

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.

SOIL FEATURES--Continued  
Coffey County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
003CC: Clareson----- Rock Outcrop----	20-40 ---	Bedrock (lithic) ---	--- ---	Indurated ---	--- ---	High ---	Moderate ---
003EK: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Clareson-----	20-40	Bedrock (lithic)	---	Indurated	---	High	Moderate
003WF: Woodson-----	---	---	---	---	Low	High	Moderate
059CM: Clareson----- Eram-----	20-40 20-40	Bedrock (lithic) Bedrock (paralithic)	--- ---	Indurated Weakly cemented	--- None	High High	Moderate Moderate
111CA: Chase-----	---	---	---	---	High	High	Low
111EC: Elmont, eroded--	40-60	Bedrock (paralithic)	---	---	High	Moderate	Low
111KC: Kenoma-----	---	---	---	---	---	High	Moderate
111LA: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
111LB: Labette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
111OA: Olpe-----	---	---	---	---	---	High	Moderate
Kenoma-----	---	---	---	---	---	High	Moderate
139CM: Clareson----- Eram-----	20-40 20-40	Bedrock (lithic) Bedrock (paralithic)	--- ---	Indurated Weakly cemented	--- None	High High	Moderate Moderate
139DN: Dennis-----	---	---	---	---	---	High	Moderate
139LU: Lula-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
Ae: Apperson----- Eram-----	40-60 20-40	Bedrock (lithic) Bedrock (paralithic)	--- ---	Indurated Weakly cemented	--- None	High High	Low Moderate
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---
Bb: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Bc: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Cs: Clareson----- Shidler-----	20-40 4-20	Bedrock (lithic) Bedrock (lithic)	--- ---	Indurated Indurated	None None	High Moderate	Moderate Low
Db: Dennis-----	---	---	---	---	---	High	Moderate
De: Dennis, eroded--	---	---	---	---	---	High	Moderate
Eb: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Ec: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Eh: Eram, eroded----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
EN: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Ep: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Apperson-----	40-60	Bedrock (lithic)	---	Indurated	---	High	Low
Er: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
Es: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Shidler-----	4-20	Bedrock (lithic)	---	Indurated	---	Moderate	Low
INT: Aquolls-----	---	---	---	---	Low	---	---
Kb: Kenoma-----	---	---	---	---	---	High	Moderate
Ke: Kenoma, eroded--	40-60	Bedrock (lithic)	---	Indurated	---	High	Moderate

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				
Ko:							
Kenoma-----	---	---	---	---	---	High	Moderate
Olpe-----	---	---	---	---	---	High	Moderate
La:							
Lanton-----	---	---	---	---	None	High	Moderate
Le:							
Leanna, drained-	---	---	---	---	---	High	Moderate
Lu:							
Lula-----	40-60	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
M-W:							
Miscellaneous	---	---	---	---	---	---	---
Water-----							
Ma:							
Mason-----	---	---	---	---	---	Moderate	Moderate
Ob:							
Olpe-----	---	---	---	---	---	High	Moderate
Oc:							
Orthents-----	---	---	---	---	Low	High	Moderate
Oh:							
Orthents-----	---	---	---	---	None	Moderate	Low
Os:							
Osage-----	---	---	---	---	None	High	Moderate
Ot:							
Osage-----	---	---	---	---	---	High	Moderate
Pt:							
Pits, Quarries--	---	---	---	---	---	---	---
Sa:							
Summit-----	---	---	---	---	None	High	Low
Sc:							
Summit-----	---	---	---	---	None	High	Low
Sd:							
Summit-----	---	---	---	---	---	High	Low
Vb:							
Verdigris-----	---	---	---	---	---	Low	Low
Vc:							
Verdigris-----	---	---	---	---	---	Low	Low
W:							
Water-----	---	---	---	---	Low	---	---
Wo:							
Woodson-----	---	---	---	---	Low	High	Moderate

