

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

### Capacity of the grate:

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

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

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

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

### Orifice Equation

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

### Capacity of the Throat:

$$L = 2.95'$$

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

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

### 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:

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

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

Inlet Checks OK