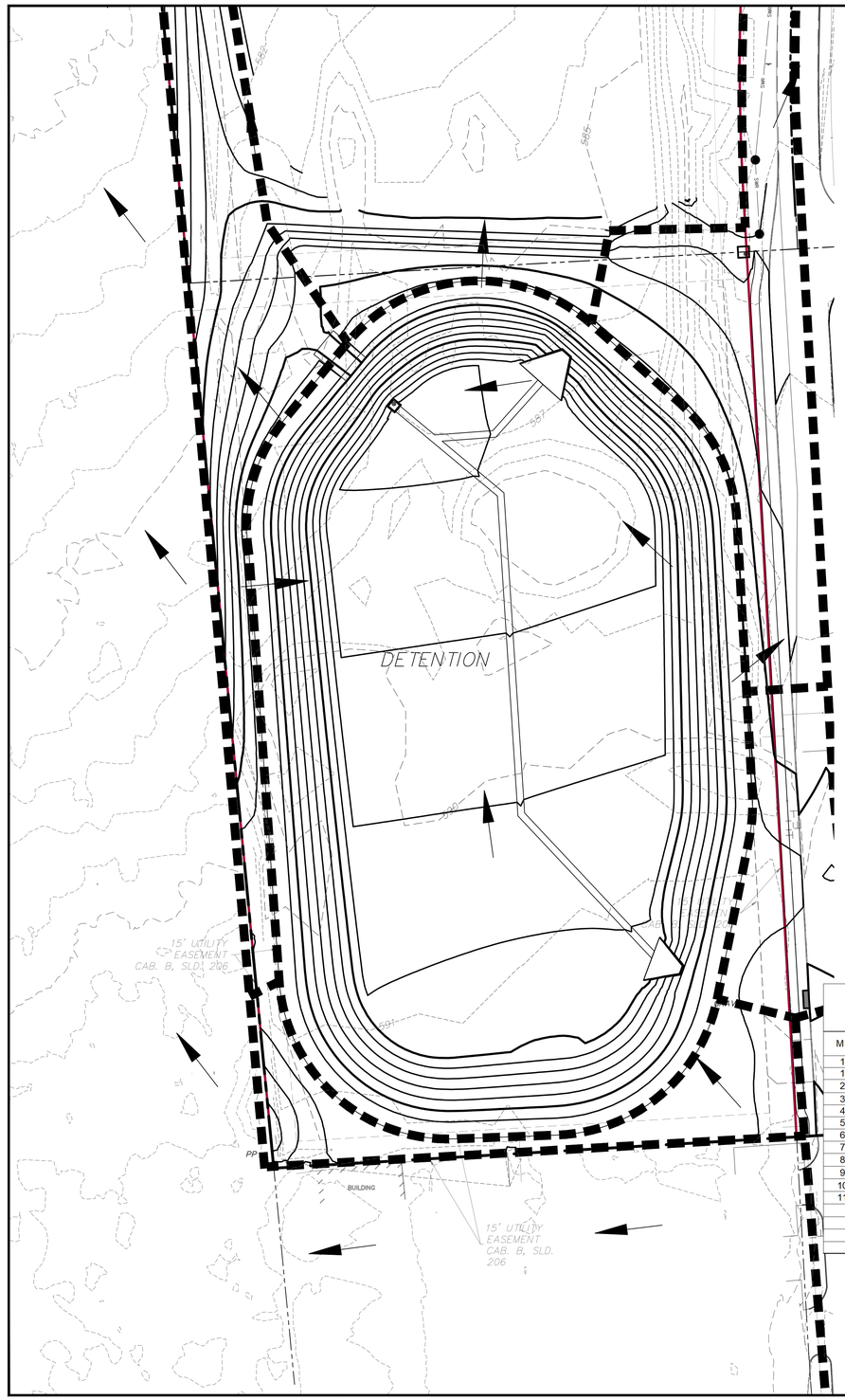


Select County:	ROCKWALL
Enter C Value:	0.90
Enter Total Area:	28.562
Starting Flow Line:	580.36
Number of Storm Events:	5

Storm Event	Q_{max}	WSE	STORAGE (cu-ft)	STORAGE (ac-ft)
100	68.94	586.23	250,589	5.75
50	62.30	586.48	271,186	6.23
25	54.82	586.08	238,090	5.47
10	49.01	585.78	213,789	4.91
5	40.70	585.28	173,902	3.99

Pond Storage

Elevation	Contour Area	Storage (Incremental)	Storage (Cumulative)	Storage
(ft)	(sq-ft)	(cu-ft)	(cu-ft)	(ac-ft)
580.36	0.00	0.00	0.00	0.00
581	3,952.00	1976.00	1976.00	0.05
582	25,518.00	14735.00	16711.00	0.38
583	46,171.00	35844.50	52555.50	1.21
584	64,915.00	55543.00	108098.50	2.48
585	78,362.00	71638.50	179737.00	4.13
586	83,766.00	81064.00	260801.00	5.99
587	89,132.00	86449.00	347250.00	7.97
588	94,700.00	91916.00	439166.00	10.08
589	100,462.00	97581.00	536747.00	12.32
590	106,512.00	103487.00	640234.00	14.70
591	112,807.00	109659.50	749893.50	17.22

Total Pond Area and Composite C value

Area #	Area (ac)	C Value	C*A
C-1	2.890	0.90	2.601
C-2	3.920	0.90	3.528
C-3	0.735	0.90	0.662
C-4	1.632	0.90	1.469
C-5	9.955	0.90	8.960
C-6	0.996	0.90	0.896
C-7	0.854	0.90	0.769
C-8	0.180	0.90	0.162
C-9	0.302	0.90	0.272
C-10	2.500	0.90	2.250
C-11	0.204	0.90	0.184
C-12	0.940	0.90	0.846
C-13	2.330	0.90	2.097
C-14	0.267	0.90	0.240
C-15	0.585	0.90	0.527
C-16	0.272	0.90	0.245
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
			0.000
Total Pond Drainage Area	28.562		25.706

COMPOSITE C VALUE (total area/sum of C*A)	0.90

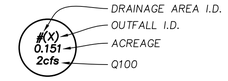
DETENTION POND CALCULATIONS Table 1

Storm Event	Existing Flow Rate
100 Year	68.94 cfs

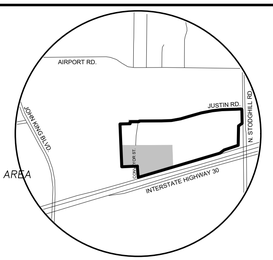
MIN	I-100YR	C*	TOTAL AREA (ac)	TOTAL CFS	TOTAL FLOW	OUTFLOW	STORAGE
10	9.80	0.90	28.56	251.92	151150	41364	109786
15	9.00	0.90	28.56	231.35	208217	51705	156512
20	8.30	0.90	28.56	213.36	256030	62046	193984
30	6.90	0.90	28.56	177.37	319266	82728	236538
40	5.80	0.90	28.56	149.09	357825	103410	254415
50	5.00	0.90	28.56	128.53	385587	124092	261495
60	4.50	0.90	28.56	115.68	416434	144774	271660
70	4.00	0.90	28.56	102.82	431857	165456	266401
80	3.70	0.90	28.56	95.11	456535	186138	270397
90	3.50	0.90	28.56	89.97	485840	206820	279020
100	3.40	0.90	28.56	87.40	524398	227502	296896
110	3.20	0.90	28.56	82.26	542906	248184	294722

Detention Storage Required (cubic feet)	=	250,589
Detention Storage Required (acre feet)	=	5.75
100 Year Water Surface Elevation	=	586.23
Pond Elevation Including 2 ft Freeboard	=	588.23

DRAINAGE AREA MAP LEGEND



- DRAINAGE AREA I.D.
- OUTFALL I.D.
- ACREAGE
- Q100
- PROPOSED DRAINAGE AREA DIVIDES
- FLOW ARROW
- 465 EXISTING CONTOURS
- 465 PROP. CONTOURS
- BOUNDARY LINE



VICINITY MAP
NOT TO SCALE

BEFORE YOU DIG TEXAS 811

Present Conditions
Q=CIA

A =	23.73
C =	0.35
Tc =	20
I_{100} =	8.30
Q_{100} =	68.94

Future Conditions (Developed)		Offsite Conditions		Bypass	
A =	28.56	A =	0.00	A=	0.00
Aadj=	28.56				
C =	0.90	C =	0.35	C=	0.90
Tc =	10	Tc =	20	Tc=	10
I_{100} =	9.8	I_{100} =	8.3	I_{100} =	9.8
Q_{100} =	251.92	Q_{100} =	0.00	Q_{100} =	0.00

Flow for Storm Durations (Developed)

Time	I	C	Q
10 min	9.8	0.9	251.92
15 min	9	0.9	231.35
20 min	8.3	0.9	213.36
30 min	6.9	0.9	177.37
40 min	5.8	0.9	149.09
50 min	5	0.9	128.53
60 min	4.5	0.9	115.68
70 min	4	0.9	102.82
80 min	3.7	0.9	95.11
90 min	3.5	0.9	89.97
100 min	3.4	0.9	87.40
110 min	3.2	0.9	82.26

Flow for Storm Durations (Offsite)

Time	I	C	Q
10 min	9.8	0.35	0
15 min	9	0.35	0
20 min	8.3	0.35	0
30 min	6.9	0.35	0
40 min	5.8	0.35	0
50 min	5	0.35	0
60 min	4.5	0.35	0
70 min	4	0.35	0
80 min	3.7	0.35	0
90 min	3.5	0.35	0
100 min	3.4	0.35	0
110 min	3.2	0.35	0

Storage Calculations

10 min			
Inflow	151150.1	Storage	101,366.54
Outflow	49783.57		
15 min			
Inflow	208217	Storage	145,987.52
Outflow	62229.46		
20 min			
Inflow	256029.8	Storage	181,354.42
Outflow	74675.35		
30 min			
Inflow	319266	Storage	219,698.90
Outflow	99567.13		
40 min			
Inflow	357824.7	Storage	233,365.82
Outflow	124458.9		
50 min			
Inflow	385587	Storage	236,236.30
Outflow	149350.7		
60 min			
Inflow	416434	Storage	242,191.48
Outflow	174242.5		
70 min			
Inflow	431857.4	Storage	232,723.18
Outflow	199134.3		
80 min			
Inflow	456535	Storage	232,508.96
Outflow	224026		
90 min			
Inflow	485839.6	Storage	236,921.79
Outflow	248917.8		
100 min			
Inflow	524398.3	Storage	250,588.71
Outflow	273809.6		
110 min			
Inflow	542906.5	Storage	244,205.10
Outflow	298701.4		

NOTES:

AREAS C–2, C–3, C–4, AND C–5 HAVE INTERIM AREAS THAT DRAIN TO OUTFALL C INSTEAD OF THE DETENTION POND. IN FUTURE CONDITIONS AFTER THESE AREAS ARE DEVELOPED, THEY WILL FOLLOW THE ULTIMATE DRAINAGE CONDITIONS AND DRAIN TO DETENTION POND 1. SEE SHEET C–06.07 FOR INTERIM CALCULATIONS.

FOR THE REST OF THE PLANS, THE ROCKWALL CALCULATIONS ARE NOT USED. THE ULTIMATE DRAINAGE CALCULATIONS ARE USED. THIS IS TO SHOW THAT THE POND STORAGE IS LOWER USING THE ROCKWALL VALUES SO IT IS A MORE CONSERVATIVE APPROACH TO USE THE CALCULATIONS FOUND ON C–05.04

AS–BUILT

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1.			
2.			
3.			
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WILLIAM R. WINKELMANN 120378 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

02-25-2025
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DETENTION POND 1 EXHIBIT
(PER CITY OF ROCKWALL CALCULATIONS)
I–30 FRONTAGE RD & FM 3549
ROCKWALL, TX

63406

IKEA @ ROCKWALL HEIGHTS

C-05.06

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