

The following table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A restrictive layer is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
		In	In				
015CS: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
015FC: Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
015LC: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
015LS: Ladysmith-----	---	---	---	---	Moderate	High	Low
015NS: Norge-----	---	---	---	---	---	Moderate	Low
015NT: Norge, eroded---	---	---	---	---	---	Moderate	Low
015ON: Olpe-----	---	---	---	---	---	High	Moderate
Norge-----	---	---	---	---	---	Moderate	Low
015VE: Verdigris-----	---	---	---	---	---	Low	Low
019MB: Martin-----	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
049FM: Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
Martin-----	---	---	---	---	High	High	Low
049IV: Ivan-----	---	---	---	---	Moderate	Low	Low
191MB: Milan-----	---	---	---	---	None	Moderate	Low
191MC: Milan-----	---	---	---	---	None	Moderate	Low
191PX: Pratt-----	---	---	---	---	None	Low	Moderate
191RO: Rosehill-----	20-40	Bedrock (paralithic)	---	---	None	High	Low
191RS: Rosehill-----	20-40	Bedrock (paralithic)	---	---	None	High	Low
191TV: Tivoli-----	---	---	---	---	None	Low	Low
191US: Ustifluvents---	---	---	---	---	None	---	---
Aa: Attica-----	---	---	---	---	---	Low	Low
Ab: Attica-----	---	---	---	---	---	Low	Low
Tivoli-----	---	---	---	---	---	Low	Low
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---
Ba: Bethany-----	---	---	---	---	None	High	Low
Bb: Bethany-----	---	---	---	---	None	High	Low
Bc: Brewer-----	---	---	---	---	None	High	Moderate
Ca: Canadian-----	---	---	---	---	---	Low	Low
Ch: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Rock Outcrop---	---	---	---	---	None	---	---
Cc: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Da: Dale-----	---	---	---	---	None	Moderate	Low
Db: Dwight-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
Fa: Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
Ia: Irwin-----	---	---	---	---	Moderate	High	Low
Ib: Ivan-----	---	---	---	---	Moderate	Low	Low
INT: Aquolls-----	---	---	---	---	Low	---	---
La: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Lb: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Lc: Labette, eroded-	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Ld:		In	In				
Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Dwight-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
Le:							
Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Lf:							
Lesho-----	---	Strongly contrasting textural stratification	---	---	---	High	Low
Lg:							
Lincoln-----	---	---	---	---	---	Low	Low
Tivoli-----	---	---	---	---	---	Low	Low
M-W:							
Miscellaneous	---	---	---	---	---	---	---
Water-----							
Ma:							
Martin-----	---	---	---	---	High	High	Low
Mb:							
Martin-----	---	---	---	---	High	High	Low
Mc:							
Martin, eroded--	---	---	---	---	High	High	Low
MCC:							
Martin-----	---	---	---	---	High	High	Low
Md:							
Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
Martin-----	---	---	---	---	High	High	Low
Florence-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	Moderate	Low
Me:							
Milan-----	---	---	---	---	---	Moderate	Low
Mf:							
Minco-----	---	---	---	---	None	Low	Low
Mg:							
Minco-----	---	---	---	---	None	Low	Low
Na:							
Norge-----	---	---	---	---	---	Moderate	Low
Nb:							
Norge-----	---	---	---	---	---	Moderate	Low
Nc:							
Norge, eroded---	---	---	---	---	---	Moderate	Low
Oa:							
Olpe-----	---	---	---	---	---	High	Moderate
Ob:							
Osage-----	---	---	---	---	---	High	Moderate
Ra:							
Reading-----	---	---	---	---	High	Moderate	Low
Rb:							
Rosehill-----	20-40	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Low
Rc:							
Rosehill-----	20-40	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Low
Sa:							
Smolan-----	---	---	---	---	Low	Moderate	Low
Sb:							
Smolan-----	---	---	---	---	Moderate	Moderate	Low
Sc:							
Smolan, eroded--	---	---	---	---	Moderate	Moderate	Low
Sd:							
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Ta:							
Tabler-----	---	---	---	---	---	High	Low
Tb:							
Tabler-----	---	---	---	---	---	High	Low
Va:							
Vanoss-----	---	---	---	---	---	Moderate	Moderate
Vb:							
Vanoss-----	---	---	---	---	---	Moderate	Moderate
Vc:							
Vanoss-----	---	---	---	---	---	Moderate	Moderate
Vd:							
Verdigris-----	---	---	---	---	---	Low	Low
W:							
Water Areas-----	---	---	---	---	---	---	---
Wa:							
Waurika-----	---	---	---	---	---	High	Moderate

