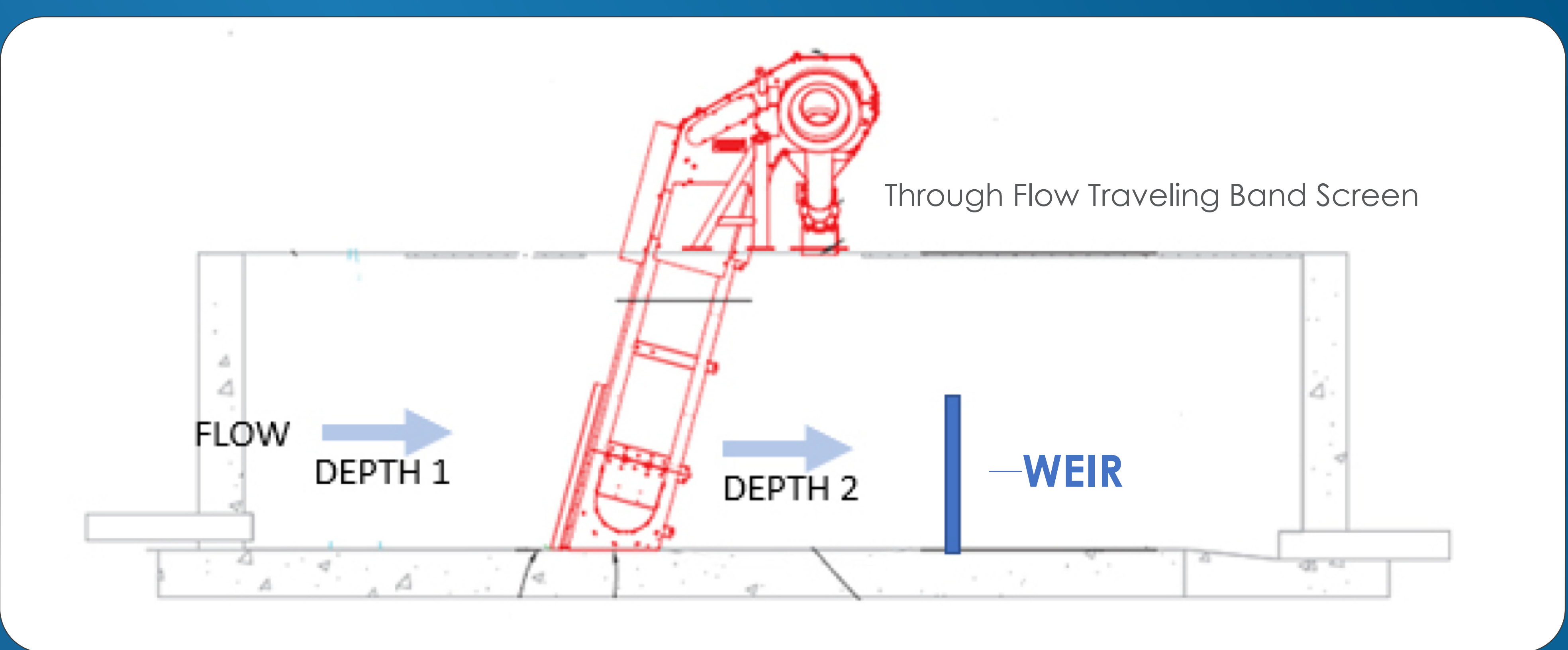


BEST PRACTICES FOR WASTEWATER SCREENING DESIGN  
**A BRIEF GUIDELINE OF SCREENING  
 EQUIPMENT DESIGN UTILIZING A WEIR**

**SCREENING GRID VELOCITY – WHY IT MATTERS**

The main function of wastewater screening equipment is to capture debris to protect downstream equipment from damage and reduce maintenance. All wastewater screening equipment is built around a screening grid. A screening grid functions best with constant water velocity to the grid. Wastewater flowing at differing velocities to the grid can impact the operation and function of equipment in the following ways:

- 01** More debris is captured by a screen designed with correct grid velocity
- 02** High velocities at peak flow can force debris through the screening grid
- 03** Low velocities can result in grit deposition
- 04** Installation of a weir downstream can attenuate velocity shifts with flow rate changes



**What is a weir?**  
 A weir is a flow control device used with screening to control grid velocity

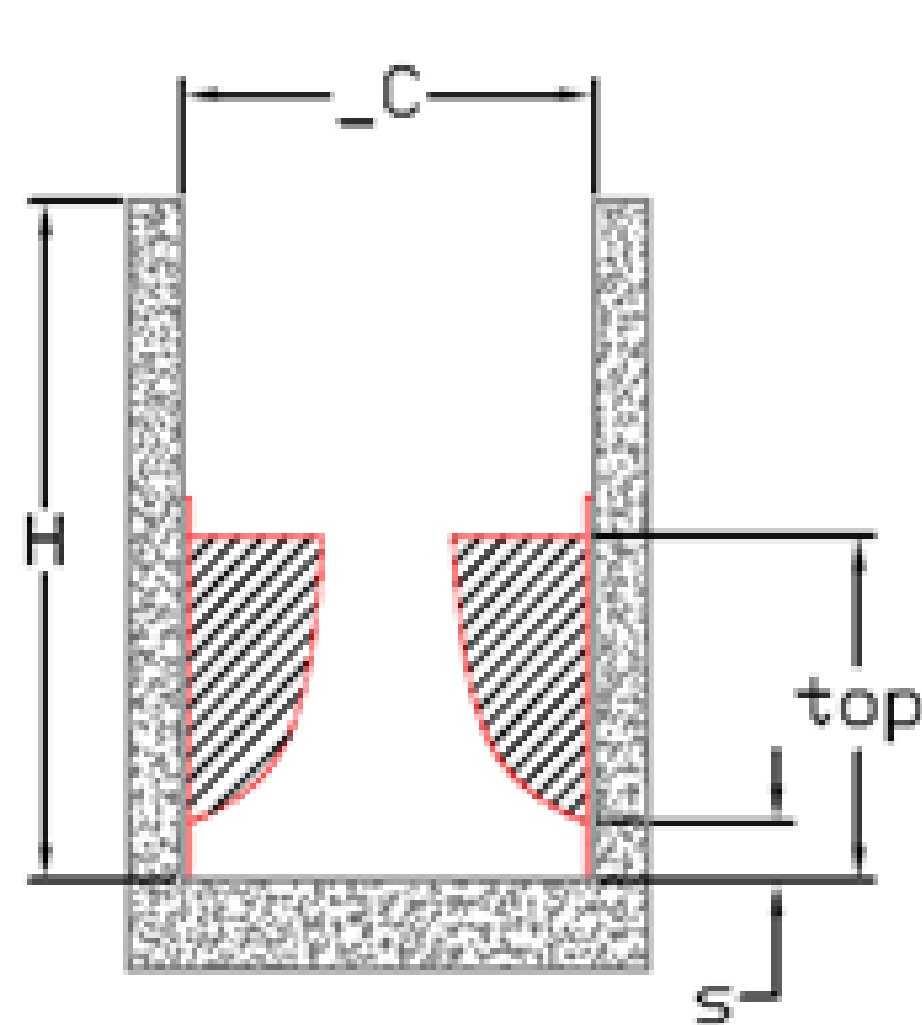
**Why install a weir?**  
 A weir helps the screening equipment capture more and unload debris best

**When to install a weir?**  
 When turn down exceeds 3:1 and after fine screening for improved hydraulics

**Where to install a weir?**  
 A single weir is commonly used after screening equipment

**What are the common weir types used with screening?**  
 Common weir types with screening are a Suto weir or an underflow weir

**COMMON WEIR TYPES  
 (FRONT VIEW)**



**SUTRO/PROPORTIONAL/PARABOLIC**  
 FLOW IS PROPORTIONAL BY A CONSTANT (S) TO DISCHARGE HEAD

**Suto weirs help achieve optimum screening grid velocities at peak, average, and low flows**

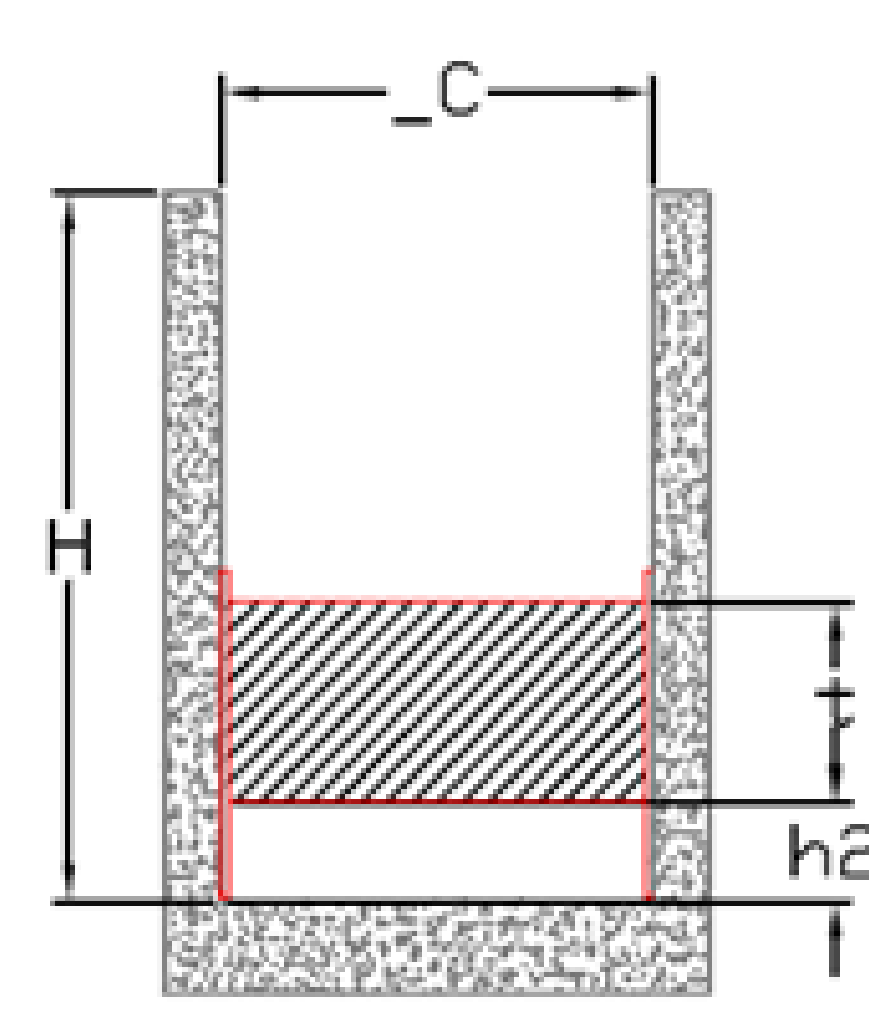
Screen equipment with proper screen grid velocity captures most debris best

Screen equipment with proper screen grid velocity offloads screened debris more effectively because debris does not get forced into the grid

More open space is available as the level drops, allowing velocity to remain near constant

Flow is proportional to discharge head

The parabolic curve is derived to maintain constant mean velocity upstream and across the full flow range



**UNDERFLOW**  
 AS FLOW INCREASES, MEAN VELOCITY INCREASES

**Underflow weirs help achieve optimum screening grid velocities at both peak and average flows**

Small solids present in the wastewater flow do not get trapped by the weir

Adjustable so more weir area can be easily added as the flow to a facility increases; adjustability is used to account for plant flow expansion between peak and average flows as water intake grows with population

Generally least expensive option

Rectangular weirs are not constant velocity designs; screen grid velocity increases as flow increases

Since screen grid velocity can increase, this design might not provide best screening conditions for all flow ranges

**Want to Learn More?**

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