

DETENTION 1 - 5 YEAR STORM

Present Conditions	PRESENT AREAS 1,2,3,4,5,6,7 = 3.37 AC
Q=CIA	PRESENT AREAS 3.11 AC C=.35 .26 AC C=.9
A = 3.37	C PRESENT = (3.11/3.37) X .35 + (.26/3.37) X .9 = 0.4
C = 0.4	
Tc = 20	
I5 = 4.9	FUTURE AREAS 3,4,6,7 = .81 AC C=.9
Q5 = 6.6052	FUTURE AREAS 1,2,5 = 2.56 AC
	C FUTURE = (2.56/3.37) X .35 + (.81/3.37) X .9 = 0.4

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 3.37	A = 0	A = 0.008
Aadj = 3.362		
C = 0.48	C = 0.4	C = 0.9
Tc = 10	Tc = 20	Tc = 10
I5 = 6.1	I5 = 4.9	I5 = 6.1
Q5 = 9.86736	Q5 = 0	Q5 = 0.04392

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	6.1	0.48	9.843936	10 min	6.1	0.4	0
15 min	5.5	0.48	8.87568	15 min	5.5	0.4	0
20 min	4.9	0.48	7.907424	20 min	4.9	0.4	0
30 min	4.1	0.48	6.616416	30 min	4.1	0.4	0
40 min	3.4	0.48	5.486784	40 min	3.4	0.4	0
50 min	2.8	0.48	4.518528	50 min	2.8	0.4	0
60 min	2.6	0.48	4.195776	60 min	2.6	0.4	0
70 min	2.4	0.48	3.873024	70 min	2.4	0.4	0
80 min	2.3	0.48	3.711648	80 min	2.3	0.4	0
90 min	2.1	0.48	3.388896	90 min	2.1	0.4	0
100 min	1.9	0.48	3.066144	100 min	1.9	0.4	0
110 min	1.8	0.48	2.904768	110 min	1.8	0.4	0

Storage Calculations			
Time	Inflow	Outflow	Storage
10 min	5906.362	3936.788	1969.594
15 min	7988.112	4920.96	3067.152
20 min	9488.909	5905.152	3583.757
30 min	11909.55	7873.536	4036.013
40 min	13168.28	9841.92	3326.362
50 min	13555.58	11810.3	1745.28
60 min	15104.79	13778.69	1326.106
70 min	16266.7	15747.07	519.6288
80 min	17815.91	17715.46	100.4544
90 min	18300.04	19683.84	-1383.8
100 min	18396.86	21652.22	-3255.36
110 min	17428.61	23620.61	-6192

DETENTION 1 - 10 YEAR STORM

Present Conditions	PRESENT AREAS 1,2,3,4,5,6,7 = 3.37 AC
Q=CIA	PRESENT AREAS 3.11 AC C=.35 .26 AC C=.9
A = 3.37	C PRESENT = (3.11/3.37) X .35 + (.26/3.37) X .9 = 0.4
C = 0.4	
Tc = 20	
I10 = 5.9	FUTURE AREAS 3,4,6,7 = .81 AC C=.9
Q10 = 7.9532	FUTURE AREAS 1,2,5 = 2.56 AC
	C FUTURE = (2.56/3.37) X .35 + (.81/3.37) X .9 = 0.4

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 3.37	A = 0	A = 0.008
Aadj = 3.362		
C = 0.48	C = 0.4	C = 0.9
Tc = 10	Tc = 20	Tc = 10
I10 = 7.1	I10 = 5.9	I10 = 7.1
Q10 = 11.48496	Q10 = 0	Q10 = 0.05112

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	7.1	0.48	11.4577	10 min	7.1	0.4	0
15 min	6.5	0.48	10.48944	15 min	6.5	0.4	0
20 min	5.9	0.48	9.521184	20 min	5.9	0.4	0
30 min	4.8	0.48	7.746048	30 min	4.8	0.4	0
40 min	4	0.48	6.45504	40 min	4	0.4	0
50 min	3.5	0.48	5.64816	50 min	3.5	0.4	0
60 min	3	0.48	4.84128	60 min	3	0.4	0
70 min	2.8	0.48	4.518528	70 min	2.8	0.4	0
80 min	2.6	0.48	4.195776	80 min	2.6	0.4	0
90 min	2.5	0.48	4.0344	90 min	2.5	0.4	0
100 min	2.4	0.48	3.873024	100 min	2.4	0.4	0
110 min	2.3	0.48	3.711648	110 min	2.3	0.4	0

Storage Calculations			
Time	Inflow	Outflow	Storage
10 min	6874.618	4741.248	2133.37
15 min	9440.496	5926.56	3513.936
20 min	11425.42	7111.872	4313.549
30 min	13942.89	9482.496	4460.39
40 min	15492.1	11853.12	3638.976
50 min	16944.48	14223.74	2720.736
60 min	17428.61	16594.37	834.24
70 min	18977.82	18964.99	12.8256
80 min	20139.72	21335.62	-1195.89
90 min	21785.76	23706.24	-1920.48
100 min	23238.14	26076.86	-2838.72
110 min	22269.89	28447.49	-6177.6

DETENTION 1 - 25 YEAR STORM

Present Conditions	PRESENT AREAS 1,2,3,4,5,6,7 = 3.37 AC
Q=CIA	PRESENT AREAS 3.11 AC C=.35 .26 AC C=.9
A = 3.37	C PRESENT = (3.11/3.37) X .35 + (.26/3.37) X .9 = 0.4
C = 0.4	
Tc = 20	
I25 = 6.6	FUTURE AREAS 3,4,6,7 = .81 AC C=.9
Q25 = 8.8968	FUTURE AREAS 1,2,5 = 2.56 AC C=.35
	C FUTURE = (2.56/3.37) X .35 + (.81/3.37) X .9 = 0.48

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 3.37	A = 0	A = 0.008
Aadj = 3.362		
C = 0.48	C = 0.4	C = 0.9
Tc = 10	Tc = 20	Tc = 10
I25 = 8.3	I25 = 6.6	I25 = 8.3
Q25 = 13.42608	Q25 = 0	Q25 = 0.05976

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	8.3	0.48	13.39421	10 min	8.3	0.4	0
15 min	7.5	0.48	12.1032	15 min	7.5	0.4	0
20 min	6.6	0.48	10.65082	20 min	6.6	0.4	0
30 min	5.5	0.48	8.87568	30 min	5.5	0.4	0
40 min	4.6	0.48	7.423296	40 min	4.6	0.4	0
50 min	4	0.48	6.45504	50 min	4	0.4	0
60 min	3.5	0.48	5.64816	60 min	3.5	0.4	0
70 min	3.3	0.48	5.325408	70 min	3.3	0.4	0
80 min	3.1	0.48	5.002656	80 min	3.1	0.4	0
90 min	2.9	0.48	4.679904	90 min	2.9	0.4	0
100 min	2.7	0.48	4.357152	100 min	2.7	0.4	0
110 min	2.5	0.48	4.0344	110 min	2.5	0.4	0

Storage Calculations			
Time	Inflow	Outflow	Storage
10 min	8036.525	5302.224	2734.301
15 min	10892.88	6627.78	4265.1
20 min	12780.98	7953.336	4827.643
30 min	15976.22	10604.45	5371.776
40 min	17815.91	13255.56	4560.35
50 min	19365.12	15906.67	3458.448
60 min	20333.38	18557.78	1775.592
70 min	22366.71	21208.9	1157.818
80 min	24012.75	23860.01	152.7408
90 min	25271.48	26511.12	-1239.64
100 min	26142.91	29162.23	-3019.32
110 min	24206.4	31813.34	-7606.94

DETENTION 1 - 100 YEAR STORM

Present Conditions	PRESENT AREAS 1,2,3,4,5,6,7 = 3.37 AC
Q=CIA	PRESENT AREAS 3.11 AC C=.35 .26 AC C=.9
A = 3.37	C PRESENT = (3.11/3.37) X .35 + (.26/3.37) X .9 = 0.4
C = 0.4	
Tc = 20	
I100 = 8.3	FUTURE AREAS 3,4,6,7 = .81 AC C=.9
Q100 = 11.1884	FUTURE AREAS 1,2,5 = 2.56 AC C=.35
	C FUTURE = (2.56/3.37) X .35 + (.81/3.37) X .9 = 0.48

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 3.37	A = 0	A = 0.008
Aadj = 3.362		
C = 0.48	C = 0.4	C = 0.9
Tc = 10	Tc = 20	Tc = 10
I100 = 9.8	I100 = 8.3	I100 = 9.8
Q100 = 15.85248	Q100 = 0	Q100 = 0.07056

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	9.8	0.48	15.81485	10 min	9.8	0.4	0
15 min	9	0.48	14.52384	15 min	9	0.4	0
20 min	8.3	0.48	13.39421	20 min	8.3	0.4	0
30 min	6.9	0.48	11.13494	30 min	6.9	0.4	0
40 min	5.8	0.48	9.359808	40 min	5.8	0.4	0
50 min	5	0.48	8.0688	50 min	5	0.4	0
60 min	4.5	0.48	7.26192	60 min	4.5	0.4	0
70 min	4	0.48	6.45504	70 min	4	0.4	0
80 min	3.7	0.48	5.970912	80 min	3.7	0.4	0
90 min	3.5	0.48	5.64816	90 min	3.5	0.4	0
100 min	3.3	0.48	5.325408	100 min	3.3	0.4	0
110 min	2.9	0.48	4.679904	110 min	2.9	0.4	0

Storage Calculations			
Time	Inflow	Outflow	Storage
10 min	9488.909	6670.704	2818.205
15 min	13071.46	8338.38	4733.076
20 min	16073.05	10006.06	6066.994
30 min	20042.9	13341.41	6701.491
40 min	22463.54	16676.76	5786.779
50 min	24206.4	20012.11	4194.288
60 min	26142.91	23347.46	2795.448
70 min	27111.17	26682.82	428.352
80 min	28860.38	30018.17	-1357.79
90 min	30500.06	33353.52	-2853.46
100 min	31952.45	36688.87	-4736.42
110 min	28079.42	40024.22	-11944.8

REVISED TO CONFORM TO CONSTRUCTION RECORDS.
 DATE: 1-9-23



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DETENTION CALCULATIONS
ST. BENEDICT'S ANGLICAN CHURCH
 CITY ROCKWALL, ROCKWALL COUNTY, TEXAS

REVISION
 CHECKED **W.L.D.**
 DRAWN **G.C.W.**
 SCALE
 1" = 20'H
 1" = 4'V
 DATE **DEC, 2021**
 PROJECT **21007**
 5.0