Guide to Estimating Subgrade Soil Strengths for Fine-Grained Soils

Estimated Consistency By:		Test By:				Correlates to:			
Feel	Visual	Standard Penetration Test (blows/ft)	Dynamic Cone Penetrometer (in/blow)			Shear Strength, C_u		R Value	CBR
			SC,SM,SP	CL	CH	(psi)	(tsf)		
Very Soft	Man standing sinks > 3”	< 2	-	-	-	< 1.7	< 1.125	-	< 0.4
Soft	Man walking sinks about 2” - 3”	2 - 4	-	-	-	1.7 - 3.5	0.125 - 0.25	< 0.36	0.4 - 0.8
Medium	Man walking sinks about 1”	4 - 8	-	> 2.6	-	3.5 - 6.9	0.25 - 0.5	0.36 - 2.5	0.8 - 1.6
Stiff	Pickup truck ruts about 0.5” - 1”	8 - 15	> 3.9	2.6 - 1.8	-	6.9 - 13.9	0.5 - 1.0	2.5 - 6.8	1.6 - 3.2
Very Stiff	Loaded dump truck ruts about 1” - 3”	15 - 30	3.9 - 2.2	1.8 - 1.3	> 4.3	13.9 - 27.8	1.0 - 2.0	6.8 - 15.5	3.2 - 6.4
Hard	Insignificant ruts from loaded dump truck	> 30	2.2 - 1.1	1.3 - 0.9	4.3 - 2.1	> 27.8	> 2.0	> 15.5	> 6.4

References: After Portland Cement Association, E.I. DuPont literature and McCarthy, David F. Essentials of Soil Mechanics and Foundations. AASHTO, 1993 Guide for Design of Pavement Structures, Van Till et. Al. NCHRP 128.

Subbase Thickness for Subgrade Stabilization

Loading Conditions:

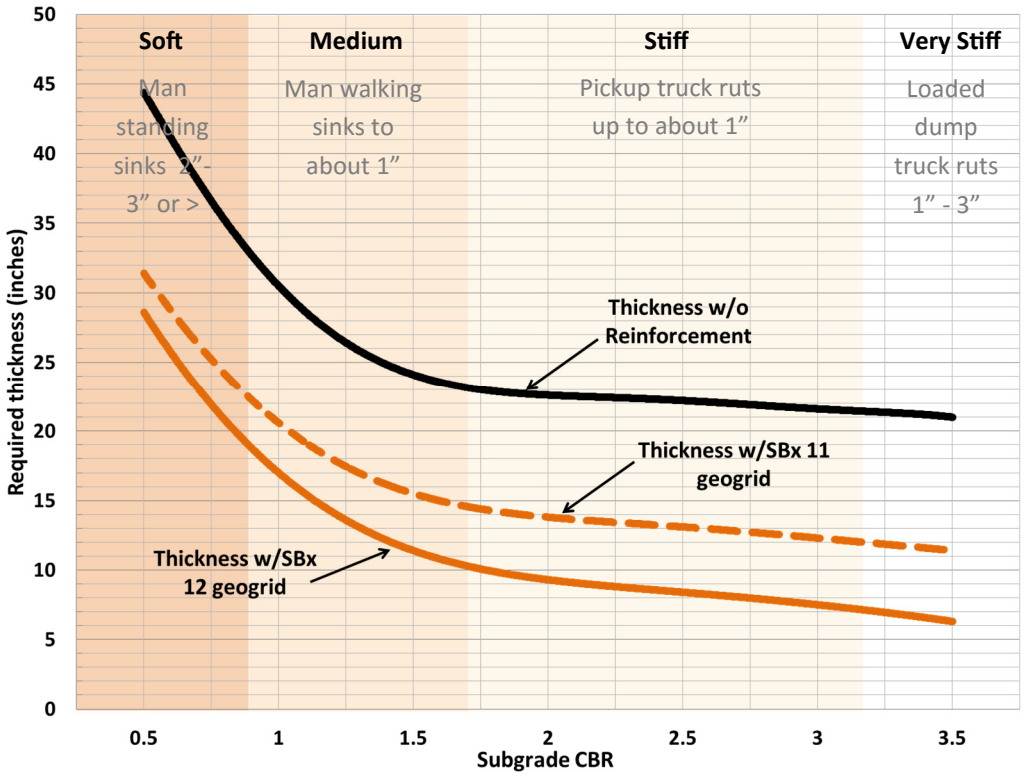
20,000 lb/axle load

100 psi tire pressure

1,200 passes

Subbase CBR = 20 (min)

1.5” wheel rut depth



Loading Conditions:

20,000 lb/axle load

100 psi tire pressure

1,200 passes

Subbase CBR = 20 (min)

3.0” wheel rut depth