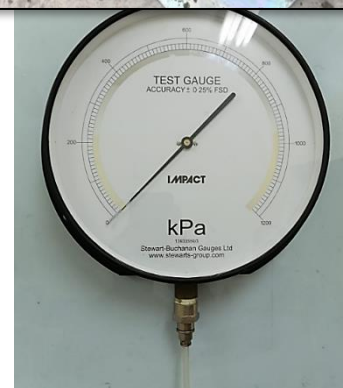




HIGHER TECHNOLOGICAL INSTITUTE
6th OF OCTOBER BRANCH
CIVIL ENGINEERING DEPARTMENT

Laboratory Manual



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1. Introduction:

This manual was written and prepared under the supervision of the Laboratories Committee of the Civil Engineering Department, to assist laboratory users, including teaching staff, lab staff, and students while using the laboratory equipment and tools easily and safely.

- This manual is intended to be for the Civil Engineering Department's laboratories, which are:
 - (1) Materials and Concrete laboratory.
 - (2) Hydraulics laboratory.
 - (3) Surveying laboratory.
 - (4) Soil and Foundations laboratory.

2. Safety:

2.1 Disclaimer:

The safety measures mentioned in this manual are applicable for general activities in the laboratory. Students and lab staffs are asked to follow additional safety measures if it's necessary for any specific experiment.

2.2 Safety manual:

This safety manual is applicable for Material and Concrete Laboratory, Hydraulics laboratory, Surveying laboratory, and Soil and Foundations laboratory. This will help both students and laboratory instructors and staffs to know about the safety features and safe work practices inside the laboratory.

2.3Emergency:

Definition:

Sudden, unexpected, or impending situation that may cause injury, loss of life, damage to the property, and/or interference with the normal activities of a person or group and which, therefore, requires immediate attention and remedial action.

The following situations may be regarded as emergency:

- 1) A sudden, urgent, usually unexpected occurrence or occasion requiring immediate action.
- 2) A state, especially of need for help or relief, created by some unexpected event.

Emergency Contact List

Designation	Name	Contact
Head of the Civil Department	Prof. Dr. Ahmed Azmy	0100 255 11 81
Head of Civil Laboratories	Dr. Mahmoud El-Desouky	010 211 30 997
Member of the Laboratories Committee	Dr. Mohamed Hassan	0100 967 5375
Member of the Laboratories Committee	Dr. Ibrahim Ragab	010 998 222 85
Laboratory staff in charge	Mr. Ahmed Ragab	0100 381 8776

H.T.I Clinic	Physician in Shift	Internal No. 108
H.T.I Security [Staff Gate]	Security in Shift	Internal No. 104
H.T.I Security [Students Gate]	Security in Shift	Internal No. 139

Designation	Name	Contact
Emergency Ambulance Service	Hot Line	123
6 th of October Ambulance Service	Land Line	0238322198
General Hospital in 6th of October	Land Line	0238331736
Police Emergency	Hot Line	122
General Administration of Civil Protection	Hot Line	180
6 th of October Civil Protection	Land Line	0238335928
Electricity emergency	Hot Line	121

➤ **What to do in Case of an Emergency?**

In the event of an emergency,

- Get out of immediate danger!
- Report situation to the instructor
- Explain the nature of the emergency.
- Provide your name and location.
- Provide the phone number from which you are calling.
- Answer all questions and do not hang up the phone until the operator is finished.

If the emergency has cause injury to a person,

- Provided it is safe for you, stay with the victim!
- If the victim is conscious, ask what the problem is.
- If the victim is unconscious, check for breathing and bleeding. Do not move the individual until trained personnel arrive or an immediate threat to life exists. Only trained individuals should administer first aid and CPR.
- Keep the victim still, comfortable, and ventilated.
- Protect the victim from any disturbances.
- Search for any emergency identification (i.e. ID)
- Wait for emergency help to arrive. Never leave the victim alone if possible.
- Once the emergency responders have arrived, stay out of the way of emergency personnel and emergency vehicles.

What to do in case of a fire or smoke?

All situations related to fire should be taken seriously. If you hear or see anything uncertain, evacuate the building.

If fire or smoke is discovered anywhere on or about the campus:

- Leave the area where the fire is located, isolating it as well as possible by closing doors and windows around it.
- Call Civil Protection.
- Do not attempt to retrieve valuables.
- Never attempt to fight a fire larger than wastebasket size. Even a small fire can generate enough smoke to cause serious injury.
- Never attempt to fight a fire by yourself. Call for help.
- Always stay between the fire and the exit.

If you can't evacuate:

- Find a safe location and call emergency.
- Crawl to the door on hands and knees, so you can breathe the fresher air near the floor.
- Seal your room against entering smoke.
- If it's still smoky in your room, breathe through a wet towel that covers your nose and mouth.
- Breathe only through your nose.
- Clear flammable debris from the window.

3. General Conduct:

3.1 Behavior in the Laboratories:

- Act in a professional manner at all times.
- Visitors must be escorted.
- Students must be aware of the location and proper operation of laboratory safety equipment, i.e. fire extinguishers, flammable cabinets and fume hoods, eye-wash stations, and personal protective equipment.

3.2 Personal Habits:

- Be alert to unsafe conditions. It is the responsibility of each individual to assure a safe working environment for themselves and other workers in the laboratories.
- No eating, drinking, gum chewing or cosmetic application in the labs.

- Closed toed shoes must be worn at all times in active laboratory areas. No sandals!
- Long hair and loose clothing shall be confined. Appropriate clothing must be worn at all times. No shorts, skirts, or sleeveless shirts where chemicals or machines are present.
- Proper Personal Protective Equipment (PPE) must be worn.
- Users of the Lab must be familiar with the hazards of the materials with which they are working.
- Hands should be washed before using the restrooms and before eating. Areas of exposed skin, i.e. forearms, should be washed frequently if there is potential of contact with chemicals or Cementitious materials.
- Do not conduct any unauthorized experiments.
- Personnel must have pre-approval by his/her direct supervisor in order to perform work alone.
- Work should not be conducted if the researcher is feeling tired or otherwise impaired.

4. Laboratories:

Civil engineering Labs consists of two buildings:

- (a) Main Building [Ground Floor].
- (b) Front Yard Extension [Besides Main Gate]

4.1 Materials and Concrete Lab.:

- All Construction Materials tests in addition to hardened concrete tests exist in the main building Lab.
- All concrete tests: Casting, Curing, fresh concrete tests, Materials Storage exist in the front yard Lab.



Sample Divider



Core Test



Electric Chainsaw



Electric oven



Compressive Machine



Vicat Apparatus



Blaine Apparatus



Kelly's Ball



Los Angeles Apparatus



VB Test



Water Bath



Flask



Concrete Mixer (1)



Concrete Mixer (2)



Metal Bowl for Mixing



Accessory for Flexure Test (concrete beams)



Accessory for Splitting tensile Test
(Cylinders)



Steel Beam Mold



Steel Cubes Mold



Steel Cylinders Mold



Compacting Factor Test



Sieve Analysis Test



Water Curing Basin (1)



Water Curing Basin (2)



Mortar Vibrator



Slump Test



Schmedit Hammer



Steel Detector



Ultra Sonic Test



Chloride Detector



Sulfate Detector



PPM Detector



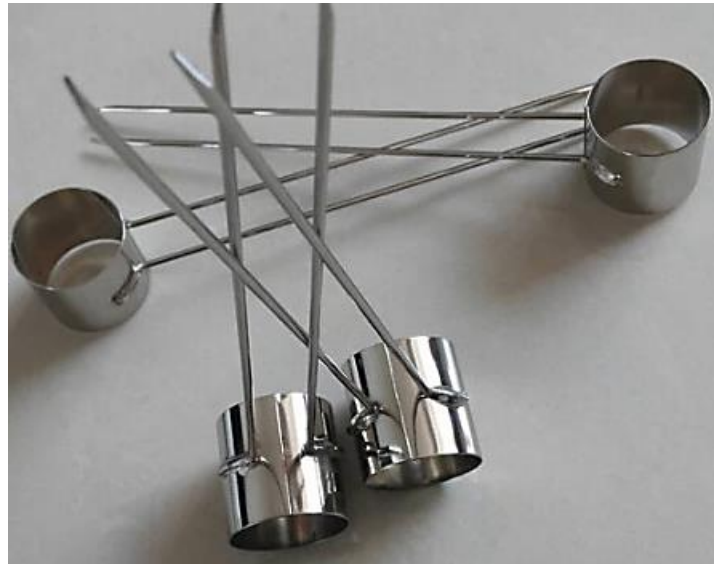
Volumetric Weight Vessel



Cement Molds



Concrete Compacting Rods



le chatelier

4.2 Surveying Lab.:



Tapes



Levels



Theodolite



Total Station



Planimeter



Compass



Steel Arrows & Rods



Ranging Rods



Tripods



Surveying Staff



Total Station Prism

4.3 Hydraulics Lab.:



Impact of Jet



Jet Trajectory and Flow
through Submerged Vertical
Orifice Nozzle



Trajectory from a Horizontal Orifice Nozzle



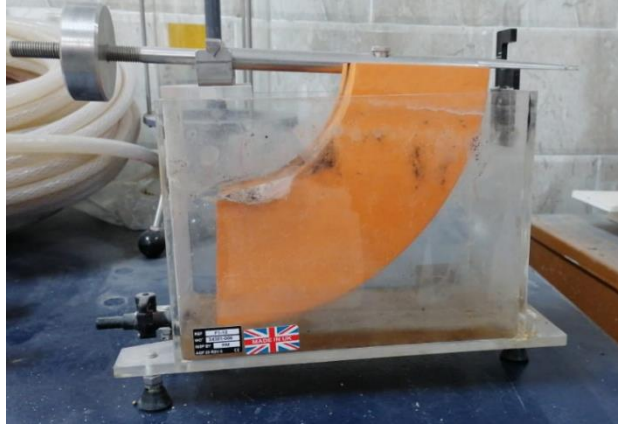
Set of Weirs Apparatus



Venturi Meter Apparatus



Volumetric Hydraulic Bench



Archimidis

4.4 Soil and Foundations Lab.:



C.B.R. Test



Shear Test



Sand Cone Apparatus



Soil Mixer



Load Frame
[Tri Axial]



Tri Axial



Automatic Volume Change



Consolidation Apparatus



Unconfined