DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Transportation Laboratory
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METHOD OF TESTS FOR PLASTICITY INDEX OF SOILS

CAUTION: Prior to handling test materials, performing equipment setups, and/or conducting this method, testers are required to read **"SAFETY AND HEALTH"** in Part V of this method. It is the responsibility of the user of this method to consult and use departmental safety and health practices and determine the applicability of regulatory limitations before any testing is performed.

PART I. PLASTICITY INDEX

A. SCOPE

The plasticity index of a soil is the numerical difference between its liquid limit and its plastic limit. The liquid limit and plastic limit are both expressed as percent moisture content.

B. TEST PROCEDURE

This test shall be performed in accordance with AASHTO Designation T 90-00.

PART II. LIQUID LIMIT

A. SCOPE

The liquid limit of a soil is that water content, as determined in accordance with AASHTO Designation T 89-02, at which the soil passes from a plastic to a liquid state.

B. TEST PROCEDURE

This test shall be performed in accordance with AASHTO Designation T 89-02.

PART III. PLASTIC LIMIT TEST

A. SCOPE

The plastic limit of a soil is the lowest water content, as determined in accordance with the following procedure, at which the soil becomes plastic. Use AASHTO Designation T 90-00.

B. TEST METHOD

This test shall be performed in accordance with AASHTO Designation T 90-00.

PART IV. TESTS OF CEMENT TREATED OR LIME TREATED SOILS

A. FOLLOW THE PROCEDURES DESCRIBED IN PARTS I, II, AND III OF THIS TEST METHOD WITH THE FOLLOWING EXCEPTIONS:

1. Add cement or lime to the passing No. 4 sample prior to grinding and sieving over the No. 40 sieve. For field samples that contain 10% or more aggregate retained on the No. 4 sieve, use the following example to determine the percent of cement or lime to add to the soil passing the No. 4 sieve.

   Two percent of cement is to be added in the field to an aggregate graded 100 percent passing the ¾-inch sieve and 60 percent passing the No. 4 sieve.

   Let X = Percent cement required, by weight, for passing the No. 4 sieve portion.

Then

$$100/60 = X/2$$

$$X = 3.33\%$$

2. Add water and mix as specified previously in this procedure; then, leave mixed sample in uncovered evaporating dish in workroom for 24 hours.

3. Use spatula, plus hand-operated mortar and pestle when necessary, and break up crust and soil-cement (or soil-lime) aggregations.

4. Again add water, mix, and cure, all as previously specified for the routine test procedure.

PART V. SAFETY AND HEALTH

Soil and water may contain bacteria and/or organisms that can be harmful to one's health. Please be sure to clearly identify those soils and waters that may contain contaminates. The wearing of dust masks and protective gloves when handling materials is advised.

Prior to handling, testing or disposing of any waste material, testers are required to read Part A, (Section 5.0), Part B, (Section 5.0, 6.0, 10), and Part C, (Section 1.0) of Caltrans Laboratory Safety Manual.

REFERENCES:

AASHTO Designations T 87, T 89 and T 90

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(California Test 204 contains 2 pages)