

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				
Ac:							
Aksarben-----	---	---	---	---	High	Moderate	Moderate
Ad:							
Aksarben-----	---	---	---	---	High	Moderate	Moderate
Ae:							
Aksarben-----	---	---	---	---	High	Moderate	Moderate
Bs:							
Burchard-----	---	---	---	---	Moderate	Moderate	Low
Bx:							
Burchard-----	---	---	---	---	Moderate	Moderate	Low
Steinauer-----	---	---	---	---	Moderate	Moderate	Low
Ch:							
Chase-----	---	---	---	---	High	High	Low
Co:							
Contrary-----	---	---	---	---	High	Moderate	Moderate
Ga:							
Grundy-----	---	---	---	---	High	High	Moderate
Ju:							
Judson-----	---	---	---	---	High	Moderate	Low
Kd:							
Kennebec, CHANNELED-----	---	---	---	---	High	Moderate	Low
Ke:							
Kennebec-----	---	---	---	---	High	Moderate	Low
Kp:							
Kipson-----	7-20	Bedrock (paralithic)	---	Noncemented	Moderate	Low	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
M-W:							
Miscellaneous Water-----	---	---	---	---	---	---	---
Ma:							
Marshall-----	---	---	---	---	High	Moderate	Moderate
Mb:							
Marshall-----	---	---	---	---	High	Moderate	Moderate
Md:							
Martin-----	---	---	---	---	High	High	Low
Mf:							
Martin-----	---	---	---	---	High	High	Low
Mh:							
Mayberry-----	---	---	---	---	High	High	Low
Mk:							
Monona-----	---	---	---	---	High	Low	Low
Mn:							
Monona-----	---	---	---	---	High	Low	Low
Mt:							
Morrill-----	---	---	---	---	Moderate	Moderate	Moderate
Mw:							
Muscotah-----	---	---	---	---	Moderate	High	Low
My:							
Muscotah-----	---	---	---	---	Moderate	High	Low
No:							
Nodaway-----	---	---	---	---	High	Moderate	Low
Om:							
Olmitz-----	---	---	---	---	Moderate	Moderate	Moderate
Or:							
Orthents, Earthen Dam----	---	---	---	---	---	---	---
Pd:							
Padonia-----	20-40	Bedrock (paralithic)	---	Noncemented	Moderate	High	Low
Martin-----	---	---	---	---	High	High	Low
Pe:							
Padonia-----	20-40	Bedrock (paralithic)	---	Noncemented	Moderate	High	Low
Martin-----	---	---	---	---	High	High	Low
Pf:							
Padonia-----	20-40	Bedrock (paralithic)	---	Noncemented	Moderate	High	Low
Oska-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
Pm:							
Pawnee-----	---	---	---	---	High	High	Low
Pn:							
Pawnee-----	---	---	---	---	High	High	Low
Po:							
Pawnee-----	---	---	---	---	High	High	Low
Pt:							
Pits, Quarries--	---	---	---	---	---	---	---
Pw:							
Pohocco-----	---	---	---	---	High	Moderate	Low
Netawaka-----	---	---	---	---	High	Low	Low
Px:							
Pohocco-----	---	---	---	---	High	Moderate	Low
Netawaka-----	---	---	---	---	High	Low	Low
Re:							
Reading-----	---	---	---	---	High	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
		In	In				
Sg: Shelby-----	---	---	---	---	Moderate	Moderate	Moderate
Sm: Shelby-----	---	---	---	---	Moderate	Moderate	Moderate
W: Water-----	---	---	---	---	Low	---	---
Wa: Wabash-----	---	---	---	---	High	High	Moderate
We: Wamego-----	20-40	Bedrock (paralithic)	---	Noncemented	Moderate	Moderate	Moderate
Wg: Wamego-----	20-40	Bedrock (paralithic)	---	Noncemented	Moderate	Moderate	Moderate
Vinland-----	10-20	Bedrock (paralithic)	---	Noncemented	Moderate	Low	Moderate
Wm: Wymore-----	---	---	---	---	High	High	Moderate
Wn: Wymore-----	---	---	---	---	High	High	Moderate

