THE VILLAGES AT SHADY CREEK
15 YEAR, 20 MINUTE STORM SEWER HYDRAULICS

LineID	LineSize	FlowRate	InvertDn	InvertUp	LineLength	LineSlope	VelAve	Grnd/RimElev Dn	Grnd/RimElev Up	HGLDn	HGLUp	Rim-Hw	CriticalDepth	EGLDn	EGLUp	EnergyLoss	CapacityFull	n-valuePipe
	(in)	(cfs)	(ft)	(ft)	(ft)	(%)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	
1-2	24	4.02	550.40	550.87	94.00	0.50	1.41	552.40	552.87	552.40	552.42	0.41	0.70	552.43	552.46	0.031	15.99	0.013
3-4	24	21.44	546.00	546.40	40.00	1.00	7.82	548.00	552.50	548.00	548.47	3.08	1.75	548.95	549.42	0.471	22.62	0.013
5-6	30	20.53	550.53	550.72	38.00	0.50	4.22	553.41	555.62	553.03	553.11	2.27	1.54	553.30	553.39	0.089	29.00	0.013
6-7	24	16.94	550.92	551.09	35.00	0.49	5.39	555.62	555.62	553.35	553.54	1.85	1.48	553.80	553.99	0.196	15.77	0.013
7-8	24	12.78	551.29	551.53	48.52	0.49	4.07	555.62	557.00	553.77	553.92	2.95	1.28	554.03	554.18	0.155	15.91	0.013
8-9	24	12.34	551.73	552.86	113.00	1.00	4.57	557.00	559.50	554.05	554.27	5.02	1.26	554.29	554.69	0.403	22.62	0.013
9-10	18	10.27	553.06	559.86	170.00	4.00	6.27	559.50	566.50	554.48	561.09 j	5.41	1.23	555.16	561.77	0.000	21.00	0.013
10-11	15	7.14	560.06	570.37	172.00	5.99	6.49	566.50	576.70	561.09	571.44	5.26	1.07	561.73	572.07	0.000	15.81	0.013
11-12	12	2.79	570.57	578.47	93.00	8.49	4.25	576.70	583.50	571.44	579.19 j	4.31	0.72	571.77	579.52	0.000	10.38	0.013
12-13	12	1.81	578.67	589.55	68.00	16.00	4.16	583.50	595.00	579.19	590.12	4.88	0.57	579.42	590.36	0.000	14.25	0.013
11-14	15	3.02	570.57	572.13	104.00	1.50	3.80	576.70	578.00	571.44	572.83 j	5.17	0.70	571.72	573.11	0.000	7.91	0.013
14-15	15	3.02	572.33	572.54	21.04	1.00	4.73	578.00	577.68	572.93	573.24	4.44	0.70	573.22	573.52	0.000	6.45	0.013
15-15A	12	1.51	572.74	573.09	35.00	1.00	3.76	577.68	577.68	573.24	573.61	4.07	0.52	573.45	573.82	0.000	3.56	0.013
16-17	24	24.89	545.00	545.38	38.00	1.00	7.92	547.00	551.00	547.00	547.46	2.56	1.76	547.98	548.44	0.460	22.62	0.013
18-18.1	15	4.11	552.00	552.56	28.00	2.00	3.35	553.52	558.40	553.77	553.88	4.44	0.82	553.94	554.06	0.113	9.13	0.013
18.1-19	12	4.11	552.76	557.81	116.00	4.35	5.49	558.40	565.34	553.96	558.67 j	6.67	0.86	554.39	559.18	1.493	7.43	0.013
19-20	12	2.98	558.01	558.71	35.00	2.00	5.12	565.34	565.34	558.67	559.45	5.89	0.74	559.02	559.81	0.000	5.04	0.013
20-21	12	1.85	558.91	560.02	110.50	1.00	4.10	565.34	564.80	559.45	560.60	4.20	0.58	559.69	560.84	0.000	3.57	0.013
22-23	24	18.42	552.00	552.64	32.00	2.00	6.47	554.00	557.60	554.00	554.18 j	3.42	1.54	554.53	554.96	0.226	31.99	0.013
23-24	24	17.65	552.84	556.04	110.00	2.91	7.39	557.60	564.54	554.18	557.55	6.99	1.51	554.93	558.30	0.000	38.58	0.013
24-25	24	14.97	556.24	556.59	35.00	1.00	6.63	564.54	564.54	557.55	557.98	6.56	1.39	558.19	558.62	0.000	22.62	0.013
25-26	24	12.11	556.79	557.89	110.00	1.00	6.03	564.54	565.20	557.98	559.14	6.06	1.25	558.52	559.67	0.000	22.62	0.013
26-27	24	9.21	558.09	559.02	93.00	1.00	5.41	565.20	567.20	559.14	560.10	7.10	1.08	559.58	560.54	0.000	22.62	0.013
27-28	15	6.70	559.22	563.65	177.36	2.50	6.68	567.20	573.50	560.10	564.69	8.81	1.04	560.69	565.28	0.000	10.21	0.013
28-29	12	6.23	567.65	580.45	64.00	20.00	13.53	573.50	591.30	568.08	581.41	9.89	0.96	569.09	582.42	0.000	15.93	0.013
29-30	12	4.95	584.45	589.90	83.79	6.50	9.19	591.30	596.00	584.98	590.81	5.19	0.91	585.65	591.49	0.000	9.08	0.013
30-31	12	4.95	590.10	593.16	47.00	6.51	7.42	596.00	599.32	590.81	594.07	5.25	0.91	591.49	594.75	0.000	9.09	0.013
31-32	12	3.20	593.36	606.09	153.96	8.27	5.15	599.32	613.47	594.07	606.86	6.61	0.77	594.46	607.24	0.000	10.24	0.013
32-33	12	2.82	606.29	606.99	35.00	2.00	5.41	613.47	613.47	606.86	607.71	5.76	0.72	607.19	608.05	0.000	5.04	0.013
33-34	12	2.32	607.19	608.37	118.00	1.00	4.56	613.47	613.20	607.78	609.02	4.18	0.65	608.06	609.31	0.000	3.56	0.013
28-35	12	0.47	563.85	565.77	96.00	2.00	1.62	573.50	570.00	564.69	566.05 j	3.95	0.28	564.79	566.16	0.000	5.04	0.013
31-36	12	1.25	593.36	593.72	36.24	0.99	2.76	599.32	600.25	594.07	594.19 j	6.06	0.47	594.26	594.37	0.000	3.55	0.013
36-37	12	0.75	593.92	595.07	115.00	1.00	3.26	600.25	600.20	594.23	595.43	4.77	0.36	594.37	595.56	0.000	3.56	0.013
100-100.1	36	64.21	576.50	576.98	24.00	2.00	9.52	579.92	585.20	579.50	579.55	5.65	2.57	580.78	581.09	0.215	94.32	0.013
100.1-101	30	64.21	577.18	591.90	82.00	17.95	13.28	585.20	601.42	579.55	594.32	7.10	2.42	582.27	597.03	0.000	173.76	0.013
102-103	12	1.61	619.50	621.14	164.00	1.00	2.89	620.50	626.63	620.50	621.68 j	4.95	0.54	620.57	621.90	0.692	3.56	0.013
103-104	12	1.06	621.34	621.69	35.00	1.00	3.60	626.63	626.63	621.71	622.12	4.51	0.43	621.88	622.29	0.000	3.56	0.013
105-106	15	3.10	602.50	603.30	40.00	2.00	3.43	603.75	613.00	603.75	604.01 j	8.99	0.71	603.85	604.30	0.168	9.13	0.013
106-107	12	3.10	603.50	615.50	150.00	8.00	6.31	613.00	621.23	604.01	616.25	4.98	0.75	604.38	616.62	0.000	10.07	0.013
107-108	12	1.80	615.70	616.05	35.39	0.99	3.96	621.23	621.36	616.25	616.62	4.74	0.57	616.49	616.86	0.000	3.54	0.013
109-110	12	2.70	598.00	598.46	46.04	1.00	3.44	599.00	609.00	600.70	600.96	8.01	0.70	600.88	601.15	0.265	3.56	0.013
110-111	12	2.70	603.51	611.64	116.04	7.01	7.46	609.00	617.05	603.88	612.34	4.71	0.70	604.20	612.67	0.000	9.43	0.013
112-113	15	3.16	597.50	598.38	44.00	2.00	2.58	598.75	609.00	600.70	600.81	8.18	0.72	600.80	600.91	0.105	9.13	0.013
113-114	12	3.16	604.20	614.70	140.00	7.50	8.00	609.00	621.60	604.59	615.46	6.14	0.76	604.97	615.84	0.000	9.75	0.013
114-115	12	3.16	614.90	615.38	24.00	2.00	5.85	621.60	620.74	615.47	616.14	4.60	0.76	615.85	616.52	0.000	5.04	0.013
115-116	12	1.22	615.58	615.93	35.00	1.00	3.05	620.74	620.74	616.14	616.40 j	4.34	0.47	616.32	616.58	0.000	3.56	0.013
117-118	12	1.24	607.00	607.36	36.00	1.00	1.92	608.00	615.30	608.00	608.02	7.26	0.47	608.04	608.10	0.059	3.56	0.013
118-119	12	1.24	610.40	619.63	142.00	6.50	5.76	615.30	625.08	610.65	620.10	4.98	0.47	610.83	620.28	0.000	9.08	0.013
119-120	12	0.68	619.83	620.18	35.00	1.00	3.17	625.08	625.08	620.13	620.52	4.56	0.34	620.25	620.65	0.000	3.56	0.013
121-122	30	32.18	600.34	600.76	42.00	1.00	6.74	602.84	606.50	602.84	603.00	3.08	1.93	603.51	603.75	0.243	41.01	0.013
122-123	24	32.18	600.96	608.32	54.00	13.63	10.35	606.50	618.63	603.42	610.21 j	8.42	1.89	605.05	611.91	1.020	83.50	0.013
123-124	24	30.74	608.52	609.90	55.00	2.51	10.45	618.63	618.63	610.21	611.77	6.86	1.87	611.78	613.34	0.000	35.83	0.013
124-125	24	28.00	610.10	611.50	56.00	2.50	9.64	618.63	619.42	611.77	613.33	6.09	1.83	613.12	614.67	0.000	35.76	0.013
126-127	12	2.28	616.00	616.76	38.00	2.00	2.90	617.00	623.58	618.09	618.25	5.24	0.65	618.22	618.38	0.156	5.04	0.013
127-128	12	0.58	616.96	618.06	55.00	2.00	1.68	623.58	623.58	618.34	618.39 j	5.09	0.32	618.35	618.49	0.146	5.04	0.013
129-130	18	7.17	616.30	616.66	36.00	1.00	4.06	617.80	622.00	618.09	618.26	3.56	1.04	618.35	618.51	0.168	10.50	0.013
130-131	15	5.70	616.86	621.65	126.00	3.80	5.12	622.00	629.10	618.44	622.62 j	6.48	0.97	618.77	623.10	1.043	12.59	0.013
131-132	15	3.95	621.85	622.20	35.00	1.00	4.88	629.10	629.10	622.62	623.00	6.10	0.80	622.97	623.35	0.000	6.46	0.013
132-133	12	2.00	622.40	623.50	110.00	1.00	4.04	629.10	628.70	623.00	624.10	4.60	0.60	623.26	624.36	0.000	3.56	0.013
133-134	12	0.67	623.70	624.90	120.00	1.00	2.55	628.70	629.50	624.10	625.24 j	4.26	0.34	624.23	625.37	0.000	3.56	0.013
135-136	24	14.82	617.00	618.06	53.07	2.00	7.42	619.00	626.80	618.09	619.45	6.00	1.39	618.72	620.08	0.000	31.96	0.013
136-137	15	5.67	618.26	624.03	164.78	3.50	5.15	626.80	629.20	619.45	624.99 j	4.21	0.96	619.93	625.48	0.000	12.08	0.013
137-138	15	4.65	624.23	625.03	80.00	1.00	5.40	629.20	630.70	625.02	625.90	4.80	0.87	625.42	626.30	0.000	6.46	0.013
138-139	12	2.03	625.23	625.97	74.00	1.00	3.84	630.70	632.50	625.90	626.58 j	5.92	0.61	626.16	626.83	0.000	3.56	0.013
139-140	12	1.58	626.17	627.37	120.00	1.00	4.05	632.50	633.02	626.64	627.90	5.12	0.53	626.85	628.12	0.000	3.56	0.013
140-141	12	0.64	627.57	627.92	35.00	1.00	2.80	633.02	633.02	627.90	628.25	4.77	0.33	628.02	628.37	0.000	3.56	0.013
136-142	12	3.48	618.26	624.10	145.99	4.00	4.81	626.80	630.06	620.80	624.90 j	5.16	0.80	621.10	625.31	1.433	7.12	0.013
136-143	12	4.41	618.26	628.80	139.60	7.55	5.82	626.80	636.40	620.80	629.68 j	6.72	0.88	621.29	630.24	2.034	9.79	0.013
143-144	12	3.06	629.00	629.70	35.30	1.98	5.12	636.40	636.31	629.68	630.45	5.86	0.75	630.05	630.81	0.000	5.02	0.013
144-145	12	1.47	629.90	631.05	115.00	1.00	3.47	636.31	636.00	630.45	631.56 j	4.44	0.51	630.65	631.77	0.000	3.56	0.013
145-146	12	0.76	631.25	634.87	181.00	2.00	3.28	636.00	640.50	631.56	635.23	5.27	0.36	631.70	635.37	0.000	5.04	0.013
138-147	12	1.95	625.23	631.30	135.00	4.50	3.73	630.70	636.83	625.90	631.90 j	4.93	0.60	626.15	632.14	0.000	7.55	0.013
147-148	12	0.97	631.50	631.85	35.00	1.00	3.27	636.83	636.83	631.90	632.26	4.57	0.41	632.05	632.42	0.000	3.56	0.013
200-201	60	195.24	580.50	581.00	25.00	2.00	10.30	586.08	589.30	585.50	585.41	3.40	3.99	587.04	587.17	0.133	368.36	0.013
201-202	54	195.24	581.20	595.02	85.00	16.26	12.67	589.30	605.42	585.90	599.02	6.40	4.00	588.25	601.68	0.792	792.99	0.013
203-204	15	5.85	601.20	601.88	34.00	2.00	4.77	602.45	607.50	605.00	605.28	1.69	0.98	605.35	605.63	0.279	9.13	0.013
204-205	12	3.88	602.08	607.48	60.00	9.00	5.24	607.50	612.90	605.81	608.32 j	4.58	0.84	606.19	608.79	0.700	10.68	0.013
205-206	12	3.88	607.68	614.58	138.00	5.00	6.45	612.90	620.45	608.32	615.42	5.03	0.84	608.79	615.89	0.000	7.96	0.013
207-208	12	0.79	601.40	602.62	61.00	2.00	1.01	602.40	616.00	605.00	605.03	10.95	0.37	605.02	605.05	0.030	5.04	0.013
209-210	48	104.04	600.16	602.00	46.00	4.00	9.14	604.16	611.76	605.00	605.09	6.67	3.09	606.07	606.64	0.257	287.30	0.013
210-211	48	101.94	602.20	603.03	55.00	1.51	10.20	611.76	611.76	605.09	606.09	5.67	3.06	606.61	607.61	0.000	176.47	0.013
211-212	36	35.69	603.23	605.70	247.00	1.00	6.26	611.76	616.70	606.09	607.64 j	9.06	1.94	606.93	608.49	0.000	66.69	0.013
212-213	30	34.96	605.90	606.80	60.00	1.50	8.93	616.70	620.12	607.64	608.81	11.31	2.01	608.71	609.87	0.000	50.23	0.013
213-214	30	24.24	607.00	607.53	35.00	1.51	6.66	620.12	620.12	608.81	609.21 j	10.91	1.68	609.55	609.95	0.000	50.47	0.013
214-215	24	22.89	607.73	609.13	63.36	2.21	8.62	620.12	623.27	609.21	610.83	12.44	1.70	610.21	611.84	0.000	33.62	0.013
215-216	24	19.39	609.33	610.95	81.00	2.00	7.47	623.27	622.00	610.83	612.53	9.47	1.58	611.65	613.35	0.000	31.99	0.013
216-217	24	19.39	611.15	612.51	68.00	2.00	7.82	622.00	620.70	612.53	614.09	6.61	1.58	613.35	614.91	0.000	31.99	0.013
217-218	24	18.52	612.71	615.10	159.00	1.50	7.55	620.70	621.50	614.09	616.65	4.85	1.55	614.88	617.43	0.000	27.73	0.013
218-219	18	8.36	615.30	618.70	170.00	2.00	5.45	621.50	625.50	616.65	619.82 j	5.68	1.12	617.19	620.36	0.000	14.85	0.013
219-220	15	6.48	618.90	628.10	230.00	4.00	6.36	625.50	634.70	619.82	629.12	5.58	1.02	620.38	629.69	0.000	12.91	0.013
220-221	12	2.21	628.30	635.65	210.00	3.50	3.69	634.70	641.00	629.12	636.29 j	4.71	0.64	629.40	636.56	0.000	6.66	0.013
211-222	36	64.22	603.23	605.03	60.04	3.00	9.60	611.76	615.00	606.09	607.60	7.40	2.57	607.63	609.14	0.000	115.48	0.013
222-223	36	55.93	605.23	613.41	270.00	3.03	9.24	615.00	621.00	607.60	615.83	2.87	2.42	608.90	617.13	0.000	116.09	0.013
223-224	24	20.23	613.61	623.23	137.39	7.00	6.95	621.00	631.03	618.13	624.84 j	6.19	1.61	618.78	625.71	1.116	59.85	0.013
224-224.1	24	17.87	623.43	623.71	27.69	1.01	7.25	631.03	631.52	624.84	625.23	6.29	1.52	625.60	625.99	0.000	22.75	0.013
224.1-225	24	17.87	623.91	624.26	35.00	1.00	7.47	631.52	631.58	625.25	625.78	5.80	1.52	626.01	626.54	0.000	22.62	0.013
225-226	24	15.89	624.46	625.74	127.63	1.00	6.90	631.58	631.50	625.78	627.18	4.32	1.44	626.46	627.85	0.000	22.65	0.013
226-227	24	14.47	625.94	628.14	158.03	1.39	6.71	631.50	636.30	627.18	629.51	5.86	1.37	627.80	630.13	0.000	26.69	0.013
227-228	18	8.95	628.34	630.28	129.00	1.50	6.09	636.30	639.00	629.51	631.44 j	7.56	1.16	630.09	632.02	0.000	12.88	0.013
228-229	18	8.03	630.48	633.70	215.00	1.50	6.27	639.00	639.00	631.44	634.80	4.20	1.10	631.96	635.32	0.000	12.85	0.013
229-230	15	5.60	633.90	637.36	230.27	1.50	5.75	639.00	644.50	634.80	638.32	6.18	0.96	635.28	638.80	0.000	7.92	0.013
230-231	12	2.58	637.56	639.40	122.50	1.50	4.26	644.50	645.00	638.32	640.09 j	4.91	0.69	638.63	640.40	0.000	4.36	0.013
231-232	12	1.22	639.60	640.12	35.00	1.49	3.31	645.00	645.00	640.09	640.59 j	4.41	0.47	640.27	640.77	0.000	4.34	0.013
222-233	15	5.74	607.37	610.49	156.25	2.00	6.74	615.00	616.94	608.09	611.46	5.48	0.97	608.58	611.95	0.000	9.12	0.013
233-234	15	3.64	610.69	611.04	35.00	1.00	4.59	616.94	616.94	611.46	611.81	5.13	0.77	611.79	612.14	0.000	6.46	0.013
234-235	12	2.11	611.24	611.59	35.00	1.00	4.34	616.94	617.90	611.81	612.21	5.69	0.62	612.07	612.47	0.000	3.56	0.013
235-236	12	0.36	611.79	613.63	92.00	2.00	1.76	617.90	618.90	612.21	613.88 j	5.02	0.25	612.30	613.97	0.000	5.04	0.013
235-237	12	1.27	611.79	612.71	23.00	4.00	3.75	617.90	618.37	612.21	613.19	5.18	0.48	612.40	613.37	0.000	7.12	0.013
223-238	30	33.92	613.61	617.07	237.00	1.46	7.75	621.00	626.50	615.83	619.05 j	5.96	1.98	616.86	620.08	0.000	49.55	0.013
238-239	30	28.41	617.27	619.52	155.00	1.45	7.52	626.50	629.80	619.05	621.34	8.46	1.82	619.91	622.20	0.000	49.41	0.013
239-240	30	27.20	619.72	621.17	145.00	1.00	7.70	629.80	632.80	621.34	622.95	8.04	1.78	622.16	623.77	0.000	41.01	0.013
240-241	30	21.64	621.37	622.59	122.50	1.00	6.63	632.80	633.20	622.95	624.17	9.03	1.58	623.63	624.85	0.000	40.93	0.013
241-242	24	19.50	622.79	623.32	35.00	1.51	7.87	633.20	633.20	624.17	624.91	8.29	1.59	625.00	625.73	0.000	27.83	0.013
242-243	24	15.99	623.52	624.81	129.00	1.00	6.74	633.20	630.80	624.91	626.25	4.55	1.44	625.58	626.93	0.000	22.62	0.013
243-244	24	14.75	625.01	626.51	150.21	1.00	6.79	630.80	634.10	626.25	627.89	6.21	1.38	626.88	628.52	0.000	22.60	0.013
244-245	24	13.10	626.71	629.41	270.00	1.00	6.41	634.10	636.90	627.89	630.71	6.19	1.30	628.46	631.28	0.000	22.62	0.013
245-246	18	11.90	629.61	631.41	60.00	3.00	7.91	636.90	636.50	630.71	632.72	2.44	1.31	631.53	633.54	0.000	18.19	0.013
246-247	15	8.94	631.61	637.64	134.00	4.50	7.66	636.50	644.25	632.72	638.79	5.46	1.15	633.61	639.68	0.000	13.70	0.013
247-248	15	6.93	637.84	638.89	35.00	3.00	6.59	644.25	644.25	638.79	639.94	4.31	1.05	639.40	640.56	0.000	11.18	0.013
248-249	15	4.20	639.09	639.50	40.96	1.00	4.78	644.25	645.00	639.94	640.33 j	4.67	0.83	640.31	640.70	0.000	6.46	0.013

THE VILLAGES AT SHADY CREEK
15 YEAR, 20 MINUTE STORM SEWER HYDRAULICS

LineID	LineSize	FlowRate	InvertDn	InvertUp	LineLength	LineSlope	VelAve	Grnd/RimElev Dn	Grnd/RimElev Up	HGLDn	HGLUp	Rim-Hw	CriticalDepth	EGLDn	EGLUp	EnergyLoss	CapacityFull	n-valuePipe
	(in)	(cfs)	(ft)	(ft)	(ft)	(%)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	
249-250	15	3.73	639.70	640.70	100.00	1.00	5.04	645.00	647.80	640.38	641.48	6.32	0.78	640.72	641.81	0.000	6.46	0.013
250-251	15	3.73	640.90	641.22	32.00	1.00	5.04	647.80	647.96	641.58	642.00	5.96	0.78	641.92	642.33	0.000	6.46	0.013
251-252	15	2.38	641.42	641.77	35.00	1.00	4.11	647.96	647.96	642.00	642.39	5.57	0.62	642.24	642.63	0.000	6.46	0.013
252-253	12	1.03	641.97	642.51	54.00	1.00	3.28	647.96	648.45	642.39	642.94	5.51	0.43	642.55	643.10	0.000	3.56	0.013
253-254	12	0.63	642.71	643.61	90.00	1.00	3.10	648.45	647.70	642.99	643.94	3.76	0.33	643.12	644.06	0.000	3.56	0.013
238-255	12	4.11	617.27	621.56	122.50	3.50	5.49	626.50	626.93	620.54	622.42 j	4.51	0.86	620.97	622.93	1.576	6.66	0.013
255-256	12	2.10	621.76	622.11	35.00	1.00	3.98	626.93	626.93	622.42	622.73 j	4.20	0.62	622.68	622.99	0.000	3.56	0.013
240-257	12	4.64	621.37	627.44	110.31	5.50	6.08	632.80	635.20	624.76	628.34 j	6.86	0.90	625.30	628.94	1.765	8.35	0.013
257-258	12	3.67	627.64	635.20	137.50	5.50	5.82	635.20	640.37	628.34	636.02	4.35	0.82	628.78	636.46	0.000	8.35	0.013
258-259	12	2.08	635.40	635.75	35.00	1.00	4.10	640.37	640.37	636.02	636.37	4.00	0.62	636.28	636.63	0.000	3.56	0.013
246-260	12	1.55	631.61	633.92	154.00	1.50	2.69	636.50	639.50	634.06	634.48	4.84	0.53	634.12	634.66	0.542	4.36	0.013
248-261	12	1.83	639.09	639.59	50.00	1.00	3.23	644.25	644.20	639.94	640.17 j	4.03	0.58	640.18	640.40	0.000	3.56	0.013
227-262	12	4.49	628.34	639.20	144.77	7.50	5.91	636.30	644.56	630.44	640.09 j	4.47	0.89	630.95	640.66	2.180	9.75	0.013
262-263	12	2.18	639.40	639.75	35.00	1.00	3.99	644.56	644.56	640.09	640.38 j	4.18	0.63	640.36	640.65	0.000	3.56	0.013
230-264	12	2.01	637.56	637.90	23.00	1.48	3.60	644.50	642.50	638.32	638.50 j	4.00	0.60	638.57	638.76	0.000	4.33	0.013
213-265	18	10.01	612.34	615.82	115.91	3.00	8.52	620.12	623.39	613.13	617.04	6.35	1.22	613.79	617.70	0.000	18.20	0.013
265-266	18	7.80	616.02	616.72	35.00	2.00	5.91	623.39	623.39	617.04	617.80	5.59	1.08	617.55	618.31	0.000	14.85	0.013
266-267	15	5.94	616.92	618.30	68.92	2.00	6.08	623.39	625.12	617.80	619.28	5.84	0.98	618.31	619.79	0.000	9.14	0.013
267-268	12	2.16	618.50	619.16	66.00	1.00	3.71	625.12	623.70	619.28	619.79 j	3.91	0.63	619.55	620.06	0.000	3.56	0.013
267-269	12	2.05	618.50	619.55	35.00	3.00	3.59	625.12	625.12	619.28	620.16 j	4.96	0.61	619.54	620.42	0.000	6.17	0.013
215-270	12	3.11	614.23	615.05	55.00	1.49	5.45	623.27	623.27	614.86	615.81	7.47	0.75	615.23	616.18	0.000	4.35	0.013
270-271	12	2.72	615.25	615.76	51.15	1.00	4.79	623.27	621.75	615.91	616.47	5.28	0.71	616.23	616.79	0.000	3.56	0.013
271-272	12	1.31	615.96	616.34	37.88	1.00	3.38	621.75	621.39	616.47	616.82 j	4.57	0.48	616.66	617.01	0.000	3.57	0.013
218-273	18	8.97	615.30	615.73	29.17	1.47	5.74	621.50	622.47	616.65	616.89 j	5.58	1.16	617.23	617.47	0.000	12.75	0.013
220-276	12	2.39	628.30	628.99	53.66	1.29	3.89	634.70	635.33	629.12	629.65 j	5.68	0.66	629.42	629.94	0.000	4.04	0.013
278-279	36	71.43	600.00	602.56	64.00	4.00	10.11	603.42	614.70	605.00	605.73	7.77	2.67	606.59	607.32	0.734	133.39	0.013
279-280	36	70.85	602.76	606.46	148.00	2.50	10.35	614.70	620.00	606.93	609.13	10.87	2.67	608.49	610.90	1.579	105.45	0.013
280-281	36	66.81	606.66	607.91	50.00	2.50	10.49	620.00	623.70	609.13	610.52	13.18	2.61	610.75	612.15	0.000	105.45	0.013
281-282	36	66.05	608.11	610.66	102.00	2.50	10.50	623.70	617.92	610.52	613.26	4.66	2.60	612.12	614.86	0.000	105.45	0.013
280-283	12	2.42	615.00	617.88	48.00	6.00	6.93	620.00	623.00	615.36	618.55	4.45	0.67	615.66	618.84	0.000	8.72	0.013
300-301	12	2.62	613.50	623.93	149.00	7.00	3.92	614.50	629.70	616.40	624.62 j	5.08	0.69	616.57	624.94	0.994	9.42	0.013
302-303	30	28.62	612.50	615.43	133.00	2.20	6.65	615.00	626.50	616.40	617.25 j	9.25	1.82	616.93	618.12	0.741	60.87	0.013
303-304	30	28.62	615.63	616.02	39.34	0.99	7.98	626.50	625.65	617.25	617.84	7.81	1.82	618.12	618.71	0.000	40.84	0.013
304-305	30	26.25	616.22	616.57	35.00	1.00	7.48	625.65	625.65	617.84	618.32	7.34	1.74	618.64	619.12	0.000	41.01	0.013
305-306	30	25.32	616.77	617.37	60.09	1.00	7.51	625.65	626.86	618.32	619.08	7.78	1.71	619.09	619.86	0.000	40.98	0.013
306-307	24	24.04	617.57	618.27	35.00	2.00	8.87	626.86	626.86	619.08	620.01	4.92	1.73	620.16	621.08	0.000	31.99	0.013
307-308	24	20.59	618.47	619.34	58.17	1.50	7.74	626.86	628.10	620.01	620.97	7.13	1.63	620.89	621.85	0.000	27.66	0.013
308-309	24	20.59	619.54	621.12	105.00	1.50	8.06	628.10	626.30	620.97	622.75	2.29	1.63	621.85	623.63	0.000	27.75	0.013
309-310	18	11.40	621.32	623.87	56.73	4.49	6.82	626.30	629.40	622.75	625.16 j	2.82	1.29	623.52	625.93	0.000	22.26	0.013
310-311	15	6.79	624.07	635.99	149.00	8.00	6.09	629.40	643.33	625.16	637.04 j	6.29	1.05	625.75	637.63	0.000	18.26	0.013
311-312	15	4.84	636.19	636.55	35.81	1.01	5.32	643.33	643.18	637.04	637.44	5.74	0.89	637.45	637.86	0.000	6.47	0.013
312-313	12	2.86	636.75	637.85	110.00	1.00	4.82	643.18	643.10	637.44	638.57	4.53	0.72	637.78	638.92	0.000	3.56	0.013
313-314	12	1.83	638.05	640.63	129.00	2.00	4.15	643.10	645.60	638.57	641.21	4.39	0.58	638.81	641.44	0.000	5.04	0.013
314-315	12	0.80	640.83	643.31	124.00	2.00	2.98	645.60	648.10	641.21	643.68 j	4.42	0.37	641.34	643.82	0.000	5.04	0.013
307-316	12	1.68	618.47	621.98	50.08	7.01	2.97	626.86	627.25	621.94	622.53 j	4.72	0.55	622.01	622.75	0.218	9.43	0.013
309-317	15	7.27	621.32	624.85	141.44	2.50	6.20	626.30	629.70	624.01	625.93 j	3.77	1.08	624.56	626.58	1.726	10.20	0.013
317-318	15	5.75	625.05	632.57	150.33	5.00	5.95	629.70	640.11	625.93	633.54	6.57	0.97	626.42	634.03	0.000	14.44	0.013
318-319	15	3.73	632.77	633.12	35.00	1.00	4.67	640.11	640.11	633.54	633.90	6.21	0.78	633.87	634.23	0.000	6.46	0.013
319-320	12	1.73	633.32	633.56	23.75	1.01	3.75	640.11	640.80	633.90	634.12 j	6.68	0.56	634.13	634.35	0.000	3.58	0.013
320-321	12	1.73	633.76	634.64	88.00	1.00	4.17	640.80	639.30	634.25	635.20	4.10	0.56	634.48	635.43	0.000	3.56	0.013
310-322	12	3.26	624.07	628.47	157.00	2.80	4.58	629.40	634.00	626.58	629.24 j	4.76	0.77	626.85	629.63	1.398	5.96	0.013
322-323	12	2.23	628.67	633.01	124.00	3.50	4.51	634.00	638.90	629.24	633.65	5.25	0.64	629.52	633.92	0.000	6.66	0.013
323-324	12	1.20	633.21	637.55	124.00	3.50	3.51	638.90	642.50	633.65	638.01	4.49	0.46	633.83	638.19	0.000	6.66	0.013
325-326	24	23.90	612.50	614.16	83.00	2.00	7.61	614.50	619.50	616.40	617.33	0.88	1.73	617.30	618.23	0.927	31.99	0.013
326-327	24	8.47	614.36	616.65	176.00	1.30	2.70	619.50	621.80	618.62	618.87	2.87	1.04	618.74	618.98	0.247	25.80	0.013
327-328	15	7.16	616.85	620.48	145.44	2.50	6.12	621.80	626.30	618.93	621.55 j	4.75	1.07	619.46	622.19	1.729	10.20	0.013
328-329	15	5.92	620.68	626.81	136.06	4.51	6.11	626.30	633.59	621.55	627.79	5.80	0.98	622.06	628.30	0.000	13.71	0.013
329-330	15	2.96	627.01	628.58	35.00	4.49	3.95	633.59	633.59	627.79	629.27 j	4.32	0.69	628.07	629.55	0.000	13.68	0.013
326-331	24	13.95	614.36	616.10	144.60	1.20	4.44	619.50	626.02	618.62	619.17	6.69	1.34	618.93	619.48	0.550	24.81	0.013
331-332	24	11.77	616.30	616.72	35.00	1.20	3.75	626.02	626.02	619.33	619.42	6.35	1.23	619.55	619.64	0.095	24.78	0.013
332-333	18	9.97	616.92	617.57	36.59	1.78	5.64	626.02	627.60	619.67	620.00	7.17	1.22	620.17	620.50	0.330	14.00	0.013
333-334	18	9.97	617.77	619.62	102.50	1.80	5.64	627.60	625.80	620.43	621.36	3.64	1.22	620.93	621.85	0.924	14.11	0.013
334-335	15	7.75	619.82	624.83	166.95	3.00	6.54	625.80	630.60	622.16	625.93 j	4.67	1.10	622.78	626.64	2.283	11.19	0.013
335-336	12	2.60	625.03	631.78	225.17	3.00	3.99	630.60	637.20	625.93	632.47 j	4.73	0.69	626.25	632.78	0.000	6.17	0.013
336-337	12	1.35	631.98	635.73	150.00	2.50	3.52	637.20	640.40	632.47	636.22	4.18	0.49	632.66	636.41	0.000	5.63	0.013
334-338	12	0.86	619.82	620.22	40.00	1.00	1.10	625.80	625.40	622.16	622.18	3.20	0.39	622.18	622.20	0.023	3.56	0.013
335-339	12	3.28	625.03	632.03	140.00	5.00	4.71	630.60	638.94	625.93	632.80 j	6.14	0.77	626.32	633.20	0.000	7.96	0.013
339-340	12	1.64	632.23	633.98	35.00	5.00	3.64	638.94	638.94	632.80	634.52 j	4.42	0.54	633.02	634.74	0.000	7.96	0.013
400-401	42	49.56	630.43	630.55	23.56	0.51	5.16	633.93	638.20	633.93	633.98	3.81	2.20	634.34	634.40	0.054	71.80	0.013
401-402	36	49.56	630.75	631.15	50.00	0.80	7.01	638.20	636.92	634.39	634.67	1.49	2.29	635.16	635.43	0.276	59.65	0.013
403-404	24	9.25	632.00	633.49	186.00	0.80	2.94	634.00	641.00	636.18	636.49	4.44	1.09	636.31	636.63	0.311	20.24	0.013
404-405	24	8.88	633.69	634.61	114.98	0.80	2.83	641.00	640.20	636.56	636.74	3.28	1.06	636.68	636.86	0.177	20.23	0.013
405-406	12	1.34	634.81	637.39	129.00	2.00	2.61	640.20	642.80	636.92	637.88 j	4.92	0.49	636.97	638.07	0.486	5.04	0.013
406-407	12	0.91	637.59	640.07	124.00	2.00	3.97	642.80	645.30	637.88	640.47	4.83	0.40	638.03	640.62	0.000	5.04	0.013
407-408	12	0.48	640.27	642.75	124.00	2.00	3.31	645.30	647.80	640.48	643.04	4.76	0.29	640.58	643.14	0.000	5.04	0.013
405-409	18	6.75	634.81	635.71	112.50	0.80	3.82	640.20	640.87	636.92	637.39	3.37	1.00	637.15	637.61	0.465	9.39	0.013
409-410	15	3.24	635.91	636.19	35.00	0.80	2.64	640.87	640.87	637.50	637.59	3.17	0.72	637.61	637.70	0.088	5.78	0.013
411-412	30	20.29	632.00	632.71	141.00	0.50	4.13	634.50	640.70	636.18	636.53	3.91	1.53	636.45	636.79	0.345	29.10	0.013
412-413	24	11.66	632.91	633.01	19.50	0.51	3.71	640.70	640.13	636.79	636.84	3.18	1.22	637.01	637.06	0.052	16.20	0.013
413-414	24	9.65	633.21	633.39	35.00	0.51	3.07	640.13	640.13	636.95	637.01	3.04	1.11	637.10	637.16	0.064	16.22	0.013
414-415	24	8.13	633.59	634.35	151.66	0.50	2.59	640.13	640.40	637.09	637.28	2.96	1.01	637.19	637.39	0.196	16.01	0.013
415-416	12	2.42	634.55	635.62	67.00	1.60	3.08	640.40	641.00	637.44	637.75	3.18	0.67	637.59	637.90	0.309	4.50	0.013
416-417	12	1.42	635.82	637.80	124.00	1.60	2.69	641.00	642.70	637.82	638.30 j	4.40	0.50	637.87	638.50	0.482	4.50	0.013
412-418	24	8.63	632.91	634.54	271.00	0.60	2.75	640.70	642.60	636.79	637.19	5.16	1.05	636.91	637.30	0.395	17.54	0.013
418-419	18	5.15	634.74	634.94	19.87	1.01	2.91	642.60	641.42	637.44	637.49	3.87	0.87	637.57	637.62	0.048	10.54	0.013
419-420	15	3.86	635.14	635.49	35.00	1.00	3.15	641.42	641.42	637.55	637.68	3.66	0.79	637.71	637.83	0.125	6.46	0.013
420-421	12	1.48	635.69	637.20	150.58	1.00	2.04	641.42	642.30	637.76	638.00	4.22	0.52	637.81	638.08	0.265	3.57	0.013
418-422	12	2.81	634.74	637.80	102.00	3.00	4.12	642.60	645.30	637.44	638.52 j	6.78	0.72	637.64	638.86	0.742	6.17	0.013
422-423	12	2.81	638.00	638.68	34.00	2.00	5.62	645.30	644.57	638.53	639.40	5.17	0.72	638.87	639.74	0.000	5.04	0.013
423-424	12	1.33	638.88	639.58	35.00	2.00	3.37	644.57	644.57	639.40	640.07 j	4.50	0.49	639.59	640.26	0.000	5.04	0.013
415-425	15	4.44	634.55	635.81	126.00	1.00	3.62	640.40	641.48	637.44	638.04	3.34	0.85	637.64	638.24	0.596	6.46	0.013
425-426	12	2.22	636.01	636.36	35.00	1.00	2.83	641.48	641.48	638.14	638.27	3.08	0.64	638.26	638.40	0.136	3.56	0.013
500-501	30	21.54	635.14	635.57	43.00	1.00	4.62	637.64	640.95	637.64	637.69	2.89	1.58	637.94	638.06	0.115	41.01	0.013
502-503	30	16.72	637.00	637.17	32.00	0.53	3.41	639.50	643.50	639.96	640.01	3.38	1.38	640.14	640.19	0.053	29.89	0.013
503-504	30	16.72	637.37	637.87	100.00	0.50	3.43	643.50	644.75	640.12	640.27	4.27	1.38	640.30	640.46	0.156	29.00	0.013
504-505	30	14.84	638.07	638.32	49.00	0.51	4.41	644.75	644.75	640.48	639.62	4.17	1.30	641.00	640.13	0.000	29.29	0.013
505-506	24	8.79	638.52	638.97	89.95	0.50	2.93	644.75	644.92	640.58	640.69	4.10	1.06	640.70	640.83	0.131	16.00	0.013
506-507	18	6.67	639.17	639.47	61.00	0.49	3.77	644.92	644.92	640.82	641.07	3.54	1.00	641.04	641.29	0.246	7.36	0.013
507-508	18	5.52	639.67	639.93	51.95	0.50	3.12	644.92	645.80	641.38	641.53	4.20	0.90	641.54	641.68	0.144	7.43	0.013
508-509	18	4.65	640.13	640.78	128.41	0.51	3.11	645.80	649.30	641.60	641.81	7.32	0.83	641.71	642.01	0.300	7.47	0.013
509-510	18	4.65	640.98	641.14	33.00	0.48	3.95	649.30	648.52	641.98	642.05	6.17	0.83	642.19	642.32	0.123	7.31	0.013
510-511	15	3.22	641.34	641.52	35.00	0.51	3.23	648.52	648.52	642.35	642.41	5.86	0.72	642.49	642.60	0.103	4.63	0.013
511-512	12	1.48	641.72	642.33	61.00	1.00	2.78	648.52	650.40	642.66	642.85 j	7.55	0.52	642.87	643.05	0.000	3.56	0.013
512-513	12	1.48	642.53	643.73	120.00	1.00	3.98	650.40	648.00	642.98	644.25	3.75	0.52	643.18	644.45	0.000	3.56	0.013
505-514	18	4.90	638.52	638.97	90.00	0.50	2.77	644.75	643.50	640.58	640.78	2.63	0.85	640.70	640.89	0.196	7.43	0.013
514-515	12	3.27	639.17	640.69	76.21	1.99	4.58	643.50	647.50	640.87	641.47 j	5.50	0.77	641.14	641.85	0.680	5.03	0.013
515-516	12	2.66	640.89	644.62	124.21	3.00	3.96	647.50	649.95	642.00	645.32 j	4.63	0.70	642.18	645.64	0.844	6.17	0.013
517-518	12	2.49	637.00	639.45	163.00	1.50	3.17	638.00	645.20	639.96	640.76	4.36	0.68	640.12	640.91	0.797	4.37	0.013
518-519	12	1.53	639.65	641.49	123.00	1.50	2.81	645.20	648.20	640.84	642.01 j	6.19	0.52	640.89	642.22	0.501	4.36	0.013
519-520	12	1.53	641.69	643.58	189.00	1.00	4.02	648.20	647.70	642.15	644.10	3.60	0.52	642.36	644.31	0.000	3.56	0.013
600-601	24	22.27	628.00	628.59	59.00	1.00	7.13	630.00	635.43	630.00	630.52	4.10	1.68	630.78	631.32	0.536	22.62	0.013
601-602	24	20.61	628.79	629.52	73.00	1.00	6.56	635.43	635.43	631.33	631.94	3.15	1.63	632.00	632.61	0.606	22.62	0.013
602-603	24	18.82	629.72	630.15	43.00	1.00	5.99	635.43	632.15	632.28	632.57	-0.98	1.56	632.83	633.13	0.298	22.62	0.013
604-605	36	33.42	622.50	622.98	48.00	1.00	4.96	625.50	629.68	625.50	625.54	3.93	1.88	625.85	625.96	0.117	66.69	0.013
605-606	36	32.29	623.18	623.91	73.00	1.00	6.05	629.68	629.68	625.75	625.75 j	3.93	1.84	626.54	626.53	0.000	66.69	0.013
606-607	36	31.25	624.11	624.55	44.00	1.00	7.45	629.68	627.55	625.75	626.36	1.19	1.81	626.52	627.12	0.000	66.69	0.013
608-609	15	1.19	622.50	622.87	74.97	0.49	1.11	623.75	627.30	623.75	623.77	3.50	0.43	623.76	623.80	0.030	4.54	0.013
609-610	15	0.55	623.07	623.44	73.00	0.51	1.20	627.30	627.30	623.80	623.83	3.42	0.29	623.81	623.88	0.063	1.60	0.013

ISSUE	DATE / REMARKS
1	3-3-2015 Initial Submittal
2	5-7-2015 City Comments
3	6-26-2015 City & PWSD #2 Comments
4	11-5-2015 City Comments
5	12-10-2015 City Comments

PROJECT TITLE

The Villages at Shady Creek

O'FALLON, MISSOURI

THE STERLING CO.
ENGINEERS & SURVEYORS
5055 New Baumgartner Road
St. Louis, Missouri 63129
Ph 314-487-0440 Fax 314-487-8944
www.sterling-eng-sur.com
Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature affixed to this sheet applies only to the material and items shown on this sheet. All drawings, instruments or other documents not exhibiting this seal and signature shall not be considered prepared by this engineer, and the engineer expressly disclaims any and all responsibility for such plans, drawings or documents not exhibiting this seal and signature.

STATE OF MISSOURI
RODNEY ARNOLD
NUMBER PE-2002016612
PROFESSIONAL ENGINEER

Date: 12/10/2015
RODNEY ARNOLD
LICENSE # PE-2002016612
Civil Engineer

Lombardo Homes of St. Louis, LLC
2299 Technology Drive, Suite 150
O'Fallon, Missouri 63368
Ph. (636) 265-2710
Fax (636) 695-3195
www.lombardohomesstlouis.com

HYDRAULIC CALCULATIONS

P+Z No. P&Z NO
City No. 15-162-SP
Date: 12/10/2015
Job No. 14-03-087

Page No.
11.1
IMP

"Final Plan" Approval Date: January 8, 2015 (26–14.01)

Drawing name: V:\1403087 GRIFFITH\Drawings\Engineering\Improvements\3087IMP-Storm Sewer.dwg Plotted on: Dec 15, 2015 - 10:36am Plotted by: bmolitor