

PROPOSED STORM SEWER CALCULATIONS

Storm Sewer/ Lateral Number	Runoff Collection Point		Distance Between Collection Points	Area No.	Incremental Drainage Area				Time of Concentration (MIN.)			Design Storm Freq. (Yrs.)	Intensity (I) (In./Hr.)	Runoff (Q) (c.f.s.)	Actual Q from Inlet (c.f.s.)	Slope of Hydraulic Gradient (Ft./Ft.)	No of Pipes/ Boxes	Selected Storm Sewer Pipe Size	Velocity Between Points (f.p.s.)	Upstream Minor Losses			Flow Time Distance/ Downstream Station (Min.)	Time at Downstream Station (Min.)	Remarks	
	Upstream Station	Downstream Station			Drainage Area (Ac.)	Runoff Coeff. "C"	Incremental "CA"	Accumulated "CA"	Inlet Time (MIN.)	Along Sewer Line (MIN.)	Used in Design (MIN.)									Upstream Point of Turbulence	Head Loss Coeff. "K"	Velocity Head Loss (Feet)				
Lateral A-1	17.33	0.00	17.33	A1	1.52	0.90	1.37	1.37	10.00	0.00	10.00	100	9.80	13.41		0.0163	1	18.0	7.59			0.04	10.04	Into Storm Sewer A-2		
Lateral A-2	17.68	0.00	17.68	A2+Carryover from A1	0.15	0.90	0.14	0.14	10.00	0.00	10.00	100	9.80	1.32	1.93	0.0003	1	18.0	1.09			0.27	10.27	Into Storm Sewer A-2		
Lateral A-3	42.66	0.00	42.66	A3	0.72	0.80	0.58	0.58	10.00	0.00	10.00	100	9.80	5.64		0.0029	1	18.0	3.19			0.22	10.22	Post Office - Into Storm Sewer A-2		
Lateral A-4	18.00	0.00	18.00	A4A,A4B & C.O. from A2+A3	1.33	0.65	0.86	0.86	10.00	0.00	10.00	100	9.80	8.47	9.10	0.0075	1	18.0	5.15			0.06	10.06	Low Point - Into Storm Sewer A-2		
Lateral A-5	12.02	0.00	12.02	A5A, A5B	0.32	0.90	0.29	0.29	10.00	0.00	10.00	100	9.80	2.82		0.0007	1	18.0	1.60			0.13	10.13	Low Point - Into Storm Sewer A-2		
Lateral A-5b	12.14	0.00	12.14	A5	0.32	0.90	0.29	0.29	10.00	0.00	10.00	100	9.80	2.82		0.0007	1	18.0	1.60			0.13	10.13	Positive Overflow for Low Point		
Lateral A-6	49.91	22.93	26.98	A6	0.95	0.50	0.48	0.48	10.00	0.00	10.00	100	9.80	4.66		0.0020	1	18.0	2.63			0.17	10.17			
	22.93	0.00	22.93	A7	0.67	0.50	0.34	0.81	10.00	0.17	10.17	100	9.80	7.94		0.0057	1	18.0	4.49	0.60	0.25	0.09	10.26	Into Storm Sewer A-2		
Lateral A-7	30.27	0.00	30.27	A7	0.67	0.50	0.34	0.34	10.00	0.00	10.00	100	9.80	3.28		0.0010	1	18.0	1.86			0.27	10.27	St. Mary Place - Into Lateral A6		
Lateral A-8	17.56	0.00	17.56	A8	0.37	0.50	0.19	0.19	10.00	0.00	10.00	100	9.80	1.81		0.0003	1	18.0	1.03			0.29	10.29			
Lateral A-9	17.27	0.00	17.27	A9	0.45	0.90	0.41	0.41	10.00	0.00	10.00	100	9.80	3.97		0.0014	1	18.0	2.25			0.13	10.13	St. Mary/Fannin - Into Storm Sewer A-2		
Lateral A-9B	25.70	0.00	25.70	A9 (Grate)	0.45	0.90	0.41	0.41	10.00	0.00	10.00	100	9.80	3.97		0.0014	1	18.0	2.25			0.19	10.19	St. Mary - Into Storm Sewer A-1		
Lateral A-10	6.85	0.00	6.85	A10	0.28	0.90	0.25	0.25	10.00	0.00	10.00	100	9.80	2.47		0.0006	1	18.0	1.40			0.08	10.08	St. Mary - Into Storm Sewer A-1		
Lateral A-11	10.56	0.00	10.56	A11	2.57	0.50	1.29	1.29	10.00	0.00	10.00	100	9.80	12.59		0.0144	1	18.0	7.13			0.02	10.02	St. Mary - Into Storm Sewer A-1		
Storm Sewer A-1	770.83	563.54	207.29	St. Sew A-2, A-3 & B-1				15.55	16.27	0.00	16.27	100	8.80	136.84	139.47	0.0050	1	54.0	8.77	Junction Box	0.60	1.19	0.39	16.66		
	563.54	553.29	10.25					15.55	16.27	0.39	16.66	100	8.80	136.84	139.47	0.0050	1	54.0	8.77	45 Degree Bend	0.50	0.60	0.02	16.68		
	553.29	335.87	217.42					15.55	16.66	0.02	16.68	100	8.80	136.84	139.47	0.0050	1	54.0	8.77	45 Degree Bend	0.50	0.60	0.41	17.10		
	335.87	333.15	2.72	A11	2.57	0.50	1.29	16.84	16.68	0.41	17.10	100	8.80	148.19	150.82	0.0034	1	60.0	7.68	60 Degree Wye	0.60	0.20	0.01	17.10		
	333.15	322.65	10.50					16.84	17.10	0.01	17.10	100	8.80	148.19	150.82	0.0034	1	60.0	7.68	45 Degree Bend	0.40	0.37	0.02	17.13		
	322.65	249.85	72.80					16.84	17.10	0.02	17.13	100	8.80	148.19	150.82	0.0034	1	60.0	7.68	45 Degree Bend	0.30	0.27	0.16	17.28		
	249.85	55.91	193.94					16.84	17.13	0.16	17.28	100	8.80	148.19	150.82	0.0034	1	60.0	7.68	22 Degree Bend	0.60	0.55	0.42	17.70		
	55.91	18.49	37.42					16.84	17.28	0.42	17.70	100	8.80	148.19	150.82	0.0034	1	60.0	7.68	15 Degree Bend	0.60	0.55	0.08	17.79		
	18.49	0.00	18.49					16.84	17.70	0.08	17.79	100	8.80	148.19	150.82	0.0110	1	48.0	12.00	Junction Box	0.60	1.34	0.03	17.81		
Storm Sewer A-2	516.82	506.82	10.00	OS1	5.96	0.90	5.36	5.36	15.00	0.00	15.00	100	9.00	48.28		0.0243	1	27.0	12.14			0.01	15.01			
	506.82	478.90	27.92					0.00	5.36	15.00	0.01	15.01	100	8.95	48.01		0.0023	1	42.0	4.99	Manhole A	0.60	0.23	0.09	15.11	
	478.90	457.71	21.19					0.00	5.36	15.01	0.09	15.11	100	8.95	48.01		0.0023	1	42.0	4.99	45 Degree Bend	0.50	0.19	0.07	15.18	
	457.71	347.54	110.17	Lateral A-1	1.52	0.90	1.37	6.73	15.11	0.07	15.18	100	8.95	60.25		0.0036	1	42.0	6.26	60 Degree Wye	0.60	0.38	0.29	15.47		
	347.54	313.27	34.27	Lateral A-2	0.15	0.90	0.14	6.87	15.18	0.29	15.47	100	8.93	61.32	61.93	0.0038	1	42.0	6.44	60 Degree Wye	0.60	0.28	0.09	15.56		
	313.27	285.38	27.89	Lateral A-3	0.72	0.80	0.58	7.44	15.47	0.09	15.56	100	8.90	66.24		0.0043	1	42.0	6.89	60 Degree Wye	0.60	0.35	0.07	15.63		
	285.38	249.98	35.40	Lateral A-5b				0.00	7.44	15.56	0.07	15.63	100	8.90	66.24		0.0043	1	42.0	6.89	60 Degree Wye	0.60	0.29	0.09	15.71	
	249.98	245.98	4.00					0.00	7.44	15.63	0.09	15.71	100	8.90	66.24		0.0021	1	48.0	5.27	Pipe Expansion		0.04	0.01	15.73	
	245.98	241.29	4.69	Lateral A-5	0.32	0.90	0.29	7.73	15.71	0.01	15.73	100	8.90	68.81		0.0023	1	48.0	5.48	60 Degree Wye	0.60	0.21	0.01	15.74		
	241.29	156.95	84.34	Lateral A-4	1.33	0.65	0.86	8.60	15.73	0.01	15.74	100	8.90	76.50	77.13	0.0029	1	48.0	6.14	60 Degree Wye	0.60	0.31	0.23	15.97		
	156.95	102.52	54.43	Lateral A-6, A-7	1.62	0.50	0.81	9.41	15.74	0.23	15.97	100	8.85	83.24		0.0034	1	48.0	6.62	60 Degree Wye	0.60	0.33	0.14	16.11		
	102.52	27.67	74.85	Lateral A-8	0.37	0.50	0.19	9.59	15.97	0.14	16.11	100	8.80	84.40		0.0035	1	48.0	6.72	60 Degree Wye	0.60	0.29	0.19	16.29		
	27.67	0.00	27.67	Lateral A-9	0.45	0.90	0.41	10.00	16.11	0.19	16.29	100	8.80	87.96		0.0037	1	48.0	7.00	Junction Box A		0.92	0.07	16.36	Into Storm Sewer A-1	
Storm Sewer A-3	46.89	25.76	21.13	Lateral A-10	0.28	0.90	0.25	0.25	10.00	0.00	10.00	100	9.80	2.47		0.0006	1	18.0	1.40	60 Degree Wye	0.60	0.03	0.25	10.25		
	25.76	0.00	25.76	Lateral A-9B	0.45	0.90	0.41	0.66	10.00	0.00	10.00	100	9.80	6.44		0.0038	1	18.0	3.64	60 Degree Wye	0.60	0.19	0.12	10.12	Into Storm Sewer A-1	

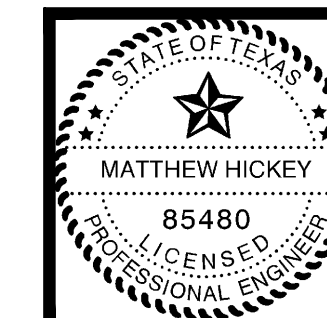
PLOTTED BY: GDAVIS ON 4/30/2009
 PLOT STYLE: ----
 PLOT SCALE: 1:25849
 H:\Projects\Rockwall\2005111\Record_AutoCAD_Drawings_for_CD\2005111-044_ST--SEWER-1.dwg
 REVISION: 4/24/09 - GDAVIS

This record drawing is a compilation of the sealed engineering drawing for this project; modified by addenda, change orders and information furnished by the contractor. The information shown on the record drawings that was provided by the contractor or others not associated with the design engineer cannot be verified for accuracy or completeness. This original sealed drawings are on file at the offices of Birkhoff, Hendricks & Conway, L.L.P.

BY MH DATE 4/25/09

THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.

DATE: 4/19/09



CITY OF ROCKWALL, TEXAS

FANNIN STREET
PROPOSED STORM SEWER
CALCULATIONS

BIRKHOFF, HENDRICKS & CONWAY, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: <u>M.H.</u>	PROJECT: <u>2005-111</u>	SHEET NO. <u>44</u>
DRAWN BY: <u>J.M.</u>	DATE: <u>APRIL, 2006</u>	