

MODIFIED RATIONAL METHOD

Project Description: Rockwall Technology Park, Rockwall, TX

Project No.: WA08037

Date: 10/12/2009

Checked By:

100 YR POND DESIGN

Step	Existing Conditions	K	C	b	d	e	T <sub>c</sub> (min)	I (in/hr)	A (acres)	Q <sub>peak</sub> = Q <sub>0</sub> (cfs)
1	Existing Conditions	1	0.35				10	9.80	2.32	7.95
2	Proposed Conditions	1	0.90				10	9.80	2.32	20.46

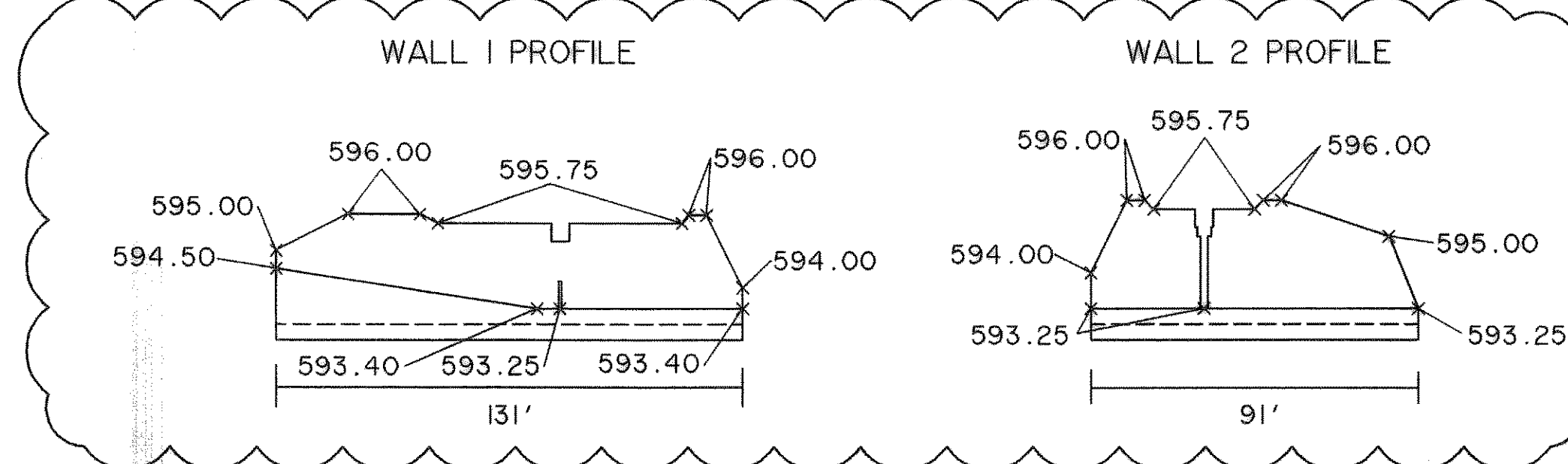
  

Time Step	T <sub>d</sub> duration (min)	K	C	I (in/hr)	A (acres)	Q <sub>peak</sub> (cfs)	Volume (ft <sup>3</sup> )			Volume (acre-ft)
							Inflow T <sub>d</sub> *Q*60	Outflow 0.5*(T <sub>c</sub> +T <sub>d</sub> )*Q*60	Required Storage Inflow-Outflow	
1	10	1	0.90	9.80	2.32	20.46	12,277	4,775	7,503	0.172
2	20	1	0.90	8.30	2.32	17.33	20,796	7,162	13,635	0.313
3	30	1	0.90	6.90	2.32	14.41	25,933	9,549	16,384	0.376
4	40	1	0.90	5.80	2.32	12.11	29,065	11,936	17,129	0.393
5	50	1	0.90	5.00	2.32	10.44	31,320	14,324	16,996	0.390
6	60	1	0.90	4.50	2.32	9.40	33,826	16,711	17,115	0.393
7	70	1	0.90	4.10	2.32	8.56	35,955	19,098	16,857	0.387
8	80	1	0.90	3.90	2.32	8.14	39,087	21,486	17,602	0.404
9	90	1	0.90	3.60	2.32	7.52	40,591	23,873	16,718	0.384
10	100	1	0.90	3.40	2.32	7.10	42,595	26,260	16,335	0.375

MAX STORAGE (AC-FT) 0.40

17,602

Storm Event return period	Proposed Flow (cfs)	Allowable Flow (cfs)	Required Storage (Ac-ft)
5 yr	12.7	5.0	0.15
10 yr	14.8	5.8	0.19
25 yr	17.3	6.7	0.30
100 yr	20.5	8.0	0.40



Pond 1 Outfall (Orifice)				Pond 2 Outfall (Weir)				Combined Flow (cfs)
Elevation (ft)	Orifice Area (sf)	Orifice Coefficient	Flow (cfs)	Elevation (ft)	Weir Length (ft)	Weir Coefficient	Flow (cfs)	
593.25	0.00	0.6	0.0000	593.25	0.46	3.3	0.0000	0.0
593.50	0.50	0.6	0.2764	593.25	0.46	3.3	0.0000	0.3
593.75	0.50	0.6	0.8512	593.25	0.46	3.3	0.0000	0.9
594.00	0.50	0.6	1.4743	593.25	0.46	3.3	0.0000	1.5
594.25	0.50	0.6	1.9033	593.25	0.46	3.3	0.0000	1.9
594.50	0.50	0.6	2.2520	593.25	0.46	3.3	0.0000	2.3
594.75	0.50	0.6	2.5535	593.25	0.46	3.3	0.0000	2.6
595.00	0.50	0.6	2.8230	593.50	0.46	3.3	0.1889	3.0
595.00	0.50	0.6	2.8230	593.75	0.46	3.3	0.5344	3.4
595.00	0.50	0.6	2.8230	594.00	0.46	3.3	0.9817	3.8
595.00	0.50	0.6	2.8230	594.25	0.46	3.3	1.5114	4.3
595.00	0.50	0.6	2.8230	594.50	0.46	3.3	2.1122	4.9
595.00	0.50	0.6	2.8230	594.75	0.46	3.3	2.7766	5.6
595.00	0.50	0.6	2.8230	595.00	4.00	3.3	3.4989	6.3
595.25	0.50	0.6	3.0690	595.25	4.00	3.3	8.9418	11.8
595.50	0.50	0.6	3.2966	595.50	5.00	3.3	7.1635	10.0
595.75	0.50	0.6	3.5095	595.75	5.00	3.3	11.8080	14.6

POND 1 FILLS  
POND 2 REMAINS EMPTY

POND 1 FULL  
POND 2 BEGINS TO FILL

BOTH PONDS FULL

\* BENCH MARKS \*

BM A AN "C" IN THE MIDDLE OF INLET AT THE BACK OF CURB OF SCIENCE PLACE +/- 80 FEET SOUTH OF THE INTERSECTION OF THE CENTERLINES OF SCIENCE PLACE AND OBSERVATION TRAIL. 592.68 FT.

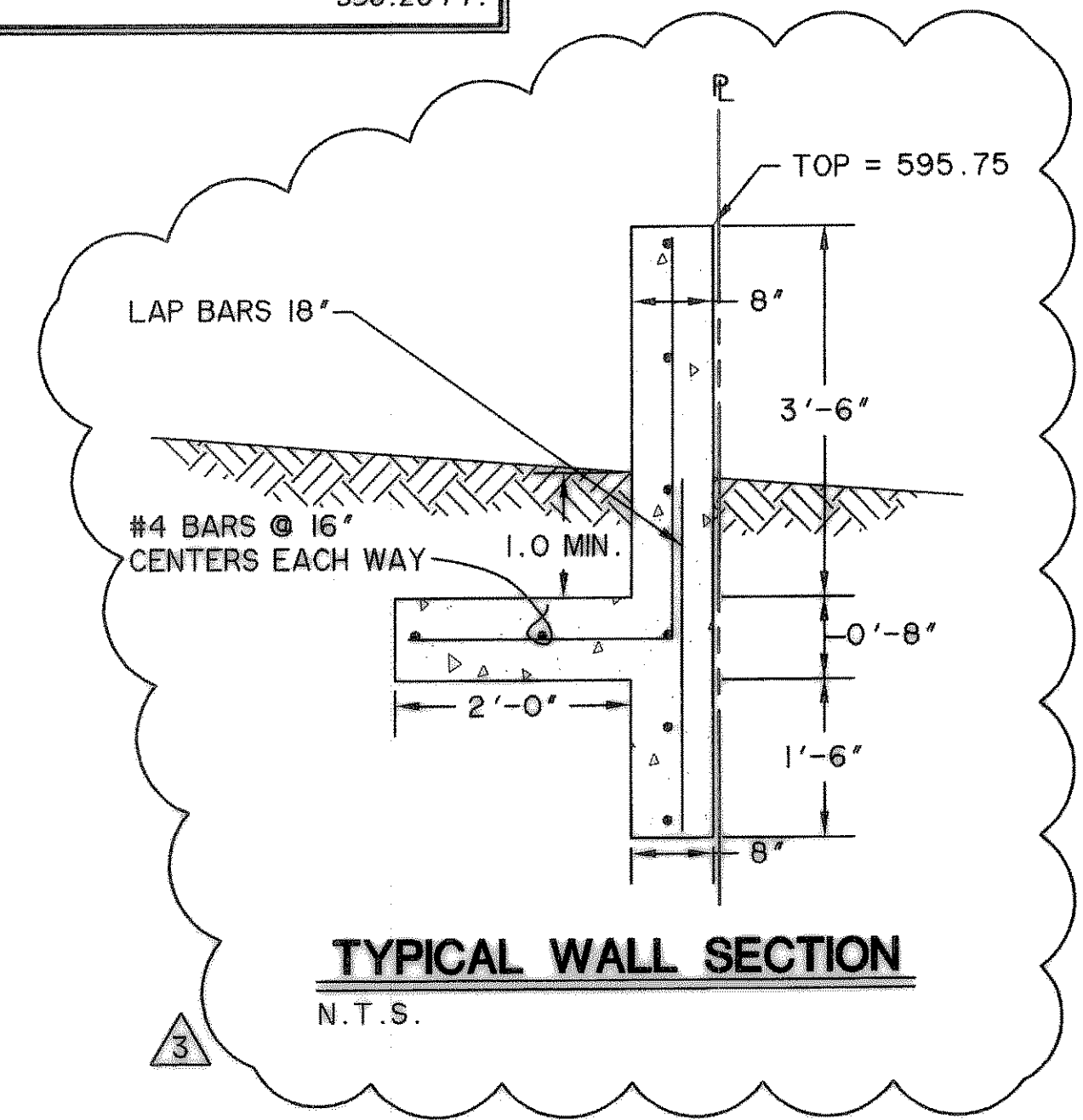
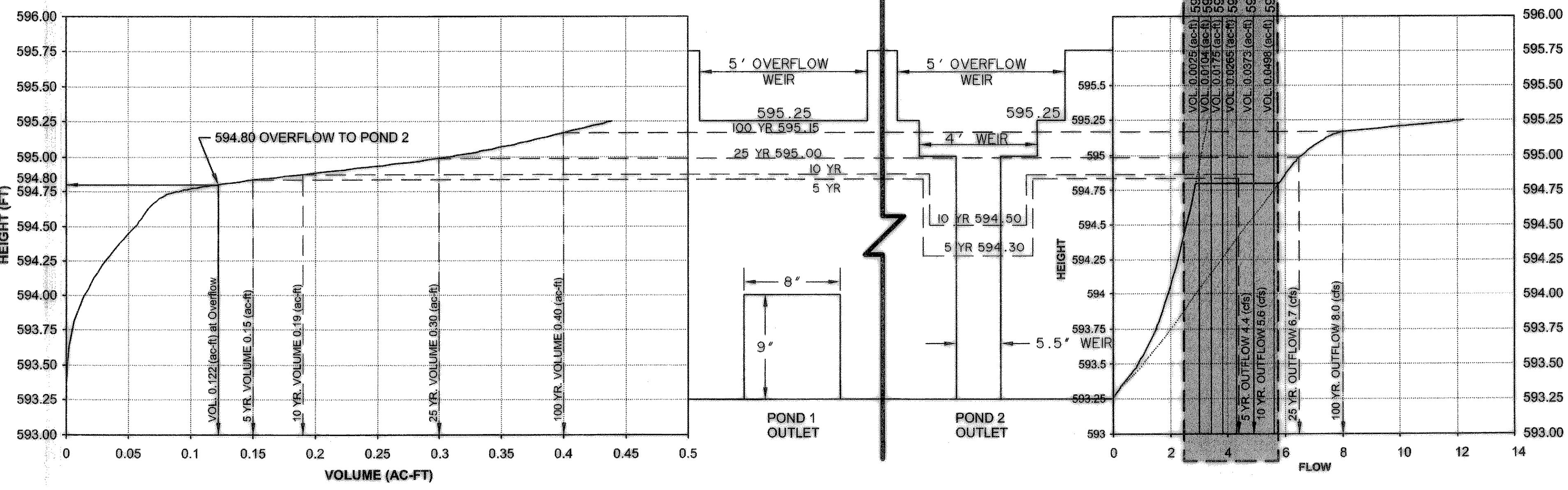
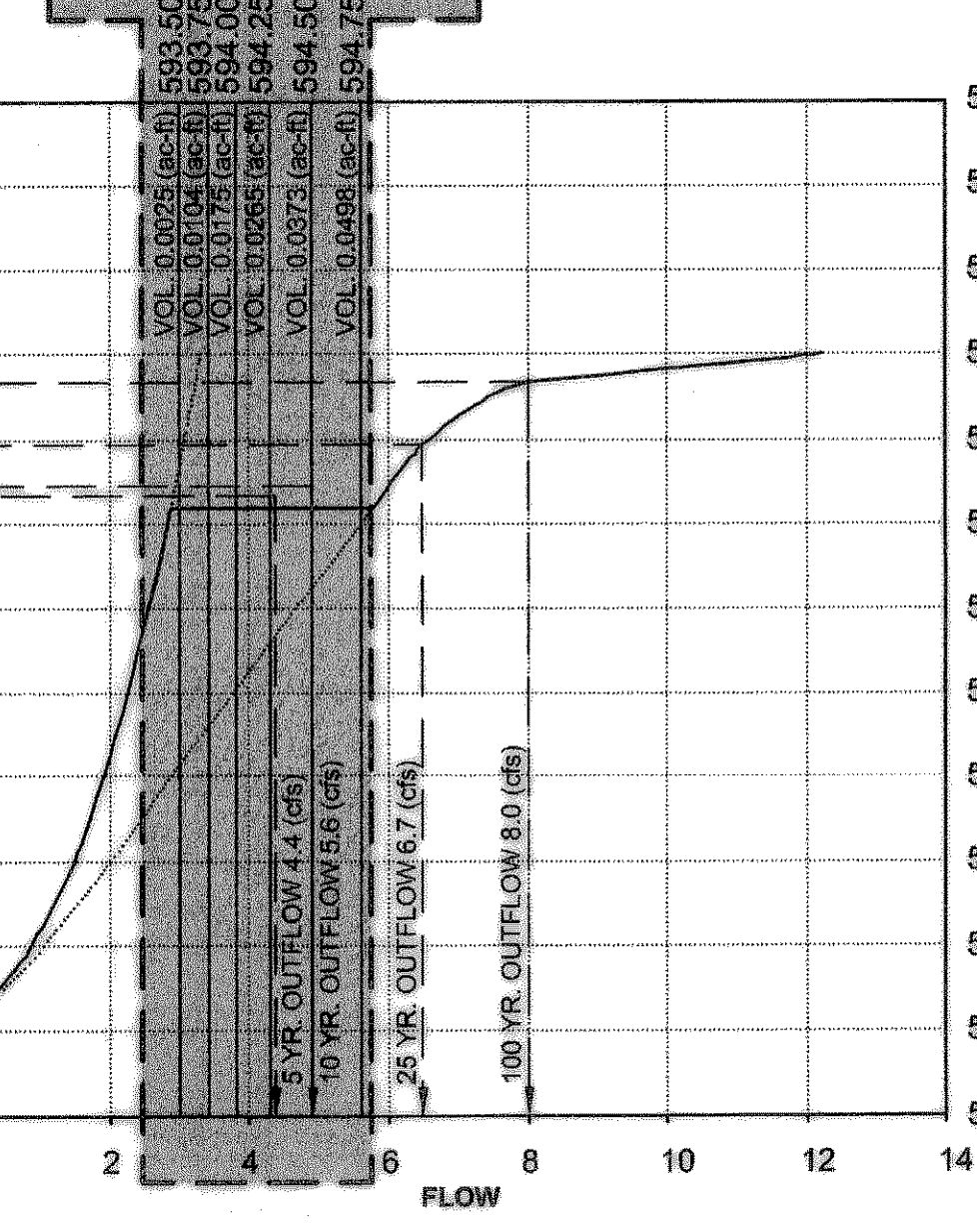
BM B AN "C" CUT ON THE EAST MEDIAN NOSE DISCOVERY BOULEVARD +/- 90 FEET WEST OF THE INTERSECTION OF DISCOVERY BOULEVARD AND F.M. 549. 598.20 FT.

POND VOLUME CALCULATIONS

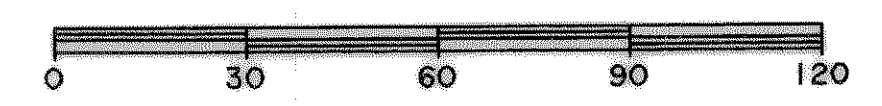
Elevation (ft)	Area (sf)	Area (Ac)	A1+A2+(A1*A2) <sup>0.5</sup> (Ac)	Volume (Ac-ft)	Volume Sum (Ac-ft)
593.00	0	0.0000	0.0000	0.0000	0
593.25	0	0.0000	0.0000	0.0000	0.0000
593.50	332	0.0076	0.0076	0.0006	0.0006
593.75	1092	0.0251	0.0465	0.0039	0.0045
594.00	2453	0.0563	0.1190	0.0099	0.0144
594.25	3526	0.0809	0.2048	0.0171	0.0315
594.50	4924	0.1130	0.2896	0.0241	0.0556
594.75	6446	0.1480	0.3904	0.0325	0.0882
595.00	21619	0.4963	0.9153	0.0763	0.3085
595.25	23967	0.5502	1.5891	0.1308	0.4393

SUM OF BOTH POND VOLUMES AT AN ELEVATION OF 596.00

POND 2 DEPTH & VOLUME DURING OVERFLOW



REVISD DETAIL



RECORD DRAWING

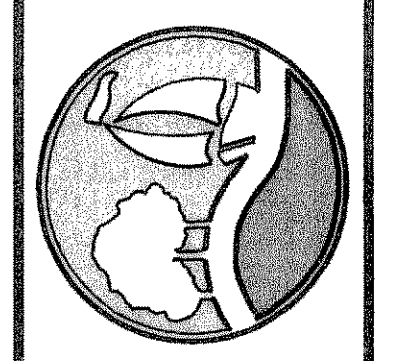
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PREPARED BY: WIA WIER & ASSOCIATES, INC. ENGINEERS SURVEYORS LAND PLANNERS

701 HIGHLANDER BLVD., SUITE 300 ARLINGTON, TEXAS 76010 METRO (817) 467-7700

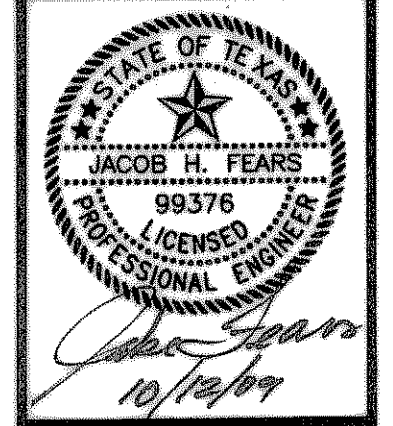
6849 ELM STREET FRISCO, TEXAS 75034 METRO (214) 387-8000

Texas Firm Registration No. F-2776 www.wierassociates.com



ROCKWALL TECHNOLOGY PARK PHASE I ROCKWALL, TEXAS

DETENTION POND



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