

STORM SEWER DESIGN CALCULATION TABLE (25-yr Return Frequency)

| LINE NO. | STA. | STRUC. NUMBERS (from) (to) | LOCAL C | LOCAL A (ac) | LOCAL C X A (ac) | TOTAL C X A (ac) | NLET TIME (min) | TOTAL Tc (min) | "K" | "C" (ave.) | 25-YR I | | | PIPE DIA. (in) | MANN N | PIPE SLOPE (%) | MANN'S FULL CAP (cfs) | FULL VEL (fps) | DES VEL (fps) | VEL HEAD (ft) | FLOW DEPTH (in) | PIPE LEN (ft) | FLOW TIME (min) |
|----------|----------|----------------------------|---------|--------------|------------------|------------------|-----------------|----------------|------|------------|---------|-------|---------|----------------|--------|----------------|-----------------------|----------------|---------------|---------------|-----------------|---------------|-----------------|
| | | | | | | | | | | | (in/hr) | (Ac) | O (cfs) | | | | | | | | | | |
| 1 | 10+00.00 | - | 0.00 | 0.00 | 0.00 | 7.71 | 0.00 | 11.06 | 1.10 | 0.69 | 6.80 | 11.13 | 57.64 | 36 | 0.013 | | | | | | | | |
| 1 | 11+08.58 | 1-1 | 0.62 | 0.56 | 0.35 | 7.71 | 5.98 | 10.89 | 1.10 | 0.69 | 6.84 | 11.13 | 57.98 | 36 | 0.013 | 1.00% | 66.70 | 9.44 | 10.63 | 1.75 | 25.95 | 108.58 | 0.17 |
| 1 | 11+56.58 | 1-3 | 0.62 | 0.54 | 0.33 | 7.36 | 7.15 | 10.84 | 1.10 | 0.70 | 6.85 | 10.57 | 55.45 | 30 | 0.013 | 3.00% | 71.04 | 14.47 | 16.01 | 3.98 | 19.94 | 48.00 | 0.05 |
| 2 | 10+00.00 | 2-1 | 0.00 | 0.00 | 0.00 | 26.57 | 9.39 | 11.88 | 1.10 | 0.76 | 6.62 | 34.99 | 193.47 | 54 | 0.013 | 0.00% | 0.00 | | | | | | |
| 2 | 12+10.78 | 2-2 | 0.62 | 0.27 | 0.17 | 26.57 | 7.50 | 11.63 | 1.10 | 0.76 | 6.67 | 34.99 | 194.93 | 54 | 0.013 | 1.00% | 196.65 | 12.36 | 14.10 | 3.09 | 43.85 | 210.78 | 0.25 |
| 2 | 13+82.62 | 2-3 | 0.00 | 0.00 | 0.00 | 15.98 | 0.00 | 11.41 | 1.10 | 0.81 | 6.72 | 19.70 | 118.09 | 48 | 0.013 | 1.00% | 143.64 | 11.43 | 12.76 | 2.53 | 33.14 | 171.84 | 0.22 |
| 2 | 15+50.85 | 2-4 | 0.62 | 0.26 | 0.16 | 13.08 | 7.25 | 11.17 | 1.10 | 0.80 | 6.77 | 16.29 | 97.39 | 42 | 0.013 | 1.00% | 100.61 | 10.46 | 11.91 | 2.20 | 33.27 | 168.23 | 0.24 |
| 2 | 18+75.83 | 2-5 | 0.62 | 0.46 | 0.29 | 9.62 | 7.09 | 10.70 | 1.10 | 0.80 | 6.88 | 12.08 | 72.79 | 42 | 0.013 | 1.00% | 100.61 | 10.46 | 11.39 | 2.02 | 26.48 | 324.98 | 0.48 |
| 2 | 19+24.83 | 2-6 | 0.62 | 0.46 | 0.29 | 0.29 | 7.09 | 7.09 | 1.10 | 0.62 | 7.84 | 0.46 | 2.46 | 24 | 0.013 | 1.00% | 22.62 | 7.20 | 4.72 | 0.35 | 5.34 | 49.00 | 0.17 |
| 3 | 10+00.00 | 3-1 | 0.00 | 0.00 | 0.00 | 10.74 | 0.00 | 9.10 | 1.10 | 0.83 | 7.28 | 12.90 | 86.03 | 36 | 0.013 | 0.00% | 0.00 | | | | | | |
| 3 | 11+15.94 | 3-2 | 0.62 | 0.29 | 0.18 | 10.74 | 6.83 | 9.00 | 1.10 | 0.83 | 7.30 | 12.90 | 86.27 | 36 | 0.013 | 3.80% | 130.02 | 18.39 | 19.67 | 6.01 | 21.42 | 115.94 | 0.10 |
| 3 | 11+63.94 | 3-3 | 0.62 | 0.29 | 0.18 | 10.56 | 6.83 | 8.96 | 1.10 | 0.84 | 7.31 | 12.61 | 84.94 | 36 | 0.013 | 3.80% | 130.02 | 18.39 | 19.60 | 5.97 | 21.21 | 48.00 | 0.04 |
| 3a | 10+00.00 | 3a-1 | 0.00 | 0.00 | 0.00 | 3.88 | 0.00 | 8.94 | 1.10 | 0.82 | 7.32 | 4.75 | 31.23 | 24 | 0.013 | 0.00% | 0.00 | | | | | | |
| 3a | 11+05.25 | 3a-2 | 0.62 | 0.28 | 0.17 | 3.88 | 6.83 | 8.83 | 1.10 | 0.82 | 7.35 | 4.75 | 31.36 | 24 | 0.013 | 4.40% | 47.45 | 15.10 | 16.14 | 4.04 | 14.25 | 105.25 | 0.11 |
| 3a | 11+53.25 | 3a-3 | 0.62 | 0.28 | 0.17 | 3.71 | 6.83 | 8.76 | 1.10 | 0.83 | 7.37 | 4.47 | 30.04 | 24 | 0.013 | 2.00% | 31.99 | 10.18 | 11.58 | 2.08 | 18.47 | 48.00 | 0.07 |
| 4 | 10+50.50 | 4-1 | 0.62 | 0.27 | 0.17 | 10.42 | 7.13 | 7.13 | 1.10 | 0.69 | 7.87 | 15.02 | 89.79 | 42 | 0.013 | 1.00% | 100.61 | 10.46 | 11.82 | 2.17 | 30.93 | 50.50 | 0.07 |
| 5 | 10+50.00 | 5-1 | 0.62 | 0.26 | 0.16 | 0.16 | 7.13 | 7.13 | 1.10 | 0.62 | 7.83 | 0.26 | 1.39 | 30 | 0.013 | 2.20% | 60.84 | 12.39 | 5.11 | 0.40 | 3.13 | 50.00 | 0.16 |
| 7 | 10+00.00 | 7-1 | 0.00 | 0.00 | 0.00 | 8.59 | 0.00 | 10.88 | 1.10 | 0.81 | 6.84 | 10.58 | 64.67 | 36 | 0.013 | 0.00% | 0.00 | | | | | | |
| 7 | 12+89.33 | 7-2 | 0.62 | 0.52 | 0.32 | 8.59 | 7.45 | 10.43 | 1.10 | 0.81 | 6.95 | 10.58 | 65.71 | 36 | 0.013 | 1.00% | 66.70 | 9.44 | 10.76 | 1.80 | 29.04 | 289.33 | 0.45 |
| 7 | 13+37.33 | 7-3 | 0.62 | 0.52 | 0.32 | 8.27 | 7.45 | 10.36 | 1.10 | 0.82 | 6.96 | 10.58 | 63.33 | 36 | 0.013 | 1.00% | 66.70 | 9.44 | 10.74 | 1.79 | 28.01 | 48.00 | 0.07 |
| 10 | 10+49.00 | 10-1 | 0.62 | 0.36 | 0.22 | 10.00 | 7.23 | 8.28 | 1.10 | 0.83 | 7.50 | 12.09 | 82.49 | 42 | 0.013 | 1.00% | 100.61 | 10.46 | 11.67 | 2.11 | 28.94 | 49.00 | 0.07 |

INLET DESIGN TABLE (25-yr Return Frequency)

| LINE NO. | STA. | STRUC. NO. | LBN (ft) | OVERLAND S (%) | GUTTER S (%) | FLOW VEL (fps) | TIME (min) | INLET TIME (min) | "K" | "C" | 25-YR I | | | US BYPASS (cfs) | TOTAL FLOW (cfs) | STREET SLOPE (%) | STREET XSLOPE (%) | 12 OG-1 CAP (cfs) | INLET LBN (ft) | INLET CAP (cfs) | 80% CAP (cfs) | BYPASS DS (cfs) |
|----------|----------|------------|----------|----------------|--------------|----------------|------------|------------------|------|--------|---------|--------|---------|-----------------|------------------|------------------|-------------------|-------------------|----------------|-----------------|---------------|-----------------|
| | | | | | | | | | | | (in/hr) | (Ac) | O (cfs) | | | | | | | | | |
| 1 | 10+00.00 | 1-1 | | | | | | | 1.10 | 203.00 | 18.80 | 262.00 | 28.80 | | | | | | | | | |
| 1 | 11+08.58 | 1-2 | 18 | 2.0% | 1.8% | 3.55 | 1.13 | 5.98 | 1.10 | 0.62 | 8.19 | 0.56 | 3.13 | | 3.13 | | 2.08% | SUMP | 5 | 15.46 | 12.37 | |
| 1 | 11+56.58 | 1-3 | 18 | 2.0% | 1.8% | 3.55 | 2.30 | 7.15 | 1.10 | 0.62 | 7.62 | 0.54 | 2.88 | 1.74 | 4.62 | | 2.08% | SUMP | 5 | 15.46 | 12.37 | |
| 2 | 10+00.00 | 2-1 | 50 | 2.0% | 1.2% | 3.08 | 1.31 | 9.39 | | | | | | | | | | | | | | |
| 2 | 12+10.78 | 2-2 | 18 | 2.0% | 1.2% | 3.08 | 2.65 | 7.50 | 1.10 | 0.62 | 7.72 | 0.27 | 1.42 | | 1.42 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 2 | 13+82.62 | 2-3 | | | | | | | | | | | | | | | | | | | | |
| 2 | 15+50.85 | 2-4 | 18 | 2.0% | 1.2% | 3.08 | 2.41 | 7.25 | 1.10 | 0.62 | 7.79 | 0.26 | 1.38 | | 1.38 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 2 | 18+75.83 | 2-5 | 18 | 2.0% | 1.2% | 3.08 | 2.24 | 7.09 | 1.10 | 0.62 | 7.84 | 0.46 | 2.46 | | 2.46 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 2 | 19+24.83 | 2-6 | 18 | 2.0% | 1.2% | 3.08 | 2.24 | 7.09 | 1.10 | 0.62 | 7.84 | 0.46 | 2.46 | | 2.46 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 3 | 10+00.00 | 3-1 | | | | | | | | | | | | | | | | | | | | |
| 3 | 11+15.94 | 3-2 | 18 | 2.0% | 2.6% | 4.50 | 1.98 | 6.83 | 1.10 | 0.62 | 7.92 | 0.29 | 1.57 | | 1.57 | 1.19% | 2.08% | 4.66 | 5 | 7.74 | 6.19 | |
| 3 | 11+63.94 | 3-3 | 18 | 2.0% | 2.6% | 4.50 | 1.98 | 6.83 | 1.10 | 0.62 | 7.92 | 0.29 | 1.57 | | 1.57 | 1.19% | 2.08% | 4.66 | 5 | 7.74 | 6.19 | |
| 3a | 10+00.00 | 3a-1 | | | | | | | | | | | | | | | | | | | | |
| 3a | 11+05.25 | 3a-2 | 18 | 2.0% | 2.6% | 4.50 | 1.98 | 6.83 | 1.10 | 0.62 | 7.92 | 0.28 | 1.51 | | 1.51 | 1.19% | 2.08% | 4.66 | 5 | 7.74 | 6.19 | |
| 3a | 11+53.25 | 3a-3 | 18 | 2.0% | 2.6% | 4.50 | 1.98 | 6.83 | 1.10 | 0.62 | 7.92 | 0.28 | 1.51 | | 1.51 | 1.19% | 2.08% | 4.66 | 5 | 7.74 | 6.19 | |
| 4 | 10+50.50 | 4-1 | 18 | 2.0% | 1.8% | 3.55 | 2.28 | 7.13 | 1.10 | 0.62 | 7.83 | 0.27 | 1.44 | | 1.44 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 5 | 10+50.00 | 5-1 | 18 | 2.0% | 1.6% | 3.55 | 2.28 | 7.13 | 1.10 | 0.62 | 7.83 | 0.26 | 1.39 | | 1.39 | 1.20% | 2.08% | 4.68 | 5 | 7.74 | 6.19 | |
| 7 | 10+00.00 | 7-1 | | | | | | | | | | | | | | | | | | | | |
| 7 | 12+89.33 | 7-2 | 18 | 2.0% | 1.0% | 2.81 | 2.60 | 7.45 | 1.10 | 0.62 | 7.73 | 0.52 | 2.74 | | 2.74 | | 2.08% | SUMP | 5 | 15.46 | 12.37 | |
| 7 | 13+37.33 | 7-3 | 18 | 2.0% | 1.0% | 2.81 | 2.60 | 7.45 | 1.10 | 0.62 | 7.73 | 0.52 | 2.74 | | 2.74 | | 2.08% | SUMP | 5 | 15.46 | 12.37 | |
| 10 | 10+49.00 | 10-1 | 18 | 2.0% | 1.7% | 3.88 | 2.38 | 7.23 | 1.10 | 0.62 | 7.80 | 0.36 | 1.82 | | 1.82 | 5.85% | 2.08% | 10.33 | 5 | 5.60 | 4.48 | |

BASED ON TRAVEL TIME CALCULATION APWA SECTION 5602.5 B.
GUTTER CAPACITIES BASED ON MAXIMUM ALLOWABLE SPREAD.

Prepared for Review.
Revised drainage table values

R.J.S.
R.J.S.

06-07-07
01-25-08

P.E. SIGNATURE

DATE

DRAINAGE TABLES
CENTERPOINT-KCS
INTERMODAL CENTER

STATE OF MISSOURI
ROBERT J. SUNTA
E-25751
REGISTERED PROFESSIONAL ENGINEER

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