

Soil Survey Ward County, Texas

TABLE 6.—Engineering

[Tests performed by the Texas Highway Department in accordance with standard

Soil name and location	Parent material	Report No.	Depth	Shrinkage		
				Linear	Ratio	Limit
			<i>In.</i>			
Arno clay:						
In an abandoned cultivated field, 100 feet W. of a field road, 0.5 mile NE. of U.S. Highway No. 80, 1.3 miles E. of the Pecos River. (Modal)	Alluvial clay.	6-1	12-40	18.4	1.91	17
In an abandoned cultivated field, 50 feet W. of a field road, 0.35 mile NE. of U.S. Highway No. 80, 1.3 miles E. of the Pecos River. (Less clayey than modal)	Alluvial clay.	4-1	9-60	10.2	1.79	19
In abandoned cultivated field, 0.6 mile N. along irrigation canal, then NE. 0.5 mile on an unimproved road, then 1.4 miles E. of U.S. Highway No. 80 to Barstow. (More clayey than modal)	Alluvial clay.	5-1	16-60	20.0	1.94	16
Delnorte gravelly loam:						
In native range, 0.2 mile W. of a gravel road, 2.2 miles N. of the end of Farm Road 516, 7.6 miles NW. of the Community Center in Barstow. (Modal)	Calcareous outwash.	1-1	0-10	1.4	1.87	16
		1-2	21-60	2.3	1.42	30
In native range, 50 feet E. of a north-south range trail, 0.65 mile N. and 0.2 mile W. of graded road to Mentone, 2.2 miles N. of the end of Farm Road 516, 7.5 miles N. of the Community Center in Barstow. (Less clayey than modal)	Calcareous outwash.	3-1	0-10	2.0	1.81	17
		3-2	26-60	1.7	1.47	28
In native range, 25 feet W. of a graded range trail, 0.1 mile S. of U.S.G.S. marker Hayes AZ 1935, 0.3 mile N. of U.S. Highway No. 80, which point is 3.2 miles east of the intersection of U.S. Highway No. 80 and Farm Road 516 in Barstow. (More clayey than modal)	Calcareous outwash.	2-1	0-9	3.7	1.91	14
		2-2	20-60	1.8	1.42	31
Hodgins clay loam:						
In an irrigated pasture, 150 feet SE. of the intersection of Farm Road 871 and 11, which point is 3.1 miles SE. of Grandfalls, on Farm Road 11. (Modal)	Calcareous sediment.	15-1	10-40	3.6	1.87	16
		15-2	40-52	9.4	1.96	13
		15-3	52-62	6.7	1.85	16
In an irrigated field, 100 feet NW. of a 90 degree turn in Farm Road 516, which point is 7.6 miles NW. of the Community Center in Barstow. (More clayey than modal)	Calcareous sediment.	13-1	12-40	5.4	1.91	15
		13-2	40-56	6.3	1.92	14
		13-3	56-74	8.5	1.87	15
Ima fine sandy loam:						
In a cultivated field, 100 feet S. of U.S. Highway No. 80, which point is 1.1 miles E. of the intersection of Farm Road 516 and U.S. Highway No. 80 in Barstow. (Modal)	Calcareous sediment.	19-1	10-41	2.6	1.85	16
		19-2	41-56	4.7	1.82	17
In native range, on NW. edge of a newly excavated gravel pit, which is 0.2 mile E. of a gravel road, which point is 0.3 mile SE. of U.S. Highway No. 80, 1.6 miles east of its intersection with Farm Road 516 in Barstow. (Less clayey than modal)	Calcareous sediment.	21-1	10-44	2.7	1.82	16
		21-2	44-56	5.0	1.78	17
In a cultivated field, 0.15 mile SE. of U.S. Highway No. 80, which point is 1.1 miles E. of the intersection of U.S. Highway No. 80 and Farm Road 516 in Barstow. (More clayey than modal)	Calcareous sediment.	20-1	10-41	3.2	1.83	16
		20-2	41-56	4.4	1.77	20

See footnotes at end of table.

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test data

procedures of the American Association of State Highway Officials (AASHO) (9)

Mechanical analysis ¹									Liq-uid limit	Plas-ticity index	Classification	
Percentage passing sieve—						Percentage smaller than—					AASHO ²	Unified ³
¾ in.	¾ in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.005 mm.	0.002 mm.				
			100	99	92	91	63	30	Pct. 60	37	A-7-6(20)	CH
			100	98	83				40	21	A-6(12)	CL
	100	99	98	96	95	95	77	62	65	39	A-7-6(20)	CH
76	67	57	54	51	17	12	5	3	18	4	A-2-4(0)	GM-GC
74	64	49	37	26	9	9	1	0	37	6	A-1-a(0)	GP-GM
91	84	76	72	69	26	17	4	2	20	3	A-2-4(0)	SM
60	51	43	37	26	10	8	2	1	32	5	A-1-a(0)	GP-GM
91	82	75	72	69	40	34	10	7	20	5	A-4(1)	SM-SC
91	85	74	62	47	22	17	3	1	35	4	A-1-b(0)	SM
			100	99	48	38	21	15	22	8	A-4(3)	SC
			100	98	75	68	39	28	31	18	A-6(11)	CL
98	95	93	90	81	46	40	28	12	29	13	A-6(3)	SC
100	99	99	98	91	57	47	25	18	25	12	A-6(5)	CL
99	98	95	92	86	57	50	38	27	25	13	A-6(5)	CL
100	99	97	95	88	61	53	42	30	31	16	A-6(7)	CL
	100	99	96	86	29	23	11	9	20	5	A-2-4(0)	SM-SC
100	99	95	90	79	39	34	24	19	25	11	A-6(1)	SC
100	99	97	96	78	27	20	11	8	20	4	A-2-4(0)	SM-SC
98	94	87	77	62	28	23	14	9	27	10	A-2-4(0)	SC
	100	97	94	87	35	26	13	10	21	5	A-2-4(0)	SM-SC
99	97	89	83	71	39	33	22	15	28	11	A-6(1)	SC

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TABLE 6.—Engineering

Soil name and location	Parent material	Report No.	Depth	Shrinkage		
				Linear	Ratio	Limit
Monahans fine sandy loam: In abandoned cultivated field, 0.15 mile NW. of a gravel road, which point is 0.45 mile SW. of Farm Road 516, 5.3 miles NW. of the Community Center in Barstow. (Modal) In native range, 100 feet W. of an oilfield access road, then NE. 1.2 miles to an unnumbered paved road, adjacent to the Grandfalls municipal water supply storage tank, which point is 5.8 miles NW. of Grandfalls. (Less clayey than modal) In irrigated cropland, 0.5 mile NW. of Interstate 20, then 0.25 mile E. of intersection of Interstate 20 and Farm Road 516, which point is 1.55 miles SE. of Barstow. (More clayey than modal)	Gypsiferous earth.	11-1	<i>In.</i> 8-28	4.9	1.85	16
		11-2	34-48	6.3	1.72	20
	Gypsiferous earth.	12-1	7-32	2.5	1.76	19
		12-2	38-60	2.8	1.64	23
	Gypsiferous earth.	10-1	14-25	5.0	1.82	17
		10-2	44-56	3.9	1.72	21
Pyote loamy fine sand: In native range, 100 yards SW. of Farm Road 1233, 6.2 miles SE of its intersection with Texas Highway No. 18, which point is 3.8 miles south of its intersection with Interstate 20 in Monahans. (Modal) In native range, 150 feet E. of a caliche oilfield road, 0.2 mile N. of Farm Road 1776, which point is 1.6 miles W. of its intersection with Texas Highway No. 18, 6.4 miles S. of its intersection with Interstate 20 in Monahans. (Less clayey than modal) In native range, 100 feet S. of Farm Road 1233, 6.3 miles SE. of its intersection with Texas Highway No. 18 which point is 4 miles S. of Interstate 20 in Monahans. (More clayey than modal)	Eolian sediment.	9-1	10-26	.4	1.71	19
		9-2	26-56	.3	1.72	20
	Eolian sediment.	8-1	10-30	.2	1.76	18
		8-2	30-56	.8	1.72	18
	Eolian sediment.	7-1	12-38	.5	1.76	17
		7-2	38-52	2.0	1.75	18
Wickett loamy fine sand: In native range, in North Ward oilfield, 0.25 mile W. of an oilfield road, then S. 4.75 miles to Farm Road 1219, which point is 0.9 mile N. of the intersection of U.S. Highway No. 80 and Farm Road 1219 in Wickett. (Modal) In native range, 50 feet east of an oilfield access road, which is 0.2 mile N. of Farm Road 1219, which point is 0.9 mile N. of its intersection with U.S. Highway No. 80 in Wickett. (Less clayey than modal)	Eolian sediment.	16-1	8-20	1.1	1.77	17
		16-2	20-34	.8	1.79	18
		16-3	42-76	3.0	1.44	29
	Eolian sediment.	18-1	8-20	1.0	1.78	17
		18-2	20-32	1.2	1.73	17
		18-3	44-72	2.4	1.76	18

¹ Mechanical analysis according to the AASHO Designation T 88-57 (3). Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS Soil Survey procedure, the fine material is analyzed by the pipette method,

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test data—Continued

Mechanical analysis ¹									Liq-uid limit	Plas-ticity index	Classification	
Percentage passing sieve—						Percentage smaller than—					AASHO ²	Unified ³
¾ in.	½ in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.005 mm.	0.002 mm.				
100	98	94	91	81	44	37	19	15	Pct. 24	11	A-6(2)	SC
100	95	90	82	65	32	28	17	4	33	13	A-2-6(1)	SC
-----	100	99	98	94	40	30	10	7	23	6	A-4(1)	SM-SC
83	80	75	69	59	23	18	4	2	28	6	A-2-4(0)	SM-SC
-----	-----	100	99	97	63	50	25	17	26	11	A-6(6)	CL
-----	100	98	94	85	56	43	16	7	29	9	A-4(4)	CL
-----	-----	-----	100	97	10	5	2	2	20	3	A-2-4(0)	SP-SM
-----	-----	-----	100	97	17	13	10	9	20	2	A-2-4(0)	SM
-----	-----	-----	-----	100	9	3	0	0	21	3	A-2-4(0)	SP-SM
-----	-----	-----	100	99	16	7	2	2	20	3	A-2-4(0)	SM
-----	-----	-----	100	97	7	4	2	1	19	2	A-2-4(0)	SP-SM
-----	-----	-----	100	96	18	14	12	11	20	3	A-2-4(0)	SM
-----	-----	-----	100	97	16	10	6	5	18	2	A-2-4(0)	SM
-----	-----	-----	100	96	18	13	11	10	19	2	A-2-4(0)	SM
-----	-----	-----	100	96	4	3	1	1	36	7	A-2-4(0)	GP
49	36	24	16	9	18	13	11	10	19	2	A-2-4(0)	SM
-----	-----	-----	100	97	16	10	7	6	18	2	A-2-4(0)	SM
-----	-----	-----	100	99	16	10	6	5	18	3	A-2-4(0)	SM
86	81	72	64	52	16	13	6	4	23	4	A-2-4(0)	SM-SC

and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes for soil.

¹ Based on AASHO Designation M 145-49 (3).
² Based on Unified soil classification system (12).