Soils Field Testing Technician
KT 10 Plasticity Tests (LL)
Revised July 2016

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.

Applicant: _____ **CIT #:** _____

Employer: _____

		1st Test		Stopped Test		Re-Test	
	Sample Preparation						
1.	Dry the material at a temperature not exceeding 140ºF (60ºC). (4.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
2.	Separate into two fractions using a No. 10 (2.00 mm) sieve. Grind the material retained on the sieve until the aggregations of soil particles are broken into separate grains. Ground soil shall then be separated into two fractions using the No. 10 (2.00 mm) sieve. Discarding the material retained on the sieve. (4.2.1.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
3.	Dry-screen the material over a No. 40 (425 µm) sieve. (4.2.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
	Test Procedure						
4.	Place a piece of masking tape across the outside bottom of the cup parallel with the axis of the cup hanger pivot. Place the tape between the wear spot and the pivot so that the edge of the tape away from the cup hanger bisects the spot on the cup that contacts the base. Slide the height gauge under the cup to the device and turn the crank until the cup is raised to its maximum height. If the adjustment is correct, a slight ringing sound will be heard when the cam strikes the cam follower. Remove the tape after adjustment. (4.3.1.1. and 4.3.1.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
5.	Inspect the liquid limit device to be sure that it is in good working order and that there are no worn or "out of alignment" parts that will affect the test results. (4.3.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

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6.	Take a sample weighing approximately 100 g and place in the mixing dish. The sample shall be thoroughly mixed with 15 to 20 mL of distilled or demineralized water by alternately and repeatedly stirring, kneading, and chopping with a spatula. (4.3.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
7.	Additions of water shall be made in 1 to 3 mL increments. Each increment of water shall be thoroughly mixed with the soil before another increment is added. Once testing has begun no additional dry soil is to be added to the moistened soil. (4.3.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
8.	The liquid limit device shall not be used for mixing the soil and water. If too much moisture has been added to the sample, the sample shall either be discarded, or mixed and kneaded until the natural evaporation lowers the closure point into acceptable range. (4.3.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
9.	A sufficient quantity of this mixture shall be placed in the cup above the spot where the cup rests on the base and shall be squeezed and spread with the spatula to level and at the same time trimmed to a depth of 10 mm at the point of maximum thickness. (4.3.4.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
10.	The soil in the cup shall be divided by a maximum of six firm strokes of the grooving tool. The depth of the grove should be increased with each stroke and only the last stroke should scrape the bottom of the cup. (4.3.4.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
11.	The cup containing the sample shall be lifted and dropped by turning the crank at the rate of approximately two revolutions per second until the two sides of the sample come in contact at the bottom of the groove along a distance of about 0.5 in. (13 mm). DO NOT hold the base with the free hand while crank is turned. (4.3.5.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
12.	Record the number of shocks. (4.3.5.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

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13.	Remove a slice of the soil approximately the width of the spatula, extending from edge to edge of the soil cake at right angles to the groove and including that portion of the groove in which the soil flowed together, and place in a suitable container. (4.3.6.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
14.	Record the sample mass to the nearest 0.01 g. The soil in the container (with lid) shall be dried in accordance with KT-11 to determine the moisture content. Record the results. (4.3.6.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
15.	Transfer the soil remaining in the cup to the mixing dish. (4.3.7.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
16.	Wash and dry the grooving tool and cup. (4.3.7.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
17.	Add water to the sample in the mixing dish to bring the soil to a more fluid condition. (4.3.8.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
18.	The object of this procedure is to obtain samples of such consistency that at least one determination will be made in each of the following ranges of shocks: 25-35, 20-30, 15-25. The range of the three determinations shall be at least 10 shocks. (4.3.8)	PASS	FAIL	PASS	FAIL	PASS	FAIL
19	Calculate the moisture content. (5.1)	PASS	FAIL	PASS	FAIL	PASS	FAIL
20	Draw a flow curve on a semi-logarithmic graph by plotting moisture contents on the arithmetical scale and number of shocks on the logarithmic scale, then drawing a straight line as nearly as possible through three plotted points. (5.2.)	PASS	FAIL	PASS	FAIL	PASS	FAIL
21	Determine the liquid limit of the soil by locating the intersection of the flow curve with the 25 shock ordinate and report to the nearest whole number. (5.3.)	PASS	FAIL	PASS	FAIL	PASS	FAIL

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Overall Score

Circle One

1st Test	Stopped Test	Re-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