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Newsletter

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Prof. Sriman Kumar Bhattacharyya takes over as Director, CBRI

Prof. Sriman Kumar Bhattacharyya has taken over as Director, Central Building Research Institute (CBRI), Roorkee, w.e.f. 5 August 2009. His current research areas include: Fluid-Structure Interactions, FRP – Concrete Composite Structures, Structural Health Monitoring; Analysis of Fibre-composite Structures and Structural Restoration.

During May-July 2007, as Guest Professor at the Technical University of Braunschweig, Germany, Prof Bhattacharyya offered a course on 'Finite Element Technique' to Masters students and interacted with research groups in the area of fluid – structure interactions. From December 2000 to February 2001, as Visiting Professor at the same university, he offered a course on Fluid-structure Interaction to research students.

He worked as Professor of Structural Engineering in the Civil Engineering Department at the University of Durban – Westville, South Africa. He has been Lecturer, Assistant Professor, Associate Professor and Professor in the Structural Engineering Section of the Civil Engineering Department at Indian Institute of Technology (I I T), Kharagpur, from February 1987 to August 2009.

Prof. Bhattacharyya worked as Assistant Design Engineer/Senior Astt. Design Engineer with M/s Tata

In this Issue

Consulting Engineers, Bangalore, in the field of Design & Engineering of Thermal Power Plant Structures, and Industrial Structures.

Prof. Bhattacharyya has been the recipient of several honours & awards, some of which include: Fellow of Indian National Academy of Engineering (FNAE) in 2004; 'K.F. Antia Memorial' Gold Medal for the best publication in the Journal of the Institution of Engineers in December 2004; 'Telkom Best Lecturer Award' for the best teacher in Civil Engineering at the University of Durban – Westville, South Africa, in 1999-2000; Merit Award for work performance in Tata Consulting Engineers in the year 1984; University Gold Medal for securing first position in B.E. Examination in Civil Engineering (Calcutta University) in 1979; National scholarship during 1974-1979 based on Secondary examination.

Prof. Bhattacharyya has been Fellow, Indian National Academy of Engineering (INAE); Life Member of the Institution of Engineers (India); Life Member of Indian Association of Structural Engineering; Life Member of Indian Association of Computational Mechanics; Life Member of the Indian Society of Theoretical and Applied Mechanics; Life Member of the Coal Ash Institute of India; Member, Institute for Steel Development and Growth (INSDAG), India; and Member, International Association of Steel-Concrete Composite Structures (IASCCS).

Prof Bhattacharyya has 50 research publications in international/national referred Journals, and 61 publications in international/national Conference Proceedings. He has been reviewer for several journals.

Research in Progress

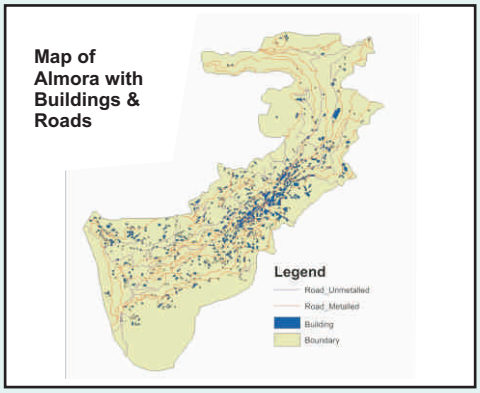
Seismic Vulnerability Assessment and Damage Scenario of Buildings in Almora City

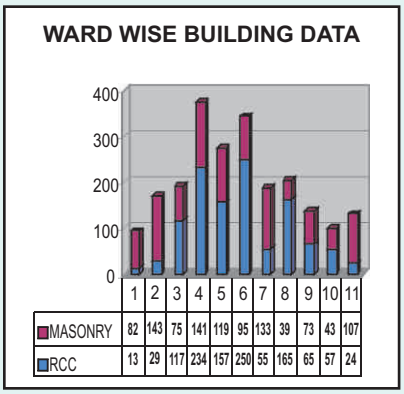
For a comprehensive approach towards the disaster mitigation, the estimation of seismic vulnerability of buildings is perhaps the most important component where earthquake engineers need to focus. Evaluation of the seismic safety of all-important buildings is required so that the weaker ones could be strengthened to resist future earthquakes. In a developing country this task is further difficult as both engineered and non-engineered buildings exist. Buildings in the Himalayan regions of India are susceptible to large earthquake forces and so need to be evaluated. There is no well-defined standard procedure available to evaluate the seismic safety of such structures. However, different researchers throughout the world have tried to develop their evaluation philosophies. Some of these methods have already been implemented in cities of developed countries.

An effort has been made to evolve a quick and suitable approach for vulnerability assessment of buildings in the hilly towns of northern India. This contains the information on building inventory developed especially for the hilly regions of India. The building survey data of all the 11 municipal wards of Almora city has been collected and analysed. Microtremor study for finding the predominant natural ground frequency has also been studied for the different locations (7 wards) of the town.

Scope of Work :

- Preparation of exhaustive building inventories of Almora town.
- Study of the seismicity of the region and estimation of PGA values.
- Field survey and data collection for existing buildings in different wards.
- Preparation of sub surface map of the Almora town.
- Study of predominant period at various locations using micro tremor.
- Estimation of seismic vulnerability of existing buildings.
- Preparation of seismic risk map and damage scenario map of Almora town.





Vulnerability Assessment :

Vulnerability is the degree of loss to a given element at risk resulting from the occurrence of a specified earthquake. For loss assessment over a population of buildings the requirements include:

- ✓ A means of specifying the earthquake hazard.
- ✓ A classification of the buildings or other facilities into distinct types whose performance in earthquakes is likely to be similar both in nature and degree.
- ✓ A method of defining loss so that the extent of loss to a particular building or population of buildings can be quantified.
- ✓ A means of estimating the distribution of losses to each building type for each discrete level of ground shaking or as a function of ground shaking.

Vulnerability analysis may be carried out in three or more steps such as (a) inventory creation of the building and related infrastructure (b) relationship between the category of structure and its possible damage due to the seismic hazard (c) loss computation. Many classifications for buildings have been tried all over the world. The issues, which are important for the seismic resistance of the building, should be identified with the aim that these could be incorporated into the inventory of the buildings. These are listed as under:

- ✓ Structural form- shape of plan, shape in elevation, number of stories, stiffness, percentage of openings, location of openings, foundations (depth, adequacy), design faults, type of roof.
- ✓ Site planning- pounding effect, slope effects, mutual stiffening effects, local ground failure.
- ✓ Construction quality- quality of building material, quality of workmanship, neglect of design specifications.
- ✓ History- age, pre-existing damage weakening structure, repair and maintenance of structure, modification to structure.

Geology of Almora Region :

The Almora city is located in the NW Himalayan belt bound by Himalayan territory towards its north. The Himalayan territory to its north comprises of diverse rock formations varying from igneous through metamorphic to the sedimentary rock formations. These rocks are cut across by numerous thrusts and faults at different scales. The major geological units comprising the Higher Himalaya, Lesser Himalaya and the Outer Himalaya are separated by major thrust faults. These thrust faults are regional in scale and traverse the entire Himalayan territory approximately parallel to the strike. All these major thrust faults are reportedly active and are potential zone for future earthquakes.

Seismicity of the Region :

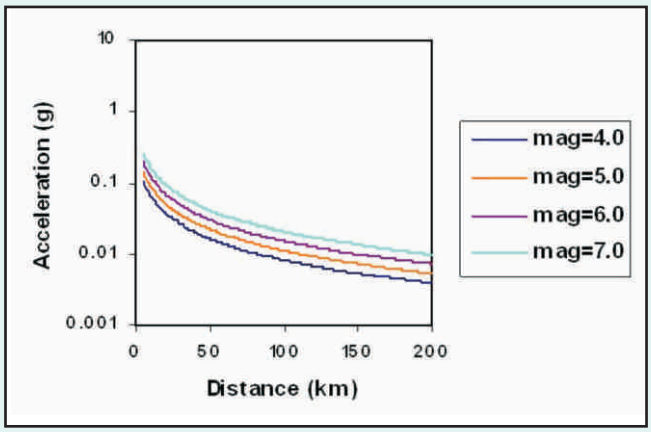
On account of northward movement of the Indian plate, strains are accumulating in several parts of the Himalaya as well as in the Indian Peninsula. There are several areas in the Indian Peninsula along which strains are accumulating and being released in the form of earthquakes. The occurrence of earthquakes in Latur, Jabalpur and Bhuj are the glaring examples. Thus, during the International Decade of Natural Disaster and Reduction (IDNDR) and after, our country has experienced earthquakes of moderate to high intensities. The Uttarakhand region has experienced twenty moderate size earthquakes in the last 200 years and is still seismically active.

The Almora region has a seismic history, being affected by the Himalayan earthquakes. The seismicity in this region is due to movements along several faults, thrusts as well as lineaments. The Himalayan earthquakes have their epicenters very close to any of the terrain bounding thrusts i.e. Main Central Thrust (MCT), Main Boundary Thrust (MBT) or Himalayan Frontal Thrust (HFT).

Seismic Hazard Assessment of Almora :

The PGA in and around Almora region are computed by assuming the seismic history of the region, a maximum expected earthquake of magnitude 7.5 and a 20 km depth. The attenuation relations which are developed for Himalayan region are

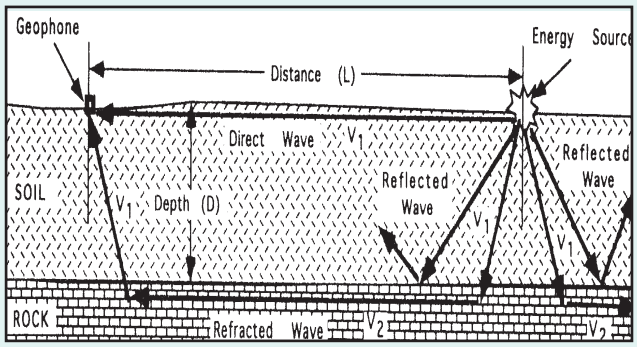
used to compute the attenuation with distance. The PGA value may be of the order of 0.21 g within or around Almora region.



Effect of PGA due to earthquake in Higher Himalayas

Seismic Survey :

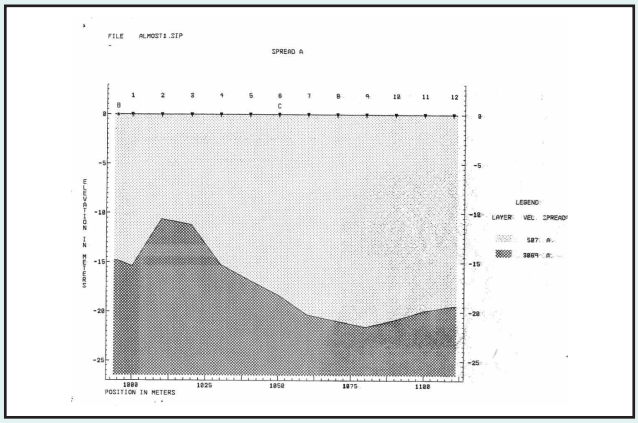
Elastic waves generated on the ground surface travel downwards into the various layers and are refracted back to the surface from the junctions of the various layers. The waves are picked up at various points on the ground and arrival times are recorded. Subsequently the velocity of propagation and depth of the layers are computed. The principle is schematically shown in the Fig below:



Principle of Seismic Survey

Seismic Profiling:

Seismic refraction tests were carried out along two sections – one at the stadium and the other along a roadside. 12 vertical geophones of 6 Hz frequency range were placed over a stretch of 100m to detect the refracted signals from the subsurface layers. Hammer blows were used as the source of energy. Multiple hammer strokes were used and data were stacked one above the other. Five shot locations were used two at both the ends and the one at the middle of the spread.

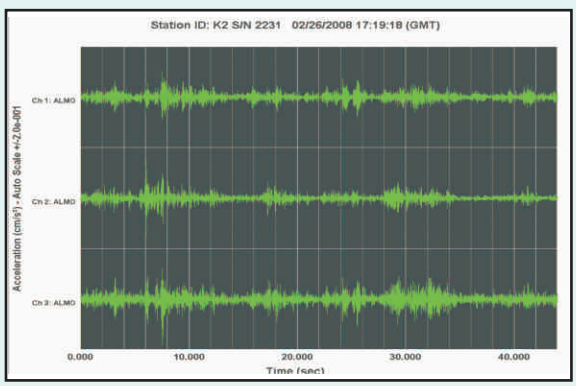


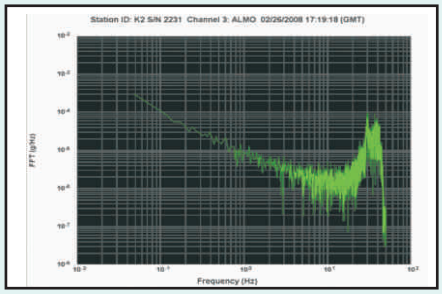
Road Side Profile – Top Layer Thickness (10-20m)

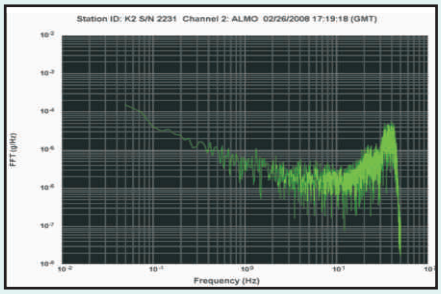
It is observed that the topsoil is composed of highly fragmented rocks mixed with soil. The layer is loose. At the stadium site the flat ground has been made by cut and fill. Since the water table is neither near the surface nor within the depth of the fill possibility of liquefaction is also low under seismic event. Below the top filled up layer the base rock is detected. Average depth of the top loose layer varies between 20 – 25 meters.

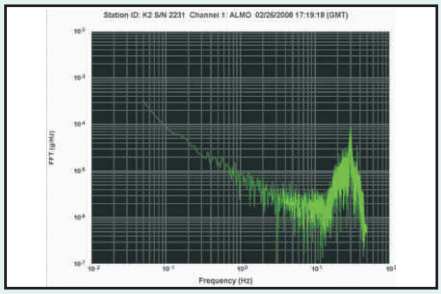
Ambient Vibration Studies :

Ambient vibration data is collected using either seismograph or accelerograph. In the present case Digital Triaxial Strong Motion Accelerograph (SMA) is used to collect ambient vibration data. A digital triaxial Strong Motion Accelerograph (Altus K2, Kinemetrics, USA) is kept at various places for some time. The SMA was kept in trigger threshold mode for recording acceleration time histories of ground motion in digital form. The threshold was set very low to get the even cultural noise generated inside the ground. SMAs have full-scale range of 2.0 g with sampling rate of 100 Samples Per Second (SPS). Preliminary results of the study for some locations are shown in the Table. It was observed that the natural frequencies of the structure undertaken in the study are between 0.85 to 1.5 Hz.









Predominant Natural Frequency – 0.85 ~ 1.5 Hz

Excerpt of Building Inventory for RCC Buildings :

Sr. No	Parameter	Details		
1	No. of Stories	1–2	3–5	> 5
2	Soft Storey	No		Yes
3	Basement	Yes		No
4	Provision for Lateral load	Shear Walls	Infill Walls	Nil/Any Other
5	Shape (Elevation)	Square	Rectangular	Any Other
6	Shape (Plan)	Square	Rectangular	Any Other
7	Water Tank at Roof	No/ Synthetic	Yes	
			Type: RCC/Other	
8	Extended Portions (Including Balconies)	< 10%	10-20%	> 20%
9	Non structural Architectural Features	Nil	Few	More
10	Presently Observed distresses			
	Corrosion	No sign	Just Started	Spall. of Conc.
	Cracks in Beam/Column/Slab	No	Non Str.	Structural
	Cracks in Walls	No	Non Str.	Structural
11	Overall Integrity of Structure	Very Good	Fairly Good	Poor
12	Ratio Column Height/Least Lateral Dimension	10	10-15	> 15
13	Average Rebound Number	> 35	25-35	< 25
14	Positions of Partition Walls	At Appropriate Positions		Any Where
15	Ratio of Stiffness of Column and Beams	> 1		< 1
16	Type of Foundation	Raft	Isolated	Other
17	Type of Soil	Hard	Sandy	Soft
18	Depth of water Table	Low		High
19	Maintenance	Regular	When Reqd.	Never
20	Mumty	Not Provided		Provided
21	Location of stair case	At Appropriate Positions		Any Where
22	% of openings (in terms of linear length of wall)	< 15	15-25	> 25
23	Age of Building (Year of Construction)	< 20	21-35	> 35

Sr. No.	Inventory Type	Details		
1.	No. of stories	1	2	3-4
2.	Shape (in Elevation)	Sq./Rect.with no offset/shift	Sq./Rect.With small Offset/ Shift	Sq./Rect.With Offset/shift
3.	Shape (in Plan)	Square (Upto1:1.2)	Rectangular (Upto 1:2.5) with small projections	Unsymmet./Long/Rect. (>1:2.5)/with projections
4.	% of opening (in terms of linear length of wall)	< 15	15-25	>25
5.	Location of opening	Centre	Any other Location	End
6.	Type of Construction	Brick in C/L-Sand mortar	Stone Coursed Masonary/Hollow blocks	R/R masonary in mud/Solid Blocks
7.	Quality of construction	Excellent	Good	Poor
8.	Earthquake provisions provided	All	Partly	None

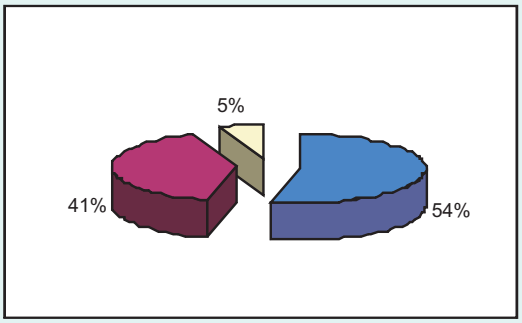
Building Inventory Data Base :

The data of the buildings is collected and entered along with photographs in the Ms Excel. Data is compiled ward wise and masonry /RCC building wise. A view of the data sheet is shown below:

Microsoft Excel - RCC Ward9

BUILDING INVENTORY FOR RCC BUILDINGS

Sr. No.	Parameter	Seismic Resistance Grading in Points		
1	No. of Stories	1-2 (5)	3-5 (3)	>5 (1)
2	Soft Storey	No (5)		Yes (0)
3	Basement	Yes (3)		No (0)
4	Provision for Lateral load	Shaear Walls (5)	Infill Walls (3)	Nil/Any Other (1)
5	Shape (Elevation)	Square (3)	Rectangular (2)	Any Other (1)
6	Shape (Plan)	Square (3)	Rectangular (2)	Any Other (1)
7	Water Tank at Roof	No/Synthetic (1)		Yes Type: RCC/Other (-1)
8	Extended Portions (including Balconies)	<10% (3)	10-20% (2)	>20% (0)
9	Non structural Architectural Features	Nil (3)	Few (2)	More (1)
10	Persently Observed distresses 1) Corrosion 2) Cracks in	No sign No (5)	Just Started Non Str.(3)	Spall. Of Conc. Structural (1)



Conclusion :

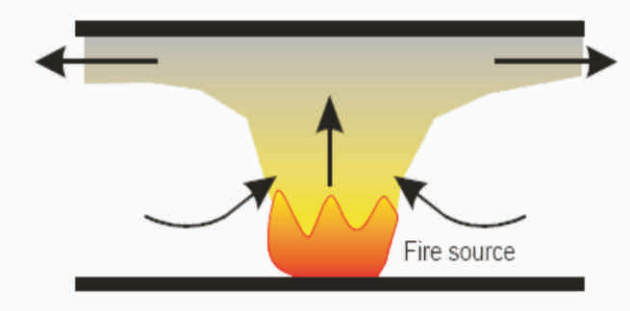
- More than 50% buildings in Almora Town are identified as 'Poor'. (Need detailed investigations)
- Only 5% Buildings are qualifying as 'Good'.
- 10.5% of RCC Buildings qualify as 'Good', whereas 27.7% as 'Poor'.
- 82% of Masonry Buildings are identified as 'Poor'. (Need detailed investigations).

CFD Modeling of Fire in Building Corridor

This work was initiated on account of development of major infrastructure in the country in this decade in the form of Malls, Underground car parks, Metro corridor etc. Therefore efforts were made to study fire safety inside these large aspect ratio enclosures using Computational Fluid Dynamics (CFD) as a tool. A particular case of transport tunnels (Metro) was chosen in view of its importance in the form of coming of Delhi Metro.

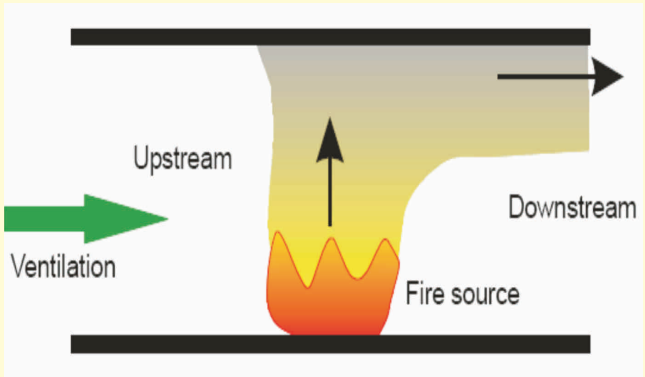
The study of various safety components shows that ventilation system is one of very important safety measures inside tunnels used for controlling and extracting smoke in case of fire emergency. In long tunnels, where ventilation is provided by mechanical means, two types of ventilation lay outs exist i.e. longitudinal and transverse. The longitudinal ventilation is provided through jet fans located axially

below the ceiling or through jet injection system where the fans are located in a fan room and air is supplied through ventilation shafts. In longitudinally ventilated tunnel fires, smoke and hot gases form a layer below the ceiling and flow in the direction opposite to the ventilation stream. This phenomenon is called back layering as shown in the Fig. (Smoke progress in a naturally ventilated tunnel).



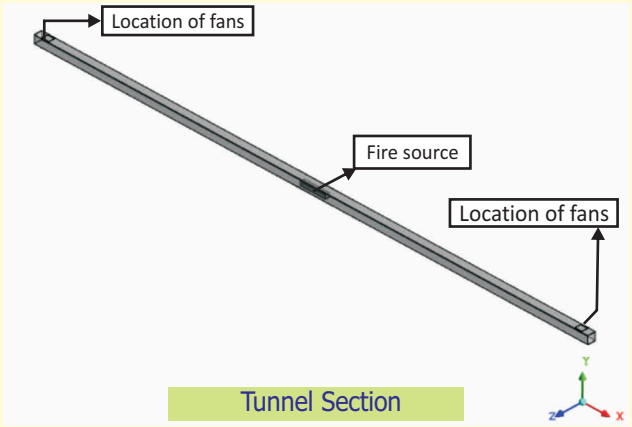
Smoke Progress in a naturally ventilated tunnel

The ventilation velocity just sufficient to prevent back layering of smoke over the stalled vehicles is the minimum velocity needed for smoke control and is known as the critical velocity. The ability of the longitudinal ventilation system to prevent back layering is the current industry standard to measure the adequacy of the system for smoke control. The ventilation velocity depends on number of parameters such as heat release rate (HRR), tunnel geometry, slope etc. This implies that ventilation system has to be designed for each individual tunnel. The ventilation system can though be designed and evaluated through experimental studies of each tunnel, but that is impractical and expensive. Alternative method is to use mathematical modeling which when coupled with flow visualization techniques provides an excellent means to study the environment inside a tunnel. This should help in designing appropriate ventilation system effectively without the need to conduct experiments.



Influence of Longitudinal air velocity on smoke progress in the fire zone (Ventilation velocity = critical velocity)

Therefore CFD model has been used to evaluate ventilation strategies in a transport tunnel in case of fire emergency. The aim is to study the smoke movement inside tunnels, and determination of critical ventilation velocity for smoke control in longitudinally ventilated tunnels which are similar to tunnel sections of Delhi Metro Rail corridor, India. The tunnel sections considered have jet injection type ventilation system. The CFD program, CFX is used to study the effectiveness of smoke ventilation system to control smoke spread in the event of fire inside the tunnel.

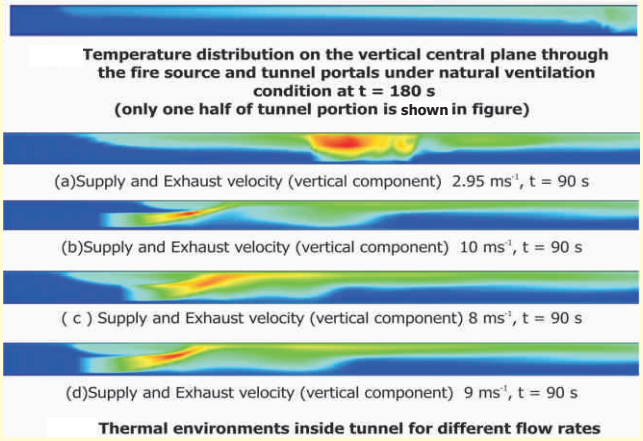


Tunnel Section

The section of tunnel considered is 400 m long, 5.5 m wide and 6 m high (Fig. Tunnel Section). The analysis has been carried out by assuming a variable fire source with a peak heat release rate (HRR) of 16MW, located at the center of the tunnel. Ventilation ducts are located in the ceiling near the tunnel portals and inclined at 10° to the plane of the ceiling through which fans discharge air. The influence of the fire HRR curve slope on the smoke flow dynamics in this realistic tunnel model fitted with inclined fans is investigated. In case of fire, two scenarios are studied: (i) fans activated immediately and achieve its full speed after detection of fire. (ii) fans activated at delayed times to take into account the response time of the fans to achieve its maximum speed. The velocity of supply and exhaust fans necessary to remove smoke in 30 sec from the upstream direction is determined.

It is found that under natural ventilation conditions inside a tunnel, the smoke moves symmetrically along the crown in both directions, and cool entrained air from bottom of tunnel portals move towards the fire source. The smoke reaches tunnel portals in about 3 min (Fig. Temperature distribution on the vertical central plane through the fire source and tunnel portals under natural ventilation condition at t = 180 s). It is also found that for this type of tunnel

configuration higher supply and exhaust velocities are required to produce the desired critical velocity (Fig. Thermal environments inside tunnel for different flow rates) than predicted by empirical formulas available in literature. The velocities of fan required to produce different desired axial velocity inside the tunnel is determined. The exhaust fans do not influence the velocity in upstream area but are necessary for smoke removal in the downstream direction. It is also necessary that fans are activated to full speed within three minutes of starting of fire in order for the ventilation system to be effective for desired smoke removal.



Thermal environments inside tunnel for different flow rates

Assessment & Monitoring of Distress and Remedial Measures for Ancient Temples in Uttarakhand

Historical and recent earthquakes created large scale destruction of buildings in Uttarakhand Himalaya. It is reported in literature that ancient temples were also severely damaged during the earthquakes, but unfortunately they could not get sufficient attention due to oblivious reasons and the rehabilitation strategies adopted by the administration centred on mass housing leaving the ancient monumental structures in distress state. On request of ASI, Dehradun, the Institute has undertaken the study on the present status of two famous ancient temples Sun temple located Katarmal (Almora) and Gopinath temple at Gopeshwar to know the distress and instability to arrive at possible remedies.

The main objective of the study is to assess the present status of the Sun temple of Almora and Gopinath temple of Gopeshwar with respect to seismicity and slope instability through instrumental monitoring study alongwith geological and geotechnical investigations and suggesting possible remedies to minimize the deterioration process.

Sun Temple, Almora

The Sun temple popularly known as Baraditya is one of the biggest and oldest temple of Kumaun Himalaya. The temple is located at Kosi-Katarmal area, which is about 15 km from the Almora town. It was probably built in 13th century by the Katarmal Raja, the Medieval king of Katyuri dynasty who ruled the Central Himalayan region. There are 45 miniature shrines clustering around the main shrine, which seems to be constructed in different periods. The region known to be prone for earthquakes is situated in the seismo-tectonically active zone. From


Main Temple


Northward Tilt in Miniature Temples

the various sources of information, it is observed that the region has been affected by several earthquakes ranging between 4.5-6.8 magnitudes on Richter scale.

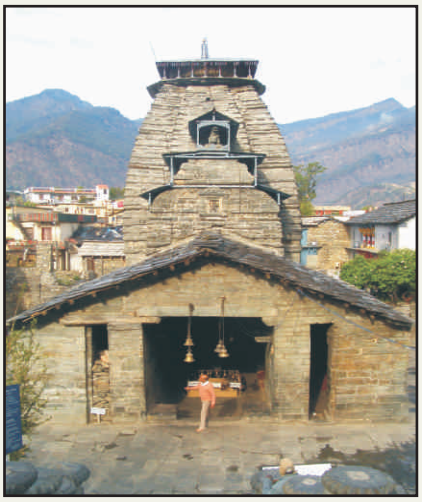
A field survey was carried out to collect first hand information about the temple. The visual inspection of the Sun temple of Kosi-Katarmal indicates that settlement and tilting around the main temple has


Displaced Shikhras of the Miniature Temples

taken place in the past. There are indications of seepage on the walls of the main temple. There are weak joints at several locations in the temple through which rain water seeps inside the temple. The sign of distress was very prominent in few of the miniature temples. The inclination data of all the temples were measured. It was observed that the majority of the temples inclined in North direction. The maximum inclination of a temple was found to be 13°. About 12 inches displacement of one of the shikhars of the miniature temple was also observed.

Gopinath Temple, Gopeshwar

The Shiva temple known as Gopinath temple is one of the biggest temples of Garhwal Himalaya situated at Gopeshwar on the ancient route of Badrinath and Kedarnath shrine. The temple is located centrally in the compound with a shikhar. The Gopeshwar town in the Chamoli region known to be earthquake prone is situated in the seismotectonically active zone with a close proximity to Main Central Thrust (MCT).



Gopinath Temple, Gopeshwar

A field survey was carried out to observe the present state of the temple. From the various sources of information, it is observed that the region has been affected by several earthquakes ranging between 4.5-6.8 magnitudes on Richter scale. Evidences of severe damage during 1803 event in Gopeshwar temple has been reported and many parts of the temple have been reconstructed. The temple suffered only minor vertical cracks during Chamoli earthquake 1999 in spite of it being located in meizo-seismal area. This indicates that the intensity of 1803 earthquake experienced at

Indication of water seepages

Indication of Settlement & Tilting

Gopeshwar have been much larger. During Chamoli earthquake nearest Strong Motion instrument was located in Gopeshwar and the peak ground acceleration (PGA) recorded was 0.359 g at a distance of 10 km from the epicenter.

In the Gopeshwar temple, it was observed that water leakage was the main problem. There are weak joints and cracks at several locations in the temple through which rain water seeps inside the temple. The crown of the temple is also in very bad shape, allowing sufficient inlet for water to enter. Further, problem of settlement and tilting were also observed in the temple structure .

Geological, geophysical, geotechnical and structural investigations are being carried out for possible causes of distress. Data pertaining to monitoring of inclinations and settlement of the temples are being analysed to know the present status of the temples. The structural integrity of the temple will be assessed and possible remedies will be suggested.

Earth Day

The Institute celebrated the 39th anniversary of the Earth Day on 22nd April, 2009 by inviting staff children and arranging talk by Dr. A.K. Saraf, Prof. I.I.T., Roorkee. About 80 students of CBRI wards participated in the painting competition held on the occasion in three different categories i.e. for category 1 (Class V & below) on **'Environment Around You'**; category 2 (Class VI-IX) on **'The Global Warming'**; and category 3 (Class X-XII) on **'Violent Earth'**.

Prof. Saraf's talk enthralled the children with his presentation on change of Earth temperature due to Earthquakes.

Shri S.G. Dave, Scientist 'G' in his introductory remarks said that we have not inherited this earth from our fore fathers but have borrowed it for our children from them and we should look after it well and should hand over it to our children safely.

Shri Vinod Kumar, Scientist 'F' compered and Shri S.C. Tyagi, CoA proposed the vote of thanks.

Independence Day

The Independence Day was celebrated at the Institute on August 15, 2009. Prof. Sriman Kumar Bhattacharyya, Director unfurled the National Flag and addressed the members of the staff. The CBRI staff club distributed sweets on the occasion.

Hindi Week

The Institute celebrated Hindi week during 14-18 September, 2009. Dr. Kamal Kant Budhkar graced as Cheif Guest. The inauguration function was presided over by Prof. S.K. Bhattacharyya, Director CBRI and Dr. Mahavir Agarwal, Gurukul Kangri University, Haridwar, was the Chief Guest on concluding function.

Dr. Budhkar in his speech, applauded the efforts made by the Institute for popularization of Hindi. He dwelt about the role of Hindi in the National and International sphere. He emphasized that we should not think the use of Hindi only in the inter-state level but we have to steer out efforts to make it as a pride in the international level. Prof. Mahavir Agarwal in his address told that Hindi is symbol of our culture and, by glorifying it, we would be able to get the Hindi at its right place among masses. He emphasized that efforts should be made at the official/government level to make Hindi recognized one of the official language of UNO. Prof. Bhattacharyya apprised that CBRI is always working towards progress of Hindi and he assured that in future also there would be enough support for its upliftment.

During Hindi week, several Hindi programmes and competitions were organized in which a number of Scientific/Administrative staff participated.

Shri S.G. Dave, Scientist 'G' presented introduction of the Chief Guest and Shri S.C. Tyagi, Controller of Administration presented a vote of thanks. On this occasion prizes were distributed to the winners of various competitions organized during the Hindi week. Shri R.C. Saxena, Sr. Hindi Officer was the Organizing Secretary.

Sadbhavna Diwas

The Institute observed Sadbhava Diwas on August 20, 2009 with a view to promote harmony amongst people of all religions, languages and states and goodwill towards everyone.

Shri M.P. Singh, Scientist 'G' administered the Sadbhavana pledge to all the staff members of the Institute.

CSIR Foundation Day

The Institute observed 'Open Day' on September 26, 2009 to commemorate the Foundation Day of Council of Scientific and Industrial Research. The Institute was left open to the public and invitations were sent to schools to send their children to interact freely with the scientists of the Institute.

Prof. Prem Krishna, Former Professor, IIT, Roorkee graced the occasion as Chief Guest and congratulated scientists and staff members of the Institute for carrying out various R&D programmes concerned with the Building Science & Technology. The R&D work of CBRI has benefited the society, particularly the rural people of the country. He told that the Nation is indeed proud to have an organization like CSIR in the Indian Sub-continent under the aegis of the Ministry of Science & Technology. Prof. Prem Krishna, Chief Guest of the ceremony draw attention on the problem of Global Warming. He also emphasized that the scientists in the Institute should choose a few areas and work towards excellence in those. "If you have such excellence, people from all over the world would come to you" said Prof. Prem Krishna.

In his inaugural address, Prof. S.K. Bhattacharyya, Director, CBRI welcomed the Chief Guest and highlighted the Institute's R&D activities. He informed that CSIR has always received due importance and appreciation by its President, the Prime Minister of India and Vice President, the Hon'ble Minister of Science & Technology and all those familiar with contribution of CBRI/CSIR. He apprised that the President of CSIR Dr. Monmohan Singh Ji, in the meeting of CSIR Society has complimented the role of CSIR in the overall development of the country and has appreciated the efforts made by CSIR. The President has great expectation from CSIR and CBRI has to play a major role.

Prof. S.K. Bhattacharyya told that the Scientists of CBRI and other CSIR labs are facing a great challenge to keep pace with the development in different parts of the globe and it is indeed a matter of great satisfaction that our country is now considered as one of the greatest resources of the world market as the Scientists of this country have proved their worth. CBRI is one of those labs which is directly concerned and connected with the upliftment of common man because shelter is considered as one of the basic needs. CBRI has always played a vital role in finding appropriate solutions for providing houses and buildings to meet the aspirations of the people of this country.

On this occasion the retired persons and the employees who have served CSIR for 25 years were honoured. An essay competition on "Water Conservation" and a painting competition for CBRI wards in different groups were organised and students were awarded.

The whole ceremony was compered by Shri Y. Pandey, Scientist 'F'. Shri M.P. Singh, Scientist 'G' also spoke on this occasion. The vote of thanks was given by Controller of Administration, Shri S.C. Tyagi.

Visit Abroad

US-India Workshop on Metrology, Standard and Confirmity Assessment and their use in support of Technical Regulations (June 1-5, 2009 at NIST, USA)

Dr. M.O. Garg, Director (Additional Charge) CBRI and Dr. A.K. Minocha, Sc.'F', EST Division, CBRI Roorkee visited USA on deputation during June 1 to 5, 2009 to participate in the US-India Workshop on Metrology, Standard and Confirmity Assessment and their use in support of Technical Regulations at NIST Campus in Gaitherburg, M.D., USA.

Dr. M.O. Garg, Director (Additional Charge) CBRI Roorkee gave presentation on :

1. Overview of Indian Institute of Petroleum, Dehradun.
2. Indian Strategies and Programs of IIP, Dehradun.
3. Indian Priorities on Biofuels

Dr. A.K. Minocha, Sc.'F' gave presentation on:

1. Overview of Central Building Research Institute, Roorkee.
2. Development of Certified Reference Building Materials at CBRI, Roorkee

Further discussions on topics of mutual interest were made between NIST, USA and CBRI, Roorkee.

Staff News

Appointment

S.K. Bhattacharyya	Director	05.08.2009

Superannuations

P.K. Gangopadhyay	Scientist 'E-II'	30.04.2009
T.D. Joshi	Tech. Gr.I (4)	31.05.2009
Dinesh Kumar	Tech. Gr.I (4)	31.07.2009
Shree Ram	Lab. Asstt. Gr.II (3)	31.07.2009
R.L. Dhabal	Scientist 'F'	31.08.2009
B.B. Lal	Scientist 'F'	30.09.2009

We wish them a peaceful and happy retired life

Promotions

R.K. Goel (Retd.on 31.7.2008)	Scientist 'F' Gr.IV (5)	01.01.2008
Suvir Singh	Scientist 'F' Gr.IV (5)	29.03.2008
Atul Kumar Agarwal	Scientist 'E-II' Gr.IV (4)	30.03.2006
Rajesh Kumar Verma	Scientist 'E-I' Gr.IV (3)	01.04.2007
Saurabh Jain	Scientist 'E-I' Gr.IV (3)	24.09.2007
Soraj Kumar Panigrahi	Scientist 'E-I' Gr.IV (3)	28.09.2007
S.K. Singh	Scientist 'C' Gr.IV (2)	01.01.2001

Congratulations!

Transfer

The following joined CBRI on Transfer from :

Avanish Kumar Section Officer (F&A)	IIP, Dehradun	03.08.2009

Welcome!

Obituary

It is placed on record the sad and untimely demise of Shri Bhram Prakash Sharma, Technician on 18.05.2009 & Shri Suresh Chand, Technician on 16.06.2009.

CBRI family convey their heartfelt condolences to the bereaved families.

Papers Published/Presented

Rajni Lakhani, Anupam Singh Shiwach and S.P. Agarwal "Strengthening of Weak Mortar by Polymeric Consolidants" Civil Engineering and Construction Review, Vol.22 (4) April 2009, 52-56.

Mridul Garg, Neeraj Jain and Manjit Singh, "Development of Alpha Plaster from Phosphogypsum for Cementitious Binder", Construction & Building Materials, 23(10), 2009, 3138-3143.

P.C. Thapliyal & S.R. Karade, "Performance Studies of Coating System based on Cardanol Modified Epoxy for Concrete Structure", Proc. World CORCON 2009, TP 40, 2009, 1-4.

Neeraj Jain, Scientist presented a paper on "Low Cost Building Materials from Waste Gypsum" in National Workshop on New Technologies for Rural Development having Potential of Commercialization jointly organized by The Institute of Engineers, MP and Indian Society of Remote Sensing, Bhopal on May 9, 2009.

Training/Workshop Attended

Dr. Abha Mittal, Scientist F has attended a Short term course on "Recent Advances in Optimization Techniques and their Applications" organized by Department of Mathematics and Continuing Education Centre, IIT, Roorkee during April 20-24, 2009.

Dr. Abha Mittal & Dr. Rajni Lakhani, Scientists have attended a course on "Capacity Building of Women Managers in Higher Education" under UGC Scheme organized by IWSA, Roorkee Centre and Continuing Education Centre, IIT, Roorkee during May 18-22, 2009.

Dr. Abha Mittal, Scientist 'F' has attended CSIR Workshop on "Advances and Applications of Mathematical Modelling (AAMM–2009)" organized by C-MMACS, Bangalore at NAL, Bangalore during May 23-25, 2009.

Editor: Dr. Atul Kumar Agarwal, *Scientist*
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