

INTERIM DRAINAGE FLOW CALCULATIONS

I.D. NO.	AREA (AC.)	Tc (MIN)	INTERIM DRAINAGE FLOW CALCULATIONS																				COMMENTS
			5-YEAR				10-YEAR				25-YEAR				50-YEAR				100-YEAR				
			C	Ca	I (IN/HR)	Q (CFS)	C	Ca	I (IN/HR)	Q (CFS)	C	Ca	I (IN/HR)	Q (CFS)	C	Ca	I (IN/HR)	Q (CFS)	C	Ca	I (IN/HR)	Q (CFS)	
OUTFALL C: DETAINED																							
C-1	2.890	10.0	0.90	1.00	6.10	15.87	0.90	1.00	7.10	18.47	0.90	1.00	8.30	21.59	0.90	1.00	9.00	23.41	0.90	1.00	9.80	25.49	DETENTION POND 1
C-6	0.996	10.0	0.90	1.00	6.10	5.47	0.90	1.00	7.10	6.36	0.90	1.00	8.30	7.44	0.90	1.00	9.00	8.07	0.90	1.00	9.80	8.78	C-6 INLET TO DETENTION POND 1
C-7	0.854	10.0	0.90	1.00	6.10	4.69	0.90	1.00	7.10	5.46	0.90	1.00	8.30	6.38	0.90	1.00	9.00	6.92	0.90	1.00	9.80	7.53	C-7 INLET TO DETENTION POND 1
C-8	0.180	10.0	0.90	1.00	6.10	0.99	0.90	1.00	7.10	1.15	0.90	1.00	8.30	1.34	0.90	1.00	9.00	1.46	0.90	1.00	9.80	1.59	C-8 INLET TO DETENTION POND 1
C-9	0.302	10.0	0.90	1.00	6.10	1.66	0.90	1.00	7.10	1.93	0.90	1.00	8.30	2.26	0.90	1.00	9.00	2.45	0.90	1.00	9.80	2.66	C-9 INLET TO DETENTION POND 1
C-10	2.500	10.0	0.90	1.00	6.10	13.73	0.90	1.00	7.10	15.98	0.90	1.00	8.30	18.68	0.90	1.00	9.00	20.25	0.90	1.00	9.80	22.05	ROOF DRAINS TO DETENTION POND 1
C-11	0.204	10.0	0.90	1.00	6.10	1.12	0.90	1.00	7.10	1.30	0.90	1.00	8.30	1.52	0.90	1.00	9.00	1.65	0.90	1.00	9.80	1.80	C-11 INLET TO DETENTION POND 1
C-12	0.940	10.0	0.90	1.00	6.10	5.16	0.90	1.00	7.10	6.01	0.90	1.00	8.30	7.02	0.90	1.00	9.00	7.61	0.90	1.00	9.80	8.29	C-12 INLET TO DETENTION POND 1
C-13	2.330	10.0	0.90	1.00	6.10	12.79	0.90	1.00	7.10	14.89	0.90	1.00	8.30	17.41	0.90	1.00	9.00	18.87	0.90	1.00	9.80	20.55	C-13 INLET TO DETENTION POND 1
C-14	0.267	10.0	0.90	1.00	6.10	1.47	0.90	1.00	7.10	1.71	0.90	1.00	8.30	1.99	0.90	1.00	9.00	2.16	0.90	1.00	9.80	2.35	C-14 INLET TO DETENTION POND 1
C-15	0.584	10.0	0.90	1.00	6.10	3.21	0.90	1.00	7.10	3.73	0.90	1.00	8.30	4.36	0.90	1.00	9.00	4.73	0.90	1.00	9.80	5.15	C-15 INLET TO DETENTION POND 1
C-16	0.272	10.0	0.90	1.00	6.10	1.49	0.90	1.00	7.10	1.74	0.90	1.00	8.30	2.03	0.90	1.00	9.00	2.20	0.90	1.00	9.80	2.40	TO DETENTION POND 1
Total	12.319					67.631	CFS			78.718	CFS			92.023	CFS			99.784	CFS			108.654	CFS
OUTFALL C: UNDETAINED																							
C-2	3.920	20.0	0.35	1.00	4.90	6.72	0.35	1.00	5.90	8.09	0.35	1.00	6.60	9.06	0.35	1.00	7.50	10.29	0.35	1.00	8.30	11.39	SHEET FLOW TO OUTFALL C
C-3	0.735	10.0	0.90	1.00	6.10	4.04	0.90	1.00	7.10	4.70	0.90	1.00	8.30	5.49	0.90	1.00	9.00	5.95	0.90	1.00	9.80	6.48	SHEET FLOW TO OUTFALL C
C-4	1.632	10.0	0.90	1.00	6.10	8.96	0.90	1.00	7.10	10.43	0.90	1.00	8.30	12.19	0.90	1.00	9.00	13.22	0.90	1.00	9.80	14.39	X. C-4 INLET TO EX. CULVERT, SHEET FLOW TO OUTFALL
C-5	9.955	20.0	0.35	1.00	4.90	17.07	0.35	1.00	5.90	20.56	0.35	1.00	6.60	23.00	0.35	1.00	7.50	26.13	0.35	1.00	8.30	28.92	EX. HEADWALL, SHEET FLOW TO OUTFALL C
Total	16.242					36.790	CFS			43.777	CFS			49.733	CFS			55.595	CFS			61.184	CFS

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

Present Conditions

Q=CIA	23.73
A =	0.35
C =	20
Tc =	8.30
I ₁₀₀ =	68.94

Future Conditions (Developed)

A =	12.32	Offsite Conditions	A =	16.24	Bypass	A =	0.00
Aadj =	12.32						
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 =	108.65	Q ₁₀₀ =	47.18	Q ₁₀₀ =	0.00		

Flow for Storm Durations (Developed)

Time	L	C	Q
10 min	9.8	0.9	108.65
15 min	9	0.9	99.78
20 min	8.3	0.9	92.02
30 min	6.9	0.9	76.50
40 min	5.8	0.9	64.31
50 min	5	0.9	55.44
60 min	4.5	0.9	49.89
70 min	4	0.9	44.35
80 min	3.7	0.9	41.02
90 min	3.5	0.9	38.80
100 min	3.4	0.9	37.70
110 min	3.2	0.9	35.48

Flow for Storm Durations (Offsite)

Time	L	C	Q
10 min	9.8	0.35	55.71006
15 min	9	0.35	51.1623
20 min	8.3	0.35	47.18301
30 min	6.9	0.35	39.22443
40 min	5.8	0.35	32.97126
50 min	5	0.35	28.4235
60 min	4.5	0.35	25.58115
70 min	4	0.35	22.7388
80 min	3.7	0.35	21.03339
90 min	3.5	0.35	19.89645
100 min	3.4	0.35	19.32798
110 min	3.2	0.35	18.19104

Storage Calculations

Time	Inflow	Storage	Outflow
10 min	98618.18	48,836.36	49781.82
15 min	135851.6	73,624.30	62227.28
20 min	167047.1	92,374.39	74672.73
30 min	208305.8	108,742.11	99563.65
40 min	233463.5	109,008.90	124454.6
50 min	251577	102,231.53	149345.5
60 min	271703.2	97,466.78	174236.4
70 min	281766.2	82,638.95	199127.3
80 min	297867.2	73,848.96	224018.2
90 min	316987	68,077.91	248909.1
100 min	342144.7	68,344.69	273800
110 min	354220.4	55,529.48	298690.9

INTERIM DETENTION POND 1 CALCULATIONS

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

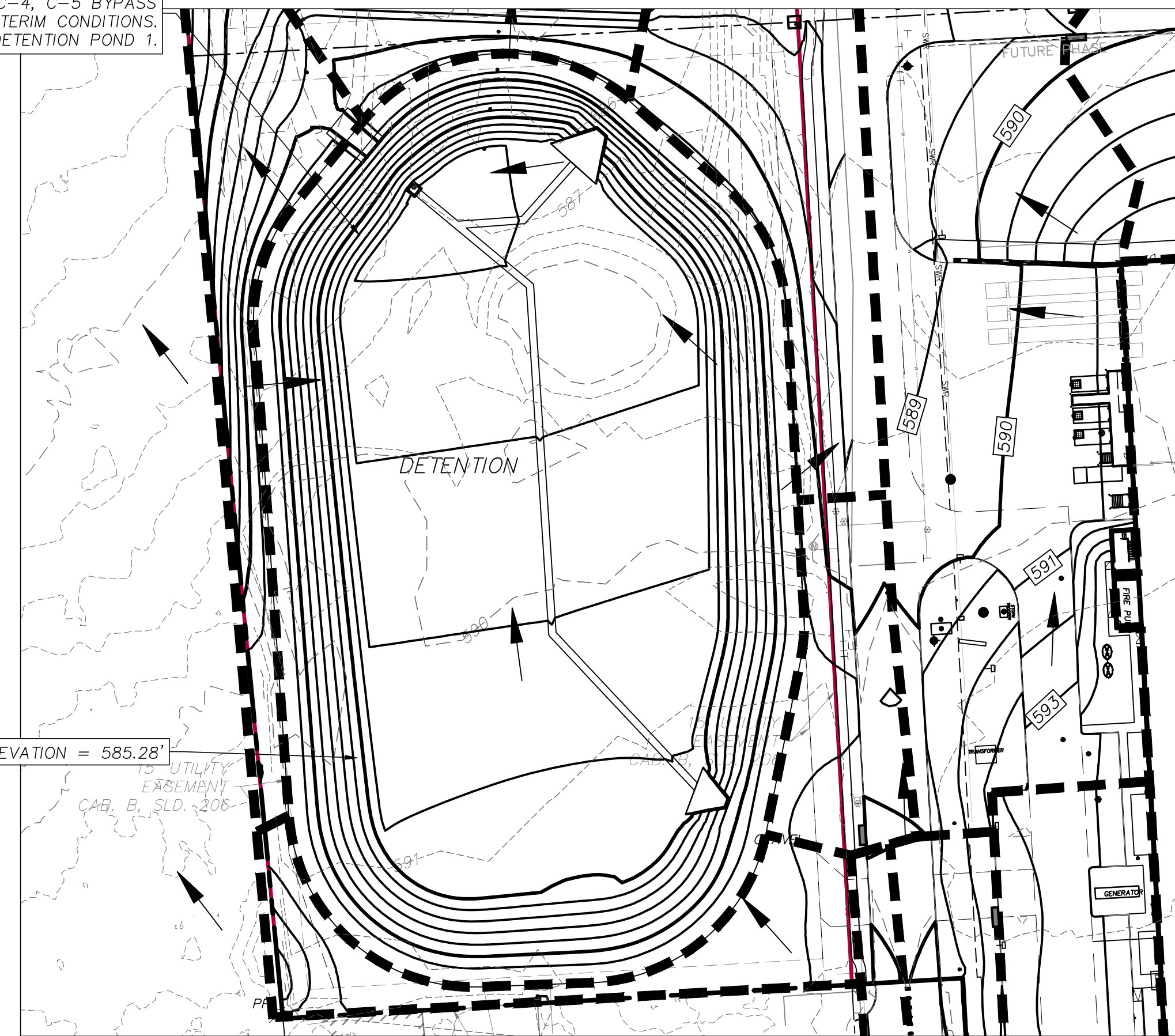
AREAS C-1, C-6, C-7, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-15, AND C-16 DRAIN TO DETENTION POND 1 AT INTERIM CONDITIONS. AREAS C-2, C-3, C-4, C-5 BYPASS DETENTION POND 1 AND DRAIN TO OUTFALL C AT INTERIM CONDITIONS. FOR FUTURE DEVELOPMENT, ALL C AREAS WILL DRAIN TO DETENTION POND 1.

Storm Event	Q _{max}	WSE	STORAGE (cu-ft)	STORAGE (ac-ft)
100	21.76	583.64	68,344	1.57

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

Area #	Area (ac)	C Value	C*A
C-1	2.890	0.90	2.601
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

INTERIM DETENTION POND CALCULATIONS				Storm Event	Existing Flow Rate	
Table 1				100 Year	21.76 cfs	
MIN	I-100YR	C*	TOTAL AREA (ac)	TOTAL CFS	TOTAL FLOW	OUTFLOW STORAGE
10	9.80	0.90	12.32	108.66	65197	13056 52141
15	9.00	0.90	12.32	99.79	89813	16320 73493
20	8.30	0.90	12.32	92.03	110436	19584 90852
30	6.90	0.90	12.32	76.51	137713	26112 111601
40	5.80	0.90	12.32	64.31	154345	32640 121705
50	5.00	0.90	12.32	55.44	166320	39168 127152
60	4.50	0.90	12.32	49.90	179626	45696 133930
70	4.00	0.90	12.32	44.35	186278	52224 134054
80	3.70	0.90	12.32	41.03	196923	58752 138171
90	3.50	0.90	12.32	38.81	209563	65280 144283
100	3.40	0.90	12.32	37.70	226195	71808 154387
110	3.20	0.90	12.32	35.48	234179	78336 155843
				Detention Storage Required (cubic feet)	=	68,344
				Detention Storage Required (acre feet)	=	1.57
				100 Year Water Surface Elevation	=	583.64
				Pond Elevation Including 2 ft Freeboard	=	585.64



AS-BUILT

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William R. Winkelmann
WINKELMANN AND ASSOCIATES, INC. 04-20-2026
DATE

INTERIM DRAINAGE FLOW CALCULATIONS
 I-30 FRONTAGE RD & FM 3549
 ROCKWALL, TX
 C-06.07

No.	DATE	REVISION
5.		
4.		
3.		
2.		
1.		

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