4. Determine the volume of the specimen with coating by immersing it in water in the graduate cylinder. The volume of specimen without coating is the volume of the displaced water less than the volume of paraffin.
5. Compute the unit weight.
6. Assuming the specific gravity and soil solids (the proper determination of specific gravity shall be taken up in separate laboratory work), compute the void ratio, porosity and degree of saturation.

GENERAL DATA:

WATER CONTENT DETERMINE	TRIAL 1	TRIAL 2
WEIGHT OF CONTAINER		
WEIGHT OF CONTAINER + WET SOIL		
WEIGHT OF CONTAINER + DRY SOIL		
WEIGHT OF WATER, Ww		
WEIGHT OF DRY SOIL, Ws		
WATER CONTENT, w		

Unit weight:

Volume by Measurement

Length of sample (cm)_____

Diameter of sample (cm)_____

Area (cm)_____

Volume of sample (cm)_____

Weight of sample (gm)_____

Unit weight (gm/cc)_____

Volume by Immersion

Weight of sample (gm)_____

Wt. of sample + paraffin, cc_____

Weight of paraffin (cc)_____

Volume of paraffin (cc)_____

Volume of sample + paraffin (cc)_____

Unit weight (gm/cc)_____

Void ratio, Porosity, Degree of Saturation

Average water content, w_____

Specific gravity of Soil Solids, Gs_____

Void ratio, e_____

Porosity, n_____

Degree of Saturation, Sr_____

COMPUTATIONS:

DRAWING OF APPARATUS:

GENERAL DISCUSSIONS:

The determination of water content is a routine laboratory test to determine the amount of water present in a quality of soil in terms of its dry weight. It is a part of other more elaborate tests such as the compaction test, the determination of liquids, plastic and shrinkage limits, the field density test, etc. It is defined mathematically as

$$w = \frac{Ww}{Ws} \times 100\%$$

where;

w = water content

Ww = weight of water present in the soil mass

Ws = weight of soil solids

Although, one could define the water content as the ratio of Ww and the total weight or ratio of the volume of water present in the soil mass and the total volume.

The unit weight is determined from representative undisturbed soil samples. The void ratio, porosity and degree of saturation are normally determined accurately after the true specific gravity of the solids are obtained.

REMARKS AND CONCLUSION:

a.) Simply falling apart
b.) With the outer tubular (hollow roll) layer that split from ends inward
c.) Barrel – shaped solid pieces 6 to 8 mm. long (for heavy clays)

Do not produce a failure by allowing thread to reach 3 mm. by reducing the rate of rolling and/or hand pressure. Exception is with soils approaching nonplasticity; this initial ball may be shaped close to 3mm. by hand prior to rolling.

3. Repeat this sequence several times adding each test to the same moisture can.
4. Weigh the covered can, remove the lid, and place the can in the oven.

GENERAL DATA:

Liquid Limit Determination

Can No.				
Wt. of wet soil + can				
Wt. of dry soil + can				
Wt. of can				
Wt. of dry soil				
Wt. of moisture				
Water content, w = w1				
No. of blows, N				

Flow Index = _____
Liquid Limit = _____

Plastic Limit Determination

Can No.				
Wt. of wet soil + can				
Wt. of dry soil + can				
Wt. of can				
Wt. of dry soil				
Wt. of moisture				
Water content, w = Wp				

The volumetric changes of a soil for a given moisture content is the volumetric change expressed as a percentage of the dry volume of the soil mass when the moisture content is usually taken as the field moisture equivalent. The volumetric change shall be calculated from the data obtained in the volumetric shrinkage determination by the following formula:

Volumetric Change = (w - S)R

where:

w = given moisture content
S = shrinkage limit
R = shrinkage ratio

Lineal Shrinkage:

The lineal shrinkage of a soil for a given moisture content is the decrease in one dimension expressed as a percentage of the original dimension of the soil mass when the moisture equivalent is reduced from the amount equal to the field moisture equivalent or liquid limit to the shrinkage limit.

The lineal shrinkage shall be obtained either by means of a formula or by means of the chart for determining lineal shrinkage from volumetric.

GENERAL DATA:

Weight of dish

Weight of dish and wet soil

Weight of dish and dry soil

Weight of water

Volume of wet soil, V

Volume of dry soil, Vd

Moisture content

Shrinkage limit

Shrinkage Ratio

Volumetric Change

COMPUTATIONS:

TABLE ON SPECIFIC GRAVITY OF WATER AT DIFFERENT TEMPERATURES:

Temp °C	0	1	2	3	4	5	6	7	8	9
0										
10										
20										
30										
40										
50										
60										
70										
80										
90										

GENERAL DATA:

Trial No.			
Wa (pycnometer + water)			
Wb (pycnometer + water + soil)			
X (temperature in °C)			
Ws (Weight of dry soil)			
Gt (specific gravity of water)			
Gs (specific gravity of soil)			

CALIBRATION CURVE

COMPUTATIONS:

DRAWING OF APPARAUS

GENERAL DISCUSSION:

The specific gravity of soil, Gs without any qualifications are taken to be the average value for the soil grains. If numerical values are given in the discussion where it may not be clear to what