

**A
Report
on

An

Industrial Field Visit

By

B. Tech Third Year and Fourth Year Students

of

Civil Engineering Department at Umiam Dam
Repair site, Shillong Meghalaya**



**Date of Visit
26.04.204, 29.04.2024 and 30.04.2024**

Introduction

On 26th April 2024, 29th April 2024 and 30th April 2024, the third and fourth-year B.Tech Civil Engineering students of NIT Meghalaya undertook an industrial visit to the Umiam Dam repair site. The purpose of the visit was to provide practical insights into dam repair techniques, specifically grouting methods, quality inspection processes including permeability tests, and the operational aspects of infiltration galleries. This report provides a comprehensive overview of the visit, highlighting the key learnings and observations made by the students.

The main objectives of the industrial visit were:

1. To understand the practical application of dam repair techniques, particularly grouting.
2. To learn about quality inspection processes, especially the permeability test.
3. To observe and comprehend the functioning and significance of infiltration galleries in dam maintenance.

Overview of Umiam Dam

Umiam Dam, also known as Barapani Dam, is a gravity dam located in the state of Meghalaya. It is primarily used for hydroelectric power generation and is a crucial infrastructure component for the region. The dam has been undergoing repair to address issues related to seepage and structural integrity.

Key Learnings and Observations

1. Dam Repair by Grouting Technique:

Grouting is a process used to fill gaps and voids in concrete structures to enhance their strength and reduce permeability. The students observed the following during the grouting process:

(a) **Materials Used:** Different types of grout materials were introduced, including cementitious and chemical grouts.

(b) **Injection Process:** The method of injecting grout under pressure into the dam's foundation and body to fill voids and cracks.

(c) **Equipment and Safety Measures:** The various tools and machinery used in the grouting process, such as grout pumps, mixers, and injection rods. The importance of adhering to safety protocols to prevent accidents during the grouting operation.

2. Quality Inspection by insitu Pressurized Permeability Test

Permeability tests are crucial in assessing the water tightness of repaired sections of the dam. The students learned about: Steps involved in conducting permeability tests, including preparing test sections, measuring water flow, and recording data Understanding the significance of test results in evaluating the effectiveness of the repair work. The tools and instruments used for measuring permeability, such as permeameters and pressure gauges.

3. Infiltration Galleries

Visit to infiltration galleries and understand the inspection techniques. Infiltration galleries are horizontal or gently inclined tunnels constructed at the foundation of dams to collect and drain seepage water.

During the visit, the students observed:

(a) Design and Construction: The structural design of infiltration galleries and their placement within the dam structure.

(b) Functionality: How infiltration galleries help in reducing water pressure on the dam foundation by draining seepage water.

(c) Maintenance: Regular inspection and maintenance procedures to ensure the effective functioning of infiltration galleries.

Conclusion

The industrial visit to the Umiam Dam repair site was an invaluable experience for the third and fourth-year B.Tech Civil Engineering students of NIT Meghalaya. It provided them with a practical understanding of critical dam repair techniques, quality inspection processes, and the role of infiltration galleries in dam maintenance. The knowledge gained during this visit will undoubtedly enhance their academic learning and prepare them for future professional challenges in the field of civil engineering.

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