

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 In	Thickness In	Hardness		Uncoated Steel	Concrete
015LS:							
Ladysmith-----	---	---	---	---	Moderate	High	Low
035LG:							
Lincoln-----	---	---	---	---	---	Low	Low
Tivoli-----	---	---	---	---	---	Low	Low
035VC:							
Vanoss-----	---	---	---	---	---	Moderate	Moderate
035VD:							
Verdigris-----	---	---	---	---	---	Low	Low
077AN:							
Kaski-----	---	---	---	---	None	Low	Low
077BM:							
Lincoln-----	---	---	---	---	None	Low	Low
077BP:							
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
Port-----	---	---	---	---	None	Moderate	Low
077CE:							
Corbin-----	---	---	---	---	None	High	Low
077CF:							
Corbin-----	---	---	---	---	None	High	Low
077GN:							
Grant-----	40-60	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Low
077GS:							
Grant-----	40-60	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Low
077KR:							
Kirkland-----	---	---	---	---	None	High	Low
Renfrow-----	---	---	---	---	None	High	Low
077KW:							
Kirkland-----	---	---	---	---	None	High	Low
Renfrow-----	---	---	---	---	None	High	Low
077PH:							
Dale-----	---	---	---	---	None	Moderate	Low
077PT:							
Pratt-----	---	---	---	---	None	Low	Moderate
Tivoli-----	---	---	---	---	None	Low	Low
077SQ:							
Shellabarger----	---	---	---	---	None	Low	Moderate
Albion-----	---	---	---	---	None	Low	Low
077TH:							
Tivoli-----	---	---	---	---	None	Low	Low
095DA:							
Dillwyn-----	---	---	---	---	Low	Low	Low
Plevna-----	---	---	---	---	Low	High	Low
095OA:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	Low	High	Low
095RA:							
Renfrow-----	---	---	---	---	Low	High	Low
173EA:							
Elandco-----	---	---	---	---	Low	Moderate	Low
173LA:							
Lesho-----	---	---	---	---	Low	High	Low
173PB:							
Plevna-----	---	---	---	---	Low	High	Low
173RA:							
Renfrow-----	---	---	---	---	None	High	Low
1439:							
Crisfield-----	---	---	---	---	None	Low	Low
AED:							
Arents, Earthen Dam-----	---	---	---	---	None	---	Low
Ba:							
Bethany-----	---	---	---	---	None	High	Low
Bb:							
Bethany-----	---	---	---	---	None	High	Low
BOA:							
Borrow Areas----	---	---	---	---	None	---	---
Br:							
Brewer-----	---	---	---	---	None	High	Moderate
Bs:							
Brewer-----	---	---	---	---	None	High	Moderate
Drummond-----	---	---	---	---	None	High	High
Ca:							
Canadian-----	---	---	---	---	None	Low	Low
CAA:							
Canadian-----	---	---	---	---	---	Low	Low
Cc:							
Carwile-----	---	---	---	---	None	High	Moderate
Cr:							
Corbin-----	---	---	---	---	None	High	Low
Da:							
Dale-----	---	---	---	---	None	Moderate	Low

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Dr:		In	In				
Dale-----	---	---	---	---	None	Moderate	Low
Reinach-----	---	---	---	---	None	Low	Low
Ea:							
Elandco-----	---	---	---	---	None	Moderate	Low
Ec:							
Elandco-----	---	---	---	---	None	Moderate	Low
Fa:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fb:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fc:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fd:							
Farnum-----	---	---	---	---	None	Moderate	Low
GRP:							
Gravel Pits----	---	---	---	---	None	---	---
INT:							
Aquolls-----	---	---	---	---	Moderate	---	---
IRR:							
Irwin-----	---	---	---	---	Moderate	High	Low
Ka:							
Kirkland-----	---	---	---	---	None	High	Low
Kb:							
Kirkland-----	---	---	---	---	None	High	Low
Kc:							
Kirkland-----	---	---	---	---	None	High	Low
Lo:							
Lesho-----	---	---	---	---	None	High	Low
Ls:							
Lincoln-----	---	---	---	---	None	Low	Low
M-W:							
Miscellaneous	---	---	---	---	---	---	---
Water-----							
Ma:							
Milan-----	---	---	---	---	None	Moderate	Low
Mb:							
Milan-----	---	---	---	---	None	Moderate	Low
Mc:							
Milan-----	---	---	---	---	None	Moderate	Low
Md:							
Milan-----	---	---	---	---	None	Moderate	Low
On:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Oo:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Op:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Elandco-----	---	---	---	---	None	Moderate	Low
Or:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Renfrow-----	---	---	---	---	None	High	Low
Os:							
Wellsford-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Shale Outcrop---	---	---	---	---	None	---	---
Pa:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Pb:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Pc:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Pd:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Px:							
Pratt-----	---	---	---	---	None	Low	Moderate
Ra:							
Renfrow-----	---	---	---	---	None	High	Low
Grainola-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Ro:							
Rosehill-----	20-40	Bedrock (paralithic)	---	---	None	High	Low
Rs:							
Rosehill-----	20-40	Bedrock (paralithic)	---	---	None	High	Low
Rx:							
Rosehill-----	20-40	Bedrock (paralithic)	---	---	None	High	Low
Sa:							
Shellabarger----	---	---	---	---	None	Low	Moderate
Sb:							
Shellabarger----	---	---	---	---	None	Low	Moderate

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Sc:		In	In				
Shellabarger----	---	---	---	---	None	Low	Moderate
Ta:							
Tabler-----	---	---	---	---	None	High	Low
Tv:							
Tivoli-----	---	---	---	---	None	Low	Low
Us:							
Ustifluvents----	---	---	---	---	None	---	---
Va:							
Vanoss-----	---	---	---	---	None	Moderate	Moderate
Vb:							
Vanoss-----	---	---	---	---	None	Moderate	Moderate
Vc:							
Vanoss-----	---	---	---	---	None	Moderate	Moderate
W:							
Water (< 40 Acres)-----	---	---	---	---	None	---	---
Wa:							
Waurika-----	---	---	---	---	None	High	Moderate

