



**CSIR – Central Building Research Institute**  
**Roorkee – 247667 (UK)**



**Five Days Skill Training Programme**  
**on**  
**Multi-Hazard Resistant Construction Practices for Engineers of**  
**Arunachal Pradesh**

August 05-09, 2019 at CSIR-CBRI, Roorkee

**About the Course**

CSIR-CBRI is one of the leading institutions in the country which has developed innovative technologies for architectural and structural design of multi-hazard resistant construction for different houses and habitat. These technologies have been demonstrated in field, and hands-on training has been provided of grass root level functionaries in different parts of the country. It is essential to mass implement multi hazard resistant technologies developed by different institutions. This demands development of skills and capacity building among the administrative and technical functionaries at the state/district level for its systematic implementation. To achieve this, professionals needs to be trained in the application of innovative technologies for disaster risk mitigation.

Most casualties in the event of disasters are caused by the collapse of buildings, both engineered and non-engineered, and structural mitigation measures are the key to make a significant impact towards earthquake safety in our country. Additionally, there are significant revisions in most of the Indian standards in the last decade due to enhancement in knowledge. This calls for update of relevant provisions and measures. For successful disaster mitigation, it has to be ensured that all new constructions in the seismic zone are compliant with the BIS Codes and for this purpose a techno-legal regime has to be put in place. In-so-far as the existing stock of building is concerned; and retrofit the lifeline buildings in first instance. As a step towards disaster risk reduction, one of the initiatives taken-up by the PWD Govt. Arunachal Pradesh, for training of engineers is timely and a prominent step in the right direction.

**Aim**

Recognizing the needs of Arunachal Pradesh, it is being proposed to develop a pool of trained professionals in the construction of multi hazard resistant buildings, CSIR-Central building research institute is conducting five days training course on “Multi-Hazard Resistant Construction Practices” for engineers under CSIR Integrated Skill Initiatives during August 05-09, 2019 at its premises. This training course is particularly aims to deal with the best practices in planning, design, construction and maintenance of multi-hazard resistant housing including utilization of Bamboo as Building Material, thus matching state-of-the art with practice and knowledge.

## **Objectives:**

The main objectives of the course are as follows:

- Natural hazard risks in Arunachal Pradesh
- Experience of Past Earthquakes – A Technical Evaluation
- Planning, Design/ Bye laws & Construction of buildings
- Construction materials and Testing
- General Principles of Seismic resistant design
- Review of Codal Provisions for Earthquake Resistant Design, Construction & Detailing
- Seismic Provisions for Earthquake Resistant Design & Construction of Masonry Buildings
- Floods/Flash Floods Risk Mitigation & Management
- Design & Construction of Concrete Pavements
- Wind & Cyclone Resistant Construction Practices
- Landslides/ Floods: Risk, mitigation, control measures
- Fire: Risk, mitigation, control measures and evacuation strategies
- Traditional buildings in Arunachal Pradesh: Practices & Interventions
- Earthquake Effects on Foundation- Soil System
- Retrofitting, Repair & Strengthening: Concept & Techniques
- Quality Assurance & Control
- Utilisation of Bamboo as Building Material
- Site Visits & Brain-storming session
- Technical demonstrations of CBRI developed technologies

## **Outcome:**

The course will enhance academic and technical expertise of the participants in the area of Earthquake, Landslide, Flood, Wind & Cyclone, Fire along with other disaster mitigation and aspects on retrofitting of buildings and quality assurance & control, with a goal of 'sustainable disaster risk reduction' in Arunachal Pradesh. As a result, participants will be fully adapt in all aspects of multi disaster resistant construction and maintenance. Lecture notes and other resource material shall be provided to the participants during the course.

## **Target Group:**

The target participants consist of about 50 engineers of Public Works Department, Govt. of Arunachal Pradesh.

## **Evaluation**

The final session will be devoted to evaluation and validation. The participants will be supplied with an evaluation proforma, which they will complete and hand over to the course staff.

## **Certificate**

A Certificate will be awarded to each participant on successful completion of the training course.