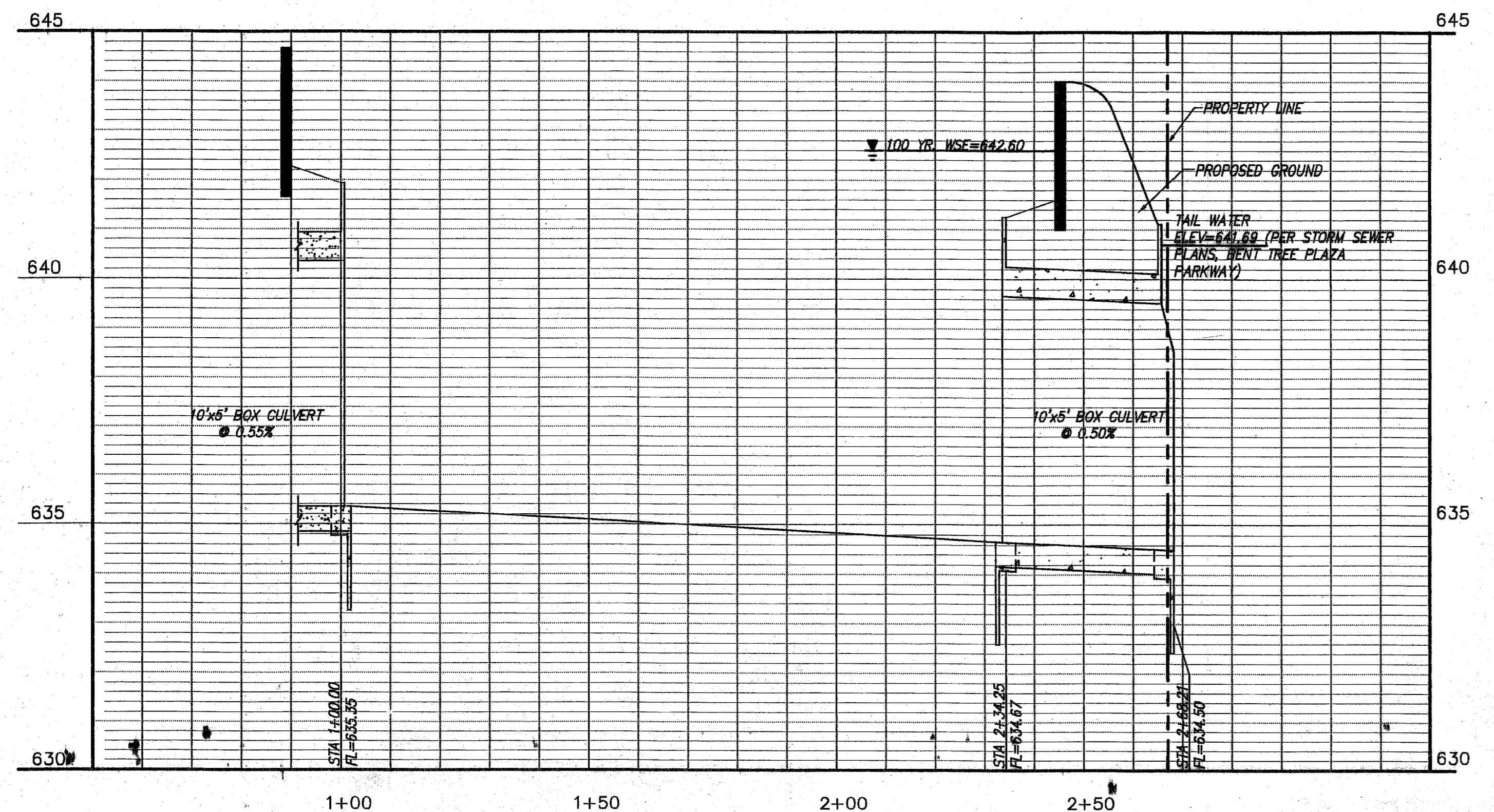
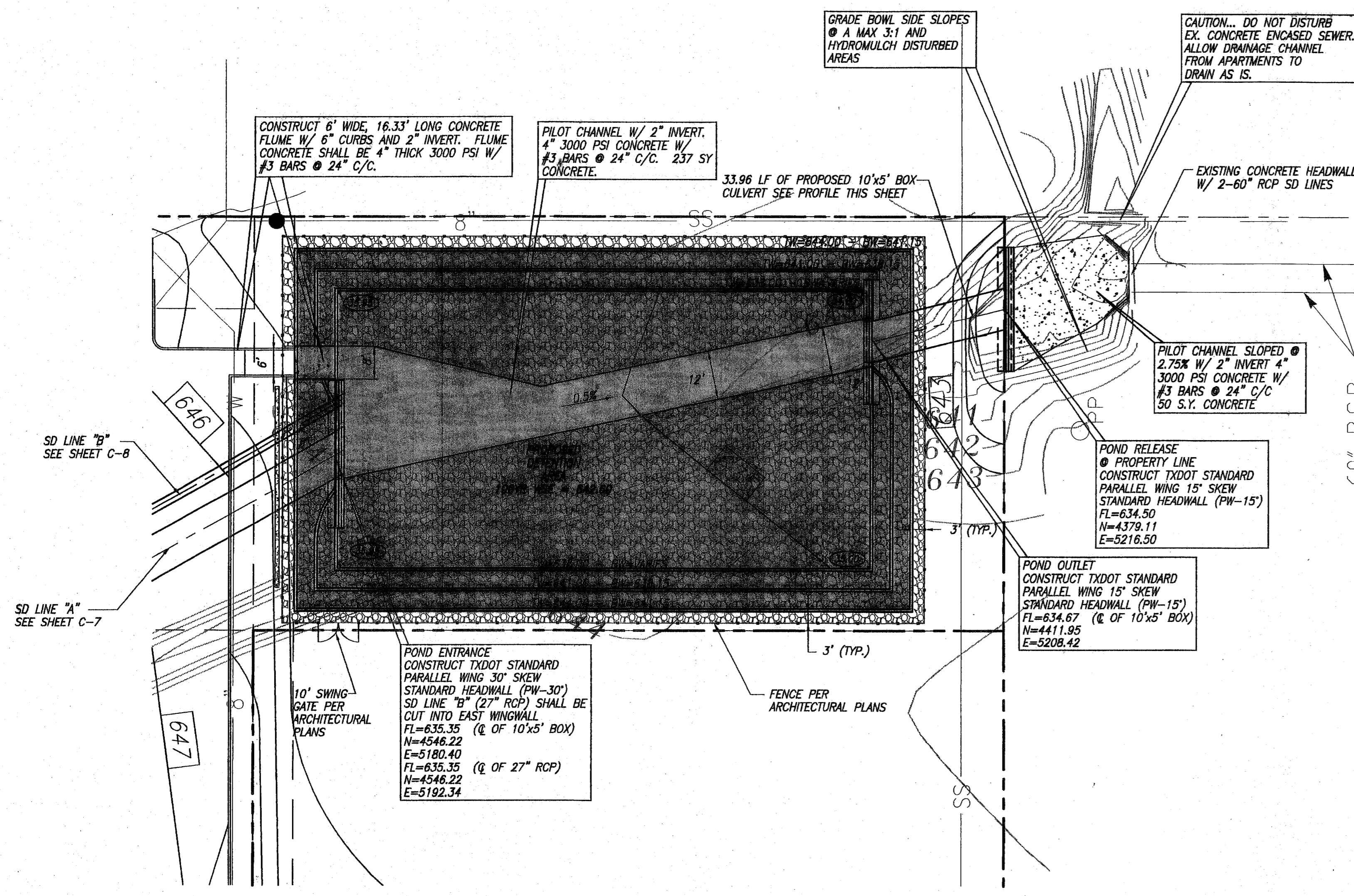
LEGEND



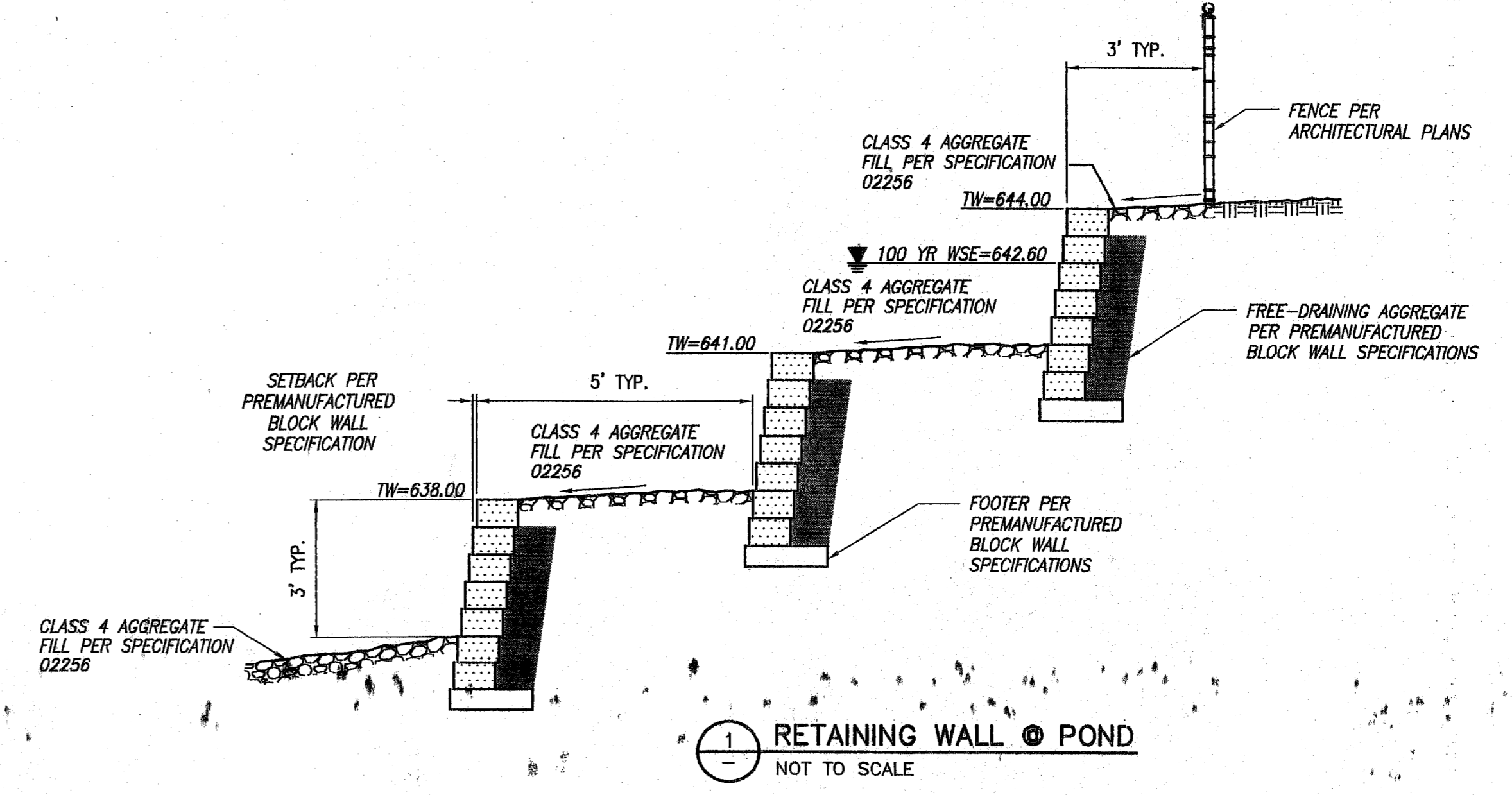
- NOTES**
1. BOTTOM OF POND SHALL SLOPE TO DRAIN AS NOTED ON PLANS.
 2. DETENTION POND DESIGN IS BASED ON THE CITY CARROLLTON DRAINAGE DESIGN STANDARDS.

Detention Pond Capacities

Stage	Area (sf)	Volume (cf)	Cumulative Vol. (cf)	Storage acre-ft
634.67		0	0	
635	3003	495	495	0.01
636	9410	6207	6,702	0.15
637	9410	9410	16,112	0.37
638	11554	10482	26,594	0.61
639	11554	11554	38,148	0.88
640	11554	11554	49,702	1.14
641	13897	12725	62,427	1.43
642	13897	13897	76,324	1.75
642.6	13897	8338	84,663	1.94



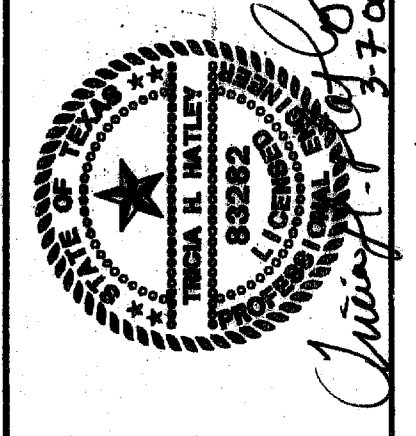
DETENTION POND RELEASE PIPE
 SCALE: HORIZ: 1"=20'
 VERT: 1"=2'



RETAINING WALL @ POND
 NOT TO SCALE

RECORD DRAWING
 DATE: 3-5-00
 BY: TD, THH

THE SEAL APPEARING ON THIS DOCUMENT
 IS VALID ONLY IF THE DRAWING IS
 SIGNED AND DATED BY
 AN ENGINEER REGISTERED IN THE STATE OF
 TEXAS REGISTRATION NO. 63282
 DATE: OCT. 6, 1999



FREESE-NICHOLS
 1341 W. McWhorter Lane, Suite 230-E
 Dallas, Texas 75247
 214-920-2500

OMNIPLAN ARCHITECTS
SOJOURN OFFICE CENTER
 ADDISON, TEXAS
 SITEMARK PLANS
DETENTION POND PLAN & CALCULATIONS

NO.	REVISION	DATE	BY	DESIGNED	DRAWN	CHECKED	THH
1	PER CONTRACTOR RT "1" AND "5"	4/30/99	MW				
				GAH			

Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

NO. REVISION SHEET C-9 SEQ. 12 of 16

"AS-BUILTS"