

	TOP	BOTTOM	VOL.	100 yrs. Water Surface Elev.
POND #1	541.25'	539.75'	1020 cuft	541.05
POND #2	539.50'	537.88'	835 cuft	539.31
POND #3	540.72'	535.76'	7800 cuft	539.50

* PONDS 1 & 2 WORK TOGETHER IN DETERMINING VOLUME AND DISCHARGE CALCULATIONS

ALLOWABLE DISCHARGE (100 YR)			
	EXISTING DRAINAGE AREA	DIRECT RUNOFF-PROPOSED DRAIN AREA	MAX ALLOWABLE AREA
PONDS 1 & 2	A (1.95cfs)	D (0.18cfs)	1.77cfs
POND 3	B (1.02cfs)	-	1.02cfs

REQUIRED DETENTION VOL. AND DISCHARGE PIPE			
	REQUIRED DETENTION	PROVIDED DETENTION	DISCHARGE PIPE
PONDS 1 & 2	1852 cuft	1855 cuft	8"
POND 3	7800 cuft	7800 cuft	4"

Ponds 1 and 2 Discharge Table

Storm Event	Q _{allowable} (cfs)	Q _{actual} (cfs)	WATER SURFACE
10 yrs.	1.23	1.23	538.75
25 yrs.	1.42	1.42	538.93
50 yrs.	1.58	1.59	539.11
100 yrs.	1.77	1.76	539.31

Pond 3 Discharge Table

Storm Event	Q _{allowable} (cfs)	Q _{actual} (cfs)	WATER SURFACE
10 yrs.	0.71	0.70	538.70
25 yrs.	0.82	0.81	538.85
50 yrs.	0.91	0.89	539.00
100 yrs.	1.02	1.02	539.50

Ponds 1 and 2 100 yrs. Volume Calculations

ALLOWABLE FLOW (Taken from Existing Drainage Area Map)
 Q=CIA tc= 20 min. BYPASS
 C= 0.35 C= 0.90
 I₁₀₀ = 8.3 in/hr I = 9.8 in/hr
 A= 0.67 Acres A= 0.02 Acres
 Q_{allowable} = 1.95-0.18=1.77 cfs Q_{req} = 0.18 cfs

DEVELOPED CONDITIONS (Total Proposed Drainage Areas going to Pond)
 Q=CIA tc= 10min.
 C= 0.90
 I₁₀₀ = 9.8 in/hr
 A= 0.36 Acres
 Q_{req} = 3.18 cfs

9.0 15 min.	I ₁₀₀ = 7.56 in/hr	Q _{req} = (0.90)(7.56)(0.36) = 2.45 cfs
8.3 20 min.	I ₁₀₀ = 6.80 in/hr	Q _{req} = (0.90)(6.80)(0.36) = 2.20 cfs
6.8 30 min.	I ₁₀₀ = 5.80 in/hr	Q _{req} = (0.90)(5.80)(0.36) = 1.88 cfs
5.6 40 min.	I ₁₀₀ = 5.00 in/hr	Q _{req} = (0.90)(5.00)(0.36) = 1.62 cfs
5.0 50 min.	I ₁₀₀ = 4.40 in/hr	Q _{req} = (0.90)(4.40)(0.36) = 1.43 cfs
4.5 60 min.	I ₁₀₀ = 3.96 in/hr	Q _{req} = (0.90)(3.96)(0.36) = 1.28 cfs
4.3 70 min.	I ₁₀₀ = 3.60 in/hr	Q _{req} = (0.90)(3.60)(0.36) = 1.17 cfs
3.8 80 min.	I ₁₀₀ = 3.32 in/hr	Q _{req} = (0.90)(3.32)(0.36) = 1.08 cfs
3.5 90 min.	I ₁₀₀ = 2.97 in/hr	Q _{req} = (0.90)(2.97)(0.36) = 0.96 cfs

Pond 3 100 yrs. Volume Calculations

ALLOWABLE FLOW (Taken from Existing Drainage Area Map)
 Q=CIA tc= 20 min.
 C= 0.35
 I₁₀₀ = 8.3 in/hr
 A= 0.35 Acres
 Q_{allowable} = 1.02cfs

DEVELOPED CONDITIONS (Total Proposed Drainage Areas going to Pond)
 Q=CIA tc= 15min.
 C= 0.90
 I₁₀₀ = 9.8 in/hr
 A= 0.83 Acres
 Q_{req} = 5.56 cfs

9.0 15 min.	I ₁₀₀ = 7.56 in/hr	Q _{req} = (0.90)(7.56)(0.63) = 4.29 cfs
8.3 20 min.	I ₁₀₀ = 6.80 in/hr	Q _{req} = (0.90)(6.80)(0.63) = 3.86 cfs
6.8 30 min.	I ₁₀₀ = 5.80 in/hr	Q _{req} = (0.90)(5.80)(0.63) = 3.29 cfs
5.8 40 min.	I ₁₀₀ = 5.00 in/hr	Q _{req} = (0.90)(5.00)(0.63) = 2.84 cfs
5.0 50 min.	I ₁₀₀ = 4.40 in/hr	Q _{req} = (0.90)(4.40)(0.63) = 2.49 cfs
4.5 60 min.	I ₁₀₀ = 3.96 in/hr	Q _{req} = (0.90)(3.96)(0.63) = 2.24 cfs
4.3 70 min.	I ₁₀₀ = 3.60 in/hr	Q _{req} = (0.90)(3.60)(0.63) = 2.04 cfs
3.8 80 min.	I ₁₀₀ = 3.32 in/hr	Q _{req} = (0.90)(3.32)(0.63) = 1.88 cfs
3.5 90 min.	I ₁₀₀ = 2.97 in/hr	Q _{req} = (0.90)(2.97)(0.63) = 1.68 cfs

DETENTION CALCULATIONS

15 min. STORM	inflow (15)(2.45)(60) = 2205.00	outflow (0.5)(25)(1.77)(60) = 1327.50	877.50
20 min. STORM	inflow (20)(2.20)(60) = 2640.00	outflow (0.5)(30)(1.77)(60) = 1593.00	1047.00
30 min. STORM	inflow (30)(1.88)(60) = 3384.00	outflow (0.5)(40)(1.77)(60) = 2124.00	1260.00
40 min. STORM	inflow (40)(1.62)(60) = 3888.00	outflow (0.5)(50)(1.77)(60) = 2655.00	1233.00
50 min. STORM	inflow (50)(1.43)(60) = 4290.00	outflow (0.5)(60)(1.77)(60) = 3186.00	1104.00
60 min. STORM	inflow (60)(1.28)(60) = 4608.00	outflow (0.5)(70)(1.77)(60) = 3717.00	891.00
70 min. STORM	inflow (70)(1.17)(60) = 4914.00	outflow (0.5)(80)(1.77)(60) = 4248.00	666.00
80 min. STORM	inflow (80)(1.08)(60) = 5184.00	outflow (0.5)(90)(1.77)(60) = 4779.00	405.00
90 min. STORM	inflow (90)(0.96)(60) = 5184.00	outflow (0.5)(100)(1.77)(60) = 5310.00	126.00

DETENTION CALCULATIONS

15 min. STORM	inflow (15)(4.29)(60) = 3861.00	outflow (0.5)(25)(1.02)(60) = 765.00	3096.00
20 min. STORM	inflow (20)(3.86)(60) = 4632.00	outflow (0.5)(30)(1.02)(60) = 918.00	3714.00
30 min. STORM	inflow (30)(3.29)(60) = 5922.00	outflow (0.5)(40)(1.02)(60) = 1224.00	4698.00
40 min. STORM	inflow (40)(2.84)(60) = 6816.00	outflow (0.5)(50)(1.02)(60) = 1530.00	5286.00
50 min. STORM	inflow (50)(2.49)(60) = 7470.00	outflow (0.5)(60)(1.02)(60) = 1836.00	5634.00
60 min. STORM	inflow (60)(2.24)(60) = 8064.00	outflow (0.5)(70)(1.02)(60) = 2142.00	5922.00
70 min. STORM	inflow (70)(2.04)(60) = 8568.00	outflow (0.5)(80)(1.02)(60) = 2448.00	6120.00
80 min. STORM	inflow (80)(1.88)(60) = 9024.00	outflow (0.5)(90)(1.02)(60) = 2754.00	6270.00
90 min. STORM	inflow (90)(1.68)(60) = 9072.00	outflow (0.5)(100)(1.02)(60) = 3060.00	6012.00

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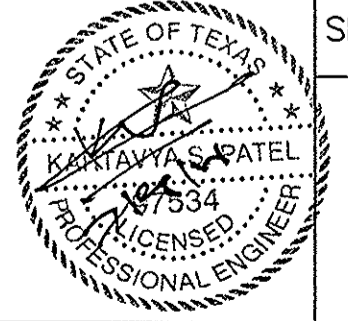
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PROJECT INFO.
 7-ELEVEN
 N.E.C. OF N. GOLIAD STREET
 & FM 552
 ROCKWALL, TEXAS

DRAWING INFO.
 AS-BUILT
 STORM SEWER PLAN
 & DETENTION
 CALCULATIONS

PROJECT No. 06127
 DATE: 05/18/07
 DRAWN BY: CS
 CHECKED BY: RA



SHEET NUMBER
 C4.1

7-ELEVEN-NE.C. OF N. GOLIAD STREET (SH 205) & FM 552, ROCKWALL, TEXAS