

1.2.3 Geotextile

The geotextile must retain the coarser particles of the subgrade while remaining permeable enough to allow infiltration and exfiltration to occur freely. It is not necessary to retain all the particle sizes in the subgrade; in fact, it is beneficial to allow the smaller particles to pass through the geotextile, leaving a coarser substrate behind.

Either woven or non-woven needle-punched fabrics may be used. If a non-woven fabric is used, it must have a mass density greater than 12 ounces per square yard (400 grams per square meter). Under no circumstances may a spun-bond or slit-film fabric be allowed.

The permeability requirement is such that the geotextile must be at least ten times more permeable than the subgrade soil:

$$K_g > 10K_s \text{ (1.13)}$$

where:

K_g = Permeability of geotextile (cm/s)

K_s = Permeability of subgrade soil (cm/s)

In most riverine applications with noncohesive bed material, the particle retention requirement dictates that the Apparent Opening Size (AOS, also known as the O95) of the geotextile must be less than the d90 of the subgrade soil. However, in areas of high turbulence, the AOS should be less than the d50 of the soil. It is not uncommon to use a geotextile on bank soils different from that used on the bed. **Figure 1.6** provides a flowchart developed under NCHRP Project 24-23 to assist in the selection of a geotextile filter for use with ACB systems.

Reference: Ayres Associates, "Recommended Guidelines for Designing, Installing and Inspecting Articulating Concrete Block (ACB) Systems".

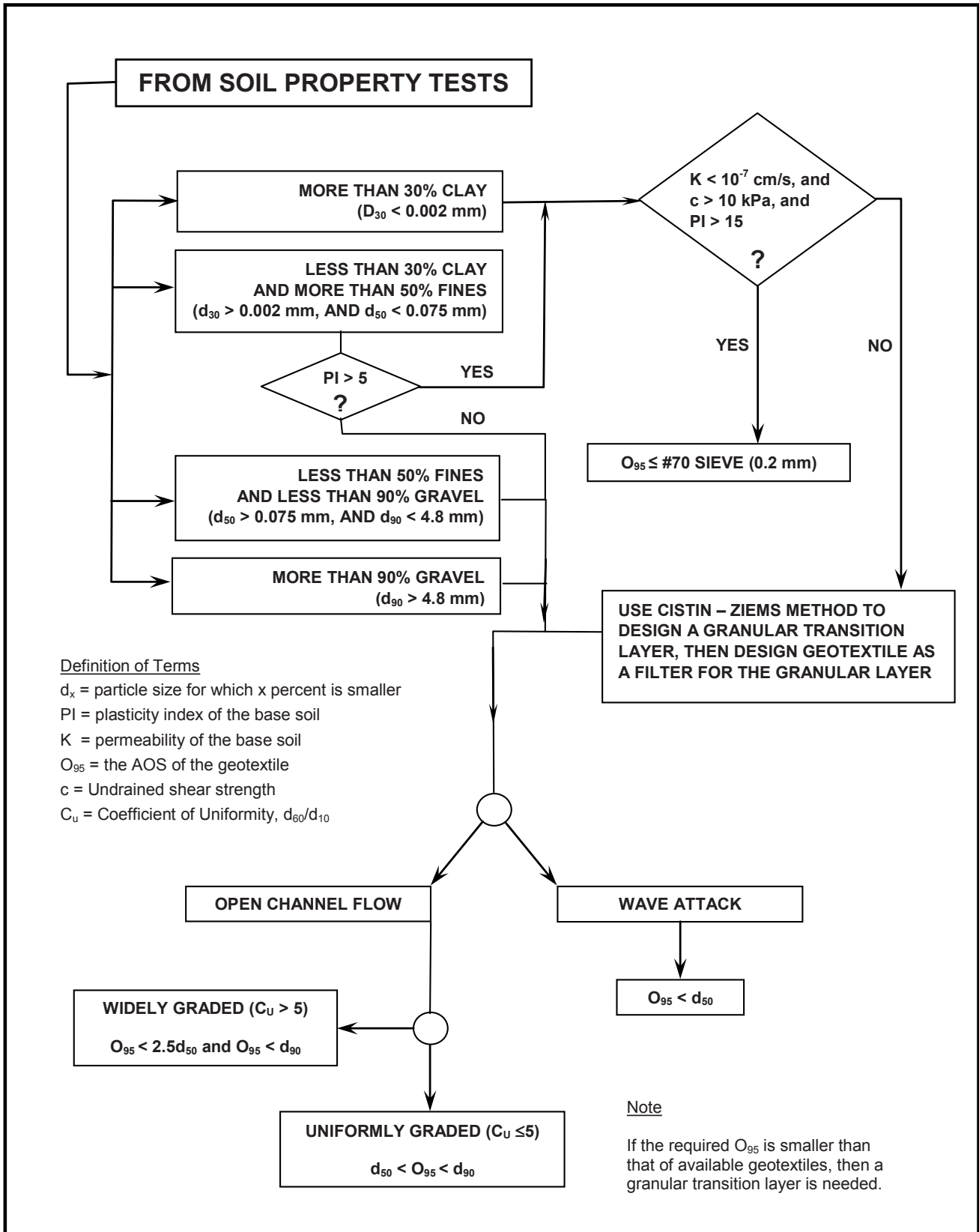


Figure 1.6. Flowchart for geotextile selection (from NCHRP Project 24-23)

Reference: Lagasse, P.F., Clopper, P.E., Zevenbergen, L.W., and Ruff, J.F., "Riprap Design Criteria, Specifications, and Quality Control," Final Report, prepared for National Cooperative Highway Research Program, Transportation Research Board, National Research Council, NCHRP Project 24-23, Ayres Associates, Fort Collins, CO (2006).