Guidance on Conductivity Rates

The conductivity rate is used for the calculation of both the horizontal and vertical transfer of the water in the sub-surface layers of a Stormwater Control.

The rate to be used would typically be specified by the manufacturer/supplier of the aggregate material being used in the system.

However a table of representative values for different materials found in scientific reports and manufacturer documentation is provided below.

These values are only indicative and should be used with caution.

Material	Typical Porosity (%)	Typical Conductivity (m/hr)
Clay	40 - 55	< 0.1
Sand	35 - 50	5 - 50
Gravel / Crushed Stone	10 - 30	50 - 500
Porous Concrete	10 - 50	50 - 500
Rubber (Shredded)	40 - 50	> 300
Crates/Lined tank	90 - 100	> 500

Warning

Conductivity and Porosity values of a Soil can vary widely between sites. You may need help from a Geotechnical Engineer for evaluating the appropriate values on your site.

Clay content

Note that the Porosity of a Clay can be larger than that of a Sand, but the Drainable Porosity of the Clay is much lower than that of the Sand, because the Field Capacity of the Clay is much higher than that of a Sand.
Please refer to pages 146-148 of the SWMM Reference Manual Volume 1, for example.

Therefore a soil layer with a significant content of Clay can only be represented properly using the Soil layer (Filtration Layers tab), where the Field Capacity and Wilting Point values can be specified.
It would not be appropriate to represent such a layer using the Storage layer.

References:

Crushed Stone and Rubber - https://vtrans.vermont.gov/sites/aot/files/highway/documents/materialsandresearch/completedprojects/AOT_PermeabilityofHighwayBaseandSub-baseMaterial.pdf