

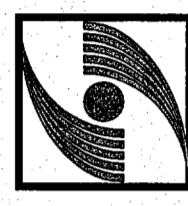
**COMPUTATION SHEET  
HYDRAULIC COMPUTATIONS FOR STORM DRAINS**

**STORM DRAIN HYDRAULIC CALCULATIONS TABLE BASED ON CITY OF DALLAS DETENTION METHOD WITH STARTING W.S. ELEV. = 638.95**

FROM	TO	Pipe Length feet	Drainage Area			Runoff "C"	Incr. CA	Total CA	Time Of Concentration			5-year Intensity in/hr	100-year Intensity in/hr	Q-5 Runoff cfs	Q-100 Runoff cfs	Inlet Bypass cfs	Q Pipe cfs	Pipe Size in	Manning's n	Sf	HEAD LOSS CALCULATIONS										Design HGL Elev.	T/C ELEV.		COMMENTS
			No.	Area	Total Area				Inlet min.	Travel min.	Total min.										D/S Elev.	U/S Elev.	V1 (in) ft/sec	V2 (out) ft/sec	V1^2/2G ft	V2^2/2G ft	Ki	Kj V1^2/2G ft	Hk ft	HGL Elev.		FROM	TO	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
<b>LINE "A" PRIVATE</b>																																		
653	1014	381.0	A1	2.47	2.47	0.90	2.22	2.22	10.00	NA	10.00	5.74	8.74	12.8	19.4	0.0	19.4	27	0.013	0.0039	645.19	646.60	NA	4.86	NA	0.37	1.25	0.46	0.46	647.06	640.88	642.32	647.7 +/-	FUTURE CURB INLET TC = 647.7 +/-
520.0	653.0	133.0	A3A & A4	1.19	3.66	0.90	3.29	3.29	10.00	NA	10.00	5.74	8.74	18.9	28.8	0.0	28.8	27	0.013	0.0068	643.59	644.73	7.24	9.61	0.81	1.43	0.75	0.61	0.82	644.73	639.01	640.88	NA	
470.0	520.0	50.0	A2 & A3	1.20	4.86	0.90	1.08	4.37	10.00	NA	10.00	5.74	8.74	25.1	38.2	0.0	38.2	27	0.013	0.0152	642.01	642.77	9.61	8.94	1.43	1.24	0.75	1.08	0.17	642.77	638.06	639.01	NA	BRANCH LINE EXISTING INLET TC = 645.8 +/-
313.1	470.0	156.9	A5	0.72	5.58	0.90	0.85	5.02	10.00	NA	10.00	5.74	8.74	28.8	43.9	0.0	43.9	30	0.013	0.0114	640.05	641.84	8.94	5.03	1.24	0.39	NA	NA	-0.42	641.84	635.81	638.06	NA	FROM CITY OF DALLAS HL = V2^2/4G - V1^2/4G
181.0	313.1	132.1	A6 & A7	0.58	6.16	0.90	0.52	5.54	10.00	NA	10.00	5.74	8.74	31.8	48.4	0.0	48.4	42	0.013	0.0023	640.17	640.47	5.03	5.03	0.39	0.39	0.25	0.10	0.29	640.47	635.06	635.81	NA	
85.7	181.0	95.3	NA	NA	6.16	NA	NA	NA	10.00	NA	10.00	5.74	8.74	31.8	48.4	0.0	48.4	42	0.013	0.0023	639.85	640.07	5.03	NA	0.39	NA	0.25	0.10	0.10	640.07	634.50	635.06	NA	
64.0	85.7	21.7	A8, A9 & A10	1.92	8.08	0.67	1.29	6.83	10.00	NA	10.00	5.74	8.74	39.2	59.7	0.0	59.7	42	0.013	0.0000	639.85	639.85	NA	NA	NA	NA	NA	NA	NA	639.85	634.28	634.50	NA	
0.0	64.0	64.0	ROUTED THROUGH DETENTION BASIN	NA	8.08	NA	NA	NA	10.00	NA	10.00	5.74	8.74	22.3	36.4	0.0	36.4	30	0.013	0.0035	636.72	639.85	10.03	5.3	1.56	0.44	0.23	0.36	NA	639.85	633.64	634.28	NA	

**GLENN ENGINEERING**

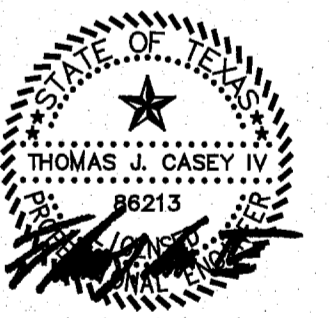
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# F - 303



TRINITY CHRISTIAN ACADEMY

DRAINAGE & DRIVE IMPROVEMENTS NEAR THE UPPER SCHOOL

DRAINAGE CALCS



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY THOMAS J. CASEY IV, P.E. 89213, ON JULY 8, 2010

Issue Dates:  
Review: June 23, 2010  
Comments: June 30, 2010  
Comments: July 2, 2010  
Comments: July 8, 2010

Construction: AS NOTED

Scale: AS NOTED

Drawn By: TJC

Checked By: CMA

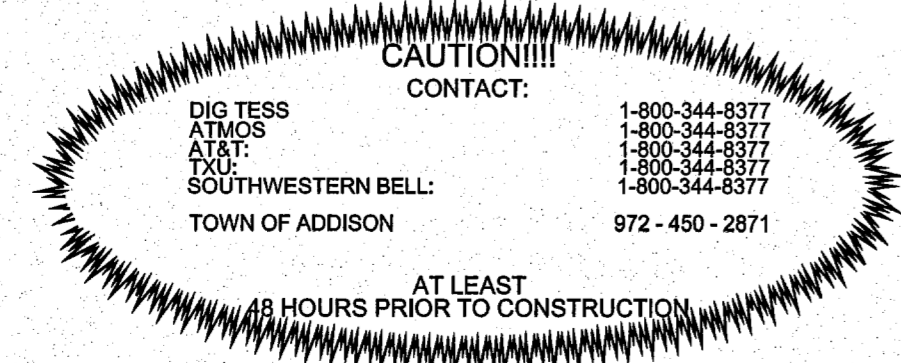
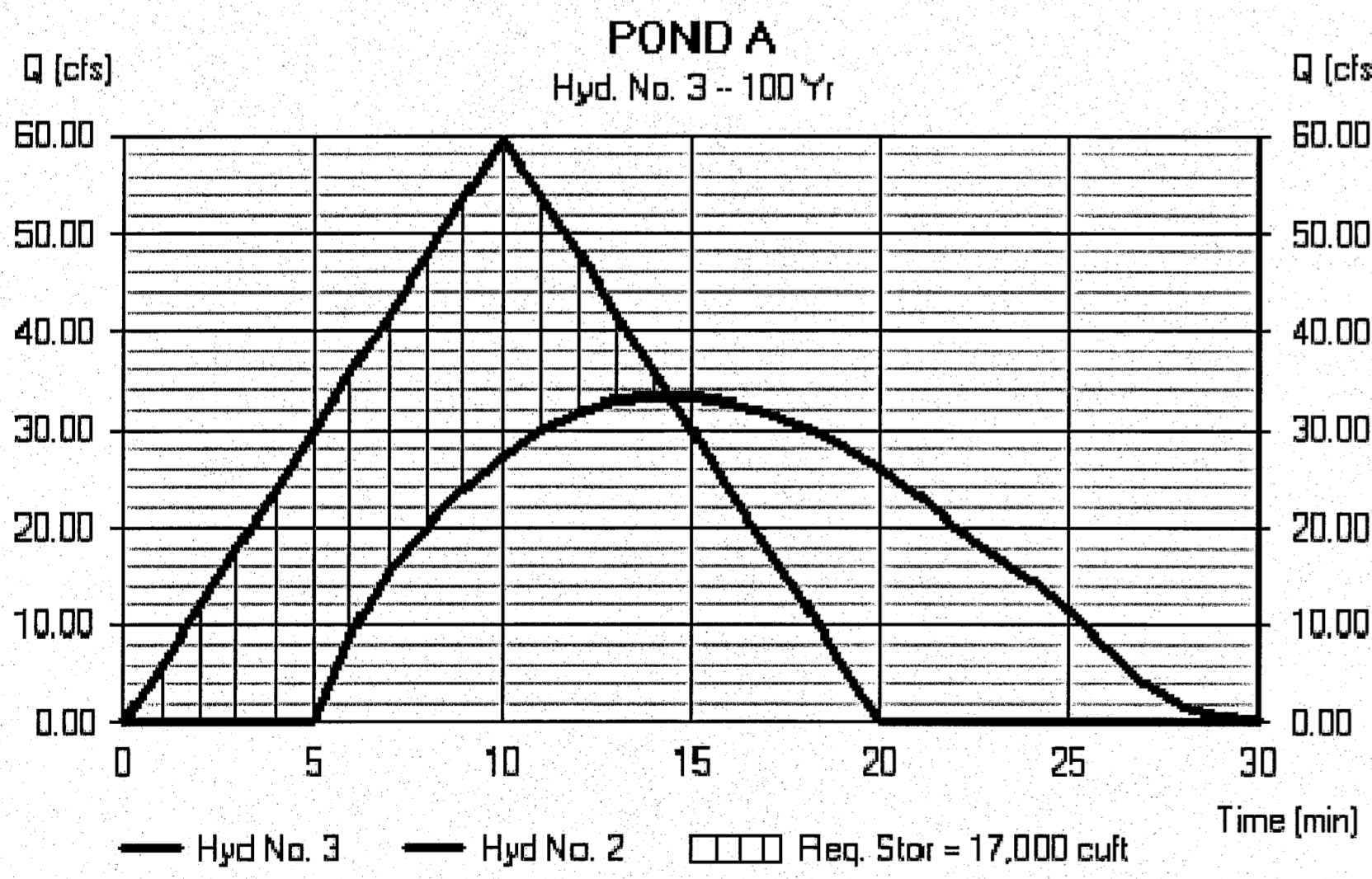
Project No.: 10 - 599-150

Sheet 9 of 15

**HYDRAFLOW HYDROGRAPHS INFORMATION  
(IF 26.5" ORIFICE PLATE WAS REMOVED)**

**EXECUTIVE SUMMARY - POND "A" - 100 YEAR STORM**

BASIN ANALYSIS METHOD	QMAX TO PROPOSED BASIN (CFS)	QMAX EXISTING (CFS)	QMAX OUT OF BASIN (ROUTED) (CFS)	MAX. 100 YR WATER SURFACE ELEVATION	MAX. STORAGE C.F.
TAILWATER ANALYSIS, ELEV. 638.72	59.7	38.9	33.4	638.71	17,000
NO TAILWATER ANALYSIS	59.7	38.9	36.3	637.91	12,226



**BENCHMARK:**  
TOWN OF ADDISON BENCHMARK 6, BRASS DISC SETON TOP OF EXISTING INLET, LOCATED ON THE EAST SIDE OF ADDISON ROAD, DIRECTLY EAST OF THE LOWER SCHOOL PLAYGROUNDS.  
ELEV. = 639.88'

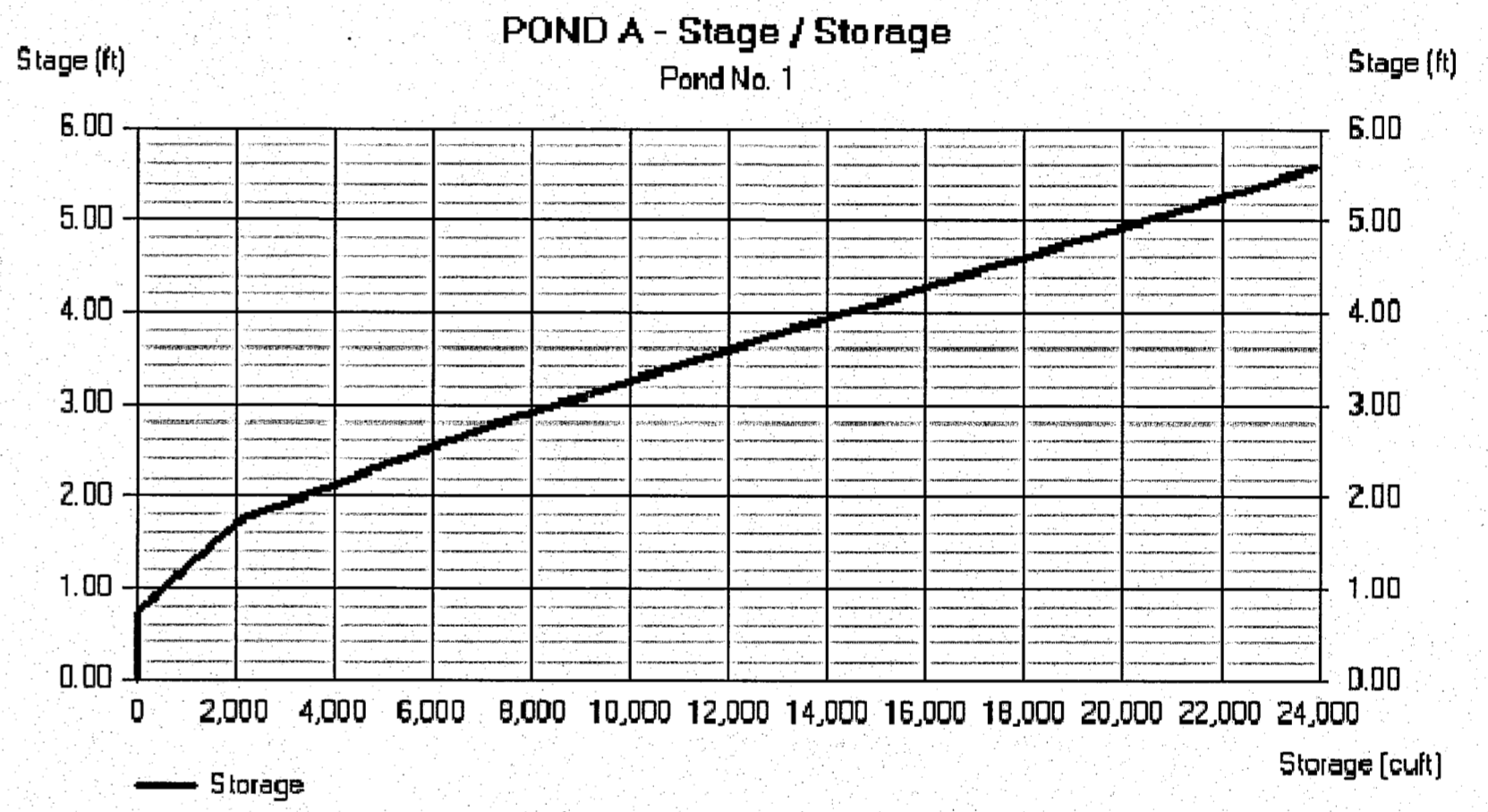
**OUTLET RATING - NO TAILWATER - 26.5" ORIFICE PLATE  
(DALLAS METHOD)**

$$Q = C * A * \sqrt{2 * G * H}$$

WHERE:

- C = 0.60
- A = 3.82 S.F.
- H = 4.47 FT (MAX. ELEV. ABOVE CENTERLINE)
- G = 32.2 FPS/S
- Q = 38.9 CFS

**POND A STAGE STORAGE INFORMATION  
STAGE 0 = ELEVATION 634.28  
(COMMON TO BOTH DESIGN METHODS)**



**DALLAS METHOD DETENTION BASIN VOLUME CALCULATIONS  
TRINITY CHRISTIAN ACADEMY**

DURATION (Hours)	DURATION (Minutes)	Rainfall Intensity (in/hr)	Inflow Rate (cfs)	Inflow Volume (cf)	Outflow Rate (cfs)	Outflow Volume (cf)	Inflow - Outflow Volume (cf)
0.17	10	8.74	59.7	36820	38.9	23940	12480
0.25	15	7.52	51.4	46230	38.9	29175	17055
0.33	20	6.80	46.4	55738	38.9	35010	20728
0.50	30	5.74	39.2	70574	38.9	46680	23894
0.67	40	4.94	33.7	80984	38.9	58350	22634
0.83	50	4.37	29.9	89550	38.9	70020	19530
1.00	60	3.90	26.6	95903	38.9	81690	14213
1.17	70	3.65	24.9	104714	38.9	93360	11354
1.33	80	3.35	22.9	109837	38.9	105030	4807
1.50	90	3.08	21.0	113608	38.9	116700	-3092
1.67	100	2.87	19.6	117624	38.9	128370	-10746
1.83	110	2.70	18.4	121722	38.9	140040	-18318
2.00	120	2.53	17.3	124427	38.9	151710	-27283