ISO 17892-9:2018-02 (E)

Geotechnical investigation and testing - Laboratory testing of soil - Part 9: Consolidated triaxial compression test s on water saturated soils

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 2

4 Symbols 3

5 Apparatus 5
5.1 General 5
5.2 Triaxial cell 7
5.3 Confining membrane 7
5.4 Porous discs 7
5.5 Filter paper 8
5.6 Pressure systems 8
5.7 Load frame 8
5.8 Measuring devices 8
5.8.1 Load measuring device 8
5.8.2 Pressure measuring devices 9
5.8.3 Vertical displacement measuring device 9
5.8.4 Volume change measuring device 9
5.9 Cell and back pressure fluids 9
5.10 Ancillary apparatus 9

6 Test procedure 10
6.1 General requirements and equipment preparation 10
6.2 Preparation of specimens 10
6.3 Saturation of specimen 11
6.3.1 Saturation 11
6.3.2 Application of cell and back pressure 12
6.3.3 Saturation checks 12
6.4 Isotropic consolidation (CIU and CID tests) 13
6.5 Anisotropic consolidation (CAU and CAD tests) 13
6.6 End of consolidation 13
6.7 Shearing 13
6.7.1 General 13
6.7.2 Undrained tests (CIU and CAU) 14
6.7.3 Drained tests (CID and CAD) 14
6.8 Dismounting 15

7 Test results 15
7.1 Bulk density, dry density and water content 15
7.2 Calculations of test parameters 16
7.2.1 Height after consolidation 16
7.2.2 Corrected cross sectional area 16
7.2.3 Corrections for elastic membrane 16
7.2.4 Correction for filter paper strips 17

7.2.5 Vertical total stress 17
7.2.6 Vertical effective stress 17
7.2.7 Horizontal total stress 18
7.2.8 Horizontal effective stress 18
7.2.9 Pore pressure change 18
7.2.10 Vertical strain 18
7.2.11 Vertical strain during shear 18
7.2.12 Volumetric strain 18
7.2.13 Volumetric strain during shear 18

8 Test report 19

8.1 Mandatory reporting 19
8.2 Graphical presentation 20
8.3 Optional reporting 20

Annex A (normative) Calibration, maintenance and checks 21

Annex B (informative) Additional calculations for effective shear strength 23

Bibliography 25