ON-SITE RUNOFF CALCULATIONS PHASE 8B

Drainage Area #	Area (Acres)	Runoff Coeff.	Intensity (in./hr.)	Time(conc.) (minutes)	Discharge (c.f.s.)	Comment
A-13	1.51	0.5	9.80	10.0	7.40	Developed - Single Family
A-14	0.78	0.5	9.80	10.0	3.82	Developed - Single Family
A-15	1.21	0.5	9.80	10.0	5.93	Developed - Single Family
A-16	0.23	0.5	9.80	10.0	1.13	Developed - Single Family
A-17	1.40	0.5	9.80	10.0	6.86	Developed - Single Family
B-1N	1.92	0.5	9.80	10.0	9.41	Developed - Single Family
B-1S	0.13	0.5	9.80	10.0	0.64	Developed - Single Family
B-2N	1.60	0.5	9.80	10.0	7.84	Developed - Single Family
B-2S	0.35	0.5	9.80	10.0	1.72	Developed - Single Family
B-3	1.27	0.5	9.80	10.0	6.22	Future - Recreation Center
B-4	3.14	0.5	9.80	15.4	15.39	Developed - Single Family
B-5	0.47	0.5	9.80	10.0	2.30	Developed - Single Family
C-1	1.92	0.5	9.80	10.0	9.41	From Phase 8B to off-site North to Caruth Lake
OS-1	0.12	0.5	9.80	10.0	0.59	From Phase 8B to off-site North to Phelps Lake
OS-2	0.32	0.5	9.80	10.0	1.57	From Phase 8B to off-site North to Phelps Lake
OS-3	1.51	0.5	9.80	10.0	7.40	From Phase 8B to off-site North to Caruth Lake
OS-4	1.77	0.5	9.80	10.0	8.67	From Phase 8B to off-site West to Caruth Lake
OS-5	2.13	0.5	9.80	10.0	10.44	From Phase 8B to off-site West to Caruth Lake
OS-6	1.67	0.5	9.80	10.0	8.18	From Phase 8B to off-site West to Caruth Lake
8A	0.51	0.5	9.80	10.0	2.50	From Phase 8B to off-site Existing Phase 6
8B	1.25	0.5	9.80	10.0	6.13	From Phase 8B to off-site Existing Phase 6

PIPE HYDRAULICS

RUNOFF COLLECTION POINT (Inlet or Manhole) UPSTREAM STATION	DOWNSTREAM STATION	Distance Between Collection Points	INCREMENTAL DRAINAGE AREA Area No.	Drainage Area	Runoff Coeff. "C"	Accumulated "CA"	Time at Upstream Station	Design Storm Frequency (yrs.)	Intensity "I" (inches/hr)	Storm Water Runoff "Q"	Slope of Hydraulic Gradient "S"	No. of Pipes or Boxes	Selected Storm Sewer Size HT.	Dia. W	Velocity in Sewer Between Collection Points "v"	Head loss Coeff. Kj	Velocity Head Loss at Upstream Station $V2^2/2g$	Velocity Head Loss at Downstream Station $Kj V_2^2/2g$	Velocity Head Loss $(V_2^2/2g - KV_1^2/2g)$	Velocity Head Loss $(V_2^2/4g - KV_1^2/4g)$	Total Velocity Headloss	Friction Loss = Sf x L	Upstream Hydraulic Grade	Downstream Hydraulic Grade	Flow Time in Sewer Distance / V x 60	Time of Downstream Station	Remarks
STA	STA	ft		acres			min	yrs	in/hr	cfs	ft/ft		in or ft		fps		ft	ft	ft	ft	ft	ft	ft	ft	min	min	
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
STM A2																											
																								516.85			TC=517.81
946.54	923.32	23.22	A-17	1.40	0.5	0.70	10	100	9.80	9.06	0.0016	1		24	2.89	1.25	0.13	0.16	0.13		0.130	0.04	516.72	516.68	0.13	10.13	TC=517.81
923.32	838.75	84.57	A-16	0.23	0.5	0.82	10.13		9.74	10.14	0.0020	1		24	3.24	0.60	0.16	0.10	0.00		0.000	0.17	516.68	516.51	0.44	10.57	
838.75	836.1	2.65	PIPE SIZE		0.5	0.82	10.57		9.54	10.14	0.0011	1		27	2.56	0.60	0.10	0.06	0.00		0.004	0.00	516.51	516.51	0.02	10.59	
836.1	690.58	145.52	A-15	1.21	0.5	1.42	10.59		9.54	15.74	0.0026	1		27	3.97	0.60	0.24	0.15	0.18		0.184	0.38	516.32	515.95	0.61	11.20	TC=519.82
690.58	585.67	104.91	A-14 & A-13	2.29	0.5	2.57	11.20		9.26	25.96	0.0070	1		27	6.55	0.60	0.67	0.40	0.52		0.519	0.74	515.43	514.69	0.27	11.46	TC=517.84
			Subtotal	5.13															EXISTING HGL IS FROM EXISTING STORM PHASE 8A					514.69			
STM B																											
																								502.71			
960.73	924.75	35.98	B-5	0.47	0.5	0.24	10	100	9.80	2.30	0.0002	1		21	0.96	1.25	0.01	0.02	0.01		0.014	0.01	502.69	502.69	0.62	10.62	TC=515.43
924.75	920.69	4.06	PIPE SIZE		0.5	0.24	10.62		9.52	2.24	0.0001	1		24	0.71	0.60	0.01	0.00	(0.01)		(0.010)	0.00	502.70	502.69	0.09	10.72	
920.69	789.37	135.38	B-4	3.14	0.5	1.81	10.72		9.48	17.11	0.0057	1		24	5.46	0.60	0.46	0.28	0.46		0.458	2.50	502.24	499.74	0.41	11.13	TC=515.18
789.37	487.29	437.46	MH		0.5	1.81	11.13		9.29	16.77	0.0055	1		24	5.35	1.60	0.45	0.71	0.17		0.167	1.60	499.57	497.97	1.36	12.49	
487.29	195.97	291.32	B-3	1.27	0.5	2.44	12.49		8.68	21.19	0.0088	1		24	6.76	0.60	0.71	0.43	(0.00)		(0.002)	2.55	497.97	495.41	0.72	13.21	TC= 511.26
195.97	193.24	2.73	PIPE SIZE		0.5	2.44	13.21		8.36	20.40	0.0025	1		30	4.17	0.60	0.27	0.16	(0.16)		(0.156)	0.01	495.57	495.56	0.01	13.22	
193.24	183.73	9.51	B-2	1.95	0.5	3.42	13.22		8.36	28.54	0.0048	1		30	5.83	0.60	0.53	0.32	0.37		0.366	0.05	495.20	495.15	0.03	13.25	TC=501.34
183.73	0	183.73	B-1	2.05	0.5	4.44	13.25		8.34	37.05	0.0082	1		30	7.57	0.60	0.89	0.53	0.57		0.573	1.50	494.58	493.08	0.40	13.66	TC=501.41
			Subtotal	8.88															EXISTING HGL IS FROM CARUTH LAKE					493.08			
STM C																											
																								495.23			
541.84	0	541.84	C-1	1.92	0.5	0.96	10	100	9.80	9.41	0.0080	1		18	5.34	1.25	0.44	0.55	0.44		0.442	4.35	494.79	490.44	1.69	11.69	TC=505.06
			Subtotal	1.92															EXISTING HGL IS FROM CARUTH LAKE					490.44			
STM A-13																											
																								515.64			
30.38	0	30.38	A-13	1.51	0.5	0.76	10.00	100	9.80	7.40	0.0022	1		21	3.08	1.25	0.15	0.18	0.15		0.148	0.07	515.49	515.43	0.16	10.16	TC=517.84
			Subtotal	1.51															EXISTING HGL IS FROM EXISTING STORM A-14 STA: 0+24.74					515.55			
STM A-14																											
																								515.89			
54.56	24.74	29.82	A-14	0.78	0.5	0.39	10	100	9.80	3.82	0.0006	1		21	1.59	1.25	0.04	0.05	0.04		0.039	0.02	515.85	515.83	0.31	10.31	TC=517.84
24.74	0	24.74	A-13	1.51	0.5	1.15	10.31	100	9.66	11.06	0.0049	1		21	4.61	0.60	0.33	0.20	0.28		0.281	0.12	515.55	515.43	0.09	10.40	TC=517.84
			Subtotal	2.29															EXISTING HGL IS FROM EXISTING STORM A2 STA: 6+90.58					515.43			
STM A-15																											
																								516.48			
45.24	0	45.24	A-15	1.21	0.5	0.61	10.00	100	9.80	5.93	0.0014	1		21	2.47	1.25	0.09	0.12	0.09		0.095	0.06	516.39	516.32	0.31	10.31	TC=519.82
			Subtotal	1.21															EXISTING HGL IS FROM EXISTING STORM A2 STA: 8+36.10					516.32			
STM A-16																											
																								516.69			
27.12	0	27.12	A-16	0.23	0.5	0.12	10	100	9.80	1.13	0.0000	1		24	0.36	1.25	0.00	0.00	0.00		0.002	0.00	516.68	516.68	1.26	11.26	TC=517.81
			Subtotal	0.23															EXISTING HGL IS FROM EXISTING STORM A2 STA: 8+36.10					516.68			
STM B-1																											
																								493.46			
25.98	0	25.98	B-1	2.05	0.5	1.03	10.00	100	9.80	10.05	0.0040	1		21	4.19	1.25	0.27	0.34	0.27		0.272	0.10	493.18	493.08	0.10	10.10	TC=501.41
			Subtotal	2.05															EXISTING HGL IS FROM CARUTH LAKE					493.08			
STM B-2																											
																								494.85			
8.08	0	8.08	B-2	1.95	0.5	0.98	10.00	100	9.80	9.56	0.0036	1		21	3.98	1.25	0.25	0.31	0.25		0.246	0.03	494.61	494.58	0.03	10.03	TC=501.34
			Subtotal	1.95															EXISTING HGL IS FROM EXISTING STORM B STA: 2+24.92					494.58			
STM B-3																											
																								498.12			
30.38	0	30.38	B-3	1.27	0.5	0.64	10.00	100	9.80	6.22	0.0015	1		21	2.59	1.25	0.10	0.13	0.10		0.105	0.05	498.02	497.97	0.20	10.20	TC=511.04
																			EXISTING HGL IS FROM EXISTING STORM B STA: 4+87.29					497.97			
STM B-4																											
																								503.05			
18.52	0	18.52	B-4	3.14	0.5	1.57	10.00	100	9.80	15.39	0.0094	1		21	6.41	1.25	0.64	0.80	0.64		0.639	0.17	502.41	502.24	0.05	10.05	TC=515.18
			Subtotal	3.14															EXISTING HGL IS FROM EXISTING STORM B STA: 9+20.70					502.24			

PHASE 8B INLETS

INLET No.	INLET Location	AREA RUNOFF Q=CIA Drainage Area No.	Design Storm Freq. (yrs.)	Time of Conc. (min.)	Intensity I (in./hr.)	Runoff Coeff. "C"	Area (Ac.)	Q (c.f.s.)	Upstream Inlet Bypass and Crossover (c.f.s.)	To/From	Total Gutter Flow (c.f.s.)	Gutter Capacity (c.f.s.)	Gutter Slope (%)	Crown Type	SELECTED INLET Length "Li" (Feet)	Type	Inlet Capacity (c.f.s.)	Cary-Over Downstream (c.f.s.)	Q100 Intercepted at Inlet (c.f.s.)
PROPOSED CURB INLETS																			
A-13	1+52.87 OPEN BAY COURT	A-13	100	10	9.80	0.5	1.51	7.40	2.2	TO EX. PH 8A	7.40	43.00	3.83	6" PARABOLIC	10	ON GRADE	5.2	2.20	5.2
A-14	1+52.87 OPEN BAY COURT	A-14	100	10	9.80	0.5	0.78	3.82			3.82	43.00	3.83	6" PARABOLIC	10	ON GRADE	5.2	0.00	3.8
A-15	1+42.58 ALLEY 5	A-15	100	10	9.80	0.5	1.21	5.93			5.93	45.00	4.00	6" PARABOLIC	15	ON GRADE	8.3	0.00	5.9
A-16	20+00 PHELPS LAKE DRIVE	A-16	100	10	9.80	0.5	0.23	1.13			1.13	21.50	0.81	6" PARABOLIC	10	SAG	20.0	0.00	1.1
A-17	20+00 PHELPS LAKE DRIVE	A-17	100	10	9.80	0.5	1.40	6.86			6.86	21.50	0.81	6" PARABOLIC	10	SAG	20.0	0.00	6.9
B-1	6+91.57 SHADY LANE DRIVE	B1-N + B1-S	100	10	9.80	0.5	2.05	10.05			10.05	45.00	4.20	6" PARABOLIC	10	SAG	20.0	0.00	10.0
B-2	6+91.57 SHADY LANE DRIVE	B2-N + B2-S	100	10	9.80	0.5	1.95	9.56	6.61	B-2 / B-3	16.16	45.00	4.20	6" PARABOLIC	10	SAG	20.0	0.00	16.2
B-3	FUTURE RECREATION CENTER	B-3	100	10	9.80	0.5	1.27	6.22	5.39	B-3 / B-4	11.61	42.50	3.50	6" PARABOLIC	10	ON GRADE	5.00	6.61	5.0
B-4	6+02.46 MOUNTAIN LAKE DRIVE	B-4	100	10	9.80	0.5	3.14	15.39			15.39	20.00	0.80	6" PARABOLIC	15	ON GRADE	10.0	5.39	10.0
B-5	5+72.88 MOUNTAIN LAKE DRIVE	B-5	100	10	9.80	0.5	0.47	2.30			2.30	20.00	0.80	6" PARABOLIC	15	ON GRADE	10.0	0.00	2.3
C-1	END OF PABNA COURT	C-1	100	10	9.80	0.5	1.92	9.41			9.41	17.80	0.60	6" PARABOLIC	10	SAG	21.0	0.00	9.4

Amount of runoff Open Bay Court passed on to existing storm line	2.20	cfs

ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN.

BENCHMARKS

1. X-chiseled in CL of Alley East of Morningstar Drive within the third lot north of Midnight Pass. Elevation = 513.26

2. PK Nail in CL of Caruth Lane & Alley intersection 150 feet +/- east of Morningstar Drive. Elevation = 491.68

NO.	REVISIONS DURING CONSTRUCTION	BY	DATE

AS-BUILT DRAWING

TO THE BEST OF JBI PARTNERS, INC. KNOWLEDGE HEREBY STATES THIS PLAN IS AS-BUILT. THE INFORMATION PROVIDED IS BASED ON CONSTRUCTION STAKING AND PAD VERIFICATION AT THE SITE AND INFORMATION PROVIDED BY THE CONTRACTOR.

NAME — DATE 06-04-2015

STATE OF TEXAS — DANIEL DEWEY 93961 LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DANIEL DEWEY, P.E. 93961. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

07-31-2014

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DRAINAGE AREA CALCULATIONS

Caruth Lakes Phase 8B

City of Rockwall, Texas

PROJECT NO. HOE132F

SHEET NO. 16

Drawing: H:\Projects\HOE132F\dwg\AS-BUILTS\16-8B DRAINAGE AREA CALCULATIONS.dwg Saved By: jchip Save Time: 4/22/2015 7:37 AM
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