

Capacity of a Double 'C' Storm Drop Inlet Inlet 'CI-14'

Capacity of the grate:

$$\begin{aligned} L &= 80'' - 2(2''_{\text{ends}}) - 14(1\frac{1}{2}''_{\text{middle bars}}) - 6''_{\text{center piece}} \\ &= 66\frac{1}{2}'' \\ &= 5.25' \end{aligned}$$

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

$$\begin{aligned} \text{Area} &= 5.25' \times 1.54' \\ &= 8.09 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 8.09 - 8.09 \times 0.5 \text{ (clogging factor)} \\ &= 4.04 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

Orifice Equation

$$\begin{aligned} Q &= CA \sqrt{2gH} \\ Q &= 0.6 \times 4.04 \times \sqrt{2 \times 32.2 \times 0.72} \\ Q &= 16.51 \text{ cfs} \end{aligned}$$

Capacity of the Throat:

$$L = 6.50'$$

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

$$\begin{aligned} \text{Area} &= 6.50' \times 0.5208' \\ &= 3.39 \text{ ft}^2 \text{ at the throat} \end{aligned}$$

Weir Equation

$$\begin{aligned} Q &= CLH^{3/2} \\ Q &= 2.95 \times 3.39 \times 0.90^{3/2} \\ Q &= 8.54 \text{ cfs} \end{aligned}$$

Total Capacity:

$$\begin{aligned} Q_{\text{cap}} &= 16.51_{\text{grate}} + 8.54_{\text{throat}} \\ Q_{\text{cap}} &= 25.05 \text{ cfs} \end{aligned}$$

$$Q_{\text{req}} = 11.45 \text{ cfs (Revised 11/20/13)}$$

Inlet Checks OK