

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
033CP: Clairemont-----	---	In	In	---	None	Moderate	Low
033OA: Obaro-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Low	Low
033OB: Obaro-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Low	Low
Rock Outcrop----	---	---	---	---	None	---	---
033QR: Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
033QT: Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
033YE: Yahola-----	---	---	---	---	None	Low	Low
077BP: Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
Port-----	---	---	---	---	None	Moderate	Low
077FU: Farnum-----	---	---	---	---	None	Moderate	Low
077GE: Gerlane-----	---	---	---	---	None	Low	Low
077MC: Minco-----	---	---	---	---	None	Low	Low
077MN: Minco-----	---	---	---	---	None	Low	Low
077MO: Minco-----	---	---	---	---	None	Low	Low
077QU: Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
077SE: Shellabarger----	---	---	---	---	None	Low	Moderate
077WE: Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
095AC: Albion-----	---	---	---	---	None	Low	Low
095DA: Dillwyn-----	---	---	---	---	Low	Low	Low
Plevna-----	---	---	---	---	Low	High	Low
095FA: Farnum-----	---	---	---	---	Low	Moderate	Low
095PB: Pratt-----	---	---	---	---	Low	Low	Moderate
095SB: Shellabarger----	---	---	---	---	None	Low	Moderate
095WA: Waldeck-----	---	---	---	---	Low	Moderate	Low
097LN: Lincoln-----	---	---	---	---	Low	Low	Low
097QW: Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	Low	Moderate	Low
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	Low	Low	Low
097WA: Waldeck-----	---	---	---	---	Low	Moderate	Low
151AB: Albion-----	---	---	---	---	Low	Low	Low
151AO: Albion-----	---	---	---	---	Low	Low	Low
151AS: Albion-----	---	---	---	---	Low	Low	Low
151AS: Shellabarger----	---	---	---	---	Low	Low	Moderate
151BC: Blanket-----	---	---	---	---	Low	High	Low
151CA: Carwile-----	---	---	---	---	---	High	Moderate
151CK: Case-----	---	---	---	---	Low	Moderate	Low
Clark-----	---	---	---	---	Low	Moderate	Low
151CM: Clark-----	---	---	---	---	Low	Moderate	Low
151CN: Clark-----	---	---	---	---	Low	Moderate	Low

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
151CO:							
Clark-----	---	---	---	---	Low	Moderate	Low
Ost-----	---	---	---	---	Low	Moderate	Low
151FA:							
Farnum-----	---	---	---	---	Low	Moderate	Low
151KP:							
Kanza-----	---	---	---	---	Low	High	Moderate
Plevna-----	---	---	---	---	Low	High	Low
151OS:							
Ost-----	---	---	---	---	Low	Moderate	Low
151PM:							
Pratt-----	---	---	---	---	Low	Low	Moderate
151PN:							
Pratt-----	---	---	---	---	Low	Low	Moderate
151PO:							
Pratt-----	---	---	---	---	Low	Low	Moderate
Carwile-----	---	---	---	---	Low	High	Moderate
151SA:							
Albion-----	---	---	---	---	Low	Low	Low
Kaski-----	---	---	---	---	Low	Low	Low
151SE:							
Shellabarger----	---	---	---	---	Low	Low	Moderate
1439:							
Crisfield-----	---	---	---	---	None	Low	Low
Ad:							
Albion-----	---	---	---	---	None	Low	Low
Shellabarger----	---	---	---	---	None	Low	Moderate
Ae:							
Albion-----	---	---	---	---	None	Low	Low
Shellabarger----	---	---	---	---	None	Low	Moderate
AED:							
Arents, Earthen Dam-----	---	---	---	---	---	---	---
AN:							
Albion-----	---	---	---	---	None	Low	Low
Shellabarger----	---	---	---	---	None	Low	Moderate
As:							
Clairemont-----	---	---	---	---	None	High	Low
At:							
Attica-----	---	---	---	---	None	Low	Low
Ba:							
Blanket-----	---	---	---	---	None	High	Low
Bb:							
Blanket-----	---	---	---	---	None	High	Low
Bc:							
Blanket-----	---	---	---	---	None	High	Low
Bf:							
Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Clairemont-----	---	---	---	---	None	Moderate	Low
Ca:							
Canadian-----	---	---	---	---	None	Low	Low
Cc:							
Case-----	---	---	---	---	None	Moderate	Low
Clark-----	---	---	---	---	None	Moderate	Low
Cd:							
Clairemont-----	---	---	---	---	None	Moderate	Low
Cf:							
Clairemont-----	---	---	---	---	None	Moderate	Low
Ck:							
Clark-----	---	---	---	---	None	Moderate	Low
Fa:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fm:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fr:							
Farnum-----	---	---	---	---	None	Moderate	Low
Fu:							
Farnum-----	---	---	---	---	None	Moderate	Low
Ga:							
Grant-----	---	---	---	---	None	Moderate	Low
Gb:							
Grant-----	---	---	---	---	None	Moderate	Low
Gc:							
Grant-----	---	---	---	---	None	Moderate	Low
GRP:							
Gravel Pits-----	---	---	---	---	None	---	---
INT:							
Aquolls-----	---	---	---	---	Moderate	---	---
Ka:							
Kanza-----	---	---	---	---	None	High	Moderate
Kf:							
Kingfisher-----	20-40	Bedrock (paralithic)	---	Very weakly cemented	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
Kv:		In	In				
Kingfisher-----	20-40	Bedrock (paralithic)	---	Very weakly cemented	None	Moderate	Low
Vernon-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Kz:							
Kingfisher-----	20-40	Bedrock (paralithic)	---	Very weakly cemented	None	Moderate	Low
Vernon-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Ln:							
Lincoln-----	---	---	---	---	None	Low	Low
LNN:							
Lincoln-----	---	---	---	---	None	Low	Low
Ma:							
Mangum-----	---	---	---	---	None	High	Low
Mg:							
Mangum-----	---	---	---	---	None	High	Low
Drummond-----	---	---	---	---	None	High	High
Mn:							
Minco-----	---	---	---	---	None	Low	Low
Na:							
Naron-----	---	---	---	---	None	Low	Low
Nb:							
Naron-----	---	---	---	---	None	Low	Low
Os:							
Ost-----	---	---	---	---	None	Moderate	Low
Ot:							
Ost-----	---	---	---	---	None	Moderate	Low
Pa:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Pd:							
Pond Creek-----	---	---	---	---	None	Moderate	Moderate
Ph:							
Dale-----	---	---	---	---	None	Moderate	Low
Pk:							
Buttermilk-----	---	---	---	---	None	High	Moderate
Ps:							
Pratt-----	---	---	---	---	None	Low	Moderate
Pt:							
Pratt-----	---	---	---	---	None	Low	Moderate
Tivoli-----	---	---	---	---	None	Low	Low
Qn:							
Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Qw:							
Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
Rb:							
Knoco-----	4-19	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Rock Outcrop----	0-0	Bedrock (paralithic)	---	---	None	---	---
Sb:							
Shellabarger----	---	---	---	---	None	Low	Moderate
SBB:							
Shellabarger----	---	---	---	---	Low	Low	Moderate
Sc:							
Shellabarger----	---	---	---	---	None	Low	Moderate
Tv:							
Tivoli-----	---	---	---	---	None	Low	Low
Vn:							
Vernon-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Vr:							
Vernon-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Vs:							
Knoco-----	4-19	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
Vernon-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	High	Low
W:							
Water-----	---	---	---	---	None	---	Low
Wa:							
Waldeck-----	---	---	---	---	None	Moderate	Low
Wo:							
Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low

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Woodward-----	20-40	Bedrock (paralithic)	---	Extremely weakly cemented	None	Low	Low
Quinlan-----	10-20	Bedrock (paralithic)	---	Extremely weakly cemented	None	Moderate	Low
Ya:							
Yahola-----	---	---	---	---	None	Low	Low
Ze:							
Zenda-----	---	---	---	---	None	High	Low

