Synthetic Turf Base Stone Permeability/Conductivity Calculation

COMPONENTS
The following table provides typical ranges of permeability (hydraulic Conductivity) It is obtained from Essentials of Soil Mechanics and Foundations, Basic Geotechnics, 5th Edition by David F. McCarthy

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Table 6-2 Typical Ranges of Permeability (Hydraulic Conductivity): Water and Different Soil Types*

Soil Type	Relative Degree of Permeability	k, Coefficient of Permeability or Hydraulic Conductivity (mm/sec)**	Drainage Properties
Clean gravel	High	10 to 100	Good
Clean sand, sand and gravel mixtures	Medium	10 to 10^{-2}	Good
Fine sands, silts	Low	10^{-2} to 10^{-4}	Fair–poor
Sand–silt–clay mixtures, glacial tills	Very low	10^{-3} to 10^{-6}	Poor–practically impervious
Homogeneous clays	Very low–practically impermeable	$<10^{-6}$	Practically impervious

*For other fluids, values of k are expected to vary from those shown, refer Eq. 6-5.
**To convert, use 1 mm/sec = 0.2 ft/min = 86.4 m/day.

Provided Range = 10 TO 10^{-2} OR 10 - 0.01 (MM/SEC)

Value used for k is 10^{-1} mm/sec = 0.1 mm/sec

1mm/sec=0.2ft/min ⟶ 0.1mm/sec = 0.02 ft/min

0.02 ft/min x 12in/ft = 0.24 in/min ⟶ 1 min = 0.24"

1" = 1min/[0.24in/min] ⟶ 1"=4.2 min

To be conservative, we have used 2 minutes per inch (2min/in)

The flat panel drains will be placed 20-ft on center. 20 ft x 12in/ft = 240 inches.

240 inches x 2 minutes per inch = 480 minutes