APPENDIX BB   
ADOPTION PROPOSAL FORM

**CPR183/F15**

**KENYA BUREAU OF STANDARDS**

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| **Document Type:** | **Adoption proposal** | |
| **Dates:** | Circulation date | Closing date |
| 20th April – 2021 | 19th – May - 2021 |
| **TC Secretary** | **This form shall be filled, signed and returned to Kenya Bureau of Standards for the attention of Eric Sitienei** | |

The Kenya Bureau of Standards intends to adopt the ISO Standards as detailed here below

1. Number : ISO 17892-1:2014

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 1: Determination of water content.

Scope : This International Standard specifies a method of determining the water content of soils. This International Standard is applicable to the laboratory determination of the water (also known as moisture) content of a soil test specimen by oven-drying within the scope of geotechnical investigations. The water content is required as a guide to the classification of natural soils and as a control criterion in re-compacted soils, and is measured on samples used for most field and laboratory tests. The ovendrying method is the definitive procedure used in usual laboratory practice. The practical procedure for determining the water content of a soil is to determine the mass loss on drying the test specimen to a constant mass in a drying oven controlled at a given temperature. The mass loss is assumed to be due to free water and is referenced to the remaining dry mass of solid particles. NOTE This document fulfils the requirements of the determination of water content of soils for geotechnical investigation and testing in accordance with EN 1997–1 and EN 1997–2.

This East African Standard cancels and replaces the EAS 424-2005, Hydraulic road binders Composition, specifications and conformity criteria which is hereby withdrawn.

1. Number : ISO 17892-2:2014

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 2: Determination of bulk density Bitumen and bituminous binders — Specification — Part 1: Penetration grade bitumen (1st Edition)

Scope : This International Standard specifies three methods for the determination of the bulk density of soils, comprising:

a) linear measurement method;

b) immersion in fluid method;

c) fluid displacement method.

This International Standard is applicable to the laboratory determination of the bulk density of soil

within the scope of geotechnical investigations.

The linear measurement method is suitable for the determination of the bulk density of a specimen of soil of regular shape, including specimens prepared for other tests. The specimens used are either rectangular prisms or cylinders with circular cross sections.

The immersion in fluid method covers the determination of the bulk density of a specimen of natural or compacted soil by measuring its mass in air and its apparent mass when suspended in fluid. The method may be used when lumps of material of suitable size can be obtained.

The fluid displacement method covers the determination of the bulk density of a specimen of soil by measuring its mass in air and the mass of fluid displaced by immersion. The method may be used when lumps of material of suitable size can be obtained.

If the immersion in fluid method or fluid displacement method is used, and if the fluid is likely to penetrate

into the specimen (eg water) the specimen should be coated before testing to prevent fluid penetration.

The bulk density of a soil is useful in the determination of the in situ overburden stress as a function of depth.

If required, the dry density of a specimen may be calculated from the bulk density and the water

content, if known.

NOTE This International Standard fulfils the requirements of the determination of the bulk density of soils

for geotechnical investigation and testing in accordance with EN 1997–1 and EN 1997–2.

1. Number : ISO 17892-3:2015

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 3: Determination of particle density.

Scope : This part of ISO 17892 specifies methods for the determination of the particle density of soils.

This part of ISO 17892 is applicable to the laboratory determination of the particle density of soil within

the scope of geotechnical investigations, and describes two methods, a pycnometer method by fluid

displacement and a pycnometer method by gas displacement.

The fluid pycnometer method described in this part of ISO 17892 applies to soil types with particle sizes under about 4 mm, or soils crushed to meet this requirement. Larger pycnometers are used for coarser materials. The particle size of soils suitable for testing in the gas pycnometer is limited by the dimensions of the specimen container of the particular gas pycnometer being used.

NOTE 1 This part of ISO 17892 fulfils the requirements of the determination of particle density of soils for

geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

NOTE 2 The presence of dissolved salts in the pore water can affect the results of these tests. Techniques for compensating for dissolved salts are available but are beyond the scope of this standard.

1. Number : ISO 17892-4:2016

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 4: Determination of particle size distribution

Scope : This part of ISO 17892 specifies a method of determining the particle size distribution of soils.

This part of ISO 17892 is applicable to the laboratory determination of the particle size distribution of a soil test specimen by sieving, or sedimentation, or a combination of both within the scope of geotechnical investigations.

The particle size distribution is one of the most important physical characteristics of soil. Classification of soils is mainly based on the particle size distribution. Many geotechnical and geohydrological properties of soil are related to the particle size distribution.

The particle size distribution provides a description of soil based on a subdivision in discrete classes of particle sizes. The size of each class can be determined by sieving and/or sedimentation. Coarse soils are usually tested by sieving, but fine and mixed soils are usually tested by a combination of sieving and sedimentation, depending on the composition of the soil.

The sieving method described is applicable to all non-cemented soils with particle sizes less than 125 mm. Two sedimentation methods are described: the hydrometer method and the pipette method.

NOTE This part of ISO 17892 fulfils the requirements of the particle size distribution testing in accordance with EN 1997-2.

1. Number : ISO 17892-5:2017

Title : ISO 17892-5:2017:Geotechnical investigation and testing — Laboratory testing of soil — Part 5: Incremental loading oedometer test

Scope : This document specifies methods for the determination of the compressibility characteristics of soils by incremental loading in an oedometer.

This document is applicable to the laboratory determination of the compression and deformation characteristics of soil within the scope of geotechnical investigations.

The oedometer test is carried out on a cylindrical test specimen that is confined laterally by a rigid ring. The specimen is subjected to discrete increments of vertical axial loading or unloading and is allowed to drain axially from the top and bottom surfaces. Tests may be carried out on undisturbed, remoulded, recompacted or reconstituted specimens.

The stress paths and drainage conditions in foundations are generally three dimensional and differences can occur in the calculated values of both the magnitude and the rate of settlement.

The small size of the specimen generally does not adequately represent the fabric features present in natural soils.

Analysis of consolidation tests is generally based on the assumption that the soil is saturated. In case of unsaturated soils, some of the derived parameters may not be appropriate.

NOTE This document fulfils the requirements of the determination of the compressibility characteristics of soils in the oedometer for geotechnical investigation and testing in accordance with EN 1997–1 and EN 1997–2.

1. Number : ISO 17892-6:2017

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 6: Fall cone test

Scope : This document specifies a method of undrained strength index testing of both undisturbed and remoulded specimens of fine grained soils by the fall cone method.

This document is applicable to the laboratory estimation of undrained shear strength of a soil test specimen within the scope of geotechnical investigations.

In the fall cone test, a cone is allowed to fall with its tip towards a soil specimen, and the resulting penetration of the cone into the soil is measured. The penetration values are used to estimate the undrained shear strength. The fall cone test produces a complex shear in the test specimen, and does not represent either a vertical triaxial compression or a horizontal shear test. However, this index test may be correlated to some estimate of undrained shear strength determined in the laboratory by other test methods.

As the test is performed on a small laboratory specimen, the result may not agree with laboratory tests on larger specimens. In addition, the test specimen may not be fully representative of the soil in its natural state in the field; for example, the test specimen may not have fissures present in situ at a larger spacing than the specimen size.

Therefore, for the above reasons, the test can be regarded as an estimation of undrained shear strength, rather than a true measurement of it.

The ratio of the remoulded shear strength to the undisturbed shear strength may be used to estimate the sensitivity of a soil specimen. Time-dependent measurement of the shear strength may be used to assess the thixotropic regain of strength of a remoulded soil specimen.

NOTE This document fulfils the requirements of the strength index testing of soils for geotechnical investigation and testing in accordance with EN 1997–1 and EN 1997–2.

1. Number : ISO 17892-7:2017

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 7: Unconfined compression test

Scope : This document specifies a method for the unconfined compression test.

This document is applicable to the determination of the unconfined compressive strength for a homogeneous specimen of undisturbed, re-compacted, remoulded or reconstituted soil under compression loading within the scope of geotechnical investigations.

This test method is useful to estimate the undrained shear strength of soil. It is noted that drainage is not prevented during this test. The estimated value for undrained shear strength is, therefore, only valid for soils of low permeability, which behave sufficiently undrained during the test.

NOTE This document fulfils the requirements of unconfined compression tests for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2

1. Number : ISO 17892-8:2018

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 8: Unconsolidated undrained triaxial test

Scope : This document specifies a method for unconsolidated undrained triaxial compression tests.

This document is applicable to the laboratory determination of undrained triaxial shear strength under compression loading within the scope of geotechnical investigations. The cylindrical specimen, which can comprise undisturbed, re-compacted, remoulded or reconstituted soil, is subjected to an isotropic stress under undrained conditions and thereafter is sheared under undrained conditions. The test allows the determination of shear strength and stress-strain relationships in terms of total stresses.

Non-standard procedures such as tests with the measurement of pore pressure or tests with filter drains are not covered in this document.

NOTE This document fulfils the requirements of unconsolidated undrained triaxial compression tests for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

1. Number : ISO 17892-9:2018

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 9: Consolidated triaxial compression tests on water saturated soils

Scope : This document specifies a method for consolidated triaxial compression tests on water-saturated soils.

This document is applicable to the laboratory determination of triaxial shear strength under compression loading within the scope of geotechnical investigations.

The cylindrical specimen, which can comprise undisturbed, re-compacted, remoulded or reconstituted soil, is subjected to an isotropic or an anisotropic stress under drained conditions and thereafter is sheared under undrained or drained conditions. The test allows the determination of shear strength, stress-strain relationships and effective stress paths. All stresses and strains are denoted as positive numerical values in compression.

NOTE 1 This document provides a test for a single specimen. A set of at least three relatable tests are required to determine the shear strength parameters from these tests. Procedures for evaluating the results are included in Annex B and, where required, the shear strength parameters are to be included in the report.

Special procedures such as:

a) tests with lubricated ends;

b) multi-stage tests;

c) tests with zero lateral strain (K0) consolidation;

d) tests with local measurement of strain or local measurement of pore pressure;

e) tests without rubber membranes;

f) extension tests;

g) shearing where cell pressure varies,

are not fully covered in this procedure. However, these specific tests can refer to general procedures described in this document.

NOTE 2 This document fulfils the requirements of consolidated triaxial compression tests for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

1. Number : ISO 17892-10:2018

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 10: Direct shear tests

Scope : This document specifies two laboratory test methods for the determination of the effective shear strength of soils under consolidated drained conditions using either a shearbox or a ring shear device.

This document is applicable to the laboratory determination of effective shear strength parameters for soils in direct shear within the scope of geotechnical investigations.

The tests included in this document are for undisturbed, remoulded, re-compacted or reconstituted soils. The procedure describes the requirements of a determination of the shear resistance of a specimen under a single vertical (normal) stress. Generally three or more similar specimens from one soil are prepared for shearing under three or more different vertical pressures to allow the shear strength parameters to be determined in accordance with Annex B.

Special procedures for preparation and testing the specimen, such as staged loading and pre-shearing or for interface tests between soils and other materials, are not covered in the procedure of this document.

NOTE This document fulfils the requirements of the determination of the drained shear strength of soils in direct shear for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

1. Number : ISO 17892-11:2019

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 11: Permeability tests

Scope : This document specifies methods for the laboratory determination of the water flow characteristics in soil.

This document is applicable to the laboratory determination of the coefficient of permeability of soil within the scope of geotechnical investigations.

NOTE This document fulfils the requirements of the determination of the coefficient of permeability of soils in the laboratory for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

1. Number : ISO 17892-12:2018

Title : Geotechnical investigation and testing — Laboratory testing of soil — Part 12: Determination of liquid and plastic limits

Scope : This document specifies methods for the laboratory determination of the water flow characteristics in soil.

This document is applicable to the laboratory determination of the coefficient of permeability of soil within the scope of geotechnical investigations.

NOTE This document fulfils the requirements of the determination of the coefficient of permeability of soils in the laboratory for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

Adoption acceptable as presented

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Adoption proposal not acceptable because of the reason(s) below

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Our Recommendations are as follows

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Name and Signature (of respondent): ................................................

Position (of respondent): .....................................

On behalf of ......................................................................................... (Name of organization)

Date .........................................................................

**NOTE:** Absence of any reply or comments shall be deemed to be an acceptance of the proposal for adoption and **shall constitute an approval vote**.