CECB Laboratory Services.....

CECB Laboratory, located in Jawatta, Colombo 05, is a major sub unit of CECB, an institution under the Ministry of Mahaweli Development and Environment.
At CECB Laboratory Services we are equipped to perform traditional laboratory testing for projects in different geographical areas across Sri Lanka. Our highly trained Engineers are more than capable of conducting a range of tests, whether it be soil testing, aggregate testing, concrete testing, cement testing, asphalt testing or testing of clay bricks. Now laboratories are located throughout the country to provide quality laboratory testing in Colombo, Badulla and Ampara.

Contact Us....

Main Laboratory - Colombo
CECB Laboratory Services
No.11, Jawatta Road,
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Tel : +94 112 505 688
+94 112 081 324
+94 714 222 444
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E-mail : cecblab@gmail.com
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Base Laboratory

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EPC - South East,
Sri Rathana Mawatha,
Ampara, Sri Lanka.
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Fax: +94 632 222 439
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Our other services ....

Environmental Impact Assessment
Pre-feasibility study/ Feasibility study
Integrated Pollution Control (IPC) Licensing
Clean Water Act permit
Environmental Protection License
Industrial Water Quality Assessment
Invasive Species Study
Wetland Delineation

Our hands-on approach is always available in helping you to find the best solution for your project within the regulatory tools and scientific norms. We assist you in obtaining your project permits/licenses and keep your project on schedule as our laboratory provides the latest techniques and facilities to accomplish every task at one door step saving your valuable time and money.

Other Testing Facilities Available at CECB Laboratory

Fresh / Hardened Concrete Testing
Slump test, Cube casting, Concrete mix design G15 to G80 Temperature Monitoring, Compressive strength test, Flextural strength test, Water absorption test, Permeability test, Abrasion test, Carbonation test, Concrete coring & testing

Cement Testing
Motor cube preparation & testing for compressive strength, Flexural test, Soundness test, Setting time test, Fineness test & Testing for chemical parameters

Cement/ Paving blocks & Bricks Testing
Compressive strength test, Density and water absorption test, Abrasion resistance test, Dimension test, Efflorescence test for bricks

Structural Assessment
Serviceability assessments of existing buildings & monitoring

Non Destructive Testing
Schmidt hammer test, Ultrasound Pulse Velocity (UPV) test, Cover meter test, Corrosion analysis.

Soil Testing
All physical & chemical tests for construction requirements, field density test

Advanced Soil Testing
Triaxial test (UU,CU), Direct shear test, Consolidation test, Soil permeability test, Pinhole test

Aggregate Testing
All physical & chemical tests for construction requirements, field density test

Rock Testing
Point load test, Unconfined compressive strength (UCS) test, Rock triaxial test, Poisson's ratio, Elastic properties

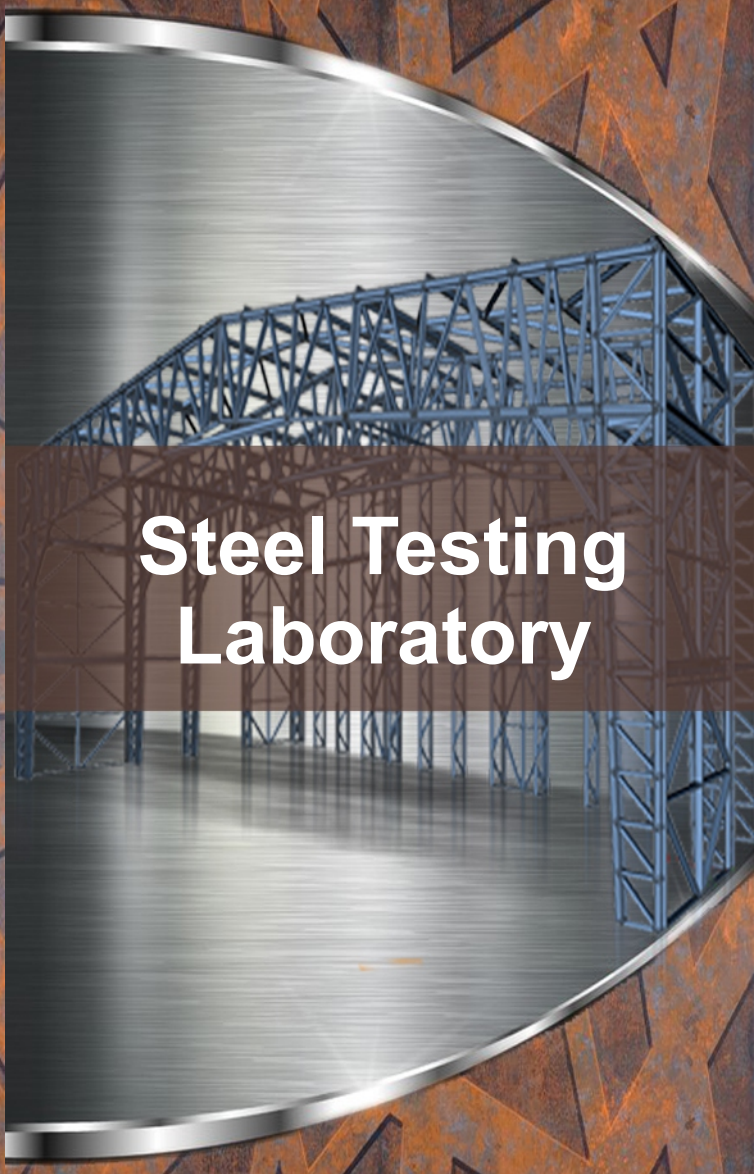
Water Testing
All chemical parameters for construction requirements

Asphalt Testing
Marshall test, Coring & field density test, Stability & flow test, Extraction test, Asphalt mix designs

Geotechnical Investigations
Bore holes investigations, Field CBR test, Plate load test, Dynamic cone penetration test, Mackintosh test, Foundation recommendations

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CECB Laboratory Services



Steel Testing Laboratory

CECB Laboratory Services
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Steel Reinforcement in Construction Industry

Steels are essentially alloys of iron and carbon but they always contain other elements, either as impurities or alloying elements. The iron as produced from the smelting of iron ore in a blast furnace, is impure and the impurities are removed by oxidation and the melt contains only small amounts of C, Si, Mn, S & P. But steel should be deoxidized to achieve strength to use as structural material & generally it is done by adding Si, Mn & Al sufficiently. After adding other elements to achieve desired steel structure Carbon is added to correct level to produce desired steel type.

Alloying additions are made to steels to enhance the properties such as strength, ductility, corrosion resistance, toughness and weldability. Therefore internal structure and amount of alloying element are extremely important to select desired steel for construction purposes.

Selection of Steel for Construction

The selection of steel for a specific application is determined by following factors:

- Tensile & yield strengths
- Toughness, ductility, weldability and other properties such as weather resistance
- Availability and cost
- Local conditions, specifications and codes of practice

Determination of exact composition of steel and its physical properties are extremely important to meet the construction requirements.

Concrete is a very strong material in compression but has very low strength against tension. Therefore, reinforcement bars are used in concrete to improve capacity to withstand tensile loads.

Steel reinforcement bar is also known as rebar, reinforcing bar, reinforcing steel is a versatile constructional material which is widely used in the construction industry for making of the reinforced concrete.

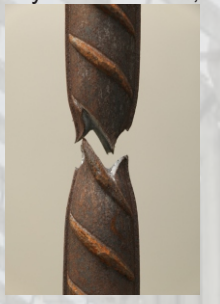
Steel is the best material as reinforcement in concrete structures as thermal expansion properties of steel and concrete are approximately the same. This along with excellent bendability property and ability to bond well with concrete, are other reasons for steel works effectively as reinforcement.

As conducted for other construction materials it is required to test steel samples to check adherence to quality requirements. The most common tests for steel reinforcement bars are tensile test, bending test, rib geometry and chemical analysis.



Tensile Test

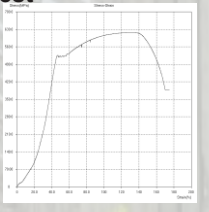
The test involves straining a test piece by tensile force, generally to fracture.



Test Standards:
SLS 978:2004
BS EN ISO 6892-1: 2019,
BS 449:2005 +A2:2009
ISO15630-1:2010

Testing Capacity:
Round specimens φ 8mm to 40 mm
Flat specimens up to 30 mm thickness

Parameters determined using Tensile Test
Lower yield strength
Upper yield strength
Tensile strength
Proof strength
Total elongation
Percentage elongation at fracture



CECB Steel Testing Facilities

Bar Diameter	Tensile Test	Bending / Rebending Test	Rib Geometry
10 mm	✓	✓	✓
12 mm	✓	✓	✓
16 mm	✓	✓	✓
20 mm	✓	✓	✓
25 mm	✓	✓	✓
32 mm	✓	✓	✓
40 mm	✓	✓	✓
Tensile test can be conducted for steel sections up to 30 mm thickness			

Bending / Rebending Test

Bending tests deform the test material at the midpoint causing a concave surface or a bend without the occurrence of fracture and are typically performed to determine the ductility or resistance to fracture of that material. Unlike in a flexure test, the goal is not to load the material until failure but rather to deform the sample into a specific shape.



Test Standards:
BS 4449:2005 +A2:2009
ISO15630-1:2010, SLS 375:2009

Testing Capacity:
up to φ 40 mm

Surface Geometry

This test includes measurements such as rib pattern, rib spacing, rib height, rib inclination angle and mass per meter.

Test Standards :BS 4449:2005 +A2:2009
ISO15630-1:2010, SLS 375:2009





Chemical Analysis of Steel

Physical and physiochemical properties of steel are influenced by its chemical composition. Iron and carbon are major constituents in steel. In addition, sulphur, phosphorus, nitrogen and metals such as manganese, chromium, molybdenum, vanadium, copper and nickel are available in steel in trace levels. Therefore, it is important to determine chemical composition of steel to certify the quality of steel.

Test Standards
BS 4449:2005 + A2:2009, ISO15630-1:2010
ASTM E1019 18, ASTM E350 - 18

Test Methods

Element	Method
Carbon	Direct combustion infrared absorption method or combustic gravimetric method
Phosphorus	Molybdenum blue spectrophotometric method or alkalimetr method
Sulphur	Combustion-infrared absorption detection method
Nitrogen	Inert gas fusion and thermal conductivity detection method or distillation spectrophotometric method
Metals	Atomic absorption method

