

FILE: D205-DRAINICAL5-98041-04.dwg

STORM DRAIN CALCULATIONS FOR STORM DRAIN LINE E

| FROM | TO | LENGTH (FT) | CxA | INLET TIME (min.) | TOTAL INTERCEPTED CxA | TIME AT UPSTREAM OF REACH (min) | DESIGN STORM FREQUENCY (yrs) | RAINFALL INTENSITY (in/hr) | INTERCEPTED FLOW (cfs) | STORM DRAIN DIAMETER (in) | VELOCITY (ft/s) | SLOPE OF FRICTION GRADIENT (ft/ft) | STRUCTURE LOSS COEFFICIENT | STRUCTURE LOSS AT UPSTREAM OF REACH | FLOW TIME IN DRAIN (min) | TIME AT DOWNSTREAM OF REACH (min) | H.G. AT UPSTREAM OF REACH (ft) | REMARKS |
|----------|----------|-------------|------|-------------------|-----------------------|---------------------------------|------------------------------|----------------------------|------------------------|---------------------------|-----------------|------------------------------------|----------------------------|-------------------------------------|--------------------------|-----------------------------------|--------------------------------|---------|
| INLET E1 | INLET E2 | 45 | 0.4 | 10 | 0.4 | 10 | 100 | 9.8 | 3.9 | 21 | 1.6 | 0.0006 | 1.25 | 0.05 | 0.5 | 10.5 | 598.59 | |
| INLET E2 | 0+35.33 | 120.66 | 0.94 | 10 | 1.34 | 10.5 | 100 | 9.7 | 13 | 21 | 5.4 | 0.0067 | 0.35 | 0.16 | 0.4 | 10.9 | 598.51 | |

STORM DRAIN CALCULATIONS FOR STORM DRAIN LINE I

| FROM | TO | LENGTH (FT) | CxA | INLET TIME (min.) | TOTAL INTERCEPTED CxA | TIME AT UPSTREAM OF REACH (min) | DESIGN STORM FREQUENCY (yrs) | RAINFALL INTENSITY (in/hr) | INTERCEPTED FLOW (cfs) | STORM DRAIN DIAMETER (in) | VELOCITY (ft/s) | SLOPE OF FRICTION GRADIENT (ft/ft) | STRUCTURE LOSS COEFFICIENT | STRUCTURE LOSS AT UPSTREAM OF REACH | FLOW TIME IN DRAIN (min) | TIME AT DOWNSTREAM OF REACH (min) | H.G. AT UPSTREAM OF REACH (ft) | REMARKS |
|----------|----------|-------------|------|-------------------|-----------------------|---------------------------------|------------------------------|----------------------------|------------------------|---------------------------|-----------------|------------------------------------|----------------------------|-------------------------------------|--------------------------|-----------------------------------|--------------------------------|---------|
| INLET I1 | INLET I2 | 45 | 0.71 | 10 | 0.71 | 10 | 100 | 9.8 | 7 | 18 | 4 | 0.0044 | 1.25 | 0.3 | 0.2 | 10.2 | 598.8 | |
| INLET I2 | 0+34.30 | 80.45 | 0.67 | 10 | 1.38 | 10.2 | 100 | 9.76 | 13.5 | 21 | 5.6 | 0.0073 | 0.35 | 0.17 | 0.2 | 10.4 | 598.3 | |

STORM DRAIN CALCULATIONS FOR STORM DRAIN LINE P

| FROM | TO | LENGTH (FT) | CxA | INLET TIME (min.) | TOTAL INTERCEPTED CxA | TIME AT UPSTREAM OF REACH (min) | DESIGN STORM FREQUENCY (yrs) | RAINFALL INTENSITY (in/hr) | INTERCEPTED FLOW (cfs) | STORM DRAIN DIAMETER (in) | VELOCITY (ft/s) | SLOPE OF FRICTION GRADIENT (ft/ft) | STRUCTURE LOSS COEFFICIENT | STRUCTURE LOSS AT UPSTREAM OF REACH | FLOW TIME IN DRAIN (min) | TIME AT DOWNSTREAM OF REACH (min) | H.G. AT UPSTREAM OF REACH (ft) | REMARKS |
|----------|---------|-------------|------|-------------------|-----------------------|---------------------------------|------------------------------|----------------------------|------------------------|---------------------------|-----------------|------------------------------------|----------------------------|-------------------------------------|--------------------------|-----------------------------------|--------------------------------|---------|
| INLET P1 | 4+65.42 | 26.35 | 0.34 | 10 | 0.34 | 10 | 100 | 9.8 | 3.3 | 18 | 1.9 | 0.001 | 1.25 | 0.07 | 0.2 | 10.2 | 599.14 | |
| 4+65.42 | 4+57.92 | 7.5 | - | - | 0.34 | 10.2 | 100 | 9.76 | 3.3 | 27 | 0.8 | 0.0001 | 0.75 | 0 | 0.2 | 10.4 | 599.04 | |
| INLET P2 | 4+57.92 | 31.11 | 0.92 | 10 | 0.92 | 10 | 100 | 9.8 | 9 | 21 | 3.7 | 0.0032 | 1.25 | 0.27 | 0.1 | 10.1 | 599.41 | |
| 4+57.92 | 1+13.35 | 457.92 | - | - | 1.26 | 10.4 | 100 | 9.72 | 12.2 | 27 | 3.1 | 0.0016 | 0.75 | 0.14 | 2.5 | 12.9 | 599.04 | |

STORM DRAIN CALCULATIONS FOR STORM DRAIN LINE Q *SD LINE 'Q' HAS BEEN SIZED TO CARRY 100 YR UNDETAINED FLOWS

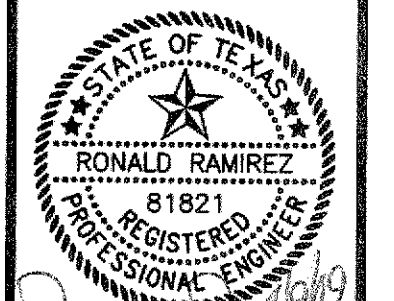
| FROM | TO | LENGTH (FT) | CxA | INLET TIME (min.) | TOTAL INTERCEPTED CxA | TIME AT UPSTREAM OF REACH (min) | DESIGN STORM FREQUENCY (yrs) | RAINFALL INTENSITY (in/hr) | INTERCEPTED FLOW (cfs) | STORM DRAIN DIAMETER (in) | VELOCITY (ft/s) | SLOPE OF FRICTION GRADIENT (ft/ft) | STRUCTURE LOSS COEFFICIENT | STRUCTURE LOSS AT UPSTREAM OF REACH | FLOW TIME IN DRAIN (min) | TIME AT DOWNSTREAM OF REACH (min) | H.G. AT UPSTREAM OF REACH (ft) | REMARKS |
|---------|---------|-------------|------|-------------------|-----------------------|---------------------------------|------------------------------|----------------------------|------------------------|---------------------------|-----------------|------------------------------------|----------------------------|-------------------------------------|--------------------------|-----------------------------------|--------------------------------|---------|
| 2+64.42 | 1+49.97 | 114.45 | 9.32 | 10 | 9.32 | 10 | 100 | 9.8 | 91.3 | 48 | 7.3 | 0.004 | 0.5 | 0.41 | 0.3 | 10.3 | 599.84 | |
| 1+49.97 | 1+13.35 | 36.62 | - | - | 11.72 | 11.8 | 100 | 9.47 | 111 | 48 | 8.8 | 0.006 | 0.75 | 0.58 | 0.1 | 11.9 | 598.97 | |
| 1+13.35 | 0+50 | 63.35 | - | - | 12.98 | 12.9 | 100 | 9.29 | 120.6 | 48 | 9.6 | 0.007 | 0.75 | 0.53 | 0.1 | 13 | 598.17 | |

STORM DRAIN CALCULATIONS FOR STORM DRAIN LINE R

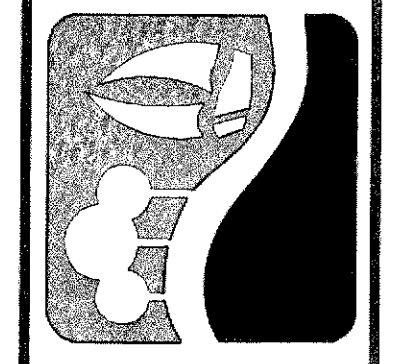
| FROM | TO | LENGTH (FT) | CxA | INLET TIME (min.) | TOTAL INTERCEPTED CxA | TIME AT UPSTREAM OF REACH (min) | DESIGN STORM FREQUENCY (yrs) | RAINFALL INTENSITY (in/hr) | INTERCEPTED FLOW (cfs) | STORM DRAIN DIAMETER (in) | VELOCITY (ft/s) | SLOPE OF FRICTION GRADIENT (ft/ft) | STRUCTURE LOSS COEFFICIENT | STRUCTURE LOSS AT UPSTREAM OF REACH | FLOW TIME IN DRAIN (min) | TIME AT DOWNSTREAM OF REACH (min) | H.G. AT UPSTREAM OF REACH (ft) | REMARKS |
|----------|---------|-------------|------|-------------------|-----------------------|---------------------------------|------------------------------|----------------------------|------------------------|---------------------------|-----------------|------------------------------------|----------------------------|-------------------------------------|--------------------------|-----------------------------------|--------------------------------|---------|
| 11+75.01 | 10+52 | 123.01 | 6.63 | 10 | 6.63 | 10 | 100 | 9.8 | 65 | 42 | 6.8 | 0.0042 | 0.5 | 0.35 | 0.3 | 10.3 | 600.03 | |
| 10+52 | 9+09.58 | 142.42 | - | - | 6.63 | 10.3 | 100 | 9.74 | 64.6 | 42 | 6.7 | 0.0041 | 0.35 | 0.25 | 0.4 | 10.7 | 599.16 | |
| INLET R1 | 9+09.58 | 41.48 | 1.63 | 10 | 1.63 | 10 | 100 | 9.8 | 16 | 24 | 5.1 | 0.005 | 1.25 | 0.5 | 0.1 | 10.1 | 599.04 | |
| 9+09.58 | 7+11 | 198.58 | - | - | 8.26 | 10.7 | 100 | 9.66 | 79.8 | 45 | 7.2 | 0.0044 | 0.75 | 0.28 | 0.5 | 11.2 | 598.33 | |
| 7+11 | 6+00 | 111 | 0.95 | 0 | 9.21 | 11.2 | 100 | 9.57 | 88.1 | 45 | 8 | 0.0053 | 0.5 | 0.49 | 0.2 | 11.4 | 597.18 | |

RECORD DRAWING
4/07/2009

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 REGISTERED PROFESSIONAL ENGINEER
 WIER & ASSOCIATES, INC.
 LAST SHEET EDIT
 DATE: 04-07-2009
 WA# 98041.04
SHEET NO.
D205

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ROCKWALL TECHNOLOGY PARK
PHASE III

STORM DRAIN HYDRAULIC CALCULATIONS