Table I. Summary of material tests

(Blank spaces indicate data not available)

Classification of the material	Number on plate I	Location: 1/4 fraction	Location: 1/4 section	Location: Section	Location: Township (S)	Location: Range (E)	Estimated quantity of material (cubic yards)	Average thickness: Material (feet)	Average thickness: Overburden (feet)	Accessibility	Geologic formation or member[1]	Authority for test data[2]	Date of test	Sieve analysis: Percent on 3/4 inch	Percent on 3/8 inch	Percent on No. 4	Percent on No. 16	Percent on No. 100	Percent passed No. 200 (wash)	Description of the material[3]: Fraction	Quartz	Feldspars	Acid igneous rocks	Basic igneous rock	Sandstone	Limonite nodules	Hornblende	Mica	Anhydrite	Chert and/or chalcedony	Laboratory test data: Weight per cubic foot (dry)	Specific gravity (dry)	Gradation factor	Compressive strength ratio: 1 day	Compressive strength ratio: 3 days	Los Angeles percent loss	Soundness[4] (25 cycles)	Toughness	Cementation	Absorption	Color[5]	Laboratory No.	Remarks
Mixed aggregate	ma1	SE	SW	23	7	6				Good	Alluvium	SHCK	4-41	3	8	17	61	99	0.3	C	5	35	60							Tr		4.0										42322	Particles larger in diameter than 1/2 inch (percent): Chert, 55; limestone, 20; sandstone, 15; granite, 10.
																				F	70	15	10		5					Tr													
	ma2	SW	NW	25	7	6	5,000			Fair	Alluvium	SHCK	10-38	7	14	26	72	99	0.7	Granitic sand-gravel containing particles of blue flint and some sticks.											114	2.59	4.4	1.22	1.10					dk st	35687	Accepted for use as mixed aggregate under Sec. 67, Kans. Highway Stand. Spec. (ed. 1937).
	ma3	NE	SW	5	10	8	100			Good	Alluvium	SHCK	3-46	1	3	15	84	99	0.8	C	Tr	20	60							20	161	2.59	4.4	1.26	1.28	37	0.94				lt st	49527	Sampled from stock pile. Acceptable for use under Secs. 106, 108-110, 112, Kans. Highway Stand. Spec. (ed. 1945).
																				F	55	10	30	Tr					5													
	ma4	SW	SW	17	10	8	10,000			Good	Alluvium	SHCK	4-37	0	3	8	52	99	0.3	Clean granitic sand-gravel											116	2.61	3.5	1.04	1.01						31361	Acceptable for use under Sec. 57, Kans. Highway Stand. Spec (ed. 1934).
Fine aggregate	fa1	NE	SE	36	10	7	30,000	10-20	1-4	Good	Dune sand	USGS	4-49				0	47	20.2	C											100.3	2.59	0.5	0.41	0.52					cl	62696	
																				F	90							5	5													
	fa2	SE	SE	31	10	7	50,000	8	3	Good	Glacio-fluvial deposit	USGS	6-49			0	1	92	4.5	C											96.8	2.60	2.0	0.81	0.86					lt st	63617	
																				F	70	10			5	10				5												
	fa3	SW	NW	4	11	7	20,000	5-12	0-3	Good	Dune sand	USGS	4-49				0	79	6.5	C											101	2.60	0.9	0.61	0.73					st	62693	
																				F	90	10					Tr	Tr													
Chert gravel	cg1	SE	NE	5	7	6	5,000	6	0-3	Good	Glacio-fluvial deposit	USGS	4-48	18	46	55	60	88	11.7	Gravel-size particles of chert, limestone, and quartzite in matrix of fine sand and silt.													4.8									58663	
	cg2	SW	SE	10	7	6	15,000	10	0-4	Good	Glacio-fluvial deposit	USGS	4-48	20	42	56	72	84	15.6	Gravel-size particles of chert and limestone in matrix of fine sand and silt.													5.0									58666	
	cg3	SE	SE	10	7	6	3,000	6	3-6	Good	Glacio-fluvial deposit	USGS	4-48	32	59	69	80	95	5.1	Gravel-size particles of chert, limestone and some of quartzite in a matrix of fine sand.												2.22	6.1				0.92					58668	
	cg4	NE	SE	34	8	6	12,000	5-6	0-2	Good	Glacio-fluvial deposit	USGS	4-48	32	55	65	75	83	16.0	Gravel-size particles of chert and some of limestone in a matrix of silt and clay.													5.5									58665	
	cg5	SE	NW	11	10	7	10,000	3-6	0-4	Good	Glacio-fluvial deposit	USGS	4-49	31	49	65	76	78	21.8	Gravel-size particles of chert and some cobbles of limestone in a matrix of fine silt and clay.													5.3			23.1						62690	
	cg6	SE	NW	30	11	9	40,000		0-5	Fair	Terrace deposit	SHCK	2-47	48	80	93			0.6	Gravel-size particles of chert and limestone in a matrix of silt.												2.45				27.4						53717	
	cg7	NW	NW	15	11	7	10,000	10	0-3	Good	Glacio-fluvial deposit	USGS	4-49	19	44	59	67	71	27.8	Gravel-size particles of chert in a matrix of fine silt and clay.													4.6			23.5						62689	
Mineral filler	mf1	NW	NW	2	9	5	30,000	10	1-3	Good	Sanborn	USGS	4-49				0	1	99.0	Red-brown silty clay.											75.5	2.62							100+			62706	Cementation factor too high; not acceptable under Secs 108 and 109, Kans. Highway Stand. Spec. (ed. 1945).
	mf2	SE	SE	12	9	5	12,000	10-20	2-4	Good	Terrace deposit	USGS	4-49				0	5	93.6	Compact dark-brown silty clay.											86.8	2.59							100+			62705	Cementation factor too high; not acceptable under Secs 108 and 109, Kans. Highway Stand. Spec. (ed. 1945).
	mf3	NW	NW	18	10	8	5,000	10+	1-2	Good	Glacio-fluvial deposit	USGS	4-49				0	52	40.8	Light-brown silty clay.											84.5	2.62							100+			62697	Cementation factor too high; not acceptable under Secs. 108 and 109, Kans. Highway Stand. Spec. (ed. 1945).
Limestone	ls1	NW	SW	35	6	4	40,000+	5	0-4	Fair	Herington limestone member	USGS	4-49							Yellow-brown fossiliferous limestone; contains some geodes and is somewhat porous.											131	2.11				59.9	0.97			7.44		62695	
																				Light-yellow limestone; some porous zones; part of "rimrock" ledge; 40 percent of quarry.											127	2.06				52.4	0.77			7.72		49439	Abrasion loss too high and soundness ratio too low to comply with Sec. 107, Kans. Highway Stand. Spec. (ed. 1945).
	ls2	SE	NW	6	7	6	150,000	7	0-5	Good	Fort Riley limestone member	SHCK	3-46							Fine-grained, massive, gray limestone; part of the "rimrock" ledge; 25 percent of quarry.											140	2.24				49.5	0.98			4.18		49440	Acceptable under Secs 107, 108, and 114, Kans Highway Stand. Spec. (ed. 1945)
																				Fine-grained, light-gray limestone, part of the "rimrock" ledge; 35 percent of quarry.											145	2.33				33.6	0.89			4.51		49441	Acceptable under Secs. 108-112, and 114. Kans. Highway Stand. Spec. (ed. 1945).
	ls3	SW	SW	18	7	6	30,000+	6	0-4	Good	Cresswell limestone member	USGS	4-48							Massive to platy, light-gray, fossiliferous limestone.											155	2.40				31.0	0.88			3.75		58669	
	ls4	NW	NE	15	7	5	10,000	3+	0-7	Good	Cresswell limestone member	SHCK	3-43							Soft, yellow limestone.											145	2.33				78.0	0.92			14.3		46375	Accepted by SHCK for use as riprap.
	ls5	NE	SW	21	9	6	20,000	6	0-6	Good	Towanda limestone member	USGS	4-48							Thin-bedded to massive, blue-gray, yellow and brown limestone.											157	2.52				29.0	0.96			2.0		58667	
	ls6	NW	NW	31	9	8	500 tons	2	0-5	Good	Burr limestone member	SHCK	3-41							Light-gray limestone containing minute crystals of calcite.											139.8	2.24					OK	5		4.4		41934	Wear, 7.6 percent; acceptable for aggregate under Secs 68-71, 73, and 76, Kans. Highway Stand. Spec (ed. 1937).
	ls7	SE	NE	13	9	5	10,000	4	0-3	Good	Cresswell limestone member	USGS	4-48							Massive, fossiliferous, light-gray limestone.											140	2.25				84.1	0.46			7.65		58662	
	ls8	SE	SE	11	9	4	10,000	6	0-4	Good	Towanda limestone member	SHCK	6-36							Hard zone near the top of a massive, yellow-brown ledge of limestone.											159	2.55					OK	6		1.4		28581	Wear, 6 percent; acceptable for aggregate under Secs 58-61, and 63, Kans. Highway Stand. Spec (ed. 1934).
	ls9	NE	SE	11	9	4	10,000	6	0-4	Good	Towanda limestone member	SHCK	3-46							Gray limestone ledge composed of a thin-bedded porous zone and a hard massive zone.											134.4	2.16				28.4	0.95			2.77		49443	Acceptable under Secs. 107-109, 111, 112, and 114, Kans Highway Stand. Spec. (ed. 1945).
	ls10	SW	NW	12	9	4	25,000	4+	0-4	Good	Towanda limestone member	SHCK	6-38							Massive, hard ledge near top of gray-yellow limestone; other zones porous and soft.											140.0	2.34					OK			3.1		34854	Wear, 7 percent; acceptable for aggregate under Secs. 68-73, Kans Highway Stand. Spec. (ed. 1937).
	ls11	SW	NW	27	10	9	50,000	6	0-4	Fair	Tarkio limestone	SHCK	11-47							Massive, rust-brown, fossiliferous limestone.											159.2	2.56				31.5	0.97			1.62		57236	Acceptable under Secs 107-112, and 114. Kans. Highway Stand. Spec. (ed. 1945).
	ls12	NE	SW	29	10	9	1,000	2	0	Poor	Aspinwall limestone	USGS	4-49							Massive, yellow and brown limestone containing numerous fragments of fossils.											151	2.43				37.7	0.96			3.43		62688	
	ls13	SW	SW	30	10	9	1,500	6	0-5	Fair	Five Point limestone	USGS	4-49							Light-brown to tan, massive, fossiliferous limestone.											138.5	2.23				43.5	0.96			3.93		62691	
	ls14	NE	SW	6	10	8	300	2	0-4	Good	Howe limestone member	SHCK	3-41							Dark-brown, porous, massive limestone.											153.5	2.46					OK	9		3.3		41935	Wear, 4.2 percent.
	ls15	NE	NW	7	10	8	10,000	6	0-5	Good	Cottonwood limestone member	SHCK	9-31							Massive, buff-gray limestone containing abundant wheat-size fossils and 2 thin chert bands.											134.8	2.16					OK			6.0		17919	Wear, 17 percent.
	ls16	SE	NW	20	10	8	1,000	6	0-5	Fair	Cottonwood limestone member	SHCK	10-38							Massive, light-gray limestone containing scattered chert nodules, abundant wheat-size fossils.											151.6	2.43				33.4	OK			3.2		35558	Satisfactory aggregate for culverts if produced to sieve-analysis requirements (SHCK).
	ls17	NE	SE	29	10	8	30,000	5	0-8	Good	Neva limestone member	SHCK	3-46							Light-gray, massive to platy limestone containing thin shale partings; 17 percent of quarry.											150.4	2.42				32.3	0.78			3.15		49446	Acceptable under Secs. 110 and 112, Kans Highway Stand. Spec. (ed. 1945)
	ls18	NE	NW	25	10	7	10,000	5	0-4	Fair	Neva limestone member	SHCK	5-46							Massive to platy, light-gray, fossiliferous limestone; 50 percent of quarry.											150.3	2.41				32.2	0.91			3.09		50150	Acceptable under Secs 107-112, and 114, Kans Highway Stand. Spec. (ed. 1945).
	ls19	SE	SE	24	11	8	20,000+	2	0-4	Good	Eiss limestone member	USGS	4-49							Massive, pitted, gray limestone; upper of two ledges seperated by shale.											143.0	2.30				38.2	0.95			4.23		62692	
	ls20	SE	SE	9	11	7	5,000+	3	0-4	Good	Crouse limestone	USGS	4-49							Platy, tan-gray, somewhat porous limestone.											151.2	2.43				29.2	0.92			3.30		62694	
	ls21	SE	NW	16	11	7	20,000	6	0-5	Good	Funston limestone	USGS	4-49							Massive, light-gray limestone.											136.0	2.19				45.4	0.96			6.44		62687	
serpentine	se1	NW	NW	6	9	5	100,000				Cretaceous (?) intrusive	SHCK	9-45							Gray-green, dense, massive serpentine.											153.0	2.46				28.6	0.80			3.1		48740	Not sound, rejected by SHCK.

1. All correlations with geologic formations or members by USGS.
2. SHCK, State Highway Commission of Kansas: sample collection and test data. USGS, U.S. Geological Survey: sample collection and description of material; test data by SHCK.
3. C, coarse fraction, retained on No.4 sieve; F, fine fraction, passed through No.4 sieve; Tr, trace; in terms of percent composition.
4. Loss ratio.
5. cl, clear; dk st, dark straw; lt st, light straw; st, straw.

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This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.