



Event Report on

Geotechnical and Foundation Engineering Practices

3- Day Skill Development Workshop/Hands-on Sessions on Geotechnical and Foundation Engineering Practices, organized by Civil Engineering Department, School of Technology (SOT), PDEU, Gandhinagar, Gujarat.
(19th December 2022 to 21st December 2022)

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Introduction of the Event

Soil Investigation or geotechnical investigation is a procedure that determines the stratigraphy (study of rocks) and relevant physical properties of the soil underlying the site. This is done to ensure that this substructure, which is eventually going to hold up structures, is safe and enduring. For any civil engineering project, however big or small, it is of primary importance that a proper field survey and a very precise geotechnical investigation be conducted. Geotechnical investigation is an integral part of the construction process which is done to obtain information about the physical characteristics of soil/rock around a site. It is a below-ground investigation wherein the soil strata are sampled and tested to establish its characteristics, which will influence the construction project. These investigations form the basis for planning, designing, and constructing the structures. The serviceability and performance of the structure depend on the accuracy and adequacy of these investigations. How accurate the information in the geotechnical report is strongly influences the design, construction, project cost, and safety. Unfortunately, many people underestimate the importance of proper geotechnical investigation during the conceptual phase of a project. One of the greatest causes of foundation failure is insufficient knowledge of ground conditions. There have been some instances where attempting to save on such site investigations have led to disastrous results. Because structures that are designed on assumed or inadequate data can lead to long term complications. It may also result in loss of life and property, endanger residents, damage adjoining structures, and essentially be rendered non-functional for intended purpose. Soil investigations provide the engineer with knowledge of the subsurface conditions at the site of an engineering project. It allows the engineer to work out safe and economical design of a project and inform the construction engineer about the material and conditions he will encounter in the field.

Thus, hands on practices through 3- Days Skill Development Workshop/Hands-on Sessions on Geotechnical and Foundation Engineering Practices is being conducted by Civil Engineering Department, School of Technology (SOT), PDEU, Gandhinagar for the final year students.



Objectives of the Event

- 1) To spread awareness about QA and QC in construction industry.
- 2) To give hands on testing practice at the lab.
- 3) To classify different types of Soils.
- 4) To understand necessity of Compaction of Soil.
- 5) To understand the concept of Shear Strength of Soil.
- 6) To have an idea of Settlement of Soils.
- 7) To understand the importance of Geotechnical Field Investigations.
- 8) To understand the Estimation of Bearing Capacity of different Soils.

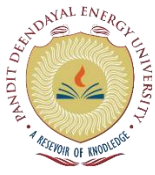
Beneficiaries of the Event

The main beneficiaries of the workshop were undergraduate and post graduate students, and research scholars of PDEU.

Brief Description of the Event

On 23rd December 2022, 3- Days Skill Development Workshop/Hands-on Sessions on Geotechnical and Foundation Engineering Practices is being conducted by Civil Engineering Department, [School of Technology \(SOT\)](#), [Pandit Deendayal Energy University \(PDEU\)](#), Gandhinagar, Gujarat for the final year students. Understanding the role QA & QC in construction works is a must.

The inauguration of workshop was commenced sharp at 09:30am. The first module was started at sharp 10:00am which was on Classification of Soils. This session covers classification of different types of cohesionless and cohesive soils. Tests are needed for classifications such as Liquid Limit, Plastic Limit, and Grain Size Distribution Test.



Hands-on for Lab Sessions and Classification Exercises. In the end, a quiz related to the session and Feedback on the session.

After lunchbreak the Module 2 was started which was on Compaction of Soil. This session covered the necessity of compaction, and related tests to find maximum dry density and optimum moisture content. Field equipment, Field Application of Test results. The procedure of quality control in the field and related tests such as core cutter and sand replacement test. Hands-on Lab Sessions. In the end, a quiz related to the session and Feedback on the session.

On Second day Module 3 was started sharp at 10:00am which was on Shear Strength of Soil. This session covers the concept of shear strength. Total and effective strength concept. Different types of tests to estimate shear strength parameters such as direct shear Test, Triaxial, Test, Unconfined Compression Test and Vane Shear Test, its suitability for types of test and test conditions. Hands-on Lab Sessions. In the end, a quiz related to the session and Feedback on the session.

After lunchbreak the Module 4 was started which was on Settlement of Soil. This session covers the concept of compression and consolidations. Fundamentals. Explanation of Consolidation Test. Demonstration for Sample Preparation and Sample Reading. Assessment of Different Parameters using past recorded readings. Field Applications. Quiz and Feedback was conducted at the end of the session.

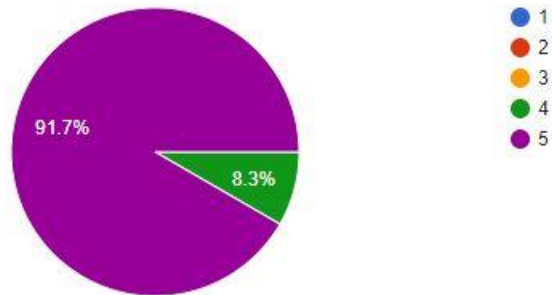
On Third Day Module 5 was started which was on Geotechnical Field Investigations. Why to Investigate, Stages of Field Investigations. Decision Making regarding the extent of Investigations & suitability of methods. Soil sampling. Video Demonstration of field tests such as SPT, CPT, Plate Load, Pile Load Tests. Geophysical Tests. Demonstration of Soil Reports. Quiz and Feedback at the end of the session.

Summary of Feedback

1. Feedback for Settlement of Soil

How helpful was the workshop?

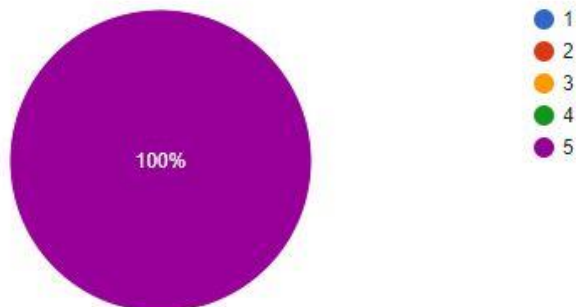
12 responses



2. Feedback for Soil Bearing Capacity

How helpful was the workshop?

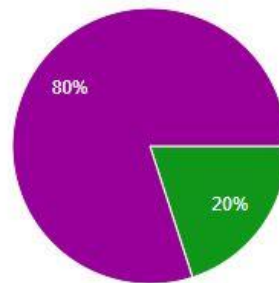
9 responses



3. Feedback for Shear Strength of Soil

How helpful was the workshop?

15 responses



4. Feedback for Field Investigation of Soil

How helpful was the workshop?

18 responses

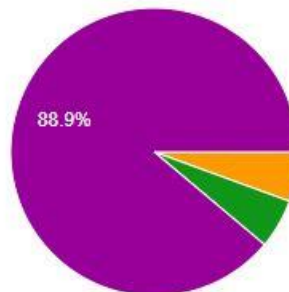




Fig: Lecture delivering at Geotechnical Engineering Lab



Fig: Explanation of Plate Load Test by Dr. Manas Bhoi sir



Fig: Explanation of Liquid Limit test by Yatin Patel sir



Fig: Explanation of Proctor Compaction Test



Fig: Geotechnical Workshop group photo