Soils Field Tester Technician
KT-13 Field Density Tests of Soils, Treated Base Courses, and Water Bound Base Courses (Sand Cone Method)

Revised April 2025

Two attempts may be made by the applicant. The applicant may stop themselves once and not have that count as one of the two attempts. If the applicant stops voluntarily, draw a line at that point and note that the applicant stopped themselves then restart at the top of the next attempt.

Underlined items will be administered orally

Applicant: _____ **CIT #:** _____

Employer: _____

		TEST TRIAL 1st Test		Stopped Test		3rd Test	
	Determine the Volume of Jar & Attachment						
1.	Weigh the assembled apparatus and record. (6.1.1.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
2.	Place the apparatus up right and open the valve. (6.1.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
3.	Fill the apparatus with water until it appears over the valve. (6.1.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
4.	Close the valve and remove excess water. (6.1.4)	PASS	FAIL	PASS	FAIL	PASS	FAIL
5.	Weigh the apparatus and water. (6.1.5)	PASS	FAIL	PASS	FAIL	PASS	FAIL
6.	Repeat the procedure described above at least twice. The volume used shall be the average of three determinations with a maximum variation of 3 mL. (6.1.6.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
7.	Calculate the volume of the density apparatus. (6.1.7)	PASS	FAIL	PASS	FAIL	PASS	FAIL
	Determination of Bulk Density of Sand						
8.	Place the empty apparatus upright on a firm, level surface; close the valve and fill the funnel with sand. (6.2.1.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

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9.	Open the valve and keeping the funnel at least half full of sand, fill the apparatus. Close the valve sharply and empty excess sand. (6.2.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
10.	Weigh the apparatus and sand. Determine the net weight of sand by subtracting the mass of the apparatus. (6.2.3)	PASS	FAIL	PASS	FAIL	PASS	FAIL
11.	Calculate the bulk density of sand. (6.2.4.)						
	Determination of mass of sand filling the funnel						
12.	Put sand in the apparatus and obtain the mass of the apparatus and sand. (6.3.1.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
13.	Seat the inverted apparatus on a clean, level, plane surface. (6.3.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
14.	Open the valve and keep open until the sand stops running. (6.3.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
15.	Close the valve sharply. Weigh the apparatus with remaining sand and determine the loss of sand. This loss represents the mass of sand required to fill the funnel. (6.3.4.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
16.	Replace the sand removed in the funnel determination and close the valve. (6.3.5.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
	Determination of Density of Soil in-place						
17.	Prepare the surface of the location to be tested so that it is a level plane. (6.4.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
18.	Seat the inverted apparatus on the prepared plane surface and mark the outline of the funnel. (6.4.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
19.	Drill or cut a test hole. Carefully save all material. (6.4.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
20.	Seat the apparatus in the previously marked position, open the valve, and after the sand has stopped flowing, close the valve. (6.4.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

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21.	Weigh the apparatus and remaining sand. Determine the mass of sand used in the test. (6.4.4.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
22.	Weigh the material that was removed from the test hole. (6.4.5.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
23.	Mix the material thoroughly and secure and weigh a representative sample for moisture determination. (6.4.6.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
24.	Determine the moisture content in accordance with KT-11. (6.4.7.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
25.	Calculate the wet density of the material removed from the hole. (6.5.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
26.	Calculate the in place dry density of the material tested to the nearest 0.1 lb/ft^3 (6.5.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

Overall Score

Circle One

1st Test	Stopped Test	3rd Test
PASS	PASS	PASS
FAIL	FAIL	FAIL

Witness Examiner: _____ _____

(First Try) Signature Date

Witness Examiner: _____ _____

(Stopped Try) Signature Date

Witness Examiner: _____ _____

(Re-Test) Signature Date