UNITY HEALTH CARE

O'FALLON, MISSOURI

DETENTION BASIN &

STORM SEWER HYDRAULIC

CALCULATIONS

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JUNE 9, 1999

Unity - O'Fallon, Mo.
Storm Sewer Hydraulics 15 year frequency

Project No. 98593

Structure		D	D	Q	S	n	L	Velocity	Velocity Head	Hydraulic Slope	Friction	Q full	Normal Depth	Angle	Turn Loss	Vel Head Loss	Total Loss	Flow Line		Hydraulic Elev		Top of Struct.	
Down	Up	in	ft	cfs	%	-	ft	fps	ft	%	ft	cfs	ft	deg	ft	ft	ft	Down	Up	Down	Up	Down	Up
X-1	1	48	4.00	129.13	1.63%	0.013	35.00	10.28	1.64	0.81%	0.28	183.39	2.48	40.0	0.71	1.64	2.35	525.72	526.29	529.72	530.00	536.12	531.90
1	2	48	4.00	110.32	2.42%	0.013	62.00	8.78	1.20	0.59%	0.37	223.46	1.99	30.0	0.42	0.95	1.37	526.49	527.99	531.37	531.74	531.90	538.75
3	4	15	1.25	13.73	10.00%	0.013	52.00	11.19	1.94	4.52%	2.35	20.43	0.75	0.0	0.00	1.94	1.94	536.00	541.20	537.25	541.95	537.25	553.00
5	6	30	2.50	42.05	3.16%	0.013	168.00	8.57	1.14	1.05%	1.76	72.91	1.36	0.0	0.00	1.14	1.14	536.00	541.31	538.50	542.67	538.50	545.00
6	7	30	2.50	42.05	3.16%	0.013	346.00	8.57	1.14	1.05%	3.63	72.91	1.36	15.0	0.20	1.07	1.27	541.51	552.44	543.94	553.80	545.00	558.00
7	7A	30	2.50	42.05	3.16%	0.013	142.00	8.57	1.14	1.05%	1.49	72.91	1.36	15.0	0.20	1.10	1.30	552.64	557.13	555.10	558.49	558.00	561.00
7A	8	24	2.00	18.83	5.27%	0.013	101.00	5.99	0.56	0.69%	0.70	51.93	0.83	0.0	0.00	0.56	0.56	557.33	562.65	559.05	563.48	561.00	571.00
8	9	15	1.25	6.43	4.54%	0.013	207.00	5.24	0.43	0.99%	2.05	13.76	0.60	15.0	0.07	0.43	0.50	562.85	572.24	563.98	572.84	571.00	580.40
9	10	12	1.00	4.08	2.50%	0.013	115.00	5.19	0.42	1.31%	1.51	5.63	0.63	20.0	0.10	0.42	0.52	572.44	575.31	573.36	575.94	580.40	580.00
10	11	12	1.00	1.77	1.00%	0.013	109.00	2.25	0.08	0.25%	0.27	3.56	0.50	60.0	0.04	0.08	0.12	575.51	576.60	576.06	577.10	580.00	580.35
7A	7B	21	1.75	23.22	10.45%	0.013	29.00	9.65	1.45	2.15%	0.62	51.22	0.83	90.0	1.01	1.45	2.46	557.33	560.36	559.08	561.19	561.00	564.00
15	16	18	1.50	5.89	1.00%	0.013	376.00	3.33	0.17	0.31%	1.17	10.50	0.80	0.0	0.00	0.17	0.17	576.61	580.37	578.11	581.17	578.11	584.45
8	12	18	1.50	9.59	2.00%	0.013	288.00	5.43	0.46	0.83%	2.39	14.86	0.88	65.0	0.26	0.46	0.72	562.85	568.61	564.35	569.49	571.00	581.00
12	13	18	1.50	9.59	2.00%	0.013	185.00	5.43	0.46	0.83%	1.54	14.86	0.88	0.0	0.00	0.46	0.46	568.81	572.51	569.95	573.39	581.00	577.50
13	14	15	1.25	5.47	2.00%	0.013	155.00	4.46	0.31	0.72%	1.12	9.14	0.70	90.0	0.22	0.31	0.53	572.71	575.81	573.92	576.51	577.50	579.50

VELOCITY LOSSES (info)

FL up+ d	He dwn+F	Stuc. Down	Top Stuc. Down	Hyd. Elev Down	Freeboard Down		Stuc. Up	Top Stuc. Up	Hyd. Elev Up	Freeboard Up		Structure Down	Up	Discharge (Downstream) cfs	Pipe Diameter (Downstream) ft	Velocity (Downstream) fps	Velocity Head (Downstream) ft
528.77	530.00	X-1	536.12	529.72	6.40	OK	1	531.90	530.00	1.90	OK	X-1	1	129.13	4.00	10.28	1.64
529.98	531.74	1	531.90	531.37	0.53	OK	2	538.75	531.74	7.01	OK	1	2	110.32	4.00	8.78	1.20
541.95	539.60	3	537.25	537.25	0.00	OK	4	553.00	541.95	11.05	OK	3	4	13.73	1.25	11.19	1.94
542.67	540.26	5	538.50	538.50	0.00	OK	6	545.00	542.67	2.33	OK	5	6	42.05	2.50	8.57	1.14
553.80	547.57	6	545.00	543.94	1.06	OK	7	558.00	553.80	4.20	OK	6	7	42.05	2.50	8.57	1.14
558.49	556.59	7	558.00	555.10	2.90	OK	7A	561.00	558.49	2.51	OK	7	7A	42.05	2.50	8.57	1.14
563.48	559.75	7A	561.00	559.05	1.95	OK	8	571.00	563.48	7.52	OK	7A	8	18.83	2.00	5.99	0.56
572.84	566.03	8	571.00	563.98	7.02	OK	9	580.40	572.84	7.56	OK	8	9	6.43	1.25	5.24	0.43
575.94	574.87	9	580.40	573.36	7.04	OK	10	580.00	575.94	4.06	OK	9	10	4.08	1.00	5.19	0.42
577.10	576.33	10	580.00	576.06	3.94	OK	11	580.35	577.10	3.25	OK	10	11	1.77	1.00	2.25	0.08
561.19	559.70	7A	561.00	559.08	1.92	OK	7B	564.00	561.19	2.81	OK	7A	7B	23.22	1.75	9.65	1.45
581.17	579.28	15	578.11	578.11	0.00	OK	16	584.45	581.17	3.28	OK	15	16	5.89	1.50	3.33	0.17
569.49	566.74	8	571.00	564.35	6.65	OK	12	581.00	569.49	11.51	OK	8	12	9.59	1.50	5.43	0.46
573.39	571.49	12	581.00	569.95	11.05	OK	13	577.50	573.39	4.11	OK	12	13	9.59	1.50	5.43	0.46
576.51	575.04	13	577.50	573.92	3.58	OK	14	579.50	576.51	2.99	OK	13	14	5.47	1.25	4.46	0.31

VELOCITY LOSSES 1

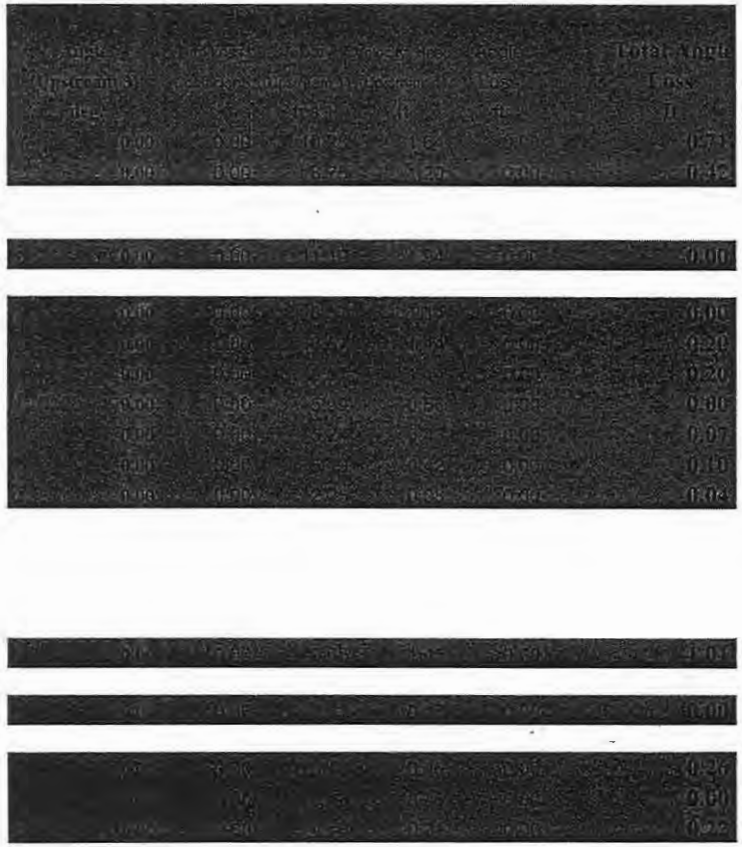
VELOCITY LOSSES 2

VELOCITY LOSSES 3

Discharge (Upstream 1) cfs	Pipe Diameter (Upstream 1) ft	Velocity (Upstream 1) fps	Velocity Head (Upstream 1) ft	Discharge (Upstream 2) cfs	Pipe Diameter (Upstream 2) ft	Velocity (Upstream 2) fps	Velocity Head (Upstream 2) ft	Discharge (Upstream 3) cfs	Pipe Diameter (Upstream 3) ft	Velocity (Upstream 3) fps	Velocity Head (Upstream 3) ft	Total Velocity Loss ft
110.32	48.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.64
13.73	1.25	11.19	1.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.95
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
42.05	30.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14
6.43	1.25	5.24	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
4.08	1.00	5.19	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10
6.43	15.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
4.08	12.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
1.77	12.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
9.59	18.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31

ANGLE LOSSES (info) **ANGLE LOSSES 1** **ANGLE LOSSES 2**

ANGLE LOSSES 3



NORMAL DEPTH (info)

NORMAL DEP

Structure Down	Structure Up	Normal Depth ft	Q cfs	d ft	S %	n -	Qf cfs	K	y/d -	y ft	Angle rad	An. sq ft	D ft
			NORMAL DEPTH						NORMAL DEPTH ITIRATI				
X-1	1	2.48	*******	4.00	*******	*******	*******	8.85	0.50	2.00	3.14	6.28	1.57
1	2	1.99	*******	4.00	*******	*******	*******	6.20	0.50	2.00	3.14	6.28	1.57
3	4	0.75	*******	1.25	*******	*******	*******	0.38	0.50	0.63	3.16	0.62	0.50
5	6	1.36	*******	2.50	*******	*******	*******	2.07	0.50	1.25	3.14	2.45	0.98
6	7	1.36	*******	2.50	*******	*******	*******	2.07	0.50	1.25	3.14	2.45	0.98
7	7A	1.36	*******	2.50	*******	*******	*******	2.07	0.50	1.25	3.14	2.45	0.98
7A	8	0.83	*******	2.00	*******	*******	*******	0.72	0.50	1.00	3.14	1.57	0.79
8	9	0.60	6.43	1.25	*******	*******	*******	0.26	0.50	0.63	3.16	0.62	0.50
9	10	0.63	4.08	1.00	*******	*******	5.63	0.23	0.50	0.50	3.14	0.39	0.39
10	11	0.50	1.77	1.00	*******	*******	3.56	0.15	0.50	0.50	3.14	0.39	0.39
7A	7B	0.83	*******	1.75	*******	*******	*******	0.63	0.50	0.88	3.15	1.21	0.69
15	16	0.80	5.89	1.50	*******	*******	*******	0.52	0.50	0.75	3.14	0.88	0.59
8	12	0.88	9.59	1.50	*******	*******	*******	0.59	0.50	0.75	3.14	0.88	0.59
12	13	0.88	9.59	1.50	*******	*******	*******	0.59	0.50	0.75	3.14	0.88	0.59
13	14	0.70	5.47	1.25	*******	*******	9.14	0.34	0.50	0.63	3.16	0.62	0.50

'TH 1

ION NO. 1

Rn	Qn	Newton
ft	cfs	-
1.00	*******	0.85
1.00	*******	0.85
0.31	*******	2.69
0.63	*******	1.36
0.63	*******	1.36
0.63	*******	1.36
0.50	*******	1.70
0.31	6.98	2.69
0.25	2.82	3.40
0.25	1.78	3.40
0.44	*******	1.92
0.38	5.25	2.26
0.38	7.43	2.26
0.38	7.43	2.26
0.31	4.63	2.69

NORMAL DEPTH 2

NORMAL DEPTH ITIRATION NO. 2

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.84	2.82	1.25	0.63	0.44	*******	2.15
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL DEPTH 3

NORMAL DEPTH ITIRATION NO. 3

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL DEPTH 4

NORMAL DEPTH ITIRATION NO. 4

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL DEPTH 5

NORMAL DEPTH ITIRATION NO. 5

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL DEPTH 6

NORMAL DEPTH ITIRATION NO. 6

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL DEPTH 7

NORMAL DEPTH ITIRATION NO. 7

y/d	y	Angle	An	D	Rn	Qn	Newton
-	ft	rad	sq ft	ft	ft	cfs	-
0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60
0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85
0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20
0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18
0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88
0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33
0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40
0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09
0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77
0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29

NORMAL D

NORMAL DEPTH IT

y/d	y	Angle	An
-	ft	rad	sq ft
0.62	2.48	3.63	8.18
0.50	1.99	3.13	6.24
0.60	0.75	3.54	0.77
0.54	1.36	3.32	2.73
0.54	1.36	3.32	2.73
0.54	1.36	3.32	2.73
0.42	0.83	2.80	1.23
0.48	0.60	3.06	0.58
0.63	0.63	3.67	0.52
0.50	0.50	3.14	0.39
0.47	0.83	3.04	1.12
0.53	0.80	3.28	0.96
0.59	0.88	3.49	1.08
0.59	0.88	3.49	1.08
0.56	0.70	3.38	0.71

DEPTH 8 — NORMAL DEPTH 9 — NORMAL DEPTH 10

TIRATION NO. 8				NORMAL DEPTH ITIRATION NO. 9								NORMAL DEPTH ITIRATION NO. 10								Normal Depth		
D	Rn	Qn	Newton	y/d	y	Angle	An	D	Rn	Qn	Newton	y/d	y	Angle	An	D	Rn	Qn	Newton	Depth		
ft	ft	cfs	-	-	ft	rad	sq ft	ft	ft	cfs	-	-	ft	rad	sq ft	ft	ft	cfs	-	ft		
2.05	1.13	*******	0.60	0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60	0.62	2.48	3.63	8.18	2.05	1.13	*******	0.60	2.48	NO GOOD	OK
1.56	1.00	*******	0.85	0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85	0.50	1.99	3.13	6.24	1.56	1.00	*******	0.85	1.99	NO GOOD	OK
0.62	0.35	*******	2.04	0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04	0.60	0.75	3.54	0.77	0.62	0.35	*******	2.04	0.75	NO GOOD	OK
1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	1.36	NO GOOD	OK
1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	1.36	NO GOOD	OK
1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	0.54	1.36	3.32	2.73	1.09	0.66	*******	1.20	1.36	NO GOOD	OK
0.61	0.44	*******	2.18	0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18	0.42	0.83	2.80	1.23	0.61	0.44	*******	2.18	0.83	NO GOOD	OK
0.47	0.30	6.42	2.88	0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88	0.48	0.60	3.06	0.58	0.47	0.30	6.42	2.88	0.60	NO GOOD	OK
0.52	0.28	4.07	2.33	0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33	0.63	0.63	3.67	0.52	0.52	0.28	4.07	2.33	0.63	NO GOOD	OK
0.39	0.25	1.78	3.40	0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40	0.50	0.50	3.14	0.39	0.39	0.25	1.78	3.40	0.50	NO GOOD	OK
0.64	0.42	*******	2.09	0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09	0.47	0.83	3.04	1.12	0.64	0.42	*******	2.09	0.83	NO GOOD	OK
0.64	0.39	5.85	2.06	0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06	0.53	0.80	3.28	0.96	0.64	0.39	5.85	2.06	0.80	NO GOOD	OK
0.72	0.41	9.64	1.77	0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77	0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77	0.88	NO GOOD	OK
0.72	0.41	9.64	1.77	0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77	0.59	0.88	3.49	1.08	0.72	0.41	9.64	1.77	0.88	NO GOOD	OK
0.57	0.33	5.51	2.29	0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29	0.56	0.70	3.38	0.71	0.57	0.33	5.51	2.29	0.70	NO GOOD	OK

PROJ. NAME UNITY HEALTHCARE-O'FALLON, MO. OFFSITE DETENTION BASIN

PROJ NO. 98593

FREQUENCY FOR DETENTION POND CALCULATIONS 2 YEAR

SITE DATA

Total Area Being Developed..... =	37.95	acres
P.I. Factor Undeveloped. ..... =	1.27	cfs/acre
P.I. Factor Developed... ..... =	2.39	cfs/acre
Time of Concentration ..... =	20	minutes
Avgerage Runoff Developed ..... =	90.70	cfs
Avgerage Runoff Undeveloped ..... =	48.20	cfs
Differential Site Runoff Rate .... =	42.50	cfs
Detention Time Required ..... =	30	minutes
Detention Volume Required ..... =	76507	cubic feet

DETENTION POND DESIGN PARAMETER

Area Tributary To Pond ..... =	37.78	acres
P.I. Area Trib. To Pond ..... =	2.39	cfs
Average Runoff Into Pond ..... =	90.29	cfs
Differential Runoff Rate ..... =	42.50	cfs
Low Flow Structure Design Flow ... =	47.79	cfs
Overflow Structure Design Flow ... =	90.29	cfs
Low Flow Control Elevation ..... =	532.30	
Overflow Control Elevation ..... =	538.75	
Max. Detention Vol. Storage Depth =	6.45	feet

LOW FLOW STRUCTURE DESIGN

Type of Low Flow Structure ..... = RECT. WEIR

Width of Rectangular Weir ..... = 20.9 inches

Peak Discharge at Max. Depth ..... = 95.58 cfs

Max. Allowable Discharge Rate .... = 47.79 cfs

OVERFLOW STRUCTURE DESIGN

Overflow Structure Design Flow ... = 90.29 cfs

Overflow Control Elevation ..... = 538.75

Max. Height of Water Above Weir .. = 21 inches

Required Weir Length ... . = 12 feet

Actual Weir Length .... = 27 feet

Actual Height of Water Above Weir .= 12 inches

Invert Elevation - Outlet Pipe ... = 527.17

Number of Outlet Pipes . ..... = 1

Approximate Outlet Pipe Size ..... = 48 inches

DETENTION POND DESIGN

STAGE	DEPTH	AREA	TOT. VOL.	OUTFLOW	S/T	S/T+1/2 Q
532.30	0.00	0.00	0	0.00	0.00	0.00
534.00	1.70	12130.00	10311	12.93	85.93	92.40
536.00	3.70	37080.00	59521	41.53	496.01	516.78
538.00	5.70	41760.00	138361	79.4	1153.0	1192.7
538.75	6.45	44287.50	170629	95.6	1421.9	1469.7
539.00	6.70	45130.00	181806	112.5	1515.1	1571.3
540.00	7.70	48500.00	228621	251.1	1905.2	2030.7

END

STORM WATER ROUTING

Frequency of Routed Storm ..... = 2 years

Flow Rate Multiplier to Base Storm = 1.00

Total Runoff Into Pond ..... = 90.3 cfs

Time Base of Inflow Hydrograph ... = 60.00 minutes

Type of Routing ..... = SLUG

TIME (MIN)	INFLOW (CFS)	AVG. INFLOW (CFS)	S/T-1/2 Q	S/T+1/2 Q	Q (CFS)	SURF ELEV
0	90.29	0.00	0.00	0.00	0.00	532.30
2.0	90.29	90.29	0.00	0.00	0.00	532.30
4.0	90.29	90.29	77.65	90.29	12.64	533.96
6.0	90.29	90.29	149.93	167.95	18.02	534.36
8.0	90.29	90.29	217.33	240.22	22.89	534.70
10.0	90.29	90.29	280.20	307.63	27.43	535.01
12.0	90.29	90.29	338.82	370.49	31.67	535.31
14.0	90.29	90.29	393.50	429.12	35.62	535.59
16.0	90.29	90.29	444.48	483.79	39.31	535.84
18.0	90.29	90.29	492.23	534.77	42.54	536.05
20.0	90.29	90.29	537.32	582.53	45.21	536.19
22.0	0.00	45.15	579.87	627.61	47.74	536.33
24.0	0.00	0.00	577.43	625.02	47.59	536.32
26.0	0.00	0.00	532.50	577.43	44.93	536.18
28.0	0.00	0.00	490.09	532.50	42.41	536.05
30.0	0.00	0.00	450.36	490.09	39.73	535.87
32.0	0.00	0.00	413.31	450.36	37.05	535.69
34.0	0.00	0.00	378.75	413.31	34.56	535.51
36.0	0.00	0.00	346.52	378.75	32.23	535.35
38.0	0.00	0.00	316.46	346.52	30.06	535.20
40.0	0.00	0.00	288.43	316.46	28.03	535.06
42.0	0.00	0.00	262.29	288.43	26.14	534.92
44.0	0.00	0.00	237.91	262.29	24.38	534.80
46.0	0.00	0.00	215.17	237.91	22.74	534.69
48.0	0.00	0.00	193.97	215.17	21.20	534.58
50.0	0.00	0.00	174.20	193.97	19.77	534.48
52.0	0.00	0.00	155.76	174.20	18.44	534.39
54.0	0.00	0.00	138.56	155.76	17.20	534.30
56.0	0.00	0.00	122.52	138.56	16.04	534.22
58.0	0.00	0.00	107.56	122.52	14.96	534.14
60.0	0.00	0.00	93.61	107.56	13.95	534.07
62.0	0.00	0.00	80.60	93.61	13.01	534.01
64.0	0.00	0.00	69.32	80.60	11.28	533.78
66.0	0.00	0.00	59.62	69.32	9.70	533.58
68.0	0.00	0.00	51.28	59.62	8.34	533.40
70.0	0.00	0.00	44.10	51.28	7.18	533.24
72.0	0.00	0.00	37.93	44.10	6.17	533.11
74.0	0.00	0.00	32.62	37.93	5.31	533.00
76.0	0.00	0.00	28.06	32.62	4.56	532.90

78.0	0.00	0.00	24.13	28.06	3.93	532.82
80.0	0.00	0.00	20.75	24.13	3.38	532.74
82.0	0.00	0.00	17.85	20.75	2.90	532.68
84.0	0.00	0.00	15.35	17.85	2.50	532.63
86.0	0.00	0.00	13.20	15.35	2.15	532.58
88.0	0.00	0.00	11.35	13.20	1.85	532.54
90.0	0.00	0.00	9.76	11.35	1.59	532.51
92.0	0.00	0.00	8.39	9.76	1.37	532.48
94.0	0.00	0.00	7.22	8.39	1.17	532.45
96.0	0.00	0.00	6.21	7.22	1.01	532.43
98.0	0.00	0.00	5.34	6.21	0.87	532.41
100.0	0.00	0.00	4.59	5.34	0.75	532.40
102.0	0.00	0.00	3.95	4.59	0.64	532.38
104.0	0.00	0.00	3.40	3.95	0.55	532.37
106.0	0.00	0.00	2.92	3.40	0.48	532.36
108.0	0.00	0.00	2.51	2.92	0.41	532.35
110.0	0.00	0.00	2.16	2.51	0.35	532.35
112.0	0.00	0.00	1.86	2.16	0.30	532.34
114.0	0.00	0.00	1.60	1.86	0.26	532.33
116.0	0.00	0.00	1.38	1.60	0.22	532.33
118.0	0.00	0.00	1.19	1.38	0.19	532.33
120.0	0.00	0.00	1.02	1.19	0.17	532.32

PROJ. NAME UNITY HEALTHCARE-O'FALLON, MO. PROJ NO. 98593
OFFSITE DETENTION BASIN

FREQUENCY FOR DETENTION POND CALCULATIONS 15 YEAR

SITE DATA

Total Area Being Developed..... =	37.95	acres
P.I. Factor Undeveloped. ..... =	1.87	cfs/acre
P.I. Factor Developed... ..... =	3.52	cfs/acre
Time of Concentration ..... =	20	minutes
Avgerage Runoff Developed ..... =	133.58	cfs
Avgerage Runoff Undeveloped ..... =	70.97	cfs
Differential Site Runoff Rate .... =	62.62	cfs
Detention Time Required ..... =	30	minutes
Detention Volume Required ..... =	112712	cubic feet

DETENTION POND DESIGN PARAMETER

Area Tributary To Pond ..... =	37.78	acres
P.I. Area Trib. To Pond ..... =	3.52	cfs
Average Runoff Into Pond ..... =	132.99	cfs
Differential Runoff Rate ..... =	62.62	cfs
Low Flow Structure Design Flow ... =	70.37	cfs
Overflow Structure Design Flow ... =	132.99	cfs
Low Flow Control Elevation ..... =	532.30	
Overflow Control Elevation ..... =	538.75	
Max. Detention Vol. Storage Depth =	6.45	feet

LOW FLOW STRUCTURE DESIGN

Type of Low Flow Structure ..... = RECT. WEIR

Width of Rectangular Weir ..... = 20.9 inches

Peak Discharge at Max. Depth ..... = 95.58 cfs

Max. Allowable Discharge Rate .... = 70.37 cfs

OVERFLOW STRUCTURE DESIGN

Overflow Structure Design Flow ... = 132.99 cfs

Overflow Control Elevation ..... = 538.75

Max. Height of Water Above Weir .. = 21 inches

Required Weir Length ... . = 17 feet

Actual Weir Length .... = 27 feet

Actual Height of Water Above Weir .= 16 inches

Invert Elevation - Outlet Pipe ... = 527.17

Number of Outlet Pipes . ..... = 1

Approximate Outlet Pipe Size ..... = 48 inches

DETENTION POND DESIGN

STAGE	DEPTH	AREA	TOT. VOL.	OUTFLOW	S/T	S/T+1/2 Q
532.30	0.00	0.00	0	0.00	0.00	0.00
534.00	1.70	12130.00	10311	12.93	85.93	92.40
536.00	3.70	37080.00	59521	41.53	496.01	516.78
538.00	5.70	41760.00	138361	79.4	1153.0	1192.7
538.75	6.45	44287.50	170629	95.6	1421.9	1469.7
539.00	6.70	45130.00	181806	112.5	1515.1	1571.3
540.00	7.70	48500.00	228621	251.1	1905.2	2030.7

END

STORM WATER ROUTING

Frequency of Routed Storm ..... = 15 years

Flow Rate Multiplier to Base Storm = 1.00

Total Runoff Into Pond ..... = 133.0 cfs

Time Base of Inflow Hydrograph ... = 60.00 minutes

Type of Routing ..... = SLUG

TIME (MIN)	INFLOW (CFS)	AVG. INFLOW (CFS)	S/T-1/2 Q	S/T+1/2 Q	Q (CFS)	SURF ELEV
0	132.99	0.00	0.00	0.00	0.00	532.30
2.0	132.99	132.99	0.00	0.00	0.00	532.30
4.0	132.99	132.99	117.32	132.99	15.67	534.19
6.0	132.99	132.99	226.73	250.30	23.57	534.74
8.0	132.99	132.99	328.77	359.72	30.95	535.26
10.0	132.99	132.99	423.93	461.75	37.82	535.74
12.0	132.99	132.99	513.14	556.92	43.78	536.12
14.0	132.99	132.99	597.34	646.12	48.78	536.38
16.0	132.99	132.99	676.84	730.33	53.49	536.63
18.0	132.99	132.99	751.87	809.82	57.95	536.87
20.0	132.99	132.99	822.71	884.86	62.15	537.09
22.0	0.00	66.49	889.58	955.70	66.12	537.30
24.0	0.00	0.00	889.93	956.07	66.14	537.30
26.0	0.00	0.00	827.49	889.93	62.44	537.10
28.0	0.00	0.00	768.55	827.49	58.94	536.92
30.0	0.00	0.00	712.91	768.55	55.64	536.74
32.0	0.00	0.00	660.39	712.91	52.52	536.58
34.0	0.00	0.00	610.81	660.39	49.58	536.42
36.0	0.00	0.00	564.01	610.81	46.80	536.28
38.0	0.00	0.00	519.83	564.01	44.18	536.14
40.0	0.00	0.00	478.13	519.83	41.70	536.01
42.0	0.00	0.00	439.20	478.13	38.93	535.82
44.0	0.00	0.00	402.90	439.20	36.30	535.63
46.0	0.00	0.00	369.04	402.90	33.86	535.46
48.0	0.00	0.00	337.47	369.04	31.57	535.30
50.0	0.00	0.00	308.02	337.47	29.45	535.15
52.0	0.00	0.00	280.56	308.02	27.46	535.02
54.0	0.00	0.00	254.95	280.56	25.61	534.89
56.0	0.00	0.00	231.07	254.95	23.88	534.77
58.0	0.00	0.00	208.79	231.07	22.28	534.65
60.0	0.00	0.00	188.02	208.79	20.77	534.55
62.0	0.00	0.00	168.65	188.02	19.37	534.45
64.0	0.00	0.00	150.58	168.65	18.07	534.36
66.0	0.00	0.00	133.73	150.58	16.85	534.27
68.0	0.00	0.00	118.01	133.73	15.72	534.19
70.0	0.00	0.00	103.35	118.01	14.66	534.12
72.0	0.00	0.00	89.68	103.35	13.67	534.05
74.0	0.00	0.00	77.13	89.68	12.55	533.95
76.0	0.00	0.00	66.34	77.13	10.79	533.72

78.0	0.00	0.00	57.06	66.34	9.28	533.52
80.0	0.00	0.00	49.08	57.06	7.98	533.35
82.0	0.00	0.00	42.21	49.08	6.87	533.20
84.0	0.00	0.00	36.30	42.21	5.91	533.08
86.0	0.00	0.00	31.22	36.30	5.08	532.97
88.0	0.00	0.00	26.85	31.22	4.37	532.87
90.0	0.00	0.00	23.09	26.85	3.76	532.79
92.0	0.00	0.00	19.86	23.09	3.23	532.72
94.0	0.00	0.00	17.08	19.86	2.78	532.67
96.0	0.00	0.00	14.69	17.08	2.39	532.61
98.0	0.00	0.00	12.63	14.69	2.06	532.57
100.0	0.00	0.00	10.86	12.63	1.77	532.53
102.0	0.00	0.00	9.34	10.86	1.52	532.50
104.0	0.00	0.00	8.03	9.34	1.31	532.47
106.0	0.00	0.00	6.91	8.03	1.12	532.45
108.0	0.00	0.00	5.94	6.91	0.97	532.43
110.0	0.00	0.00	5.11	5.94	0.83	532.41
112.0	0.00	0.00	4.40	5.11	0.71	532.39
114.0	0.00	0.00	3.78	4.40	0.62	532.38
116.0	0.00	0.00	3.25	3.78	0.53	532.37
118.0	0.00	0.00	2.80	3.25	0.45	532.36
120.0	0.00	0.00	2.41	2.80	0.39	532.35

PROJ. NAME UNITY HEALTHCARE-O'FALLON, MO. PROJ NO. 98593
OFFSITE DETENTION BASIN

FREQUENCY FOR DETENTION POND CALCULATIONS 25 YEAR

SITE DATA

Total Area Being Developed..... =	37.95	acres
P.I. Factor Undeveloped. ..... =	2.31	cfs/acre
P.I. Factor Developed... ..... =	4.35	cfs/acre
Time of Concentration ..... =	20	minutes
Avgerage Runoff Developed ..... =	165.08	cfs
Avgerage Runoff Undeveloped ..... =	87.66	cfs
Differential Site Runoff Rate .... =	77.42	cfs
Detention Time Required ..... =	30	minutes
Detention Volume Required ..... =	139352	cubic feet

DETENTION POND DESIGN PARAMETER

Area Tributary To Pond ..... =	37.78	acres
P.I. Area Trib. To Pond ..... =	4.35	cfs
Average Runoff Into Pond ..... =	164.34	cfs
Differential Runoff Rate ..... =	77.42	cfs
Low Flow Structure Design Flow ... =	86.93	cfs
Overflow Structure Design Flow ... =	164.34	cfs
Low Flow Control Elevation ..... =	532.30	
Overflow Control Elevation ..... =	538.75	
Max. Detention Vol. Storage Depth =	6.45	feet

LOW FLOW STRUCTURE DESIGN

Type of Low Flow Structure ..... = RECT. WEIR

Width of Rectangular Weir ..... = 20.9 inches

Peak Discharge at Max. Depth ..... = 95.58 cfs

Max. Allowable Discharge Rate .... = 86.93 cfs

OVERFLOW STRUCTURE DESIGN

Overflow Structure Design Flow ... = 164.34 cfs

Overflow Control Elevation ..... = 538.75

Max. Height of Water Above Weir .. = 21 inches

Required Weir Length ... . = 21 feet

Actual Weir Length .... = 27 feet

Actual Height of Water Above Weir .= 18 inches

Invert Elevation - Outlet Pipe ... = 527.17

Number of Outlet Pipes . ..... = 1

Approximate Outlet Pipe Size ..... = 48 inches

DETENTION POND DESIGN

STAGE	DEPTH	AREA	TOT. VOL.	OUTFLOW	S/T	S/T+1/2 Q
532.30	0.00	0.00	0	0.00	0.00	0.00
534.00	1.70	12130.00	10311	12.93	85.93	92.40
536.00	3.70	37080.00	59521	41.53	496.01	516.78
538.00	5.70	41760.00	138361	79.4	1153.0	1192.7
538.75	6.45	44287.50	170629	95.6	1421.9	1469.7
539.00	6.70	45130.00	181806	112.5	1515.1	1571.3
540.00	7.70	48500.00	228621	251.1	1905.2	2030.7

END

STORM WATER ROUTING

Frequency of Routed Storm ..... = 25 years

Flow Rate Multiplier to Base Storm = 1.00

Total Runoff Into Pond ..... = 164.3 cfs

Time Base of Inflow Hydrograph ... = 60.00 minutes

Type of Routing ..... = SLUG

TIME (MIN)	INFLOW (CFS)	AVG. INFLOW (CFS)	S/T-1/2 Q	S/T+1/2 Q	Q (CFS)	SURF ELEV
0	164.34	0.00	0.00	0.00	0.00	532.30
2.0	164.34	164.34	0.00	0.00	0.00	532.30
4.0	164.34	164.34	146.56	164.34	17.78	534.34
6.0	164.34	164.34	283.25	310.91	27.66	535.03
8.0	164.34	164.34	410.72	447.59	36.87	535.67
10.0	164.34	164.34	530.26	575.06	44.80	536.17
12.0	164.34	164.34	643.12	694.61	51.49	536.53
14.0	164.34	164.34	749.64	807.46	57.82	536.86
16.0	164.34	164.34	850.20	913.98	63.78	537.18
18.0	164.34	164.34	945.12	1014.54	69.42	537.47
20.0	164.34	164.34	1034.73	1109.47	74.74	537.75
22.0	0.00	82.17	1119.30	1199.07	79.77	538.02
24.0	0.00	0.00	1121.56	1201.47	79.91	538.02
26.0	0.00	0.00	1046.15	1121.56	75.41	537.79
28.0	0.00	0.00	974.96	1046.15	71.19	537.57
30.0	0.00	0.00	907.76	974.96	67.20	537.36
32.0	0.00	0.00	844.32	907.76	63.44	537.16
34.0	0.00	0.00	784.44	844.32	59.88	536.97
36.0	0.00	0.00	727.91	784.44	56.53	536.79
38.0	0.00	0.00	674.55	727.91	53.36	536.62
40.0	0.00	0.00	624.18	674.55	50.37	536.47
42.0	0.00	0.00	576.63	624.18	47.55	536.32
44.0	0.00	0.00	531.75	576.63	44.88	536.18
46.0	0.00	0.00	489.38	531.75	42.37	536.04
48.0	0.00	0.00	449.70	489.38	39.68	535.87
50.0	0.00	0.00	412.69	449.70	37.01	535.68
52.0	0.00	0.00	378.17	412.69	34.52	535.51
54.0	0.00	0.00	345.98	378.17	32.19	535.35
56.0	0.00	0.00	315.96	345.98	30.02	535.20
58.0	0.00	0.00	287.96	315.96	28.00	535.05
60.0	0.00	0.00	261.85	287.96	26.11	534.92
62.0	0.00	0.00	237.50	261.85	24.35	534.80
64.0	0.00	0.00	214.79	237.50	22.71	534.68
66.0	0.00	0.00	193.61	214.79	21.18	534.58
68.0	0.00	0.00	173.86	193.61	19.75	534.48
70.0	0.00	0.00	155.44	173.86	18.42	534.38
72.0	0.00	0.00	138.26	155.44	17.18	534.30
74.0	0.00	0.00	122.24	138.26	16.02	534.22
76.0	0.00	0.00	107.30	122.24	14.94	534.14

78.0	0.00	0.00	93.37	107.30	13.93	534.07
80.0	0.00	0.00	80.37	93.37	13.00	534.00
82.0	0.00	0.00	69.12	80.37	11.25	533.78
84.0	0.00	0.00	59.45	69.12	9.67	533.57
86.0	0.00	0.00	51.13	59.45	8.32	533.39
88.0	0.00	0.00	43.97	51.13	7.16	533.24
90.0	0.00	0.00	37.82	43.97	6.15	533.11
92.0	0.00	0.00	32.53	37.82	5.29	533.00
94.0	0.00	0.00	27.98	32.53	4.55	532.90
96.0	0.00	0.00	24.06	27.98	3.92	532.81
98.0	0.00	0.00	20.69	24.06	3.37	532.74
100.0	0.00	0.00	17.79	20.69	2.90	532.68
102.0	0.00	0.00	15.30	17.79	2.49	532.63
104.0	0.00	0.00	13.16	15.30	2.14	532.58
106.0	0.00	0.00	11.32	13.16	1.84	532.54
108.0	0.00	0.00	9.74	11.32	1.58	532.51
110.0	0.00	0.00	8.38	9.74	1.36	532.48
112.0	0.00	0.00	7.21	8.38	1.17	532.45
114.0	0.00	0.00	6.20	7.21	1.01	532.43
116.0	0.00	0.00	5.33	6.20	0.87	532.41
118.0	0.00	0.00	4.58	5.33	0.75	532.40
120.0	0.00	0.00	3.94	4.58	0.64	532.38

PROJ. NAME UNITY HEALTHCARE-O'FALLON, MO. PROJ NO. 98593
OFFSITE DETENTION BASIN

FREQUENCY FOR DETENTION POND CALCULATIONS 100 YEAR

SITE DATA

Total Area Being Developed..... =	37.95	acres
P.I. Factor Undeveloped. ..... =	2.95	cfs/acre
P.I. Factor Developed... ..... =	5.57	cfs/acre
Time of Concentration ..... =	20	minutes
Avgerage Runoff Developed ..... =	211.38	cfs
Avgerage Runoff Undeveloped ..... =	111.95	cfs
Differential Site Runoff Rate .... =	99.43	cfs
Detention Time Required ..... =	30	minutes
Detention Volume Required ..... =	178972	cubic feet

DETENTION POND DESIGN PARAMETER

Area Tributary To Pond ..... =	37.78	acres
P.I. Area Trib. To Pond ..... =	5.57	cfs/acre
Average Runoff Into Pond ..... =	210.43	cfs
Differential Runoff Rate ..... =	99.43	cfs
Low Flow Structure Design Flow ... =	111.01	cfs
Overflow Structure Design Flow ... =	210.43	cfs
Low Flow Control Elevation ..... =	532.30	FL OUT
Overflow Control Elevation ..... =	538.75	
Max. Detention Vol. Storage Depth =	6.45	feet

LOW FLOW STRUCTURE DESIGN

Type of Low Flow Structure ..... = RECT. WEIR

Width of Rectangular Weir ..... = 20.9 inches

Peak Discharge at Max. Depth ..... = 95.58 cfs ←

Max. Allowable Discharge Rate .... = 111.01 cfs

OVERFLOW STRUCTURE DESIGN

Overflow Structure Design Flow ... = 210.43 cfs

Overflow Control Elevation ..... = 538.75

Max. Height of Water Above Weir .. = 21 inches

Required Weir Length ... . = 27 feet

Actual Weir Length .... = 27 feet

Actual Height of Water Above Weir .= 21 inches

Invert Elevation - Outlet Pipe ... = 527.17

Number of Outlet Pipes . ..... = 1

Approximate Outlet Pipe Size ..... = 48 inches

DETENTION POND DESIGN

STAGE	DEPTH	AREA	TOT. VOL.	OUTFLOW	S/T	S/T+1/2 Q
532.30	0.00	0.00	0	0.00	0.00	0.00
534.00	1.70	12130.00	10311	12.93	85.93	92.40
536.00	3.70	37080.00	59521	41.53	496.01	516.78
538.00	5.70	41760.00	138361	79.4	1153.0	1192.7
538.75	6.45	44287.50	170629	95.6	1421.9	1469.7
539.00	6.70	45130.00	181806	112.5	1515.1	1571.3
540.00	7.70	48500.00	228621	251.1	1905.2	2030.7

END

STORM WATER ROUTING

Frequency of Routed Storm ..... = 100 years

Flow Rate Multiplier to Base Storm = 1.00

Total Runoff Into Pond ..... = 210.4 cfs

Time Base of Inflow Hydrograph ... = 60.00 minutes

Type of Routing ..... = SLUG

TIME (MIN)	INFLOW (CFS)	AVG. INFLOW (CFS)	S/T-1/2 Q	S/T+1/2 Q	Q (CFS)	SURF ELEV
0	210.43	0.00	0.00	0.00	0.00	532.30
2.0	210.43	210.43	0.00	0.00	0.00	532.30
4.0	210.43	210.43	189.55	210.43	20.88	534.56
6.0	210.43	210.43	366.33	399.99	33.66	535.45
8.0	210.43	210.43	531.87	576.76	44.89	536.18
10.0	210.43	210.43	688.14	742.31	54.17	536.67
12.0	210.43	210.43	835.65	898.57	62.92	537.13
14.0	210.43	210.43	974.90	1046.09	71.19	537.57
16.0	210.43	210.43	1106.34	1185.33	78.99	537.98
18.0	210.43	210.43	1230.13	1316.78	86.65	538.34
20.0	210.43	210.43	1346.68	1440.56	93.88	538.67
22.0	0.00	105.22	1446.99	1557.12	110.13	538.97
24.0	0.00	0.00	1442.89	1552.20	109.31	538.95
26.0	0.00	0.00	1348.88	1442.89	94.01	538.68
28.0	0.00	0.00	1260.36	1348.88	88.52	538.42
30.0	0.00	0.00	1177.01	1260.36	83.35	538.18
32.0	0.00	0.00	1098.49	1177.01	78.52	537.95
34.0	0.00	0.00	1024.37	1098.49	74.12	537.72
36.0	0.00	0.00	954.40	1024.37	69.97	537.50
38.0	0.00	0.00	888.35	954.40	66.05	537.29
40.0	0.00	0.00	826.00	888.35	62.35	537.10
42.0	0.00	0.00	767.15	826.00	58.85	536.91
44.0	0.00	0.00	711.59	767.15	55.56	536.74
46.0	0.00	0.00	659.15	711.59	52.44	536.58
48.0	0.00	0.00	609.64	659.15	49.51	536.42
50.0	0.00	0.00	562.91	609.64	46.73	536.27
52.0	0.00	0.00	518.80	562.91	44.11	536.14
54.0	0.00	0.00	477.16	518.80	41.64	536.01
56.0	0.00	0.00	438.30	477.16	38.86	535.81
58.0	0.00	0.00	402.06	438.30	36.24	535.63
60.0	0.00	0.00	368.26	402.06	33.80	535.46
62.0	0.00	0.00	336.74	368.26	31.52	535.30
64.0	0.00	0.00	307.34	336.74	29.40	535.15
66.0	0.00	0.00	279.92	307.34	27.42	535.01
68.0	0.00	0.00	254.35	279.92	25.57	534.88
70.0	0.00	0.00	230.51	254.35	23.84	534.76
72.0	0.00	0.00	208.27	230.51	22.24	534.65
74.0	0.00	0.00	187.53	208.27	20.74	534.55

76.0	0.00	0.00	168.19	187.53	19.34	534.45
78.0	0.00	0.00	150.15	168.19	18.04	534.36
80.0	0.00	0.00	133.33	150.15	16.82	534.27
82.0	0.00	0.00	117.64	133.33	15.69	534.19
84.0	0.00	0.00	103.01	117.64	14.63	534.12
86.0	0.00	0.00	89.36	103.01	13.65	534.05
88.0	0.00	0.00	76.85	89.36	12.51	533.94
90.0	0.00	0.00	66.10	76.85	10.75	533.71
92.0	0.00	0.00	56.85	66.10	9.25	533.52
94.0	0.00	0.00	48.89	56.85	7.96	533.35
96.0	0.00	0.00	42.05	48.89	6.84	533.20
98.0	0.00	0.00	36.17	42.05	5.88	533.07
100.0	0.00	0.00	31.11	36.17	5.06	532.97
102.0	0.00	0.00	26.76	31.11	4.35	532.87
104.0	0.00	0.00	23.01	26.76	3.75	532.79
106.0	0.00	0.00	19.79	23.01	3.22	532.72
108.0	0.00	0.00	17.02	19.79	2.77	532.66
110.0	0.00	0.00	14.64	17.02	2.38	532.61
112.0	0.00	0.00	12.59	14.64	2.05	532.57
114.0	0.00	0.00	10.83	12.59	1.76	532.53
116.0	0.00	0.00	9.31	10.83	1.52	532.50
118.0	0.00	0.00	8.01	9.31	1.30	532.47
120.0	0.00	0.00	6.89	8.01	1.12	532.45