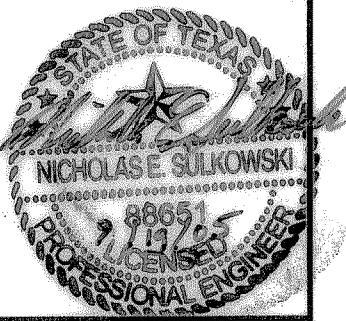


RECORD DRAWING
THIS RECORD DRAWING REFLECTS TO THE BEST OF THE DESIGN ENGINEER'S KNOWLEDGE AND BELIEF THE WORK AS SHOWN ON THE DRAWING. THE CONTRACTOR SHALL VERIFY ALL INFORMATION AS PROVIDED BY THE CONTRACTORS.

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Fax No. (972) 239-1820



Drainage / Detention Calculations
Modified Rational Method - 100 yr
Alliance - Detention Pond #1 - Ultimate Conditions

Onsite Existing Conditions

| | | | |
|--------|-------|-----|-------------------------|
| Q100yr | 35.62 | cfs | Allowable Release Rate* |
|--------|-------|-----|-------------------------|

Onsite Proposed Conditions

| Pond By-Pass Flow (F3) | | | Flow to Detention Pond (F1) | | |
|------------------------|------|---------|-----------------------------|-------|---------|
| Area | 1.73 | acres | Area | 9.24 | acres |
| Time (Tc) | 20 | minutes | Time (Tc) | 10 | minutes |
| C value | 0.35 | | C value | 0.90 | |
| Q100yr | 8.3 | in/hr | Q100yr | 9.8 | in/hr |
| Q100yr | 5.03 | cfs | Q100yr | 81.50 | cfs |

Allowable Release Rate

| | | |
|--------|-------|-----|
| Q100yr | 30.59 | cfs |
|--------|-------|-----|

Runoff to Detention Pond vs. Time

| Time (min) | 1-100yr (in/hr) | C value | Area (ac) | Runoff (cfs) |
|------------|-----------------|---------|-----------|--------------|
| 10 | 9.80 | 0.90 | 9.24 | 81.50 |
| 15 | 9.00 | 0.90 | 9.24 | 74.84 |
| 20 | 8.30 | 0.90 | 9.24 | 69.02 |
| 30 | 7.00 | 0.90 | 9.24 | 58.21 |
| 40 | 5.80 | 0.90 | 9.24 | 48.23 |
| 50 | 5.00 | 0.90 | 9.24 | 41.58 |
| 60 | 4.50 | 0.90 | 9.24 | 37.42 |
| 70 | 4.00 | 0.90 | 9.24 | 33.26 |
| 80 | 3.75 | 0.90 | 9.24 | 31.19 |
| 90 | 3.45 | 0.90 | 9.24 | 28.69 |
| 100 | 3.20 | 0.90 | 9.24 | 26.61 |

Inflow vs. Time

| Time (min) | Runoff (cfs) | Inflow (ft ³) |
|------------|--------------|---------------------------|
| 10 | 81.50 | 48,898 |
| 15 | 74.84 | 67,360 |
| 20 | 69.02 | 82,827 |
| 30 | 58.21 | 104,782 |
| 40 | 48.23 | 115,759 |
| 50 | 41.58 | 124,740 |
| 60 | 37.42 | 134,719 |
| 70 | 33.26 | 139,709 |
| 80 | 31.19 | 149,688 |
| 90 | 28.69 | 154,927 |
| 100 | 26.61 | 159,667 |

Outflow vs. Time

| Time In (min) | Time Out (min) | Release (cfs) | Outflow (ft ³) |
|---------------|----------------|---------------|----------------------------|
| 10 | 20 | 30.59 | 18,354 |
| 15 | 25 | 30.59 | 22,942 |
| 20 | 30 | 30.59 | 27,531 |
| 30 | 40 | 30.59 | 36,708 |
| 40 | 50 | 30.59 | 45,884 |
| 50 | 60 | 30.59 | 55,061 |
| 60 | 70 | 30.59 | 64,238 |
| 70 | 80 | 30.59 | 73,415 |
| 80 | 90 | 30.59 | 82,592 |
| 90 | 100 | 30.59 | 91,769 |
| 100 | 110 | 30.59 | 100,946 |

Detention Volume

| Time In (min) | Inflow (ft ³) | Outflow (ft ³) | Storage (ft ³) |
|---------------|---------------------------|----------------------------|----------------------------|
| 10 | 48,898 | 18,354 | 30,544 |
| 15 | 67,360 | 22,942 | 44,417 |
| 20 | 82,827 | 27,531 | 55,297 |
| 30 | 104,782 | 36,708 | 68,074 |
| 40 | 115,759 | 45,884 | 69,874 |
| 50 | 124,740 | 55,061 | 69,679 |
| 60 | 134,719 | 64,238 | 70,481 |
| 70 | 139,709 | 73,415 | 66,294 |
| 80 | 149,688 | 82,592 | 67,096 |
| 90 | 154,927 | 91,769 | 63,158 |
| 100 | 159,667 | 100,946 | 58,721 |

* ALLOWABLE RELEASE RATE IS BASED UPON EXISTING DRAINAGE CONDITIONS. SEE SHEET C-9.
Volume Provided - 100 YR
Pond = 76,549 FT³

LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE SWALE
- PROPERTY BOUNDARY
- STD. CURB INLET
- DRAINAGE AREA NUMBER
- ACRES
- DEVELOPED 100 YEAR FLOW

DRAINAGE AREA CALCULATIONS

| DRAINAGE AREA NO. | AREA (AC) | C (coeff) | tc (min) | I ₁₀₀ (in/hr) | Q ₁₀₀ (CFS) | COMMENTS |
|-------------------|-----------|-----------|----------|--------------------------|------------------------|----------------------------|
| F1 | 9.25 | 0.90 | 10 | 9.80 | 81.50 | DETAINED ON-SITE (POND #1) |
| F2 | 10.55 | 0.90 | 10 | 9.80 | 93.05 | DETAINED ON-SITE (POND #2) |
| F2 | 1.73 | 0.90 | 10 | 9.80 | 15.26 | DETAINED ON-SITE (POND #3) |

- DESIGN POINTS**
- 1 DETENTION POND RELEASE
CONTRIBUTING AREA = F1
DETAINED AREA = F1 (9.58 ACRES)
Q_h = 35.62 CFS
 - 2 PROPOSED DETENTION POND RELEASE INTO EXISTING DRAINAGE DITCH.
 - 3 PROPOSED 30" RCP CULVERT
(TO REPLACE EXISTING 24" CMP)
Q_{cap} = 56.54 CFS

BENCHMARK #1 (BM1)
TOP OF FLANGE NUT ON CONCRETE BASE OF LIGHT POLE OF THE FOOTBALL FIELD AND TRACK AT THE NORTHWEST END.
EL. = 529.40

ALLIANCE
ROCKWALL COUNTY
CITY OF ROCKWALL, TEXAS

ULTIMATE CONDITION DRAINAGE AREA MAP

Scale: 1" = 50'
Designed by: KHA
Drawn by: MSM
Checked by: NES
Date: SEPTEMBER, 2005
Project No. 064015000