

Department of Civil Engineering

The Department of Civil Engineering with its multifaceted faculty continues to maintain and cultivate its strong links with the building and construction industry and academic and research institutions both within and outside the country. Besides high quality teaching and instruction at both UG and PG levels, the Department is actively involved in basic and applied research and consultancy and provides high quality technological advisory support through various R & D projects and consultancies to various organizations. The department has attracted significant amount of sponsored research funding from government and private agencies.

Academic Programmes

The Department of Civil Engineering offers broad-based undergraduate BTech degree programme. A dual degree BTech-MTech programme is also run in structural engineering. Postgraduate MTech. (admissions through GATE/ sponsorships) and PhD (through selections/ sponsorships) programmes are offered in the following six specialisations:

- Geotechnical Engineering
- Offshore Engineering
- Remote Sensing Applications
- Structural Engineering
- Transportation Systems Engineering
- Water Resources Engineering

This year, 46 MTech and 18 PhD students were admitted in the above specialisations. In the first year, 34 students were admitted in the BTech, and 10 students were admitted in the dual degree BTech-MTech programmes. During the year, 35 BTech, 56 MTech and 10 PhD students graduated from the department.

Extension Activities

In order to encourage and facilitate interaction amongst practitioners and researchers, the following activities were organized:

Two in-house one-day CEP courses on Urban drainage management for Thane Municipal Corporation held on 6th August 2001; and Government of Orissa, 21st November 2001.

A CEP course on 'Neural Networks in Civil Engineering' during July 12-13, 2001 was conducted.

Sponsored Research

11 new sponsored research projects worth about 56 lakh were initiated during the year. A few of ongoing and new projects are listed below:

- Integrated studies on radionuclide migration at shallow land disposal facility.
- Performance based seismic design of structures.
- Development of GUI based software package for elasto-plastic static and dynamic analysis of piping system.
- GPS studies for crustal deformations in Maharashtra.
- Design and characterization of composite materials with graded interface.
- Accelerated physical modeling of contaminant.
- Development of an analytical approach for detection of flaws in composite materials using high frequency ultrasonic waves.
- Passive structural control using tuned liquid dampers.
- Characterization of soil for ground water movement studies in unsaturated zone.
- Indo-Hungarian joint research project on space geodesy.
- Base isolation strategies for seismic design of structures and components.

Consultancy Works

285 consultancy projects worth about Rs. 2,05,60,866 were undertaken during the year by the various faculty members of the Civil Engineering Department.

Papers in Journals

Agrawal J.D. and **Deo M.C.**,

Online Wave Prediction, *Marine Structures*, Volume 15, pp 57-74, 2002.

Bairagi N.K. and Modhera C.D.,

Shear Strength of Fibre Reinforced Concrete, *ICI Journal*, Volume 75, pp 47-52, 2001.

Bendick R., Bilham R., Fielding E., Gaur V.K., Hough S.E., Kier G., **Kulkarni M.N.**, Martin S., Mueller K. and Mukul M.,

The 26 January 2001 Republic Day Earthquake, India, *Seismological Research Letters*, Volume 72, No. 3, pp 328-335, 2001.

Chitnis M.R., Desai Y.M. and **Kant T.**,

Wave Propagation in Laminated Composite Plates Using Higher Order Theory, *ASME Journal of Applied Mechanics*, Volume 68, pp 503-505, 2001.

Dafedar J.B., **Desai Y.M.** and Shiyekar M.R.,

Review of I.S. Code Provisions for Effective Length of Framed Columns, *Indian Concrete Journal*, Volume 75, No. 6, pp 402-407, 2001.

Date V.A. and **Jangid R.S.**,

Seismic Response of Torsionally Coupled Structures With Active Control Devices, *Journal of Structural Control*, Volume 8, pp 5-15, 2001.

Deo M.C., Gondane D.S. and Sanil K.V.,

Analysis of Wave Directional Spreading Using Neural Networks, *ASCE Journal of Waterways, Port, Coastal and Ocean Engineering Division*, Volume 128, No. 1, pp 30-37, 2002.

Deo M.C., Jha A., Chaphekar A.S. and Ravi K.K.,

Neural Networks for Wave Forecasting, *Ocean Engineering*, Volume 28, pp 898-998, 2001.

Dewaikar D.M. and Halkude S.A.,

Seismic Passive/Active Thrust on Retaining Wall-Point of Application, *Soils and Foundations*, *JGS*, Volume 42, No. 1, pp 9-16, 2002.

Dhawan K.R., **Singh D.N.** and Gupta I.D.,

Finite Element Analysis of Underground Openings, *Indian Geotechnical Journal*, Volume 31, No. 3, PP 240-257, 2001.

Dodagoudar G.R. and **Venkatachalam G.**,

Rain-Induced Failures in Residual Soil Slopes, *Journal of Nepal Geological Society*, Volume I, pp 49-54, 2001.

Eldho T.I. and Young D.L.,

Dual Reciprocity Boundary Element Solutions of Stokes Flows Problems Based on Velocity-Vorticity Formulation, *Journal of the Chinese Institute of Engineers*, Volume 24, No. 2, pp 141-150, 2001.

Eldho T.I.,

Groundwater Contamination – the Challenge of Pollution Control and Protection, *Journal of Indian Water Works Association*, Volume 33, No. 2, pp 171-180, 2001.

Gupta K.,

Software Review: ILSAX, Software for Urban Drainage Modelling in a Developing Country, *Waterlines: International Journal of Appropriate Technologies for Water Supply and Sanitation*, Volume 19, No. 3, pp 26, 2001.

Jangid R.S.,

Response of Sliding Structures to Bi-directional Excitation, *Journal of Sound and Vibration*, Volume 243, pp 929-944, 2001.

Jangid R.S. and Kelly J.M.,

Base Isolation for Near-Fault Motions, *Earthquake Engineering and Structural Dynamics*, Volume 30, pp 691-707, 2001.

Joshi S., **Mukherjee A.**, Kheur M. and Mehta A.,

Mechanical Performance of Endodontically Treated Teeth, *Finite Elements in Analysis and Design*, Volume 37, No. 8, pp 587-601, 2001.

Kant T. and Swaminathan K.,

Free Vibration of Isotropic, Orthotropic, and Multilayer Plates Based on Higher Order Refined Theories, *Journal of Sound and Vibration*, Volume 241, No. 2, pp 319-327, 2001.

Kant T. and Swaminathan K.,

Analytical Solutions for Vibration of Laminated Composite and Sandwich Plates Based on a Higher-Order Refined Theory, *Composite Structures*, Vol. 53, pp 73-85, 2001.

Kolay P.K. and **Singh D.N.**,

Effect of Zeolitization on Compaction, Consolidation and Permeation Characteristics of a Lagoon Ash, *Journal of Testing and Evaluation*, ASTM, Volume 28, No. 6, pp 425-430, 2001.

Kolay P.K., **Singh D.N.** and Murti M.V.R.,

Synthesis of Zeolites from a Lagoon Ash, *FUEL*, Volume 80, No. 5, pp 739-745, 2001.

Kolay P.K. and **Singh D.N.**,

Physical, Chemical, Mineralogical and Thermal Properties of Cenospheres from a Ash Lagoon, *Cement and Concrete Research*, Volume 31, No. 4, pp 539-542, 2001.

Kolay P.K. and **Singh D.N.**,

Effect of Zeolitization on Physicochemico-Mineralogical and Geotechnical Properties of Lagoon Ash, *Canadian Geotechnical Journal*, Volume 38, No. 5, pp 1105-1112, 2001.

Mandal J.N. and Suresh S.V.,

Design of Veneer Cover Soils of Landfills, *Indian Geotechnical Journal*, Volume 31, No. 1, pp 60-87, 2001.

Mandal J.N. and Suresh S.V.,

Enhancement of Slope Stability of Cover Soils of Landfills, *Indian Geotechnical Journal*, Volume 31, No. 3, pp 258-272, 2001.

Mukherjee A. and Ravindra V.,

A Fuzzy-Neuro Health Monitoring Tool using Transient Vibration Response, *Advances in Vibration Engineering*, Volume 1, No. 1, pp 100-116, 2002.

Mukherjee A., Joshi S.P. and Ganguli A.,

Active Vibration Control of Piezolaminated Stiffened Plates, *Journal of Composite Structures*, Volume 55, pp 435-443, 2002.

- Mukherjee A.** and Joshi S.P.,
Design of Actuator Profiles for Minimum Power Consumption. *Smart Materials and Structures*, Volume 10, No. 2, pp 305-313, 2001.
- Prasad K.L. and **Rastogi A.K.**,
Estimating Net Aquifer Recharge and Zonal Hydraulic Conductivity Values for Mahi Right Bank Canal Project Area, India by Genetic Algorithm, *Journal of Hydrology*, Volume 243, pp 149-161, 2001.
- Prasad K.L. and **Rastogi A.K.**,
Estimation of Net Groundwater Recharge in Large Aquifer Systems by Genetic Algorithm: A Case Study, *Korea Water Resources Association- Water Engineering Research*, Volume 2, No. 3, pp 161-169, 2001.
- Rao P.B. and **Jangid R.S.**,
Performance of Sliding Systems Under Near-Fault Motions, *Nuclear Engineering and Design*, Volume 203, pp 259-272, 2001.
- Rao P.B. and **Jangid R.S.**,
Experimental Study of Base-Isolated Structures, *ISET Journal of Earthquake Technology*, Volume 38, pp 1-15, 2001.
- Rao M.K., **Desai Y.M.** and Chitnis M.R.,
Free Vibrations of Laminated Beams using Mixed Theory, *Composite Structures*, Volume 52, pp 149-160, 2001.
- Rastogi R. and **Rao K.V.K.**,
Survey Design for Studying Transit Access Behaviour in Mumbai City, India, *Journal of Transportation Engineering*, ASCE, Volume 128, No. 1, pp 68-79, 2002.
- Shrivastava P. and **Dhingra S.L.**,
Development of Feeder Routes for Suburban Railway Stations Using Heuristic Approach, *Journal of Transportation Engineering*, ASCE, Volume 127, No. 4, pp 334-341, 2001.
- Shrivastava P. and **Dhingra S.L.**,
Development of Coordinated Schedules using Genetic Algorithms, *Journal of Transportation Engineering*, ASCE, Volume 128, No. 1, pp 89-96, 2002.
- Singh D.N.** and Gupta A.K.,
Falling-head Conductivity Tests in a Geotechnical Centrifuge, *Journal of Testing and Evaluation*, ASTM, Volume 29, No. 3, pp 258-263, 2001.
- Singh D.N.**, Kuriyan S.J. and Chakravarthy M.,
A Generalized Relationship between Soil Electrical and Thermal Resistivities, *Journal of Experimental Thermal and Fluid Science*, Volume 25, pp 175-181, 2001.
- Singh D.N.**, Kuriyan S.J. and Madhuri V.,
Application of a Geotechnical Centrifuge for Estimation of Unsaturated Soil Hydraulic Conductivity, *Journal of Testing and Evaluation*, ASTM. 29(6), 556-562, 2001.
- Singh D.N.**, Kolay P.K. and Rao, A.K.,
Simulation of Leaching Characteristics of a Fly Ash in a Ash Pond, *Indian Geotechnical Journal*, Volume 31, No. 2, pp 138-148, 2001.
- Viswanadham B.V.S.**, Konig D. and Jessberger H.L.,
Discussion on Dimension Analysis for Geotechnical Engineers, *Geotechnique*, Volume, GE51, No. 1, pp 91-93, 2001.

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A Coupled BEM and Arbitrary Lagrangian-Eulerian FEM Model for the Solution of Two- Dimensional Laminar Flow in External Flow Fields, *International Journal for Numerical Methods in Engineering*, Volume 51, No. 9, pp 1053-1057, 2001.

Young D.L., Huang J.L. and **Eldho T.I.**,
Simulation of Laminar Vortex-Shedding Flow Past Cylinders Using A Coupled BEM and Three-Step FEM Model, *Journal of Computer Methods in Applied Mechanics and Engineering*, Volume 190, pp 5975-5998, 2001.

Young D.L., Huang J.L. and **Eldho T.I.**,
Numerical Simulation of High Reynolds Number Flow around Circular Cylinders by Three-step FEM-BEM Model, *International Journal for Numerical Methods in Fluids*, Volume 37, pp 657-689, 2001.

Papers in Conference Proceedings

Abhay D., Krishna M.B. and **Rao E.P.**,
Evaluation of the JPEG 2000 Compression Standard for Remote Sensing Applications, *National Symposium on Recent Advances in Remote Sensing and GIS Technologies for Natural Resources Management*, CSRE, IIT Bombay, Mumbai, December 5-7, 2001.

Chaudhuri S.A.
Exact Solutions for Stability Control of Piezolaminated Struts, *46th Congress of ISTAM Congress*, IIT-Kharagpur, December 2001.

Chandramoan V., Jaya M.S. and **Eldho T.I.**,
Hydrodynamics of Kochi backwaters and siltation', *Proc. of Int. Conference in Ocean Engineering*, 11-14 December 2001.

Chaudhuri S.A. and **Mukherjee A.**,
Geometrically Nonlinear Electromechanically Coupled Piezolaminated Beams, 2nd International Conference on Theoretical, Applied, Computational and Experimental Mechanics, IIT Kharagpur, 2001.

Chakravarthy M.K., Krishnaiah S., **Singh D.N.** and Dalinaidu A.,
Modeling of Heat Migration Through Geomaterials, *Indian Geotechnical Conference*, Indore, 2001, pp 16-17.

Chowdhary V.S. and **Kulkarni M.N.**,
GPS-A Useful Tool for Intelligent Vehicle Highway System (IVHS), *Proc. of Asian GPS Conference*, New Delhi, pp 93-95, October 28-29, 2001.

Chitnis M.R., **Desai Y.M.** and **Kant T.**,
Wave Propagation in Laminated Composite Plates using Higher Order Theories, *Proc. of Structural Engineering Convention*, Indian Institute of Technology Roorkee, October 29-31, 2001.

Dafedar J.B., **Desai Y.M.** and Shiyekar M.R.,
Stability of Laminated Composite Plates Using Mixed, Higher-Order Analytical Formulation, *Structural Engineering Convention 2001*, IIT Roorkee, pp 943-950, October 29-31, 2001.

Gupta A.K. and **Singh D.N.**,
Hydraulic Conductivity Modelling Using Artificial Neural Networks, *Indian Geotechnical Conference*, Indore, 2001, pp 5-7.

Hegde, R.A., Dodagoudar G.R. and **Mandal J.N.**,
Modelling of Heat Flow through Landfills, *Int. Conf. On Industrial Pollution and Control Technologies*, Hyderabad, pp 678-686, December 7-10, 2001.

Hegde, R.A., Dodagoudar G.R. and **Mandal J.N.**,
Probabilistic Analysis of Contaminant Migration of Soils, *Int. Conf. On Industrial Pollution and Control Technologies*, Hyderabad, pp 687-694, December 7-10, 2001.

Joshi S. and **Mukherjee A.**,
Design of Modal Piezoelectric Transducer Shapes for Plated Structures, *46th ISTAM Congress*, IIT-Kharagpur, December 2001.

Kant T.,
Structural Mechanics of Beams, Plates and Shells-An Overview of Research, Invited Lecture, *Proc. of 46th Congress of the Indian Society of Theoretical and Applied Mechanics-An International Meet (46th ISTAM)*, Regional Engineering College Hamirpur, HP, December 19-22, 2001.

Kant T.,
Reflections on Shell Theories, Plenary Lecture, *Proc. of International Conference on Advances in Civil Engineering (ACE-2002)*, Indian Institute of Technology Kharagpur, January 3-5, 2002.

Kant T. and Gadgil M.,
Segmentation Method in Mechanics of Polymer Composites, Invited Keynote Lecture, *Proc. of International Conference on Civil Engineering (ICCE-2001)*, Indian Institute of Science Bangalore, July 23-25, 2001.

Kishore D.D., **Rao K.G.** and Prakash A.,
Improvement of Effective Spatial Resolution of Thermal Infrared Data for urban Landuse Classification, *IEEE/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas*, Rome, November 8-9, 2001.

Kolay P.K. and **Singh D.N.**,
Effect of Chemical Activation of a Lagoon Ash on its Physico-Chemico-Mineralogical Properties, Seventh *CANMET/ACI International Conference on Fly ash, Silica fume, Slag and Natural Pozzolans in Concrete*, July 22-27, 2001, Madras, India. Volume 1, pp 43-54.

Kolay P.K. and **Singh D.N.**,
Shear Strength Characteristics of Zeolitized Lagoon Ash, *International Conference on Civil Engineering*, ICCE-2001, IISc Bangalore, July 23-25, 2001, pp 696-703.

Krishnaiah S. and **Singh D.N.**,
Influence of Physical Characteristics of the Fly Ash on its Thermal Properties, *ICIPACT 2001*, JNTU, Hyderabad, 2001.

Kulkarni M.N.,
The Global Positioning System and its Application, *Proc. of Fourth Training Programme on Application of Remote Sensing & GIS in Water Resources Development*, National Water Academy, Pune, pp 64-80, January-February, 2002.

Kulkarni M.N.,
Global Positioning System Studies to Estimate Post-Earthquake Deformation due to the 2001 Gujarat Earthquake. *Proc. of International Association of Geodesy Scientific Assembly-IAG 2001*, Budapest, Hungary, September 2-8, 2001.

Kulkarni M.N.,
Crustal and Dam Deformation Studies Using Global Positioning System (GPS): Two Case Studies, Keynote Paper, *Proc. of Asian GPS Conference*, New Delhi, pp 1-4, October 28-29, 2001.

Kulkarni M.N.,

GPS-International Scenario, *Proc. of National Workshop on GPS Applications*, Institution of Surveyors, Hyderabad, pp 21-25, April 9, 2001.

Kulkarni M.N.,

Application of GPS to Civil Engineering, *Proc. of International Conference on Advances in Civil Engineering*, IIT Kharagpur, pp 1513-1522, January 3-5, 2002.

Kulkarni M.N.,

Application of GPS & Geodetic Technique to Earthquake Research, *Proc. of International Conference on RS, GIS & GPS in Human Settlement Planning*, MACT, Bhopal, pp 67-74, January 16-19, 2002.

Kulkarni M.N., Adam J., Fejes I., Freg S. and Paragi Z.

Recent Development in Space VLBI Geodesy Demonstration Experiment (GEDEX), *Proc. of International Association of Geodesy Scientific Assembly - IAG2001*, Budapest, Hungary, September 2-8, 2001.

Kulkarni S.A. and Bajoria K.M.,

Finite Element Modelling of Smart Composite Shells, *Recent Developments in Structural Engg., SEC-2001*, IIT, Roorkee, India, pp 584-92

Kulkarni S.A. and Bajoria K.M.,

Finite Element Modelling Smart Composite Shells using Higher Order Theory, *Int. Conf on Advances in Civil Engg., ACE 2002*, IIT Kharagpur, India, Volume, II, pp 1319-28, January 2002.

Kulkarni S.A. and Bajoria K.M.,

Self Control and Monitoring of the Smart Shells by Finite Element Method using Higher Order Theory, *7th Int. Conference on Inspection, Appraisal, Repairs and Maintenance of Buildings 2001*, Nottingham-Trent Campus, pp 419-426, September 2001.

Kulkarni S.A. and Bajoria K.M.,

Static Analysis of Piezolaminated Shells using Higher Order Theory, *Proceedings of National Workshop on Advances in Structural Engineering*, 2001, Sri Venkateshwara University, Tirupati, India, pp 45-52, December 2001.

Kulkarni S.A. and Bajoria K.M.,

Finite Element Model for the Active Control of Smart Shells Using Higher Order Theory, *Proceedings of National Workshop on Advances in Structural Engineering*, Sri Venkateshwara University, Tirupati, pp 73-80, December 2001.

Kulkarni S.C., Desai Y.M. and Kant T.,

Development of GUI Based Software Package for Elastic-Plastic Static and Dynamic Analysis of Piping Systems, *Proc. of Technical Programme Discussion Meeting of BRNS Projects (TPDM-2002)*, Board of Research in Nuclear Sciences, BARC, Mumbai, February 14-16, 2002.

Mohrluk U. and Eldho T.I.,

Groundwater Pollution Management Using Pump and Treat Technology: A Case Study, *Proc. of Int. Conference, Advances in Civil Engineering*, IIT Kharagpur Volume I, pp 49-57, January 3-5, 2002.

Mukherjee A. and Joshi S.P.,

Actuator Shape Optimization for Control of Smart Laminated Plates, *1st Asian-Pacific Congress on Computational Mechanics (APCOM'01)*, Sydney, 20-23 Nov. 2001, pp 1413-1417.

Mukherjee A., Maitra R.S. and Joshi M.,

FRPC Confined Concrete Columns-Experimental And Analytical Studies, *Proc. of Advances in Civil Engineering*, IIT Kharagpur, January 3-5, 2002.

- Mukherjee A.** and Ravindra V.,
A Cascading Network of Artificial Neurons for Structural Health Monitoring, Proc. of First Asia-Pacific Conference on Mechanics, University of New South Wales, 19-23 November 2001, pp 1289-1294.
- Nagesha, M.S. and **Venkatachalam G.**,
A Neural Network Assisted Back-Analysis of Slopes, *Int. Conf. on Civil Engineering*, ICCE-2001, Bangalore, Volume 2, pp 385-392, 2001.
- Rao K.M. and **Desai Y.M.**,
Static Analysis of Laminated and Sandwich Plates Using Hybrid/Mixed Theory, Structural Engineering Convention 2001, IIT Roorkee, pp 934-942, October 29-31, 2001.
- Rajeev K.P. and **Singh D.N.**,
An Instrument for Detection of Contaminant Transport in Soils, *Indian Geotechnical Conference*, Indore, 2001, pp 483-484.
- Ramtekkar G.S. and **Desai Y.M.**,
Analysis of Laminated Composite Plates by Using Mixed Finite Element Formulation, *46th Congress of ISTAM*, REC Hamirpur, pp 279-286, 2001.
- Ramtekkar G.S. and **Desai Y.M.**,
Analysis of Laminated Composite Beams by Using Mixed Finite Element Model, *Structural Engineering Convention 2001*, IIT Roorkee, pp 925-933, October 29-31, 2001.
- Rao K.V.K.** and Rastogi, R.,
Modelling Transit Access Behaviour Using Revealed Preference and Stated Preference Information, *9th World Conference on Transport Research*, Seol, Korea, July 22-27, 2001.
- Rao K.V.K.** and Rao C.V.S.,
A Micro-Analytic Land Use Model Using Artificial Neural Networks, *9th World Conference on Transport Research*, Seol, Korea, July 22-27, 2001.
- Rastogi A.K.**,
Aquifer Flow Modelling by Numerical Simulation in Mahi Right Bank Canal Command Area, Gujarat, India, *Proc. of UNESCO-IHP Workshop on Modeling in Hydrogology*, Chennai, Dec 3-7, 2001, pp 73-88.
- Rastogi A.K.** and Prasad K.L.,
Auto Calibration of Groundwater Flow Models Using Genetic Algorithms, *Proc. of International Conference on Civil Engineering*, IISc Bangalore, Volume II, pp 602-610, July 23-25, 2001.
- Rastogi A.K.** and Patil S.,
Transport of Pollutants in Open Channel with Short Waves, *Proc. of National Conference on Hydraulics and Water Resources*, HYDRO 2001, CWPRS Pune, pp 152-158, Dec 6-7, 2001.
- Rastogi A.K.** and Ukarande S.K.,
Prevention of Sea Water Intrusion by Recharge Wells in Multi Layer Coastal Aquifers, *Proc. International Conference on Water Resources Management in Arid Regions*, Kuwait Institute for Scientific Research, Kuwait, March 23-27, 2002.
- Rastogi A.K.** and Ukarande S.K.,
Parametric Studies on the Effect of Field Parameters on Seawater Intrusion in Multi-Layered Coastal Aquifers, *Proc. of International Conference on Sustainable Development and Management of Groundwater Resources in Semi-Arid Region with Special Reference to Hard Rocks*, pp 427-436, Feb. 20-22, 2002.

Rejani R., Panda, S.N., Jha, M.K., **Eldho T.I.** and Mull R.,
Groundwater Management in a Coastal Catchment in Orissa, India Using a Finite Element Model, *Proc. of Int. Conference, Advances in Civil Engineering*, IIT Kharagpur Volume I, pp 108-117, January 3-5, 2002.

Salman S.Q. and **Kulkarni M.N.**,
Web-based Automatic GPS Data Processing System, *Map India 2002 International Conference*, New Delhi, pp 107-110, February 6-8, 2002.

Singh A.K. and **Eldho T.I.**,
Dieter Prinz, 'Integrated Watershed Approach for Combating Drought in Semi-arid Region of India: A case of Jhabua Watershed', *Proc. of 2nd World Water Congress*, IWA, Berlin, Germany, 15-19 October 2001.

Singh A.K. and **Eldho T.I.**,
Sustainable Watershed Management Strategies in Semi-arid Region of India - A Case Study, *Proc. of Int. Conference, Advances in Civil Engineering*, IIT Kharagpur Volume I, pp 206-215, January 3-5, 2002.

Shrimali M.K. and **Jangid R.S.**,
Earthquake Response of Base Isolated liquid Storage Tank to Bi-directional Ground Motion, *Proceedings of SEC-2001*, Roorkee, pp 677-685, 2001.

Sreekanth G.N., **Venkatachalam G.** and Rao E.P.,
Runoff Simulation of Ungauged Catchments Using GIS and Remotely Sensed Data, *National Symposium on Recent Advances in Remote Sensing and GIS Technologies for Natural Resources Management*, CSRE, IIT Bombay, Mumbai, December 5-7, 2001.

Srikanth J.V.S.S. and **Kulkarni M.N.**,
An Experiment for Vehicle Guidance System using GPS-GIS Integration, *Map India 2002 International Conference*, New Delhi, pp 89-92, February 6-8, 2002.

Tomar V.S., Pillai P. and **Kulkarni M.N.**,
Provision of Precise GPS Control for the Proposed International Airport at Nagpur, India, *Map India 2002 International Conference*, New Delhi, pp 99-101, February 6-8, 2002.

Ukarande S.K. and **Rastogi A.K.**,
Parametric Studies on the Effect of Field Parameters on Sea Water Intrusion, *Proc. of National Conference on Hydraulics and Water Resources*, HYDRO 2001, CWPRS, Pune, pp 207-217, Dec 6-7, 2001.

Viswanadham, B.V.S.,
Modelling and Instrumentation Considerations of a Geogrid, *Proc. of Landmarks in Earth Reinforcement, International, Symp. on Earth Reinforcement*, Fukuoka, Japan, Volume I, pp 153-158, November 14-16, 2001.

Venkatachalam G., Quadri, S.S., Nair, R.S., Dodagoudar G.R. and Nagesha M.S.,
Mathematical Modelling in Slope Stability Analysis, *Proc. of Workshop on Recent Trends in Landslide Assessment and Monitoring*, ed. R. Nagarajan, CSRE, IIT Bombay, 2001.

Young D.L., Wang Y.F. and **Eldho T.I.**,
Hydrodynamics of Shallow Water Flow Fields, *Proc. of Int. Conference in Ocean Engineering*, 11-14 December 2001.

Young D.L., Capart H., Huang, S.Y. and **Eldho T.I.**,
Transcritical Flow Simulation in Natural Channel Using a Flux Predictor Numerical Model, *Proc. of Int. Conference, Advances in Civil Engineering*, IIT Kharagpur Volume I, pp 372-381, January 3-5, 2002.

Awards

Prof. N.K. Bairagi selected for "RASHTRIYA RATNA SHIROMONI" Award by the India International Society for Unity, Delhi, 2001-02.

Prof. D.M. Dewaikar who is the Honorary Secretary of the Indian Geotechnical Society (Mumbai Chapters) has been awarded the Best Chapter Award for the year 2001 by the IGS, New Delhi.

Honorary Works

Bairagi N.K.,

Selection Committee Member: Nominated and Invited as Expert for the Selection of Professor/Asso. Professor (Reader) in Structural Engineering in Jai Narain Vyas University, Jodhpur.
Referee for the Journal of the Institute of Engineers (India) in the Civil (Structures/Construction) Group.

Deo M.C.,

Associate Editor, ASCE Journal of computing in civil engineering,
Reviewer, ASCE Journal of computing in civil engineering,
Reviewer, Hydrological Processes, Journal, Academic, USA,
Member, Monitoring committee of AICTE projects,
Member, Advisory Board, IEOT, ONGC
Member, Editorial board, CIVIL-COMP conference, Eisenstad, Austria, Sept. 2001,
Member, Accreditation Teams of AICTE at Surathkal, Ahmedabad, Nagpur, Patiala, Chennai,
Reviewer, DST project proposal, Member, ACE2002 conference, IIT Kharagpur,
Examiner of two M S theses of IIT Madras
Member of ASCE, COPRI of USA, Indian Society of Hydraulics

Desai Y.M.,

Reviewer for Journal of Sound and Vibration and Indian Concrete Journal
Participated in Courses Conducted through QIP and CEP
Examiner for Ph.D. and M.E. Dissertations from Engineering Institutes

Dewaikar D.M.,

Honorary Secretary, Indian Geotechnical Society, Mumbai.

Eldho T.I.,

Reviewer of water resources related papers in the International Conference on Advances in Civil Engineering, January 3-5, 2002, IIT Kharagpur.
Reviewer of research papers to Journal of Computing in Civil Engineering, ASCE.

Jangid R.S.,

Reviewer for research papers of ASCE Journal of Structural Engineering, Earthquake Engineering and Structural Dynamics, Journal of Sound and Vibration, Structural Engineering and Mechanics, Advances in Structural Engineering-An International Journal.

Kant T.,

Founder: Indian Association for Structural Engineering and Indian Association for Computational Mechanics;
Fellow: Indian National Academy of Engineering (INAE), The Institution of Engineers (IE) and The Aeronautical Society of India (AeSI);
Reviewer: International Journal for Numerical Methods in Engineering, Journal of Sound and Vibration, Engineering Computations-An International Journal, Mechanics of Composite Materials and Structures;
Editorial Board Member: Structural Engineering and Mechanics-An International Journal;
Member: Building and Works Committee of the National Institute of Industrial Engineering Bombay, AERB Committee on Safety Research Projects, Faculty Selection Committees of IISc-Bangalore and Scientists Selection Committee of SERC-Madras, NBA accreditation teams.

Kulkarni M.N.,

Member, Steering Committee, International Conference on GIS-GPS & Remote Sensing for Human Settlement Planning, MACT, Bhopal, 16-19 Jan. 2002
Co-chaired the session on GPS-GIS Applications, at the International Conference on GIS-GPS & Remote Sensing for Human Settlement Planning, MACT, Bhopal, 16-19 Jan. 2002
Member, Expert Subgroup on Advanced Technology Applications, Natural Resource Development & Management Service, DST, Govt. of India, from 3 Sept. 2001
Member, Editorial Board, Survey Review International Journal, UK, (from March 2001)
Referee for review of papers for journals: Survey Review UK, Current Science, India, GIS at development, India
Member, National Expert Committee on GPS, DST, Govt of India (from June 2001)
Member, National Org. Committee, Asian GPS Conference, New Delhi, Oct 2001
Member, Expert Committee for GPS GIS based System, Mumbai Police Department (from Feb 2001)
Member Research Board of Advisors, American Biographical Inc., USA (from Aug. 2000.)
Chaired the Session on Global Navigation Satellite Systems at Asian GPS Conference, New Delhi 29 ^Ö 30 Oct 2001
Member, Expert Sub Group on Advanced Technology Applications under Natural Resource Development & Management System (NRDMS), DST, Govt of India (from Sept 2001)

Ranganathan R.,

Member of the Editorial Board of International Journal of Structures, India.
Member of the Academic Council (Civil Engineering) of University of Mumbai.

Rao K.V.K.,

Chaired two technical sessions at the 9th World Conference on Transport Research held during 22-27 July, 2001 at Seoul, Korea.

Rastogi A.K.,

Man of the year 2001 nomination by the American Biographical Institute Inc., Raleigh, USA.
Reviewer of the project on Groundwater modelling (CSIH-HRD request)
Reviewer of ASCE-Jr of computing in Civil Engg paper
Referee to examine the research papers for Roorkee Univ, KHOSLA AWARD Consented to act as visitor nominee for faculty selection and other committees of IIT Roorkee.

Singh D.N.,

Co-Editor, Indian Geotechnical Journal
Member REACH Monitoring Committee, TIFAC, DST, Govt. of India, New Delhi.

Tom V.M.,

Invited as the Resource person for Genetic Algorithm for the Instructional workshop of soft computing, organized by the Applied Mathematics Department of Baroda University, January 7-11, 2002.

Venkatachalam G.,

Member of National Accreditation Board, for Accreditation of Kongu Engineering College, Salem and REC Hamirpur.
Examiners for Ph.D. thesis from IISc Bangalore and REC Warangal.
Chaired a Session in National Symposium on Recent Advances in Remote Sensing and GIS Technologies for Natural Resources Management, CSRE, IIT Bombay.
Chaired a Session in National Symposium on Remote Sensing and GIS at Indore, January 8-9, 2001.

Viswanadham B.V.S.,

Visited geotechnical centrifuge facilities at Tokyo Institute of Technology, Japan on Nov. 17, 2001 and held discussions on the various aspects of research pertaining to centrifuge modelling of geotechnical and geoenvironmental problems.
Also visited geotechnical centrifuge facility available at Nikki Sekki Geotechnical Institute (NNGI) on Nov. 20, 2001 and held discussions with the research group of NNGI.

Invited Lectures

Bairagi N.K.,

Selfing and Crossing Concept-Its application in Strength of Two Partially Set Concrete Mixes in Blending, Jadavpur University, Calcutta, December 18, 2001.

Bajoria K.M.,

Earthquake Resistant Structures, Maharashtra Housing and Area Development Authority (MHADA), Mumbai, July 15, 2001.

Earthquake Resistant Masonry Structures, International Workshop on Earthquake Engineering, held at Ahmedabad by Gujarat State Disaster Management Authority (GSDMA), August 31, 2001.

Eldho T.I.,

Boundary Integral Modeling of Hydrodynamics & Transport in Stratified Estuaries, Indian Statistical Institute, Calcutta, May 3, 2001.

Gupta K.,

Artificial Neural Networks Applications in Urban Drainage Problems, CEP Course "Neural Networks in Civil Engg., I.I.T. Bombay, July 13, 2001.

Constructed Wetlands, Tata Consulting Engineers, June 27, 2001.

Water Quality Modelling, MTERM Workshop on Water Quality Modelling in Urban Drainage Systems, AIT Bangkok, December 13-15, 2001.

Kulkarani M.N.,

Role of GPS in disaster management, Indian Institute of Remote Sensing, Dehradun, July 31, 2001.

Frontiers of Research in Geodesy and GPS, UGC Sponsored Training, Course on Spatial Information Technologies, JNTU, Hyderabad, August 8, 2001.

Global Positioning System & its applications, Workshop on Remote Sensing, GPS and GIS, Central Institute of Fisheries Education, Versova, Mumbai, November 24, 2001.

An Overview of the Global Positioning System, Indian Geotechnical Society Mumbai Chapter Meeting, VJTI, Mumbai, January 19, 2002.

The Global Positioning System & Geographical Information Systems, Tech Fest - Last Straw, IIT Bombay, February 1, 2002.

Mukherjee A.,

Structural Applications of Composite and Smart Materials, Staatliche Materialpruefungsanstalt, University of Stuttgart, Stuttgart, Germany, October 15, 2001.

A Novel Structural Rehabilitation Technique for Structures Affected in Gujarat Earthquake, Department of Civil and Mining Engineering, University of Wollongong, November 21, 2001.

Spatially Weighted Piezolaminated Transducers for Structural Control, Department of Aerospace Engineering, University of Sydney, November 22, 2001.

Our Research on Composites and Smart Materials, Department of Mechanical Engineering, University of Auckland, November 27, 2001.

Application of Composite and Smart Materials, Department of Civil Engineering, University of Melbourne, November 28, 2001.

Layered Sacrificial Claddings for Blast and Impact Resistant Structures, Department of Civil Engineering, Monash University, November 29, 2001.

Application of Composite and Smart Materials, Department of Civil Engineering, National University of Singapore, November 30, 2001.

Application of Composite and Smart Materials, Department of Civil Engineering, Nanyang Technological University, November 30, 2001.

Information Technology in Architecture, Engineering and Construction Industry- Recent Trends, Workshop on IT in AEC Industry, The Institute of Architects, Indian Architect and Builder, November 10, 2001.

Rehabilitation and Retrofitting of RC Structures Using Non-Metallic Fiber Composites, Workshop on Seismic Assessment and Retrofitting of Buildings, The Institution of Engineers, The Institute of Architects and Indian Society of Structural Engineers, February 02, 2002.

Rao K.G.,

Application of ANNs in Remote Sensing, National Water Academy, Pune, October 11, 2001.
Digital Analysis of remotely Sensed Data, National Water Academy, Pune, February 1, 2002.
Application of Artificial Neural Networks in Remotely Sensed Data Analysis, CEP Course "Neural Networks in Civil Engg., I.I.T. Bombay, July 13, 2001.
Remote Sensing : Principles and Methods, Central Institute of Fisheries Education, Verasova, Mumbai.
Workshop on Remote Sensing, GIS and GPS, November 24, 2001.

Venkatachalam G.,

Delivered Keynote Address Session in National Symposium on Remote Sensing and GIS at Indore, January 8-9, 2001.

Viswanadham B.V.S.,

Centrifuge Modelling of Clay Liners and Reinforced Slopes, First National Workshop on Centrifuge Modelling, IIT Bombay, March 26, 2002.

Important Visitors

Prof. S. Schmauder, Head, Department of Structural Ceramics/Composite Materials, Staatliche Materialprüfungsanstalt, University of Stuttgart, Germany, visited the Civil Engineering Department under the Indo-German bilateral research project titled "Design and Characterization of Graded Interfaces in Composite Materials" from March 7-12, 2002. Prof. Schmauder delivered a lecture on "Micro, Meso and Nano Mechanics of Composite Materials". He met the researchers in his area of interest to develop the collaborative research further and also gave a lecture at Bhaba Atomic Research Centre, Mumbai.

Mr.Gajnan Gandhe, Director, Engineering, Lear Corporation (India), Mumbai, visited the Civil Engineering Department and gave a talk on "Finite Element Analysis Techniques in Automotive Industry" on March 27, 2002

Prof. Friedemann, Wenzel, University of Karlsruhe, Germany visited the Civil Engineering Department and spoke on "Earthquake Early Warning Systems - Examples and Perspectives" on December 11, 2001.

Dr. P.S. Rana, Director (Corporate Planning), HUDCO, New Delhi visited the Civil Engineering Department and gave a talk on "Cost Effective Infrastructure For Guided Regional Development" on December 11, 2001.

Dr. D.K. Mishra, Manager, Rocla Technology, Australia visited the Civil Engineering Department and spoke on "Flyash Applications: From Cement Replacement to Aerospace Composites" on January 9, 2002

Prof. S. Bandyopadhyay, University of New South Wales, Australia gave a presentation on "Composites in Civil Engineering - Structural Applications" on January 9, 2002.

Mr. P.L. Bongirwar, Additional Metro. Commissioner, MMRDA, Mumbai, visited the Civil Engineering Department and gave a talk on the "Role of Modern Techniques & Process of Implementation in Infrastructure Development" on February 13, 2002.

Dr. M.G. Satish, Associate Dean (SA) & Professor of Civil Engineering (Water Resources), Dalhousie University, Halifax, Canada visited CSRE on July 31, 2001 and visited the Civil Engineering Department and delivered a talk on the plans for setting up of a Remote Sensing and GIS Laboratory at Daltech. Subsequently, he visited various labs of CSRE and interacted with the Scientists & Engineers.

Prof. G. Farkas, Dean, Civil Engineering, **Prof. A. Lovas**, Deputy Dean, and **Prof. J. Adam**, Head, Geodesy, BUTE, Hungary, visited IITB under the MOU between the institution and **Budapest University of Technology & Economics (BUTE), Hungary**, and the **Indo-Hungarian joint research project on Space Geodesy**, from March 2-7, 2002. They held discussions and meetings with Prof. Ashok Misra, Director, IITB, Prof. G. Venkatachalam, HOD, Civil Engineering, Prof. Madhav N. Kulkarni, PI of the project, and other faculty members and presented two seminars in the Civil Engineering Department.

Specializations of the Faculty

N.K. Bairagi, PhD (IIT Bombay)

Professor

Structural engineering: Elastic shells, Recycled aggregate concrete, Twisted reinforcements.

K.M. Bajoria, PhD (Cambridge)

Assistant Professor

Structural engineering: Computer aided design, Non-linear analysis, Nuclear structures.

P. Banerji, PhD (Berkeley)

Professor

Structural engineering: Earthquake analysis, Risk assessment, Artificial neural networks, Nuclear structures.

D.N. Buragohain, PhD (IIT Bombay)

Professor (on lien)

Structural engineering.

V.S. Chandrasekaran, PhD (Liverpool)

Professor

Geotechnical engineering: Soil-structure interaction, Offshore foundations, Centrifuge modelling.

M.C. Deo, PhD (IIT Bombay)

Professor

Water resources engineering: Offshore structures, Statistical and neural analysis of random oceanographic and hydrologic data, Artificial neural networks.

Y.M. Desai, PhD (Manitoba)

Associate Professor

Structural engineering: Wind induced vibrations, Computational mechanics, Nonlinear analysis, Finite elements, Parallel computing, Fibre reinforced polymer composites, Composites in construction.

D.M. Dewaikar, PhD (IIT Bombay)

Professor

Geotechnical engineering: Offshore foundations, Ground improvement, Seepage.

S.L. Dhingra, PhD (IIT Kanpur)

Professor

Transportation systems engineering: Modelling, Simulation, Economics, Environmental impact assessment, GIS, Expert systems, Artificial intelligence, Genetic algorithms, Fuzzy set theory.

T.I. Eldho, PhD (IIT Bombay)

Assistant Professor

Water resources engineering: Groundwater flow, pollutant transport, remediation – numerical & experimental investigations Computational fluid dynamics – Incompressible viscous flows, shallow water flow, estuary dynamics, pollutant transport Watershed management – applications of numerical models, Geographical Information Systems, Remote sensing.

K. Gopal Rao, PhD (IIT Bombay)

Associate Professor

Surveying and remote sensing, Digital Analysis and modelling, GIS, Decision support systems, Software development.

Alok Goyal, PhD (Berkeley)

Professor

Structural engineering: Base isolation systems and energy absorbing devices, Earthquake analysis and design, Liquid storage tanks, Bridges, Vibration control of structures, Service life assessment of buildings.

Kapil Gupta, PhD (Sheffield)

Assistant Professor

Water resources engineering: Urban water supply systems, Urban drainage, Urban water infrastructure management, Flood Protection structures, Computational fluid dynamics, Optimization, Environmental Impact assessment, Water quality analysis and modelling, Constructed Wetlands, Urban Disaster Management.

R.S. Jangid, PhD (IIT Delhi)

Assistant Professor

Structural engineering: Structural mechanics, Structural dynamics and earthquake engineering, earthquake-resistant design, base isolation for aseismic design of structures, seismic isolation of bridges and liquid storage tanks, non-classically damped system.

Tarun Kant, PhD (IIT Bombay)

Professor

Structural engineering: Solid mechanics, Plates, Shells, Fibre reinforced polymer composite laminates, Higher order theories, Thermal stresses, Transient dynamic techniques, Finite elements, Numerical techniques, Polymer composites in construction, Composite mechanics, Computational mechanics.

R.K. Katti, PhD (Iowa)

Professor Emeritus

Geotechnical engineering.

Madhav N. Kulkarni, PhD (Ohio State)

Associate Professor

Surveying and remote sensing: Global positioning system (GPS), Space geodesy, Geodetic Studies for geodynamics and earthquake monitoring, Mapping, GIS.

R.G. Limaye, MTech (IIT Bombay)

Assistant Professor

Structural engineering: Concrete mix designs, quality control, admixtures, non-destructive testing, prefabricated concrete structures, fibre reinforced concrete.

J.N. Mandal, PhD (IIT Kharagpur)

Professor

Geotechnical engineering: Geosynthetics for civil engineering construction.

R. Misra, PhD (IISc Bangalore)

Assistant Professor

Water resources engineering: Canal automation and control,
Contaminant/solute transport, Computational fluid dynamics.

A. Mukherjee, PhD (IIT Kharagpur)

Professor

Structural engineering: Composite materials, Environmental effects,
Artificial neural networks, Artificial intelligence, Fibre
reinforced composites.

J.S.R. Murthy, PhD (IIT Bombay)

Professor

Water resources engineering: Management information systems, Decision
support systems, Mathematical modelling, Numerical solutions, Modelling
of hydrological systems.

S. Narasimhan, PhD (Iowa)

Professor Emeritus

Water resources engineering.

B.S. Pani, PhD (Alberta)

Professor

Water resources engineering: diffusion of jets and plumes, multiple
diffusers, offshore pipelines, scour problems, cooling water structures.

C.K. Ramesh, PhD (Leeds)

Professor Emeritus

Structural engineering.

R. Ranganathan, PhD (IIT Kanpur)

Professor

Structural engineering: Reliability analysis and design of structures,
Structural optimization, Code calibration and establishing safety
factors, Fatigue reliability analysis, RCC, Prestressed concrete and
steel design.

B.V. Rao, PhD (IISc Bangalore)

Professor

Water resources engineering: Separation control in diverging channels,
3-dimensional flow, Multireservoir systems, Multiaquifer basins,
Interbasin transfer.

C.S. Rao, PhD (IIT Bombay)

Associate Professor

Remote sensing: Image processing, Geodetic adjustment, Non-linear
optimization, Field astronomy.

E.P. Rao, PhD (IIT Bombay)

Assistant Professor

Remote sensing: Remote sensing applications to water resources, Runoff
modelling, Water distribution systems optimization.

K.V. Krishna Rao, PhD (IIT Madras)

Associate Professor

Transportation Systems Engineering: Travel demand modelling; Evolutionary algorithms, neural networks and GIS in transport planning; Traffic design and analysis.

A.K. Rastogi, PhD (Birmingham)

Professor

Water resources engineering: Groundwater flow modelling of aquifers, Ground water quality modelling.

P.K. Sikdar, PhD (Waterloo)

Professor (on lien)

Transportation systems engineering.

D.N. Singh, PhD (IIT Kanpur)

Associate Professor

Geotechnical engineering: Soil exploration and characterization,
Foundation analysis and design, Stability analysis,
Environmental geotechnics, Soil contamination detection and modelling,
Radioactive waste disposal, Solid waste utilization,
Geotechnical centrifuge modelling.

Ravi Sinha, PhD (Northwestern)

Associate Professor

Structural engineering: Earthquake engineering, Vibration control and isolation, Structure rehabilitation and condition monitoring, Disaster management.

G. Venkatachalam, PhD (Leningrad)

Professor and Head

Geotechnical engineering: Finite element analysis, Digital image processing, Digital terrain modelling, GIS applications to landslides.

B.V.S. Viswanadham, PhD (Ruhr)

Assistant Professor

Geotechnical engineering: Centrifuge modelling, Soil reinforcement, Ground improvement, Environmental geotechnics- waste materials behaviour, waste containment systems.