TABLE 3.—*Estimates of*

[Absence of value indicates

Soil name	Depth from surface	Classification		
		USDA texture	Unified	AASHO
	Inches			
Alluvial land (Al).	(2)	Stratified material, dominantly sandy loam, silt loam, and loamy sand.	SM or SP	A–2
Dev soils (Ds) (0 to 2 percent slopes).	(2)	Mixed alluvium of clayey to silty material and pebbles.	SP–GP	A–2
Ector soils (Ec) (1 to 20 percent slopes).	0–8	Stony loam	SC	A–2 or A–4
	8–12	Limestone fragments		
	12–18+	Limestone		
Ector-Rock outcrop complex (Et) (5 to 20 percent slopes). Properties are for Ector soil only.	0–5	Stony clay loam	SC or CL	A–4 or A–6
	5–10	Limestone fragments		
	10–20+	Limestone		
Frio clay loam (Fr) (0 to 1 percent slopes).	0–22	Clay loam	CL	A–6 or A–7
	22–38	Clay loam	CL	A–6 or A–7
	38–70	Clay loam	CL	A–6 or A–7
Gila loam (Gm) (0 to 1 percent slopes).	0–60	Loam	ML or SM	A–4
Glendale clay loam (Gc) (0 to 1 percent slopes).	0–24	Clay loam	CL	A–6 or A–7
	24–40	Clay loam	CL	A–6 or A–7
	40–62	Clay loam	CL	A–6 or A–7
Ingram stony clay (In) (5 to 20 percent slopes).	0–12	Stony clay	GC or SC	A–2 or A–6
	12–18	Clay	GC or SC	A–2 or A–6
	18–20	Caliche		
	20–36+	Basalt		
Kavett-Tarrant stony clays (Kc) (0 to 3 percent slopes). Properties are for Kavett soil; for properties of Tarrant soil, see the mapping unit Tarrant soils.	0–15	Stony clay	CL	A–6 or A–7
	15–18	Caliche		
	18–24+	Limestone		
Kimbrough-Ector association (Ke) (1 to 8 percent slopes). Properties are for Ector soil; for properties of Kimbrough soil, see the mapping unit Kimbrough soils.	0–5	Loam	SC	A–2 or A–6
	5–10	Caliche		
	10–60+	Limestone		
Kimbrough soils (Kh) (0 to 2 percent slopes).	0–5	Loam	SC	A–4 or A–6
	5–10	Indurated caliche		
	10–72+	Caliche		

See footnotes at end of table.

properties significant to engineering

estimate was not made]

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential	Remarks
No. 4	No. 10	No. 200					
			Inches per hour	*Inches per inch of soil*	*pH*		
			0. 8–4+	0. 06–0. 18	7. 8–8. 2	Low	Susceptible to frequent flooding; subirrigation from a high water table in many places.
			0. 8–2. 5	0. 04–0. 16	7. 8–8. 2	Low	Susceptible to frequent flooding; most areas contain large amounts of water-worn limestone pebbles and large stones.
50–70	40–60	20–40	1. 0–2. 0	0. 10–0. 15	7. 8–8. 2	Low	Limestone is fractured into huge slabs.
				0. 08–0. 12	7. 8–8. 2		
					8. 2		
55–80	50–75	35–55	0. 6–1. 5	0. 10–0. 18	7. 8–8. 2	Moderate	Limestone is fractured into huge slabs.
			0. 6–1. 5	0. 08–0. 13	7. 8–8. 2		
					8. 2		
95–100	95–100	85–95	0. 8–1. 5	0. 17–0. 20	7. 8–8. 2	Moderate	Substratum is stratified gravel, silt, and clay; in some places gravelly material is below depth of 3 feet; infrequent floods are of short duration; water table lies at depth of 6 to 15 feet.
95–100	95–100	85–95	0. 8–1. 5	0. 15–0. 18	7. 8–8. 2	Moderate	
95–100	90–100	80–100	0. 8–1. 5	0. 12–0. 16	7. 8–8. 2	Moderate	
95–100	95–100	40–60	1. 0–2. 0	0. 11–0. 14	7. 8–8. 2	Low	Substratum is same material as surface layer but is finely stratificd with silt; water table is below depth of 20 feet; soil is seldom, if ever flooded.
95–100	95–100	85–95	0. 8–1. 5	0. 14–0. 18	7. 8–8. 2	Moderate	Substratum is same material as surface layer but is finely stratified with sand, silt, and clay; water table is below depth of 20 feet; soil is seldom, if ever, flooded.
95–100	95–100	85–95	0. 8–1. 5	0. 13–0. 16	7. 8–8. 2	Moderate	
95–100	90–100	80–100	0. 8–1. 5	0. 12–0. 15	7. 8–8. 2	Moderate	
40–60	30–50	25–40	0. 4–1. 0	0. 10–0. 16	6. 8–8. 0	High	Soil occurs on igneous sills or plugs, which are prominent hills, or peaks.
40–60	30–50	25–40	0. 4–1. 0	0. 10–0. 15	7. 0–8. 2	High	
			0. 4–1. 0	0. 08–0. 12	7. 8–8. 2		
65–85	60–80	50–70	0. 8–1. 5	0. 17–0. 21	7. 0–8. 0	Moderate	Water table is below depth of 20 feet.
			0. 8–1. 5	0. 10–0. 14	8. 0–8. 2	Moderate	
					8. 2		
55–75	50–70	30–50	1. 0–2. 0	0. 10–0. 15	7. 8–8. 2	Low.	
			1. 0–2. 0	0. 10–0. 15	7. 8–8. 2	Low.	
					8. 2		
55–75	50–70	35–50	1. 0–2. 0	0. 10–0. 15	7. 8–8. 2	Low.	
			0. 5–1. 5		7. 8–8. 2	Low.	
					8. 2		

217–106—67——3

TABLE 3.—*Estimates of properties*

Soil name [1]	Depth from surface	Classification		
		USDA texture	Unified	AASHO
	Inches			
Jimenez-Zapata association (Jm) (5 to 20 percent slopes). Properties are for both the Jimenez and Zapata soils.	0–7	Gravelly loam	GC	A–1 or A–2
	7–18	Indurated caliche		
	18–60+	Caliche		
Knippa silty clay (Kn) (0 to 1 percent slopes).	0–19	Silty clay	CL or CH	A–7
	19–41	Silty clay	CL or CH	A–7
	41–72	Silty clay	CL or CH	A–7
Limestone rockland (Lr) (20 to 70 percent slopes).	[2]	Clay	CL	A–6
Montell clay (Mc) (0 to 1 percent slopes).	0–10	Clay	CL or CH	A–7
	10–30	Clay	CL or CH	A–7
	30–43	Clay	CL or CH	A–7
	43–72	Clay	CL or CH	A–7
Montell clay, low (Mo) (0 to 1 percent slopes).	0–7	Clay	CL or CH	A–7
	7–21	Clay	CL or CH	A–7
	21–32	Clay	CL or CH	A–7
	32–60	Clay	CL or CH	A–7
Pintas silty clay loam (Pc) (0 to 1 percent slopes).	0–14	Silty clay loam	CL	A–6 or A–7
	14–26	Silty clay loam	CL	A–6 or A–7
	26–60	Silty clay loam	CL	A–6 or A–7
Quemado soils (Qu) (1 to 5 percent slopes).	0–12	Sandy loam	GC	A–1 or A–2
	12–24	Indurated caliche		
	24–60+	Caliche		
Reagan loam (Ra) (0 to 5 percent slopes)	0–10	Heavy loam	CL	A–6
	10–24	Heavy loam	CL	A–6
	24–32	Heavy loam	CL	A–6
	32–60	Heavy loam	CL	A–6
Tarrant-Rock outcrop complex (Tr). Tarrant soils (Ts) (1 to 8 percent slopes). Properties are for Tarrant soils in mapping units Tr and Ts.	0–5	Stony clay	CL	A–6
	5–8	Limestone fragments with clay in fragments.		
	8+	Limestone		
Uvalde silty clay loam (Uv) (0 to 1 percent slopes).	0–17	Silty clay loam	CL	A–6 or A–7
	17–27	Silty clay loam	CL	A–6 or A–7
	27–72	Silty clay loam	CL	A–6 or A–7

[1] Soil descriptions are in section beginning on p. 5.

[2] Variable.

significant to engineering—Continued

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential	Remarks
No. 4	No. 10	No. 200					
			Inches per hour	*Inches per inch of soil*	*pH*		
30–50	20–40	15–30	1. 0–2. 0	0. 10–0. 15	7. 8–8. 2	Low	Caliche and substratum combined are as much as 20 feet thick and contain large amounts of gravel of mixed origin; water table is at a great depth.
					8. 0–8. 2	Low	
					8. 0–8. 2	Low	
90–100	85–100	75–90	0. 4–1. 0	0. 19–0. 22	7. 8–8. 2	High	Below depth of 3½ feet the soil becomes less dense and more limy; in some places substratum is gravelly; water table is below depth of 20 feet.
90–100	85–100	75–90	0. 4–1. 0	0. 17–0. 20	7. 8–8. 2	High	
90–100	80–90	70–85	0. 5–1. 0	0. 12–0. 16	7. 8–8. 2	High	
55–80	50–75	50–60			7. 5–8. 0	Moderate	Clay occurs in pockets and crevices of rocks.
100	95–100	85–95	0. 05–0. 6	0. 20–0. 24	7. 8–8. 2	High	Below depth of about 3½ feet, the clay contains as much as 15 percent gypsum, and salinity ranges from moderate to severe.
100	95–100	85–95	0. 01–0. 5	0. 17–0. 21	7. 8–8. 2	High	
100	95–100	85–95	0. 01–0. 5	0. 17–0. 20	7. 8–8. 2	High	
100	95–100	75–90	0. 1 –0. 7	0. 10–0. 18	7. 8–8. 2	High	
100	95–100	85–95	0. 05–0. 6	0. 20–0. 24	7. 8–8. 2	High	Below depth of 2 feet, salinity is very severe; after occasional heavy rainfall, fluctuating water table is within 2 feet of the surface.
100	95–100	85–95	0. 01–0. 5	0. 17–0. 21	7. 8–8. 2	High	
100	95–100	85–95	0. 01–0. 5	0. 00–0. 10	7. 8–8. 3	High	
100	95–100	75–90	0. 1 –0. 7	0. 00–0. 10	7. 8–8. 3	High	
95–100	95–100	80–90	0. 8 –1. 5	0. 17–0. 20	7. 8–8. 2	Moderate	Susceptible to frequent flooding; substratum is stratified gravel; water table at a depth of 3 to 10 feet.
95–100	95–100	80–90	0. 8 –1. 5	0. 15–0. 18	7. 8–8. 2	Moderate	
95–100	80–100	70–90	0. 8 –1. 5	0. 10–0. 15	7. 8–8. 3	Moderate	
30–50	15–35	10–30	1. 0 –2. 0	0. 10–0. 15	6. 6–8. 0	Low	Caliche and substratum, combined are as much as 20 feet thick and contain large amounts of gravel of mixed origin.
					6. 6–8. 0	Low	
					8. 0–8. 2	Low	
95–100	95–100	80–90	1. 0–1. 8	0. 13–0. 18	7. 8–8. 2	Moderate	Water table is below depth of 20 feet.
95–100	95–100	80–90	1. 0–1. 8	0. 13–0. 17	7. 8–8. 2	Moderate	
95–100	90–100	75–85	1. 0–1. 8	0. 12–0. 15	7. 8–8. 2	Moderate	
95–100	80–95	70–90	1. 0–1. 8	0. 12–0. 15	7. 8–8. 2	Moderate	
55–80	50–75	50–60	0. 8–1. 3	0. 10–0. 20	7. 5–8. 0	Moderate	Hard limestone is fractured into huge slabs or blocks.
			0. 8–1. 3	0. 10–0. 15	7. 8–8. 2		
					8. 2		
95–100	95–100	80–90	0. 8–1. 5	0. 17–0. 21	7. 8–8. 2	Moderate	Water table is below depth of 20 feet.
95–100	95–100	75–85	0. 8–1. 5	0. 15–0. 20	7. 8–8. 2	Moderate	
85–100	80–100	70–90	0. 8–1. 5	0. 12–0. 17	7. 8–8. 2	Moderate	