

**Date: 17/04/2018**

## **Workshop Report**

As a part of World Earth day celebration, one day workshop was conducted by Department of Civil Engineering on the topic “**Role of Geology in Civil Engineering Projects**” through **Prakruthi club** on 16/04/2018 at Chanakya Seminar hall.

The prime objective of this workshop was to enlighten civil engineering students about the role of Geology in safe, stable and cost effective Civil Engineering projects. With this focus, three invited lectures were organized, viz., 1. Case studies of Tehri Dam project, 2. Slope stability study in Goa and 3. Case study of the Bengaluru Metro project. About 150 students were actively participated in the workshop.

At the inauguration, Dr. Niranjana P.S, HOD-Civil briefed on the purpose of the workshop and welcomed the guests. He said, Geological investigations were prime important during the initial stage of any civil engineering projects to reduce the cost and risks.

**Mr. Rajendran**, Director (Retd), Geological Survey of India, gave an overview about the theme of the workshop. In his talk he highlighted some case studies related to failures of some civil engineering structures and their treatment like Kailash Dam, Gujarat and St. Francis Dam in Los Angeles - The failure wasn't the design of the dam or its construction, but rather a limited understanding of the Geological foundation of the dam.

The first guest lecture was on the topic “Case studies of Tehri Dam project” by **Mr. Maruthi**, Director, Geological Survey of India, Bangalore. He highlighted the history, construction, technical details and geological considerations of Tehri dam. In continuation of his talk he explained the important lithologies (shale, Phyllite), structures (faults/folds/fractures/shear zones), possible seismic risk and occurrence of landslides in Tehri dam area.

The second guest lecture was on the topic “Slope stability study in Goa” by **Dr. K.V. Krishnamurthy**, Dy. Director General (Retd) Geological Survey of India. He highlighted slope stability analysis (calculation factor of safety) and measurements. He also explained how to improve Stability of slopes by following measures; 1. Flattening of slope results in reduce in weight which make that stable 2. Soil stabilization, 3. Providing lateral supports by piles or retaining walls 4. Grouting or cement injections into special places, 5. Consolidation by surcharging or electro osmosis increases the stability of slope.

The third guest lecture was on the topic “Case study of the Bengaluru Metro project” by **Dr. Fareeduddin**, Director (Retired), Geological Survey of India. He highlighted the history of Bangalore Metro, Tunnel Boring Machine and its uses in tunneling. In continuation of his talk he discussed about Gripper TBM with cutter head is using in rocky strata and also informed about working principles of two types of Machines in closed shield method, one is Earth pressure balancing machine and the other is slurry machine. He said several reasons for slow progress of tunneling work due to mixed geology (comprising of hard granite and large boulders), weak

foundation of historic buildings and dense population. At last he focused on various construction challenges and financial losses during tunneling for Bangalore Metro project due to complex geological conditions and high water table.

Later group discussion and interaction with students on fundamentals of Geology and applications of Geology in the field of civil engineering was conducted by **Dr. H.M.Ramachandra**, Director (Retd), Geological Survey of India.

Concluding remarks was done by **Mr.Rajendran**, Director (Retd), Geological Survey of India.

Prof. Ranganathan B.A, Department of Civil Engineering, NHCE proposed vote of thanks.

