

Guide for Estimating Subgrade Soil Strengths (Fine-Grained Soils)

Estimated Consistency by:		Test by:				Correlates to:				
Feel	Equipment/Visual	Standard Penetration Test (blows/ft)	Dynamic Cone Penetrometer (in/blow)			Shear Strength, C_u		California R Value	R Value	CBR
			SC, SM, SP	CL	CH	(psi)	(tsf)			
Very Soft	Man standing sinks > 3 inches	< 2	–	–	–	< 1.7	< 0.125	< 5	–	< 0.4
Soft	Man walking sinks ~ 2 - 3 inches	2 - 4	–	–	–	1.7 - 3.5	0.125 - 0.25	< 5	< 0.36	0.4 - 0.8
Medium	Man walking sinks ~ 1 inch	4 - 8	–	–	–	3.5 - 6.9	0.25 - 0.50	< 5	0.36 - 2.5	0.8 - 1.6
Stiff	Pickup truck ruts ~ 1/2 - 1 inch	8 - 15	> 3.9	2.6 - 1.8	–	6.9 - 13.9	0.50 - 1.0	5 - 20	2.5 - 6.8	1.6 - 3.2
Very Stiff	Loaded dump truck ruts ~ 1 - 3 inches	15 - 30	3.9 - 2.2	1.8 - 1.3	> 4.3	13.9 - 27.8	1.0 - 2.0	20 - 33	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	> 33	> 15.5	> 6.4

References: After Portland Cement Association, E.I. DuPont literature and McCarthy, David F., *Essentials of Soil Mechanics and Foundations*, 1977 & Tensar1998.

Webster, Personal Communication 2001, DCP vs. CBR Correlations

AASTHO, 1993 *Guide for Design of Pavement Structures*, Van Till et al. NCHRP128.

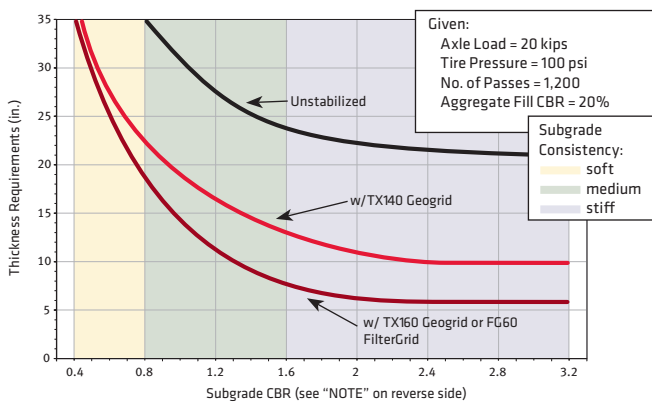
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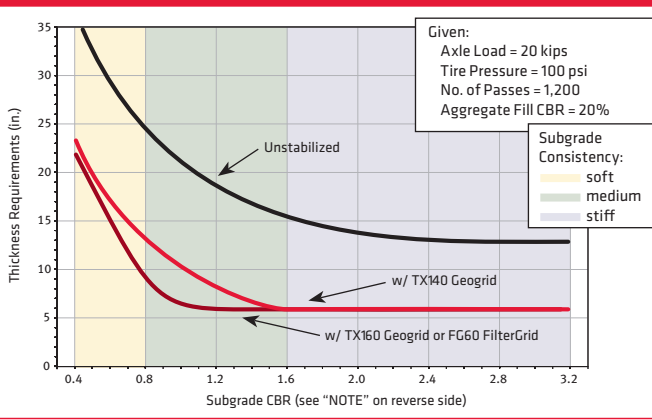
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Aggregate Thickness Requirements for a Typical Unpaved Application Scenario

Rut Depth = 1½ Inches



Rut Depth = 3 Inches



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