FROM SOIL PROPERTY TESTS

MORE THAN 30% CLAY (D30 < 0.002 mm)

LESS THAN 30% CLAY AND MORE THAN 50% FINES (d30 > 0.002 mm, AND d50 < 0.075 mm)

PI > 5

LESS THAN 50% FINES AND LESS THAN 90% GRAVEL (d50 > 0.075 mm, AND d90 < 4.8 mm)

MORE THAN 90% GRAVEL (d90 > 4.8 mm)

K < 10^-7 cm/s, and c > 10 kPa, and PI > 15

YES

NO

O95 ≤ #70 SIEVE (0.2 mm)

USE CISTIN – ZIEMS METHOD TO DESIGN A GRANULAR TRANSITION LAYER, THEN DESIGN GEOTEXTILE AS A FILTER FOR THE GRANULAR LAYER

Definition of Terms

\( d_x \) = particle size for which \( x \) percent is smaller

\( PI \) = plasticity index of the base soil

\( K \) = permeability of the base soil

\( O95 \) = the AOS of the geotextile

\( c \) = Undrained shear strength

\( Cu \) = Coefficient of Uniformity, \( d_{60}/d_{10} \)

OPEN CHANNEL FLOW

WAVE ATTACK

WIDELY GRADED \( (Cu > 5) \)

\( O95 < 2.5d_{50} \) and \( O95 < d_{50} \)

UNIFORMLY GRADED \( (Cu ≤ 5) \)

\( d_{50} < O95 < d_{90} \)

Note

If the required \( O95 \) is smaller than that of available geotextiles, then a granular transition layer is needed.

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