

5-YEAR DETENTION STORAGE CALCULATIONS

RELEASE RATE = 27.61 CFS
C = 0.90 A = 7.93 ACRES tc = 10 MIN

DURATION (min)	INTENSITY (in/hr)	PEAK Q (cfs)	INFLOW (cf)	OUTFLOW (cf)	STORAGE (cf)
5	7.05	50.37	15,112	12,425	2,687
10	6.20	44.30	26,579	16,566	10,013
15	5.50	39.30	35,367	20,708	14,660
20	4.90	35.01	42,012	24,849	17,163
25	4.50	32.15	48,228	28,991	19,238
30	4.10	29.29	52,730	33,132	19,598
40	3.40	24.29	58,303	41,415	16,888
50	2.90	20.72	62,161	49,698	12,463
60	2.60	18.58	66,877	57,981	8,896
120	1.60	11.43	82,310	107,679	0
180	1.25	8.93	96,457	157,377	0

INFLOW = STORM DURATION x FLOW x 60 SEC/MIN
OUTFLOW = 0.5 x (DURATION + tc) x RELEASE RATE x 60 SEC/MIN
(SEE DRAINAGE AREA MAP ON SHEET C7 FOR MORE INFORMATION)

10-YEAR DETENTION STORAGE CALCULATIONS

RELEASE RATE = 32.00 CFS
C = 0.90 A = 7.93 ACRES tc = 10 MIN

DURATION (min)	INTENSITY (in/hr)	PEAK Q (cfs)	INFLOW (cf)	OUTFLOW (cf)	STORAGE (cf)
5	8.20	58.59	17,577	14,400	3,177
10	7.19	51.37	30,823	19,200	11,623
15	6.35	45.37	40,833	24,000	16,833
20	5.68	40.58	48,700	28,800	19,900
25	5.14	36.72	55,087	33,600	21,487
30	4.70	33.58	60,446	38,400	22,046
40	4.01	28.65	68,763	48,000	20,763
50	3.50	25.01	75,022	57,600	17,422
60	3.10	22.15	79,737	67,200	12,537
120	1.75	12.50	90,026	124,800	0
180	1.40	10.00	108,031	182,400	0

INFLOW = STORM DURATION x FLOW x 60 SEC/MIN
OUTFLOW = 0.5 x (DURATION + tc) x RELEASE RATE x 60 SEC/MIN
(SEE DRAINAGE AREA MAP ON SHEET C7 FOR MORE INFORMATION)

25-YEAR DETENTION STORAGE CALCULATIONS

RELEASE RATE = 36.72 CFS
C = 0.90 A = 7.93 ACRES tc = 10 MIN

DURATION (min)	INTENSITY (in/hr)	PEAK Q (cfs)	INFLOW (cf)	OUTFLOW (cf)	STORAGE (cf)
5	9.30	66.45	19,934	16,524	3,410
10	8.22	58.73	35,239	22,032	13,207
15	7.33	52.37	47,135	27,540	19,595
20	6.61	47.23	56,674	33,048	23,626
25	6.01	42.94	64,412	38,556	25,856
30	5.50	39.30	70,735	44,064	26,671
40	4.69	33.51	80,423	55,080	25,343
50	4.08	29.15	87,454	66,096	21,358
60	3.60	25.72	92,598	77,112	15,486
120	2.25	16.08	115,748	143,208	0
180	1.60	11.43	123,464	209,304	0

INFLOW = STORM DURATION x FLOW x 60 SEC/MIN
OUTFLOW = 0.5 x (DURATION + tc) x RELEASE RATE x 60 SEC/MIN
(SEE DRAINAGE AREA MAP ON SHEET C7 FOR MORE INFORMATION)

100-YEAR DETENTION STORAGE CALCULATIONS

RELEASE RATE = 44.22 CFS
C = 0.90 A = 7.93 ACRES tc = 10 MIN

DURATION (min)	INTENSITY (in/hr)	PEAK Q (cfs)	INFLOW (cf)	OUTFLOW (cf)	STORAGE (cf)
5	10.20	72.88	21,863	19,899	1,964
10	9.80	70.02	41,966	26,882	15,083
15	9.00	64.30	57,810	33,603	24,207
20	8.30	59.30	71,085	40,323	30,761
25	7.50	53.59	80,380	46,431	33,949
30	6.80	48.59	88,642	53,765	34,877
40	5.80	41.44	99,347	67,206	32,141
50	5.00	35.72	107,055	80,647	26,408
60	4.40	31.44	115,619	94,088	21,531
120	2.75	19.65	141,470	172,458	0
180	2.00	14.29	154,330	252,054	0

INFLOW = STORM DURATION x FLOW x 60 SEC/MIN
OUTFLOW = 0.5 x (DURATION + tc) x RELEASE RATE x 60 SEC/MIN
(SEE DRAINAGE AREA MAP ON SHEET C7 FOR MORE INFORMATION)

STORAGE VOLUME CALCULATIONS

VOLUME REQUIRED: 34,390 CF
VOLUME PROVIDED-ELEV. 536.16: 34,390 CF
VOLUME PROVIDED-ELEV. 538.00: 52,060 CF
100-YR WSE = 536.21
TOP OF WALL = 538.00

ELEVATION	DEPTH (FT)	VOLUME (CF)	YR WSE
531.00	0.00	0	
532.00	1.00	665	
533.00	2.00	4,750	
533.50	2.50	8,860	
534.00	3.00	13,660	
534.62	3.62	19,598	5-YR
534.87	3.87	22,046	10-YR
535.00	4.00	23,260	
535.36	4.36	26,671	25-YR
536.00	5.00	32,860	
536.21	5.21	34,877	100-YR
537.00	6.00	42,460	
538.00	7.00	52,060	

AREA CALCULATIONS:

PRESENT CONDITIONS A=8.26
FUTURE CONDITIONS (DEVELOPED) A=4.25
OFFSITE CONDITIONS (DEVELOPED) A=4.01

ALLOWABLE DISCHARGE = 5-YR

A. DETAINED = 5.23
B. UN-DETAINED = C*I*A=0.9*6.20*4.01 = 22.38
C. TOTAL = 27.61

ALLOWABLE DISCHARGE = 10-YR

A. DETAINED = 6.06
B. UN-DETAINED = C*I*A=0.9*7.19*4.01 = 25.95
C. TOTAL = 32.00

ALLOWABLE DISCHARGE = 25-YR

A. DETAINED = 7.06
B. UN-DETAINED = C*I*A=0.9*8.22*4.01 = 29.66
C. TOTAL = 36.72

ALLOWABLE DISCHARGE = 100-YR

A. DETAINED = 8.86
B. UN-DETAINED = C*I*A=0.9*9.80*4.01 = 35.36
C. TOTAL = 44.22

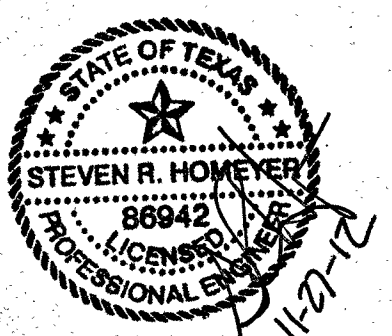
NOTES:

- CITY OF ROCKWALL CONSTRUCTION STANDARDS APPLY WHETHER INDICATED ON THESE PLANS OR NOT.
- ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN.

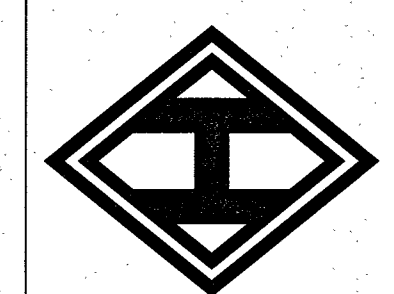
RECORD DRAWING

TO THE BEST OF OUR KNOWLEDGE, HOMEYER ENGINEERING, INC., HEREBY STATES THAT THIS PLAN IS A RECORD DRAWING. THE INFORMATION PROVIDED IS BASED ON ON-SITE SURVEYING, SITE OBSERVATIONS AND INFORMATION PROVIDED BY THE CONTRACTOR.

STEVEN R. HOMEYER, P.E. #86942
DATE: 12-2-13



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ROCK RIDGE ASSISTED LIVING
AND MEMORY CARE
LOT 1R, BLOCK A,
FLAGSTONE CORNERS
CITY OF ROCKWALL
ROCKWALL COUNTY, TEXAS

DETENTION
CALCULATIONS

DRAWN: SRH
DATE: 11/27/12
HEI #: 12-112
SHEET NO:
C8.1