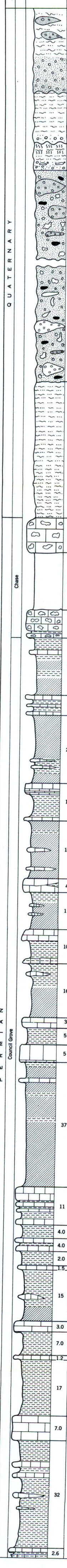
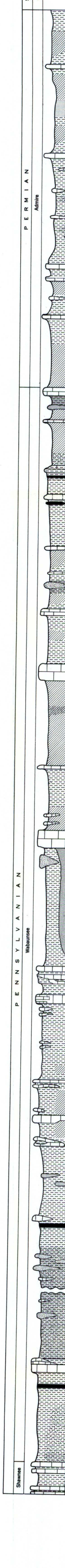
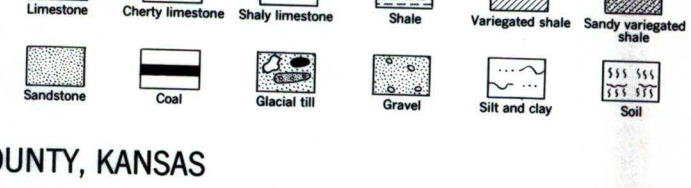


System	Group	Average thickness, in feet	Formation	Member	Description	Construction materials
QUATERNARY		25	Alluvium		Mostly sand and gravel in lower part; silt and clay with lenses of sand and gravel in upper part; gray brown to tan gray	
		10 to 20	Terrace deposit		Mostly gray to tan-gray silt and clay; some lenses of fine sand and gravel; some erratics and fragments of local limestone; tends to stand in vertical walls	
		8	Sanborn		Gray to gray-brown clay and silt; thin lenses of limestone and chert gravel in some exposures; lenses of sand and gravel numerous; some erratics; lenses of volcanic ash present, but rare	Road metal
		0 to 400	Glacial till and lenses of glacial outwash		Mostly brown, tan-brown, and gray clay; some scattered sand-size particles; many lenses of sand and gravel. Large deposits of sand and gravel in glacial till; sand- to boulder-size particles; crossbedded; some well-cemented zones. Fine crossbedded quartz sand; some erratics	Aggregates, road metal
		30 to 50	Glaciolacustrine		Fine to coarse silt; some clay; some crossbedded zones	Mineral filler
PERMIAN	Chase	10	Wreford limestone	Schroyer limestone	Gray to light-gray cherty limestone; exposures poor, and consist largely of chert fragments	
		17		Havensville shale	This shale does not crop out in Nemaha County	
		8		Threemile limestone	Beds of cherty limestone interbedded with thin beds of chert; beds of gray fossiliferous shale near the base; poorly exposed	
	Council Grove	17	Speiser shale		Clayey calcareous shale; tan gray in upper part, gray green and maroon in lower part; persistent thin bed of limestone in upper part	Aggregates, riprap, structural stone, and road metal
		6	Funston limestone		Three or more beds of gray hard limestone separated by beds of gray silty shale	
		20	Blue Rapids shale		Gray-green clayey calcareous shale beds; some maroon zones in middle part; thin beds of soft limestone in lower part	
		11	Crouse limestone		Upper bed is a hard tan to tan-brown massive to platy limestone; middle part is clayey, and calcareous, tan-gray, blocky shale; lower part is a medium-hard gray fossiliferous limestone	
		16	Easly Creek shale		Silty calcareous shale; alternating gray-green and maroon zones except for tan-gray zone in upper part; thin beds of limestones in middle and lower parts	
		4	Bader limestone	Middleburg limestone	One or more light-gray hard massive limestone beds; a thin shale parting present in some places	
		11		Hooser shale	Silty calcareous shale; upper part tan gray, remainder interbedded maroon and green zones; one or more thin hard limestone beds	
		10		Eiss limestone	Upper part is a bed of tan soft fossiliferous dolomitic limestone; middle part is a tan-gray silty to clayey calcareous shale; lower part is a gray, and very fossiliferous limestone	
		16	Stearns shale		Tan-gray shale in the upper part, gray-green and purple zones in the lower part; mostly silty and calcareous; thin bed of limestone in upper part	
		3	Beattie limestone	Morrill limestone	One or more gray to tan-brown porous limestone beds	
		5		Florena shale	Tan-gray silty calcareous thin-bedded shale; very fossiliferous in lower part	
		5		Cottonwood limestone	Light-gray massive limestone; chert nodules scattered throughout; some solution channels; fusulinids very abundant	
		37	Eskridge shale		Mostly tan and gray-green clayey calcareous shales in upper part; maroon, purple and gray-green zones in middle and lower parts; thin bed of hard fossiliferous limestone in upper part	
		11	Grenola limestone	Neva limestone	Alternating beds of gray hard porous limestone and dark-gray shale; thickest bed of limestone is in upper part; thickest bed of shale is in lower part. Shale and limestone beds are fossiliferous, silty, and calcareous	
		4.0		Salem Point shale	Tan to gray silty calcareous thin-bedded shale	
		4.0		Burr limestone	Two or more gray medium-hard limestone beds separated by silty and calcareous tan shale	
		2.0		Legion shale	Gray silty calcareous shale	
		1.5		Sallyards limestone	Hard tan-gray fossiliferous limestone	
		15	Roca shale		Tan, tan-gray, and gray shales with green, gray-green, and some maroon beds in lower part; lenses of limestone in lower part	Aggregates, riprap, structural stone, and road metal
		3.0	Red Eagle limestone	Howe limestone	Tan-brown soft clayey massive porous limestone; microfossils abundant in upper part	
		7.0		Bennett shale	Clayey calcareous blocky fossiliferous shale which is gray in upper part and very dark gray in lower part	
		1.2		Glenrock limestone	Gray medium-hard limestone; fusulinids very abundant	
		17	Johnson shale		Tan-gray, olive-drab to gray-orange, silty calcareous shale beds; calcium carbonate nodules and plates in lower part	
		7.0	Foraker limestone	Long Creek limestone	Gray to tan-brown soft slightly dolomitic massive limestone; pink celestite crystals abundant in upper part	
		32		Hughes Creek shale	Gray to dark gray silty calcareous very fossiliferous shale; two persistent fusulinid-bearing beds of limestone in upper part; other thin beds of limestone may be present in middle and lower parts	
		2.6		Americus limestone	Two dark-gray fossiliferous limestone beds separated by gray silt-shale	



System	Group	Average thickness, in feet	Formation	Member	Description	Construction materials
PERMIAN	Admire	16	Janesville shale	Hamlin shale	Slightly calcareous clay shale; bluish-gray, gray-green, and some maroon zones; tan cellular zone in upper part	
		1			Gray porous lenticular limestone with irregular bedding	
		25			Silty calcareous shale with gray to gray-green and maroon zones in upper part; beds of sandstone in middle part, and blue-gray zone mottled with maroon in lower part	
		1.5		Five point limestone	Tan-gray medium-hard limestone; fossiliferous in some localities	
		30		West Branch shale	Tan-gray to olive-drab silty calcareous shale; thin lenses of clayey limestone may be present; some sandy and micaceous shales	Aggregates, road metal
		8	Falls City limestone		Two beds of soft to medium-hard massive limestone separated by shale; upper bed is coquina with oatmeal-like texture	
		10	Onaga shale	Hawxby shale	Tan-gray and gray-green mostly silty calcareous shale; some maroon zones in the middle part; thin lens of fossiliferous limestone in lower part	
		1		Aspinwall limestone	Tan medium-hard massive fossiliferous limestone	
		20		Towle shale	Tan-gray to gray-green clayey noncalcareous shales; maroon and purple zones in lower part; some fossil fragments in upper part	
		2.3	Wood Siding	Brownville limestone	Tan-gray medium-hard clayey fossiliferous limestone; weathers blocky to nodular	
		7		Pony Creek shale	Silty to sandy micaceous shale; gray to tan-gray zones in upper part, maroon in lower part; crossbedded sandstone commonly present in middle part	
		0.6		Grayhorse limestone	Gray medium-hard crystalline limestone; contains numerous limonite nodules and clay balls; fossiliferous	
		13		Plumb shale	Clayey to silty calcareous shale; gray-green and maroon zones in upper part; gray, sandy, micaceous, in lower part	
		2		Nebraska City limestone	Dark-gray very fossiliferous limestone; weathers to a shaly appearance	
		20	Root shale	French Creek shale	Gray-green to gray-brown clayey calcareous shale. Lorton coal bed in the upper part; shales immediately below the coal are sandy and micaceous. Lens of fossiliferous limestone underlain by thin coal bed in upper part	
		0.6		Jim Creek limestone	Gray to gray-green medium-hard, fossiliferous limestone	
		25±		Friedrich shale	Tan-gray to bluish-gray clayey and calcareous shale; some lenticular maroon beds; lenses of sandstone and sandy shale sometimes found in lower part; fossiliferous limestone in middle part	
		2	Stotler limestone	Grandhaven limestone	Tan-brown to brown conglomeratic and fossiliferous limestone (not exposed)	
		14		Dry shale	Gray clayey calcareous shale; some sandy and maroon zones	
		5		Dover limestone	Gray medium-hard fossiliferous limestone; weathers nodular to blocky. Limonite nodules, clay balls, algae, and fusulinids common	
PENNSYLVANIAN	Wabaunsee	25	Pillsbury shale		Gray-green and maroon clayey calcareous shales with some thin sandy micaceous zones	Aggregates, riprap, structural stone, and road metal
		1.0	Zeandale limestone	Maple Hill limestone	Gray to tan-gray medium-hard limestone; fractures in elongated blocks; fossiliferous	
		18		Wamego shale	Silty calcareous to noncalcareous shale; gray brown in upper part; gray green and maroon in lower part; thin lenses of fossiliferous limestone in lower part	
		5		Tarkio limestone	Gray-brown massive limestone, dense in upper part and shaly in lower part. Large fusulinids abundant. Forms hillside bench	
		35	Willard shale		Tan-gray to blue-gray silty noncalcareous slightly sandy and micaceous shale beds and one or more beds of sandstone; bed of maroon shale in upper part includes channels of sandy shale and cross-bedded ripple-marked sandstone	
		5	Emporia limestone	Elmont limestone	One or more beds of tan-gray to dark-blue-gray fossiliferous hard somewhat dense limestone beds separated by thin shale partings	
		3		Harveyville shale	Gray to gray-green clayey calcareous shale	
		2.5		Reading limestone	Gray to gray-brown hard slightly dense fossiliferous limestone; weathers to 3 or 4 beds	
		15 to 30	Auburn shale		Tan-gray silty to clayey shale in upper part, tan to yellow in middle part, and gray green to tan gray in lower part; thin lenses of limestone in upper and middle parts; some fossils in upper part	
		2.5	Bern limestone	Wakarusa limestone	One or more beds of tan-brown soft to medium-hard fossiliferous limestone	
		8		Soldier Creek shale	Silty to clayey, calcareous shale, gray to gray-brown except in central part of county where it consists of interbedded green and maroon zones; some clayey limestone in lower part	
		9		Burlingame limestone	Generally two or more beds of limestone separated by one or more beds of shale; upper limestone is tan gray to tan brown, porous, medium hard, and contains inclusions of limestone; shales are tan to tan gray or maroon and green; lower limestone is gray to tan and includes a shale parting	
		12 to 27	Scranton shale	Silver Lake shale	Gray-green to tan micaceous noncalcareous clay shale; includes sandy and silty lenses and thin beds of sandstone	
		3		Rulo limestone	Gray medium-hard fossiliferous lenticular limestone	Aggregates, riprap, structural stone, and road metal
		105		White Cloud and Cedar Vale shales, undifferentiated	Tan to blue-gray silty or sandy micaceous shale beds; some calcium carbonate cemented sandstone that show crossbedding and ripple-marks; nodules, plates and concretions of limonite abundant; some thin lenses of fossiliferous limestone. Elmo coal bed in upper part	
		0-1.6	Howard limestone	Utopia limestone	Gray to tan-gray medium-hard fossiliferous thin-bedded limestone	
		2.3		Church limestone	Dark-blue-gray hard dense massive fossiliferous limestone	
		4.5		Aarde shale	Dark-gray to tan-gray silty calcareous shale; contains some minute crystals of gypsum. Nodaway coal bed at base	
		22	Severy shale		Upper part very clayey shale; lower part silty to slightly sandy calcareous micaceous and gray to tan-gray shale	
Shawnee		2.8	Topeka limestone	Coal Creek limestone	Two beds of gray fossiliferous dense limestone separated by a thin bed of shale	
		3.7		Holt shale	Gray to dark-gray clayey noncalcareous bed of shale; heavily limonite stained	
		2.7		Du Bois limestone	Two beds of gray hard dense fossiliferous limestone separated by a thin bed of shale	

EXPLANATION



STRATIGRAPHIC SECTION FROM NEMAHA COUNTY, KANSAS

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