

PROTECTIVE COVER	UNDERLYING SOIL	$\tau_p$ (Pa)
Class A Vegetation	Erosion Resistant	177
	Erodible	177
Class B Vegetation	Erosion Resistant	101
	Erodible	101
Class C Vegetation	Erosion Resistant	48
	Erodible	48
Class D Vegetation	Erosion Resistant	29
	Erodible	29
Class E Vegetation	Erosion Resistant	17
	Erodible	17
Woven Paper		7
Jute Net		22
Single Fiberglass		29
Double Fiberglass		41
Straw w/Net		69
Curled Wood Mat		74
Synthetic Mat		96
Plain Grass, Good Cover	Clay	N/A
Plain Grass, Average Cover	Clay	N/A
Plain Grass, Poor Cover	Clay	N/A
Grass, Reinforced w/Nylon	Clay	N/A
Dycel w/Grass	Clay	N/A
Petraflex w/Grass	Clay	N/A
Armorflex w/Grass	Clay	N/A
Dymex w/Grass	Clay	N/A
Grasscrete	Clay	N/A
Gravel		
D <sub>50</sub> = 25 mm		19
D <sub>50</sub> = 50 mm		38
Rock		
D <sub>50</sub> = 150 mm		120
D <sub>50</sub> = 300 mm		239
0.15 m Gabions	Type I	1676
0.10 m Geoweb	Type I	479
Soil Cement (8% cement)	Type I	>2155
Dycel w/o Grass	Type I	>335
Petraflex w/o Grass	Type I	>1532
Armorflex w/o Grass	Type I	575-958
Enkamat w/75 mm in Asphalt	Type I	622-766
Enkamat w/25 mm in Asphalt	Type I	<239
Armorflex Class 30	Type I	>1628
with longitudinal and lateral cables, no grass		
Dycell 100, longitudinal cables, cell filled with mortar	Type I	<575
Concrete construction	Type I	>958
Blocks, granular filter underlayer		
Wedge-shaped blocks with drainage slot	Type I	>1197

Type I soil is a silty clay to silty sand (SC-SM) with AASHTO classification A-4(0).

Source: FHWA-RD-89-199

## SUMMARY OF PERMISSIBLE SHEAR STRESS FOR VARIABLE PROTECTION MEASURES

**Figure 30-6C**