

| EXISTING CONDITIONS | | | | | | | | | | | | |
|----------------------------------|------------------------|------------------|-----------------------------|-----------------------|---------------------|------------------------|----------------------|------------------------|----------------------|-------------------------|-----------------------|--|
| Drainage Area | Runoff Coefficient "C" | Area (Acres) "A" | Time of Concentration (Min) | Intensity (in/hr) I 5 | Discharge (cfs) Q 5 | Intensity (in/hr) I 10 | Discharge (cfs) Q 10 | Intensity (in/hr) I 25 | Discharge (cfs) Q 25 | Intensity (in/hr) I 100 | Discharge (cfs) Q 100 | |
| EX-1 | 0.35 | 15.96 | 20.00 | 5.00 | 27.93 | 5.85 | 32.68 | 6.67 | 37.26 | 8.30 | 46.36 | |
| ROCKWALL LIBRARY POND-A OUT FLOW | 0.90 | 1.10 | 10.00 | 6.15 | 5.81 | 7.20 | 6.75 | 8.20 | 7.74 | 9.80 | 9.67 | |
| ROCKWALL LIBRARY POND-B OUT FLOW | 0.90 | 0.44 | 10.00 | 6.15 | 2.33 | 7.20 | 2.72 | 8.20 | 3.11 | 9.80 | 3.89 | |
| Total Q | | | | | 36.07 | | 42.15 | | 48.11 | | 59.92 | |

| PROPOSED CONDITIONS | | | | | | | | | | | | |
|----------------------------------|------------------------|------------------|-----------------------------|-----------------------|---------------------|------------------------|----------------------|------------------------|----------------------|-------------------------|-----------------------|--|
| Drainage Area | Runoff Coefficient "C" | Area (Acres) "A" | Time of Concentration (Min) | Intensity (in/hr) I 5 | Discharge (cfs) Q 5 | Intensity (in/hr) I 10 | Discharge (cfs) Q 10 | Intensity (in/hr) I 25 | Discharge (cfs) Q 25 | Intensity (in/hr) I 100 | Discharge (cfs) Q 100 | |
| TOTAL AREA | 0.90 | 24.45 | 10.00 | 6.15 | 135.33 | 7.20 | 158.44 | 8.20 | 180.44 | 9.80 | 215.65 | |
| ROCKWALL LIBRARY POND-B OUT FLOW | 0.90 | 0.44 | 10.00 | 6.15 | 2.33 | 7.20 | 2.72 | 8.20 | 3.11 | 9.80 | 3.89 | |
| Total Q | | 24.89 | | | 137.66 | | 161.16 | | 183.55 | | 219.54 | |

Rockwall Justice Center Detention Pond Calculations

Allowable Flow
 Downstream headwall capacity = 64.20cfs
 Reference: City of Rockwall, Townsend Blvd (I.H. 30 to Justin) & Yellow Jacket Ln (S.H. 205 to Townsend) engineering plans
 Prepared by WIER & ASSOCIATES, Dated 02/06/07.
 Reference Sheet No. D1011

For Existing Library Detention Plans
 Reference: Rockwall Library Plans
 Prepared by F.C. Cuny Corporation,
 Dated July 2008.
 Reference Sheet 6 of 11

| 5-YR Detention Volume | | | | |
|--------------------------|------------|------------|---------------------------|--|
| Storm Duration (minutes) | 1/2 Factor | Q (cfs) | Volume (ft ³) | Maximum Volume Required (ft ³) |
| 10 min Storm Inflow | | 137.77 cfs | 82660 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 21642 ft ³ | 61016 ft ³ |
| 15 min Storm Inflow | | 124.33 cfs | 11893 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 27052 ft ³ | 84840 ft ³ |
| 20 min Storm Inflow | | 112.01 cfs | 13440 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 32463 ft ³ | 101943 ft ³ |
| 30 min Storm Inflow | | 89.60 cfs | 16128 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 43284 ft ³ | 118,003 ft ³ |
| 40 min Storm Inflow | | 77.28 cfs | 18540 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 54105 ft ³ | 131,375 ft ³ |
| 50 min Storm Inflow | | 64.96 cfs | 19489 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 64926 ft ³ | 129,963 ft ³ |
| 60 min Storm Inflow | | 57.12 cfs | 20564 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 75747 ft ³ | 129,894 ft ³ |
| 70 min Storm Inflow | | 49.28 cfs | 20698 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 85588 ft ³ | 120,417 ft ³ |
| 80 min Storm Inflow | | 44.80 cfs | 21650 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 97389 ft ³ | 117,681 ft ³ |
| 90 min Storm Inflow | | 39.20 cfs | 21689 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 108210 ft ³ | 103,479 ft ³ |
| 100 min Storm Inflow | | 35.84 cfs | 21650 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 119031 ft ³ | 96,019 ft ³ |
| 110 min Storm Inflow | | 34.72 cfs | 22962 ft ³ | |
| Outflow | 0.5 | 36.07 cfs | 129852 ft ³ | 99,310 ft ³ |

| 10-YR Detention Volume | | | | |
|--------------------------|------------|------------|---------------------------|--|
| Storm Duration (minutes) | 1/2 Factor | Q (cfs) | Volume (ft ³) | Maximum Volume Required (ft ³) |
| 10 min Storm Inflow | | 161.29 cfs | 96772 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 25290 ft ³ | 71,482 ft ³ |
| 15 min Storm Inflow | | 145.61 cfs | 131046 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 316125 ft ³ | 99,433 ft ³ |
| 20 min Storm Inflow | | 131.05 cfs | 157255 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 37935 ft ³ | 119,320 ft ³ |
| 30 min Storm Inflow | | 107.52 cfs | 193545 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 50580 ft ³ | 142,965 ft ³ |
| 40 min Storm Inflow | | 89.60 cfs | 21650 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 63225 ft ³ | 151,825 ft ³ |
| 50 min Storm Inflow | | 78.40 cfs | 23521 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 75870 ft ³ | 159,341 ft ³ |
| 60 min Storm Inflow | | 67.20 cfs | 24193 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 88515 ft ³ | 153,416 ft ³ |
| 70 min Storm Inflow | | 56.00 cfs | 23521 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 10160 ft ³ | 134,051 ft ³ |
| 80 min Storm Inflow | | 53.76 cfs | 25806 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 113805 ft ³ | 144,255 ft ³ |
| 90 min Storm Inflow | | 50.40 cfs | 27212 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 126450 ft ³ | 145,722 ft ³ |
| 100 min Storm Inflow | | 47.04 cfs | 282253 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 139095 ft ³ | 143,158 ft ³ |
| 110 min Storm Inflow | | 44.80 cfs | 295693 ft ³ | |
| Outflow | 0.5 | 42.15 cfs | 151740 ft ³ | 143,953 ft ³ |

| 25-YR Detention Volume | | | | |
|--------------------------|------------|------------|---------------------------|--|
| Storm Duration (minutes) | 1/2 Factor | Q (cfs) | Volume (ft ³) | Maximum Volume Required (ft ³) |
| 10 min Storm Inflow | | 183.69 cfs | 110213 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 28866 ft ³ | 81,347 ft ³ |
| 15 min Storm Inflow | | 165.77 cfs | 149191 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 360825 ft ³ | 113,108 ft ³ |
| 20 min Storm Inflow | | 147.85 cfs | 177416 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 43299 ft ³ | 134,117 ft ³ |
| 30 min Storm Inflow | | 123.21 cfs | 221770 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 57732 ft ³ | 164,038 ft ³ |
| 40 min Storm Inflow | | 103.04 cfs | 247307 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 72165 ft ³ | 175,142 ft ³ |
| 50 min Storm Inflow | | 89.60 cfs | 268812 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 86598 ft ³ | 182,214 ft ³ |
| 60 min Storm Inflow | | 78.40 cfs | 282253 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 101031 ft ³ | 181,222 ft ³ |
| 70 min Storm Inflow | | 67.20 cfs | 282253 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 115464 ft ³ | 166,789 ft ³ |
| 80 min Storm Inflow | | 60.48 cfs | 290317 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 129897 ft ³ | 160,420 ft ³ |
| 90 min Storm Inflow | | 56.00 cfs | 302414 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 144330 ft ³ | 158,084 ft ³ |
| 100 min Storm Inflow | | 53.76 cfs | 322574 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 158763 ft ³ | 163,811 ft ³ |
| 110 min Storm Inflow | | 50.40 cfs | 332655 ft ³ | |
| Outflow | 0.5 | 48.11 cfs | 173196 ft ³ | 159,459 ft ³ |

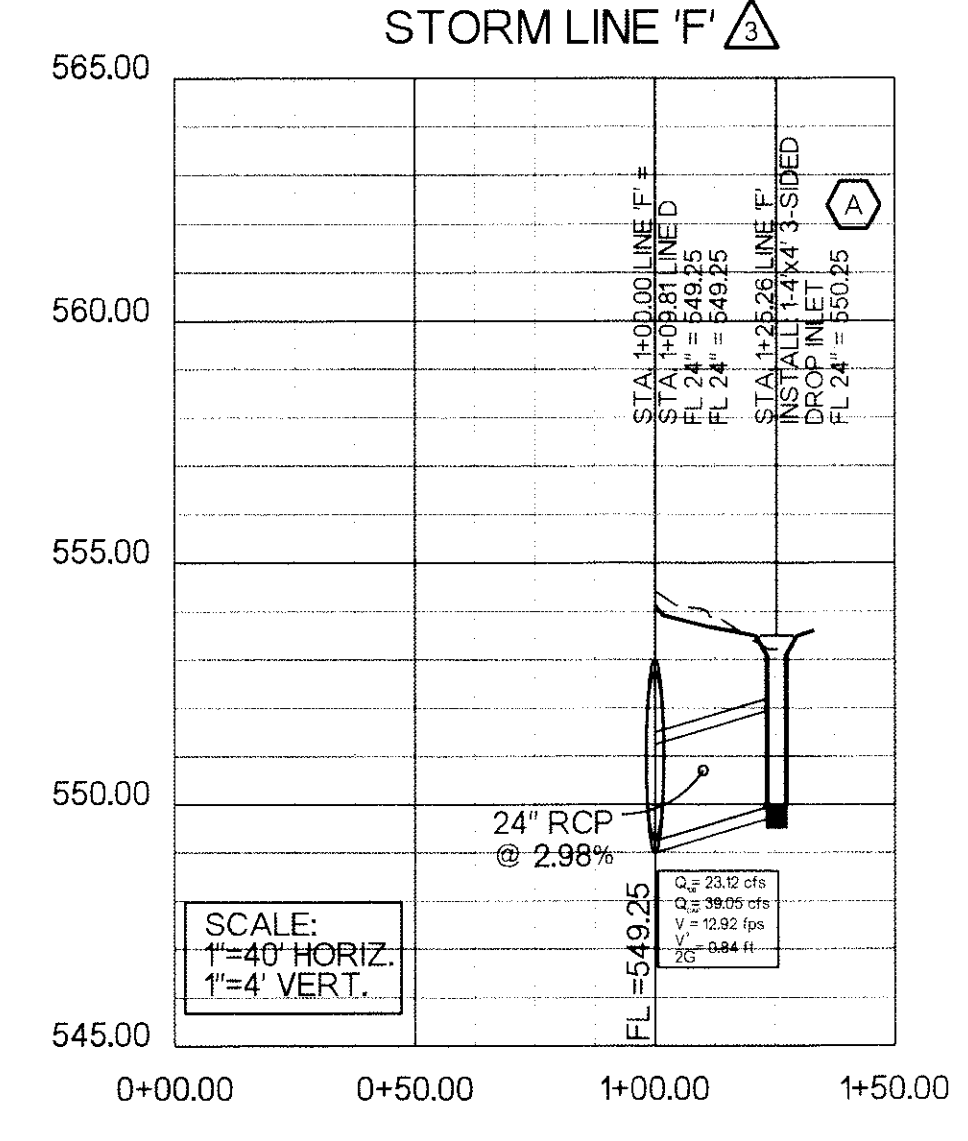
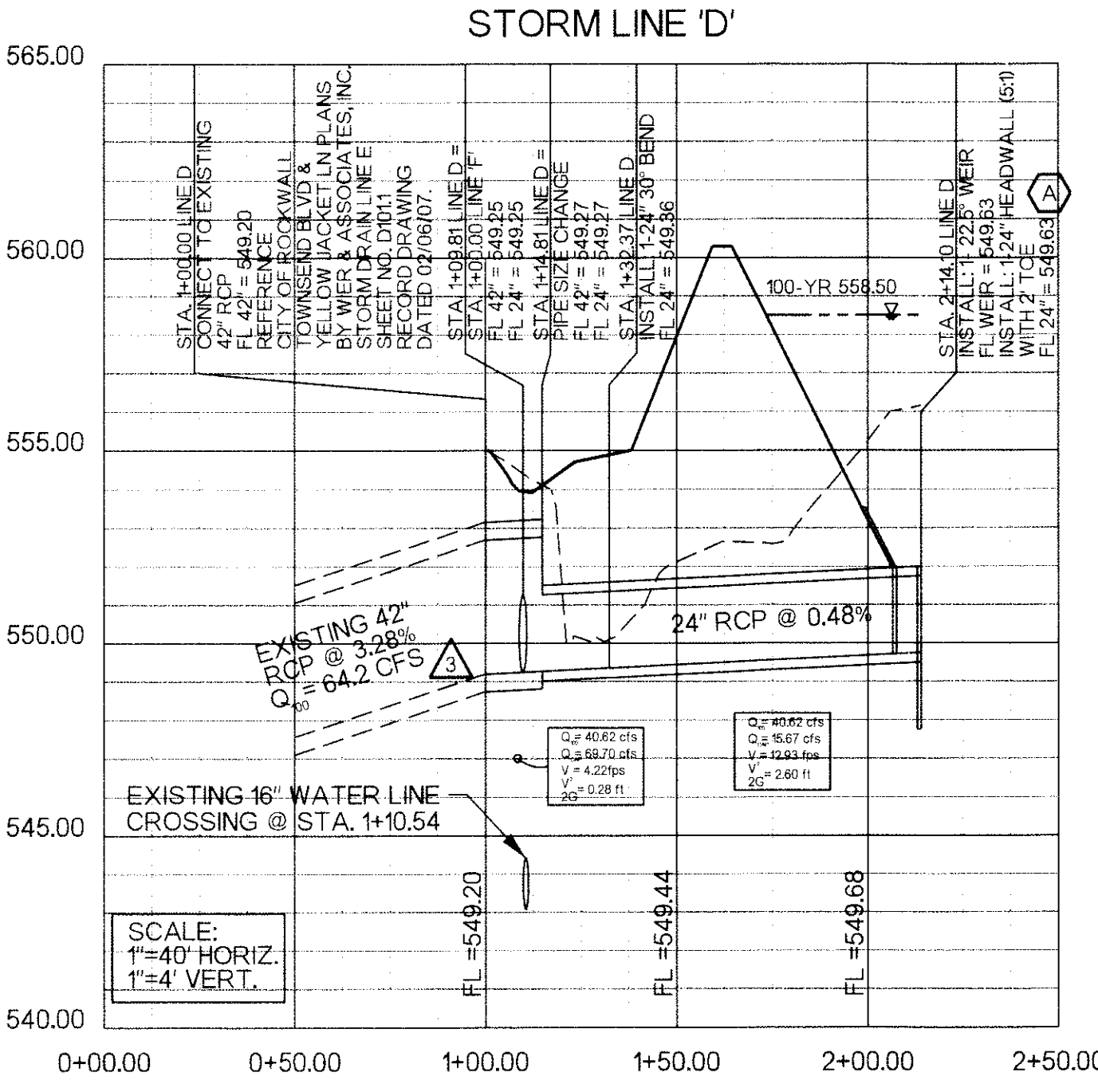
| 100-YR Detention Volume | | | | |
|--------------------------|------------|------------|---------------------------|--|
| Storm Duration (minutes) | 1/2 Factor | Q (cfs) | Volume (ft ³) | Maximum Volume Required (ft ³) |
| 10 min Storm Inflow | | 219.53 cfs | 131718 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 35952 ft ³ | 95,766 ft ³ |
| 15 min Storm Inflow | | 201.61 cfs | 181448 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 44940 ft ³ | 136,508 ft ³ |
| 20 min Storm Inflow | | 185.93 cfs | 223114 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 53928 ft ³ | 169,186 ft ³ |
| 30 min Storm Inflow | | 154.57 cfs | 278220 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 71904 ft ³ | 206,316 ft ³ |
| 40 min Storm Inflow | | 129.93 cfs | 318222 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 89890 ft ³ | 221,942 ft ³ |
| 50 min Storm Inflow | | 112.01 cfs | 336015 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 107856 ft ³ | 228,159 ft ³ |
| 60 min Storm Inflow | | 100.80 cfs | 362896 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 125832 ft ³ | 237,064 ft ³ |
| 70 min Storm Inflow | | 89.60 cfs | 376337 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 143808 ft ³ | 232,529 ft ³ |
| 80 min Storm Inflow | | 82.88 cfs | 397842 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 161784 ft ³ | 236,058 ft ³ |
| 90 min Storm Inflow | | 78.40 cfs | 423379 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 179760 ft ³ | 243,619 ft ³ |
| 100 min Storm Inflow | | 71.68 cfs | 430099 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 197736 ft ³ | 232,363 ft ³ |
| 110 min Storm Inflow | | 67.20 cfs | 443540 ft ³ | |
| Outflow | 0.5 | 59.92 cfs | 215712 ft ³ | 227,928 ft ³ |

Maximum Volume Required = 131,375 ft³

Maximum Volume Required = 159,341 ft³

Maximum Volume Required = 182,214 ft³

Maximum Volume Required = 243,619 ft³



| 5-YR Rockwall IDF | | | | |
|-------------------|------|--------------|--------|---------|
| Time (min) | C | i100 (in/hr) | A (ac) | Q (cfs) |
| 10 | 0.90 | 6.15 | 24.89 | 137.77 |
| 15 | 0.90 | 5.55 | 24.89 | 124.33 |
| 20 | 0.90 | 5.00 | 24.89 | 112.01 |
| 30 | 0.90 | 4.00 | 24.89 | 89.60 |
| 40 | 0.90 | 3.45 | 24.89 | 77.28 |
| 50 | 0.90 | 2.90 | 24.89 | 64.96 |
| 60 | 0.90 | 2.55 | 24.89 | 57.12 |
| 70 | 0.90 | 2.20 | 24.89 | 49.28 |
| 80 | 0.90 | 2.00 | 24.89 | 44.80 |
| 90 | 0.90 | 1.75 | 24.89 | 39.20 |
| 100 | 0.90 | 1.60 | 24.89 | 35.84 |
| 110 | 0.90 | 1.55 | 24.89 | 34.72 |

| 25-YR Rockwall IDF | | | | |
|--------------------|------|--------------|--------|---------|
| Time (min) | C | i100 (in/hr) | A (ac) | Q (cfs) |
| 10 | 0.90 | 8.20 | 24.89 | 183.69 |
| 15 | 0.90 | 7.40 | 24.89 | 165.77 |
| 20 | 0.90 | 6.60 | 24.89 | 147.85 |
| 30 | 0.90 | 5.50 | 24.89 | 123.21 |
| 40 | 0.90 | 4.60 | 24.89 | 103.04 |
| 50 | 0.90 | 4.00 | 24.89 | 89.60 |
| 60 | 0.90 | 3.50 | 24.89 | 78.40 |
| 70 | 0.90 | 3.00 | 24.89 | 67.20 |
| 80 | 0.90 | 2.70 | 24.89 | 60.48 |
| 90 | 0.90 | 2.50 | 24.89 | 56.00 |
| 100 | 0.90 | 2.40 | 24.89 | 53.76 |
| 110 | 0.90 | 2.25 | 24.89 | 50.40 |

| 10-YR Rockwall IDF | | | | |
|--------------------|------|--------------|--------|---------|
| Time (min) | C | i100 (in/hr) | A (ac) | Q (cfs) |
| 10 | 0.90 | 7.20 | 24.89 | 161.29 |
| 15 | 0.90 | 6.50 | 24.89 | 145.61 |
| 20 | 0.90 | 5.85 | 24.89 | 131.05 |
| 30 | 0.90 | 4.80 | 24.89 | 107.52 |
| 40 | 0.90 | 4.00 | 24.89 | 89.60 |
| 50 | 0.90 | 3.50 | 24.89 | 78.40 |
| 60 | 0.90 | 3.00 | 24.89 | 67.20 |
| 70 | 0.90 | 2.50 | 24.89 | 56.00 |
| 80 | 0.90 | 2.40 | 24.89 | 53.76 |
| 90 | 0.90 | 2.25 | 24.89 | 50.40 |
| 100 | 0.90 | 2.10 | 24.89 | 47.04 |
| 110 | 0.90 | 2.00 | 24.89 | 44.80 |

| 100-YR Rockwall IDF | | | | |
|---------------------|------|--------------|--------|---------|
| Time (min) | C | i100 (in/hr) | A (ac) | Q (cfs) |
| 10 | 0.90 | 9.80 | 24.89 | 219.53 |
| 15 | 0.90 | 9.00 | 24.89 | 201.61 |
| 20 | 0.90 | 8.30 | 24.89 | 185.93 |
| 30 | 0.90 | 6.90 | 24.89 | 154.57 |
| 40 | 0.90 | 5.80 | 24.89 | 129.93 |
| 50 | 0.90 | 5.00 | 24.89 | 112.01 |
| 60 | 0.90 | 4.50 | 24.89 | 100.80 |
| 70 | 0.90 | 4.00 | 24.89 | 89.60 |
| 80 | 0.90 | 3.70 | 24.89 | 82.88 |
| 90 | 0.90 | 3.50 | 24.89 | 78.40 |
| 100 | 0.90 | 3.20 | 24.89 | 71.68 |
| 110 | 0.90 | 3.00 | 24.89 | 67.20 |

*SEE SHEET C5.02B FOR DRAINAGE AREA CALCULATIONS