

Volume 10, Issue 1 - 4
January - December 2009

IGS News

A Bulletin of Indian Geotechnical Society, Chennai Chapter

www.igschennai.in

Editors : Prof. S.V. RAMASWAMY & Er. I.V. ANIRUDHAN

Geotechnical Calendar

National

- **18-20 February, 2010**, Guntur, Andhra Pradesh, **IGC 2009**, RVR & JC College of Engineering will host Indian Geotechnical Conference IGC-2009. Contact Prof. M. Rama Rao, igc2009.guntur@gmail.com
- **October -November 2010**, New Delhi, 6th International Congress on Environmental Geotechnics, Prof. Manoj Datta :mdatta@civil.iitd.ac.in, Prof. R.K. Srivastava: rksciv@yahoo.com, Dr. G.V. Ramana: ramana@civil.iitd.ac.in
- **16-18 December 2010**, Mumbai, IGC 2010, GEotrendz at IIT Bombay. Prof. B.V.S. Viswanatham, Email: igc2010@gmail.com, Web Site www.civil.iitb.ac.in/~igc2010/

Paper competition on Geotechnical Engg topics for ME/ M.Tech students and Research Scholars in Tamilnadu.

Tentative Dates:

Receiving the paper - 30 May 2010
Short-list - 15 June 2009
Presentation and award - July 2010
More details will be available soon at www.igschennai.in

International

- 09-11 May 2010 Huntington Beach, California, USA, 2nd IS on Cone Penetration Testing Conference website: www.cpt10.com, Abstract to: abstracts@cpt10.com
- 23-27 May, 2010, Brazil, 91CG on Geosynthetics, Contact: http://www.9icg_brazil2010.info
- 24-29 May, 2010, San Diego, CA, USA, 5th IC on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, Contact: Prof. Shamsher Prakash, Conference Chair, E-Mail: prakash@mst.edu, <http://5geoeqconf2010.mst.edu/>.
- 07-10 June, 2010, Moscow, Russia, IC on Geotechnical Challenges in Mega Cities Contact: M.L. Kholmyansky- E. mail: info@GeoMos2010.tu
- 5-10 September, 2010, Auckland, New Zealand, The 11th Congress of the International Association for Engg: Geology and the Environment (NZGS) on theme "Geologically Active", Contact: IAEG 2010, Auckland, New Zealand
- 10-12 October, 2010, Shanghai, China, IS on Geomechanics and Geotechnics from Micro to Macro, Prof. Ming-Jing Jiang, email: mingjing.jiang@mail.tongji.edu.cn
- 23-27 May, 2011, Hong Kong, China, 14th Arc on Soil Mechanics and Geotechnical Engineering, website: <http://www.cse.polyu.edu.hk/14arc>, Contact: Miss Laurel Lan, E-mail: 14arc.2011@polyu.edu.hk

From the Editor's Desk ... Chennai Chapter 2009

There was a perceptible lull in the activities during 2009. The one day workshop on Pile Termination Criteria proposed in October 2009 had to be postponed to March 2010. However the paper competition programme for research scholars and postgraduate students elicited a good response. The quality of papers and the presentation were commendable. Four technical lectures were arranged during the year and the attendance was fair varying from 40 to 70. Particular mention should be made of the lecture on proposed revisions of IS Code 2911 Part IV on Load Tests on Piles and subsequent discussions which lasted more than two and half hours.

It was announced that IGS Chennai Chapter was selected for IGS AIMIL Best Chapter Award for the year 2007. A Certificate and a Silver Shield with Citation were presented to the Chapter during IGC 2008 held at Bangalore. Later it was clarified that the award was given for the conduct of IGC 2006 only and not for the overall performance of the chapter. The chapter sought for proper explanations from the Parent Body and the issue was raised on several occasions in the national executive committee by Prof. S.V. Ramaswamy. Even though a convincing reply was not received from the National Body, the matter was closed by accepting the award for conducting IGC 2006. After closely watching these discussions, one can conclude that many such decisions were made without any constructive discussion between the members of the subcommittees formed for the purpose. The overall perception that the elected members or nominated members do not come under any scrutiny does not augur well

for the continued growth of the Society. The elections to the new national executive committee are due in September 2010 and we sincerely hope that responsible members of the society who can strive for transparency in administration are elected to the Executive Committee.

The term of the present executive committee of the Chennai Chapter was over by December 2009 and the elections should have been conducted during November 2009. The elections were not conducted because of time constraints on the part of the Secretary and the elections will now be held during March 2010. The invitations for nomination papers have already been despatched. The annual general body meeting is scheduled to be held on March 20, 2010 and the new executive committee will take office on that day.

IGS Chennai Members Directory

The Chapter has roughly 910 members, out of which only about 630 addresses are valid as of now. This news letter is being sent only to these 630 addresses. The members who receive the news letter are requested to send their E Mail IDs to the chapter (E-Mail ID is chapter@igschennai.in) so that the information about the programmes can be sent to the members well in advance. The regular post takes more than five days and we can not depend up on such a system for providing information on time. The members are also requested to inform others who have shifted to send their new addresses

Utilisation of Funds Available with the Chapter

The Chapter has about 15 lakh as fixed deposit and the present interest rate is very low. Many have expressed a feeling that the money can be utilised for acquiring an office space for the Chapter. This amount is not sufficient for such a venture. There is no scope for receiving more funds in the near future since the money can be generated only by conducting National Conference. Donations from companies towards such ventures are the only source. However the present economical situation is not favourable for obtaining funds from companies. The members are requested to suggest suitable avenues for effective use of the accumulated funds.

**One day seminar on Pile Termination Criteria
20 March 2010 - Details are available at www.igschennai.in**

Members at NTPC project in North Madras where vibrostone columns were installed in large scale.
Courtesy - Kellers Ground Engineering.



Activities during 2009

Technical Lectures

Sri. Guru Vittal, Sr. Scientist, GRR, New Delhi and Co-chairman, IGS Delhi Chapter, on "**Geosynthetics - CRRI - Experiences**" held on 12 March 2009. About 60 members participated.



Shri A. Vetriselvan, then Dy. General manager, Keller Ground Engineering India Pvt Ltd "**Vibro Replacement Techniques**" on 22 May 2009. About 60 members participated.



Prof. T.G. Sitharam, Department of Civil Engineering, IISc Bangalore "Some Case Studies Related to Large Underground Openings & Slopes in Jointed Rock Mass" on 1st June 2009 with more than 80 participants.



Dr. D.N. Naresh, NTPC, New Delhi, presented the proposed changes in IS 2911 for the Load Test on Piles on 5 December 2009. More than 70 attended the lecture. The discussion on various points went on for more than one and half hours.



Paper Competition

The chapter conducted a students paper competition after a gap of ten years and the response was good. There were thirteen entries and nine of them were presented by the authors. Shri M.N. Ramesh, C.E.O Savcor India Private Ltd, Bangalore inaugurated the paper presentation seminar on 29th August 2009. Two first prizes (at research associate level and post graduate level) and three second prizes were given. Cash prize, certificate and a chance to participate in IGC 2009 at Guntur were presented to the winners.



Mr. G. Kalyankumar, IIT Madras, Mrs. P.V. Premalatha, NIT Trichi, Ms. Kimi Bose, GCT Coimbatore; Mr. S.V. Anilkumar, Anna Univeristy; Mr. M. Muthukumar, Anna Univeristy; Mr. R.M. Subtramaniam, GCT Coimbatore; Mr. D. Saktibalan, Anna University; Mr. R. Sudhakar, Anna University; Ms. R.K. Madhumathi, Anna University; Mr. T. Arun, Anna Univeristy; Mr. S. Senthilkumar, NIT Trichy and Ms. Sreni, Anna University participated in the competition. The abstracts of the awarded papers are presented in the news letter. The full text of the papers can be read at www.igschennai.in.

Personal Column

1. **Dr. V.V. S. Rao** (LM-6), Nagadi Consultants, Chennai, recently awarded ACCE- Gaurav Award 2009 for significant contributions in Civil Engineering Consultancy.
2. **Prof. S.R. Gandhi** (LM-13) is currently the Chairman of Engineering Unit of IIT Madras.
3. **Prof. K. Ilamparuthi** (LM-26) is the Chairman, Civil Engineering, Anna University, Guindy
4. **Dr. V.K. Stalin** (LM-252), is appointed as the Head, Division of Soil Mechanics and Foundation Engineering, Anna University, Guindy.
5. **Dr. P.T. Ravichandran** (LM-193), SRM Institute of Technology, was awarded Ph.D degree of Anna University for his work on Anchors
6. **Prof. K. Rajagopal** (LM-160) attended 17th International Conference on Soil Mechanics & Geotechnical Engineering held in Alexandria, Egypt during October 5-9, 2009.

Welcome New Members

895. Prashant Kumar
896. Shibsundar Bala
897. Kondapalli Bairagi
898. Srinivasan D
899. Jithendra Kumar Chauhan
900. Bandaru Subba Rao
901. Durbakula Satyanarayana Murthy
902. Pandey Badrinath
903. Vidya Bushan Maji
904. Vetriselvan A
905. Santhanakrishnan V.
906. Pramod Kumar Rati
907. Kolli Venkata Madhava Rao
908. Sujan M.
909. Ibrahim C
910. Peter Chandran C
911. Premalatha P.V.
912. Samiduari V. (Student)

Technical Site Visit: Vibro Stone Column construction and Band Drain installation sites in North Chennai.

M/s Keller Ground Engineering and Howe India hosted the visits. The visit was held on 20th June 2009. Thirty two members including some trainee students from IIT Madras participated. The NTPC site has seven to ten metre this soft sandy clay that has poor shear strength and high compressibility. Vibrostone columns are installed up to 7.0m to 10.0m to improve the overall bearing capacity and to reduce the compression of soft clay.

Band drain site is an area reclaimed by dredged sand and the original soil is soft clay for some depth. Bandrains are being installed to accelerate the consolidation of the clay under the weight of reclaimed fill.



Abstracts of Papers Selected for Awards for Students Competition

Probabilistic Seismic Hazard Analysis for Rock Sites in the Chennai City

G. Kalyan Kumar, IIT madras



Seismic hazard assessment of low seismicity regions of the world is now-a-days becoming more common. The seismic hazard assessment involves the quantitative estimation of ground motion characteristics at a particular site. The assessment of probabilistic seismic hazard is required for the establishment of zoning maps over large regions or in the context of seismic risk studies for sites that deserve special attention such as nuclear power plant sites. Probabilistic seismic hazard analysis (PSHA) allows uncertainties in the size, location, rate of recurrence and effects of earthquakes to be explicitly considered in the evaluation of seismic hazards. The conventional PSHA implies an integration of all the potential magnitudes and source distances to estimate the mean frequencies of earthquake ground motions occurring at the site in any given time period i.e., the estimation of $P(a \geq a^* \text{ in } t)$, the probability with which ground motion values of interest (a^*) are expected to be exceeded at least once during a certain time interval of duration t .

Specification of ground motion attenuation relating the ground motion parameters at a site to earthquake magnitude, source-to-site distance, and other variables such as style of faulting, site geology, etc. constitute major ingredients of the seismic hazard analysis. In this paper, an attempt is made to carry out seismic hazard analysis for rock sites in the Chennai city. As the seismicity data of the study area are scarce, appropriate assumptions are made in the completeness analysis of the records. A few locations in the Chennai city are selected and seismic hazard results are presented in the form of hazard curves, which indicate the annual probability of exceeding the peak horizontal ground acceleration in a specified period of time. Deaggregation is also performed and the resulting hazard curves are presented.

Analysing the Optimum Length of Tie-rod Anchors for a Berthing Structure

P.V. Premalatha, NIT Trichy

Berthing structures are constructed for berthing and mooring of vessels, to enable loading and unloading of cargo and for embarking and disembarking of passengers and vehicles. The soil found in the coastal areas is generally soft marine clay or a loose sandy soil deposit. Such kind of soil has a very low shear strength values. Hence pile foundations are adopted in these areas in order to by-pass the weak layers of low bearing capacity and transfer the loads to deeper soil. Hence piles of a berthing structure are subjected to both axial and lateral loads. These lateral loads are typically generated by wind wave current, seismic loads, berthing or mooring of vessels and due to lateral soil movement.

Among these lateral loads on the berthing structure a large amount of deflection occurs when mooring force is acting on it. When tie rods are provided to support such structures not only strengthens the structure but also reduces the deflection of the structure to a large extent. The main objective of the present investigation is to study the behaviour of laterally loaded piles considering the effect of anchors. In this present research various analyses are performed by varying the location of anchors and by comparing their results



Dr. K. Premalatha addressing the audience during Student's Paper Competition presentations

Response of Footing on Sand Slopes

S.V. Anil kumar, Anna University



This paper presents the results of plane strain model tests carried out on strip footing placed on both reinforced and unreinforced sand slopes with a view to study the influence of geogrid reinforcement and slope angle on bearing capacity. The investigations were carried out for 3 different slope angles and three different edge distances. It is shown that load-settlement behaviour and bearing capacity can be improved by inclusion of geosynthetic reinforcement under the footing. Further the bearing capacity decreases with increase in slope angle and decrease in edge distance both in reinforced and un-reinforced slopes. The effectiveness of geosynthetic reinforcement in improving the bearing capacity is attributed to stiffness, location and length of reinforcement. A numerical study was carried out using Plaxis FEM code and compared with the model test results. The mechanism of footing on sloped ground was brought out and load-settlement response obtained from the FEM compared reasonably with the model test results.

Optimum Design of Nailed Soil Wall

M. Muthukumar, Anna University



Nailed wall is used to support both temporary and permanent structures. The objective of this study is to propose a simplified method of design of nailed soil wall based on experimental investigation and analysis through program SNAILZ. The nail rigidity number was arrived based on properties of nail and soil. Experimental investigations are carried and to find the influence of nail rigidity number in the failure surface and

nail displacement. The snailz program is used to understand the influence nail rigidity number in the global and local stability of nailed soil wall. A simplified method for optimum design of nailed wall is proposed for sandy deposit. Evolution of design chart for different Soil Nail parameter is the future scope of this study.

Study on Effect of Waste Tyres in Flexible Pavement System

R. M. Subramanian, GCT Coimbatore

Today most tyres, especially those fitted to motor vehicles, are manufactured from synthetic rubber. As the number of vehicles is increasing so are the heaps of discarded rubber tyres. One of the main issues associated with the management of scrap tyres has been their proper disposal. In this project work, an effort has been made to make



use of these waste tyres in subgrade and subbase layers of the flexible pavement. Soil and aggregates used in the study were collected from nearby locations. Tyre pieces of approximately square and rectangular shapes cut from tractor tyres passing IS 25mm sieve and retained in IS 20mm sieve and crumb tyres scrapped from light motor vehicle tyres passing IS 2.36mm sieve are used in the study. Crumb tyre was mixed with soil in various proportions and tested

for compressive strength and California bearing ratio showed marginal improvement in its value. Tyre pieces mixed with soil and aggregates separately in various proportions and tested for California bearing ratio to determine its optimum content. Aggregate crushing value, impact value and abrasion value decreased with increase in waste tyre content in the aggregates. Finally a pavement model study was performed in a tank of size 30 x 30 x 30 cm with and without optimum percentage of waste tyre pieces in subbase layer and pressure versus deflection curves were plotted and compared.



IGS Chennai Chapter wishes its Members and their Families a very peaceful and joyous **New Year 2010**

A Bulletin of Indian Geotechnical Society, Chennai Chapter

Division of Soil Mechanics & Foundation Engineering,
Anna University, Chennai 600 025
Phone: 91-044-42021624 (Secretary)
Email: chapter@igschennai.in



www.igschennai.in

Growth of Geotechnical Wisdom

ELECTIONS TO CHAPTER EXECUTIVE

ELECTIONS TO THE CHAPTER EXECUTIVE COMMITTEE

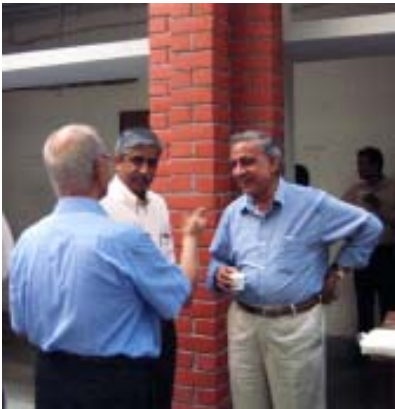
The term for the present executive committee came to an end by November 2009. The elections were not held during November because of preoccupations and the elections are now being held during February - March 2010. The request for nominations for the posts of Chairman, Secretary and eight executive committee members is sent to all the members. Please note that the requests were not sent to the student members. The names of the members who have shifted from their original addresses and not provided the new addresses to the Chapter office have been removed from the postal list.

The nominations will be received till 21 February 2010 and elections will be held during March 2010 if nominations more than the number of posts are received. More detailed programme of the elections and nomination form are available at www.igschennai.in

Lecture on

Proposed Revisions in IS 2911 Part 4 for Load test on Piles

5 December 2009



Pre-lecture discussion - Dr. D.N. Naresh, Prof. S.V. Ramaswamy and Shri Murali Iyengar.



Dr. D.N. Naresh, NTPS, presenting the proposed changes in the new IS 2911- Part 4



Dr. Naresh receives a memento from **Prof. K. Muthukrishniah**,

Sections of distinguished participants



ISSMGE TC40

International Symposium on Forensic Geotechnics of Vibratory and Natural Hazards will be held on 14-15 December 2010 at IIT Mumbai under ISSMGE TC 40. Registration fee for Indian delegates is Rs 2000/- (excluding stay). The papers will be received till September 1, 2010 and acceptance will be informed before October 2, 2010. Contact Prof G.L. Sivakumar Babu at glgs@civil.iisc.ernet.in