

## 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 technical advisory support through various R & D projects and consultancy 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 five specializations:

Transportation Systems Engineering  
Geotechnical Engineering  
Water Resources Engineering  
Structural Engineering  
Geodesy & Remote Sensing

This year, 35 MTech and 7 PhD students were admitted in the above specialisations. In the first year, 49 students were admitted in the BTech, and 15 students were admitted in the dual degree BTech/MTech programmes. During the year, 23 BTech, 62 MTech and 13 PhD students graduated from the Department.

## Awards

**Prof. V.S. Chandrasekaran** received the *Vasvik Award 1999*: Mechanical Sciences and Technology.

**Prof. V.S. Chandrasekaran** received the *Life Time Achievement Award* of IIT Bombay, 2003.

**Prof. Kapil Gupta**, has been awarded the *Quality of Life Award* by the Association of Commonwealth Universities (ACU), London to carry out research work on minimization of the overflows in storm water drains at the University of Sheffield, England, UK over a period of two months.

**Dr. T.I. Eldho**, with Mr. Anupam K. Singh and Prof. F. Nestmann of University of Karlsruhe received the *Best Poster/Paper Award* in the **12th Stockholm International Water Symposium**, held at Stockholm, Sweden, during August 2002 for their paper entitled 'Poverty Alleviation and Social Development through Integrated Watershed Management Approach – A Case Study'.

**Prof. Madhav N. Kulkarni** was awarded the *“IGS Geotech Consultants Biennial Award, 2000-02*, by the Indian Geotechnical Society, for best paper on “Innovations in Field Exploration”, presented in IGC-2000 Conference.

**Prof. S.L. Dhingra** received the *Award for Excellence in Teaching* from IIT Bombay for 2002.

### **Extension Activities**

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

Prof. **T.I. Eldho** and Prof. **E.P. Rao** organized a QIP short term course “Advanced Technologies in Water Resources and Environmental Management”, during May 6-10, 2002.

Prof. **T.I. Eldho** and Prof. **E.P. Rao** organized CEP short term course “Advanced Technologies in Water Resources Management”, during November 27-29, 2002.

Prof. **Kapil Gupta** conducted (i) CEP course on Urban Drainage Management, IIT Bombay, June 27-28, 2002, (ii) in-house CEP course on Urban Drainage Management, for Delhi Municipal Corporation, Delhi, July 27, 2002 and (iii) International Course on Global Developments in Urban Drainage Management at IIT Bombay, co-sponsored by **UNESCO-IHP/WSSCC-WHO/IWA**, February 5-7, 2003.

Prof. **Madhav N. Kulkarni** conducted the 2<sup>nd</sup> DST-Sponsored Short Training Course on GPS and its Applications during November 12-16, 2002 .

### **Sponsored Research**

15 new sponsored research projects worth about 75 lakhs were initiated during the year. A few of the ongoing and new projects are listed below:

Development of numeric models for the prediction of hydrodynamics and salinity in branched estuary channels

Establishment of geotechnical centrifuge facility-Phase IV.

IRCC project for stability evaluation

Fibre reinforced polymer concrete composites for civil construction of 21<sup>st</sup> century.

Earthquake-resistant design of bridges using seismic isolators.

Simplified seismic analysis of piping systems supported on energy dissipating devices.

Seismic risk evaluation in urban area (Mumbai)

National project on earthquake engineering education.

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.

### **Consultancy Work**

254 consultancy projects worth about Rs. 1.54 crore were undertaken during the year by the Civil Engineering Department. 23 faculty members were involved in the above consultancy work.

### **Books/Chapters in Book**

Hegde R.A., Dodagoudar G.R. and **Mandal J.N.**,  
Centrifuge Modeling of Pollutant Transport Through Liners, *Environmental Geomechanics*,  
Edited by L. Vulliet, L. Laloui & B. Schrefler, Monte Verita, Switzerland, 2002.

**Mandal J.N.**,  
A Guide to Geotextiles Testing, *New AGE International Publication*, 2002.

**Pani B.S.** and Dugad S.B.,  
Turbulent Jets: Application of Point Source Concept, *Research Perspectives in Hydraulics and Water Resources Engineering*, Edited by Rama Prasad and Vedula S., World Scientific, Singapore, 2002.

**Singh D.N.** and Shukla S.K.,  
Earth Dams, *Geosynthetics and Their Applications*, Edited by S.K. Shukla, *Thomas Telford Limited*, London, 2002.

### **Journal Papers**

Dafedar J.B. and **Desai Y.M.**,  
Thermomechanical Buckling of Laminated Composite Plates using Mixed, Higher-order Analytical Formulation, *Journal of Applied Mechanics*, ASME, Vol. 69, pp. 790-799, 2002.

**Desai Y.M.** and Ramtekkar G.S.,

Mixed Finite Element Model for Laminated Composite Beams, *Structural Engineering and Mechanics*, Vol. 13 (3), pp. 261-276, 2002.

**Desai Y.M.**, Ramtekkar G.S. and Shah A.H.,  
Dynamic Analysis of Laminated Composite Plates using a Layer-wise Mixed Finite Element Model, *Composite Structures*, Vol. 59(2), pp. 237-249, 2003.

Dhawan K.R., **Singh D.N.** and Gupta I.D.,  
2D and 3D Finite Element Analysis of Underground Openings in an Inhomogeneous Rock Mass, *International Journal of Rock Mechanics and Mining Sciences*, Vol. 39(2), pp. 217-227, 2002.

**Eldho T.I.**,  
Circulation Wells – An Innovative Hydraulic Technique for Groundwater Pollution Remediation', *ISH Bulletin – News*, Vol. 11 (2), pp. 1-2, 2002.

Jagdale S.S. and **Deo M.C.**,  
Prediction of Breaking Waves using Neural Networks, *Ocean Engineering*, Elsevier, Vol. 30(9), pp. 1163-1178, 2003.

**Jangid R.S.**,  
Parametric Study of Base-Isolated Structures, *Advances in Structural Engineering*, Vol. 5, pp. 113-122, 2002.

**Kant T.** and Swaminathan K.,  
Analytical Solutions for the Static Analysis of Laminated Composite and Sandwich Plates Based on a Higher Order Refined Theory, *Composite Structures*, Vol. 56, pp. 329-344, 2002.

**Kant T.** and Gadgil M.G.,  
Analysis of Orthotropic Plates Based on Three Theories by Segmentation Method, *Mechanics of Advanced Materials and Structures*, Vol. 9(3), pp. 189-239, 2002.

Khare R.K., **Kant T.** and Garg A.K.,  
Closed-form Thermo-Mechanical Solutions of Higher-Order Theories of Cross-Ply Laminated Shallow Shells, *Composite Structures*, Vol. 59(3), pp. 313-340, 2003.

Kolay P.K. and **Singh D.N.**,  
Application of Coal Ash in Fluidized Thermal Beds, *Journal of Materials in Civil Engineering*, ASCE, Vol. 14(5), pp. 441-444, 2002.

Kolay P.K. and **Singh D.N.**,  
Characterization of an Alkali Activated Lagoon Ash and its Application for Heavy Metal Retention, *FUEL*, Vol. 81(4), pp. 483-489, 2002.

Kulkarni J.A. and **Jangid R.S.**,  
Rigid Body Response of Base-Isolated Structures, *Journal of Structural Control*, Vol. 9, pp. 171-188, 2002.

**Kulkarni M.N.** and Manake A.,

Study of Deformation of Koyna Dam Using Global Positioning System (GPS), *Survey Review, International Journal of Surveying & Mapping, The Commonwealth Association of Land & Ecology*, Vol. 36(285), pp. 497-507, 2002.

**Kulkarni M.N.**,

Application of GPS and other Geodetic Techniques to Geodynamics and Earthquake Research, *Maer's MIT Pune Journal* (Special Issue on Earthquake), Vol. IX(1-4), pp. 40-46, 2002.

**Kulkarni M.N.**,

Deformation Studies Using Global Positioning System, *Journal of Institution of Military Engineers*, Vol. 13(2), pp. 39-46, 2002.

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

Recent Developments in Space VLBI Geodesy Demonstration Experiment (GEDEX), *Vistas for Geodesy in the Next Millennium*, Vol. 125, pp. 18-23, 2002.

More A. and **Deo M. C.**,

Forecasting Wind with Neural Networks, *Marine Structures*, Elsevier, Vol. 16(1), pp. 35-49, 2003.

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Elastic Guided Waves in a Layered Plate with Rectangular Cross Section, *Journal of Acoustics Society of America*, Vol. 112(5), pp. 1766-1779, 2002.

**Mukherjee A.** and Saha Chaudhuri A.,

Active Control Of Dynamic Instability Of Piezo- Laminated Imperfect Columns, *Journal of Smart Materials and Structures*, Vol. 11(6), pp. 874-879, 2002.

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

Energy Efficient Actuators in Vibration Control of Plated Structures, *Journal of Sound and Vibration*, Vol. 258, pp. 179-190, 2002.

**Mukherjee A.** and Joshi M.V.,

Seismic retrofitting Using Fiber Composites, *Indian Concrete Journal*, Vol. 76(8), pp. 496-502, 2002.

**Mukherjee A.** and Saha Chaudhuri A.,

Piezolaminated Beams With Large Deformations, *International Journal of Solids And Structures*, Vol. 39, pp. 4567-4582, 2002.

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

Optimum Spatial Distribution of Piezoelectric Sensors and Actuators for Shape Control of Piezolaminated Plates, *AIAA Journal*, Vol. 40(6), pp. 1204-1210, 2002.

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Vol. 55, pp. 435-443, 2002.

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*Journal of Structural Engineering*, ASCE, Vol. 128, pp. 870-880, 2002.

Nisar Ahamed T.R., **Gopal Rao K.** and **Murthy J.S.R.**,  
Automatic Extraction of Tank Outlets in a Sub-Watershed Using Digital Elevation Models,  
*Journal of Agricultural Water Management*, Vol. 57(1), pp. 1-10, 2002.

Pal S.C., **Mukherjee A.** and Pathak S.R.,  
Corrosion Behavior of Reinforcement in Slag Concrete, *ACI Materials Journal*, Vol. 99(6), pp.  
1-7, 2002.

Rajeswaramma C. and **Gupta K.**,  
Hydraulic Design of a Constructed Wetland for an Urban Area, *Journal of the Indian  
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*Journal of Sound and Vibration*, Vol. 257(4), pp. 635-651, 2002.

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Fabrication of Thermal Probes for Estimation of Soil Thermal Resistivity, *Journal of Testing and  
Evaluation*, ASTM, Vol. 31(1), pp. 65-72, 2003.

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Integrated Watershed Approach for Combating Drought in Semi-Arid Region of India: A Case  
of Jhabua Watershed, *Journal of Water Science and Technology*, Vol. 46(6-7), pp. 85-92, 2002.

**Singh D.N.** and Kolay P.K.,  
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Combustion Science*, Vol. 28, pp. 267-299, 2002.

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A New Approach to Study Leaching of Fly Ash From Landfills, *The Journal of Solid Waste  
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**Singh D.N.** and Kuriyan S.J.

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Seismic Response of Liquid Storage Tanks Isolated by Laminated Rubber Bearings, *Advances in Vibration Engineering*, Vol. 1, pp. 270-284, 2002.

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Non-linear Seismic Response of Base-Isolated Liquid Storage Tanks to Bi-directional Excitation, *Nuclear Engineering and Design*, Vol. 217, pp. 1-20, 2002.

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A Comparative Study of Performance of Various Isolation Systems for Liquid Storage Tanks, *International Journal of Structural Stability and Dynamics*, Vol. 2(4), pp. 573-591, 2002.

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Application of Genetic Algorithm for Scheduling and Schedule Co-ordination Problems, *Journal of Advanced Transportation*, Vol. 36(1), pp.23-41, 2002.

Suresh K.N. and **Pani B.S.**,  
Rapid Mixing by Free Jets, *Journal of Indian Water Works Association*, Vol. pp. 191-195, 2002.

Stamm J. and **Eldho T.I.**,  
In-Situ Remediation of Contaminated Groundwater Using Vertical Circulation Wells, *Journal of Indian Water Works Association*, Vol. 34 (3), pp.211-216, 2002.

**Tom V.M.** and Mohan S.,  
Simultaneous Route and Frequency Coded GA Model for Transit Route Network Design, *Journal of Transportation Engineering*, ASCE, Vol. 129(2), pp. 186-195, 2003.

Tongaonkar N.P. and **Jangid R.S.**,  
Earthquake Response of Bridges with Sliding System, *European Earthquake Engineering*, Vol. XVI, pp. 19-33, 2002.

**Viswanadham B.V.S.** and Mahesh K.V.,  
Modeling Deformation Behaviour of Clay Liners in a Small Centrifuge, *Canadian Geotechnical Journal*, Vol. 39(6), pp. 1406-1418, 2002.

**Viswanadham B.V.S.**  
Geosynthetics for Infrastructure Development, *The Economic Times-Polymer Journal*, August-September issue, pp. 15-19, 2002.

Young D.L., Tsai J.J., **Eldho T.I.** and Cheng A-H.D.,  
Solution of Stokes Flow Using an Iterative DRBEM Based on Compactly-Supported, Positive-Definite Radial Basis Function, *Journal of Computers & Mathematics with Applications*, Vol. 43, pp. 607-619, 2002.

Young D.L., Wang Y.F. and **Eldho T.I.**,  
Three-Dimensional Transient Shallow Water Flow Simulation Using a Boundary Integral Equation Model, *The Journal of Hydraulic Research*, IAHR, Vol. 40(4), pp. 403-412, 2002.

Young D.L., Chang T.J. and **Eldho T.I.**,  
The Riemann Complex Boundary Element Method for the Solution of Two-Dimensional Fluid Flow Problems, *Journal of Applied Mathematical Modelling*, Vol. 26, pp. 893-911, 2002.

### Conference Papers

Bakre S., **Jangid R.S.** and Reddy G.R.,  
Seismic Response of Piping Systems with Energy Dissipating Devices, *National Seminar on Seismic Design of Nuclear Power Plants*, Chennai, February 21-22, 2003.

Bhajantri M.R., **Eldho T.I.** and Deolalikar P.B.,  
Experimental and Numerical Investigation of Flow over Spillway', *Pro. 4<sup>th</sup> Int. R&D Conf. By Central Board of Irrigation and Power*, Aurangabad, January 28-31, 2003.

Bhajantri M.R., **Eldho T.I.** and Deolalikar P.B.,  
Numerical Modeling Techniques for Investigation of Flow over Spillway, *HYDRO-2002*, IIT Bombay, Mumbai, December 2002.

Boothby T. E., Bakis C. E., **Mukherjee A.** and Brown, T.,  
Long-Term Durability Study of Sheet-Bonded GFRP, *The Second International Conference on Durability of Fiber Reinforced Polymer (FRP) Composites for Construction*, May 29-31, (2002), Hotel Delta Centre Ville, Montréal (Québec) Canada.

**Chandrasekaran V.S.**,



Centrifuge Modelling: A Useful Technique for Forensic Geotechnical Engineering, *Proceedings of the Workshop on Forensic Geotechnical Engineering*, Chennai, February 2003.

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Seismic Response of Base-Isolated Structure by Wavelet Transformation, *CDROM Proceedings of VETOMAC-2*, Mumbai, Paper No. 58, 2002.

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Risk Analysis of Rain-Induced Earth Slope Failures, *HYDRO - 2002, Conference on Hydraulics, Water Resources and Ocean Engineering*, December, Mumbai, 2002.

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Effect of Seepage on Scour Caused by Impinging Circular Jets, *Advances in Hydraulics and Water Engineering, Proceedings of the 13<sup>th</sup> IAHR-APD Congress*, Singapore, pp. 276-279, August 6-8, 2002.

**Eldho T.I.**,

Velocity vorticity Navier-Stokes Equations Analysis by Dual Reciprocity Boundary Element Method', *HYDRO-2002*, IIT Bombay, Mumbai, December 2002.

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Evaluation of Concrete Beams Reinforced with Internal GFRP Bars: A Long-Term Durability Study, *The Second International Conference on Durability of Fiber Reinforced Polymer (FRP) Composites for Construction*, Hotel Delta Centre Ville, Montréal (Québec) Canada, May 29-31, 2002.

Godihal J. and **Gupta K.**,

Optimal Operation of Urban Drainage Systems, *Proceedings of HYDRO 2002*, IIT Bombay, pp. 467-471, December 16-17, 2002.

**Gupta K.**,

Data Requirements for Planning Urban Drainage Infrastructure, *Proceedings IBC Seminar on Urban Infrastructure Development*, New Delhi, pp. 203-208, June 14-16, 2002.

**Gupta K.** and Rajeswaramma C.,

Urban Wetland Design in Developing Countries, *Proceedings 9<sup>th</sup> International Conference on Urban Drainage*, Portland, Oregon, USA, September 8-13, 2002.

**Gupta K.,**

Stormwater management in metros of India, *International Conference on Sewer Operation and Maintenance*, Bradford, UK, November 26-28, 2002.

**Gupta K.** and Shukla D.,

Modelling Catchment 125(Mumbai) using DRAINS, *International Conference on Sewer Operation and Maintenance*, Bradford, UK, November 26-28, 2002.

Hauser C. and **Gupta K.,**

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An Improved Nonlinear Three Dimensional Plate and Shell Element, *8th International Conference on Impact Mechanics and Plasticity (IMPLAST-2003)*, New Delhi, March 17-18, 2003.

Krishnaiah S. and **Singh D.N.,**

Laboratory Investigations on Heat and Mass Transfer Through the Soil Mass, *Proc. of the International Symposium on Low Land Technology*, Saga University, Japan, pp. 63-66, 2002.

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Preliminary Results of GPS Studies for the January 2001 Gujarat Earthquake, *International Workshop on Gujarat Earthquake*, IIT Kanpur, pp. 86, January 27-29, 2003.

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GPS - Derived Estimation of the Horizontal Deformations in Baselines, after the 2001 Bhuj Earthquake: Preliminary Results, *National GPS Symposium-NAVSIM'02*, NERTU, Osmania University, Hyderabad, pp. 5, December 19, 2002.

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A Comparison of Plasticity Theories with First Order Shear Deformation and Higher Order Shear Deformation Kinematics for Reinforced Concrete Shells, *8th International Conference on Impact Mechanics and Plasticity (IMPLAST-2003)*, New Delhi, March 17-18, 2003.

Sreeja P. and **Gupta K.**,  
Real Time Control Strategy for Urban Drainage Management in India, *Proceedings, International Conference on Water and Wastewater: Perspectives of Developing Countries*, Delhi, pp. 351-358. December 11-13, 2002.

Ukarande S.K. and **Rastogi A.K.**,  
Modeling of Sea Water Intrusion in Multi-layered Coastal Aquifers, *Proc. 2<sup>nd</sup> International Conference on Water Quality Management*, Part II, 12-25, CBIP, New Delhi, Feb. 13-15, 2003.

**Venkatachalam G.**, Nagesha M.S. and Dodagoudar G.R.,  
Landslide Modelling Using Remote Sensing and GIS, *IGARSS - 2002 IEEE, Int. Geoscience and Remote Sensing Symp.*, Toronto, Vol. IV, pp. 2045-2047, 2002.

**Viswanadham B.V.S.** and König D.,  
Studies on Scaling Aspects of Geogrid in a Geotechnical Centrifuge, *Proceedings of International Conference on Physical modeling in Geomechanics*, Rotterdam, pp. 981-987, July 10-12, 2002.

**Viswanadham B.V.S.** and Jessberger H.L.,  
Requirements for the Design of Geogrid Reinforced Clay Liners of Landfills, *Proc. 7<sup>th</sup> International Conference on Geosynthetics*, Nice, France, pp. 693-699, September 22-27, 2002.

**Viswanadham B.V.S.**,

Containment Systems for Landfills, *Proceedings of Workshop on Geosynthetics, SASMIRA and Indian Geotechnical Society*, Mumbai, August 23-25, 2002.

**Viswanadham B.V.S.** and Jain A.,

Hazards from Municipal Solid Waste open dumps and dire need of Appropriate Landfilling, *Proc. of Fourth Int. R & D Conference- Water and Energy for 21<sup>st</sup> Century*, Vol. 4, pp.11-24, January 28-31, 2003.

**Viswanadham B.V.S., Chandrasekaran V.S. and Venkatachalam G.**

Experience with a New Large Beam Centrifuge, *Proc. of Indian Geotechnical Conference*, Allahabad, Vol. 1, pp. 412-415. December 20-22, 2002.

### **Honorary Works**

**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  
Member of ASCE, COPRI of USA, Indian Society of Hydraulics  
Organizing Secretary of “Hydro-2002” conference held in Dec. 16-17, 2003  
Fellow of The Indian Society of Hydraulics  
Member, Faculty Selection Committee of another IIT

**Desai Y.M.,**

Reviewer for several International Journals  
External Examiner for M.E./M.Tech./Ph. D. Dissertations from various universities

**Dewaikar D.M.,**

Honorary Secretary, Indian Geotechnical Society, Mumbai

**Eldho T.I.,**

Reviewer of research papers to Journal of Computing in Civil Engineering, ASCE  
Reviewer for DST project proposals 2002  
Examiner of one M S thesis of IIT Madras  
Examiner of two M E theses of Mumbai University  
Joint Organizing Secretary of “Hydro-2002” conference held in Dec. 16-17, 2003

**Jangid R.S.,**

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

**Rastogi A.K.,**

Reviewer for research papers of Jr. of Institution of Engineers (India), Jr of Indian Society of Remote Sensing, Jr of Environmental Studies and Policy, The west Indian Jr. of Engineering.

Elected as Executive Member of IAH (Indian Association of Hydrologists) for a period of two years.

Chief Guest at the XXI annual convention and national seminar on hydrology held at Dept. of Civil Engg, BLDEA college of engg, Bijapur.

Chaired a session in the area of groundwater modeling in the International Conference on water and waste water engineering – perspectives of developing countries organized by Civil Engg, Dept. IIT Delhi, Dec. 11-13, 2002.

AICTE Expert to examine and recommend the PG Programs

**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, 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.)

Member, Expert Sub Group on Advanced Technology Applications under Natural Resource Development & Management System (NRDMS), DST, Govt of India (from Sept 2001)

Co-chaired session on Geodetic Datums at International Seminar on “GTS to GPS- Geodesy on the Move”, Survey of India, Dehradun, February 9-12, 2003.

**Mukherjee A.**

Reviewed Papers for various Journals such as Journal of Computing in Civil Engineering, ASCE, International Journal of Solids and Structures, Journal of Sound and Vibration, Sensors and Actuators, Finite Elements in Analysis and Design, Indian Concrete Journal, Journal of Institute of Engineers India etc.

**Ranganathan R.,**

Member of the Editorial Board of International Journal of Structures, India.

Member of the Academic Council (Civil Engineering) of University of Mumbai.

**Singh D.N.,**

Co-Editor, Indian Geotechnical Journal

Member REACH Monitoring Committee, TIFAC, DST, Govt. of India, New Delhi.

Nominated by the Indian Geotechnical Society (IGS) on the ISSMGE Technical Committee TC-3 on "Geotechnics of Pavements".

**Venkatachalam G.,**

Member, Editorial Board, Journal of Rock Mechanics and Tunnelling Technology, India.

Member, Soil and Foundation Engineering Sectional Committee, CED 43, Bureau of Indian Standards.

Member, Rock Mechanics Sectional Committee 48, Sub-Committee 48.3 on Underground Openings and Field Monitoring, Bureau of Indian Standards.

Ph.D. Thesis Referee for IISc., IITR, REC-Warangal.

Member, Accreditation Committees, National Board of Accreditation, AICTE.

Expert Member and Coordinator, AICTE Project on Model Curriculum in Civil Engineering.

Member, Tripartite Awards Committee, Directorate General Factory Advice Service and Labour Institutes, Ministry of Labour.

Member, Sub-Committee on Reviewing Norms for Vishwakarma Award.

**Viswanadham B.V.S.,**

Member, TC2 Committee on Physical modelling in Geotechnics, International Society of Soil Mechanics and Geotechnical Engineering (2002-2006)

Associated Member, American Society of Civil Engineers (ASCE).

**Invited Lectures**

**Prof. T.I. Eldho** delivered a lecture at IIT- Bombay Alumni Association meeting on Interlinking of Indian Rivers – A National Perspective, December 2002.

**Prof. M.C. Deo** delivered a lecture at National Water Academy at Pune in September 2003.

**Prof. Y.M. Desai** delivered invited lecture on FRP composites - From theory to field applications, National Seminar on Engineered Building Materials and Their Performance, INAE, January 2003 Mumbai.



**Prof. S.L. Dhingra** delivered Key Note lecture on EIA of Urban Transportation Infrastructure Projects for Sustainable Development at National Seminar, MOBILITY – 2003: Challenges of Sustainable Urban Transport, Hotel Orchid, Mumbai, February 26 –27, 2003.

**Prof. S.L. Dhingra** delivered theme lecture on Urban Mass Transportation for Sustainable Development at *think* POLICY Seminar, Organised by School of Public Policy, GMU, USA and IIT Bombay at IIT Bombay, March 9, 2003.

**Prof. Madhav N. Kulkarni** delivered invited lectures on Global Positioning System and Geodesy at (i) National Water Academy, Pune, February 14, 2003, (ii) I.I.T. Kanpur, March 10-11, 2003 and (iii) Geological Survey of India, March 12-13, 2003.

**Prof. A. Mukherjee** delivered a lecture entitled Smart Materials in Control of Vibration for VETOMAC-II, Bhaba Atomic Research Centre, Mumbai, December 17, 2002.

**Prof. A. Mukherjee** delivered a lecture entitled Composite Materials in Structures in the National Seminar on Engineered Building Materials and Their Performance, Indian Institute of Technology Bombay, January 17, 2003.

**Prof. A. Mukherjee** delivered a lecture entitled Analysis And Characterization Of Composite And Smart Materials, Service de Constructions Mécaniques et Robotique Laboratoire des structures actives, L'Université Libre de Bruxelles, Brussels, July 26, 2002

**Prof. A. Mukherjee** delivered a lecture entitled Active Instability Control of Piezolaminated Struts and Short Axisymmetric Cylinders, World Congress on Computational Mechanics, Vienna, July 9, 2002

**Prof. A. Mukherjee** delivered a lecture entitled Design and Characterization of Composites and Smart Materials, Department of Civil Engineering, University of Arizona, USA, on May 17, 2002

**Prof. A. Mukherjee** delivered a lecture entitled Rehabilitation and Retrofitting of Structures Affected in the Earthquake in Gujarat, India, during his visit to Cold Regions Research and Engineering Laboratory, Hanover, USA, May 15, 2002

**Prof. A. Mukherjee** delivered a lecture entitled Strategies of Repair and Rehabilitation of Structures with Fiber Reinforced Composites at Maharashtra Housing and Area Development Authority, Bandra, Mumbai, on April 16, 2002.

**Prof. A. Mukherjee** delivered a lecture entitled Theory of Computer Aided Design and Finite Element Method, College of Military Engineering, Pune, April 22, 2002.

**Prof. A. Mukherjee** delivered a lecture entitled Rehabilitation and Retrofitting of RC Structures Using Non-Metallic Fiber Composites, Workshop on seismic Assessment and Retrofitting of Buildings, Institution of Engineers, February 16, 2002.

**Prof. G. Venkatachalam** delivered a lecture on ‘Landslide Studies Using DTM and GIS’, Proc. of CEP Training Course on The Global Positioning System and Its Applications, IIT Bombay, Nov. 2002.

**Prof. B.V.S. Viswanadham** delivered lectures entitled (i) Centrifuge modelling of geotechnical and geoenvironmental problems and (ii) Safe disposal of Municipal Solid Waste” to the participants from academic background in a workshop on modern trends in environmental management during May 7, 2002.

**Prof. B.V.S. Viswanadham** given lectures in the AICTE- short tern course on Geosynthetics organised by the department of Civil Engineering, Cochin University of Technology, Cochin during December 7-10, 2002.

**Prof. B.V.S. Viswanadham** delivered a lecture entitled Application of centrifuge modelling to port and harbour structures to the engineers of Cochin Port Trust during on December 8, 2002.

### **Important Visitors**

A 3-member delegation from **Tribhuvan University, Institute of Engineering, Nepal**, comprising of Prof. Jiba Pokharel, Dean, IOE, Prof. Prem Nath Maskey, Director, CARD, IOE and Prof. Mukund Pradhan, Campus Chief, Pulchowk Campus, IOE, visited IIT Bombay on August 16, 2002. They had meeting at the Civil Engineering Department and also toured the laboratories.

**Prof. F. Nestmann**, Director of Water Resources Management and Rural Engineering and Dean of Faculty of Civil Engineering, University of Karlsruhe, Germany , visited IIT Bombay on September 20, 2002. He held discussion with Director, Deans and various Faculties of Civil Engineering and sought the possibilities of future collaborations. He also visited various laboratories of Civil Engineering Department.

**Ms. Tennisha Brown**, PG student, Dept. of Agricultural Engg. Pennsylvania State University (PSU), USA, visited the campus from January 5-13, 2003. She met with the Head of the Civil Engineering Department.

**Prof. P. Rastogi** and **Prof. Musy** of EPFL, Switzerland, visited the Civil Engineering Deptt. on January 8, 2003. They met with the Dean R & D, Professor-in-Charge of International Relations and the Heads of the Of and Physics.

**Prof. Richard Ashley**, University of Bradford, UK, **Prof. Jose Saldanha Matos**, Insituto Superior Tecnico, Lisbon, Portugal, **Prof. Bob Andoh**, John-Moores University, Liverpool, UK **Dr. Ole Mark**, AIT Bangkok, **Dr Neil Armitage**, Univesity of Cape Town, South Africa, visited to the Department to participate in the International course on Global Developments in Urban Drainage organized by **Prof. Kapil Gupta** during February 5-7, 2003.

## 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*

Offshore Engineering, Wave hydrodynamics, Analysis of random data, Neural networks and Statistical analysis.

**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)

*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)

*Associate 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)

*Associate 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)

*Professor*

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

**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)

*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)

*Professor*

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

**V.M. Tom**, PhD (IIT Madras)

*Assistant Professor*

Transportation systems engineering: Traffic flow modeling and simulation,  
Transportation network optimization, control and management

**G. Venkatachalam**, PhD (Leningrad)

*Professor and Head*

Geotechnical engineering: Finite element analysis, Digital image  
processing, Digital terrain modelling, Centrifuge, Numerical and GIS modeling of landslides.

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

*Associate Professor*

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