

## Capacity of a Single 'C' Storm Drop Inlet Inlet 'CI-5'

### Capacity of the grate:

$$\begin{aligned} L &= 40'' - 2(2''_{\text{ends}}) - 7(\frac{1}{2}''_{\text{middle bars}}) \\ &= 32 \frac{1}{2}'' \\ &= 2.7083' \end{aligned}$$

$$\begin{aligned} W &= 25'' - 13(\frac{1}{2}''_{\text{middle bars}}) \\ &= 18.5'' \\ &= 1.54' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 2.7083' \times 1.54' \\ &= 4.18 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 4.18 - 4.18 \times 0.5 \text{ (clogging factor)} \\ &= 2.09 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

### Orifice Equation

$$\begin{aligned} Q &= CA \sqrt{2gH} \\ Q &= 0.6 \times 2.09 \times \sqrt{2 \times 32.2 \times 0.72} \\ Q &= 8.54 \text{ cfs} \end{aligned}$$

### Capacity of the Throat:

$$L = 2.95'$$

$$\begin{aligned} H &= 10 \frac{3}{4}'' - 4 \frac{1}{2}'' \\ &= 6 \frac{1}{4}'' \\ &= 0.5208' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 2.95' \times 0.5208' \\ &= 1.54 \text{ ft}^2 \text{ at the throat} \end{aligned}$$

### Weir Equation

$$\begin{aligned} Q &= CLH^{3/2} \\ Q &= 2.95 \times 1.54 \times 0.90^{3/2} \\ Q &= 3.87 \text{ cfs} \end{aligned}$$

### Total Capacity:

$$\begin{aligned} Q_{\text{cap}} &= 8.54_{\text{grate}} + 3.87_{\text{throat}} \\ Q_{\text{cap}} &= 12.41 \text{ cfs} \end{aligned}$$

$$Q_{\text{req}} = 10.68 \text{ cfs (Revised 11/20/13)}$$

Inlet Checks OK