



Geotechnical Engineering–I

BSc Civil Engineering – 4th Semester

Lecture # 15

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by

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Lecture Handouts: <https://groups.google.com/d/forum/geotec-1>

Federal Aviation Administration (FAA) Soil Classification

TABLE 7.3. Classification of Soils for Airport Construction^a

Mechanical Analysis						
Material Finer Than No. 10 Sieve						
Soil Group	Retained on No. 10 Sieve ^b (%)	Coarse Sand, Pass No. 10 Ret. No. 40 (%)	Fine Sand, Pass No. 40 Ret. No. 200 (%)	Com-bined Silt and Clay, Pass No. 200 (%)	Liquid Limit	Plas-ticity Index
E-1	0-45	40+	60-	15-	25-	6-
E-2	0-45	15+	85-	25-	25-	6-
E-3	0-45	—	—	25-	25-	6-
E-4	0-45	—	—	35-	35-	10-
E-5	0-55	—	—	45-	40-	15-
E-6	0-55	—	—	45+	40-	10-
E-7	0-55	—	—	45+	50-	10-30
E-8	0-55	—	—	45+	60-	15-40
E-9	0-55	—	—	45+	40+	30-
E-10	0-55	—	—	45+	70-	20-50
E-11	0-55	—	—	45+	80-	30+
E-12	0-55	—	—	45+	80+	—
E-13	Muck and peat—field examination					

Equivalent to **AASHTO A-8** soil

^a Courtesy Federal Aviation Administration.

^b Classification is based on sieve analysis of the portion of the sample passing the No. 10 sieve. When a sample contains material coarser than the No. 10 sieve in amounts equal to or greater than the maximum limit shown in the table, a raise in classification may be allowed provided the coarse material is reasonably sound and fairly well graded.

Federal Aviation Administration (FAA) Soil Classification

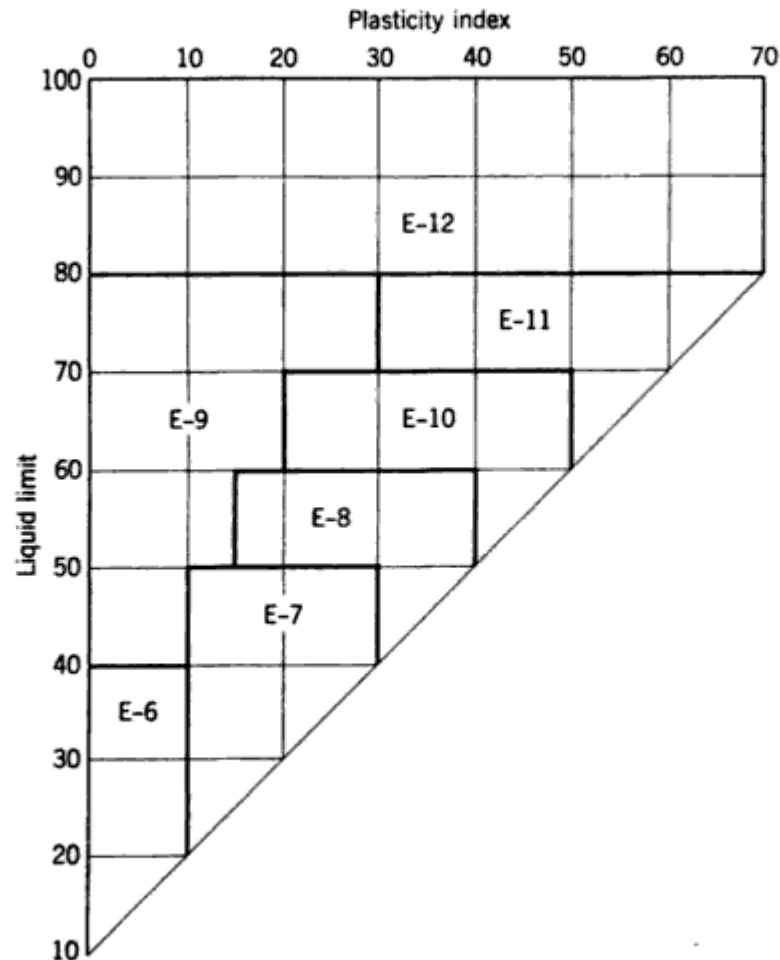


Figure 7.6. FAA classification chart for fine-grained soils. (Courtesy Federal Aviation Administration.)

Practice Problem #1

$$P_{10} = 80\%$$

$$P_{40} = 52\%$$

$$P_{200} = 20\%$$

$$LL = 18$$

$$PI = 4$$

Given data

Obtained from
*gradation curve &
Atterberg Limit tests*

Soil Group	Material Finer Than No. 10 Sieve				Liquid Limit	Plasticity Index
	Retained on No. 10 Sieve ^b (%)	Coarse Sand, Pass No. 10 Ret. No. 40 (%)	Fine Sand, Pass No. 40 Ret. No. 200 (%)	Combined Silt and Clay, Pass No. 200 (%)		
E-1	0-45	40+	60-	15-	25-	6-
E-2	0-45	15+	85-	25-	25-	6-
E-3	0-45	—	—	25-	25-	6-
E-4	0-45	—	—	35-	35-	10-
E-5	0-55	—	—	45-	40-	15-
E-6	0-55	—	—	45+	40-	10-
E-7	0-55	—	—	45+	50-	10-30
E-8	0-55	—	—	45+	60-	15-40
E-9	0-55	—	—	45+	40+	30-
E-10	0-55	—	—	45+	70-	20-50
E-11	0-55	—	—	45+	80-	30+
E-12	0-55	—	—	45+	80+	—
E-13	Muck and peat—field examination					



Practice Problem #2

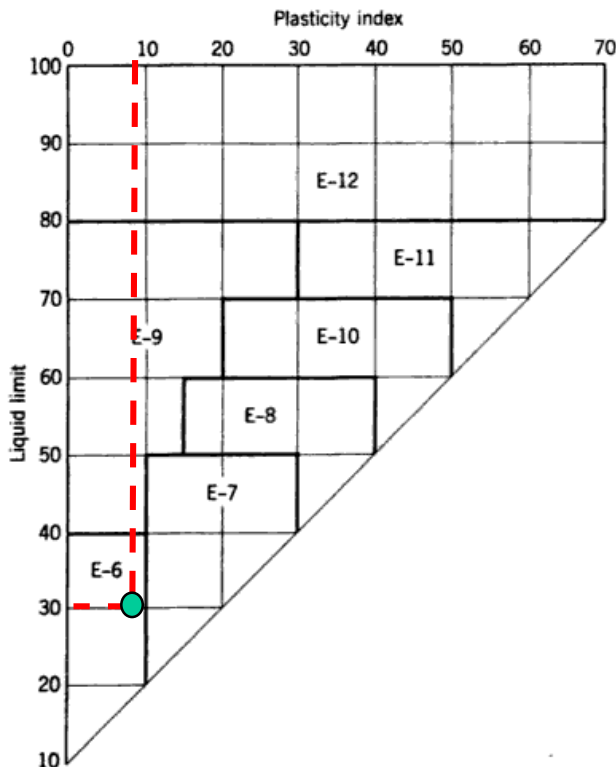
Classify the following soil Using AASHTO System. Given:

% passing No. 10 = 100;

% passing No. 40 = 80;

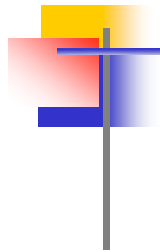
% passing No.200 = 58

LL = 30; PI = 9



Material Finer Than No. 10 Sieve

Soil Group	Retained on No. 10 Sieve ^b (%)	Material Finer Than No. 10 Sieve			Liquid Limit	Plasticity Index	
		Coarse Sand, Pass No. 10 Ret. No. 40 (%)	Fine Sand, Pass No. 40 Ret. No. 200 (%)	Combined Silt and Clay, Pass No. 200 (%)			
E-1	0-45	40+	60-	15-	25-	6-	
E-2	0-45	15+	85-	25-	25-	6-	
E-3	0-45	—	—	25-	25-	6-	
E-4	0-45	—	—	35-	35-	10-	
E-5	0-55	—	—	45-	40-	15-	
E-6	0-55	—	—	45+	40-	10-	
E-7	0-55	—	—	45+	50-	10-30	
E-8	0-55	—	—	45+	60-	15-40	
E-9	0-55	—	—	45+	40+	30-	
E-10	0-55	—	—	45+	70-	20-50	
E-11	0-55	—	—	45+	80-	30+	
E-12	0-55	—	—	45+	80+	—	
E-13		Muck and peat—field examination					



CONCLUDED