



**Outreach & Dissemination Services Office
CSIR – Central Building Research Institute**

Roorkee – 247667 (UK)

Training Program on

**‘Earthquake Retrofitting Techniques and DPR
Preparation’**

20th-24th April, 2026

Organized under the aegis of CSIR Integrated Skill Initiative

The CSIR–Central Building Research Institute (CSIR-CBRI), Roorkee, in collaboration with the Himachal Pradesh State Disaster Management Authority (HPSDMA), has conducted a five-day advanced Skill Development Training Programme on “Earthquake Retrofitting and Disaster Preparedness Report (DPR) Preparation” from 20-24 April 2026 under the CSIR Skill Development Initiative, the training was coordinated by **Er. Ashish Pippal**, Principal Scientist, CSIR-CBRI. The programme aims to strengthen professional capacity for the development of earthquake-safe and disaster-resilient infrastructure. A total of **31 participants from different districts of Himachal Pradesh** took part in the programme. The participants include engineers and technical professionals engaged in planning, design, on site retrofitting and implementation of infrastructure projects in seismically vulnerable regions.



कौशल विकास कार्यक्रम

“भूकंप रेट्रोफिटिंग तकनीकियाँ एवं विस्तृत परियोजना रिपोर्ट (DPR) की तैयारी”

Skill Development Programme on

“Earthquake Retrofitting Techniques and DPR Preparation”

Sponsored by: Himachal Pradesh State Disaster Management Authority (HPSDMA)

April 20-24, 2026

Organized under the aegis of CSIR Integrated Skill Initiative



**सीएसआईआर – केन्द्रीय भवन अनुसंधान संस्थान, रुड़की
CSIR – Central Building Research Institute, Roorkee
Ministry of Science & Technology, Govt. of India**



With the continues success of its previous programmes, CSIR–Central Building Research Institute (CSIR-CBRI), Roorkee has, for the third time, organized a special on-site practical demonstration of live house retrofitting under the expert guidance of its scientists. This ongoing initiative highlights the Institute’s leadership in disaster mitigation research and reflects its strong commitment to converting advanced scientific knowledge into practical, field-level applications.



The inaugural session was attended by distinguished scientists and experts including **Dr. D. P. Kanungo**, Chief Scientist; **Dr. Ajay Chaurasia**, Chief Scientist; and **Dr. Tabish Alam**, Senior Scientist and **Er. Ashish Pippal**, Principal Scientist and Training Coordinator. Welcoming the participants, Er. Ashish Pippal highlighted CSIR-CBRI’s core mandate, state-of-the-art research facilities, and its significant contributions towards promoting disaster-resilient construction practices, along with a brief overview of the successful live retrofitting demonstrations carried out in the earlier programmes. **Dr. D. P. Kanungo**, Chief Scientist delivered an engaging session on earthquake science, elaborating on seismic hazards, risk assessment, and effective mitigation strategies, while also emphasizing the importance of community awareness and preparedness. **Dr. Ajay Chaurasia**, Chief Scientist further enriched the session by discussing practical aspects of construction quality, field challenges, and the need for adopting improved techniques to enhance structural safety and performance. **Prof. R. Pradeep Kumar**, Director, CSIR-CBRI, also conveyed his best wishes to the participants for the success of the programme and encouraged them to actively implement and disseminate the learnings at the grassroots level, especially in earthquake-prone regions such as Himachal Pradesh. The session concluded with a formal vote of thanks delivered by **Dr. Tabish Alam**, Senior Scientist who encouraged participants to actively engage in two-way interactions, share their field experiences, and make the programme more participatory and impactful through open discussions and knowledge exchange.



On Day One of the training programme, technical lectures were delivered by **Dr. Ajay Chaurasia**, Chief Scientist, CSIR-CBRI, on the **Design of earthquake-resistant buildings for hills**. He discussed the unique challenges associated with hill terrains, including slope instability, weak soil strata, and the amplification of seismic forces. He emphasized the importance of proper site selection, suitable foundation systems, and effective slope stabilization techniques. The lecture also highlighted the need for simple and regular building configurations, the use of lightweight materials, and the incorporation of adequate lateral load-resisting mechanisms. Dr. Chaurasia

further pointed out common construction deficiencies and stressed strict adherence to relevant Indian Standards to ensure safety and resilience in earthquake-prone areas.

The second lecture of the day focused on **Construction Quality and Improvements**. The session underscored the critical role of quality control in enhancing the durability and performance of structures. Key aspects such as proper material selection, workmanship, supervision, and on-site practices were discussed in detail. Emphasis was placed on identifying frequent construction issues and adopting corrective measures, along with integrating quality assurance mechanisms and continuous improvement practices to achieve safe, reliable, and long-lasting construction.



Lab Visit



Day 2

The first lecture on second day was conducted by **Er. Sugam Prajapati, Technical Officer**, focusing on the **preparation and understanding of technical drawings**. He explained the basic principles involved in interpreting architectural and structural drawings, including plans, elevations, sections, and detailed elements. The session highlighted the use of standard symbols, scales, dimensions, and notations that are widely used in construction drawings. He also stressed the significance of precision and effective coordination among various drawings to facilitate smooth and efficient execution at the site.



The second lectures were delivered by **Er. Ashish Kapoor, Senior Scientist**, on the use of **non-destructive testing methods in structural assessment**. The first session focused on techniques such as the rebound hammer, ultrasonic pulse velocity, and correlation methods, which are used to evaluate the strength and integrity of existing structures without causing any damage. Emphasis was placed on the importance of detailed condition assessment to identify cracks, deterioration, and structural deficiencies, thereby ensuring safety and serviceability.



Rural Park and Lab visit



Retrofitting site Visit



Day 3:

The first lecture was delivered by **Er. M. M. Dalbehera, Principal Scientist, on construction technologies for hilly regions**. He discussed the challenges posed by steep gradients, complex terrain, and high seismic vulnerability in such areas. He elaborated on suitable foundation solutions, effective slope stabilization measures, and the use of lightweight, locally available materials. The lecture emphasized the adoption of safe construction practices, the provision of proper drainage systems, and the importance of maintaining structurally efficient building configurations. The session provided valuable practical insights for developing resilient and sustainable infrastructure in hilly regions.



The second lecture was delivered by **Er. Ashish Kapoor, Senior Scientist, on the design of retrofitting measures**, focusing on strengthening strategies for structurally deficient and earthquake-vulnerable buildings. It covered techniques such as jacketing, the incorporation of shear walls, bracing systems, and foundation strengthening. The session emphasized the importance of proper assessment, detailed structural analysis, and adherence to relevant codes to ensure effective and durable retrofitting solutions.



Lab visit



Retrofitting site Visit

During the retrofitting site visit, participants were guided by Er. Rajnish Kumar, Technical Assistant, who provided a practical demonstration of various retrofitting techniques. The participants gained valuable hands-on experience, observed real-time implementation processes, and understood the technical challenges encountered at the field level. This exposure significantly enhanced their practical understanding of retrofitting methods and on-site problem-solving.



Day 4:

Er. I.A. Siddiqui, Sr. Technical Officer, delivered an informative lecture on **construction cost management and recent trends in DPR preparation**. He highlighted the importance of accurate cost estimation, efficient budgeting, rate analysis, and financial control to ensure transparency and effectiveness in project execution. The session also covered modern approaches to Detailed Project Report (DPR) preparation, including data-driven planning, risk assessment, sustainability considerations, and compliance with updated standards and guidelines.



Dr. Anindya Pain, Sr. Principal Scientist, delivered a lecture on the **design of foundations for hilly regions**. He discussed the challenges associated with sloping terrain, variable soil conditions, and seismic considerations that influence foundation design in such areas. The lecture covered suitable foundation types, slope stability considerations, and the importance of proper site investigation and soil analysis. Emphasis was placed on adopting safe and efficient design practices to ensure stability, durability, and resilience of structures in hill regions.



As a component of the evaluation process, participants were assigned a task to gauge their practical comprehension of the training programme. The assignment involved creating a hand-drawn sketch of a building with proper dimensions, accompanied by stress mapping to identify critical structural areas. Participants were further required to examine and point out existing defects or limitations within the structure and recommend appropriate corrective measures and enhancements. Additionally, an assessment test based on MCQ related to the topic was conducted. This exercise was intended to assess their capability to translate theoretical concepts into practical, real-life applications.



Demonstration Park



Day 5

Dr. Shorab Jain, Sr. Principal Scientist, delivered a lecture on **fire safety measures**. He discussed essential strategies for fire prevention, detection, and control in buildings, highlighting the importance of proper planning, the use of fire-resistant materials, and the installation of effective fire protection systems. The session emphasized compliance with relevant codes and standards, along with the need for regular maintenance and safety audits to ensure preparedness and minimize fire-related risks.



Er. Sonu & Er. Suraj Kumar, Technical Assistant, conducted a session on the **demonstration and hands-on experience of NDT instruments**. He provided practical exposure to commonly used non-destructive testing tools, explaining their operation, applications, and interpretation of results. The session enabled participants to gain firsthand experience in assessing material properties and structural integrity, enhancing their understanding of field-based testing techniques.



Valediction

The **Valedictory Ceremony** marked the successful conclusion of the five-day Training Programme for engineers and professionals from Himachal Pradesh. The session began with opening remarks by **Dr. Neeraj Jain, Sr. Principal Scientist & Head ODS** and was graced by **Director Prof. R. Pradeep Kumar, CSIR-CBRI** congratulated the participants for completion their active involvement throughout the programme.

The training effectively bridged the gap between research and field application, with hands-on retrofitting serving as a key highlight. Participants shared positive feedback and were awarded certificates in recognition of their participation. The programme concluded with a Vote of Thanks by Dr. Neeraj Jain, expressing gratitude to all contributors.





Schedule



Training Programme
for
“Earthquake Retrofitting Techniques and DPR Preparation”
Sponsored by:
Himachal Pradesh State Disaster Management Authority (HPSDMA)
April 20-24, 2026
Training Schedule



Hours	20.04.2026	21.04.2026	22.04.2026	23.04.2026	24.04.2026
9:30 AM	Registration & Inauguration – Director, CBRI	Recapitulation of 1 st Day	Recapitulation of 2 nd Day	Recapitulation of 3 rd Day	Recapitulation of 4 th Day
10:00-11:00		Preparation & Understanding of Technical Drawings <i>Er. Sugam Prajapati</i>	Construction technologies for hilly region <i>Er. M.M. Dalbehera</i>	Construction cost management & recent trends in DPR Preparation <i>Er. L.A. Siddiqui</i>	Fire Safety Measures <i>Dr. Shorab Jain</i>
11:00	Tea Break				
11:15-12:15	Design of Earthquake-Resistant Buildings for Hills <i>Dr. Ajay Chourasia</i>	Use of Non-Destructive Testing Methods in Structural Assessment <i>Er. Ashish Kapoor</i>	Design of Retrofitting Measures <i>Er. Ashish Kapoor</i>	Construction cost management & recent trends in DPR Preparation <i>Er. L.A. Siddiqui</i>	Demonstrations and Hands on Experience of NDT Instruments <i>Er. Sonu Kumar</i>
12:15-13:15				Design of Foundations for Hills <i>Dr. Anindya Pain</i>	Feedback, Discussion & Valediction
13:15-14:15	Lunch Break				
14:15-15:15	Construction Quality & Improvements <i>Dr. Ajay Chourasia</i>	Visit of Rural Technology Park <i>Ar. Rashi</i>	Visit to Laboratories <i>Er. Anuj</i>	Assessment Test	*****
15:15	Tea Break				
15:45-17:30	Visit to Laboratories <i>Er. Rajat</i>	Visit to Retrofitting site <i>Er. Rajnish</i>	Visit to Retrofitting site <i>Er. Rajnish</i>	Visit to Retrofitting site <i>Er. Rajnish</i>	*****

List of Participates

Sr. No	Name in English	Name in Hindi	Desig./Dept./Distt.
1.	Smt. Nisha Kumari	श्रीमती निशा कुमारी	J.E,RDD/Kinnaur
2.	Sh. Suraj Mani	श्री सूरज मणि	T.A, RDD/ Kinnaur
3.	Sh. Anil Kumar Negi	श्री अनिल कुमार नेगी	J.E, RDD/ Kinnaur
4.	Sh. Akshay Jaryal	श्री अक्षय जरयाल	J.E,HPWD/Chamba
5.	Sh. Pankaj Mahajan	श्री पंकज महाजन	J.E,JSV/Tissa
6.	Sh. Anil Chauhan	श्री अनिल चौहान	J.E,UDD/Sirmour
7.	Sh. Mohan Lal	श्री मोहन लाल	J.E,UDD/Sirmour
8.	Sh. Joginder Sharma	श्री जोगिंदर शर्मा	J.E, RDD/Una
9.	Sh. Amandeep	श्री अमनदीप	A.E,RDD/Una
10.	Sh. Lakhvinder Singh	श्री लखविंदर सिंह	J.E,HPPWD/Una
11.	Sh. Kanwar Abhishek	श्री कंवर अभिषेक	J.E,HPPWD/Mandi
12.	Sh. Sanjeev Kumar	श्री संजीव कुमार	A.E,HPPWD/Hamirpur
13.	Sh. Surjeet Singh	श्री सुरजीत सिंह	J.E,HPPWD/Una
14.	Sh. Manjit Singh	श्री मंजीत सिंह	J.E,HPPWD/Hamirpur
15.	Sh. Ankit Kumar	श्री अंकित कुमार	J.E,HPPWD/ Hamirpur
16.	Sh. Kashish	श्री कशिश	J.E,HPPWD/ Hamirpur
17.	Sh. Neeshu Ram	श्री नीशू राम	J.E,HPPWD/ Kullu
18.	Sh. Durga Chand	श्री दुर्गा चंद	J.E, RDD/ Mandi
19.	Sh. Nishant Thakur	श्री निशांत ठाकुर	J.E,RDD/Mandi
20.	Sh. Roop Singh	श्री रूप सिंह	T.A,RDD/Mandi
21.	Sh. Girdharilal	श्री गिरधारीलाल	J.E,HPPWD/Kullu
22.	Sh. Akshay Prampha	श्री अक्षय प्रम्फा	S.D.O,HPPWD/Lahaul&Spiti

23.	Sh. Lobzang Angchuk	श्री लोबज़ेंग अंगचुक	T.A,RDD/Lahaul&Spiti
24.	Sh. Kalzang Phunchog	श्री कलजंग फुनचोग	T.A,RDD/Lahaul&Spiti
25.	Sh. Sanjeev	श्री संजीव	J.E,RDD/ Lahaul&Spiti
26.	Sh. Harish	श्री हरीश	T.A,RDD/ Lahaul&Spiti
27.	Sh. Vijay Kumar	श्री विजय कुमार	T.A,RDD/ Lahaul&Spiti
28.	Sh. Vikas	श्री विकास	T.A, RDD/ Lahaul&Spiti
29.	Sh. Shubham Choudhary	श्री शुभम चौधरी	J.E,HPPWD/Kangra
30.	Er. Diwanshu Mahajan	इंजी. दीवांशु महाजन	J.E,JSV/Manali
31.	Sh. Narender Kumar	श्री नरेंद्र कुमार	J.E, /

Training Course on

Sponsored by: Himachal Pradesh State Disaster Management Authority (HPSDMA)

April 20-24, 2026

Organized under the aegis of CSIR Integrated Skill Initiative

S. No.	Name of Participants & Designation, Depart. Distt.	Signature									
		20-Apr (FN)	20-Apr (AN)	21-Apr (FN)	21-Apr (AN)	22-Apr (FN)	22-Apr (AN)	23-Apr (FN)	23-Apr (AN)	24-Apr (FN)	24-Apr (AN)
1.	Smt. Nisha Kumari J.E,RDD										
2.	Sh. Suraj Mani TA,RDD										
3.	Sh. Anil Kumar Negi J.E,RDD										
4.	Sh. Akshay Jaryal J.E,HPPWD										
5.	Sh. Pankaj Mahajan A.E,JSV										
6.	Sh. Anil Chauhan J.E,UDD										
7.	Sh. Mohan Lal J.E,UDD										
8.	Sh. Joginder Sharma J.E, RDD										

