

QUAIL RUN RETENTION CALCULATIONS

Total Acreage In Plat:			
Phase I	25.33 Acres		
Phase II	40.06 Acres		
Total	65.39 Acres		
Greenbelt Phase I			
Greenbelt Phase II	6.10 Acres		
Total	1.47 Acres		
Total Developed Acreage:			
	65.39 Acres		
Less Greenbelts	-7.57 Acres		
	57.82 Acres		
Detention Required:			
Developed	(57.82) (.50) (9.8)	=	283.32 cfs
Undeveloped	(57.82) (.35) (8.3)	=	167.97 cfs
	Detention Required	=	115.35 cfs
	Allowed Release Rate	=	167.97 cfs

POND No. 2

Drainage Area Captured			
	16.75 Acres		
Developed	(16.75) (0.50) (9.8)	=	82.08 cfs
Undeveloped	(16.75) (0.35) (8.3)	=	48.66 cfs
	Detention Required	=	32.42 cfs
	Allowed Release Rate	=	48.66 cfs

Off Site (Area 5)	(6.30 acres) (.35) (8.3)	=	18.30 cfs
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Total Flow Into Pond	=	100.38 cfs
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Total Allowed Release Rate	=	66.96 cfs
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Calculate Average "C"

16.75 (.50)	=	8.375
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6.30 (.35)	=	2.205
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23.05	=	10.58
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Average "C"	=	10.58/23.05 = 0.459
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CHECK VARIOUS DURATION STORMS

15 min	I = 9.1	Q = (0.459) (9.1) (23.05)	=	96.28 cfs
20 min	I = 8.3	Q = (0.459) (8.3) (23.05)	=	87.81 cfs
30 min	I = 6.9	Q = (0.459) (6.9) (23.05)	=	73.00 cfs
40 min	I = 5.7	Q = (0.459) (5.7) (23.05)	=	60.31 cfs
50 min	I = 5.0	Q = (0.459) (5.0) (23.05)	=	52.90 cfs
60 min	I = 4.4	Q = (0.459) (4.4) (23.05)	=	46.55 cfs

CHECK STORAGE REQUIRED

15 min storm	Inflow	(15) (96.28) (60)	=	86,652 CF
	Outflow	(0.5)(30)(66.96)(60)	=	26,388 CF
20 min storm	Inflow	(20) (87.81) (60)	=	105,372 CF
	Outflow	(0.5)(35)(66.96)(60)	=	70,308 CF
30 min storm	Inflow	(30) (73.00) (60)	=	131,401 CF
	Outflow	(0.5)(45)(66.96)(60)	=	90,396 CF
40 min storm	Inflow	(40) (60.31) (60)	=	144,744 CF
	Outflow	(0.5)(55)(66.96)(60)	=	110,484 CF
50 min storm	Inflow	(50) (52.90) (60)	=	158,700 CF
	Outflow	(0.5)(65)(66.96)(60)	=	130,572 CF

Maximum Storage Volume required is 41,004 CF at the 30 minute storm duration.

QUAIL RUN COMMERCIAL RETENTION POND

Total Area Of Plat			
	15.61 acres		
TOTAL COMMERCIAL AREA DEVELOPED			
	15.61 ACRES		
Developed	(15.61) (0.80) (9.8)	=	122.38 cfs
Undeveloped	(15.61) (0.35) (8.3)	=	45.35 cfs
	TOTAL TO BE RETAINED	=	78.77 cfs
	ALLOWED RELEASE	=	45.35 cfs

Drainage Captured by the Pond:

Total Area Developed	14.89
Plus Highway R.O.W.	0.76
Plus Pond	0.72
	16.37

Flow into Pond:

(14.89) (.80) (9.8)	=	116.74 cfs
(1.48) (.35) (8.3)	=	4.30 cfs

Calculate Average "C":

14.89 (.80)	=	11.912
1.48 (.35)	=	0.518
16.37	=	12.43

Average "C"	=	12.43/16.37 = 0.7593
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CHECK VARIOUS DURATION STORMS

15 min	I = 9.1	Q = (0.7598) (9.1) (16.37)	=	113.11 cfs
20 min	I = 8.3	Q = (0.7598) (8.3) (16.37)	=	103.17 cfs
30 min	I = 6.9	Q = (0.7598) (6.9) (16.37)	=	85.76 cfs
40 min	I = 5.7	Q = (0.7598) (5.7) (16.37)	=	70.85 cfs
50 min	I = 5.0	Q = (0.7598) (5.0) (16.37)	=	62.15 cfs
60 min	I = 4.4	Q = (0.7598) (4.4) (16.37)	=	54.69 cfs

CHECK STORAGE REQUIRED

15 min storm	Inflow	(15) (113.11) (60)	=	101,799 CF
	Outflow	(0.5)(30)(45.35)(60)	=	40,815 CF
			=	60,984 CF
20 min storm	Inflow	(20) (103.17) (60)	=	123,804 CF
	Outflow	(0.5)(35)(45.35)(60)	=	47,618 CF
			=	76,186 CF
30 min storm	Inflow	(30) (85.76) (60)	=	154,386 CF
	Outflow	(0.5)(45)(45.35)(60)	=	61,222 CF
			=	93,164 CF
40 min storm	Inflow	(40) (70.85) (60)	=	170,040 CF
	Outflow	(0.5)(55)(45.35)(60)	=	74,828 CF
			=	95,212 CF
50 min storm	Inflow	(50) (62.15) (60)	=	186,450 CF
	Outflow	(0.5)(65)(45.35)(60)	=	88,432 CF
			=	98,018 CF
60 min storm	Inflow	(60) (54.69) (60)	=	196,884 CF
	Outflow	(0.5)(75)(45.35)(60)	=	102,038 CF
			=	94,846 CF

Maximum Storage Volume required is 98,018 CF at the 50 minute storm duration.

POND NO. 1 (EXISTING POND)

Check Allowed Release

Phase 1 And 2	65.39Ac.(0.35)(8.3)	=	189.96 cfs
Off Site Area 5	6.30Ac.(0.35)(8.3)	=	18.30 cfs
Off Site Area 1	44.76Ac.(0.35)(7.2)	=	112.80 cfs
Total Release Allowed		=	321.06 cfs

Released Without Detention:			
Greenbelt Area 1	3.73Ac.(0.35)(8.3)	=	10.84 cfs
Lots 1 Through 5, Blk. A	1.06Ac.(0.50)(9.8)	=	5.19 cfs
Lots 1 Through 18, Blk. E	3.95Ac.(0.50)(9.8)	=	19.35 cfs
Sub-total Release		=	40.90 cfs

Lots 1 Through 18, Blk. E	3.95Ac.(0.50)(9.8)	=	19.35 cfs
Line "D"		=	105.37 cfs
Line "O"		=	72.34 cfs
Line "P"		=	18.18 cfs
Line "B" (Below Pond)		=	14.01 cfs
Sub-total Release		=	250.80 cfs

Released Allowed Pond No. 1	321.06 cfs
Less Sub-total Release	250.80 cfs
Allowed Release Pond No. 1	70.26 cfs

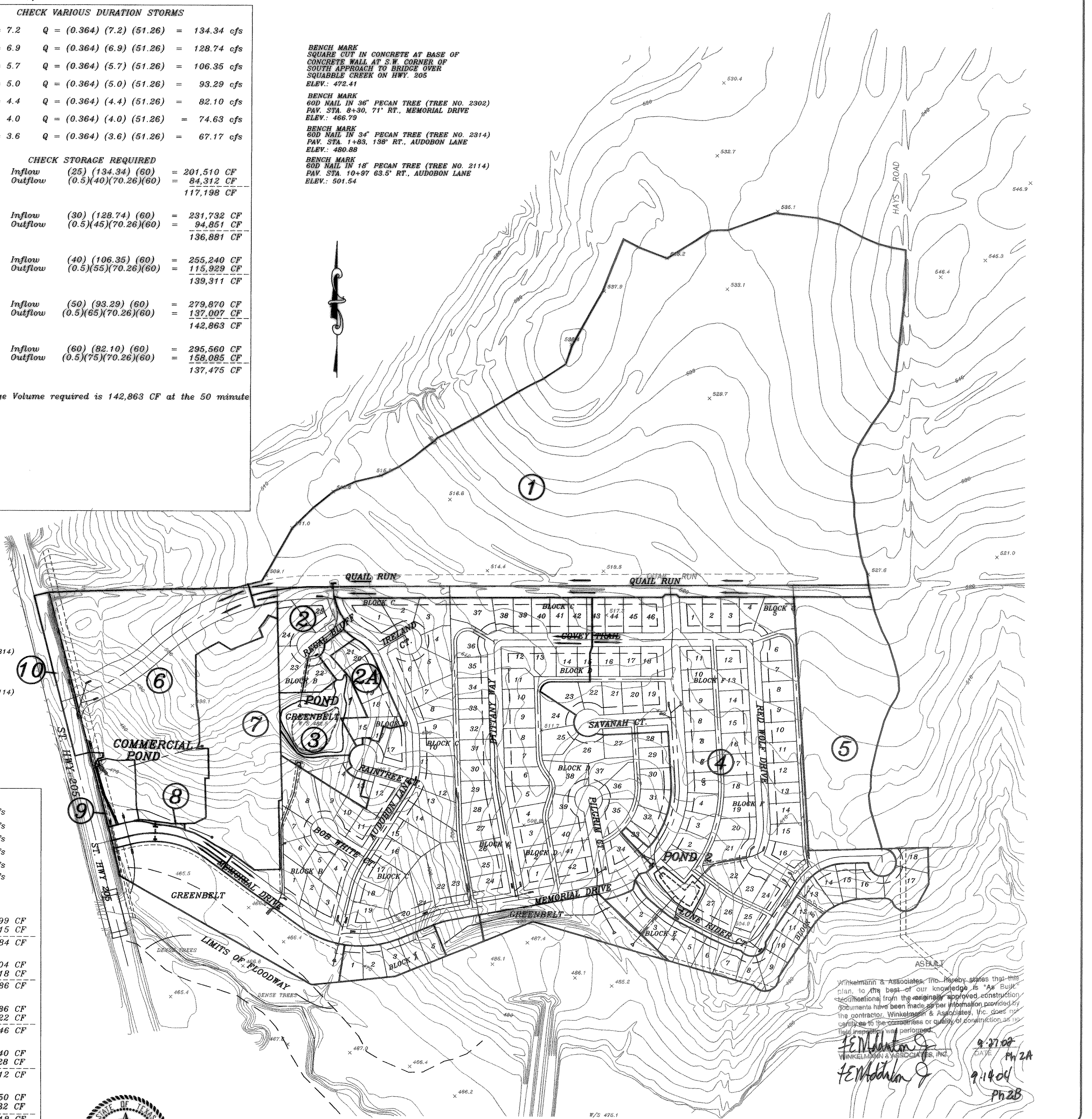
Calculate Average "C" for Pond:

44.76 (.35)	=	15.666
1.70 (.35)	=	.595
4.80 (.50)	=	2.400
51.26	=	18.661

Average "C"	=	18.661/51.26 = 0.364
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CHECK VARIOUS DURATION STORMS					
25 min	I = 7.2	Q = (0.364) (7.2) (51.26)	=	134.34 cfs	
30 min	I = 6.9	Q = (0.364) (6.9) (51.26)	=	128.74 cfs	
40 min	I = 5.7	Q = (0.364) (5.7) (51.26)	=	106.35 cfs	
50 min	I = 5.0	Q = (0.364) (5.0) (51.26)	=	93.29 cfs	
60 min	I = 4.4	Q = (0.364) (4.4) (51.26)	=	82.10 cfs	
70 min	I = 4.0	Q = (0.364) (4.0) (51.26)	=	74.63 cfs	
80 min	I = 3.6	Q = (0.364) (3.6) (51.26)	=	67.17 cfs	
CHECK STORAGE REQUIRED					
25 min storm	Inflow	(25) (134.34) (60)	=	201,510 CF	
	Outflow	(0.5)(40)(70.26)(60)	=	84,312 CF	
			=	117,198 CF	
30 min storm	Inflow	(30) (128.74) (60)	=	231,732 CF	
	Outflow	(0.5)(45)(70.26)(60)	=	94,851 CF	
			=	136,881 CF	
40 min storm	Inflow	(40) (106.35) (60)	=	255,240 CF	
	Outflow	(0.5)(55)(70.26)(60)	=	115,929 CF	
			=	139,311 CF	
50 min storm	Inflow	(50) (93.29) (60)	=	279,870 CF	
	Outflow	(0.5)(65)(70.26)(60)	=	137,007 CF	
			=	142,863 CF	
60 min storm	Inflow	(60) (82.10) (60)	=	295,560 CF	
	Outflow	(0.5)(75)(70.26)(60)	=	158,085 CF	
			=	137,475 CF	

Maximum Storage Volume required is 142,863 CF at the 50 minute storm duration.

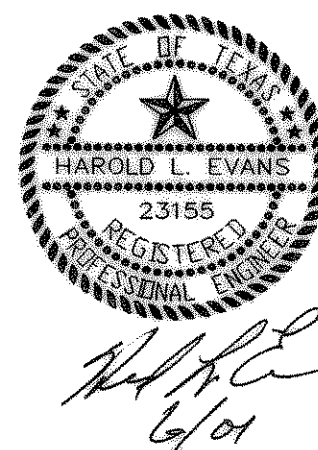


BENCH MARK
SQUARE CUT IN CONCRETE AT BASE OF
CONCRETE WALL AT S.W. CORNER OF
SOUTH APPROACH TO BRIDGE OVER
SQUIBBLE CREEK ON HWY. 205
ELEV.: 472.41

BENCH MARK
60D NAIL IN 36" PECAN TREE (TREE NO. 2302)
PAV. STA. 8+30, 71' RT., MEMORIAL DRIVE
ELEV.: 466.79

BENCH MARK
60D NAIL IN 34" PECAN TREE (TREE NO. 2314)
PAV. STA. 1+83, 138' RT., AUDOBON LANE
ELEV.: 480.88

BENCH MARK
60D NAIL IN 18" PECAN TREE (TREE NO. 2114)
PAV. STA. 10+97 63.5' RT., AUDOBON LANE
ELEV.: 501.54



REV.	6/11/01
REV.	5/11/01
REV.	3/3/01
REV.	2/21/15

HAROLD L. EVANS CONSULTING ENGINEER P.O. BOX 28655 2331 GUS THOMASSON ROAD, SUITE 102 DALLAS, TEXAS 75228, (214) 328-8133			
DATE	SCALE	DESIGN	DRAWN
	1" = 200'	H.L.E.	

RETENTION POND DRAINAGE AREA MAP QUAIL RUN VALLEY NO.1 AND NO. 2 QUAIL RUN VALLEY RETAIL CITY OF ROCKWALL			
SHEET NO.	14	JOB NO.	0020