Consolidation

Equipment Required

- If low plastic silty clay Shelby tube (ST) samples are available, prepare the consolidometer sample from the ST sample.
- If ST samples are NOT available then begin preparation at least 48 hours before the lab period. Use 300g passing No.40 sieve per group.

(If using ST samples skip Day 1 Step 1.)

**Day 1**

1. Put 300g soil sample into a big pan and add 12% water, mix thoroughly. Compact into a 3-inch diameter mold to form a cylindrical sample.

2. Cut off a 1.5 to 2 inch length of the cylindrical soil sample and place it on the bench top with the flat end on the bench top.

3. Place the sharp edge of the consolidometer ring onto the top end of the soil sample.

4. Gently push the ring down to trim off the excess diameter of the soil sample extending outside the ring diameter.
5. Use a wire saw to trim away the excess soil sample that extends above the blunt (top) edge of the ring.

6. Place the consolidation sample trimming guide onto the bench top with the deeper guide length facing up.

7. Place the soil sample and ring upside down so that the blunt edge goes against the trimming guide.

8. Gently push down on the ring so that blunt edge of the ring is displaced relative to the soil and that amount of soil extends above the sharp edge of the ring.

9. Trim away the soil that now extends above the sharp edge of the ring.

Remove the soil sample and ring from the end of the trimming guide.
10. Turn the consolidation sample trimming guide upside down so that the short guide length faces up. Place the soil and sharp edge of the ring down onto the sample trimming guide.

11. Carefully push the ring down so that the soil is recessed within the ring about the same distance from both the top and bottom edges of the ring.

12. Measure and record the mass of the ring with the soil.
13. Test the initial moisture content and the specific gravity from a representative sample of the soil. Provide the results to the lab group members.
14. Measure and record the initial sample height. Provide the initial sample height to the lab group members.

(If using a Shelby tube sample of natural soil then skip the remaining steps listed in this document, then proceed to the test procedure.)
15. Pre-consolidate the soil (submerged in water) under 4 tons per square foot stress for about 24 hours.

**Day 2**

16. At the end of the preconsolidation period, remove the load for at least 24 hours before the lab. To prevent the consolidometer ring confining the soil sample from slipping down, maintain a very small load on the sample. The suggested minimum load value is 0.5 to 1 psi on the consolidometer pressure gauge.
17. Keep the water level above the top of the sample at all times.