

HYDRAULIC CALCULATIONS FOR STORM SEWER AND LATERALS

STORM DRAIN CALCULATIONS

RUNOFF COLLECTION POINT		DISTANCE BETWEEN	INCREMENTAL DRAINAGE AREA				TIME AT UPSTREAM	DESIGN STORM	TIME OF CONCEN-	INTENSITY	ACCUM-ULATED STORM	SLOPE OF HYDRAULIC	SELE	VELOCITY IN DRAIN	FLOW TIME IN DRAIN	REMARKS	
UPSTREAM STATION	DOWNSTREAM STATION	COLLECTION POINTS	AREA No	DRAINAGE AREA *ACRES*	RUNOFF COEFF. *C*	INCRE-MENTAL *CA*	TIME AT (MIN)	FREQUENCY (YEARS)	TRATION (MIN)	(IN/HR)	WATER RUNOFF (CFS)	(FT/FT)	STC DIA. (IN)	COLLECTION POINTS (FPS)	DISTANCE/ V * 60 (MIN)	TIME AT DOWNSTREAM STATION (MIN)	
EXISTING STORM DRAIN SYSTEM																	
10+50	9+30	120		68.41	0.51	35.22	35.22	15.50	100	15	7.60	267.65	0.0106	10	13.63	0.15	15.65
9+30	8+84	46		0.00	0.51	0.00	35.22	15.65	100	15	7.50	264.13	0.0062	10	11.12	0.07	15.72
8+84	8+53	31		0.00	0.51	0.00	35.22	15.72	100	15	7.50	264.13	0.0062	10	11.12	0.05	15.76
8+53	8+34	19		0.00	0.51	0.00	35.22	15.76	100	15	7.50	264.13	0.0062	10	11.12	0.02	15.79
8+34	7+33	101		3.18	0.90	2.86	38.08	15.79	100	15	7.50	285.60	0.0072	10	12.02	0.14	15.93
7+33	4+88	245		6.34	0.90	5.71	43.79	15.93	100	10	7.50	328.39	0.0044	10	10.29	0.40	16.33
4+88	2+28	260		0.00	0.90	0.00	43.79	16.33	100	10	7.40	324.01	0.0024	10	8.22	0.53	16.85
2+28	0+00	228		0.00	0.90	0.00	43.79	16.85	100	10	7.30	319.63	0.0025	10	8.31	0.46	17.31
STORM DRAIN 1.0																	
7+10	3+60	349.91		1.51	0.90	1.36	1.36	10.00	100	10	8.74	11.88	0.0128	10	6.72	0.87	10.87
3+60	1+61	199.15		1.98	0.90	1.78	3.14	10.87	100	10	8.50	26.70	0.0074	10	6.71	0.45	11.36
1+61	0+00	160.78		2.81	0.90	2.53	5.67	11.36	100	10	8.35	47.34	0.0033	10	5.71	0.47	11.83

HYDRAULIC ANALYSIS OF EXISTING STORM DRAIN SYSTEM

STATION	SECTION	PIPE DIA.	AREA	R	R 2/3	N	Q CFS	VEL FPS	V2/2g	Sf	PIPE LENGTH	PIPE FRICTION	Kj	PIPE BENDS	Kj	WYE MANH	Kj	DIA CHANGE	TOTAL LOSSES	WATER SURFACE	ENERGY GRADIENT	COMMENTS	STATION
0+00		84	38.485	1.750	1.452	0.013	319.70	8.31	1.07	0.0025	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.54	0.54	575.15	576.76	BOX TO 84'	0+00
2+28		84	38.485	1.750	1.452	0.013	319.70	8.31	1.07	0.0025	228.00	0.57	0.00	0.00	0.00	0.00	0.50	0.54	1.11	576.79	577.86	84' TO 72'	2+28
4+88		72	28.274	1.500	1.310	0.013	206.90	7.32	0.83	0.0024	260.00	0.62	0.00	0.00	0.00	0.00	0.45	0.37	0.99	577.79	578.62	72' TO BOX	4+88
4+88		60	19.635	1.250	1.160	0.013	117.10	5.96	0.55	0.0020	273.00	0.55	0.35	0.19	0.00	0.00	0.45	0.25	0.99	577.79	578.34	60' TO BOX	4+88
7+33		72/54	47.909																	577.79	577.79		
7+33		2-7X3	42.000	1.050	1.033	0.013	328.40	7.82	0.95	0.0044	245.00	1.07	0.00	0.00	0.00	0.00	0.50	0.47	1.55	579.34	580.28	BOX TO 66'	7+33
8+34		66	23.758	1.375	1.237	0.013	285.60	12.02	2.24	0.0072	101.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.73	580.07	582.31		8+34
8+53		66	23.758	1.375	1.237	0.013	285.60	12.02	2.24	0.0072	19.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.14	580.20	582.45		8+53
8+84		66	23.758	1.375	1.237	0.013	264.20	11.12	1.92	0.0062	50.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.31	580.51	582.43	24x66 CONN	8+84
9+30		66	23.758	1.375	1.237	0.013	264.20	11.12	1.92	0.0062	46.00	0.28	0.00	0.00	0.00	0.00	0.35	0.67	0.96	581.47	583.39	66' TO 60'	9+30
10+50		60	19.635	1.250	1.160	0.013	267.70	13.63	2.89	0.0106	120.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	1.27	582.74	585.62		10+50
0+00		24	3.142	0.500	0.630	0.013	11.48	3.65	0.21	0.0026	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.08	580.51	580.80	24x66 CONN	0+00
2+86		24	3.142	0.500	0.630	0.013	11.48	3.65	0.21	0.0026	286.07	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.74	581.33	581.54	10' INLET	2+86

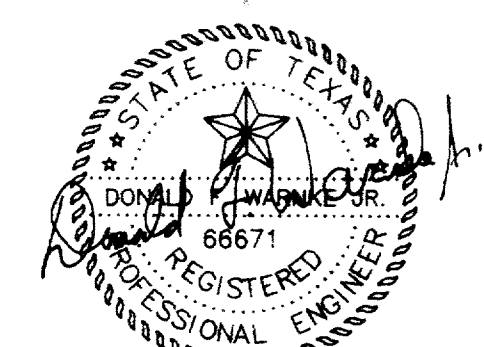
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HYDRAULIC CALCULATIONS FOR STORM SEWER AND LATERALS

STATION	SECTION	PIPE DIA.	AREA	R	R 2/3	N	Q CFS	VEL FPS	V2/2g	Sf	PIPE LENGTH	PIPE FRICTION	Kj	PIPE BENDS	Kj	WYES	Kj	DIA CHANGE	TOTAL LOSSES	WATER SURFACE	ENERGY GRADIENT	COMMENTS	STATION
0+00		39	8.296	0.813	0.871	0.013	47.34	5.71	0.51	0.0033	0.00	0.00	0.35	0.18	0.00	0.00	1.00	0.51	0.68	579.34	580.53	39' CONN	0+00
1+61		39	8.296	0.813	0.871	0.013	47.34	5.71	0.51	0.0033	160.78	0.53	0.00	0.00	0.50	0.00	0.00	0.00	0.78	580.80	581.31	27x39 CONN	1+61
1+65		39	8.296	0.813	0.871	0.013	26.70	3.22	0.16	0.0010	4.00	0.00	0.00	0.00	0.00	0.00	1.00	0.16	0.17	580.97	581.13	39' TO 27'	1+65
3+60		27	3.976	0.563	0.681	0.013	26.70	6.72	0.70	0.0074	195.15	1.45	0.00	0.00	0.50	0.00	1.00	0.70	2.50	583.47	584.17	TYPE A MH	3+60
7+10		18	1.767	0.375	0.520	0.013	11.88	6.72	0.70	0.0128	349.91	4.48	0.00	0.00	0.00	0.00	0.00	0.00	4.48	587.95	588.65	10' C.I.	7+10
0+00		27	3.976	0.563	0.681	0.013	22.12	5.56	0.48	0.0051	0.00	0.00	0.00	0.00	0.50	0.00	1.00	0.48	0.72	580.89	582.00	27x39 CONN	0+00
0+78		1.1	27	3.976	0.563	0.681	0.013	22.12	5.56	0.0051	78.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.40	581.92	582.40	2-10' C.I.	0+78
0+00		1.2	18	1.767	0.375	0.520	15.55	8.80	1.20	0.0219	0.00	0.00	0.00	0.00	0.50	0.00	1.00	1.20	1.80	585.27	586.48	18x27 CONN	0+00
2+08		1.2	18	1.767	0.375	0.520	15.55	8.80	1.20	0.0219	208.00	4.56	0.00	0.00	0.00	0.00	0.00	0.00	4.61	589.88	591.08	3'x3' D.I.	2+08
3+24		1.2	18	1.767	0.375	0.520	6.29	3.56	0.20	0.0036	115.87	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.42	590.30	590.49	8' INLET	3+24
0+00		2.0	60	19.635	1.250	1.160	117.10	5.96	0.55	0.0020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	576.79	577.34	60x84 CONN	0+00
2+73		2.0	60	19.635	1.250	1.160	117.10	5.96	0.55	0.0020	273.00	0.55	0.35	0.19	0.00	0.00	0.45	0.25	0.99	577.79	578.34	60' TO BOX	2+73

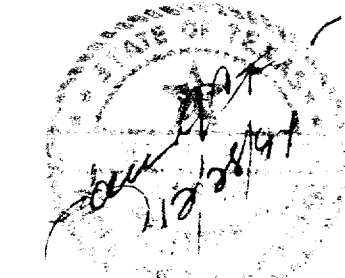
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY DONALD F. WARNKE JR., P.E. 66671 ON 01/21/94



02-08-94

AS-BUILTS

I CERTIFY THIS PROJECT WAS CONSTRUCTED IN GENERAL CONFORMANCE WITH THESE CONSTRUCTION PLANS AND WILL FUNCTION AS DESIGNED.



HYDRAULIC CALCULATIONS						
COMP USA						
ADDISON TOWN CENTER						
TOWN OF ADDISON, TEXAS						
LAWRENCE A. CATES & ASSOC.						CONSULTING ENGINEERS DALLAS, TEXAS
DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
LAC	LAC	01/21/94	N/A	D.P.	93059 HYDCALC.DWG	C-9A