

Capacity of a Double 'C' Storm Drop Inlet Inlet 'CI-6'

Capacity of the grate:

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

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

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

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

Orifice Equation

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

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

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

Total Capacity:

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

$$Q_{\text{req}} = 13.11 \text{ cfs (Revised 11/20/13)}$$

Inlet Checks OK