

MODIFIED RATIONAL METHOD DETENTION CALCULATIONS

Runoff Coefficient C =	0.9							
Drainage Area - A =	14.26	acres						
Time of Concentration - tc =	10	minutes						
Allowable Outflow Rate - Q* =	64.97	cfs						

Duration (minutes)	Intensity (inches/hr)	Depth (inches)	Inflow Discharge Cu. Ft.	Inflow Volume Cu. Ft.	Outflow Duration (minutes)	Outflow Volume Cu. Ft.	Storage Volume Cu. Ft.	Outflow Discharge (cfs)
5	10.56	0.88	135.5	40,658	15	29,237	11,422	38.1
10	9.80	1.63	125.8	75,484	20	38,982	36,492	60.8
15	9.10	2.28	116.8	105,110	25	48,728	56,383	62.6
20	8.30	2.77	106.5	127,827	30	58,473	69,354	57.8
25	7.50	3.13	96.3	144,383	35	68,219	76,164	50.8
30	6.90	3.45	88.6	159,398	40	77,964	81,434	45.2
35	6.50	3.79	83.4	175,184	45	87,710	87,475	41.7
40	5.80	3.87	74.4	178,649	50	97,455	81,194	33.8
50	5.00	4.17	64.2	192,510	60	116,946	75,994	25.2
60	4.50	4.50	57.8	207,911	70	136,437	71,474	19.9
70	4.10	4.78	52.6	221,001	80	155,928	65,073	15.5
80	3.75	5.00	48.1	231,012	90	175,419	55,593	11.6
90	3.48	5.22	44.7	241,177	100	194,910	46,267	8.6
120	2.65	5.30	34.0	244,873	130	253,383	(8,510)	(1.2)
180	1.93	5.78	24.7	267,050	190	370,329	(103,279)	(9.6)
360	1.16	6.98	14.9	322,483	370	721,167	(398,674)	(18.5)
720	0.73	8.80	9.4	406,581	730	1,422,843	(1,016,262)	(23.5)
1440	0.40	9.55	5.1	441,233	1,450	2,826,195	(2,384,962)	(27.6)
			Required Storage Volume		87,475		cubic feet	
					2.01		acre-feet	

*Allowable Q = (A1+A2+A3+A4+A5+A6+A7)(0.35)(8.3) + (OS1+OS2+OS3)(0.9)(9.8) - (A3+A7)(0.9)(9.8)

Calculations based on City of Rockwall 100-yr IDF Curve

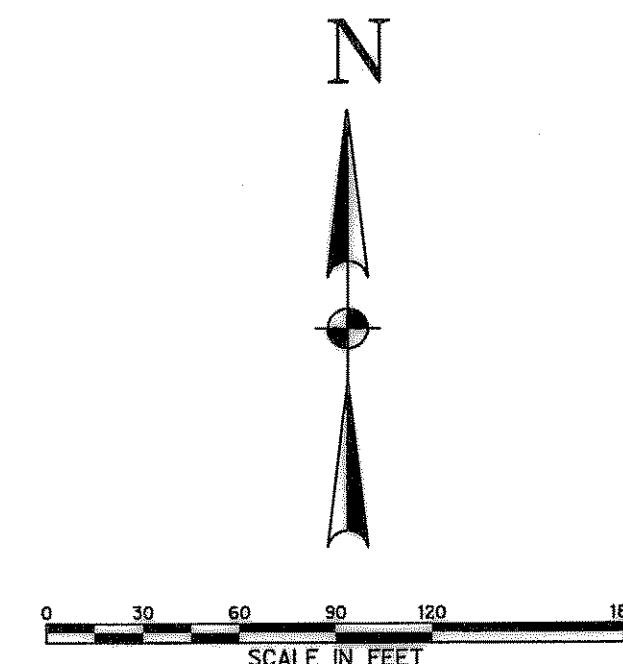
POND STAGE VS. STORAGE & DISCHARGE

Orifice Coefficient C =	0.60		
Orifice Area A =	4.77	Sq. Ft.	

Water Surface Elevation	Height of Water in Detention Pond (ft)	Storage (ft³)	Outflow (cfs)
520	1	5,693	22.97
521	2	15,527	32.49
522	3	25,361	39.79
523	4	35,639	45.94
524	5	47,227	51.36
525	6	60,186	56.27
526	7	74,184	60.77
527	8	88,939	64.97

- NOTE: 1. RUNOFF FROM AREA OS1, OS2 & OS3 IS BEING PASSED THROUGH THE PROPOSED DEVELOPMENT & DETENTION POND UNDETAINED.
2. SEE NOTE IN DRAINAGE DATA TABLE THIS SHEET REGARDING AREAS A3 & A7.
3. DETENTION WILL BE BUILT IN 2 PHASES. THE FIRST PHASE WILL BUILD THE PHASE I PORTION OF THE DETENTION TO ALLOW THE CULVERS SITE TO DEVELOP. PHASE II WILL BE CONSTRUCTED WHEN THE REMAINDER OF THE DEVELOPMENT IS BUILT.

F. M. HIGHWAY 740 (RIDGE ROAD)



GRANDY'S

LUBY'S

SCHLOTZKY'S

BURGER KING

KWIK LUBE

GOODYEAR

MCDONALD'S

HEAD ELECTRIC LINE

INTERSTATE HIGHWAY 30

RECORD DRAWING

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY THE CONTRACTOR. THE ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

ENGINEER *Michael M. Michael* 3/8/04 DATE

DRAINAGE DATA

DRAINAGE AREA DESIGNATION	AREA (AC.)	C	I ₁₀₀ (IN/HR)	Q ₁₀₀	COMMENT
A1	1.44	0.9	9.80	12.70	TO FUTURE DETENTION POND
A2	0.70	0.35	9.80	2.40	TO FUTURE DETENTION POND
A3	0.88	0.9	9.80	7.76	SEE NOTE 1
A4	3.69	0.9	9.80	32.55	TO FUTURE DETENTION POND
A5	2.04	0.9	9.80	17.99	TO FUTURE DETENTION POND
A6	1.42	0.9	9.80	12.52	TO FUTURE DETENTION POND
A7	0.12	0.9	9.80	1.06	SEE NOTE 1
OS1	0.90	0.9	9.80	7.94	ROUTED OFFSITE (NOT DETAINED)
OS2	2.33	0.9	9.80	20.55	ROUTED OFFSITE (NOT DETAINED)
OS3	1.74	0.9	9.80	15.35	ROUTED OFFSITE (NOT DETAINED)

TOTAL AREA 15.25

Q₁₀₀ = C*I*A

NOTES

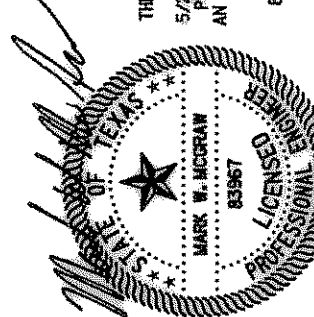
1. AREAS A3 & A7 DISCHARGE DIRECTLY TO THE TxDOT STORM DRAIN. DETENTION POND ALLOWABLE DISCHARGE HAS BEEN REDUCED BY A3 & A7'S DISCHARGE TO NOT EXCEED ALLOWABLE DISCHARGE FOR THE OVERALL SITE.

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Half Associates, Inc.
ENGINEERS • ARCHITECTS • SCIENTISTS • PLANNERS • SURVEYORS
8616 NORTHWEST PLAZA DRIVE
DALLAS, TEXAS 75225
TEL (214) 346-6200
FAX (214) 739-1095

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5	1-7-03	FIFTH SUBMITTAL	
6	1-21-03	SIXTH SUBMITTAL	

Drawn by:
Checked by:
Sheet Title

DRAINAGE AREA
MAP

CDA01

03-08-04 RECORD DRAWINGS