

DETENTION BASIN SIZING FOR POND A

PROJECT: The Plaza at Rockwall DATE: 08/30/07

Provided Detention Pond Volume

STAGE STORAGE CHART - POND A			
Elevation (FT)	Area (SF)	Incr. Vol. (CF)	Total Vol. (CF)
521	0	0	0
522	0	0	0
523	0	0	0
524	0	0	0
525.6	0	0	0
526	12013	0	0
527	18862	14437.5	14437.5
528	17993	17427.50	31865.00
529	19124	18558.50	50423.50
530	20278	19701.00	70124.50
531	21454	20866.00	90990.50
532	22801	22127.50	113118.00
533	24026	23413.50	136531.50
534	25273	24649.50	161181.00

STAGE STORAGE CHART - TOTAL			
Elevation (FT)	Area (SF)	Incr. Vol. (CF)	Total Vol. (CF)
521	0	0	0
522	0	0	0
523	0	0	0
524	0	0	0
525	0	0	0
526	12013	0	0
527	18862	14437.5	14437.5
528	17993	17427.5	31865
529	19124	18558.5	50423.5
530	20278	19701	70124.5
531	21454	20866	90990.5
532	22801	22127.5	113118
533	24026	23413.5	136531.5
534	25273	24649.5	161181

DETERMINATION OF WSEL				
Elevation (FT)	Total Vol. (CF)	Vol. Req'd (CF)	WSEL (FT)	Note
521	0	0		
522	0	0		
523	0	0		
524	0	0		
525	0	0		
526	0	0		
527	14437.5	0		
528	31865	0		
529	50423.5	82547	530.60	10-Year
530	70124.5	92756	531.08	25-Year
531	90990.5	107084	531.74	50-Year
532	113118	122857	532.42	100-Year
533	136531.5			
534	161181			

Discharge at Pond A
 Orifice Coefficient = 0.6
 Flowline of Orifice 2 (FT) = 525.8
 Elev of Cent of Orif 2 (FT) = 527.5
 Crest Elevation of Weir = 532
 Weir Coefficient = 3.3367
 Area Or 2 (SF) = 14
 Length Crest (FT) = 25

DETERMINATION OF POST DEVELOPMENT DISCHARGE						
Elevation (FT)	Height above Centroid (FT)	Orifice Discharge (CFS)	Weir Discharge (CFS)	Total Discharge Pond A(CFS)	Allowable Discharge (CFS)	Note
530.6	2.8	112.80	0	112.80	116.55	10-Year
531.08	3.28	122.08	0	122.08	136.99	25-Year
531.74	3.94	133.80	0	133.80	151.31	50-Year
532.42	4.62	144.89	22.71	167.60	169.71	100-Year

MODIFIED RATIONAL METHOD FOR SIZING DETENTION BASINS

EXISTING CONDITIONS		Q ₁₀₀
Area*	29.21	Acres
Runoff Coefficient*	0.70	
Time of Concentration*	20.00	Min
Rainfall Intensity	8.30	in/hr
Allowable Flow	169.71	cfs

DEVELOPED CONDITIONS		Q ₁₀₀
Area*	29.21	Acres
Runoff Coefficient*	0.90	
Time of Concentration (Tcd)*	10.00	Min
Rainfall Intensity	9.90	in/hr
Developed Flows	257.63	cfs

A	B	C	(A*C*60)	(Qd)(Tcd+A)/2(60)	Storage
5.0	10.60	278.66	83,599	76,370	7,230
10.0	9.80	257.63	154,579	101,826	52,753
15.0	9.00	236.60	212,941	127,283	85,658
20.0	8.30	218.20	261,838	152,739	109,099
25.0	7.20	189.28	283,921	176,196	107,726
30.0	6.90	181.39	326,509	203,652	122,857
35.0	6.20	162.99	342,283	229,109	113,174
40.0	5.80	152.48	365,943	254,565	111,378
45.0	5.40	141.96	383,294	280,022	103,272
50.0	5.00	131.45	394,335	305,478	88,857
55.0	4.70	123.56	407,742	330,935	76,808
60.0	4.50	118.30	425,852	356,391	69,461
65.0	4.25	111.73	435,740	381,848	53,893
70.0	4.00	105.16	441,655	407,304	34,351

Volume required = 122,857 CF
2.82 AC. FT.

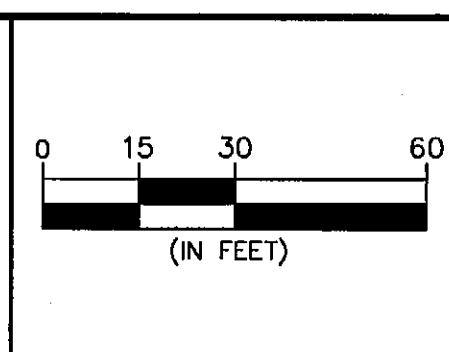
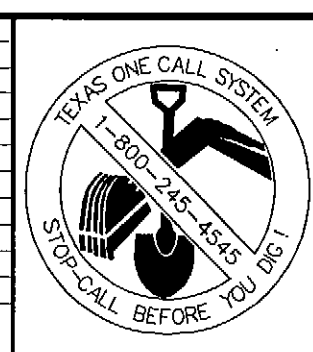
LEGEND

LOCATION OF GABION WALLS
 CONTRACTOR SHALL SUBMIT ENGINEER STAMPED SHOP DRAWINGS
 DETAILING CONSTRUCTION OF GABION WALLS FOR REVIEWS AND APPROVAL.

DISCLAIMER

TO THE BEST OF OUR KNOWLEDGE, THE WALLACE GROUP, INC. HEREBY STATES THAT THIS PLAN IS AS-BUILT/RECORD DRAWINGS. THE INFORMATION PROVIDED IS BASED ON SURVEYING CONDUCTED AT THE SITE AND INFORMATION PROVIDED BY THE CONTRACTOR.

REV	DATE	BY	DESCRIPTION
8-29-07		MM	REVISED POND A SIDE SLOPES TO 1.5:1; MODIFIED CALCULATIONS



DESIGNED: **RDC**
 DRAWN: **FM**
 CHECKED: **RS**



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3/25/08 *Matthew D. Morgan*
 DATE NAME

ENGINEERS ARCHITECTS

THE WALLACE GROUP INC.

SURVEYORS PLANNERS

THE WOODMONT COMPANY
 PLAZA AT ROCKWALL
DETENTION POND PLAN
POND "A"

SHEET 41
C5.10
 OF 56 SHEETS

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