

# Technical Note

## TN 1.09 Barracuda® Maximum Hydraulic Rates and Required Rim to Outlet Invert Difference

### Introduction

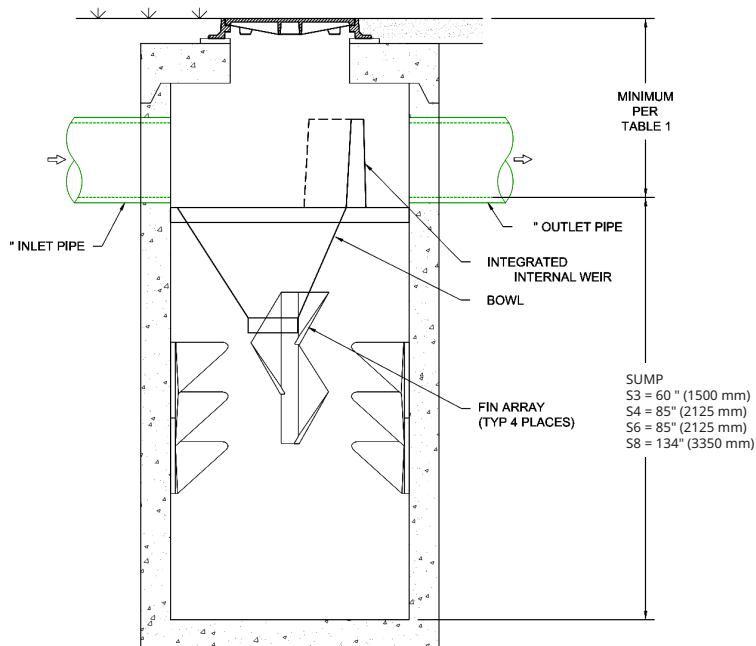
The Barracuda is a single manhole hydrodynamic separator designed to remove total suspended solids and other contaminants from stormwater. The device employs a cone structure with a vertical weir wall separating the inlet(s) and outlet pipes. This weir wall allows the unit to bypass excessive stormwater flows internally once the inletting rates exceed the designed treatment rate. This document describes the maximum hydraulic rate (MHR), or bypass capacity of the device based on unit size and rim to invert elevation difference. MHR should not be confused with Maximum Treatment Rate (MTR) which would be the flow rate at which the device meets prescribed treatment criteria.

### Maximum Hydraulic Rate & Rim to Outlet Invert Difference

The maximum hydraulic rate (bypass) is governed in part by the space between the outlet invert elevation and the rim elevation of the structure, accounting for freeboard (air space). The inlet(s) and outlet invert for Barracudas are typically at the same elevation. The table below assumes a 4" tall frame mounted on an 8" thick top slab. Contact Application Engineering for applications that require rim to invert differences shallower than the minimums shown in Table 1, or for bypass rates higher than the maximums listed in Table 1.

The Barracuda can also be configured as an offline system utilizing a diversion structure for higher bypass flow rates, or at the design engineer's discretion to meet design objectives or to minimize resuspension.

Figure 1: Barracuda Standard Detail



**Table 1: Maximum Hydraulic Rate & Rim to Outlet Invert Difference****Barracuda S3 36" (900 mm) Manhole**

Maximum Hydraulic Rate (Bypass) cfs (L/s)	Required Rim to Outlet Invert Difference in (mm)
1.4 (39.6)	36 (914)
3.7 (104.8)	40 (1016)
5.5 (155.7)	42 (1066)
8.0 (226.5)	44 (1117)

**Barracuda S4 48" (1200 mm) Manhole**

Maximum Hydraulic Rate (Bypass) cfs (L/s)	Required Rim to Outlet Invert Difference in (mm)
3.5 (99.1)	36 (914)
5.0 (141.5)	40 (1016)
7.75 (219.4)	42 (1066)
10.5 (297.3)	44 (1117)

**Barracuda S3 72" (1800 mm) Manhole**

Maximum Hydraulic Rate (Bypass) cfs (L/s)	Required Rim to Outlet Invert Difference in (mm)
9.5 (269.0)	39 (990)
12.5 (353.9)	41 (1041)
16.0 (453.0)	43 (1092)
20.0 (566.3)	45 (1143)

**Barracuda S4 96" (2400 mm) Manhole**

Maximum Hydraulic Rate (Bypass) cfs (L/s)	Required Rim to Outlet Invert Difference in (mm)
13.0 (368.1)	41 (1041)
15.5 (438.9)	44 (1117)
21.0 (594.6)	46 (1168)
28.0 (792.8)	48 (1219)

