

RUNOFF CALCULATIONS PHASE 7C									
Drainage Area	Area (Acres)	Runoff Coeff.	Intensity (in./hr.)	Time (conc.) (minutes)	Discharge (c.f.s.)	Comment			
"A"	"C"	"C"	"T"	T <sub>c</sub>	Q				
ON SITE DRAINAGE AREAS									
<b>STORM LINE 13</b>									
13	0.60	0.5	9.80	10.0	2.94	Developed - Single Family			
<b>STORM LINE 14</b>									
14-A	1.27	0.5	9.80	10.0	6.22	Developed - Single Family			
14-B	0.62	0.5	9.80	10.0	3.04	Developed - Single Family			
14-C	0.74	0.5	9.80	10.0	3.63	Developed - Single Family			
14-D	0.32	0.5	9.80	10.0	1.57	Developed - Single Family			
14-E	1.30	0.5	9.80	10.0	6.37	Developed - Single Family			
14-F	0.74	0.5	9.80	10.0	3.63	Developed - Single Family			
14-G	1.76	0.5	9.80	10.0	8.62	Developed - Single Family			
<b>STORM LINE 15</b>									
15A	0.62	0.5	9.80	10.0	3.04	Developed - Single Family			
<p><b>Note:</b> Storm Line 15 main will be constructed with Phase 7C and outfall into Caruth lakes. The runoff that will be collected in this line will be from Storm B on Phase 8B which totals to be <b>43.37 c.f.s.</b></p>									
<b>STORM LINE 16</b>									
<p><b>Note:</b> Storm Line 16 main will be constructed with Phase 7C and connected to the Ex. Line 16 that was built with Phase 7B. All laterals and inlets for Storm Line 16 will be built with Phase 7D, therefore the only areas being collected for Phase 7C main will be the Ex. Areas on Phase 7B which totals to be <b>55.18 c.f.s.</b></p>									
OFF SITE DRAINAGE AREAS									
<b>STORM LINE B</b>									
B-1	2.14	0.5	9.80	10.0	10.49	Developed - Single Family - Phase 8B			
B-2	2.74	0.5	9.80	10.0	13.43	Developed - Single Family - Phase 8B			
B-4	3.50	0.5	9.80	10.0	17.15	Developed - Single Family - Phase 8B			
B-5	0.47	0.5	9.80	10.0	2.30	Developed - Single Family - Phase 8B			
<b>STORM LINE 16</b>									
16-F	1.22	0.5	9.80	10.0	5.98	Developed - Single Family - Phase 7B			
16-G	0.67	0.5	9.80	10.0	3.28	Developed - Single Family - Phase 7B			
16-H	0.90	0.5	9.80	10.0	4.41	Developed - Single Family - Phase 7B			
16-I	0.77	0.5	9.80	10.0	3.77	Developed - Single Family - Phase 7B			
16-J	1.49	0.5	9.80	10.0	7.30	Developed - Single Family - Phase 7B			
16-K	1.48	0.5	9.80	10.0	7.25	Developed - Single Family - Phase 7B			
32.00									
<b>STORM LINE 18</b>									
18-A	0.51	0.5	9.80	10.0	2.50	Developed - Single Family - Phase 7B			
18-B	0.93	0.5	9.80	10.0	4.56	Developed - Single Family - Phase 7B			
7.06									
<b>STORM LINE 19</b>									
19-A	1.10	0.5	9.80	10.0	5.39	Developed - Single Family - Phase 7B			
19-B	1.45	0.5	9.80	10.0	7.11	Developed - Single Family - Phase 7B			
12.50									
FUTURE DRAINAGE AREAS PH 7D									
<b>STORM LINE 16</b>									
16-A	0.83	0.5	9.80	10.0	4.07	Developed - Single Family - Phase 7D			
16-B	0.31	0.5	9.80	10.0	1.52	Developed - Single Family - Phase 7D			
16-C	2.30	0.5	9.80	10.0	11.27	Developed - Single Family - Phase 7D			
16-D	1.70	0.5	9.80	10.0	8.33	Developed - Single Family - Phase 7D			
16-E	0.74	0.5	9.80	10.0	3.63	Developed - Single Family - Phase 7D			
28.81									
<b>STORM LINE 17</b>									
17-A	0.57	0.5	9.80	10.0	2.79	Developed - Single Family - Phase 7D			
17-B	0.86	0.5	9.80	10.0	4.21	Developed - Single Family - Phase 7D			
7.01									

No.	INLET Location	AREA RUNOFF Q=CIA							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		
		Drainage Area No.	Design Storm Freq. (yrs.)	Time of Conc. (min.)	Intensity I (in./hr.)	Runoff Coeff. "C"	Area (Ac.)	Q (c.f.s.)							Length "LI" (Feet)	Type	Inlet Capacity (c.f.s.)

**ONSITE INLETS PHASE 7C**

Storm Line	Inlet	Area	Design Storm Freq.	Time of Conc.	Intensity	Runoff Coeff.	Area	Q	To/From	Total Gutter Flow	Gutter Capacity	Gutter Slope	Crown Type	Length	Type	Inlet Capacity	Carry-Over	Q100 Intercepted
<b>STORM LINE 14</b>	14-A	22+98.21 HAMPTON BAY DRIVE	100	10	9.80	0.5	1.27	6.22		6.22	21.69	2.86	6" PARABOLIC	15		8.50	-	6.22
	14-B	22+98.21 HAMPTON BAY DRIVE	100	10	9.80	0.5	0.62	3.04	14-B / 13	3.78	21.69	2.86	6" PARABOLIC	10		5.20	-	3.78
	14-C	0+55.75 WHITE WATER LANE	100	10	9.80	0.5	0.74	3.63		3.63	26.96	4.42	6" PARABOLIC	10		5.00	-	3.63
	14-D	0+50.71 WHITE WATER LANE	100	10	9.80	0.5	0.32	1.57		1.57	26.96	4.42	6" PARABOLIC	5		2.25	-	1.57
	14-E	5+14.00 WHITEWATER LANE	100	10	9.80	0.5	1.30	6.37		6.37	-	SAG	6" PARABOLIC	5		10.00	-	6.37
	14-F	5+14.48 WHITEWATER LANE	100	10	9.80	0.5	0.74	3.63		3.63	-	SAG	6" PARABOLIC	5		10.00	-	3.63
14-G	13+18.83 ALLEY 10	100	10	9.80	0.5	1.76	8.62		8.62	-	SAG	5" INVERT	5		10.00	-	8.62	
<b>STORM LINE 13</b>																		
13	17+55.45 ALLEY 10	13	100	10	9.80	0.5	0.60	2.94		2.94	22.16	7.40	5" INVERT	5		2.20	0.74	2.20
<b>STORM LINE 15</b>																		
15-A	17+89.56 ALLEY 6	15-A	100	10	9.80	0.5	0.62	3.04		3.04	22.16	SAG	5" INVERT	5		10.00	-	3.04

**BENCHMARKS**

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

DATE: 04-13-2015

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.

05-17-2013



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**DRAINAGE CALCULATIONS**

Caruth Lakes Phase 7C  
City of Rockwall, Texas

PROJECT NO.	SHEET NO.
HOE132C	10

**PIPE HYDRAULICS**

UPSTREAM STATION	DOWNSTREAM STATION	Distance Between Collection Points	INCREMENTAL DRAINAGE AREA					Time at Upstream Station	Design Storm Frequency (yrs.)	Intensity "I" (inched/hr)	Storm Water Runoff "Q"	Slope of Hydraulic Gradient "S"	No. of Pipes or Boxes	Selected Storm Sewer Size	Velocity in Sewer Between Collection Points "V"	Head loss Coeff. "K"	Velocity Head Loss at Upstream Station V <sup>2</sup> /2g	Velocity Head Loss at Downstream Station V <sup>2</sup> /2g	Velocity Head Loss (V <sup>2</sup> /2g - V <sup>2</sup> /2g)	Flow Time in Sewer Distance / V	Time of Downstream Station	Remarks	Phase of Project				
			Area No.	Drainage Area	Runoff Coeff. "C"	Accumulated "CA"	ft																				
<b>STM LINE 13</b>																											
50.61	0	50.61	13	0.60	0.5	0.30	10	100	9.80	2.94	0.0008	1	18	1.67	1.25	0.04	0.05	0.04	0.04	0.04	0.04	494.89	494.85	0.51	10.51	TC=513.11	PH 7C
			Subtotal		0.60																						
BEGINNING HGL IS FROM STORM LINE 16 STA: 0+30.38 494.85																											
<b>STM LINE 14</b>																											
787.43	625.61	161.82	14-G	1.76	0.5	0.88	10	100	9.80	8.62	0.0067	1	18	4.89	1.25	0.37	0.46	0.37	0.372	1.09	506.56	505.47	0.55	10.55	TC=521.31	PH 7C	
625.61	618.99	6.62	14-F	0.74	0.5	1.25	10.55		9.55	11.94	0.0129	1	18	6.78	0.60	0.71	0.43	0.25	0.248	0.09	505.22	505.13	0.02	10.57	TC=518.86	PH 7C	
618.99	500.39	118.60	14-E	1.30	0.5	1.90	10.57		9.55	18.14	0.0298	1	18	10.29	0.60	1.64	0.93	1.22	1.217	3.54	503.91	500.38	0.19	10.76	TC=518.86	PH 7C	
500.39	238.85	261.74	14-C	0.74	0.5	1.90	10.76		9.46	17.97	0.0063	1	24	5.74	0.60	0.51	0.31	0.49	(0.476)	1.85	500.85	499.70	0.76	11.52			
238.85	140.21	360.18	14-C & 14-D & 14-H	1.06	0.5	2.43	11.52		9.12	22.16	0.0096	1	24	7.07	0.60	0.78	0.47	0.67	0.470	3.46	499.73	495.28	0.85	12.37	TC=505.93	PH 7C	
140.21	133.47	6.74	14-B	0.62	0.5	2.74	12.37		8.74	24.68	0.0119	1	24	7.38	0.60	0.96	0.58	0.50	0.498	0.08	494.78	494.70	0.01	12.38	TC=504.55	PH 7C	
133.47	127.11	6.36	14-A	1.27	0.5	3.38	12.38		8.73	29.47	0.0170	1	24	9.41	0.60	1.37	0.82	0.80	0.796	0.11	493.90	493.80	0.01	12.39	TC=503.86	PH 7C	
			Subtotal		6.75																						
HGL IS FROM STM LINE 15 STA: 8+15.63 493.80																											
<b>STM LINE 15</b>																											
815.63	619.75	195.88	STM LINE 16 & 14	25.18	0.5	12.59	10	100	9.80	123.38	0.0022	1	60	6.30	0.25	0.62	0.15	0.62	0.616	0.44	494.23	493.80	0.52	10.52			
619.75	478.49	141.26	15-A	0.62	0.5	12.90	10.52	100	9.57	123.43	0.0022	1	60	6.30	0.60	0.62	0.37	0.46	0.463	0.32	493.33	493.02	0.37	10.89			
478.49	0	478.49	STM LINE B	8.85	0.5	17.33	10.89	100	9.40	162.86	0.0039	1	60	8.32	0.60	1.07	0.64	0.70	0.704	1.87	492.31	490.44	0.96	11.85	TC=503.25	PH 7C	
			Subtotal		34.65																						
BEGINNING HGL IS FROM CARUTH LAKES 490.44																											
<b>STM LINE 16</b>																											
2259.74	2220.12	39.62	16-K	1.48	0.5	0.74	10.00	100	9.80	7.25	0.0048	1	18	4.11	1.25	0.26	0.33	0.26	0.263	0.19	514.39	514.20	0.16	10.16	TC=533.10	PH 7B	
2220.12	2216.12	4	PEPE SIZE	0.5	0.74	10.16	100	9.73	7.20	0.0010	1	24	2.30	0.60	0.08	0.05	0.25	(0.247)	0.00	514.45	514.44	0.03	10.19				
2216.12	2037.65	178.47	16-J	1.49	0.5	1.49	10.19	100	9.72	14.43	0.0041	1	24	4.60	0.60	0.33	0.20	0.28	0.280	0.73	514.16	513.44	0.65	10.84	TC=533.10	PH 7B	
2037.65	2033.65	4	PEPE SIZE	0.5	1.49	10.84	100	9.43	14.00	0.0020	1	27	3.53	0.60	0.19	0.12	0.09	(0.090)	0.01	513.44	513.43	0.02	10.85				
2033.65	1848.59	185.06	16-I	0.77	0.5	1.87	10.85	100	9.42	17.61	0.0032	1	27	4.44	0.60	0.31	0.18	0.19	0.190	0.60	513.24	512.64	0.69	11.55	TC=530.05	PH 7B	
1848.59	1844.58	4.01	STM LINE 19	2.55	0.5	1.87	11.55	100	9.11																		