

TABLE 6.—Engineering
 [Tests performed by Texas Highway Department in accordance with standard procedures of

Soil name and location	Parent material	Texas report No.	Depth from surface	Shrinkage		
				Limit	Ratio	Lineal
			Inches	Percent		Percent
Boracho gravelly loam: About 14 miles SE. of Fort Davis on State Highway 118, 3 miles S. of junction with Farm Road 1837, and ¼ mile W., in pasture.	Gravelly outwash.	69-548-R 69-549-R	0-10	16	1.81	6.3
			30-70	34	1.30	2.4
Boracho gravelly loam: 12½ miles E. and 4½ miles N. of Valentine, in range area.	Gravelly outwash.	69-563-R 69-564-R	4-12	23	1.62	7.6
			20-30	49	1.13	2.7
Canutio gravelly loam: 7 miles SW. of Vieja Pass, in range area.	Gravelly outwash.	69-570-R 69-571-R	6-48	29	1.72	4.5
			48-60	27	1.43	4.5
Canutio gravelly loam: 6 miles SW. of Vieja Pass, in range area.	Gravelly outwash.	69-572-R 69-573-R	6-48	21	1.66	6.5
			58-73	23	1.59	2.0
Espy loam: 14 miles W. of Fort Davis, in range area.	Loamy sediment.	69-540-R 69-541-R	0-7	21	1.66	9.8
			20-49	34	1.38	1.8
Espy loam: 3 miles S. on county road to Merfa from junction with State Highway 166, in range area.	Loamy sediment.	69-551-R 69-552-R	0-9	23	1.64	8.7
			18-48	30	1.49	4.3
Gageby clay loam: 2½ miles S. and 11 miles W. of Fort Davis, in range area.	Alluvium.	69-543-R	10-62	15	1.89	12.0
Gageby silt loam: In Musquiz Creek, 9 miles SE. of Fort Davis on State Highway 118, 100 feet W. of highway, in range area.	Alluvium.	69-550-R	15-48	21	1.66	9.7
Musquiz loam: 3 miles S. and 13 miles W. of Fort Davis, in range area.	Loamy sediment.	69-537-R 69-538-R	3-16	16	1.89	8.2
			16-30	14	1.92	14.8
Musquiz loam: 11 miles W. and 5 miles S. of Fort Davis, in range area.	Loamy sediment.	69-544-R 69-545-R 69-546-R	3-10	15	1.90	9.6
			10-30	16	1.88	12.5
			36-48	16	1.85	11.5
Musquiz loam: 100 yards W. of State Highway 166, 1¼ miles S. from junction with State Highway 118, in range area.	Loamy sediment.	69-565-R 69-566-R 69-567-R	2-8	19	1.73	8.5
			20-36	16	1.86	13.8
			36-46	17	1.82	9.6
Phantom clay loam: 200 feet W. of State Highway 17, 15 miles N. of Fort Davis, in range area.	Clayey sediment.	69-583-R	14-45	17	1.80	14.4
Phantom clay loam: 100 yards W. of State Highway 17, 15 miles N. of Fort Davis, in range area.	Clayey sediment.	69-584-R	21-50	16	1.87	14.5
Reagan clay loam: 3½ miles N. of Valentine and 0.2 mile W. into pasture, in range area.	Loamy sediment.	69-557-R 69-558-R 69-559-R	4-26	18	1.83	10.0
			26-42	20	1.80	7.8
			42-70	14	1.94	10.8

test data

the American Association of State Highway and Transportation Officials (AASHTO) (1)]

Mechanical analysis ¹													Liquid limit	Plasticity index	Classification	
Percentage passing sieve—										Percentage smaller than—					AASHTO ²	Unified ³
3 in	2 in	1½ in	1 in	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	95	91	86	84	77	71	67	60	42	34	10	6	28	10	A-4(1)	GC
100	85	76	62	56	45	36	27	14	6	6	1	1	40	5	A-1-a(0)	GW-GM
100	100	96	86	80	74	68	62	52	36	28	9	4	40	15	A-6(1)	GM-GC
100	94	76	67	63	55	47	39	26	11	10	1	0	57	9	A-2-5(0)	GP-GM
100	94	78	68	60	45	34	24	15	6	5	2	2	28	8	A-2-4(0)	GP-GC
100	100	99	94	86	62	45	34	23	11	10	2	2	37	7	A-2-4(0)	GP-GM
100	92	72	61	48	37	29	20	12	11	6	4	4	35	14	A-2-6(0)	GP-GC
100	93	81	76	94	85	75	57	42	36	13	8	43	17	6	A-7-6(3)	SC
100	97	94	90	92	84	74	59	44	37	15	8	42	17	11	A-7-6(4)	SC
100	97	94	90	92	80	66	53	35	20	19	6	39	11	11	A-2-6(0)	SM
100	97	94	90	92	99	98	98	95	83	75	39	31	40	21	A-6(12)	CL
100	97	94	90	92	100	99	99	97	88	80	27	16	43	24	A-7-6(14)	CL
100	97	94	90	92	99	93	85	70	54	47	23	18	31	16	A-6(6)	CL
100	97	94	90	92	94	90	85	72	60	55	38	32	46	24	A-7-6(11)	CL
100	97	94	90	92	95	91	86	73	51	45	26	20	33	17	A-6(6)	CL
100	97	94	90	92	97	92	85	72	56	50	34	30	42	21	A-7-6(9)	CL
100	97	94	90	92	72	60	51	36	25	23	16	13	40	23	A-2-6(1)	GC
100	97	94	90	92	89	84	82	73	64	53	16	8	37	17	A-6(9)	CL
100	97	94	90	92	98	96	95	83	75	69	35	28	47	23	A-7-6(14)	CL
100	97	94	90	92	86	81	76	70	62	57	34	25	37	20	A-6(9)	CL
100	97	94	90	92	100	99	98	92	87	80	50	38	50	25	A-7-6(16)	CL-CH
100	97	94	90	92	100	99	98	92	79	73	45	36	48	25	A-7-6(16)	CL
100	97	94	90	92	100	99	96	91	77	73	53	40	38	19	A-6(12)	CL
100	97	94	90	92	99	96	93	85	72	71	53	38	35	18	A-6(10)	CL
100	97	94	90	92	100	99	96	91	77	55	35	26	35	21	A-6(9)	CL

TABLE 6.—Engineering

Soil name and location	Parent material	Texas report No.	Depth from surface	Shrinkage			
				Limit	Ratio	Lineal	
			Inches	Percent		Percent	
Redona sandy loam: 1 mile N. of Valentine on county road and 250 yards E. into pasture, in range area.	Loamy sediment.	69-560-R	6-22	16	1.89	12.6	
			69-561-R	22-46	15	1.92	8.5
			69-562-R	46-66	17	1.84	6.3
Redona sandy loam: 4 miles W. of Valentine, by Miller ranch county road, in range area.	Loamy sediment.	69-577-R	12-25	15	1.90	10.2	
			69-578-R	25-48	15	1.89	7.5
			69-579-R	48-60	15	1.90	10.4
Rockhouse loam: In Limpia Canyon, 1 mile N. of Fort Davis, in range area. (Modal)	Alluvial sediment.	69-589-R	10-40	22	1.60	0.9	
Rockhouse loam: In Davis Mountain State Park on Limpia Canyon, in range area.	Alluvial sediment.	69-590-R	10-40	20	1.63	1.8	
Santo Tomas very gravelly loam: 3 miles N. of State Highway 166 from its junction with Farm Road 505, in range area.	Gravelly outwash.	69-554-R	18-38	19	1.74	3.7	
Santo Tomas very gravelly loam: 100 feet west of State Highway 118, 11 miles S. of junction with U.S. Highway 80, in range area. (Modal)	Gravelly outwash.	69-588-R	21-42	17	1.80	5.8	
Verhalen clay loam: 1½ miles N. of Valentine on county road and 200 feet E., in range area. (Modal)	Clayey sediment.	69-555-R	4-26	13	1.97	19.8	
			69-556-R	48-60	12	2.02	19.0
Verhalen clay: 4 miles S. of Valentine on the Chilecote ranch road, in range area.	Clayey sediment.	69-591-R	24-36	13	1.95	14.8	

¹ Mechanical analyses according to the AASHTO Designation T 88-57 (1). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO 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 and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical anal-

test data—Continued

Mechanical analysis ¹													Liquid limit	Plasticity index	Classification		
Percentage passing sieve—									Percentage smaller than—			AASHTO ²			Unified ³		
3 in	2 in	1½ in	1 in	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	Percent			
						99	94	89	76	54	49	34	28		42		
						98	96	91	80	56	50	34	26	31	17	A-6(7)	CL
						93	89	84	72	43	37	18	14	28	13	A-6(3)	SC
						96	96	95	89	57	52	35	27	35	18	A-6(8)	CL
						100	97	96	89	63	60	48	40	30	15	A-6(8)	CL
						100	98	96	87	66	59	31	22	35	19	A-6(10)	CL
100	81	74	62	55	44	34	28	11	2	1	0	0	25	3	A-1-a(0)	GP	
	100	95	82	75	61	47	37	18	5	4	1	1	23	2	A-1-a(0)	GP-GM	
100	95	94	91	86	66	49	37	22	12	10	4	3	26	7	A-2-4(0)	GP-GC	
		100	97	90	81	71	61	44	31	27	9	4	28	12	A-2-6(0)	SC	
						98	97	96	92	81	76	60	49	61	37	A-7-6(20)	CH
							100	98	98	91	87	68	55	55	34	A-7-6(19)	CH
						100	99	98	90	71	67	48	38	45	25	A-7-6(14)	CL

ysis data used in this table are not suitable for naming textural classes for soils. Fragments coarser than 3 inches were discarded prior to analysis.

¹ Based on AASHTO Designation M 145-49(1).

³ Based on the Unified Soil Classification System (12).