

Canyon Installation

Canyon: Installation instructions

System Description

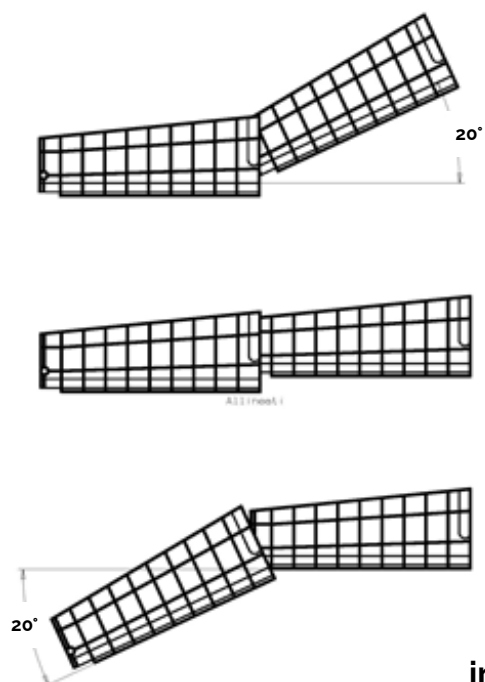
The Canyon system consists of polypropylene (PP) tiles or channels, ideal as a lightweight alternative to traditional concrete options. It is designed to convey rainwater on steep slopes, e.g. at the edge of the highways and railways.

The Canyon system is made up of modular elements that can be manually connected through an interlocking mechanism (img. 4).

The connection (img. 1-2) is made by inserting the upper element into the lower one. The connection system allows angular rotation from $+20^\circ$ to -20° relative to the central axis, thus allowing the channel system to easily adapt to the terrain slopes during installation.



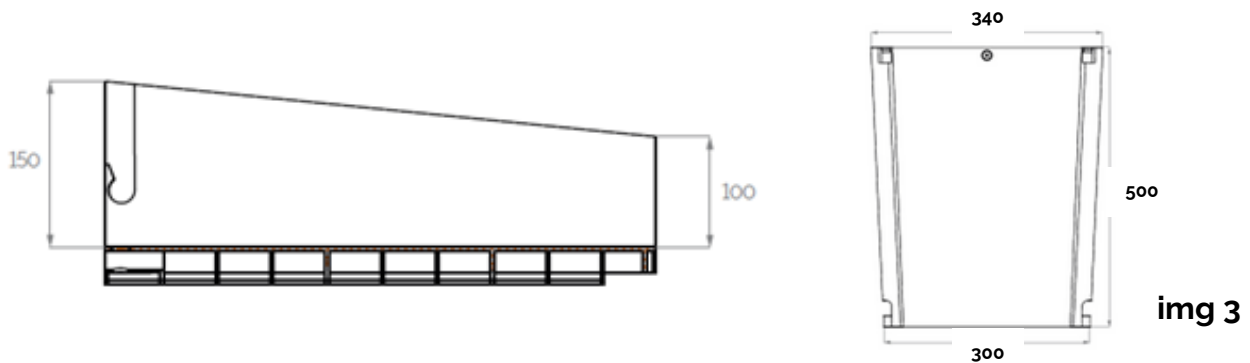
img 1



img 2

Useful Dimensions (img 3)

- Length: 500 mm
- Inlet section: 340 × 150 mm
- Outlet section: 300 × 100 mm



Installation steps

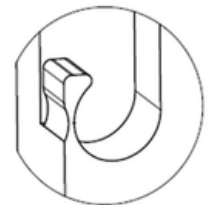
Step 1: Excavation Preparation

Make a trench 500 mm wide and at least 200 mm deep.

Canyon tiles are equipped with ribs for anchoring and reinforcement, ideal for installation on concrete with a minimum thickness of 5 cm.

Step 2: Laying

Connect the channels together using the interlock (img. 4), proceeding from the bottom upward. Place the modules in the trench following the terrain slope (img. 5).

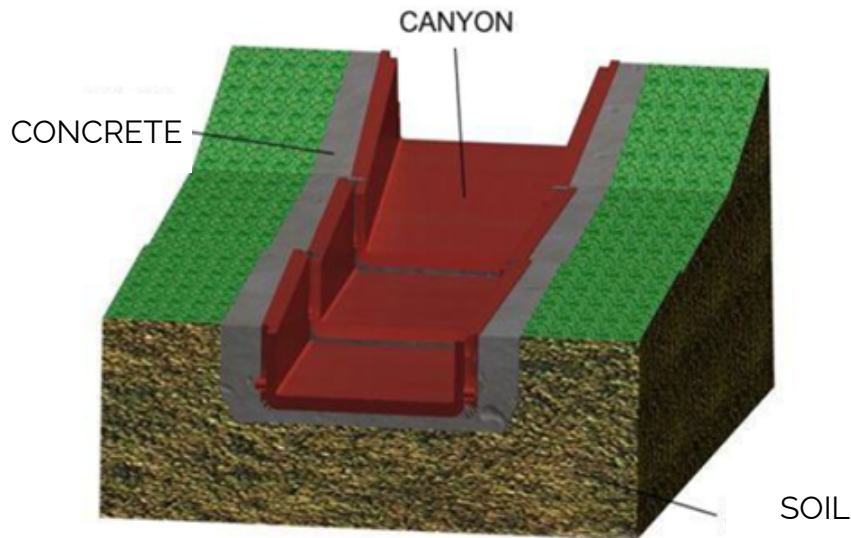


img 4



Step 3: Backfilling

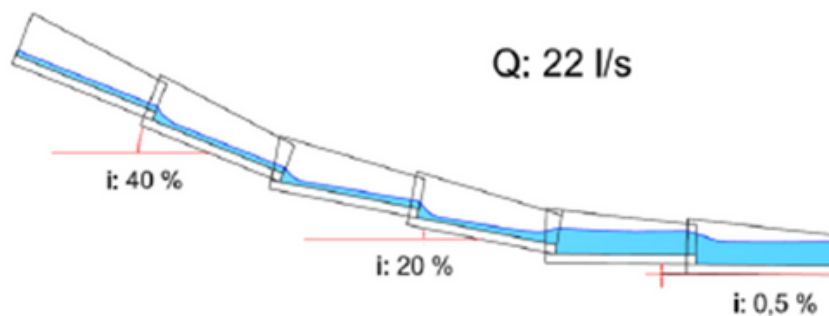
Fill the lateral gaps with lean concrete, ensuring a minimum thickness of 5 cm for proper stabilization (img. 6).



img 6

Slopes and Flow Rates

The Canyon system can be installed with variable slopes along its path, as shown in the example below (img. 7).



img 7

Flow rates are calculated using the **Chezy-Strickler formula**:

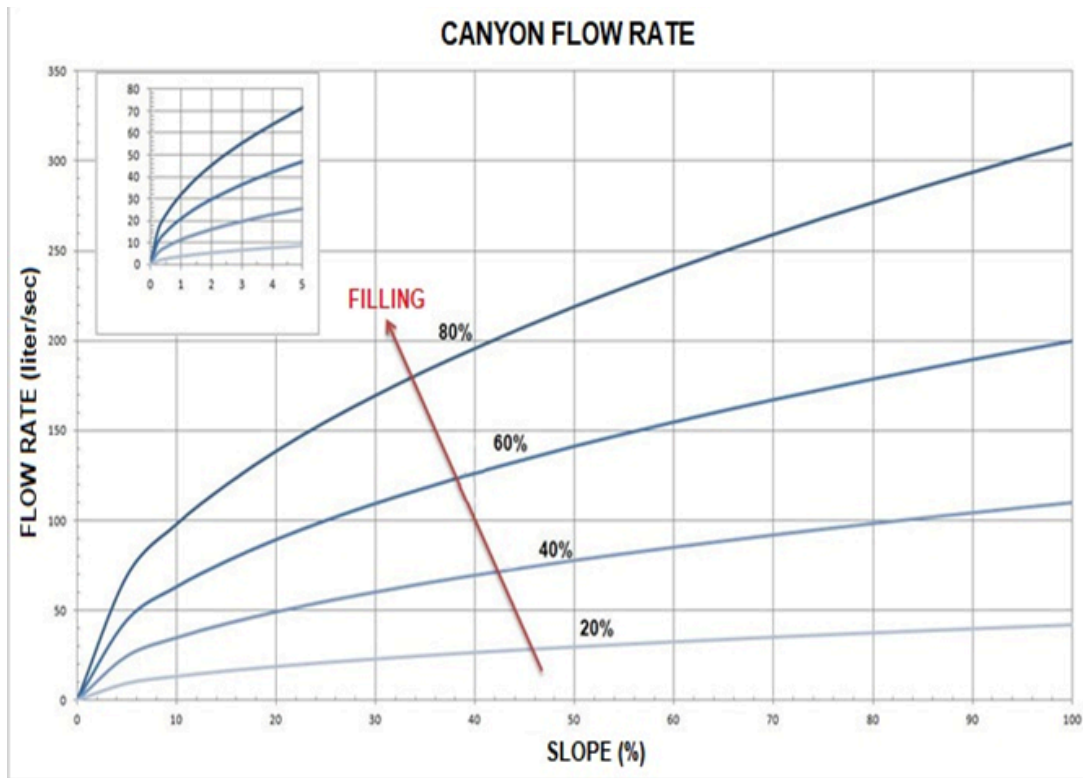
where:

- Q: flow rate (m^3/s)
- A: wetted area (m^2)
- K_s : roughness coefficient ($\text{m}^{1/3}/\text{s}$)
- R_H : hydraulic radius (A/wetted perimeter)
- i: slope (m/m)

$$Q = AK_s R_H^{2/3} i^{1/2}$$

To avoid localized overflow, it is essential to:

- Calculate the maximum flow rate for the element installed at the minimum slope.
- Once the desired filling level is set, determine the flow rate using the channel's minimum slope (img. 8).



img 8



img 9



img 10