



E.P. GAINES CHISUM SURVEY, ABST. No. 64
 CITY OF ROCKWALL
 ROCKWALL COUNTY, TEXAS
 HOME DEPOT, U.S.A., INC.
 2800 FOREST LANE
 DALLAS, TEXAS 75234

DETENTION POND CALCULATIONS
 HOME DEPOT - ROCKWALL

Date: 9/24/97
 Scale: 1" = 50'
 Designed By: D.F.W.
 Drawn By: R.D.L.
 Checked By: D.F.W.
 File: 07939CAL.DWG
 Project No.: 07939.01(20)

DETENTION POND CALCULATIONS FOR PONDS 1 & 2

REFERENCE TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION 14.00 CFS

STORM DURATION DATA FOR POND 1

| MIN | I-100YR | DEVELOPED C | AREA | TOTAL CFS | TOTAL FLOW | OUTFLOW STORAGE |
|-----|---------|-------------|------|-----------|------------|-----------------|
| 10 | 11.55 | 0.80 | 3.77 | 34.83 | 20901 | 8400 12501 |
| 20 | 8.35 | 0.80 | 3.77 | 25.18 | 30220 | 12600 17620 |
| 30 | 6.60 | 0.80 | 3.77 | 19.91 | 35830 | 16800 19030 |
| 40 | 5.55 | 0.80 | 3.77 | 16.74 | 40173 | 21000 19173 |
| 50 | 4.80 | 0.80 | 3.77 | 14.48 | 43430 | 25200 18230 |
| 60 | 4.25 | 0.80 | 3.77 | 12.82 | 46145 | 29400 16745 |
| 70 | 3.85 | 0.80 | 3.77 | 11.61 | 48769 | 33600 15169 |
| 80 | 3.50 | 0.80 | 3.77 | 10.56 | 50669 | 37800 12869 |
| 90 | 3.25 | 0.80 | 3.77 | 9.80 | 52931 | 42000 10931 |
| 100 | 3.00 | 0.80 | 3.77 | 9.05 | 54288 | 46200 8088 |
| 110 | 2.75 | 0.80 | 3.77 | 8.29 | 54740 | 50400 4340 |
| 120 | 2.60 | 0.80 | 3.77 | 7.84 | 56460 | 54600 1860 |

DETENTION POND STORAGE AT 40 MIN. = 19,173 CUBIC FEET

REFERENCE TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION 3.00 CFS

STORM DURATION DATA FOR POND 2

| MIN | I-100YR | DEVELOPED C | AREA | TOTAL CFS | TOTAL FLOW | OUTFLOW STORAGE |
|-----|---------|-------------|------|-----------|------------|-----------------|
| 10 | 11.55 | 0.80 | 3.06 | 28.27 | 16965 | 1800 15165 |
| 20 | 8.35 | 0.80 | 3.06 | 20.44 | 24529 | 2700 21829 |
| 30 | 6.60 | 0.80 | 3.06 | 16.16 | 29082 | 3600 25482 |
| 40 | 5.55 | 0.80 | 3.06 | 13.59 | 32607 | 4500 28107 |
| 50 | 4.80 | 0.80 | 3.06 | 11.75 | 35251 | 5400 29851 |
| 60 | 4.25 | 0.80 | 3.06 | 10.40 | 37454 | 6300 31154 |
| 70 | 3.85 | 0.80 | 3.06 | 9.42 | 39584 | 7200 32384 |
| 80 | 3.50 | 0.80 | 3.06 | 8.57 | 41126 | 8100 33026 |
| 90 | 3.25 | 0.80 | 3.06 | 7.96 | 42962 | 9000 33962 |
| 100 | 3.00 | 0.80 | 3.06 | 7.34 | 44064 | 9900 34164 |
| 110 | 2.75 | 0.80 | 3.06 | 6.73 | 44431 | 10800 33631 |
| 120 | 2.60 | 0.80 | 3.06 | 6.36 | 45827 | 11700 34127 |

DETENTION POND STORAGE AT 100 MIN. = 34,164 CUBIC FEET

DETENTION POND CALCULATIONS FOR POND 3

REFERENCE TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION POND = 0.35 9.80 98.51 338 CFS

STORM DURATION DATA

| MIN | I-100YR | DEVELOPED C | AREA | UNDEVELOPED C | AREA | DETENTION POND C | AREA | TOTAL CFS | TOTAL FLOW | OUTFLOW STORAGE |
|-----|---------|-------------|-------|---------------|-------|------------------|------|-----------|------------|-----------------|
| 10 | 9.80 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 507.07 | 304240 | 202800 101440 |
| 20 | 8.30 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 429.45 | 515345 | 304200 21145 |
| 30 | 6.90 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 357.02 | 642629 | 405600 237029 |
| 40 | 5.80 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 300.10 | 720242 | 507000 213242 |
| 50 | 5.00 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 258.71 | 776123 | 608400 167723 |
| 60 | 4.45 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 230.25 | 828899 | 709800 119099 |
| 70 | 4.16 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 215.24 | 904027 | 811200 92827 |
| 80 | 3.87 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 200.24 | 961150 | 912600 48550 |
| 90 | 3.57 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 184.72 | 997473 | 1014000 -16527 |
| 100 | 3.28 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 169.71 | 1018273 | 1115400 -97127 |
| 110 | 2.99 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 154.71 | 1021067 | 1216800 -195733 |
| 120 | 2.70 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 139.70 | 1005855 | 1318200 -312345 |

DETENTION POND STORAGE AT 30 MIN. = 237,029 CUBIC FEET

REFERENCE TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION POND = 0.35 9.00 98.51 310.3 CFS

STORM DURATION DATA

| MIN | I-50YR | DEVELOPED C | AREA | UNDEVELOPED C | AREA | DETENTION POND C | AREA | TOTAL CFS | TOTAL FLOW | OUTFLOW STORAGE |
|-----|--------|-------------|-------|---------------|-------|------------------|------|-----------|------------|-----------------|
| 10 | 9.00 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 465.67 | 279404 | 186180 93224 |
| 20 | 7.35 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 380.30 | 456360 | 279270 177090 |
| 30 | 6.15 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 318.21 | 572778 | 372360 200418 |
| 40 | 5.20 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 269.06 | 645734 | 465450 180284 |
| 50 | 4.50 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 232.84 | 698510 | 559540 139970 |
| 60 | 3.90 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 201.79 | 726451 | 651630 74821 |
| 70 | 3.64 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 188.34 | 791024 | 744720 46304 |
| 80 | 3.38 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 174.89 | 839454 | 837810 16444 |
| 90 | 3.13 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 161.95 | 874535 | 930900 -56365 |
| 100 | 2.87 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 148.50 | 890989 | 1023990 -133001 |
| 110 | 2.61 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 135.05 | 891259 | 1117080 -225781 |
| 120 | 2.35 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 121.59 | 875466 | 1210170 -334704 |

DETENTION POND STORAGE AT 30 MIN. = 200,418 CUBIC FEET

REFERENCE TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION POND = 0.35 8.30 98.51 286.2 CFS

STORM DURATION DATA

| MIN | I-25YR | DEVELOPED C | AREA | UNDEVELOPED C | AREA | DETENTION POND C | AREA | TOTAL CFS | TOTAL FLOW | OUTFLOW STORAGE |
|-----|--------|-------------|-------|---------------|-------|------------------|------|-----------|------------|-----------------|
| 10 | 8.30 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 429.45 | 257673 | 171720 85953 |
| 20 | 6.65 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 344.08 | 412897 | 257580 155317 |
| 30 | 5.50 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 284.58 | 512241 | 343440 168801 |
| 40 | 4.70 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 243.19 | 583644 | 429300 154344 |
| 50 | 4.00 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 206.97 | 620898 | 515160 105738 |
| 60 | 3.55 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 183.58 | 661256 | 601020 60236 |
| 70 | 3.32 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 171.78 | 721483 | 686880 34603 |
| 80 | 3.08 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 159.36 | 764946 | 772740 -7794 |
| 90 | 2.85 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 147.46 | 796302 | 858600 -62298 |
| 100 | 2.62 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 135.56 | 813376 | 944460 -131084 |
| 110 | 2.39 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 123.66 | 816170 | 1030320 -214150 |
| 120 | 2.15 | 0.80 | 39.88 | 0.35 | 51.80 | 0.25 | 6.83 | 111.24 | 800958 | 1116180 -315222 |

DETENTION POND STORAGE AT 30 MIN. = 168,801 CUBIC FEET

DETENTION POND #3 DESIGN DATA

| | 2YR | 5YR | 10YR | 25YR | 50YR | 100YR |
|---------------|--------|--------|--------|--------|--------|--------|
| OUT FLOW CFS | 181.0 | 213.8 | 251.7 | 286.2 | 310.3 | 338.0 |
| STORAGE CF | 901.45 | 125292 | 140350 | 168801 | 200418 | 237029 |
| DURATION MIN | 30 | 30 | 30 | 30 | 30 | 30 |
| WATER HT. FT. | 1.83 | 2.63 | 2.97 | 3.61 | 4.32 | 5.15 |

CULVERT CALCULATIONS FOR WETTED FLOW AREA - POND 3

| STORM | DEPTH | BOTTOM WIDTH | DEPTH | TOP WIDTH | PARTIAL AREA | TOTAL AREA | Q | N | SX | X-SECT FACTOR | PERIMETER | R | R2/3 | AxR2/3 | S | VEL |
|--------|-------|--------------|-------|-----------|--------------|------------|--------|-------|-------|---------------|-----------|------|-------|--------|--------|-------|
| 2 YR | 1.83 | 10.00 | 1.83 | 10.00 | 18.30 | 18.30 | 181.00 | 0.015 | 0.67 | 22.32 | 13.66 | 1.34 | 1.22 | 22.24 | 0.0067 | 9.89 |
| 5 YR | 2.63 | 6.00 | 0.80 | 4.54 | 22.84 | 213.80 | 0.015 | 0.67 | 26.37 | 19.38 | 1.18 | 1.12 | 25.49 | 0.0072 | 9.36 | |
| 10 YR | 2.97 | 6.00 | 1.14 | 5.09 | 6.32 | 24.62 | 251.70 | 0.015 | 0.67 | 31.04 | 20.12 | 1.22 | 1.14 | 28.17 | 0.0081 | 10.22 |
| 25 YR | 3.61 | 6.00 | 1.78 | 4.58 | 9.41 | 27.71 | 286.20 | 0.015 | 0.67 | 35.29 | 21.49 | 1.29 | 1.18 | 32.83 | 0.0077 | 10.33 |
| 50 YR | 4.32 | 6.00 | 2.49 | 4.01 | 12.46 | 30.76 | 310.30 | 0.015 | 0.67 | 38.27 | 23.02 | 1.34 | 1.21 | 37.31 | 0.0070 | 10.09 |
| 100 YR | 5.15 | 6.00 | 3.32 | 3.34 | 15.51 | 33.81 | 338.00 | 0.015 | 0.67 | 41.68 | 24.81 | 1.36 | 1.23 | 41.56 | 0.0067 | 10.00 |

ASBULT

Winkelman & Associates, Inc. hereby states that this plan, to the best of our knowledge is "As Built." Modifications from the originally approved construction documents have been made as per information provided by the contractor. Winkelman & Associates, Inc. does not certify as to the correctness or quality of construction as no field inspection was performed.

[Signature] 5/13/98
 WINKELMANN & ASSOCIATES, INC. DATE