

BHUKAMP

The Newsletter of EERC
(For internal Circulation only)

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BHUKAMP



Earthquake Engineering Research Centre
International Institute of Information Technology
Gachibowli, Hyderabad - 500 032, India

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FROM EDITORIAL TEAM...

Earthquake Engineering Research centre (EERC) is happy to release its first volume of Bhukamp, The News Letter of EERC. Intention of this newsletter is to keep in touch with its current and alumni members and also update them about latest developments. As an initial attempt we plan for 3 issues per year. Newsletter features all the relevant news which includes research projects, publications, equipments and addition of new members. It also features recognition of EERC/CASE and its alumni. Members are encouraged to send their short write-ups. Suggestions on improving Bhukamp are most welcome.

EDITORIAL TEAM:

*Chenna Rajaram,
Archanaa Dongre,
PV Dilip Kumar,
SK Ali Saheb,
& Ramancharla Pradeep Kumar*

RESEARCH UPDATE**ONGOING RESEARCH PROJECTS:**

Since its inception EERC has successfully completed 7 research projects and currently 9 projects are running. Please find below the brief description of projects.

1. Assessment of Vulnerability of installations near Gujarat Coast Vis--Vis Seismic Disturbances. Project Sponsored by *Ministry of Earth Sciences, GoI.*
2. Civil Engineering Virtual Labs (Consortium Project Virtual Labs). Project sponsored by *Ministry of Human Resource Department, GoI.*
3. Seismic Safety Assessment of Proposed "Vishista Township" at Bahadurpally. Project sponsored by *AP State Rajeev Swagruha Corporation Limited.*
4. Development of Software for Tracking the Position of a Moving Object Using Image/Video. Project sponsored by *National Agricultural Improvement Program.*
5. Geotechnical Site Characterization and Ground Response Studies for Vijayawada City. Project sponsored by *Ministry of Earth Sciences, GoI.*
6. Seismic Site Characterization of Vijayawada City Using Microtremor Testing. Project sponsored by *Department of Science and Technology, GoI.*
7. Vulnerability Assessment of Chandigarh City, Consortium Project (DISANET: International Network for Natural Disaster Mitigation and Recovery) sponsored by *Japan International Cooperation Agency.*
8. Vulnerability Assessment of Nanded City (Consortium Project: *Seismic Microzonation of Nanded City*), Project sponsored by *Government of Maharashtra.*
9. Seismic Safety Assessment of Proposed Buildings in IIIT Hyderabad. Project sponsored by *Sysplan Consultants Pvt Ltd.*

Kindly visit <http://eerc.iiit.ac.in> for more details on on-going projects.

RECENT PUBLICATIONS:

EERC has published around 75 research papers since 2002. Kindly visit website to know the details. Publication during Jan-April are given below:

1. Raju Sangam, Terala Srikanth and Ramancharla Pradeep Kumar: *School awareness program on earthquake disasters and preparedness: A pilot project aimed at high school students in Hyderabad city*, International Journal of Earthsciences and Engineering, Vol.4, No.1, Feb 2011.
2. Lakshmi Tejaswi and Ramancharla Pradeep Kumar: *Disaster Mitigation and Management for Andhra Pradesh, India: An Appraisal*, International Journal of Earthsciences and Engineering, Vol.4, Issue No.3, 2011.

3. Vijaya lakshmi and Neelima Satyam D: *Numerical Modeling of Rock Slopes in Siwalik Hills near Manali Region: A Case Study* Electronic Journal of Geotechnical Engineering, Vol. 16/G, pp. 763-783, 2011 .
4. Neelima Satyam .D and D.Venkat Reddy: *Tsunami Disaster in Japan*, Editorial in International Journal of Earth Sciences and Engineering April 2011 Issue.
5. Harinadha Babu Raparla and Ramancharla Pradeep Kumar: *Linear Analysis of Reinforced Concrete Buildings Subjected to Blast Loads*, Indian Concrete Institute Journal, Vol. 11, No.5, 2011.
6. Ramancharla Pradeep Kumar: *Faculty View Point on Use of Standards in Engineering Colleges*, One-day Workshop on Educational Utilization Program With Provisions of National Building Code 2005, NBC-IEI 14 March 2011.
7. K. Renukadevi, S. Silpa Chowdary, T. Ashwini Reddy and Ramancharla Pradeep Kumar: *Earthquake Responses of Light Houses in Gujarat Coast*, Proceedings, National Conference on Recent Trends in Civil \& Mechanical Engineering, 25-26 March 2011, Tiruchurapalli, Tamilnadu.
8. Ehsan Vafaeihosseini, Azadeh Sagheb and Ramancharla Pradeep Kumar: *The Role of Building Construction Materials on Global Warming: Lessons for Architects*, Proceedings, National Conference on Recent Trends in Civil & Mechanical Engineering, 25-26 March, 2011 Tiruchurapalli, Tamilnadu. **(Selected as 3rd Best Paper out of 100 papers in Civil Engineering)**
9. Vasudeo Chaudhary and Ramancharla Pradeep Kumar: *Performance analysis of Mundra-Panipat pipeline crossing Kachh mainland fault*, Proceedings, International Symposium on The 2001 Bhuj Earthquake and Advances in Earthsciences and Engineering AES 2011, 22-27 Jan 2011, Gujarat.
10. Terala Srikanth, Ajay Pratap Singh, Sumer Chopra, Ramancharla Pradeep Kumar and Bal Krishna Rastogi: *Earthquake Vulnerability Assessment of Gujarat port sites Viz-a-Viz seismic disturbances*, Proceedings, International Symposium on The 2001 Bhuj Earthquake and Advances in Earthsciences and Engineering AES 2011, 22-27 Jan 2011, Gujarat.
11. Terala Srikanth, Ajay Pratap Singh, Santosh Kumar, Ramancharla Pradeep Kumar and Bal Krishna Rastogi: *Earthquake Rapid Visual Survey of existing buildings in Gandhidham and Adipur Cities, Kachchh, Gujarat (INDIA)*, Proceedings, International Symposium on The 2001 Bhuj Earthquake and Advances in Earthsciences and Engineering AES 2011, 22-27 Jan 2011, Gujarat.
12. Akhila Manne and D. Neelima Satyam: *Geotechnical site Characterization for Vijayawada Urban*, 3rd Indian Young Geotechnical Engineers Conference (3IYGEC) 25-26th March 2011 New Delhi, India, pp: 191-196.
13. K. Rajesh Chandra, Akhila Manne and D. Neelima Satyam: *Preliminary Liquefaction Potential Analysis of Vijayawada Region*, International Engineering Symposium 2011(IES 2011) 3-5th March 2011 Kumamoto City, Japan, pp: C6-4-1 to C6-4-4.
14. Neelima Satyam: *Liquefaction Hazard Assessment for Vijayawada Urban* Keynote lecture, Symposium on Geotechnical Applications (GeoApps) JNTU Hyderabad, April 15, 2011.

NEWS CORNER

RESEARCH SCHOLARS IN NEWS

Vasudeo Chaudhari: Submitted MS by Research thesis on *Numerical Study of Buried Continuous Pipeline Subjected to Large Ground Deformation* in March 2011.

Chenna Rajaram: Submitted MS by Research thesis on *A Study of Pounding Between Adjacent Structures* in April 2011.

Pulikanti Sushma: Appeared for *PhD depth qualifier viva* and now writing her thesis

Ahmed Hussain: Appeared for *PhD depth qualifier viva* and now writing his thesis

Archanaa Dongre: Cleared *Breadth qualifier viva* and preparing for Appearing Depth qualifier.

Hima Chandan: Joined EERC as PhD Student

Bhukamp congratulates all the above students.

EERC IN MEDIA

'Need for quake-resistant structures in Vijayawada'

Builders, unfortunately, are not paying attention to safety aspect, says expert

Staff Reporter

VIJAYAWADA: With the city falling under "dangerous seismic zone", the people living in buildings vulnerable to earthquakes are "sitting on a time bomb", according to R. Pradeep Kumar, an expert in earthquake engineering and an associate professor at IIIT-Hyderabad.

"A half of the population will become extinct if necessary precautions are not taken," he said here on Wednesday, addressing a workshop organised by the Vijayawada Municipal Corporation (VMC) on 'Safe construction practices' organised by the Vijayawada Municipal Corporation in association with the Builders Association, on Wednesday.

Dr. Kumar said that there was a history of earthquake hitting India and the neighbouring countries every four to five years during 1819 to 2001. The last earthquake was in 2005 (Muzaffarabad), and there was every possibility of another.

As per the seismic zone, earthquakes could strike anywhere from Latur to Ongole. Even if an earthquake of a magnitude of 6 struck a place 200 km away from Vijayawada, half of the Vijayawada city would vanish as most of the buildings here were not earthquake resistant. And, it was important to remember that as many as 185 buildings collapsed or were damaged in Ahmedabad when an earthquake struck in Bhuj, which was 200 km away from there, he explained.



EXPERT TALK: R. Pradeep Kumar, professor, IIIT Hyderabad, speaking at a workshop on "Safe construction practices" organised by the Vijayawada Municipal Corporation in association with the Builders Association, on Wednesday.

— PHOTO: CH. VIJAYA BHASKAR

- City falls under 'dangerous seismic zone'
- Quake can strike anywhere from Latur to Ongole, says expert

Dr. Kumar observed that if the builders were not in a hurry to make money, their top priority should be safety of people. But they were not ready to design earthquake-resistant buildings even if the investment would not exceed 1 to 2 per cent of the overall expenditure. Simple measures like designing rectangular or square buildings, avoiding open ground buildings, 'T' or 'L' or 'X' shape buildings and avoiding weak links in construction would reduce the risk to a major extent.

Retrofitting of open ground floors would reduce the catastrophe, he suggested.

VMC in-charge CE G. Yohan, SE Adishesu, City Planner R. J. Vidyullatha, UNDP Project Support Associate P. Usha, and Indian Institute of Engineers secretary T. Ramesh Kumar were present. The Builders Association representatives, architecture students, VMC town planning and engineering wings officials, and engineers participated in the workshop.

ప్రకృతి వైపరీత్యాలు తట్టుకునేలా నిర్మాణాలు చేపట్టాలి

విజయవాడ, సాక్షివార్త :

ప్రకృతి వైపరీత్యాలను తట్టుకునేలా భవన నిర్మాణాలు చేపట్టాలని ఇంటి ప్రాసెస్ ప్రెజిడెంట్ సూరిందారు. భీమా-యూఎస్డీటీ పట్టణ విస్తర్తీత నష్ట నివారణ ప్రాజెక్టులో భాగంగా నగరపాలక సంస్థ ఆధ్వర్యంలో బుధవారం రుద్రాపురంలోని బిల్డింగ్ అసోసియేషన్ హాల్లో సభ్యులు నిర్వహించారు. దీన్నే వివరిస్తూ, సురక్షిత భవన నిర్మాణం అనే అంశంపై సవర్ పాయింట్ ప్రజెంటేషన్ ఇచ్చారు. ఈ సందర్భంగా ప్రకృతి విపత్తుల్లో భూకంపం చాలా తీవ్రమైనదని, దానిని తట్టుకునేలా భవన నిర్మాణాలు చేపట్టాలన్నారు. కొద్ది పాటి జాగ్రత్తలు తీసుకుంటే ఎంతో మంది ప్రాణాలను కాపాడవచ్చని అన్నారు. బాల్యని నిడివి తగ్గించుకోవాలని సూరిందారు. భవన నిర్మాణంలో జాగ్రత్తలను సంబంధించి నీడలను బిల్డింగ్ అసోసియేషన్ నీడ ప్రజలకు అందుబాటులో ఉండేలా చర్యలు తీసుకుంటామని నగర పాలక సంస్థ పట్టణ ప్రణాళిక అధికారి విద్యుత్తర తెలిపారు. ఇంటికిర్నీ ఇన్స్పెక్షన్లు చేపట్టమని రమేష్ కుమార్ మాట్లాడుతూ నిర్మాణానికి సంబంధించి వివరాలను సమీక్షించి ఇన్స్పెక్షన్ చేయించాలని, భవన నిర్మాణ కార్మికుల పని పాల్గొన్నారు.



మాట్లాడుతున్న ప్రాసెస్ ప్రెజిడెంట్

వార్షిక సందర్శనలకు గృహ నిర్మాణ సామాగ్రి విభజించి అడ్మిట్, సూర్య ఎంటర్ ప్రైజెస్, కీ-2, డ్రీమ్ వర్క్ ఇంటియా, షీల్డ్ నిర్మాణం చేసిన ఎగ్జిక్యూటివ్ అత్యుత్తమం. కార్యక్రమంలో నగర పాలక సంస్థ డిప్టీ ఇంజనీరు యూసూఫ్, ఎస్ఈ అధికారి, అసోసియేట్ కమిషనర్ (ప్రాజెక్టు) రామలింగరాజు, యూఎస్డీటీ కో ఆర్డినేటర్ పి ఉషా, బిల్డింగ్ అసోసియేషన్ ఆధ్వర్యం వహించింది. కార్యక్రమం అయి స్వాగతం తదితరాలు పాల్గొన్నారు.



CASE students explaining demos of R&D Showcase 2011 to participants

OUTREACH ACTIVITIES

R&D SHOWCASE

R&D Showcase 2011 was held during 26-27 Feb 2011. During inaugural function panel discussion on "Research to Maintain Vitality in Technology". There were over 30 posters by civil engineering students. As usual our demos on earthquake awareness attracted huge crowd. There were many new posters from research students. Bhukamp congratulates all the members who worked for the success of the event and wishes to upgrade the quality of posters.



TECHNICAL LECTURES

EERC in association with Indian Concrete Institute, AP Hyderabad Centre organized a technical lecture on "Artificial Neural Networks for Modeling the Characteristics of Concrete". Lecture was delivered by **Prof. H. Sudarsana Rao**, JNTU Anantapur, Andhra Pradesh was held on 29 Jan 2011 in Hamsadhwani Hall, Vindhya Bhavan, IIIT Hyderabad. Around 100 participants attended.



INVITED LECTURES

1. Dr. Pradeep organized 3-day workshop on *Earthquake Resistant Design of Structures* in Nanded during 28-30 April 2011. Around 250 engineers attended.
2. Dr. Pradeep delivered lecture titled *Earthquake resistant design of buildings* on 18 March 2011 at UNDP Nanded. 60 participants attended.
3. Dr. Pradeep delivered Keynote lecture titled *Why buildings fail during earthquakes?* on 16 Feb 2011 during Convergence held at VNR VJIT Hyderabad. 80 students attended.
4. Dr. Pradeep delivered lecture titled *Earthquake disaster management* on 02 Feb 2011 at MCR-HRD Hyderabad. 30 state government officials participated.
5. Dr. Pradeep delivered lecture titled *Tsunami disaster management* on 01 Feb 2011 at MCR-HRD

NEW EQUIPMENTS IN EERC LAB

Recently we have added two new state-of-the-art equipments in our lab:

1. Seismic Microtremor equipment



USAGE: Microtremor is useful for determining local site effects in seismically active regions, where ground motion records are few, and the noise levels are high due to urbanization.

2. Building Vibration sensors

- a. Fixed type
- b. Portable



USAGE: Buildings, including modern office buildings and domestic properties can suffer from vibration due to various external events like heavy vehicles in traffic, construction in nearby area or machine vibrations in nearby industries etc. The vibration can be a cause of discomfort to the occupants, which can become perceptible at levels which are substantially lower than those required to cause building damage. These events necessitates the need to assess the vibration amplitude and frequency to determine the effect the vibration has on the building and its occupants and whether damage could be caused to the structure.

VISITORS

- 1. Dr. Bal Rastogi, *Director General Institute of Seismological Research, Gujarat.*
- 2. Prof. Kiyoshi Takano, *Head CIDIR, University of Tokyo.*
- 3. Prof. Furumura, *Earthquake Research Institute, University of Tokyo.*
- 4. Dr. Ito, *Earthquake Research Institute, University of Tokyo.*

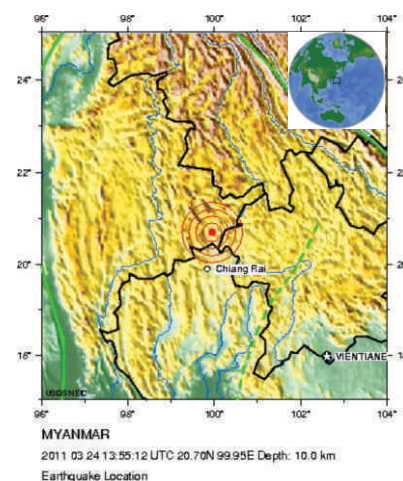
INTERNATIONAL TRAVEL

Dr. Neelima Satyam visited Japan to present her paper on Preliminary Liquefaction Potential Analysis of Vijayawada Region at International Engineering Symposium 2011 which was held during 3-5 March 2011 in Kumamoto City.

EARTHQUAKE NEWS

Magnitude 6.8 - MYANMAR*2011 March 24 13:55:12 UTC*

The magnitude 6.8 Myanmar earthquake occurred at 13:55:12 UTC on March 24, 2011, in the Myanmar (20.705°N, 99.949°E) region of Burma. This event was caused by the northward movement of the Indian subcontinent collides with the Eurasian plate. Most of the relative motion between these two plates in Myanmar region is focused on the Sagaing fault, which is a major north-striking, right-lateral fault that has a slip rate of approximately 18 mm/yr based on GPS data. Additional deformation caused by the collision between the Indian and Sunda plates extends to the east across Myanmar and into neighboring Thailand and northern Laos. In northeastern Myanmar, the collision is causing internal deformation in the Shan plateau and the Shan-Thai block.

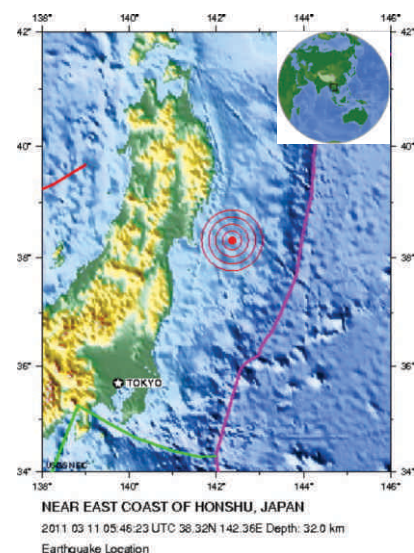


(Source: USGS)

At least 74 people killed, 111 injured, 413 buildings damaged and one bridge collapsed in eastern Myanmar. Around 136 reservoirs and 35 roads were damaged in Yunnan, China. Widely felt in Myanmar, Thailand and Vietnam.

Magnitude 9.0 - NEAR THE EAST COAST OF HONSHU, JAPAN*2011 March 11 05:46:23 UTC*

The magnitude 9.0 Tohoku earthquake occurred at 05:46:23 UTC on March 11, 2011, in the east coast of Honshu (38.322°N, 142.369°E) region of Japan. This earthquake was caused by the subduction between the Pacific and North America plates. Modeling of the rupture of this earthquake indicate that the fault moved upwards of 30-40 m, and slipped over an area approximately 300 km long (along-strike) by 150 km wide (in the down-dip direction). The rupture zone is roughly centered on the earthquake epicenter along-strike, while peak slips were up-dip of the hypocenter, towards the Japan Trench axis. The coastline was vulnerable to tsunami waves because of deep coastal embankments that amplify tsunami waves and cause great wave inundations. The frequency of aftershocks will tend to decrease with elapsed time from the time of the main shock.



(Source: USGS)



CASE NEWS**BATCH 2009-11**

O. Divya
 R. D. Veerendra Babu
 K. Rupak Ashle
 Lalit Kumar
 P. Saranya
 R. Vijaya Lakshmi
 K. Rajesh Chandra
 K. Rakesh Mulcahand
 J. Sai Tejesh
 T. Venkata Das
 V. V. Varun Naidu

BATCH 2010-12

Anthugari vimala
 Balthy Uday Kumar
 Renuka Devi.K
 M. Prasanna Kumar
 K. Rajesh
 B. Sai Krishna
 B. Shaik Anwar
 S. Silpa Chowdary
 T. Ashwini Reddy
 T. Madhu
 V.V.K. S.sai Charan
 T. Srikanth



Pg1 CASE students gave a farewell party to outgoing students on 16 April 2011. Bhukamp clicked during the memorable occasion. On placement front currently 5 students got placed and 6 are yet to be placed. Bhukamp wishes outgoing batch a fantastic career and life ahead..

EERC MEMBERS

FACULTY

R Pradeep Kumar
 M Venkateswarlu
 D Neelima Satyam
 KS Rajan
 Vishal Garg
 Kanwarjit Nagi (Guest Faculty)

STAFF

Terala Srikanth
 Ch. P. Manohar
 Sangam Raju
 P. Surya Bhagavan
 Sk. Ali Saheb
 Manne Akhila
 Munipala Abhishake
 U. Krishna Babu
 D. Madhavi
 K. Raju

RESEARCH SCHOLARS

PH.D SCHOLARS

P Sushma
 Md Ahmed Hussain
 PV Dilip Kumar
 Archanaa Dongre
 Narender Bodige
 D Hima Chandan

MS BY RESEARCH SCHOLARS

Vasudeo Chaudhari
 K Jagan Mohan
 Chenna Rajaram

PROJECT STUDENTS

Raparla Harinath Babu
 Azadeh Sagheb (JNA FAU, Hyderabad)
 Ehsan Vafaei Hosseini (JNTU Hyderabad)
 Raghavender (JNTU Anantapur)
 Mohd Jalal Uddin (KBN College, Gulbarga)
 Mohd Altaf (KBN College, Gulbarga)
 Inayat Hussain (KBN College, Gulbarga)
 Sindhu (JNTU Hyderabad)
 T. Ramakrishna Rao (SV University,
 Tirupathi)
 Srivani (SV University, Tirupathi)
 Vijaya Raghavan (NGRI)

CONTACT INFORMATION

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