# IGS NEWS

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## Contents



# Message from the President

Dear Distinguished Members,

I hope you all are doing well with your family. As we step into this vibrant festival season, it gives me immense pleasure to reach out and extend my heartfelt greetings to all of you across the length and breadth of our diverse nation. It is with great enthusiasm; I am sharing that we have recently constituted new dynamic subcommittees to steer and coordinate the various initiatives and activities of the Indian Geotechnical Society (IGS) for the term 2025–26. Their efforts are focused on fostering greater collaboration, enhancing knowledge-sharing platforms, and promoting the overall growth and impact of the IGS community. I am pleased to see the vibrant and dynamic initiatives taking place across various chapters throughout the country. Let's continue to build on this momentum as we move ahead together.

Under the guidance of Prof. Murali Krishna and the SC1 team, our website is being regularly updated, and bulk mailing for various activities conducted by the local chapters are progressing smoothly. I sincerely appreciate their dedicated efforts. The SC2 team, led by Prof. T. Thyagaraj, is diligently working to boost ISSMGE membership, while Prof. Chandresh Solanki and the SC3 team are thoughtfully planning strategies to increase IGS membership and my appreciation to both teams for their commitment. The SC4 committee on IGS Foundation and Professional Forum, headed by Dr. C.R. Parthasarathy, is actively collaborating with other professional forums to organize innovative joint events that will benefit both organizations. Additionally, the SC5 Financial Committee, under the leadership of Er. Ravi Kiran Vaidya, has proposed a promising budget for the current financial year. I appreciate their valuable contributions.

The Asian Council Meeting was held online on 27th January 2025. A key highlight of the meeting was the voting for the inaugural ISSMGE Asian Lifetime Service Awards, which saw strong competition among seven shortlisted candidates. It is a matter of great pride that Prof. M.R. Madhav was selected as one of the four distinguished recipients of this prestigious award, recognizing his exceptional contributions and achievements in our field. He is joined by three other eminent awardees: Prof. Kenji Ishihara (Japan), Prof. E.C. Shin (Korea), and Prof. Askar Zhussupbekov (Kazakhstan). The awards will be formally presented during the 1st Geotech Asia 2025, to be held in Goa. My heartfelt congratulations to Prof. M.R. Madhav Sir on this well-deserved honour, and I wish him success in his future endeavors. On 3rd February 2025, the second lecture in the online series on "Conservation of Heritage Sites" was organized by Technical Committee TC 301 under ISSMGE. The lecture, titled *"Potential Areas of Research and Development in Structural Conservation of Historical Structures,"* was delivered by Dr. Arun Menon, Professor in the Structural Engineering Division at IIT Madras. On 28th February 2025, I had the privilege of meeting Prof. Jean-Louis Briaud, former ISSMGE President, President of ASCE in 2021, and Professor at Texas A&M University. During this visit, I also delivered a technical talk as part of the Geo-Institute Seminar Series at Texas A&M. It was a pleasure to engage with Prof. Marcelo Sanchez, Chair of the Technical Oversight Committee of ISSMGE, and Prof. Zenon Medina, Associate Professor, to explore opportunities for collaboration on the upcoming Pre-Conference Workshop on *Machine Learning and Reliability in Geotechnics*, planned for the 1st Geotech Asia 2025 in Goa.


***Contd..... pg 3***

STRATA

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The Indo-US Workshop, jointly supported by the Indian Geotechnical Society (IGS), the American Society of Civil Engineers (ASCE), and the Geo-Institute (GI), was successfully conducted at the University of Louisville, Kentucky, USA, on 2nd March 2025 in conjunction with GeoFrontiers 2025. I extend my sincere thanks to all speakers and participants from India for their valuable contributions. The next Indo-US Workshop is planned to be held alongside the 1st Geotech Asia 2025. Special appreciation goes to Prof. Sireesh Saride, Prof. Anand J. Puppala, Prof. Bhaskar Chittoori, and Prof. Omid for their outstanding efforts in organizing and executing the workshop. I also had the opportunity to attend the Geotechnical Frontiers 2025 conference, held at the Kentucky International Convention Centre from 2nd to 5th March 2025. India had a strong representation at the event. Also had engaging discussions with Ms. Helen Diane Robinson, President of the Geo-Institute, regarding the various opportunities for future Indo-US collaborations in the field of geotechnical engineering. A major highlight of the conference was the inspiring Terzaghi Lecture delivered by Prof. Sarah Springman, along with the presentation of the prestigious Karl Terzaghi Award 2025 to Prof. Jean-Louis Briaud.

The 2nd International Conference on Civil Engineering – *Innovative Development in Engineering Advances (ICC IDEA 2025)* was held at SRM Institute of Science and Technology on 19th March 2025. Additionally, on 26th March 2025, I had the honor of addressing the Sri Lankan Geotechnical Society (SLGS) Project Day in online mode, an annual event organized by SLGS since 2000 to promote research and enhance presentation skills among civil engineering students in Sri Lankan universities. The International Cooperation Committees, SC6 (TC Activities) and SC7 (Networking), are being efficiently coordinated under the leadership of Prof. S.K. Prasad and Prof. D. Neelima Satyam, respectively. I sincerely appreciate the commitment and dedication of both teams in furthering international technical collaborations.

Planning for opening new chapters in Dehradun, Rewa, Lucknow, Madurai, Gorakhpur, Anantapur and Aligargh is progressing under the leadership of Prof. Dasaka S Murty under the SC8 team. The revival of local chapters by the SC9 team is advancing under the guidance of Prof. Aarti Bhargava. Expert lectures organized by IGS Kochi Chapter was delivered by Prof. Ashish Juneja and Prof. Dasaka S Murthy at Kerala Management Association, Kochi on 25th January 2025, the 3rd Alam Singh Memorial Lecture was organized by IGS Jodhpur chapter at MBM University on 30th January 2025. A series of lectures were organized by the IGS Goa Chapter, in association with the IEI Goa State Centre was held at Goa Engineering College, Farmagudi on 29th March 2025. The program was a tribute to the remarkable contributions of Dr. Victor De Mello and Dr. N.V. Nayak in the field of geotechnical engineering. The event featured the seventh Victor De Mello lecture by Prof. G.L. Sivakumar Babu and the inaugural Dr. N.V. Nayak Memorial lecture by Prof. Deepankar Choudhury. Few student chapters were opened, and numerous student chapter activities were organized during this period. I appreciate the efforts of Prof. N Unnikrishnan and SC10 team for co-ordinating the student chapter activities. The two-day 10th Indian Young Geotechnical Engineers Conference was organised by IIT Indore in association with IGS Indore chapter, IGS Ujjain chapter, IGS Bhopal chapter and IGS Jabalpur chapter on 11th and 12th March 2025. The SC11 team under the guidance of Prof. G Madhavi Latha is working hard to conduct events for Young Geotechnical Engineering fraternity.

The SC12 team, under the leadership of Prof. R. Ayothiraman, is actively working on formulating the IGS Awards guidelines, and I sincerely appreciate their dedicated efforts. I also commend the efforts of team SC13 led by Prof. Anitha G. Pillai for their consistent commitment to publishing the IGS Newsletter on time, ensuring thorough review and quality content. My thanks go to the SC14 team, led by Dr. Jaykumar Shukla, for their valuable support in BIS-related activities and for contributing significantly to the revision and development of geotechnical engineering codes. The SC15 team, guided by Dr. G. Sridevi, is making commendable progress in planning new initiatives under the Women's Forum. Meanwhile, the SC16 Infrastructure Development Committee, under the leadership of Dr. A.P. Singh, is actively working towards securing a new office space for the IGS headquarters in Delhi, with discussions and planning currently underway. I appreciate the collective efforts of all these teams for their ongoing contributions.

The SC17 team for Laboratory testing under the leadership of Dr. C.N.V Satyanarayana Reddy is interacting with NABL for improving the quality of testing in geotechnical engineering across the country. Skill Development team SC18 under the leadership of Prof. H.N Ramesh is planning various activities. Software operations Committee & Data Bank for Soil Profile SC19, under the guidance of Prof. B.K Maheswari is providing necessary supports for facilitating Plaxis Software for student members. As per the Memorandum of Understanding (MoU) between the Indian Geotechnical Society (IGS) and Nepal Geotechnical Society (NGS), IGS has provided the access of Plaxis 3D to student members of NGS for the doctoral research in advanced geotechnical modelling and analysis.

The planning for the 1st Geotech Asia Conference is progressing smoothly under the able leadership of Prof. Ashish Juneja and Prof. Dasaka S. Murty. Arrangements are also underway for finalizing venues for important meetings and workshops, including the Board meetings of FedIGS and ISSMGE, as well as the Indo-Brazil-Portugal and Indo-US workshops. The review process for full papers is currently in progress. Preparations for the 12th ISFMG Conference, scheduled to be held in Indore, are also moving forward steadily. Abstract submissions will remain open until 31st May 2025, and I encourage all members to contribute by submitting their abstracts. I extend my best wishes for the successful organization of the both conferences. Initial planning for the International Symposium on Landslides (ISL 2028) in Kochi are also going on well. Happy to inform that we have associated with International Geosynthetic Society of India under the leadership Prof. G.L Sivakumar Babu and is also planning for bidding the GeoAsia 2029 in Ahmedabad. The interactive online meetings of the members of Association of Geotechnical Societies of South Asia (AGSSA) comprising of India, Bangladesh, Nepal, Sri Lanka and Pakistan is conducted periodically to discuss the collaborations among the member societies showcasing bringing together geotechnical fraternity without borders.

The 242nd Executive Committee meeting of the Indian Geotechnical Society was held at IIT Indore on 10th March 2025. I sincerely appreciate the meticulous planning, professional arrangements, warm hospitality, and personal attention extended by Prof. Neelima Satyam, Dr. B. Ramu, and the entire organising committee in making the event a success. Look forward to the upcoming activities of local chapters and the enthusiastic involvement of all members in the events arranged by the Indian Geotechnical Society. In closing, I would like to share a quote by Phil Jackson: "The strength of the team is each individual member. The strength of each member is the team". I am confident that with the continued support of all members, and the proactive spirit of this new subcommittee, we will achieve even greater heights in the coming term. Let us continue working together for the betterment of our society and the advancement of geotechnical engineering in India. I firmly believe that "Together We Can and We Will."

Wishing you all good health and happiness.

**Dr. Anil Joseph**

GeoSutra 9

# Stone Column/Granular Piles – Versatile but Bundle of Anomalies

**Madhira R. Madhav[1*] and Baadiga Ramu[2]**
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[2]Assistant Professor, Indian Institute of Technology Indore, India

## Introduction

Introduction: Stone Column/Granular Pile treatment of difficult or problematic soils has emerged as the most versatile and popular ground improvement alternative among a galaxy of alternatives. Stone Column/Granular Piles improve the performance of the ground by reinforcement, densification and drainage. They are installed in loose sands, soft soils, waster fills, ash ponds, etc. They help avoid or replace costly deep foundations such as piles. Stone Column/Granular Piles are environmentally friendly and lead less carbon footprint, thus leading to sustainable geotechnical practice. Unfortunately, the term 'Stone Column/Granular Pile' and the design and practice encompass a bundle of anomalies.

**Anomaly 1:** 'Stone Column/Granular Piles' and 'Geopiers' used in USA are misnomers as every Civil Engineer knows that 'columns' are structural members in buildings provided above the ground, as piers under bridge deck. Both 'columns' and 'piers' are subject to axial and lateral forces and moments. Pile(s) is the term used in practice for structural members installed below ground to perform exactly the same functions, viz., axial compression, lateral load and moments and sometimes pullout. The proper term should be 'Granular Piles' which conveys the meaning of a structural element installed in the ground to transfer axial load to layers below similar to relatively stiffer and stringer steel, concrete or wooden piles.

**Origin:** Deep vibro-techniques originated in Germany to densify granular soils and non-cohesive waste fills which are amenable to densification by vibration which effects rearrangement of particles in to a closer and denser state. The mechanism is predominantly densification of granular materials resulting in increased bearing capacity and reduced settlements. It is a small but significant step to modify the technique for soft ground in which case granular material is introduced in to cavity generated by the vibro-needle and densify the granular material. The resulting foundation element is termed as 'Stone Column/Granular Pile' a misnomer as pointed out above.

Reinforcement of soft ground is the main function of Stone Column/Granular Piles. For them to function as load transfer elements as piles, the ultimate load, P, is resisted by the ground through shaft and base resistances as in the case of normal piles (Fig. 1c), as

$$P_{uP} = \pi.d.L.\tau + \pi.d^2/4.q_b$$

where d and L are respectively diameter and length of Stone Column/Granular Pile/granular pile, $\tau = c_u$ - unit shaft resistance equal to the undrained strength, $c_u$, of the in situ soil, and $q_b = 9.c_{ub}$ – end bearing resistance with $c_{ub}$ – undrained strength of soil at the base. However, the ultimate capacity of the Stone Column/Granular Pile/granular pile is limited by two other possible mechanisms. Hughes and Withers (1974) proposed bulging failure as an alternative. Applying cavity expansion theory, the axial load the Stone Column/Granular Pile can withstand is

$$P_{uB} = \pi.d^2/4.N_\phi.p_L = \pi.d^2/4.(1 + Sin\phi)/(1 - Sin\phi)\{c_u.N^*c + \sigma_{r0}\}$$

where $N_\phi = \sigma_1/\sigma_3 = (1 + Sin\phi)/(1 - Sin\phi)$ -ratio of major to minor principal stress, $p_L = \{c_u.N^*c + \sigma_{r0}\}$ – the limit pressure, $N^*c = \{1 + \ln (G/c_u)\}$, G – shear modulus of in situ soil and $\sigma_{r0}$ = total horizontal stress at the level of bulging.

***G/cu ranges from 200 to 500 and N*c ranges from 5.3 to 6.2. Unfortunately, IS Code recommends the factor as equal to 4.0 grossly underestimating the bulging capacity.***

Madhav and Vitkar (1977) proposed the extended bearing capacity type of failure which appears to unconservative and hence not applicable.

Hence the practice has been to consider pile or bulging failures, the former applicable for L/d ratio less than 5 to 6 and the latter for L/D > 6. At working loads, only the pile mechanism is applicable and settlements can be estimated from the compressible pile analysis of Poulos and Davis (1980)

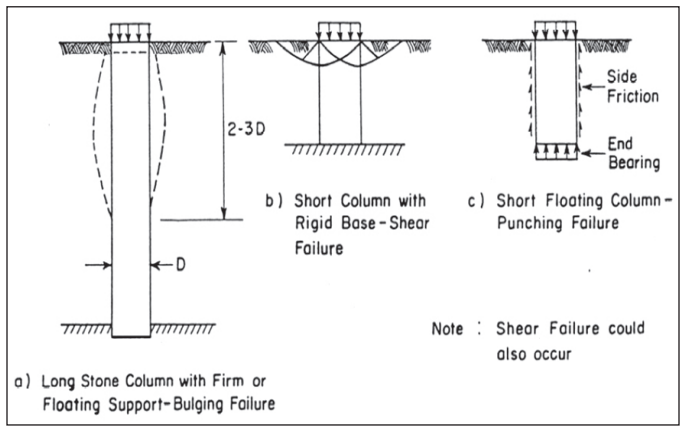


Fig. 1 Failure Mechanisms for Single Stone Column/Granular Pile/ Granular Pile

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**Anomaly 2:** IS Code 15284 (Part 1): 2003 recommends the following arrangement for the load to estimate the ultimate capacity of Stone Column/Granular Pile.

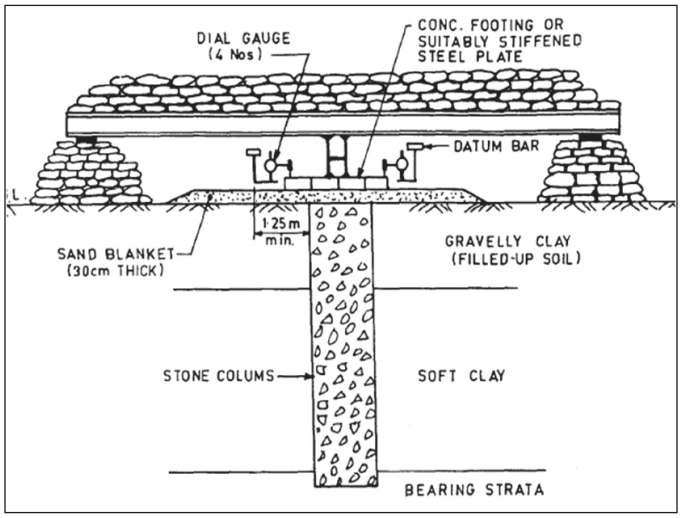
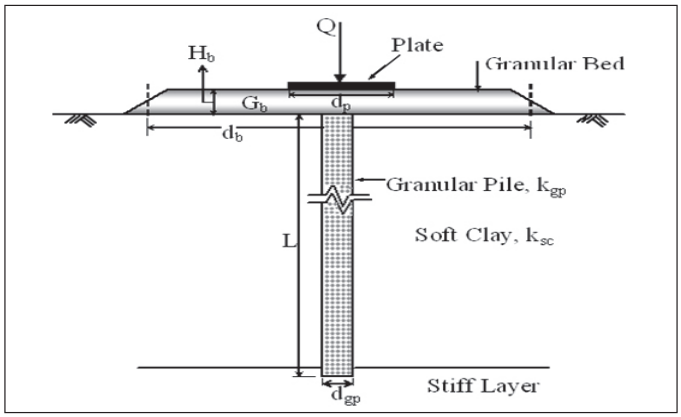
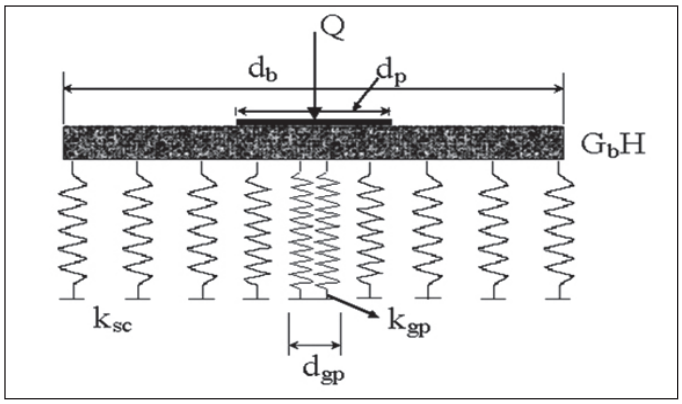



Fig. 2 : Load Test on Stone Column/Granular Pile

It should be noted that the loading plate diameter, $d_p$, is larger than the Stone Column/Granular Pile diameter, $d_{sc}$. The plate rests on a granular fill of size, $d_b$, much larger than the plate diameter, possibly two to two and half diameters and generally well compacted. This granular fill overlies gravelly fill as part of site grading. The schematic of above profile (Fig. 3a) was modelled (Fig. 3b) through Winkler springs as



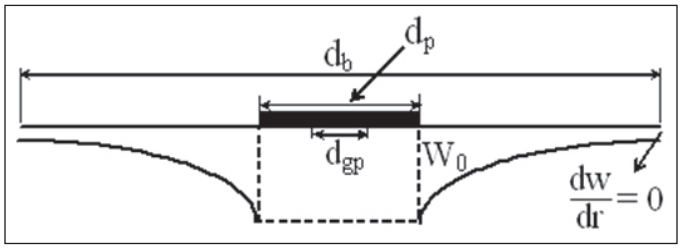

(a)



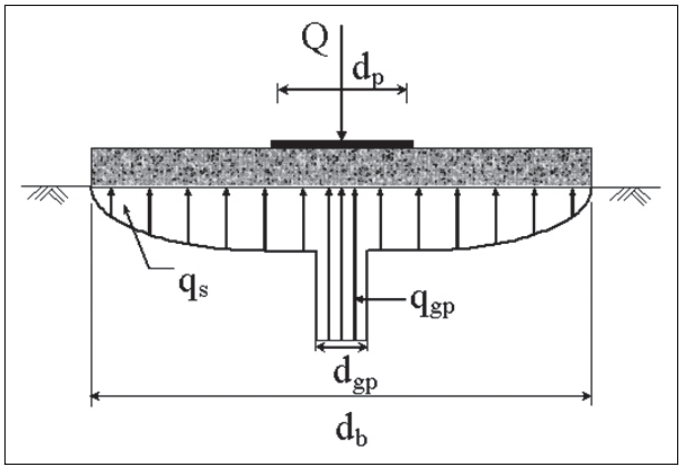

(b)

Fig. 3 : (a) Schematic and (b) Winkler Model of Load Test on Stone Column/Granular Pile

The stiffnesses of Stone Column/Granular Pile and soft ground are respectively $k_{gp}$, and $k_c$ and shear stiffness of the granular bed is $G_b.H$ where $G_b$ and H are the shear modulus and thickness of the granular bed. Generally, $k_{gp}$ is an order of magnitude greater than $k_c$, the stiffness of soft in situ ground. The shear stiffness of the granular bed is proportional to its shear modulus and thickness. Well compacted fill and thicker fill provides large shear stiffness and the layer functions as a semi-rigid stratum that tends to redistribute the contact stresses to reduce differential settlement. In the extreme case of a rigid layer, settlements would be uniform.




(a)




(b)

Fig. 4 Displacements (a) and Pressure Distribution (b) with Radial Distance

The plate moves down with a displacement, $w_b$, while the displacements of the granular bed reduce with distance from the center (Fig. 4a). The stress transferred to the Stone Column/Granular Pile is $q_{gp}$ while contact pressure between the granular bed and soft ground decreases with distance as depicted in Fig. 4b. The above case is analysed by Madhav and Rajendra Prasad (2006). The non-dimensional parameters used were: $R_k = k_{gp}/k_c$ – relative stiffness of Stone Column/Granular Pile with respect to that of soft ground; $R_p = d_p/d_{gp}$ – ratio of plate and Stone Column/Granular Pile diameters, $R_b = d_b/d_{gp}$ – ratio of granular bed and Stone Column/Granular Pile diameters; and $\mu = k_{sc}.r^2_{gp}/G_b.H$ – a non-dimensional parameter. Larger the shear stiffness, $G_b.H$, the stiffer is the bed. $\mu = 0$ corresponds to a rigid raft.

The percentage of load transferred to the Stone Column/Granular Pile depends on (i) relative stiffness of Stone Column/Granular Pile, $R_k = k_{gp}/k_c$, (ii) Relative plate size, $R_p = d_p/d_{gp}$, (iii) Relative size of granular bed, $R_b = d_b/d_{gp}$, and (iv) Relative stiffness of granular bed, $\mu = k_{gp}.r^2_{gp}/G_b.H$. The percentage of

load transferred to Stone Column/Granular Pile is never 100% and in fact ranges between about 30% to about 70% depending on the above parameters. *It is impossible to evaluate the performance of Stone Column/Granular Pile based on the plate load on a single column because of the complex interactions between all the components of system, viz., sizes of the plate and granular bed, relative stiffnesses of Stone Column/Granular Pile and granular bed, etc.*

*If the test on a single Stone Column/Granular Pile is so complex, the one on a group of three columns is much more complex to analyse.*

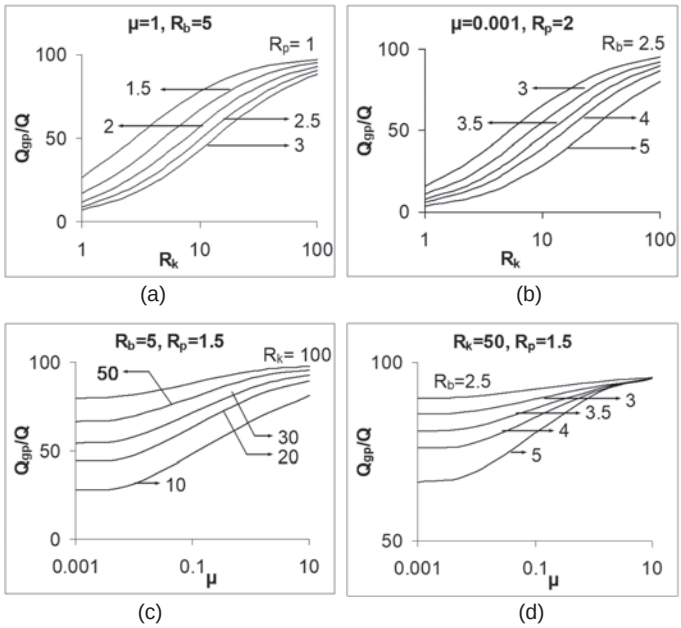
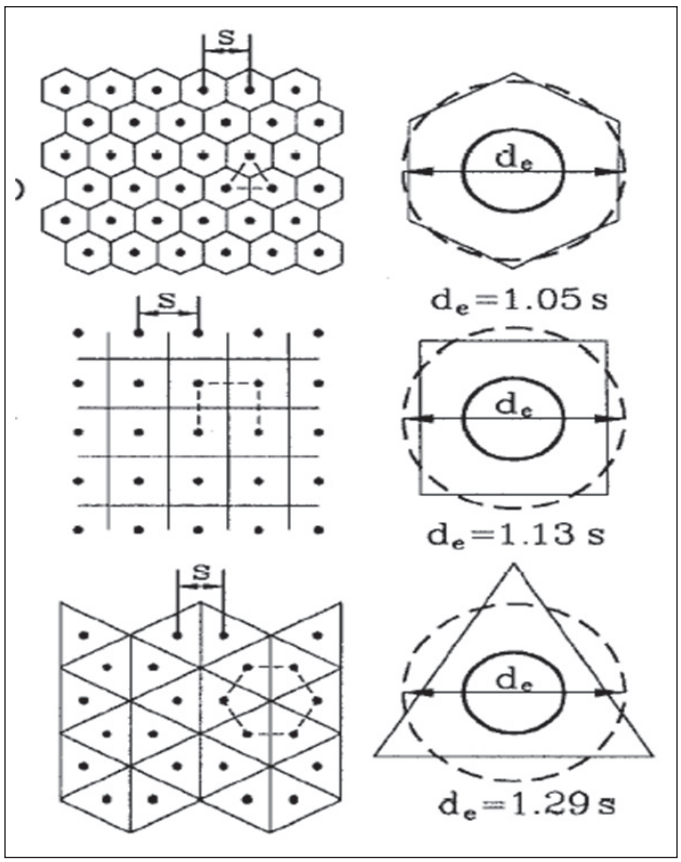



Fig. 5 : Percentage of Load Transferred to Stone Column/Granular Pile vs Relative Stone Column/Granular Pile Stiffness, $R_k$ Effects of (a) Relative Plate Size, $R_P$ and (b) Relative Granular Bed Size, Rb and Percentage of Load Transferred to Stone Column/Granular Pile vs Relative Stiffness of Granular Bed, m (c) Relative Stiffness of Stone Column/Granular Pile, $R_k$ and (d) Relative Granular Bed Size, $R_b$

**Anomaly 3:** Soft ground and waste fill sites are improved with a large number of Stone Column/Granular Piles to support embankments, retaining structures, liquid storage tanks, etc. which cover areas of large extent. Stone Column/Granular Piles of required diameter, $d_{gp}$, and length, L, extending to the required depth are installed often in either triangular or square pattern at a spacing of 'S'. In situ is usually provided with a relatively stiff and strong granular layer over which uniform pressure q acts. Based on the concept of symmetry, each Stone Column/Granular Pile is surrounded by a tributary area, hexagon or square in cases of triangular or square pattern of arrangement. The tributary area is replaced by an equivalent circle of diameters, $d_e$, 1.05S and 1.13S for triangular and square patterns.

Unit cell (Fig. 6b) is then defined as a cylinder of diameter, $d_e$, and length, L, with Stone Column/Granular Pile of diameter, $d_{gp}$, at the center and the annulus of in situ soil. Because each unit cell is bounded by similar cells on all sides, again based on the principle of symmetry, the lateral boundaries are restrained from lateral movement or displacement. Unit cell deforms in only one-dimensional compression as in an oedometer. It is a matter of simple kinematics that in unit cell as well as in an oedometer lateral deformations are not possible either along the center line and along the out cylindrical surface. Hence no lateral deformations are possible for the Stone Column/Granular Pile especially under undrained condition. It means bulging of Stone Column/Granular Pile is not possible.



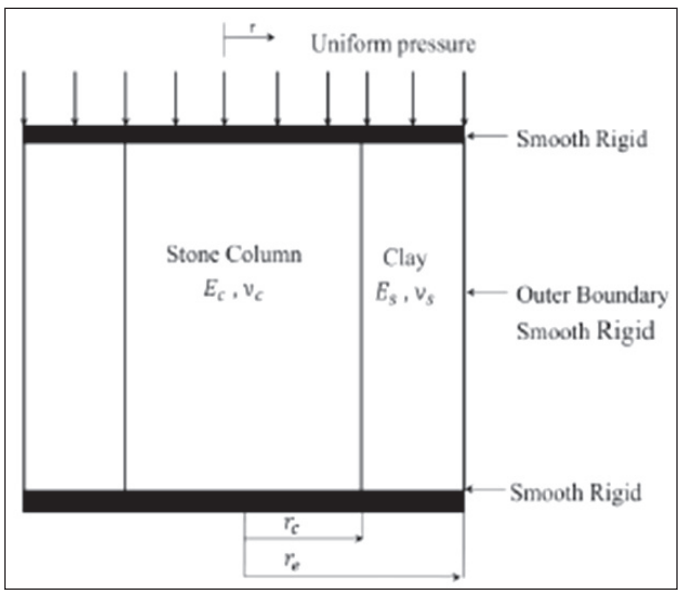
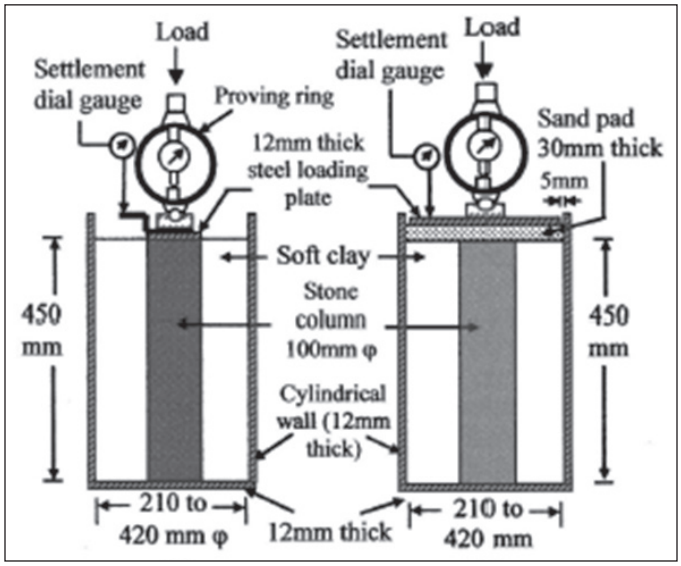




Fig. 6 (a) Typical Arrangement of Stone Column/Granular Piles and (b) Unit Cell

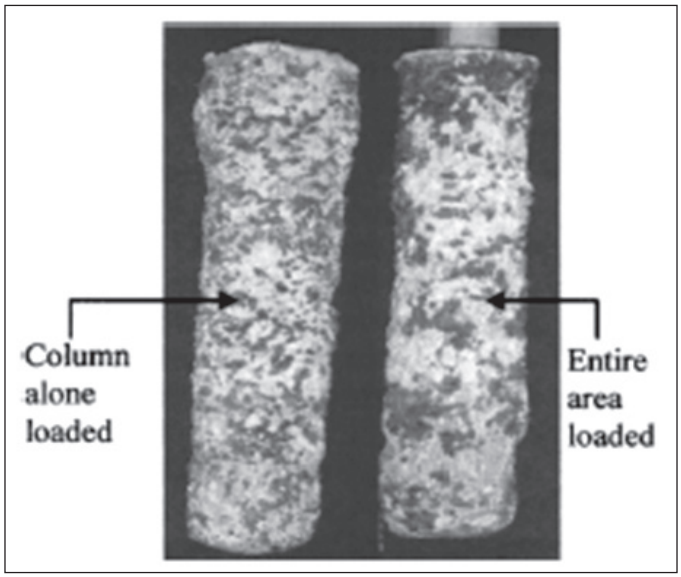
The above statement is corroborated by the experimental and Finite element results of Ambily and Gandhi (2007). They studied experimentally and numerically the responses of a single Stone Column/Granular Pile and of unit cell. Bulging could be observed experimentally (Fig. 7a) as well as in the numerical simulation (Fig. 8a) of a single Stone Column/ Granular Pile loaded axially, obviously with no lateral restraint. In contrast bulging was neither observed experimentally (Fig. 7b) nor predicted numerically (Fig. 8b).



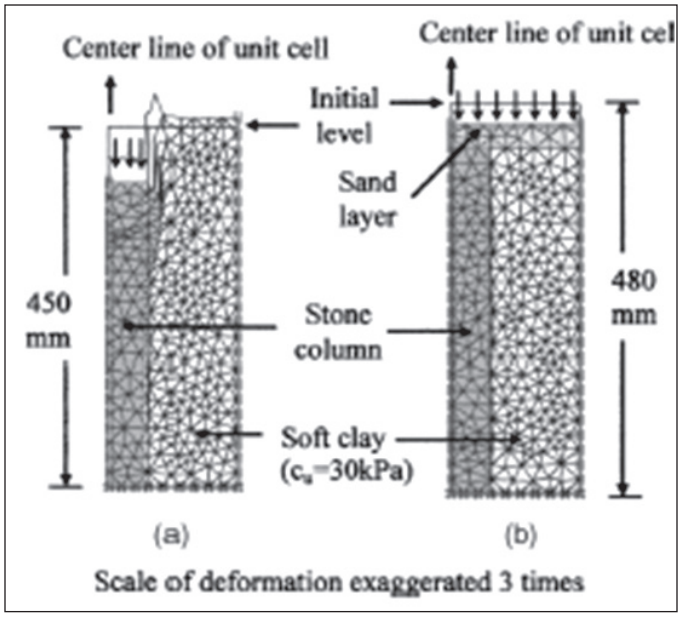

(a) (b)

Fig. 7 (a) Only Stone Colum Loaded and (b) Unit Cell under Load

The biggest anomaly for geotechnical practice of ground improvement with Stone Column/Granular Piles is IS 15284-1 (2003). The following is an extract from the same for the design methodology for Stone Column/Granular Pile treated ground with the premise that Stone Column/Granular Pile in a unit cell behaves very similar to a single Stone Column/Granular Pile but with no lateral restraint which is contrary to mechanics and even observed performance.




(a)




(b)

Fig. 8 (a) Experimental Results and (b) Numerical Simulation

## Estimation of Load Capacity of a Column

### A-1 Stone Columns in Cohesive Soils

Load capacity of the treated ground may be obtained by summing up the contribution of each of the following components for wide spread loads, such as tankages and embankments:

a) Capacity of the stone column resulting from the resistance offered by the surrounding soil against its lateral deformation (bulging) under axial load,

b) Capacity of the stone column resulting from increase in resistance offered by the surrounding soil due to surcharge over it, and

c) Bearing support provided by the intervening soil between the columns.

#### A-1.1 Capacity Based on Bulging of Column

Considering that the foundation soil is at failure when stressed horizontally due to bulging of stone column, the limiting (yield) axial stress in the colun is given by the sum of the following:

$$\sigma_v = \sigma_{rL} K_{pcol}$$

$$\sigma_v = (\sigma_{r0} + 4C_u) K_{pcol}$$

Where

$\sigma_v$ = limiting axial stress in the column when it approaches shear failure due to bulging, and

$\sigma_{rL}$ = limiting radial stress

$$\sigma_{r0} = K_0 \sigma_{rLv0}$$

Where

$K_0$ = average coefficient of lateral earth pressure for clays equal to 0.6 or alternatively, as determined from the relationship

$$K_0 = 1 - sin\varphi$$

where $\varphi$ is the effective angle of internal friction of soil, and

$\sigma_{v0}$ = average initial effective vertical stress considering an average bulge depth as **2 times diameter of the column**

$$\sigma_{r0} = \gamma 2D$$

Where

$\gamma$ = effective unit weight of soil within the influence zone.

$K_{pcol} = tan^2 (45° + \frac{\varphi_c}{2})$

$\varphi_c$ = angle of internal friction of the granular column material, which may vary depending upon angularity, surface characteristics, and density of column material. The $\varphi_c$ value may range from 38° to 42° depending upon the compactness achieved during construction of stone columns.

Yield load = $\sigma_v \frac{\pi}{4} D^2$

Safe load on column alone $Q_1 = \frac{\sigma_v \pi/4\, D^2}{2}$

Where 2 is the factor of safety.

### A-1.2 Surcharge Effect

a) Initially, the surcharge load is supported entirely by the rigid column. As the column dilates, some load is shared by the intervening soil depending upon the relative rigidity of the column and the soil. Consolidation of soil under this load results in an increase in its strength, which provides additional lateral resistance against bulging.

b) The surcharge load may consist of a **sand blanket and sand pad** (being applicable to tank foundations). If thicknesses of these elements are not known, the limiting thickness of the surcharge loading as represented by the safe bearing capacity of the soil may be considered.

c) The increase in capacity of the column due to surcharge may be computed in terms of increase in mean radial stress of the soil as follows:

$$\Delta\sigma_{r0} = \frac{q_{safe}}{3} (1 + 2K_0)$$

where $\Delta\sigma_{r0}$ is the increase in mean radial stress due to surcharge, and $q_{safe}$ is the safe bearing pressure of soil with the factor of safety of 2.5 (see IS 6403)

$$q_{safe} = C_u \frac{N_c}{2.5}$$

Increase in ultimate cavity expansion stress $= \Delta\sigma_{r0} Fq'$

where

$Fq'$ = vesie's dimenstion less cylinderical cavity expansion factor

$Fq''$ = 1 for $\varphi_s = 0$

Increase in yield stress of the column = $K_{pcol}\, \Delta\sigma_{r0}$

d) Allowing a factor safety of 2, increase in safe load of column, $Q_2$ is given by the following formula:

$$Q_2 = \frac{K_{pcol}\, \Delta\sigma_{r0}\, A_s}{2}$$

The surcharge effect is minimum at edges, and it should be compensated by installing additional columns in the peripheral region of the facility.

### A-1.3 Bearing Support Provided by the Intervening Soil

This component consists of the intrinsic capacity of the virgin soil to support a vertical load which may be computed as follows:

**Effective area of stone column including the intervening soil for triangular pattern** = $0.866\ S^2$

**Area of intervening soil for each column, $A_g$** is given by the following formula :

$$A_g = 0.866\, S^2 - \frac{\pi D^2}{4}$$

**Safe load taken by the intervening soil, $Q_3$**

$$Q_3 = q_{safe}\, A_g$$

Overall safe load on each column and its tributory soil
$= Q_1 + Q_2 + Q_3$

**Note:** The number of columns to be provided under a structure may be obtained if the total load to which the structure is subjected to and the reduction in settlements required considering the permissible total and differential settlements for it are known.

Stone Column/Granular Pile in a unit cell cannot bulge or fail because of the lateral restraint. Ground improvement with Stone Column/Granular Piles is exclusively to reduce settlements of large treated areas. The earliest design chart for estimating the settlement reduction due to Stone Column/Granular Pile treatment given by Ballam and Booker (1985) is given below. For the usual spacing, S, of 2 diameters of Stone Column/ Granular Pile, a/b is equal to 0.476 and settlement reduction ranges from about 40% to 15% for the modular ratio, $E_{gp}/E_c$, increasing from 10 to 40.

Further works by Impe and Madhav (1992), Shahu et al. (2000) and Pulko and Majes (2006) provide better estimates of settlement reduction factor against area ratio, a better index than radii ratio (Fig. 10). Granular pile material is densified to relative densities of the order of 80% or more and tend to dilate. Linear elastic approach appears conservative compared to solutions based on considering dilation of granular pile material (Fig. 10a). These predictions are validated with measured values from several field cases (Fig. 10b).

## Concluding Remarks

1. The term 'Stone Column/Granular Piles' may be replaced with 'granular pile' for better representation.

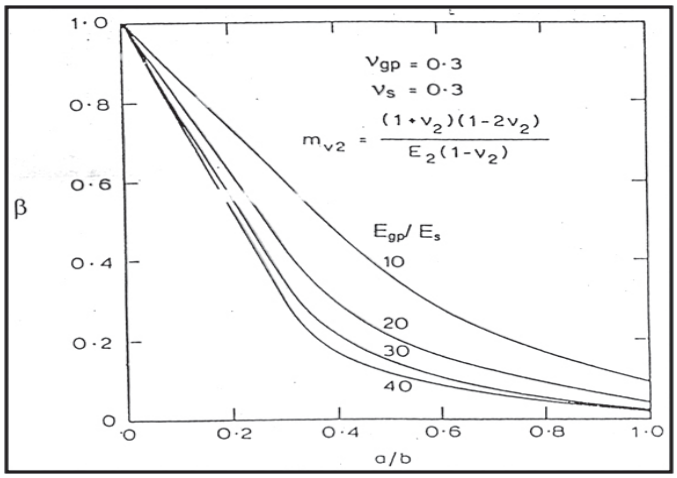
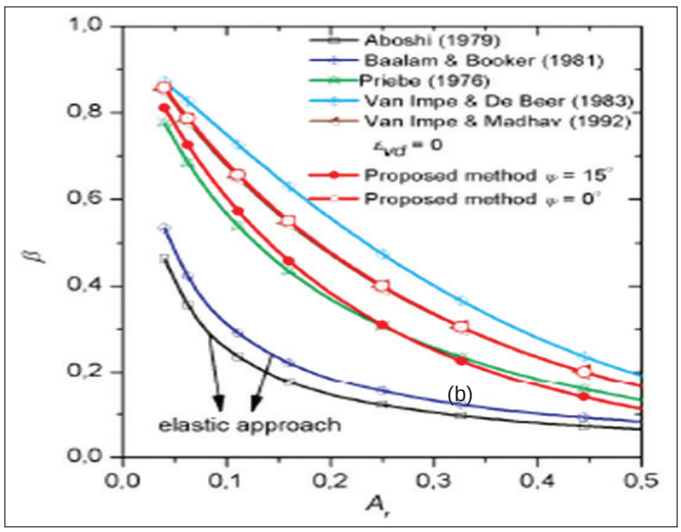
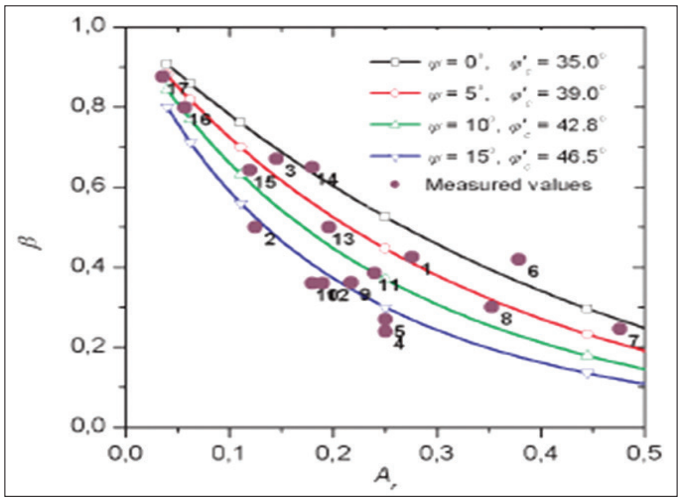



Fig. 9: Settlement Reduction Factor, b, vs a/b, Ratio of Stone Column/ Granular Pile and Unit Cell Radii




(a)




(b)

(b)Fig. 10 Comparison of Settlement Reduction Factors (a) Theoretical and (b) Measured (after Pulko and Majes (2006).

2. The testing of single Stone Column/Granular Pile as proposed in IS 15824 may be replaced with a more appropriate one that evaluates the actual performance of the Stone Column/Granular Pile.

3. The design of Stone Column/Granular Pile reinforced ground be based on settlement reduction and not based on extended analysis that presumes its yielding in bulging as in a single one.

4. One of the most versatile and commonly used ground improvement technique needs proper assessment and guidelines for good geotechnical practice.

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# SUMMARY OF Ph.D THESES

**Title of Thesis:** **Hydraulic Conductivity of Admixture Stabilized Clays: Application to in-situ Soil Mixing Techniques for Seepage Barriers**


**Name of the Student:** Dr. Murapaka Swamynaidu

**Supervisor:** Dr. Akanksha Tyagi

**Department & Institute:** Department of Civil Engineering, Indian Institute of Technology Roorkee



**SUMMARY:** The hydraulic conductivity, microstructure, freezing-thawing durability of cement, alkali activated flyash cement (FCAA) and glass granulated blast furnace slag (GGBFS) stabilised clays are studied by laboratory tests. The range of binder contents, water-contents and effective confining stresses adopted in this study, are applicable to deep soil mixing and jet grouting techniques. The hydraulic conductivity values of treated clays are measured by accelerated permeability testing using a custom-fabricated triaxial system. The relationships between the hydraulic conductivity, unconfined compressive strength, and water-binder ratios are determined for cement-stabilised, FCAA-stabilised, and cement GGBFS-stabilised clays.


**Title of Thesis:** **Hydraulic Performance Evaluation of in-situ Polymerized Bentonite for Barrier Applications**


**Name of Student:** Dr. S. Keerthana

**Supervisor:** Prof. Dali Naidu Arnepalli

**Department & Institute:** Department of Civil Engineering, Indian Institute of Technology Madras, Chennai



**SUMMARY:** This research work aimed to enhance the existing polymer formulation by incorporating a crosslinker to develop a novel in-situ polymerized bentonite (IPB) for barrier applications. Response surface method was used to optimize polymer composition using which the bentonite was polymerized in-situ. IPBs maintained 2-3 orders of magnitude lower hydraulic conductivity than untreated bentonite to various salt solutions. Comprehensive material characterization including geotechnical, physico-chemical, mineralogical, thermal, molecular, and morphological analyses provided critical insights into their micro-macro relationship as well as the mechanisms responsible for improved hydraulic performance. These findings offered a thorough understanding of IPB, demonstrating how tailoring polymer properties can advance barrier technologies in the future.


**Title of Thesis:** **Experimental and Numerical Simulations of Large Deformation Problems in Geotechnical Engineering**


**Name of Student:** Dr. Kritesh Chouhan

**Supervisor:** Dr. Jitesh T. Chavda

**Department & Institute:** Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat



**SUMMARY:** Large deformations (LDs) in geotechnical engineering occur in problems like installation of pile, landslides, cone penetration, etc. Experimental simulations are complex and costly whereas numerical simulations with conventional finite element method (FEM) struggle with LDs due to mesh distortion. The present study reviews LD problems and FEM solutions and the use of digital image correlation (DIC) for the precise measurement of large soil displacements. Three LD problems, penetration, extraction, and slope failure, are examined experimentally and numerically. A novel methodology is proposed to simulate LDPs using conventional FEM to represent continuous penetration and extraction of geo-structures. The study compares DIC, conventional FEM, and ALE methods, proposing future improvements.

**Title of Thesis:** **Stabilization of Coal Ash and Industrial Slags for Use in Base and Subbase Layer of Road Pavements**

**Name of Student:** Dr. Hrushikesh Namdev Kedar

**Supervisor:** Dr. Satyajit Patel

**Department & Institute:** Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat

**SUMMARY:** This study explores the stabilization of industrial byproducts such as fly ash, bottom ash, copper slag, and steel slag for base and subbase layers in road pavements. Various combinations with lime, GGBS, and sodium hydroxide were tested for strength, durability, and environmental safety. Laboratory and microstructural analyses revealed improved UCS, CBR, and resilient modulus values, surpassing those of conventional materials. Optimal blends demonstrated enhanced performance in numerical modeling using PLAXIS 3D. Leaching tests confirmed environmental compliance. The research promotes sustainable construction by offering an effective reuse strategy for industrial waste while conserving natural resources and improving pavement longevity.

**Title of Thesis:** **Geomechanical Modeling of Gas Hydrate Sediments**

**Name of Student:** Dr. Sahil Wani

**Supervisor:** Dr. Ramesh Kannan Kandasami

**Department & Institute:** Department of Civil Engineering, Indian Institute of Technology Madras, Chennai

**SUMMARY:** Gas hydrate sediments in deep-sea reservoirs and permafrost regions are a promising energy source, but extraction poses geomechanical challenges. This research enhances the understanding of their response by conducting experiments and developing numerical models. A novel hypoplastic model is formulated to capture cyclic response in sand and later extended to gas hydrate sediments by incorporating cementation effects and hydrate saturation. A coupled Thermo-Hydro-Mechanical-Chemical (THMC) solver has also been developed to simulate gas production and sediment deformation. The models are validated using laboratory experiments, offering insights into hydrate dissociation, subsidence risks, and optimal extraction strategies for sustainable energy recovery.

**Title of Thesis:** **Development of Angular Shaped Coarse Aggregate from Low Calcium Fly Ash and Assessment of its Suitability for use in Road Pavement**

**Name of Student:** Dr. Sandeep Singh

**Supervisor:** Dr. Satyajit Patel

**Department & Institute:** Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat

**SUMMARY:** The study examines the engineering properties and performance of Angular-shaped Flyash Aggregate (AFA) as a replacement for natural stone in wet-mix macadam (WMM) pavement layers. Autoclave curing was more effective than water bath curing for hardening low calcium fly ash-binder mixes. AFA properties, including specific gravity, angularity number, water absorption, impact value, crushing value, abrasion value, and soundness, met Indian standards. Compaction characteristics, particle breakage, slake durability and leachability were investigated. Cyclic triaxial and large box direct shear tests showed AFA performing well under traffic and shear loading. Financial analysis indicated AFA production costs were 16% lower than natural aggregates, offering a sustainable solution for 100% fly ash utilization and fulfilling aggregate demand.

**Title of Thesis:** **Liquefaction Response of the Sand Reinforced with 3D Printed Geocells**

**Name of Student:** Dr. Prerana Krishnaraj

**Supervisor:** Prof. Gali Madhavi Latha

**Department & Institute:** Department of Civil Engineering, Indian Institute of Science, Bangalore

**SUMMARY:** This thesis investigated the liquefaction response of the geocell-reinforced sands and quantified the post-liquefaction shear strength of these sands. Through strain controlled cyclic triaxial tests and shaking table model tests, the influence of geocells on liquefaction resistance in terms of hampering the pore water pressure development, reducing the seismic amplifications and improving the cyclic shear modulus in reinforced earth beds were quantified. Reduced scale polypropylene geocells used in the experiments were manufactured through 3D printing and ultrasonic welding. The experimental insights were extended to prototype reinforced systems through numerical studies to establish the quantitative benefits of geocell reinforcement in reducing the likelihood of liquefaction in sands.

**Title of Thesis:** **Evaluation of Geosynthetic-Reinforced C&D Waste for Flexible Pavement Applications - A Sustainable Approach**

**Name of Student:** Dr. Kommanamanchi Vamsi

**Supervisor:** Dr. Hariprasad Chennarapu

**Department & Institute:** Department of Civil Engineering, Ecole Centrale School of Engineering, Mahindra University, Hyderabad

**SUMMARY:** Rapid urbanization has led to the accumulation of Construction and Demolition (C&D) waste, raising environmental concerns. This study explores the use of Recycled Sand (RS) and Recycled Aggregates (RA) from C&D waste as sustainable alternatives to Natural Sand (NS) and Natural Aggregates (NA) in pavement applications. Materials were sourced from a recycling plant in Hyderabad and evaluated through geotechnical tests, SEM, and XRF. Large-scale tests with geosynthetic reinforcements assessed performance under varied subgrades. Results showed RS and RA offer comparable strength to NS and NA, reduce carbon emissions, and support sustainable pavement design as per the Indian standards.

**Title of Thesis:** **Contaminated Site Investigation and Remediation using Modified Nano Zero Valent Iron Particles**

**Name of Student:** Dr. Prathima B.

**Supervisor:** Dr. G.L. Sivakumar Babu

**Department & Institute:** Centre for Sustainable Technologies (CST), Indian Institute of Science, Bengaluru

**SUMMARY:** Rapid industrialization has intensified heavy metal contamination in soil and groundwater, particularly in Bengaluru's Peenya industrial zone, a critically polluted area. Groundwater analysis revealed 78% of samples exceeded safe Cr(VI) limits, posing significant carcinogenic and non-carcinogenic risks, especially to children. Soil exhibited high Cu and Cr levels, with TCLP confirming heavy metal leaching. Sulfidated carboxymethyl cellulose- stabilized nano zero-valent iron (S-CMC-nZVI) achieved up to 99% Cr(VI) removal in aqueous solution and effectively immobilized Copper and Chromium in contaminated soil. The S-CMC-nZVI offers a promising solution for remediating Cr(VI)-contaminated sites (both ground water and soil).

ISSMGE BULLETIN

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## IGS Allahabad Chapter

The Department of Civil Engineering at Motilal Nehru National Institute of Technology (MNNIT) Allahabad and the Indian Geotechnical Society (IGS) Allahabad Chapter successfully organized a five-day workshop titled "Role of Geotechnical Engineering in Developing Smart Cities and Sustainable Infrastructure" (GEOSMART-2025) from February 14-18, 2025.

Inaugural session of GEOSMART workshop 2025

Professor Kumar Venkatesh served as the Convener, while Dr. V.P. Singh, Dr. Vijay Kumar, and Dr. Mantu Majumder coordinated the event. The workshop was designed to enhance participants' knowledge and skills in geotechnical engineering applications for smart urban development.

Prof. J.T. Shahu from IIT Delhi inaugurated the workshop as the Chief Guest. During the opening ceremony, Prof. R. S. Verma, Director of MNNIT Allahabad, emphasized the workshop's significance and the institution's dedication to knowledge sharing and professional development initiatives.

The workshop featured presentations by distinguished speakers including: Prof. J.T. Shahu, IIT Delhi; Prof. T.V. Bharat, IIT Guwahati; Prof. G.L. Siva Kumar Babu, IISC Bangalore; Prof. Suresh Bhalla, IIT Delhi; Dr. A.P. Singh, Director & Hon. Secretary, IGS; Prof. N.K. Samadhiya, IIT Roorkee.

These experts covered comprehensive topics related to sustainable infrastructure, providing valuable insights to all participants.

Prof. R.M. Singh, Head of the Civil Engineering Department, praised the organizing team and highlighted how such workshops bridge the gap between academic knowledge and industry practices.

The valedictory session was graced by Prof. N.K. Samadhiya from IIT Roorkee as Chief Guest and Dr. A.P. Singh, Honorary Secretary of IGS New Delhi, as Guest of Honor. Both speakers encouraged participants to apply their newly acquired knowledge to benefit industry and society.

Prof. V.K. Srivastava, Officiating Director of MNNIT, expressed gratitude to all contributors during the concluding session. Participants received certificates acknowledging their involvement in the workshop, which garnered an enthusiastic response with attendees particularly appreciating the engaging sessions and interactive discussions.

The successful completion of GEOSMART-2025 marks another milestone in advancing geotechnical engineering education and its practical applications in developing smart and sustainable infrastructure.

Participants with the resource persons at the GEOSMART workshop 2025

## IGS Bangalore Chapter

The IGS Student Chapter at MS Ramaiah Institute of Technology, Bengaluru organized an insightful expert talk by Dr. Naveen B.P., Professor at the National Institute of Technical Teachers Training Research (NITTTR), Kolkata on January 6, 2025. The presentation on "Pile Termination Criteria for Rock Socketed Piles in Metro Projects" covered various field-related aspects

of pile foundations and challenges, supported by relevant case studies.

Following this, the IGS Student Chapter at Global Academy of Technology, Bengaluru hosted Dr. Naveen for another expert talk on January 7, 2025, titled "Pile Design & Construction Practice for Metro Projects." This session elaborated on pile design fundamentals and construction practices, highlighting innovations like Continuous Flight Auger piles and diaphragm walls for metro infrastructure.

The 33rd Prof. B. K. Ramiah Memorial Lecture was delivered by Dr. Raghuveer Rao Pallepati on "Geotechnical Aspects of Waste Containment." This comprehensive lecture on geoenvironmental practice covered various waste types and available management technologies, featuring two detailed case studies on mining waste management. The event attracted 60 participants from both academia and industry.

During the memorial lecture, two M. Tech. dissertation awards were presented for the years 2023 and 2024. Mr. Ramesh Biradar Patil from Basaveshwar Engineering College, Bagalkot received the 2023 award for his work on liquefaction behaviour of fly ash-treated sand. Ms. Sahana A. S. from UVCE, Bangalore was honoured with the 2024 award for her research on alkali-activated Olivine-treated black cotton soil.

The chapter's annual general body meeting was held on March 28, 2025, at IISc. Dr. Asha M. Nair, Secretary, presented the activity report for 2024-25 and financial statements. The meeting concluded with elections for the 2025-2027 term, with current office bearers unanimously re-elected.

## IGS Baroda Chapter

The IGS MSU Student Chapter was officially inaugurated on February 8, 2025, with 30 undergraduate student members. The inauguration ceremony was graced by Dr. A.V. Shroff, along with office bearers from the IGS Baroda Chapter and the Head of the Applied Mechanics & Structural Engineering Department, Faculty of Technology & Engineering, MSU.

The event featured expert lectures by Dr. Kanan Iyer, Associate Professor at IITRAM, on "Challenging Soils," and a session by Er. Premal Shah on "The Future of Geosynthetics." Both sessions received positive feedback and appreciation from the student members, providing valuable insights into the field of geosynthetics.

IGS Baroda Chapter arranged two EC meetings one on February 8, 2025, and the next on March 4, 2025.

A site visit was arranged for B.E. (2nd Year) students to the Railway underpass Bridge Construction at Faratkui and Ratanpur, Vadodara, on February 15, 2025.

A site visit was arranged for M.E. (Geotechnical Engineering) students to Ukai Dam on February 25, 2025.

## IGS Calicut Chapter

The IGS Student Chapter STM organized a site visit on March 5, 2025, to the Pinarayi Educational Hub, giving students hands-on experience with real-world engineering applications. The visit focused on foundation construction at this major educational initiative inaugurated by Chief Minister Pinarayi Vijayan on August 22, 2024. The ₹285 crore project spans 12.93 acres and will integrate various educational institutions with modern facilities for both domestic and international students.

Students received a safety briefing before exploring different construction phases across multiple buildings. The site's soil, with bearing capacity exceeding 300 kN/m², influenced the foundation design, resulting in isolated and combined footings for structural stability. Students participated in field tests including density tests and concrete compressive strength tests, gaining practical insights into construction quality control.

This enriching experience bridged the gap between theoretical knowledge and practical application, reinforcing students' enthusiasm for civil engineering and their desire for more such opportunities to enhance technical expertise.

## IGS Dhanbad Chapter

IIT (ISM) Dhanbad successfully hosted a two-day national workshop titled "Next-Gen Geotechnical Engineering: Numerical Modelling in Railway and Mining Applications" on March 28-29, 2025. The event brought together over 100 experts, researchers, and professionals from across the country, including representatives from the Research Design and Standards Organization (RDSO) and Indian Railways.

Organized by the Department of Civil Engineering under the Indian Geotechnical Society's (IGS) Dhanbad Chapter, the workshop was conducted in collaboration with MIDAS Research and Development Centre India, the Bureau of Indian Standards, PMT Infra Science, and TEXMIN as technical partners.

Mr. Ravi Kiran Anne, Director of MIDAS, inaugurated the workshop as chief guest, highlighting the evolving challenges in geotechnical engineering and the growing importance of advanced simulation software and high-performance computing. Prof. Sagar Pal, Dean (R&D), presided over the inaugural session, emphasizing increased investments in research and development. Prof. Sarat Kumar Das, Dean (Faculty) and Chairman of the IGS Dhanbad Chapter, shared the chapter's achievements, while Prof. Srinivas Pasupuleti, Head of Civil Engineering, outlined the department's academic offerings. Prof. Sowmiya Chawla, workshop coordinator and Secretary of the IGS Dhanbad Chapter, welcomed participants.

The first day featured an introduction to MIDAS by Mr. Divyansh Pandey, followed by Prof. Chawla's technical talk on numerical modelling for sustainable railway track design. Participants then engaged in hands-on training with MIDAS GTS NX software, focusing on railway track design analyses.

Day two commenced with Prof. Gopi Krishna Dondapati's lecture on numerical modelling for mining excavation stability analysis, followed by another practical session addressing mining-related applications using MIDAS GTS NX.

The workshop concluded with a valedictory session attended by Prof. Sukumar Mishra, Director of IIT (ISM) Dhanbad, who emphasized the critical role of numerical modelling in modern engineering. Prof. R. M. Bhattacherjee, Dean IRA, reflected on how current engineering students benefit from advanced tools unavailable to previous generations.

The event ended with certificate distribution, feedback collection, and a vote of thanks by Prof. Vishwas Nandkishor Khatri, workshop co-coordinator and Treasurer of the IGS Dhanbad Chapter.

This collaborative initiative successfully equipped participants with practical knowledge of cutting-edge numerical modelling techniques essential for addressing complex challenges in railway and mining applications.

## IGS Goa Chapter

The Indian Geotechnical Society Goa Chapter organized three prestigious events on March 29, 2025: the 7th Victor de Mello Goa Lecture, the inaugural Dr. Narayan V. Nayak Memorial Lecture, and an IGS Goa Chapter Invited Special Lecture.

Distinguished guests on the dais included Prof. G. L. Sivakumar Babu, Prof. Deepankar Choudhury, Dr. Anil Joseph, Er. Anwar Khan, Chairman, IE(I) Goa State Centre; Prof. Purnanand Savoikar, and Er. Umesh Kulkarni.

Prof. Savoikar welcomed delegates, highlighted chapter activities, and announced the establishment of the Dr. Narayan V. Nayak Memorial Lecture Series. Dr. Anil Joseph delivered the special lecture on "Sustainable Innovations in Construction Industry."

Prof. Sumitra S. Kandolkar presented a bio-sketch of Dr. Victor de Mello before Prof. Savoikar introduced Prof. G.L. Sivakumar Babu, who delivered the 7th Victor de Mello Lecture on "Climate Resilient Design and Rehabilitation of Embankment Structures."

Participants with dignitaries

For the inaugural Dr. Narayan V. Nayak Memorial Lecture, Dr. Pradnya Bhonsule presented Dr. Nayak's bio-sketch, and Prof. Nisha P. Nayak introduced Prof. Deepankar Choudhury, who spoke on "Foundation Systems for Mega Structures under Static and Dynamic Loadings: Theory to Practice."

Dr. Govind Bhagat served as the event compere, and Er. Umesh Kulkarni proposed the vote of thanks. The program attracted approximately 100 delegates participating both online and offline from Goa and Maharashtra.

## IGS Indore Chapter

The IGS Indore Chapter successfully hosted the latest installment of its monthly lecture series, "GeoHorizons: Geotechnical Innovation and Sustainable Developments," on January 10, 2025. The session featured Mr. Chiranjib Sarkar, Principal Engineer at GEOCONSULT India, who delivered an insightful talk on "Design and Construction of Underground Box Structures – Challenges and Innovations."

Drawing from his extensive experience in metro, railway, and high-speed rail projects, Mr. Sarkar discussed cutting-edge advancements and solutions for complex underground infrastructure challenges. Attendees were particularly engaged by his expertise in leading landmark projects such as the Mumbai-Ahmedabad High-Speed Rail and Jaipur Metro.

The event also highlighted Mr. Sarkar's significant contributions as a published researcher and award-winning tunneling expert. His presentation emphasized practical approaches to overcoming geotechnical challenges while implementing sustainable engineering practices.

Coordinated by Dr. Ramu Baadiga and Dr. Kunal Gupta, the lecture provided an excellent platform for both geotechnical professionals and students to exchange ideas and insights. The interactive session that followed the presentation fostered valuable discussions on emerging trends and innovative methodologies in underground construction.


The Indian Geotechnical Society, Indore Chapter, in collaboration with IIT Indore, successfully hosted the February edition of its GeoHorizons: Monthly Lecture Series on 15th February 2025. This session featured Dr. Rakesh Kumar, Director of UV Global Consult, who shared his expertise on "Impact of Construction Methods on Tunnel Design."

The online event brought together a diverse audience of geotechnical professionals, academicians, and students. Dr. Kumar's presentation offered an in-depth analysis of how construction methodologies influence the design and long-term performance of tunnels. He highlighted real-world case studies, discussed modern tunneling techniques, and emphasized the importance of integrating design and execution strategies to overcome geotechnical challenges efficiently.

The session was highly interactive, with participants actively engaging during the Q&A segment. Dr. Kumar's practical insights and clarity of thought made the lecture a rich learning experience for all attendees.


The Indian Geotechnical Society, in collaboration with ISSMGE TC202, conducted an expert online lecture on February 12, 2025 titled "Use of Reinforcing Geosynthetics in Railway Infrastructure – From Laboratory Testing to Field Applications." Dr. Stanislav Lenart from the Slovenian National Building and Civil Engineering Institute (ZAG) delivered this lecture.

The event attracted students, researchers, and professionals globally. Dr. Lenart shared valuable insights on geosynthetics in railway projects, connecting laboratory testing to practical field applications while highlighting techniques for improving track stability and sustainability.

The session was efficiently coordinated by Dr. Srinivasan V., VNIT; Prof. Neelima Satyam, and Dr. Baadiga Ramu, IIT Indore, with guidance from Dr. Anirban Mandal, VNIT Nagpur. The IGS extends sincere thanks to Dr. Stanislav Lenart and the entire organizing team for this enriching knowledge-sharing event.

The Indian Geotechnical Society (IGS) – Indore Chapter successfully hosted another impactful session of its *GeoHorizons: Monthly Lecture Series* on 22 February, 2025. The lecture, held online, featured Dr. S. K. Dhawan, former Chief Engineer, CPWD, who shared his vast expertise on the topic *"Durable R.C. Structures."*

Dr. Dhawan, with decades of practical experience in civil and structural engineering, offered in-depth perspectives on enhancing the durability of reinforced concrete structures. His talk addressed critical aspects such as material selection, construction practices, exposure conditions, and long-term maintenance strategies. Real-life examples and case studies added further depth to the discussion, making it highly relevant to both young engineers and seasoned professionals.


The session witnessed active participation from a nationwide audience comprising students, faculty members, and industry experts. The interactive Q&A session enabled attendees to clarify their doubts and engage in valuable discussions with the speaker.

*The Engineer's Arena*, a high-energy Technical Quiz Competition held on 25 March, 2025 organized by the IGS Indore local chapter at PIEMR Indore, was a grand success, drawing enthusiastic participation and competitive spirit from across the region. Held with the objective of promoting technical awareness and problem-solving skills among budding engineers, the event saw the participation of 17 teams comprising 82 students from reputed institutions including SGSITS, IPS Academy, Bansal College, SKITM, IIST, and Acropolis Group of Institutes. With many teams, the competition was intense, intellectually stimulating, and thoroughly engaging. The quiz covered a wide range of civil engineering domains, testing students' depth of knowledge, speed, and accuracy. Participants displayed commendable technical acumen and teamwork throughout the event. The event was lauded for its flawless execution, spirited participation, and the dynamic learning environment it fostered. The Civil Engineering Department extends heartfelt thanks to all participating institutions, students, and volunteers.

IGS Indore Chapter has initiated the HTC Champions Podcast Asia 2025, an initiative by the HTC Committee of ISSMGE. This podcast aims to bring together leading experts from academia and industry leaders in Asia to discuss key advancements, challenges, and innovations in geotechnical engineering and practice.


Threeinsightful episodes featuring Prof. M.R. Madhav (India) on Geotechnical Legacy & Innovations, Prof. Jian Chu (Singapore) on Biogeotechnics and Geotechnical Innovation and Prof. Harry Poulos (Australia) on Engineering Legacy & Landmark Structures have been recorded and can be accessed through the following link.

Podcast Link: https://open.spotify.com/show/6fAauqVNx1x4nJV7xle4ZH?si=e3da198543864e04



## IGS Jabalpur Chapter

Dr. Shilpi Mahapatra, Life Member of IGS Jabalpur Chapter and Geotechnical Engineer at AtkinsRealis was invited as a keynote speaker in the Tenth Indian Young Geotechnical Engineering Conference (10IYGEC - 2025). Five students of IGS TIET students' chapter - Mr. Mayank Rao Ahirwar, Ms. Muskan Kashyap, Mr. Sumit Kumar, Mr. Shiva Yadav, and Mr. Vikas Kumar Jaiswal from TIET and Mr Arush Shrivastav research scholar of GGITS, Jabalpur participated in 10th IYGEC at IIT Indore.


Keynote lecture by Dr. Shilpi Mahapatra in 10IYGEC - 2025 at IIT Indore



Mr. Arush Shrivastava presenting in 10IYGEC-2025 at IIT Indore

IGS-TIET Students in 10IYGEC - 2025 at IIT Indore

## IGS Jodhpur Chapter

The IGS Jodhpur Chapter organized the 3rd Alam Singh Memorial Lecture on January 30, 2025. The keynote speaker was Dr. Anil Joseph, President, IGS. He delivered an insightful lecture on "Forensic Studies of Foundation Failures and Vibration Measurement in Construction Industry - Case Studies". The session provided an in-depth analysis of foundation failures, their causes, and methodologies for forensic investigations. He highlighted real-world case studies where improper soil assessment, design flaws, and unforeseen site conditions led to structural failures. The importance of geotechnical investigations, advanced monitoring techniques, and remedial measures were discussed in detail. In the presence of Dr. Anil Joseph, an eleven-member executive committee was elected unanimously. Er. Ashok Mathur as Chairman, Dr. Abhishek Arya as Honorary Secretary, and Er. Puneet Hiranandani as Treasurer were elected along with other committee members.

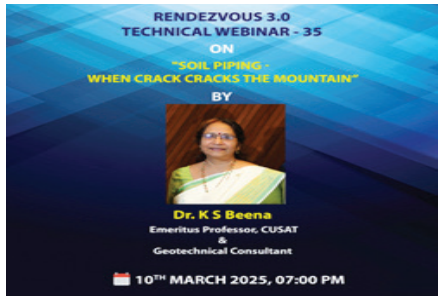
## IGS Kochi Chapter

The IGS Kochi Chapter organized technical talks delivered by Dr. Ashish Juneja and Dr. Dasaka S. Murthy, Professors in the Civil Engineering Department at IIT Mumbai, on January 25, 2025, at KMA Hall, Kochi. Dr. Ashish Juneja presented on the topic "Case Studies on Slope Stability and Stabilization of Lateritic Soils," while Dr. Dasaka S. Murthy spoke on

Participants of Technical Talks with the Invited Speakers

"Forensic Investigation of Distressed Large Diameter Slurry Tanks." Dr. Anil Joseph, National President of IGS, presided over the function.

The Webinar Series Rendezvous 3.0 resumed with the 35th webinar of the series, delivered by Dr. K. S. Beena, Emeritus Professor at the College of Engineering, CUSAT, Kochi, and a Geotechnical Consultant. The topic of the webinar was "Soil Piping – When Crack Cracks the Mountain." The webinar was conducted on March 10, 2025. The webinar series was well attended, not only by IGS members in Kerala but also by participants from across India and other professional bodies.




## IGS Kolkata Chapter

A presentation on "JUTECELL – An Efficient Tool for Soil Reinforcement Geotechnical Exploration - Theory & Practice" by Dr. Arghadeep Biswas, Asst. Professor, Jadavpur University, Civil Engineering Department was organized by IGS Kolkata chapter on February 19, 2025 at the Seminar Hall, Civil Engineering Department of Meghnad Saha Institute of Technology, Kolkata.

On February 22, 2025, a one-day Seminar on "Application of Innovative Techniques in Geotechnical Engineering: Research and Practice" was organized by this chapter in association with Midas Research and Development Centre India Pvt. Ltd.

After the initial introductory speech by Chairman, Dr. Jagat Jyoti Mandal, a total of four lectures were delivered.

Two technical lectures were delivered by Dr. Praveen Huded, Technical Support, MIDAS on "Design and Analysis of Foundations using MIDAS GTS-NX," followed by Mr. Chinmoy Pattanaik, MIDAS Geotechnical Team Lead on "Introduction to MIDAS GTS-NX & Slope Analysis." Thereafter, a special talk was given by Mr. Naga Ravi Kiran Anne, Director, MIDAS India about MIDAS. Later, a very interesting deliberation was made on "Case Studies: Explore On-Site Challenges & Solutions in Geotechnical Engineering" by Mr. Chiranjib Sarkar, Principal Engineer – GEOCONSULT India.

This Seminar went off to the immense satisfaction of the participants with overwhelming response of more than 183 registrations from different corners of the country and was attended by about 105 delegates.

Two technical lectures were organized prior to the AGM of this chapter on March 8, 2025 at the CE Department, Jadavpur University, Kolkata. "Consolidation under Cyclic Loading" by Prof. R.B. Sahu, Former HOD, Civil Engineering Department, JU and "Foundation Distress: A Deep Digging – Few Case Studies" by Er. Sudip Nath was presented.

## IGS Mumbai Chapter

On January 18, 2025, a webinar on "Slope Stabilization with Piles" was presented by Mr. Sebastian Lobo-Guerrero, Ph.D., P.E., BC.GE., Geotechnical Project Manager/Laboratory Manager, AGES Inc., Pittsburgh, PA & Adjunct Professor, University of Pittsburgh.

On February 21, 2025, a webinar on "Smarting up Subsurface Characterization" was presented by Mrs. Lucky Nagarajan, ASCE G-I BOG, Immediate Past Chair DFI WiDF, DFI Trustee & ASCE G-I BOG/Met Section BOD, Women's Network-Advisory Board Member/Boston Chamber of Commerce.

## IGS Mysuru Chapter

The Indian Geotechnical Society (IGS) Mysuru Chapter, in collaboration with its active student chapters across various institutions, conducted a series of impactful events between January and March 2025. These initiatives aimed to advance knowledge in civil and geotechnical engineering, promote road safety, encourage sustainable practices, and foster climate consciousness, all while ensuring strong participation from students and faculty. A brief summary of the events is included:

Organized by the IGS Student Chapter of SJCE on February 1, 2025 at JSS Science and Technology University (SJCE), Mysuru, the Technical Talk on "Seismic Stability of Structures" by Dr. Gopikrishna K focused on the seismic stability of structures, offering insights into geotechnical and structural considerations for earthquake-resistant design. The session benefited undergraduate and postgraduate students by enhancing their understanding of seismic behavior in civil structures.

The Department of Civil Engineering at Vidyavardhaka College of Engineering (VVCE), Mysuru hosted a Technical Talk on "Road Safety and Construction 4.0" on March 8, 2025 in collaboration with IGS Mysuru Chapter. Dr. P. Nanjundaswamy from SJCE discussed modern approaches to road safety and Construction 4.0, highlighting the integration of digital technologies and smart construction techniques for safer, efficient infrastructure development.


Organized by the MIT, Mysore Student Chapter of IGS on March 13, 2025 the Workshop on "Short-Lived Climate Pollutants & Sustainable Lifestyle for Environment" emphasized the impact of short-lived climate pollutants on the environment and promoted sustainable lifestyle practices. The event was well-received by students and faculty, increasing awareness of climate issues and the role of engineers in environmental conservation.


A Two-Day Workshop on "Concrete Mix Design Using IS:10262-2019", held on March 20 & 21, 2025 at Vidyavardhaka College of Engineering (VVCE), Mysuru with Er. Nagesh P as the resource person, focused on concrete mix design as per the latest IS code guidelines (IS:10262-2019). The event provided practical exposure to mix design procedures and quality control, enhancing the technical competency of students and professionals.

Organized by the Department of Civil Engineering at VVCE Campus, Mysuru on March 22, 2025, in association with IGS Mysuru Chapter, IGBC Mysore Chapter, NSS-VVCE, IQAC-VVCE, and UltraTech Cement, the BUILD-A-THON 2025, GREEN-A-THON & Tree Plantation Drive aimed to promote sustainability and environmental responsibility. The key highlights included:

- BUILD-A-THON 2025 – a technical innovation challenge
- GREEN-A-THON – activities related to sustainable construction and green practices
- Tree Plantation Drive – planting saplings around the VVCE campus

The 5th Executive Committee Meeting of IGS Mysuru Chapter, held on March 28, 2025 at Vidyavardhaka College of Engineering, Mysuru, brought together the executive committee members to review the chapter's progress, discuss upcoming initiatives, and plan future academic and outreach activities.

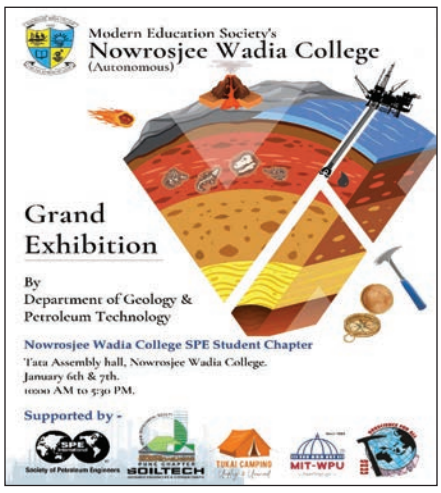
Glimpses of the EC Meeting

## IGS Patna Chapter

Organized at the Indian Institute of Technology Patna on January 19, 2025, the One-Day Workshop under the ANRF (SERB) SSR Program on "Microzonation of a City for Better Preparedness during an Earthquake" brought together experts to discuss microzonation for improving safety in seismically vulnerable cities. The concept has gained attention due to increasing natural disasters worldwide, with Patna currently exploring implementation to assess and manage earthquake vulnerability, especially in areas with older buildings and soft soil foundations. The inauguration was attended by dignitaries including Dr. Anup Kumar Keshri, Associate Dean R&D, Dr. Subrata Hait, Associate Dean PG, along with Dr. Ramakrishna Bag, Dr. A K Jha, Arpit Jain, Dr. Vaibhav Singhal, and Dr. Bachu Anilkumar from IIT Patna, and Dr. Amarnath Hegde from IIT Dharwad. Professor Dipanjan Basu from the University of Waterloo delivered two lectures, while Professor Priyanka Ghosh from IIT Kanpur presented research on seismic slope stability and its application in microzonation. Dr. Abhishek Kumar from IIT Guwahati and Dr. Pradipta Chakrabortty from IIT Patna analyzed microzonation's role in designing safer infrastructure, highlighting its influence on building codes, land use planning, and emergency services. Local engineers, faculty from engineering colleges, research scholars, and students attended to learn about applying microzonation findings to urban infrastructure.

## IGS Pune Chapter

The IGS Student Chapter of Wadia College held a grand exhibition organized by the Department of Geology and Petroleum Technology on January 6–7, 2025. The event attracted students from schools, junior colleges, and engineering colleges in and around Pune. It was a marvelous event with over 1,000 enthusiastic visitors.




The MMIT IGS Student Chapter organized its annual food donation drive to come together as a community and make a positive impact on the lives of those facing food shortages and scarcity. The IGS Pune Chapter appreciated the initiative and supported the Student Chapter in the best possible way. This event was held on January 9, 2025.

The IGS-SPPU Student Chapter organized a poster presentation competition on the topic Geotechnical Engineering for a Sustainable Environment. The Chief Guest for the event was Er. Ramesh Kulkarni, Past Chairman and Mentor of IGS Pune Chapter. The resource persons were Dr. Nirmalya Ghosh, Engineering Geophysicist at the University of Houston, and Dr. Vijay Muthekar, Assistant Professor at MIT Alandi, who also serves as the coordinator of one of the IGS Student Chapters. The event took place on January 18, 2025.

The Training Management Cell of CWPRS, in association with the IGS Pune Chapter, organized an online lecture on January 20, 2025, titled Mastering the Research Paper Process: Proven Strategies for Success. The session was delivered by Dr. Arif Ali Baig Moghal, Professor in the Geotechnical Division at NIT Warangal. Dr. Baig explained the concepts in a very lucid and passionate manner. The lecture was attended by over 75 participants and was well received and appreciated by all present.


On January 24, 2025, the IGS Pune Chapter, in association with IIBE, organized a technical event at COEP Tech University. Two technical lectures were delivered by stalwarts Er. Atul Bhobe and Er. Ramnath Bhat. Felicitation of Er. Vikas Ramgude and Dr. Harshavardhan Subbarao was also held on this day to recognize their significant contributions to the civil engineering sector.

The IGS Pune Chapter, in association with the International Council of Consultants (ICC), delivered a presentation and unveiled the first-ever documentary on the IGS Pune Chapter at the well-known Contro 2025

Conference. It was a grand event, well attended by professionals, academicians, manufacturers, contractors, and various other stakeholders from the civil engineering industry. The presentation was delivered on February 1, 2025.

The 39th Student Chapter was inaugurated at SBP Indapur College on February 8, 2025. It was a well-organized event featuring an expert talk by Executive Committee member Dr. Sachin Jain on the topic AI in Civil Engineering.

The 40th Student Chapter was inaugurated at the School of Engineering, NICMAR University, on February 18, 2025. This event was unique, as it marked the simultaneous inauguration of the ICI (Indian Concrete Institute) and IGS Pune Student Chapters. Dr. Basarkar was the expert speaker for the day.

With more than 40 student chapters associated with the IGS Pune Chapter, it is essential to keep the Student Chapters dynamic through regular activities. To appreciate and motivate the student chapter bodies, Geo-Summit 2025 was held on February 28, 2025, with over 20 student chapter representatives attending the annual gathering, meet-and-greet event. The event was hosted by APCOER, Pune.

The IGS Student Chapter of the School of Engineering, NICMAR University, organized a site visit for civil engineering students to a retaining wall project by Savi Infrastructures on February 28, 2025. It was a valuable learning experience for both students and faculty.


A site visit was organized by the IGS Student Chapter of DYP COE at Raigad on March 1, 2025, to explore developments in ferrocement technology. The on-site construction demonstration provided students with greater clarity on various geotechnical aspects related to construction. Students were given a detailed explanation of the arch-facing type retaining wall designed to resist a 3.0-meter earth fill in front of a swimming pool—both structures being constructed using ferrocement. Modern civil engineering emphasizes the adoption of sustainable construction technologies that are also in harmony with nature.

The Student Chapter of DY Patil DPU, in association with the IGS Pune Chapter, organized a technical talk on Shear Strength Determination under the Karl von Terzaghi Technical Session Series. The talk was delivered by Dr. Shailendra Banne, Associate Professor at PCCOE,

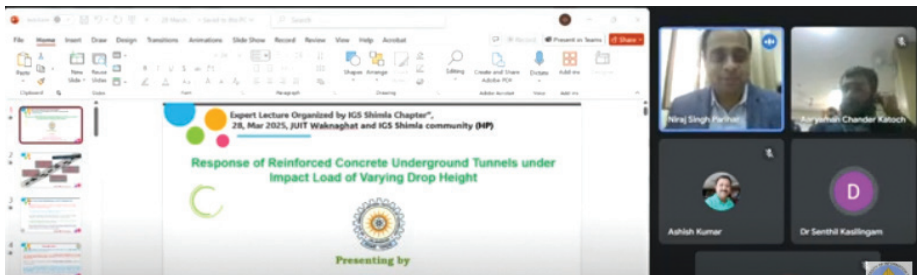

Pune, and Executive Committee member of the IGS Pune Chapter. The event was held on March 21, 2025.

The most awaited two-day event of the year for the IGS Pune Chapter, GeoFest, was hosted by AISSMS COE in association with the IGS Pune Chapter on March 27–28, 2025. The theme of the event was Rail GeoFest 2025, focusing on developments in the railway

sector, including Metro Rail, Monorail, High-Speed Rail, and conventional rail systems. A variety of activities and student competitions were conducted, such as GeoModel, GeoQuiz, Spot Talk, and Treasure Hunt. Winners were announced, and prizes were distributed.

The Student Chapter of SND Yeola, Nashik, organized a one-day workshop on Groundwater Exploration by L-Rod Dowsing. The expert lectures were delivered by Dr. Avinash Kharat, President of the Society for Advancement of Dowsing, and Dr. Raviraj Sorate, Head of the Civil Engineering Department at APCOER, Pune, and Executive Committee member of the IGS Pune Chapter. The engaging session was well attended and well received by both students and faculty members.

## IGS Shimla Chapter




Glimpses of the lecture

The IGS Shimla Chapter, in association with the Civil Engineering Department of Jaypee University of Information Technology (JUIT), Waknaghat (HP), organized an online expert lecture on March 28, 2025, focusing on underground tunneling technology to address the growing interest among both geotechnical and structural engineers. The lecture, titled "Response of Reinforced Concrete Underground Tunnels under Impact Load of Varying Drop Height," was delivered by Dr. Senthil Kasilingam, Assistant Professor, CED, NIT Jalandhar. Dr. Kasilingam demonstrated the role of tunnel cross-sections in managing external loads, with a focus on the impact loading response of tunnels under varying field conditions. He showcased the instrumentation and numerical modeling techniques used to assess load responses in modern tunneling systems, considering different overburden stresses and drop heights. The session provided insights from both geotechnical and structural engineering, catering to professionals in the underground technology field. The webinar attracted 60 participants, including academicians, field practitioners, and research scholars, and was followed by a detailed discussion on recent trends and numerical modeling in tunnel engineering. The session concluded with closing remarks by Prof. Ashish Kumar, HOD, Civil Engineering, JUIT Waknaghat, and a vote of thanks from Dr. Niraj Singh Parihar, Secretary, IGS Shimla Chapter.

The IGS Shimla Chapter continues to expand its lifetime membership base with the aim of broadening the reach of IGS technical events to a wider community of academicians, researchers, and field practitioners. In the previous quarter, a total of four new members joined the IGS lifetime membership during this period through the local IGS Shimla Chapter.

## IGS Tadepalligudem Chapter

On January 29, 2025, the IGS Student Chapter at Sasi Institute of Technology and Engineering, Tadepalligudem, hosted a guest lecture by Dr. Bharanidharan, Assistant Professor at the National Institute of Technology Andhra Pradesh, Tadepalligudem. The lecture, titled *"Microplastics and Its Associated Risk in the Environment,"* was organized by the Department of Civil Engineering at Sasi Institute of Technology and Engineering. The event was attended by 80 staff and students from the Civil Engineering Department.

Dr. Bharanidharan came all the way to engage with the students on the fundamentals of environmental engineering, microplastics, and the environmental hazards posed by these substances. Dr. A. Suresh Babu, Principal of Sasi Institute of Technology and Engineering, and Dr. P. Ramesh, Head of the Department of Civil Engineering, congratulated Dr. Bharanidharan for his informative and impactful session.


Dr. M. Rama Rao, HOD of Civil Engineering Dept. addressing the gathering


Dr. Bharanidharan facilitated by Principal and HoD

On March 1, 2025, Dr. R. Raghavendra Kumar, Assistant Professor at the National Institute of Construction Management and Research (NICMAR University), Pune, Maharashtra, delivered a guest lecture on *"An Overview of Applications of Building*

*Information Modelling and Digital Technologies in Construction"* at the Department of Civil Engineering, Sasi Institute of Technology and Engineering, Tadepalligudem. The event was organized by the IGS Tadepalligudem Chapter. Eighty students and staff members from the Civil Engineering department participated in the event.

The speaker discussed digital twins, construction project management, Building Information Modelling (BIM), and technologies such as Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR), along with their applications in the construction industry. Dr. Raghavendra Kumar also addressed all of the students' inquiries attentively.


Online Faculty Development Program on "AI & ML for Smart and Sustainable Solutions in Civil Engineering" Conducted by IGS Tadepalligudem Chapter & Department of Civil Engineering, Sasi Institute of Technology & Engineering, Tadepalligudem

The integration of Artificial Intelligence (AI) and Machine Learning (ML) in civil engineering has revolutionized traditional practices by enhancing efficiency, accuracy, and sustainability. These technologies enable data-driven decision-making, predictive modeling, and automation, significantly improving infrastructure design, construction, and maintenance. AI and ML techniques facilitate smart solutions in structural health monitoring, pavement anomaly detection, sustainable transportation, development of assessment and monitoring frameworks, and geotechnical applications, making them essential tools for modern civil engineering advancements.

Recognizing the impact of AI and ML in various civil engineering applications, the Department of Civil Engineering at Sasi Institute of Technology & Engineering, Tadepalligudem, organized a five-day online Faculty Development Program (FDP) on "AI & ML for Smart and Sustainable Solutions in Civil Engineering." This program aimed to impart the knowledge and skills necessary to incorporate AI and ML techniques to address smart and sustainable infrastructure challenges and real-world problems. The program was designed for faculty members, research scholars, practicing engineers, and students of civil engineering.

A total of ten expert lectures were arranged from March 18, 2025, to March 22, 2025 (two lectures per day), delivered by leading academicians and professionals. An overwhelming response was received, with 202 faculty, students, young engineers, and professionals registering for the program. The participants greatly benefitted from the lectures and interaction sessions with the experts. Certificates were issued to all candidates who successfully completed an assessment test conducted at the end of the course.

## IGS Thanjavur Chapter

The one-day workshop, *"Advances in Transportation Geotechnics,"* was held on March 8, 2025, as part of DAKSH and was coordinated by Dr. Sujatha E. Ramani and Dr. Vishweshwaran M. The workshop focused on sustainable and innovative approaches in geotechnical and pavement engineering, covering topics such as geomaterials, sensor technologies, nano and biomaterials, sustainable pavements, and the environmental impact on infrastructure. The workshop had 42 participants from across India.

The inaugural lecture was delivered by Dr. Umesh Chandra Sahoo, Associate Professor at IIT Bhubaneswar, who introduced geomaterials, including non-traditional and recycled materials. Dr. Pradeep Kumar, Chief Scientist at the Central Road Research Institute, explored sensor technologies, innovations, and risk assessment in pavement management. Dr. Kodi Ranga Swamy, Associate Professor at NIT Calicut, highlighted the use of eco-friendly nano and biomaterials for sustainable ground improvement.

Dr. Sunitha V, Associate Professor at NIT Trichy, discussed the efficacy of coir geotextiles in pavement design and sustainable construction. Dr. Ashutosh Kumar, Assistant Professor at IIT Mandi, examined the impact of traffic and environmental loading on railway subgrade soil, applying the unsaturated soil mechanics framework.

The workshop provided valuable insights into emerging technologies and sustainable solutions in transportation geotechnics.


Lecture by Dr. Pradeep Kumar, Chief Scientist, CRRI

Dr. Palanisamy T, Associate Professor at NIT Surathkal, delivered a guest lecture on March 28, 2025, on the topic "Machine Learning Applications for Sub and Superstructures," covering the role of artificial intelligence and data-driven techniques for sub and superstructures. The speaker discussed the benefits of AI in enhancing efficiency, safety, and cost-effectiveness in construction and geotechnical engineering. Overall, the session provided a comprehensive perspective on how machine learning can contribute to smarter and more sustainable infrastructure development.


Guest lecture by Dr. Palanisamy T.

## IGS Chennai Chapter

The IGS Chennai Chapter organized an in-person talk on 29 January, 2025 titled "Vertical Extent of Hydraulic Fractures: Insights from Theory & Experiments" by Professor Brice Lecampion, Head of the Geo-Energy Laboratory and Gaznat Chair at École Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

Professor Lecampion provided valuable insights into hydraulic fracturing, discussing the influence of the transverse isotropy of rocks on fracture growth through a combination of theoretical modeling and laboratory experiments. He also highlighted the importance of buoyancy contrast between the solid and fracturing fluid in the propagation of three-dimensional hydraulic fractures in homogeneous materials.

The talk was well-attended, drawing a large audience including several participants from the industry, and prompted an engaging discussion that benefited all attendees. The event concluded with a vote of thanks to the speaker for accepting the invitation and delivering an enriching talk, and to all the participants who contributed to the success of the event.

Prof. Brice Lecampion with Dr. Chandra Annavarapu, Dr. T. Thyagaraj, Dr. Jitendra Sangwai and Dr. V.B. Maji

## Now Online Membership Available

The homepage of the Society has been updated and a new online membership platform has been created to facilitate joining of new members.

*Just log on to:*
**www.igs.org.in**

## IGC - 2026

IGC-2026
would be hosted by

**IGS-Chennai Chapter**

The venue, theme, scheduled dates etc. are being worked out and shall be announced soon.

## JOB OPENINGS

IGS head office is looking for a Technical cum Management officer to manage technical affairs of the society, correspond with national and international experts etc. The person will be expected to correspond with experts (should have good communication skills, command over English), have basic understanding of geotechnical terminology and should be able to conduct and manage geotechnical events, the society's publications, website etc.

**Broadly, the expectations from the candidate shall be as follows:**

1. Working in coordination with the Executive Secretary at the IGS office at Nehru Place, New Delhi for routine activities such as newsletter, journal, webinars and conferences, Executive Committee Meetings, email correspondences, etc.
2. Periodic handling of web requirements assessment and updating; follow with the website operator and handling technical material in homepage.
3. Coordinating with the 55 Local Chapters of the society in different cities of the country.
4. Streamlining student chapter activities
5. Assistance to ISSMGE University Committee.
6. Assistance to set up IGS Foundation.
7. Working in close coordination with the President and Honorary Secretary of the society or person nominated by them for various activities of the society.

***Interested person, (preferably Delhi NCR based) may please apply at* admin@igs.org.in.**

## A Brief Report on

# 10IYGEC 2025

The 10th Indian Young Geotechnical Engineers' Conference (10IYGEC 2025) was successfully held on March 11–12, 2025, at the Indian Institute of Technology Indore under the leadership of Dr. Ramu Baadiga, IIT Indore, Prof. Neelima Satyam, IIT Indore, Dr. Raghavendra Singh, UEC Ujjain and organizing team. This event is was organized in association with the Indian Geotechnical Society (IGS) Chapters of Indore, Ujjain, Jabalpur, and Bhopal. This event served as a dynamic platform for young geotechnical professionals under the age of 35 to present research, exchange ideas, and foster collaborations. The conference witnessed over 450+ confirmed participants across country and few presented through online. A total of 438 abstracts were received, of which 292 full-length papers were received. The event drew wide participation from leading academic institutions such as IITs and NITs, alongside practicing professionals and industry representatives from across India.

A series of keynote addresses, special invited lectures, and technical sessions provided deep insights into the latest trends, research advancements, and practical challenges in geotechnical engineering. The technical sessions spanned a wide array of themes, including Ground Improvement Techniques, Geosynthetics and Applications, Transportation Geotechnics, Earthquake and Offshore Geotechnical Engineering, Instrumentation, Foundations, Field Monitoring, Site Investigations, Environmental Geotechnics, and Case Studies. Distinguished experts graced the event as speakers and guests. The Chief Guest was Dr. Sanjay Gupta, IAS, Commissioner, Ujjain, and the Guest of Honour was Sh. Shrawan Kumar Singh, Regional Officer, NHAI Bhopal. The event was hosted under the leadership of the Director Prof Suhas S. Joshi, IIT Indore, President of IGS Dr. Anil Joseph, and honorary secretary of IGS Dr A.P. Singh. This Megha event also hosted 242nd IGS executive body meeting at IIT Indore on 10th March 2025, which led to a fruitful discussion for the next upcoming events and future activities of IGS.

Special invited lectures were delivered by Prof. G.R. Dodagoudar (IIT Madras) and Shri Rajeev Saxena (Joint Secretary, NTTM). The keynote lectures featured eminent speakers, including Dr. Divya P.V. (IIT Palakkad), Dr. Shilpi Mahapatra, Dr. Mohit Somani (IIT Bhubaneswar), Ms. Vimala (Keller India), and a joint talk by Mr. Divyesh Rohit and Mr. Dheeraj Kumar Reddy from TechFab India. Adding to the vibrancy of the event, a dedicated exhibition zone covering over 8,000 sq. ft. housed 16+ exhibition stalls, where various industries showcased their products, innovations, and technologies. The industry-academia interaction created valuable opportunities for knowledge transfer and future collaboration. In conclusion, 10IYGEC 2025 met its vision of uniting the next generation of geotechnical engineers to explore challenges, present solutions, and strengthen professional networks. The success of this edition reinforces the growing momentum in geotechnical research and practice in India, laying a strong foundation for future engagements and innovations.

242nd EC meeting held at IIT Indore


Photosnap of the 10th IYGEC 2025 gathering

# CALL FOR ENTRIES

## IGS-PROF. G.A. LEONARDS' BEST PH.D THESIS PRIZE

IGS-Prof. G.A. Leonards' prize for the best Ph.D Thesis in Geotechnical Engineering is open to all Indian Universities/ Institutions. Nominations for the prize to be awarded during IGC-2025 at Jalandhar are invited. Ph.D. thesis awarded by the Universities/ Institutions during the year 2024 alongwith a certificate from the University/Institution regarding the award may be sent to the IGS Secretariat latest by **July 31, 2025**.

## IGS-BEST DOCTORAL THESIS AWARD FROM NON-PREMIER INSTITUTIONS SPONSORED BY PROF. M.R. MADHAV

IGS-Best Doctoral Thesis Award from Non-Premier Institutions sponsored by Prof. M.R. Madhav for the best thesis in Geotechnical Engineering is open to all Indian Universities/ Institutions (non-premier). Nominations for the prize to be awarded during IGC-2025 at Jalandhar are invited. Ph.D. thesis awarded by the Universities/Institutions (non-premier) during the year 2024 alongwith a certificate from the University/Institution (non-premier) regarding the award may be sent to the IGS Secretariat latest by **July 31, 2025**.

# CALL FOR NOMINATION

## Best Teacher of Geotechnical Engineering Award 2025

**Best Teacher of Geotechnical Engineering Award sponsored by Prof. Dr. B.J. Kasmalkar** is presented annually. The award carries a cash prize of Rs. 25,000, a plaque and certificate. The award will be presented at the IGS Annual General Session at Jalandhar in December 2025. Nominations for the Award are invited from an IGS Member of Indian Nationality who have made outstanding contribution in Geotechnical Engineering. Nominations for the Award should be on the prescribed form available on IGS Portal. The following are the eligibility criteria for the Award:

- The candidate should have minimum 15 years teaching experience in India at B.Tech/M.Tech level (or equivalent) in IIT's, IISc, NIT, recognized universities, deemed universities, government and private engineering colleges affiliated to universities and AICTE approved or accredited.
- Those teaching at Diploma level shall not be eligible.
- The candidate should not be more than 60 years of age on 31st December during the year of application.
- The candidate should have an M.Tech or Ph.D degree in Civil Engineering (or equivalent).
- The candidate should be an Indian national.
- Candidate should be a member of IGS (national body) for a minimum period of ten years.

The completed Nomination Form should reach at IGS Secretariat on or before **July 31, 2025**

## IGS Forensic Geotechnical Engineering Award 2025

**IGS Forensic Geotechnical Engineering Award** is presented biennially. The award carries a cash prize of Rs. 15,000, a plaque and certificate. The award will be presented at the IGS Annual General Session at Jalandhar in December 2025. Nominations for the award are invited from an IGS Member. The followings are the eligibility criteria for the Award:

- It is open to all members of IGS - academicians, researchers, practicing engineers and professionals.
- Applicant should be a member of IGS for a period of at least 3 years before application.
- The project / case study should pertain to forensic geotechnical engineering investigations / evaluations performed on a project in India within previous three years.
- Interested people should submit a duly signed nomination to IGS
- Along with nomination, a 2-3 page note on the technical contribution on the forensic study performed should be submitted. It may include project details, calculations, photographs, etc.
- Paper(s) published (if any) during the last two years in reputed journals or conference proceedings related to the project on which forensic evaluation was done may be submitted for consideration.

All interested eligible IGS Members are requested to submit their Nomination on or before **July 31, 2025** at the IGS Secretariat.

# ANNOUNCEMENT

## IGS - MR. H.C. VERMA DIAMOND JUBILEE AWARD

**Title :** **IGS-Mr. H.C. Verma Diamond Jubilee Award for Innovative Instrument Design**

**Frequency:** **Biennial**

**Award:** **Rs. 25,000/- Cash, Memento and Citation to be awarded in 2025**

A biennial award namely IGS-Mr. H.C. Verma Diamond Jubilee Award for Innovative Instrument Design is instituted by M/s AIMIL LTD., New Delhi a pioneering Instrument Organisation, in memory of their late Founder and Chairman Mr. H.C. Verma. The award carries a cash prize of Rs. 25,000/- a memento and certificate.

The nature of this award is different from other IGS Awards since this is intended to be neither a best paper published/thesis presented model nor is it based on the achievements of individuals over a period of time.

Those wishing to be nominated for this award will have to submit details of their instrument design to the IGS Secretariat for the due selection process. Nominations for the year 2025 are invited and interested persons may submit their entries to IGS Secretariat latest by **July 31, 2025**.

### GUIDELINES:

The entries should include:

- Detailed description of the instrument.
- Its need, utility and detailed design.
- Fabrication and calibration procedures
- Procedure for its use, limitations
- Results obtained and their validation
- Schematic sections/diagrams/photographs
- Papers/ reports/ documents related to the instrument
- Names and Address of 3 Referees who are familiar with the work.

## IGS-SARDAR RESHAM SINGH MEMORIAL AWARD 2025

A biennial award namely IGS-Sardar Resham Singh Memorial Award for Innovative Original Research Applications/Procedures to Benefit Infrastructure Projects in the field has been instituted by M/s HEICO LTD., New Delhi a pioneering Instrument Organisation, in memory of their late Founder and Chairman Sardar Resham Singh. The award carries a cash prize of Rs. 50,000/- a memento and citation.

Those wishing to be nominated for this award shall submit their original Innovative Research/Applications/ Procedures duly referenced by two eminent Referees on the subject. The applicant must be a member of Indian Geotechnical Society. Nominations for the year 2025 are invited and interested persons may submit their entries to IGS Secretariat latest by **July 31, 2025**.

### GUIDELINES:

The entries should include:

- Original Innovative Research/ Applications/ Procedures
- Benefits to Infrastructure Projects
- Reduction in ill effects of natural disasters
- Any other related advantage.

## 47th IGS ANNUAL LECTURE 2025

The prestigious

**47th IGS Annual Lecture 2025**

will be delivered by Prof. Deepankar Choudhury, Professor, Department of Civil Engineering, Indian Institute of Technology Bombay, Powai, Mumba.

The topic of his lecture is

**"Advances in Geotechnical Earthquake Engineering for Geo-Structures: Transformative Research into Practice"**

# Young Geotechnical Engineer (YGE) Best Paper Awards-2025

## INVITATION FOR SUBMISSION OF PAPERS

To motivate and encourage Young Geotechnical Engineers to get involved and participate in Geotechnical research and field work, biennial Best Paper Awards especially for YGE have been instituted for best papers in various areas of Geotechnical Engineering. All interested YGE are requested to participate and submit their papers **on or before 31st July, 2025**. The following seven (7) odd-year Awards will be given during IGC-2025 at Jalandhar.

1. IGS-Soiltech India Pvt Ltd, Pune YGE Award for Best Paper on Shallow Foundations.
2. IGS-AIMIL-HCV YGE Award for Best Paper on Geotechnical Investigation and Testing.
3. IGS-Bangalore Chapter YGE Award for Best Paper on Environmental Geotechnology.
4. IGS-Roorkee Chapter YGE Award for Best Paper on Rock Mechanics and Rock Engineering.
5. IGS-Chennai Chapter YGE Award for Best Paper on Solutions of Problematic Soils.
6. IGS-Kakinada Chapter YGE Award for Best Paper on Deep Excavations and Underground Structures.
7. IGS-Kolkata Chapter YGE Award for Best Paper on Earth Retaining Structures.

## RULES AND SUBMISSION PROCEDURE

1. The Awards will be awarded to YGEs during IGS Annual General Session conducted at the time of Indian Geotechnical Conference-2025 (IGC-2025).
2. The Award carries a Memento and Certificate. In case of more than one YGE author, the Award shall be given to YGE listed first on the paper.
3. For the purpose of the Awards, YGE is defined as an Engineer of Indian origin who is of the age of thirty-five (35) years or less as on 1st January, 2024.
4. The paper may have more than one author and author/s above the age as defined for YGE, however, at least one of the authors shall be YGE.
5. Papers published in following Proceedings/Journals shall be eligible for the Awards.
   (i) Proceedings of immediate past IGS IYGE Conference (IYGEC-2023 at Aurangabad)
   (ii) Indian Geotechnical Journal (IGJ) of the last two years (2023 & 2024).
   (iii) Proceedings of the last two IGCs (IGC 2023 & 2024).
   (iv) Proceedings of ISSMGE sponsored Conferences such as ICSMGE, ARCs, iYGEC and Seminar/ Workshop/ Symposium organized by ISSMGE-TCs during last four years ( 2021, 2022, 2023 & 2024).
   (v) Proceedings of National Conference/Seminar/Workshop conducted in India by any institute/organizations in last two years (2023 & 2024)
   (vi) Any paper identified by IGS Secretariat by suitable means published in last two years (2023 & 2024).
6. Nominations (submission of papers on behalf of author/s) from the following are also invited.
   (i) IGS Executive Committee members
   (ii) Chairmen/Secretaries of IGS Local Chapters.
   (iii) Heads of Civil Engineering Departments of IITs, IISc and any technical institute in India.
7. While submitting the papers, the **Date of Birth** and proof thereof of YGE author/s of the paper must be provided. The author/s shall provide all related information including the source and date of publication. ***It shall also mention the name of the Award for which the paper is submitted.*** The contact details such as full address, mobile number, email ID etc. shall also be provided.
8. The author can submit more than one paper for an Award. Also the same paper can be submitted for more than one Award if content of the paper is related to the areas of more than one Award. However, only one Award shall be given to the same paper and/or the same author for the given year.
9. **Last date for submission/ nomination of papers is 31st July, 2025.**

---

### Format for Submission of Paper for YGE Best Paper Award

Name of YGE author : .....

Date of Birth (dd/mm/yyyy) : ..... Age as on 01-01-2024 .....

Proof of age (copy of Driving license/ School leaving cert./ Adhaar card/ PAN card etc.:.....

Mobile No. : ..... E-mail:.....

Postal Address:.....

Name of Award for which paper is submitted: .....

Title of Paper:.....

Source and Date of publication: .....

.....

Date and Signature of author/person submitting the paper

# IGS *in* ISSMGE BULLETIN




For ISSMGE Bulletin & HTC Champions 2025 Asis Podcast can be accessed through the following links:

ISSMGE Bulletin Link:
https://www.issmge.org/publications/issmge-bulletin/vol-19-issue-1-march-2025

Podcast Link:
https://open.spotify.com/show/6fAauqVNx1x4nJV7xle4ZH?si=e3da198543864e04

# INDIAN GEOTECHNICAL JOURNAL

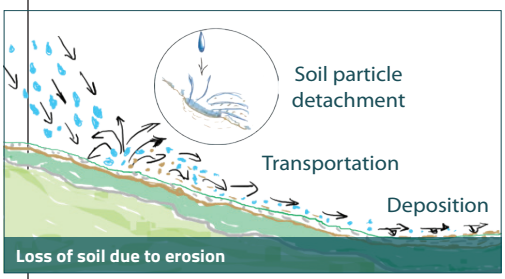
Volume 55, Issue 1, February 2025


## CONTENTS

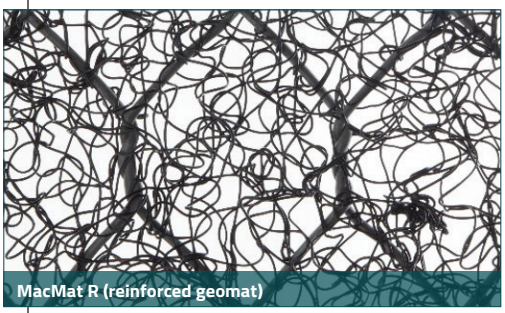
### ORIGINAL PAPERS

# Protection Against Erosion

**Sustainable reinforced geomat engineered to prevent soil loss and promote re-vegetation**



Loss of soil due to erosion


MacMat R (reinforced geomat)

## What makes **our solutions** the preferred choice over conventional methods?

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- Boosts the growth of vegetation
- High shear resistance
- Wide range tailored to project needs

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Erosion Control | Hydraulic Works | Slope Protection | Landscape & Architecture | Landfills

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# 1st GEOTECH ASIA 2025

## GeoVadis The Future of Geotechnical Engineering

**Organized by**

INDIAN GEOTECHNICAL SOCIETY

**7th – 10th October, 2025**

**Venue**

Taj Cidade de Goa Horizon, Goa

Website: www.geotechasia.org

Email : info@geotechasia.org

## Invitation

It is with great pleasure that we extend a warm invitation to the **1st Geotech Asia International Conference (Geotech Asia)** that will take place in **Goa, from October 7th to 10th, 2025**.

## About 1st Geotech Asia 2025, Goa, India

Asian Regional Conferences occur every four years through a competitive bidding and voting process among the 90 ISSMGE Member Societies, representing around 20,000 professionals. Due to high competition, hosting rights are difficult to secure. At the Asian Council Meeting in Astana during the 17th Asian Regional Conference, the idea of "Geotech Asia" was introduced. India won the bid to host the 1st Geotech Asia in 2025 with an 18–3 vote, marking a milestone for the Indian Geotechnical Society, which also hosted the 1st Asian Regional Conference in 1960. We are pleased to announce that the board meetings of Fed IGS and ISSMGE will be held in conjunction with the 1st Geotech Asia 2025. The event will feature distinguished keynote and invited speakers from around the world, along with two pre-conference workshops: the Portugal-Brazil-India Workshop and the Indo-US Workshop. A highlight of the event will be the inaugural ISSMGE Asian Lifetime Service Award ceremony, where Prof. M.R. Madhav will be honored as the first recipient.

## Conference Sub-Themes

- TH-01: Academic and Professional Practices in Geotechnical Engineering
- TH-02: Cold Region Geotechnics
- TH-03: Deep Excavation and Retention Systems
- TH-04: Earthquake Engineering and Soil Dynamics
- TH-05: Embankments and Dams
- TH-06: Environmental Geotechnics
- TH-07: Foundation Engineering
- TH-08: Geosynthetic Engineering
- TH-09: Geotechnics of Unsaturated Soils
- TH-10: Marine and Coastal Geotechnics
- TH-11: Risk and Reliability in Geotechnical Engineering
- TH-12: Rock Mechanics and Rock Engineering
- TH-13: Site Characterization
- TH-14: Slope Stability, Erosion and Landslides
- TH-15: Soft Computing and AI/ML in Geotechnical Engineering
- TH-16: Soil Stabilization and Ground Improvement
- TH-17: Theoretical and Computational Geomechanics
- TH-18: Transportation Geotechnics
- TH-19: Tunneling and Underground Structures

## Key Dates for Paper Submission

| | |
|---|---|
| Full Paper Submission Deadline | 11.04.2025 |
| Full Paper Acceptance Notification | 25.04.2025 |
| Final Camera Ready Paper Submission Deadline | 15.05.2025 |
| Publisher: The Conference proceedings will be published as an open access volume by CRC Press (Taylor & Francis Group) | |

## Important Dates

| | |
|---|---|
| Board Meeting – Fed IGS | 06.10.2025 |
| Portugal-Brazil-India joint preconference Workshop | 06.10.2025 |
| Indo-US joint preconference Workshop | 06.10.2025 |
| 1st Geotech Asia conference 2025 | 07-10.10.2025 |
| Board Meeting – ISSMGE | 11.10.2025 |

## Registration Details

| Category | Delegate Package | | Amount (INR) |
|---|---|---|---|
| Early Bird Registration (on or before March 28, 2025) | Regular | General | 40,000 |
| | | AGSSA Member (Special rates) | 32,000 |
| | | IGS Member (Special rates) | 28,000 |
| | Student | Student | 21,000 |
| | | Student AGSSA (Special rates) | 18,000 |
| | | Student IGS (Special rates) | 15,000 |
| Regular Registration (after March 28, 2025) | | Regular | 45,000 |
| | | Student | 23,000 |
| | | Accompanying Persons | 20,000 |

* Inclusive of 18% GST. As a reference 1 USD = INR 80.

### *Address for Correspondence :-*


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**Organising Secretaries**

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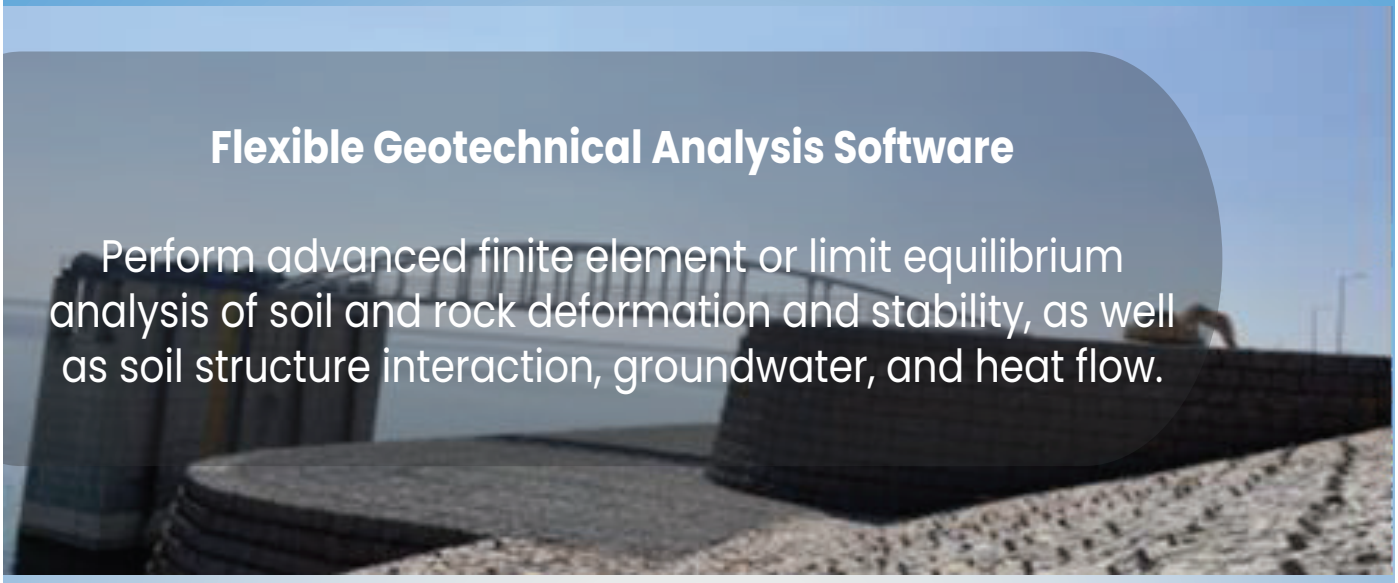

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Licenses will be allocated to students and research scholars after receipt of the relevant application form and documents, and upon approval of the operational committee.

***Note**: The licenses are exclusively for Academic Research, and cannot be used for any Consultancy/Commercial Projects as well as Sponsored Research*

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# IGC - 2025

## INDIAN GEOTECHNICAL CONFERENCE

## 'GEOTECHNICAL PRACTICES FOR INNOVATIONS AND SUSTAINABILITY'

JALANDHAR CHAPTER

**18th – 20th December, 2025 | Website: https://igc2025nitj.com/**

### Venue:

Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar, Punjab, India

### Jointly Organized by :

Indian Geotechnical Society, Jalandhar Chapter

Civil Engineering Department, Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar, Punjab

### Invitation

Indian Geotechnical Society, Jalandhar Chapter and Civil Engineering Department, Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar, Punjab extends you a warm invitation to the IGC-2025 to be held at NIT Jalandhar.

### Conference Themes

The main theme of the Conference is 'Geotechnical Practices for Innovations and Sustainability'.

### Conference Sub-Themes

- Foundations – Shallow and Deep
- Geoenvironmental Engineering
- Site Investigations and Explorations
- Earth Retaining Structures
- Geosynthetics and Reinforced Soil Structures
- Forensic Geotechnical Engineering
- Soil Dynamics and Geotechnical Earthquake Engineering
- Ground Improvement Techniques
- Physical and Numerical Modelling
- Geotechnics for Sustainable Cities
- Rock Mechanics, Tunneling and Underground Structures
- Slope Stability and Landslides
- Transportation Geotechnics
- Soil Structure Interaction
- Uncertainties, Risk and Reliability in Geotechnical Engineering
- AI/ML/DL Application in Geotechnical Engineering
- Geomaterial Characterization
- Case Studies

### Important Dates

| | |
|---|---|
| Abstract Submission | April 30, 2025 |
| Decision on Abstract | June 15, 2025 |
| Full Paper Submission | August 15, 2025 |
| Decision on Full Paper | October 15, 2025 |
| Submission of Camera Ready Paper | October 31, 2025 |
| Regular Registration | October 31, 2025 |
| Late Registration | Nov. 1 - Dec. 15, 2025 |
| Spot Registration | After Dec. 15, 2025 |

### Sponsorship Details

| Sponsorship | Fee (Rs. in Lakh) | Free Delegates | Free Ad | Corporate Presentation | Corporate Presentation |
|---|---|---|---|---|---|
| Platinum | 10.00 | 6 | Full Page Color | Yes | 18' x 9' |
| Diamond | 5.00 | 4 | Full Page Color | Yes | 9' x 9' |
| Gold | 2.50 | 3 | Full Page Color | NA | NA |
| Gold | 2.50 | 3 | Full Page Color | NA | NA |
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| Bronze | 0.50 | 1 | Half Page B&W | NA | NA |
| Well Wisher | 0.25 | 1 | Qr Page B&W | NA | NA |

### Registration Fees

| Delegate Category | Upto 31.10.2025 (Rs.) | After 31.10.2025 Upto 15.12.2025 (Rs.) | After 15.12.2025 (Rs.) | Foreign Delegates (USD) |
|---|---|---|---|---|
| IGS Member | 7000 | 8000 | 9000 | 450 |
| Non-IGS Member | 7500 | 8500 | 10000 | 500 |
| Student | 3500 | 4000 | 5000 | 250 |
| Senior Citizen (Retired) | 2500 | 3000 | 4000 | 250 |
| Spouse | 2500 | 3000 | 3000 | 250 |

### *Address for Correspondence :-*

**Dr. H.S. Chore**
Co-Chairman & Principal Organizing Secretary
Indian Geotechnical Conference, IGC-2025
Department of Civil Engineering,
Dr. B.R. Ambedkar National Institute of Technology,
Jalandhar, Punjab-144008
Email: igsjalandharchapter@nitj.ac.in
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# 12TH INTERNATIONAL SYMPOSIUM ON FIELD MONITORING IN GEOMECHANICS (ISFMG 2026)

## Abstract Submission is Open Now

***Supported by***

INDIAN GEOTECHNICAL SOCIETY

**Venue**

Brilliant Convention Centre, Indore,
Madhya Pradesh, India

Website: www.isfmg2026.com

Email : convener@isfmg2026.com
neelima.satyam@iiti.ac.in
neelima.satyam@gmail.com

## Invitation

It is with great pleasure that we extend a warm invitation to the 12th International Symposium on Field Monitoring in Geomechanics **(ISFMG 2026)** that will take place in **Indore**, from **August 6th to 10th, 2026**.

## Symposium Theme

The main theme of the symposium is "Advances in Field Monitoring for Geomechanics".

## Symposium Sub-Themes

- Tunnels and Underground Spaces
- Bridges and Transport Infrastructure
- Dams and Embankments
- Slopes and Earthworks
- Buildings and Foundations
- Mining and Landfill
- Environmental Monitoring
- The Observational Methods
- Specifications and Standards
- Excavation and Retaining Structure
- Inverse Modelling
- Advanced Design Technology

## Key Dates

| | |
|---|---|
| Symposium Dates | 06-10 Aug 2026 |
| Open for submission of abstracts | 20 Feb 2025 |
| Deadline for abstracts submission | 31 May 2025 |
| Notification of abstracts acceptance | 31 July 2025 |
| Submission of draft manuscripts | 31 Dec 2025 |
| Notification of paper acceptance | 15 Feb 2026 |
| Deadline for final paper submission | 15 March 2026 |
| Registration Starts | 01 Oct 2025 |
| Early-Bird Registration | 31 March 2026 |

## Registration Fees

| Registration Type | By 24.11.2025 | After 24.11.2025 | Onsite 24.02.2026 |
|---|---|---|---|
| | $ | $ | $ |
| Standard Registration | 600 | 700 | 900 |
| Student Registration | 300 | 350 | 500 |
| SAARC Country Delegates | 500 | 600 | 800 |
| SAARC Country Students | 250 | 300 | 400 |

## *Address for Correspondence*

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Symposium Convener
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Indian Institute of Technology Indore
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convener@isfmg2026.com
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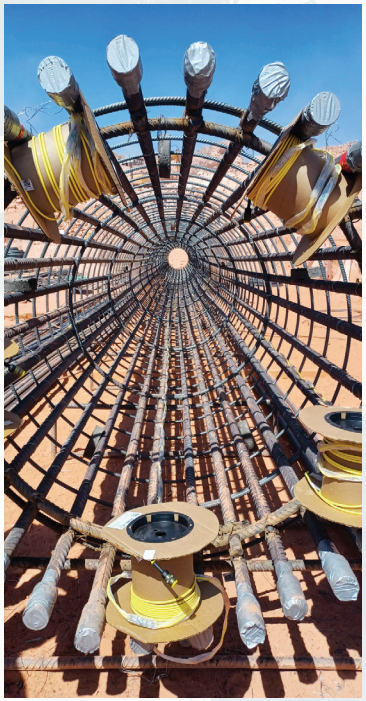

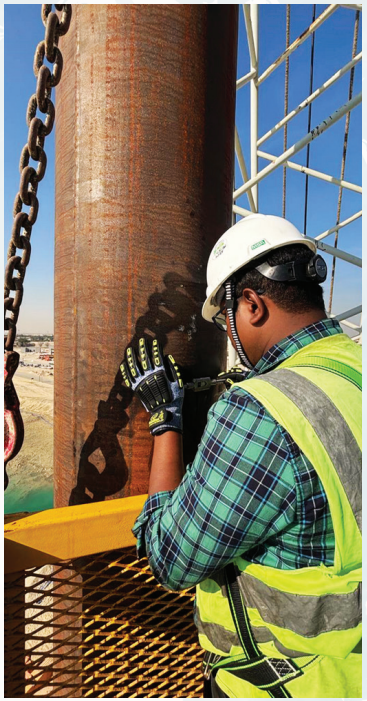

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# Welcome to New Members

*The Executive Committee of IGS extends hearty welcome to the following members who have been admitted to the Society recently/ elevated to Fellowship.*

## LIFE FELLOWS

| | |
|---|---|
| MANJUNATH L | LF-0674 |
| C.R. BALAJI | LF-0675 |
| P.C. NAVEENA | LF-0676 |
| PARVATHI G.S. | LF-0677 |

## LIFE MEMBERS

| | |
|---|---|
| LAL MANI SINGH | LM-5889 |
| BALA PARAMKUSAM RAMUDU | LM-5890 |
| MANDALA VISHNUVARDHAN | LM-5891 |
| THIRUGNANA SAMBANDAM K.S. | LM-5892 |
| SARAH MARIAM ABRAHAM | LM-5893 |
| ASHUTOSH KAINTHOLA | LM-5894 |
| RESHMA SUKUMAR | LM-5895 |
| FAMY S MAHEEN | LM-5896 |
| PAVAN KUMAR THIPPA | LM-5897 |
| BHAVYA K. | LM-5898 |
| CHANNABASSAMMA N | LM-5899 |
| NAMAN KANTESARIA | LM-5900 |
| TEJA MUNAGA | LM-5901 |
| ANKUR ABHISHEK | LM-5902 |
| PRACHI GOUR | LM-5903 |
| SHREYANS KUMAR JAIN | LM-5904 |
| NUJJAT AKHIL SHAIKH | LM-5905 |
| ANIL KUMAR YADAVA | LM-5906 |
| MASOOM MAIRAJ | LM-5907 |
| AKSHYA SHARMA | LM-5908 |
| S KESAV ARNEPALLI KUMAR | LM-5909 |
| ASHOK MALI SHIIVLING | LM-5910 |
| RAJNI LALPURA CHINTAN | LM-5911 |
| V.P. SORNARAJ | LM-5912 |
| KULDEEP SHARMA | LM-5913 |
| SUDARSHAN BOBADE SAMPATRAO | LM-5914 |
| SHYAM MUDE NARAYAN | LM-5915 |
| CHAYAN GUPTA | LM-5916 |
| ALOK RAROTIYA | LM-5917 |
| SYED MASOODHU | LM-5918 |
| JANARUL SHAIKH | LM-5919 |
| SHWETABH YADAV | LM-5920 |
| NITISH ANGRAL | LM-5921 |
| AARATHY S. S. | LM-5922 |
| JYOTHI D N | LM-5923 |
| ROHIT ANAND | LM-5924 |
| SURESH GS | LM-5925 |
| IRFAN PARRAY SHAFI | LM-5926 |
| MONOMOY GOSWAMI | LM-5927 |
| RICHA SHARMA | LM-5928 |
| IRAM AZIZ | LM-5929 |
| TUSHAR M PRABHAKAR | LM-5930 |
| BHUPENDRA RAMSWARUP AGRAWAL | LM-5931 |
| ARPIT SETHIA | LM-5932 |
| AMIT JADHAV | LM-5933 |
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| AJAY MALVIYA | LM-5935 |
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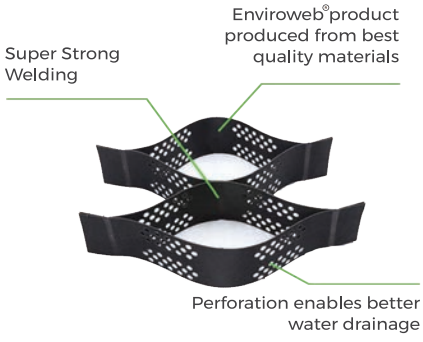


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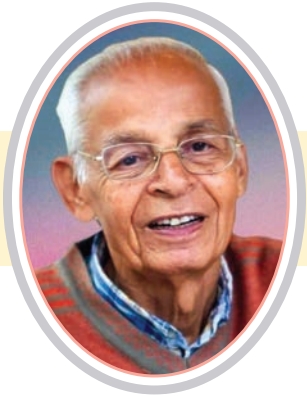

**Professor Yudhbir**
(August 1, 1936 –
March 16, 2025)

## *A Tribute by R.K. Bhandari – His Friend, Colleague, and Admirer*

Born on August 1, 1936, in the modest village of Mirthal in Punjab, Professor Yudhbir bid farewell to this world on March 16, 2025, after playing a luminous innings on the grand pitch of Geotechnical Engineering. His contributions were so profound and far-reaching that he shall forever be remembered as an unforgettable teacher, an accomplished mentor, and a towering figure in his discipline.

My journey with Yudhbir began serendipitously in 1962, when we sat side by side, appearing for the M.Tech entrance examination at IIT Bombay. The test, conducted by the legendary Professor R.K. Katti—a pioneer in research on Indian Black Cotton Soils—marked the beginning of our lifelong companionship, rooted in shared dreams, unwavering ethical values, and a deep love for our profession.

Yudhbir's career spanned more than six decades and bore the hallmarks of quiet brilliance, moral conviction, and relentless dedication. He was a man of outcomes—not one to chase accolades, but to build legacies through service and substance. As a teacher-consultant, he played a seminal role in raising the standards of geotechnical discourse in India. His presence graced national and international committees, where his voice, grounded in independent thinking, often became the voice of conscience and clarity.

A visionary thought-leader, Professor Yudhbir recognized early the pressing need to bridge the gap between scientific inquiry and on-ground engineering practice. He carried forward the legacy of his mentors—Professor R.K. Katti, who initiated him into the world of soil engineering during 1962–64, and Professor D.J. Henkel at Cornell University, under whom he completed his Ph.D. (1966–69). Around the same time, I too was completing my doctoral research at Imperial College, London, under the guidance of Professor A.W. Skempton , Professor A.W. Bishop and Professor J.N.Hutchinson , focusing on slope instability in fissured clays. While Yudhbir studied the Siwalik slopes in India, my work revolved around mudslides in the United Kingdom—different terrains, but a shared commitment to the science beneath our feet.

Following a brief stint with Woodward-Clyde and Associates in California, Yudhbir returned to India in 1970 and joined IIT Kanpur—his Karma Bhumi—where he served for over 27 years. His academic engagements also took him to MIT (1975), the Asian Institute of Technology in Bangkok (1981–83 and 1989–94), RPI in Troy, NY (1986), and Moh and Associates (1995). Yet no matter the distance, our intellectual bond remained unbroken.

Both of us were captivated by the principle of effective stress—a foundational concept in geotechnical engineering- during our formative period of research. We dedicated ourselves to seed transformational change via its propagation in classrooms and consultations alike. When the Indian Geotechnical Society hosted the fifth Asian Regional Conference in Bangalore (1975), for the first time, I felt the surge of its national impact—though Yudhbir was at MIT then, he joined the momentum soon after. Together, we championed its integration with geology, geomorphology, hydrogeology and soil mechanics, to solve real-world problems.

We were equally troubled by the disappointing state of, and respect for well-engineered site-specific soil investigations in India. Under the aegis of the ISSMFE, as a member of a specially constituted subcommittee, a paper on soil sampling practices in India, was co-authored by me and K.R. Datye, which got published in the proceedings of the 1979 International Symposium on Soil Sampling held in Singapore—a small but significant step toward national capacity-building. Yudhbir and I often discussed the care of detail required in undisturbed sampling of shear zones , discrete landslide boundary shears , slip surfaces , joints , fractures and discontinuities and their laboratory testing under appropriate stress-path conditions. Broadly speaking , the following three deeply shared convictions defined our bond:

First, we both resisted the growing trend of dilution of scientific rigor in geotechnical engineering by majoritarian decisions. As chairs of the DST's Committee on Landslides at different times, we upheld the sanctity of multidisciplinary investigations over expedient, technology-driven fixes. Together, we helped draft India's first National Guidelines on Landslide Management (2009) and documented the lessons from the tragic Malpa landslides of 1998 and 2017 in a monograph jointly published by the Indian National Academy of Engineering and CSIR-NISCAIR in 2018.

Second, we lamented the inability to convert national geotechnical investments into meaningful outcomes and innovative solutions. Post the Gujarat Earthquake (2001), we worked on multidisciplinary studies of geomorphic features and liquefaction effects. A DST-funded project led to the 2003 Monograph on Seismic Microzonation, published by the Indian National Academy of Engineering. Our shared belief in the power of connecting the threads of geology , geomorphology , hydrogeology and soil mechanics found further voice in my 2002 S.P. Nautiyal Memorial Lecture, where I focused on ocular geomorphology and its role in landslide hazard mapping—then a priority of the Wadia Institute of Himalayan Geology, where Yudhbir and I were both closely associated at that time.

Finally—and most profoundly—we were united in our refusal to compromise truth in the face of political, bureaucratic, or market pressures. In an era increasingly shaped by convenience and conformity, Yudhbir remained steadfast, like a rock, anchored in his moral and intellectual principles. Every time he stood his ground, my respect and pride in our friendship grew.

His passing leaves an unfillable void—not just for his beloved wife, Mrs. Swaran, his son Lalit, and his daughter Anjali—but for every life he touched. Their grief, though immense, is tempered by the knowledge that Yudhbir's life was one of purpose, wisdom, and unwavering integrity. To us, he was not merely a brilliant mind, but a soul of great warmth and resolute character—one who believed that what looks pleasing is not always what is right.

In remembering Yudhbir, we salute a life lived in service of truth, excellence, and education. His legacy is not just written in scholarly papers and monographs but engraved in the hearts and minds of those privileged to learn from him. A custodian of knowledge and a beacon of principled living, his spirit will continue to guide generations of engineers, educators, and seekers.

May his noble soul rest in eternal peace.

**R.K. Bhandari**

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