HYDRAULIC COMPUTATIONS ADDISON GROVES

RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points	INCREMENTAL DRAINAGE AREA				Accum-ulated 'CA'	Time at Upstream Station	Intensity 'I_{10}' (in/hr)	Storm Water Runoff 'Q_{10}'	Slope of Hydraulic Gradient 'Sf'	Pipe Diameter	Velocity in Sewer Between Collection Points	Velocity Head at Upstream Station	Flow Time in Sewer	Time at Downstream Station	Hydraulic Grade Line Elevation Downstream	Hydraulic Grade Line Elevation Upstream
UPSTREAM STATION	DOWNSTREAM STATION		Area No	Drainage Area 'A' (Acres)	Runoff Coeff. 'C'	Incremental 'CA'							'V' (fps)					
		(ft)						(minutes)		(cfs)	(ft/ft)	(in)		(ft)	(min)		(elev)	(elev)
100	102	95	100	0.13	0.88	0.11	0.11	10.00	6.54	0.73	0.00010	18	0.41	0.0092	3.85	13.85	610.06	610.22
102	104	107	102	0.46	0.88	0.41	0.52	10.63	6.40	3.32	0.00204	18	1.88	0.2179	0.95	11.58	609.82	610.03
104	106	45	104	0.00	0.88	0.00	0.52	11.58	6.20	3.32	0.00192	18	1.88	0.0863	0.40	11.98	609.60	609.69
106	107	97	106	0.365	0.88	0.32	0.84	11.98	6.12	5.15	0.00491	18	2.91	0.4760	0.56	12.53	609.52	610.00
107	108	72	107	1.10	0.88	0.97	1.81	12.53	6.02	10.90	0.00253	27	2.74	0.1821	0.44	12.97	609.40	609.58
108	node 2	71	108	0.43	0.88	0.38	2.19	12.97	5.94	13.00	0.00205	30	2.65	0.1457	0.45	13.42	609.24	609.39
node 2	110	114	node 2	0.12	0.88	0.11	2.30	13.42	5.86	13.45	0.00220	30	2.74	0.2511	0.69	14.11	609.09	609.34
110	111	116	110	4.63	0.88	4.07	6.37	14.11	5.74	36.54	0.00132	48	2.91	0.1535	0.66	14.78	609.35	609.50
111	112	55	111	0.17	0.88	0.15	6.52	14.78	5.63	36.71	0.00134	48	2.92	0.0736	0.31	15.09	608.97	609.05
112	114	78	112	0.58	0.88	0.51	7.03	15.09	5.58	39.23	0.00082	54	2.47	0.0636	0.53	15.62	608.81	608.88
114	116	58	114	2.11	0.88	1.85	8.89	15.62	5.49	48.84	0.00072	60	2.49	0.0418	0.39	16.01	608.81	608.85
116	118	49	116	1.01	0.88	0.89	9.78	16.01	5.44	53.16	0.00086	60	2.71	0.0419	0.30	16.31	608.81	608.85
118	120	27	118	0.00	0.88	0.00	9.78	16.31	5.39	53.16	0.04128	30	10.83	1.1146	0.04	16.35	607.81	608.92
inlet 304	111	28	inlet 304	0.07	0.88	0.06	0.06	10.00	6.54	0.40	0.00003	18	0.22	0.0008	2.08	12.08	608.93	608.97
inlet 306	111	14	inlet 306	0.11	0.88	0.09	0.09	10.00	6.54	0.61	0.00007	18	0.34	0.0010	0.68	10.68	608.93	608.94
122	124	51	122	0.08	0.88	0.07	0.07	10.00	6.54	0.44	0.00004	18	0.25	0.0019	3.38	13.38	609.94	610.03
124	126	51	124	0.29	0.88	0.25	0.32	10.34	6.47	2.08	0.00079	18	1.18	0.0405	0.72	11.06	609.75	609.84
126	106	31	126	0.00	0.88	0.00	0.32	10.68	6.39	2.08	0.00078	18	1.18	0.0241	0.44	11.12	609.60	609.64
128	inlet 310	24	128	0.57	0.88	0.50	0.50	10.00	6.54	3.28	0.00198	18	1.86	0.0475	0.22	10.22	609.50	609.55
inlet 310	107	28	inlet 310	0.31	0.88	0.27	0.77	10.16	6.51	5.04	0.00467	18	2.85	0.1308	0.16	10.32	609.46	609.59
inlet 312	107	15	inlet 312	0.22	0.88	0.20	0.20	10.00	6.54	1.29	0.00031	18	0.73	0.0046	0.34	10.34	609.38	609.39
130	node	60	130	0.04	0.88	0.03	0.03	10.00	6.54	0.22	0.00001	18	0.12	0.0005	8.01	18.01	609.71	609.82
node	134	9	node	0.11	0.88	0.10	0.13	10.40	6.45	0.85	0.00013	18	0.48	0.0012	0.31	10.71	609.70	609.71
134	136	53	134	0.28	0.88	0.25	0.38	10.46	6.44	2.43	0.00109	18	1.38	0.0579	0.64	11.10	609.42	609.49
136	108	30	136	0.00	0.88	0.00	0.38	10.81	6.36	2.43	0.00107	18	1.38	0.0321	0.36	11.17	609.28	609.31
inlet 308	node 2	21	inlet 308	0.12	0.88	0.11	0.11	10.00	6.54	0.71	0.00009	18	0.40	0.0019	0.87	10.87	609.21	609.22
inlet 314	142	19	inlet 314	0.37	0.88	0.33	0.33	10.00	6.54	2.14	0.00085	18	1.21	0.0161	0.26	10.26	610.28	611.38
142	110	18	142	0.15	0.88	0.13	0.46	10.02	6.54	2.99	0.00165	18	1.69	0.0296	0.18	10.20	609.10	610.15
inlet 316	142	17	inlet 316	0.15	0.88	0.13	0.13	10.00	6.54	0.85	0.00013	18	0.48	0.0022	0.59	10.59	611.16	611.19
144	146	31	144	1.93	0.88	1.70	1.70	10.00	6.54	11.11	0.00149	30	2.26	0.0460	0.23	10.23	609.87	609.92
146	148	210	146	0.13	0.88	0.12	1.82	10.21	6.50	11.79	0.00167	30	2.40	0.3516	1.46	11.66	609.32	609.68
148	150	53	148	1.24	0.88	1.09	2.91	10.89	6.35	18.44	0.00155	36	2.61	0.0821	0.34	11.23	609.29	609.37
150	152	27	150	0.00	0.88	0.00	2.91	11.25	6.27	18.44	0.00152	36	2.61	0.0409	0.17	11.42	609.25	609.29
152	153	65	152	0.51	0.88	0.45	3.35	11.43	6.24	20.91	0.00200	36	2.96	0.1298	0.37	11.79	609.36	609.49
153	110	196	153	0.30	0.88	0.26	3.62	11.86	6.15	22.23	0.00099	42	2.31	0.1945	1.41	13.27	609.10	609.30
inlet 318	153	32	inlet 318	0.16	0.88	0.14	0.14	10.00	6.54	0.94	0.00016	18	0.53	0.0052	1.01	11.01	609.19	609.20
inlet 320	153	11	inlet 320	0.13	0.88	0.12	0.12	10.00	6.54	0.77	0.00011	18	0.44	0.0012	0.42	10.42	609.19	609.19
inlet 322	154	22	inlet 322	0.09	0.88	0.08	0.08	10.00	6.54	0.53	0.00005	18	0.30	0.0011	1.23	11.23	609.25	609.26
154	152	44	154	0.09	0.88	0.08	0.16	10.15	6.51	1.05	0.00020	18	0.59	0.0089	1.24	11.38	609.25	609.26
inlet 324	154	12	inlet 324	0.09	0.88	0.08	0.08	10.00	6.54	0.53	0.00005	18	0.30	0.0006	0.67	10.67	609.25	609.25
156	158	42	156	0.03	0.88	0.02	0.02	10.00	6.54	0.16	0.00000	18	0.09	0.0002	7.90	17.90	609.33	609.33
158	148	160	158	0.18	0.88	0.16	0.18	10.28	6.48	1.16	0.00025	18	0.66	0.0397	4.06	14.34	609.31	609.35
160	158	31	160	0.06	0.88	0.05	0.05	10.00	6.54	0.34	0.00002	18	0.19	0.0007	2.67	12.67	609.33	609.33
162	164	44	162	0.33	0.88	0.29	0.29	10.00	6.54	1.88	0.00065	18	1.07	0.0287	0.69	10.69	609.29	609.32
164	152	56	164	0.00	0.88	0.00	0.29	10.14	6.51	1.88	0.00065	18	1.07	0.0362	0.88	11.01	609.25	609.28
166	168	73	166	0.33	0.88	0.29	0.29	10.00	6.54	1.92	0.00068	18	1.08	0.0494	1.12	11.12	610.08	610.19
168	170	57	168	0.25	0.88	0.22	0.51	10.49	6.43	3.28	0.00198	18	1.86	0.1131	0.51	11.00	609.90	610.02
170	112	44	170	0.00	0.88	0.00	0.51	10.86	6.35	3.28	0.00194	18	1.86	0.0852	0.39	11.26	608.80	609.76
172	174	49	172	0.35	0.88	0.31	0.31	10.00	6.54	2.03	0.00076	18	1.15	0.0371	0.71	10.71	608.79	608.83
174	116	44	174	0.10	0.88	0.09	0.40	10.33	6.47	2.56	0.00121	18	1.45	0.0533	0.51	10.83	608.75	608.81

HYDRAULIC COMPUTATIONS ADDISON GROVES

RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points	INCREMENTAL DRAINAGE AREA				Accum-ulated 'CA'	Time at Upstream Station	Intensity 'I_{10}' (in/hr)	Storm Water Runoff 'Q_{10}'	Slope of Hydraulic Gradient 'Sf'	Pipe Diameter	Velocity in Sewer Between Collection Points	Velocity Head at Upstream Station	Flow Time in Sewer	Time at Downstream Station	Hydraulic Grade Line Elevation Downstream	Hydraulic Grade Line Elevation Upstream
UPSTREAM STATION	DOWNSTREAM STATION		Area No	Drainage Area 'A' (Acres)	Runoff Coeff. 'C'	Incremental 'CA'							'V' (fps)					
		(ft)						(minutes)		(cfs)	(ft/ft)	(in)		(ft)	(min)		(elev)	(elev)
200	202	50	200	0.23	0.88	0.20	0.20	10.00	6.54	1.33	0.00033	18	0.75	0.0164	1.10	11.10	617.19	617.27
202	204	48	202	0.00	0.88	0.00	0.20	10.33	6.47	1.33	0.00032	18	0.75	0.0154	1.06	11.39	617.00	617.08
204	205	120	204	0.28	0.88	0.24	0.45	10.65	6.40	2.86	0.00150	18	1.62	0.1805	1.24	11.89	615.93	616.90
205	206	49	205	0.53	0.88	0.47	0.91	11.02	6.32	5.77	0.00270	21	2.40	0.1323	0.34	11.36	614.91	615.89
206	207	130	206	0.44	0.88	0.38	1.30	11.10	6.30	8.17	0.00266	24	2.60	0.3452	0.83	11.93	614.75	615.09
207	208	50	207	1.00	0.88	0.88	2.18	11.96	6.13	13.35	0.00216	30	2.72	0.1080	0.31	12.27	614.62	614.73
208	210	85	208	0.00	0.88	0.00	2.18	12.30	6.06	13.35	0.00212	30	2.72	0.1799	0.52	12.82	614.54	614.72
210	212	118	210	0.50	0.88	0.44	2.62	12.86	5.96	15.58	0.00177	33	2.62	0.2091	0.75	13.61	614.37	614.58
212	214	66	212	1.05	0.88	0.93	3.54	13.69	5.81	20.58	0.00195	36	2.91	0.1285	0.38	14.07	614.30	614.43
214	216	35	214	0.00	0.88	0.00	3.54	14.13	5.73	20.58	0.00190	36	2.91	0.0665	0.20	14.33	614.23	614.30
216	218	250	216	3.44	0.88	3.03	6.57	14.36	5.69	37.41	0.00139	48	2.98	0.3470	1.40	15.76	611.28	614.17
218	219	61	218	2.34	0.88	2.06	8.63	14.69	5.64	48.68	0.00071	60	2.48	0.0436	0.41	15.10	610.45	610.49
219	220	33	219	0.38	0.88	0.33	8.96	14.77	5.63	50.45	0.00077	60	2.57	0.0253	0.21	14.98	610.08	610.10
220	222	187	220	0.00	0.88	0.00	8.96	14.81	5.62	50.45	0.00077	60	2.57	0.1432	1.21	16.02	609.91	610.05
222	118	390	222	0.00	0.88	0.00	8.96	16.04	5.43	50.45	0.00027	72	1.78	0.1056	3.64	19.69	608.81	609.14
inlet 350	205	29	inlet 350	0.14	0.88	0.12	0.12	10.00	6.54	0.80	0.00012	18	0.45	0.0034	1.07	11.07	615.89	615.93
inlet 352	205	15	inlet 352	0.39	0.88	0.34	0.34	10.27	6.48	2.23	0.00000	18	1.26	0.0000	0.20	10.47	615.07	615.80
224	226	45	224	0.12	0.88	0.10	0.10	10.00	6.54	0.67	0.00008	18	0.38	0.0037	1.97	11.97	618.34	619.01
226	204	51	226	0.16	0.88	0.14	0.24	10.10	6.52	1.58	0.00046	18	0.89	0.0235	0.95	11.05	617.01	618.24
232	234	53	232	0.44	0.88	0.38	0.38	10.00	6.54	2.51	0.00116	18	1.42	0.0615	0.62	10.62	617.93	617.99
234	206	45	234	0.00	0.88	0.00	0.00	10.35	6.46	2.51	0.00113	18	1.42	0.0510	0.53	10.88	614.83	614.89
236	238	132	236	0.24	0.88	0.21	0.21	10.00	6.54	1.36	0.00034	18	0.77	0.0449	2.86	12.86	615.02	615.24
238	inlet 354	59	238	0.24	0.88	0.21	0.42	10.88	6.35	2.64	0.00129	18	1.49	0.0758	0.66	11.54	614.83	614.91
inlet 354	207	28	inlet 354	0.17	0.88	0.15	0.56	11.27	6.27	3.52	0.00230	18	1.99	0.0643	0.23	11.50	614.70	614.76
inlet 356	207	15	inlet 356	0.36	0.88	0.32	0.32	10.00	6.54	2.09	0.00081	18	1.18	0.0121	0.21	10.21	614.69	614.70
240	242	32	240	0.05	0.88	0.05	0.05	10.00	6.54	0.31	0.00002	18	0.18	0.0006	3.04	13.04	615.29	615.34
242	244	99	242	0.16	0.88	0.14	0.19	10.21	6.49	1.23	0.00028	18	0.70	0.0277	2.37	12.58	615.02	615.19
244	246	41	244	0.28	0.88	0.25	0.44	10.87	6.35	2.77	0.00142	18	1.57	0.0581	0.44	11.31	614.87	614.93
246	210	31	246	0.00	0.88	0.00	0.44	11.14	6.29	2.77	0.00139	18	1.57	0.0432	0.33	11.47	614.43	614.74
248	250	53	248	0.10	0.88	0.08	0.08	10.00	6.54	0.55	0.00006	18	0.31	0.0029	2.85	12.85	619.62	619.71
250	252	139	250	0.09	0.88	0.08	0.16	10.35	6.46	1.04	0.00020	18	0.59	0.0278	3.93	14.28	617.72	619.52
252	254	161	252	0.32	0.88	0.28	0.44	10.69	6.39	2.82	0.00147	18	1.60	0.2371	1.68	12.37	615.65	617.61
254	212	51	254	0.55	0.88	0.48	0.93	11.10	6.30	5.84	0.00277	21	2.43	0.1413	0.35	11.45	614.41	615.62
inlet 256	250	18	inlet 256	0.04	0.88	0.04	0.04	10.00	6.54	0.23	0.00000	18	0.13	0.0000	2.30	12.30	614.65	614.65
Ex Inlet 1	Ex Inlet 2	56	Ex Inlet 1	1.60	0.88	1.41	1.41	10.00	6.54	9.21	0.00336	24	2.93	0.1882	0.32	10.32	618.15	620.05
Ex Inlet 2	258	102	Ex Inlet 2	1.24	0.88	1.09	2.50	10.06	6.53	16.30	0.00192	33	2.74	0.1961	0.62	10.68	615.44	617.98
258	216	71	258	0.60	0.88	0.53	3.03	10.18	6.50	19.69	0.00176	36	2.79	0.1251	0.42	10.60	614.18	615.40

STATE OF TEXAS
CARMEN D. PEARSON
95885
LICENSED PROFESSIONAL ENGINEER

2017/12/19

SAWYER ENGINEERING, LLC
TBPE FIRM NUMBER F-9171

NO.	REVISION	BY	DATE

TOWN OF ADDISON
DALLAS COUNTY, TEXAS

IMPROVEMENT PLANS
ADDISON GROVE

DRAINAGE AREA CALCULATIONS -
HYDRAULIC CALCULATIONS

SAWYER ENGINEERING, LLC
TBPE: F-9171

1520 OLIVER STREET
HOUSTON, TEXAS 77007
(832) 553-5948

PROJECT	DESIGN	DRAWN	DATE	FILE	SHEET
	CDP	JDS	MAY 2017		22