

Library Detention Pond Calculations
Contributing Watershed Drainage areas 1, 3-13 indicated on DAM sheet 7
Total area = 5.25 acres

Allowable flow Library 5.25 acre Site			
Area	5.25	acres	
C	0.35		
Tc	20	minutes	
H100	8.3	in / hr	
Q100	15.25	cfs	Allowable release rate

Developed Conditions
Library 3.33 acre Site

Area	5.25	acres
C	0.8	runoff coeff.
Tc	10	minutes
H100	9.8	in / hr
Q100	41.16	cfs

Qmax = 41.16 cfs developed release rate

Rockwall IDF - Max Inflow				
Duration	H100	Area A	C	Q100
10	9.80	5.25	0.8	41.16
15	9.50	5.25	0.8	39.90
20	9.30	5.25	0.8	34.86
30	6.90	5.25	0.8	28.98
40	5.90	5.25	0.8	24.36
50	5.00	5.25	0.8	21.00
60	4.45	5.25	0.8	18.69
70	4.16	5.25	0.8	17.47
80	3.87	5.25	0.8	16.25
90	3.57	5.25	0.8	14.99
100	3.50	5.25	0.8	14.70

Detention Volume (Modified Rational Method)

Storm Duration (minutes)	Inflow/Outflow	1/2 Factor	10	Q in CFS	Sec/Min	Storage (Cu ft)
10	Inflow:		10	41.16	60	24896
	Outflow:	0.5	20	15.25	60	9151
						15545
15	Inflow:		15	39.90	60	35910
	Outflow:	0.5	25	15.25	60	11438
						24472
20	Inflow:		20	34.86	60	41832
	Outflow:	0.5	30	15.25	60	13726
						28106
30	Inflow:		30	28.98	60	52164
	Outflow:	0.5	40	15.25	60	18302
						33863
40	Inflow:		40	24.36	60	58464
	Outflow:	0.5	50	15.25	60	22877
						35587
50	Inflow:		50	21.00	60	63000
	Outflow:	0.5	60	15.25	60	27452
						35548
60	Inflow:		60	18.69	60	67284
	Outflow:	0.5	70	15.25	60	32028
						35256
70	Inflow:		70	17.47	60	73382
	Outflow:	0.5	80	15.25	60	36603
						36779
80	Inflow:		80	16.25	60	78019
	Outflow:	0.5	90	15.25	60	41178
						36841
90	Inflow:		90	14.99	60	80968
	Outflow:	0.5	100	15.25	60	45754
						35214

Pond Storage Volume Required = 36,841 cubic feet

Pond Storage Volume Provided = 50,532 cubic feet

Pond "A"		
	Q allowable	Q actual
10 Year	6.75	5.35
25 Year	7.74	6
50 Year	8.62	7.9
100 Year	9.67	9.5

Pond "A" Storage Calculations

Pond Elev.	Incr.	Area (sf)	Incr. Stor.	Cumm Stor.
561.3	0	904	0	0
562	0.7	1062	983	983
563	1	4429	2745.5	3728.5
564	1	8226	6327.5	10056
565	1	12236	10231	20287
566	1	16350	14293	34580

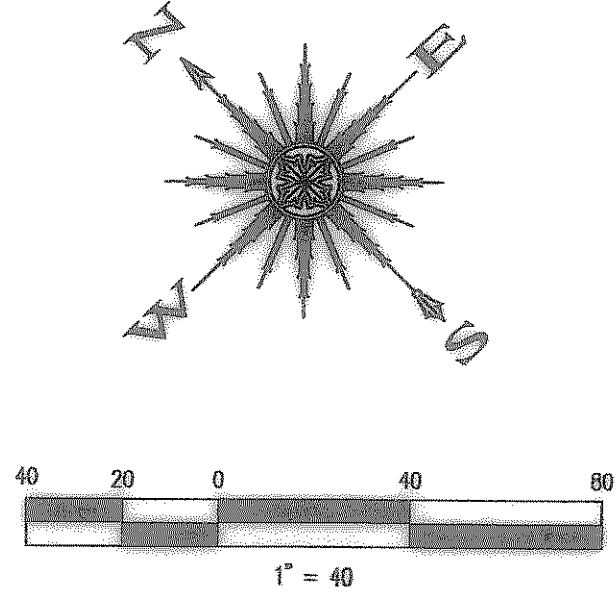
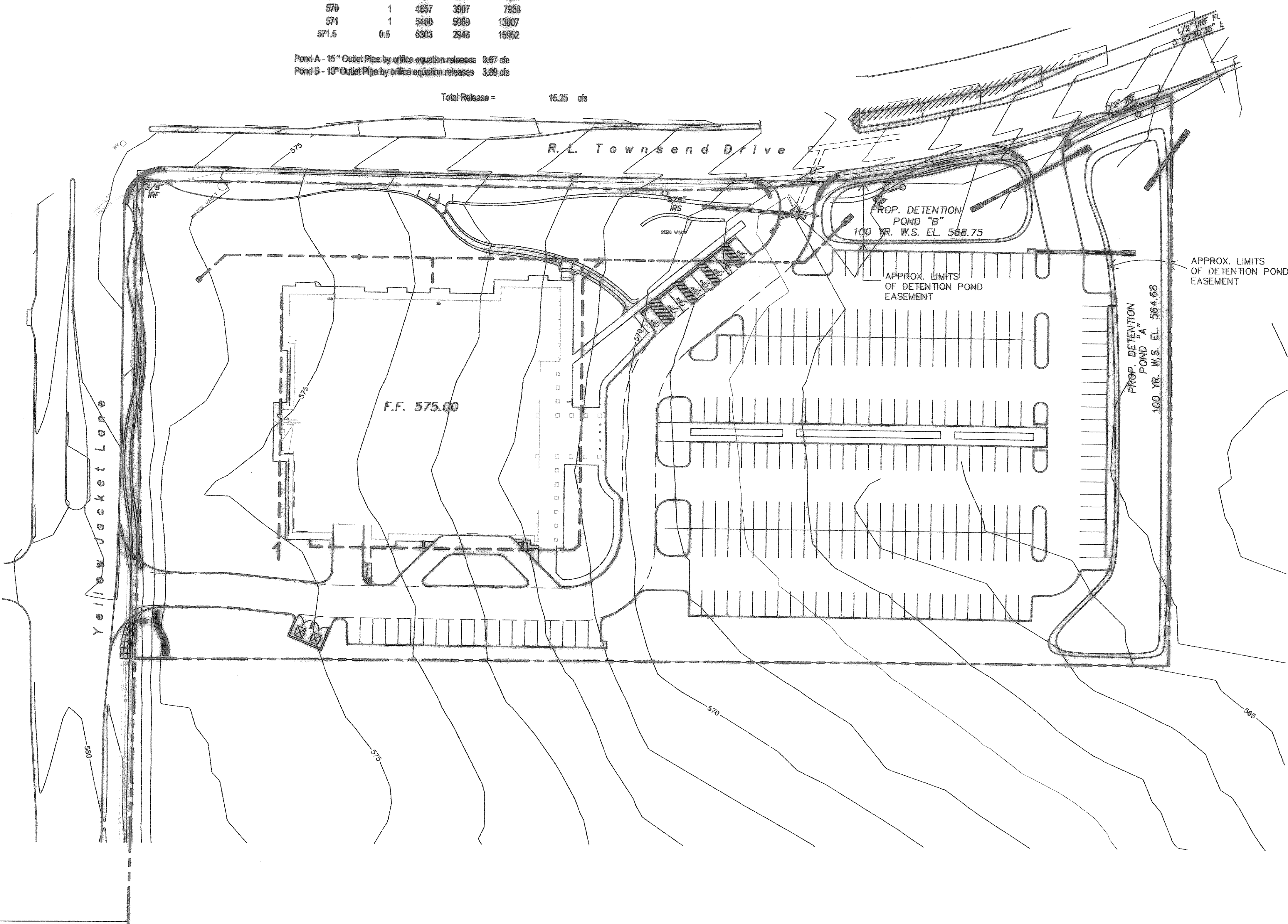
Pond "B" Storage Calculations

Pond Elevation	Increment	Area (sf)	Increment Storage	Cumm Storage
568.5	0	261	0	0
567	0.5	723	246	246
568	1	1645	1284	1530
569	1	3157	2501	4031
570	1	4657	3907	7938
571	1	5480	5069	13007
571.5	0.5	6303	2946	15952

Pond A - 15" Outlet Pipe by orifice equation releases 9.67 cfs

Pond B - 10" Outlet Pipe by orifice equation releases 3.89 cfs

Total Release = 15.25 cfs



Legend

EX. CONTOUR ----- 570 -----

FLOW DIRECTION →

FINISH FLOOR ELEV. F.F. 000.00

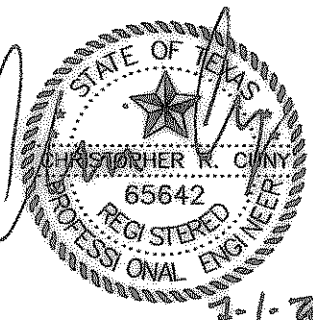
TSW TOP OF SIDEWALK

DETENTION POND PLAN AND DETAILS
Rockwall Library

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THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY CHRISTOPHER K. CUNY, P.E. 65642



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Date: 6-22-07	Project No.: 05-017
Sheet Title: Detention Pond Plan and Calculations	
Scale: 1"=40'	Sheet No.: 6 of 11

CONSTRUCTION RECORD DRAWINGS
JULY 2008