

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**

Cole 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			
15002: MCGIRK-----	---	---	---	---	0	0	Moderate	High	High
60001: MENFRO-----	---	---	---	---	0	0	Moderate	Low	Moderate
60003: MENFRO-----	---	---	---	---	0	0	Moderate	Low	Moderate
60004: MENFRO-----	---	---	---	---	0	0	Moderate	Low	Moderate
60005: MENFRO-----	---	---	---	---	0	0	Moderate	Low	Moderate
60051: URBAN LAND-----	---	---	---	---	0	0	---	---	---
HARVESTER-----	---	---	---	---	0	0	Moderate	Low	Moderate
60052: URBAN LAND-----	---	---	---	---	0	0	---	---	---
UDORTHENTS-----	Bedrock (lithic)	60-80	---	Indurated	0	0	Moderate	High	Low
64002: FREEBURG-----	---	---	---	---	0	0	Moderate	High	High
64007: FREEBURG-----	---	---	---	---	0	0	Moderate	High	High
64010: URBAN LAND-----	---	---	---	---	0	0	---	---	---
FREEBURG-----	---	---	---	---	0	0	Moderate	High	High

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
64011: KLIEVER-----	---	---	---	---	0	0	Moderate	Low	High
64012: KLIEVER-----	---	---	---	---	0	0	Moderate	Low	High
64013: KLIEVER-----	---	---	---	---	0	0	Moderate	Low	High
64014: KLIEVER-----	---	---	---	---	0	0	Moderate	Low	High
66000: MONITEAU-----	---	---	---	---	0	0	Moderate	High	High
66004: DOCKERY-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
66006: WALDRON-----	---	---	---	---	0	0	Moderate	High	Low
66009: HAYNIE-----	---	---	---	---	0	0	Moderate	Low	Low
66010: SARPY-----	---	---	---	---	0	0	Low	Low	Low
66026: BLAKE-----	---	---	---	---	0	0	Moderate	High	Low
66027: HAYNIE-----	---	---	---	---	0	0	Moderate	Low	Low
66028: LETA-----	---	---	---	---	0	0	Moderate	High	Low

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
70023: ELDON-----	---	---	---	---	0	0	Moderate	Moderate	High
70029: MOKO-----	Bedrock (lithic)	4-20	---	Indurated	0	0	Moderate	Low	Low
ROCK OUTCROP-----	Bedrock (lithic)	0-0	---	Indurated	0	0	---	---	---
70046: SACVILLE-----	---	---	---	---	0	0	Moderate	High	Moderate
73012: GRAVOIS-----	Dense material	18-40	10-35	Noncemented	0	0	Moderate	Moderate	High
73035: GRAVOIS-----	Dense material	18-40	10-35	Noncemented	0	0	Moderate	Moderate	High
73040: MAPLEWOOD-----	Dense material	16-40	8-20	Noncemented	0	0	Moderate	High	Moderate
73041: MAPLEWOOD-----	Dense material	16-40	8-20	Noncemented	0	0	Moderate	High	Moderate
73042: NIANGUA-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	Moderate	High
BARDLEY-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	Moderate	Moderate
73048: RUETER-----	---	---	---	---	0	0	Moderate	High	High
73050: ROCK OUTCROP-----	Bedrock (lithic)	0-0	---	Indurated	0	0	---	---	---
BARDLEY-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	Moderate	Moderate

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
73088: RUETER-----	---	---	---	---	0	0	Moderate	High	High
73089: RUETER-----	---	---	---	---	0	0	Moderate	High	High
73095: GRAVOIS-----	Dense material	18-40	10-35	Noncemented	0	0	Moderate	Moderate	High
73101: WRENGART-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	High
73112: GUNLOCK-----	Dense material	20-34	10-30	Noncemented	0	0	Moderate	Moderate	High
73250: GATEWOOD-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	High	Moderate
MOKO-----	Bedrock (lithic)	4-20	---	Indurated	0	0	Moderate	Low	Low
73251: GATEWOOD-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	High	Moderate
MOKO-----	Bedrock (lithic)	4-20	---	Indurated	0	0	Moderate	Low	Low
73253: OCIE-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	High
73254: OCIE-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	High
73255: OCIE-----	Bedrock (lithic)	40-60	---	Indurated	0	0	Moderate	High	High
73256: ARKANA-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	Moderate	Moderate

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
73257: CANEVILLE-----	Bedrock (lithic)	20-40	---	Indurated	0	0	Moderate	Moderate	Moderate
73258: COTTON-----	Dense material	20-40	12-45	Noncemented	0	0	Moderate	High	High
73259: COTTON-----	Dense material	20-40	12-45	Noncemented	0	0	Moderate	High	High
73260: MAPLEWOOD-----	Dense material	16-40	6-28	Noncemented	0	0	Moderate	High	Moderate
	Bedrock (lithic)	48-59	---	Indurated					
73261: WRENGART-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	High
	Bedrock (lithic)	60-79	---	Indurated					
73262: WRENGART-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	High
	Bedrock (lithic)	60-79	---	Indurated					
73263: WRENGART-----	Dense material	20-40	5-35	Noncemented	0	0	Moderate	Moderate	High
	Bedrock (lithic)	60-79	---	Indurated					
74634: HARTVILLE-----	---	---	---	---	0	0	Moderate	Moderate	High
74659: DEIBLE-----	Abrupt textural change	11-22	---	Noncemented	0	0	Moderate	High	High

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	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
74678: RACoon-----	---	---	---	---	0	0	Moderate	High	High
75376: CEDARGAP-----	---	---	---	---	0	0	Moderate	Low	Moderate
75387: HACREEK-----	---	---	---	---	0	0	Moderate	High	Moderate
75399: JAMESFIN-----	---	---	---	---	0	0	Moderate	Low	Moderate
75415: JEMERSON-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
75456: RACKET-----	---	---	---	---	0	0	Moderate	Moderate	Low
75457: URBAN LAND-----	---	---	---	---	0	0	---	---	---
JAMESFIN-----	---	---	---	---	0	0	Moderate	Low	Moderate
75458: TANGLENOOK-----	---	---	---	---	0	0	Moderate	High	High
99000: Pits, quarries-----	---	---	---	---	0	0	---	---	---
99001: Water-----	---	---	---	---	---	---	---	---	---
99012: URBAN LAND-----	---	---	---	---	0	0	---	---	---