

Engineering Interpretations

Soil Features

This table gives estimates of several important soil features which are used in land use planning that involves engineering considerations. Soil features which are covered include bedrock depth and hardness, cemented pan depth and hardness, subsidence, potential frost action, and risk of corrosion for uncoated steel or for concrete.

DEPTH TO BEDROCK - This value is given if bedrock is within a depth of 60 inches. The depth is based on many soil borings and observations made during soil mapping. The rock is specified as either soft or hard. If the rock is soft, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

CEMENTED PAN - Cemented pan is a nearly continuous layer of indurated or strongly cemented material having a hard, brittle consistency because the particles are held together by cementing substances such as, calcium carbonate, or oxides of silicon, iron, or aluminum. These layers are identified when they occur within a depth of 60 inches. Pans are classified as "thin" or "thick." "Thin" cemented pans are thin enough so that excavations can be made with trenching machines, backhoes, or small rippers and other equipment common to construction of pipelines, sewer lines, cemeteries, and the like. "Thick" cemented pans are sufficiently thick or massive to require blasting or special equipment beyond which is considered normal in excavating for this type of construction.

SUBSIDENCE - Subsidence potential is the maximum possible loss of surface elevation from the drainage of wet soils having organic layers or semi-fluid mineral layers. Estimates of the depth of subsidence (in inches) that takes place soon after drainage (initial subsidence) and after oxidation (total subsidence) are given for soils that are likely to subside.

POTENTIAL FROST ACTION - This is the likelihood of upward or lateral movement of soil by the formation of segregated ice lenses (frost heave) and the subsequent loss of soil strength upon thawing. The following classes are used in regions where frost action is a potential problem: (1) Low -- soils are rarely susceptible to the formation of ice lenses, (2) Moderate -- soils are susceptible to the formation of ice lenses, resulting in frost heave and subsequent loss of soil strength, and (3) High -- soils are highly susceptible to the formation of ice lenses, resulting in frost heave and subsequent loss of soil strength.

RISK OF CORROSION - Various metals and other materials corrode when on or in the soil, and some metals and materials corrode more rapidly when in contact with specific soils than when in contact with others. Corrosivity ratings are given for two of the common structural materials, uncoated steel and concrete. The risk of corrosion classes are low, moderate, and high.

This subsection includes:

- **(a) Soil Features**

Bollinger County, Missouri
Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
60033: Wrengart-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	Moderate
60046: Minnith-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
60053: Winfield-----	---	---	---	---	0	0	High	High	Moderate
60054: Minnith-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
60055: Winfield-----	---	---	---	---	0	0	High	Moderate	Moderate
66000: Moniteau-----	---	---	---	---	0	0	High	High	High
66054: Wakeland-----	---	---	---	---	0	0	High	High	Low
66055: Haymond-----	---	---	---	---	0	0	High	Low	Low
73055: Alred-----	Strongly contrasting textural stratification	14-40	---	Noncemented	0	0	Moderate	Moderate	High
Rueter-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
73100: Wrengart-----	Dense material	20-40	5-35	Noncemented	0	---	Moderate	Moderate	Moderate
73101: Wrengart-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	High

Bollinger County, Missouri
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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
73139: Poynor-----	Strongly contrasting textural stratification	14-40	---	Noncemented	0	0	Moderate	High	High
Clarksville-----	---	---	---	---	0	0	Moderate	Moderate	High
Scholten-----	Fragipan	14-30	6-35	Noncemented	0	0	Moderate	High	High
73140: Clarksville-----	---	---	---	---	0	0	Moderate	Moderate	High
Scholten-----	Fragipan	16-36	6-35	Noncemented	0	0	Moderate	High	High
73141: Firebaugh-----	---	---	---	---	0	0	High	High	High
73145: Crider-----	---	---	---	---	0	0	High	Moderate	Moderate
73146: Marquand-----	---	---	---	---	0	0	High	High	High
73150: Caneyville-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	High	Moderate
Bucklick-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	Moderate
73151: Caneyville-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	High	Moderate
Gasconade-----	Bedrock (lithic)	4-20	---	Indurated	0	0	Moderate	High	Low
Bucklick-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	Moderate

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
73156: Alred-----	Strongly contrasting textural stratification	14-40	---	Noncemented	0	0	Moderate	High	Moderate
Gepp-----	---	---	---	---	0	0	Moderate	High	Moderate
73157: Captina-----	Fragipan	20-36	6-32	Noncemented	0	0	High	High	High
73223: Coulstone-----	---	---	---	---	0	0	Moderate	Low	High
Bender-----	Bedrock (lithic)	20-39	41-61	Indurated	0	0	Moderate	Low	High
73264: Alred-----	Strongly contrasting textural stratification	14-40	---	Noncemented	0	0	Moderate	Moderate	High
Wrengart-----	---	---	---	---	0	0	High	Moderate	Moderate
73265: Captina-----	Fragipan	20-36	6-32	Noncemented	0	0	High	High	High
Scholten-----	Fragipan	20-35	6-35	Noncemented	0	0	Moderate	High	High
73266: Hildebrecht-----	Fragipan	24-36	10-30	Noncemented	0	0	High	High	High
73267: Yelton-----	Fragipan	16-28	10-25	Noncemented	0	0	High	High	High
Scholten-----	Fragipan	20-35	6-35	Noncemented	0	0	High	High	High

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
73269: Brussels-----	---	---	---	---	0	0	Moderate	Moderate	Low
Gasconade-----	Bedrock (lithic)	4-20	---	Indurated	0	0	Moderate	Moderate	Low
Rock outcrop-----	Bedrock (lithic)	0-0	---	Indurated	0	0	None	---	---
73270: Wrengart-----	---	---	---	---	0	0	High	High	Moderate
73343: Captina-----	Fragipan	15-30	6-26	Noncemented	0	0	High	Moderate	High
73344: Captina-----	Fragipan	21-35	6-31	Noncemented	0	0	High	Moderate	High
73345: Hildebrecht-----	Fragipan	24-36	6-24	Noncemented	0	0	Moderate	Moderate	High
73346: Hildebrecht-----	Fragipan	24-36	6-24	Noncemented	0	0	Moderate	Moderate	High
74644: Deible-----	Abrupt textural change	8-22	---	Noncemented	0	0	High	High	Moderate
74646: Cornwall-----	---	---	---	---	0	0	High	High	Moderate
74648: Aslinger-----	---	---	---	---	0	0	High	High	High
74649: Aslinger-----	---	---	---	---	0	0	High	High	High
Waben-----	---	---	---	---	0	0	Moderate	Low	Moderate

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Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
74679: Higdon-----	---	---	---	---	0	0	High	Low	Moderate
74680: Moniteau-----	---	---	---	---	0	0	High	High	High
74685: Auxvasse-----	---	---	---	---	0	0	High	High	High
75379: Kaintuck-----	---	---	---	---	0	0	Moderate	Low	Moderate
75381: Bearthicket-----	---	---	---	---	0	0	High	Low	Low
75395: Jamesfin-----	---	---	---	---	0	0	High	Low	Moderate
75408: Secesh-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
75409: Relfe-----	---	---	---	---	0	0	Low	Low	Moderate
75411: Tilk-----	---	---	---	---	0	0	Moderate	Moderate	High
75416: Gladden-----	---	---	---	---	0	0	Moderate	Low	Moderate
75417: Relfe-----	---	---	---	---	0	0	Low	Low	Moderate
Sandbur-----	---	---	---	---	0	0	Moderate	Low	Low
75426: Gabriel-----	---	---	---	---	0	0	High	High	Moderate

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
75428: Tilk-----	---	---	---	---	0	0	Moderate	Moderate	High
Cornwall-----	---	---	---	---	0	0	High	High	Moderate
Poynor-----	Strongly contrasting textural stratification	15-40	---	Noncemented	0	0	Moderate	High	High
75429: Tilk-----	---	---	---	---	0	0	Low	Low	High
Secesh-----	---	---	---	---	0	0	Moderate	Moderate	High
75430: Wideman-----	---	---	---	---	0	0	Low	Low	Low
75451: Gladden-----	---	---	---	---	0	0	Moderate	High	High
75467: Wilbur-----	---	---	---	---	0	0	High	Moderate	Moderate
75468: Elsah-----	---	---	---	---	0	0	Moderate	Low	Moderate
77000: Killarney-----	Fragipan	26-34	12-48	Noncemented	0	0	Moderate	Moderate	High
Frenchmill-----	---	---	---	---	0	0	Moderate	Moderate	High
77002: Delassus-----	Fragipan	20-36	20-48	Noncemented	0	0	Moderate	High	High
	Bedrock (lithic)	60-80	---	Indurated					

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
77005: Hassler-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	High
Syenite-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	High	High
77008: Hassler-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	High
80000: Calhoun-----	---	---	---	---	0	0	None	High	Moderate
80001: Oaklimeter-----	---	---	---	---	0	0	None	High	High
82000: Dubbs-----	---	---	---	---	0	0	None	Moderate	Moderate
82001: Amagon-----	---	---	---	---	0	0	None	High	High
82002: Forestdale-----	---	---	---	---	0	0	None	High	Moderate
82005: Malden-----	---	---	---	---	0	0	None	Low	Moderate
82006: Bosket-----	---	---	---	---	0	0	None	Low	Moderate
82007: Bosket-----	---	---	---	---	0	0	None	Low	Moderate
82009: Forestdale-----	---	---	---	---	0	0	None	High	Moderate
82010: Amagon-----	---	---	---	---	0	0	None	High	High

