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| **Course Name : CE 363** | **Date of Testing: 24.05.2010** |
| **No. and Title of Test :**  **SML 19 UNCONFINED COMPRESSION TEST** | |
| **Year and Section: 3,1** | **Lab. Group : 4** |
| **SURNAME, Other names of student:** | |

# OBJECT

To determine the unconfined compressive strength and hence the undrained shear strength of a saturated clay.

# THEORY

# TEST PROCEDURE

1. Prepare a specimen by jacking a thin-walled, lubricated core cutter into the soil sample. Then push the specimen out of the core cutter by means of a loose-fitting wooden dolly, and trim it to the required height by placing it inside a trimming tube which is of the right height and has a diameter slightly larger than that of the specimen.
2. Take water content and specific gravity samples.
3. Weigh the sample and determine its mean diameter and height.
4. Place the sample between the loading platens of the testing machine. Adjust the vertical deflection and proving ring dial gauges to zero.
5. Apply an axial load at a constant rate of strain, sufficiently slow to permit recording of the strain and the proving ring dial readings at 10-division intervals of the strain dial. Continue until failure occurs.
6. Prepare a sketch showing the mode of failure of the specimen, measuring the angle of inclination of the failure plane, if any, to the axis of the specimen.

# CALCULATIONS and GRAPH

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| --- | --- |
| Initial height : 72 mm | Initial area: 1017,87602 mm2 |
| Initial diameter : 36 mm | Proving ring constant : 0,95157 kN/div. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strain dial | Strain | Corrected Area | Proving Ring Dial | Axial Load | Compressive Stress |
| 0 | 0 | 1017.87602 | 0 | 0 | 0 |
| 10 | 0.001388889 | 1019.291703 | 35 | 0.000845946 | 0.082993487 |
| 20 | 0.002777778 | 1020.711329 | 74 | 0.001788571 | 0.175227895 |
| 30 | 0.004166667 | 1022.134915 | 113 | 0.002731196 | 0.26720506 |
| 40 | 0.005555556 | 1023.562478 | 147 | 0.003552972 | 0.347118241 |
| 50 | 0.006944444 | 1024.994034 | 180 | 0.004350578 | 0.424449109 |
| 60 | 0.008333333 | 1026.4296 | 210 | 0.005075674 | 0.494498052 |
| 70 | 0.009722222 | 1027.869192 | 243 | 0.00587328 | 0.571403482 |
| 80 | 0.011111111 | 1029.312829 | 272 | 0.006574207 | 0.638698618 |
| 90 | 0.0125 | 1030.760526 | 300 | 0.007250963 | 0.703457614 |
| 100 | 0.013888889 | 1032.212302 | 323 | 0.007806871 | 0.756324119 |
| 110 | 0.015277778 | 1033.668172 | 345 | 0.008338608 | 0.806700654 |
| 120 | 0.016666667 | 1035.128156 | 360 | 0.008701156 | 0.840587326 |
| 130 | 0.018055556 | 1036.592269 | 362 | 0.008749496 | 0.844063389 |
| 140 | 0.019444444 | 1038.06053 | 358 | 0.008652816 | 0.833556047 |



qu= 0.844063389 kPa

cu= 0.422031694 kPa

c20%= 0.833556047 kPa

# DISCUSSION

The compressive stress is only in one direction since we have used no water. Moreover, the experiment was conducted only once so shear strength parameters could not be calculated.

# REFERENCES

Mirata. Türker (2001). Laboratory Instructions for Soil Mechanics Students. Middle East Technical University.