

SCHOOL OF INFRASTRUCTURE
DEPARTMENT OF CIVIL ENGINEERING

Ref. : 482A/Dean(Sol)/0623

Date : 03.07.2023

**REPORT ON TWO DAY ALL INDIA SEMINAR
ON
RECENT ADVANCEMENTS IN
GROUND IMPROVEMENT TECHNIQUES FOR PROBLEMATIC
SOIL**

**ORGANISED IN ASSOCIATION WITH INSTITUTION OF
ENGINEERS, KANCHEEPURAM LOCAL CENTRE**

Date: 23-05-2023 & 24-05-2023

Two day national Seminar on “Recent Advancements in Ground Improvement Techniques for Problematic Soil” sponsored by the Institution of Engineers (India) was organized by the Department of Civil Engineering, School of Infrastructure in association with Kanchepuram Local Centre during on 23rd May 2023 and 24th May 2023.

Dr. D. Elango, FIE, National Council Member & Chairman IE(I)-Kanchepuram Local Centre welcomed the Chief Guest Dr. C. Sivathanupillai, Former Chief Engineer (Civil), Associate Director, CEG, IGCAR, Kalpakkam, and the audience. He stated that the Institution of Engineers (India) is the National organization of engineering professionals in India. It is the largest multi-disciplinary engineering professional society. Dr.M.S.Haji Sheik Mohammed, Professor & Dean, School of Infrastructure, B.S. Abdur Rahman Crescent Institute of Science & Technology delivered presidential address. He insisted that there is a lot of opportunities in the field of Civil Engineering, and also stated about the importance of geotechnical engineering. Dr. C. Sivathanupillai, Former Chief Engineer (Civil), Associate Director, CEG, IGCAR, Kalpakkam inaugurated and delivered the keynote address. Dr. P. Vasanthi, Professor & Student Advisor IE(I)

School of Infrastructure, B.S. Abdur Rahman Crescent Institute of Science & Technology explained about the overview of two days seminar and topics covered in each session.

ABOUT THE SEMINAR

The ground improvement techniques play a vital role in ensuring the stability and suitability of soil for construction purposes. The need for ground improvement techniques arises from various factors, including unstable soil conditions, risk of liquefaction, high water table, flood-prone areas, and soft soil. The objectives of ground improvement techniques are to increase the load-bearing capacity, reduce the risk of settlements and soil failure, reduce the risk of liquefaction, reduce the risk of flooding, and protect against erosion and landslide. Ground improvement techniques are often necessary in areas where the soil is either too weak, too soft, or has poor load-bearing capacity to support the weight of a building. This seminar served as a comprehensive programme to learn about new innovative techniques available for improvement of problematic soil.

PROGRAMME SCHEDULE

DAY 1 – May 23, 2023 (Tuesday)		
Time	Topic	Speaker
09.30 a.m.	QIRATH	Mr. L. MUHAMMAD IBRAHIM (IV Year) General Secretary, IE(I) Student Chapter
09.33 a.m.	STATE SONG	Thamizh Thai Vazhthu
09.35 a.m.	WELCOME ADDRESS & PRESIDENTIAL ADDRESS	Dr. D. ELANGO., FIE National Council Member & Chairman, IE(I) –Kancheepuram Local Centre
09.50 a.m.	FELICITATION	Dr. N. RAJA HUSSAIN Registrar
09.55 a.m	RELEASE OF SOUVENIOR	Dr. C. SIVATHANUPILLAI, B.E (Civil), M.E (Structure), M.S (Civil), Ph.D (Civil) Former Chief Engineer (Civil), Associate Director, CEG, IGCAR, Kalpakkam.
10.00 a.m.	INAUGURAL ADDRESS	Dr. C. SIVATHANUPILLAI, B.E (Civil), M.E (Structure), M.S (Civil), Ph.D (Civil) Former Chief Engineer (Civil), Associate Director, CEG, IGCAR, Kalpakkam.
10.15 a.m	VOTE OF THANKS	Dr. VASANTHI PADMANABHAN, FIE Professor

10:30 to 11:30 a.m	Geosynthetics for Sustainable Infrastructure Developments	Dr. P.T. RAVICHANDRAN, Professor & Head, S.R.M University, Chennai.
11:30 to 11:45 a.m	Tea Break	
11:45 to 12:45 p.m	Ground Improvement using Geosynthetics Encased Stone Columns - Online	Dr. MOHAMMED SHAKEEL ABID, Assistant Professor, Kakatiya Institute of Technology and Science, Warangal
12:45 to 01:45 p.m	Lunch Break	
01:45 to 02:45 p.m	Innovative Materials For Stabilization of Problematic Soil	Dr. SIVAPRIYA S.V, Associate Professor, S.S.N College of Engineering, Chennai.
02:45 to 03:00 p.m	Tea Break	
03:00 to 4:00 p.m	Soil Stabilization Techniques and Geotechnical Applications.	Dr. S. BHUVANESHWARI, Assistant Professor, CEG Campus, Anna University, Chennai.
DAY 2 – May 24, 2023 (Wednesday)		
Time	Topic	Speaker
09:30 to 11:00 a.m	Emerging Trends in Sustainable Foundation Technologies for Complex Ground Conditions	Er. MADAN KUMAR, Head of Engineering, Keller India, Chennai.
11:00 to 11:15 a.m	Tea-break	
11:15 to 12:30 p.m	Recent Soil Improvement Techniques	Dr. V. BALAKUMAR, Senior Consultant, Simplex Infrastructure Limited, Chennai.
12:30 to 01:30 p.m	Lunch Break	
01:30 to 02:30 p.m	Advanced Techniques in Soil Improvement and Reinforcement	Er. M. KUMARAN, Head - Engg & Tech, L&T Geo Structure, Chennai.
02:30 to 03:30 p.m	Lunar Soil Improvement Techniques for Lunar Structures - Online	Dr. T. PRABU, Post-Doctoral Associate, New York University, Abu Dhabi.
03:30 to 03:45 p.m	Tea break	
03:45 to 04:00 p.m	Valedictory Function (Certificate Distribution)	



Inaugural address by **Dr. C. Sivathanu Pillai**, Former Chief Engineer (Civil), Associate Director, IGCAR, Kalpakkam.



Lecture by **Dr. P.T. Ravichandran**, Professor & Head, S.R.M University, Chennai. On the topic "Geosynthetics for Sustainable Infrastructure Developments"



Lecture by **Dr. Sivapriya S.V** Associate Professor, S.S.N College of Engineering, Chennai, on the topic "Innovative Materials For Stabilization of Problematic Soil"



Lecture by **Dr. S. Bhuvaneshwari**, Associate Professor, CEG Campus, Anna University, Chennai, on the topic "Soil Stabilization Techniques and Geotechnical Applications"



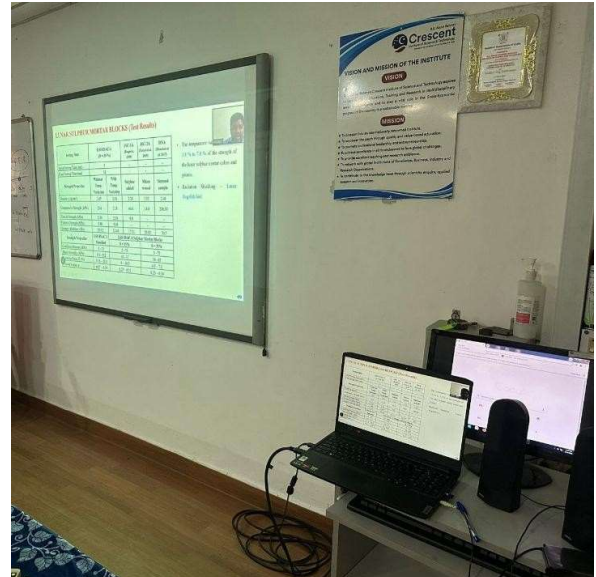
Lecture by **Er. Madan Kumar**, Head of Engineering, Keller India, Chennai, on the topic “Emerging Trends in Sustainable Foundation Technologies for Complex Ground Conditions”



Lecture by **Dr. V. Balakumar**, Senior Consultant, Simplex Infrastructure Limited, Chennai, on the topic “Recent Soil Improvement Techniques”



Lecture by **Er. M. Kumaran**, Head - Engg & Tech, L&T Geo Structure, Chennai, on the topic “Advanced Techniques in Soil Improvement and Reinforcement”



Lecture by **Dr. T. Prabu**, Post-Doctoral Associate, Newyork University, Abu dhabi, on the topic “Lunar Soil Improvement Techniques for Lunar Structures” through online



Participants of Two Day All India Seminar on Recent Advancements in Ground Improvement Techniques for Problematic Soil

BRIEF DESCRIPTION ABOUT LECTURES DELIVERED

TOPIC: GEOSYNTHETICS FOR SUSTAINABLE INFRASTRUCTURE DEVELOPMENTS

Day –I (Date: 23.05.2023, Time: 10.30 a.m to 11:30 a.m)

Presented by :Dr. P.T.Ravichandran,Professor & Head, S.R.M University,Chennai.

The talk covered, geosynthetics which are synthetic materials that are used in various civil engineering and environmental applications to improve the performance and durability of soil, rock, and other geotechnical materials. These materials are typically made from polymers such as polyethylene, polypropylene, or polyester. Geosynthetics can be categorized into several types based on their functions:

Geotextiles: These are permeable fabrics made of synthetic fibers. They are used to separate, filter, reinforce, and protect soil or other materials. Geotextiles are commonly used in road construction, erosion control, drainage systems, and landfill liners.

Geogrids: Geogrids are rigid or flexible mesh-like materials made of polymer or fiberglass. They provide tensile reinforcement and improve soil stability. Geogrids are often used in retaining walls, embankments, and soil reinforcement applications.

Geomembranes: These are impermeable sheets or liners made of flexible

synthetic materials. They are used to prevent the seepage of liquids, gases, or contaminants. Geomembranes are commonly employed in landfill liners, wastewater treatment plants, and containment ponds.

Geocells: Geocells are three-dimensional honeycomb-like structures made of plastic. They are used to confine and stabilize soil or aggregate materials. Geocells find applications in slope stabilization, load support, and erosion control.

Geosynthetic clay liners (GCLs): GCLs are composite materials that consist of bentonite clay sandwiched between geotextiles or geomembranes. They provide both hydraulic barrier properties and reinforcement. GCLs are often used in landfill caps, canals, and secondary containment systems. The use of geosynthetics offers several advantages, including improved soil stability, increased load-bearing capacity, enhanced drainage, reduced erosion, and environmental protection. These materials provide cost-effective solutions and can significantly extend the service life of geotechnical projects.

TOPIC: GROUND IMPROVEMENT USING GEOSYNTHETICS ENCASED STONE COLUMNS

- ONLINE

Date: 23.05.2023, Time: 11.45 a.m to 12:45 p.m

Presented by: Dr. Mohammed Shakeel Abid, Assistant Professor, Kakatiya Institute of Technology and Science, Warangal

The talk covers, the potential use of a woven polypropylene textile for encapsulating stone columns and improving the performance of a local soft soil in Warangal city of India. A series of axial load tests were performed on stone columns of various diameters and under various encapsulation conditions that include single and double layers and other combinations. Load carrying capacity of stone column increased twice its original capacity when encapsulated with different geofabric materials. Performance enhancement strongly correlated to the tensile strength of encasement material and encapsulation condition. In addition, the influence of lateral thrust on group of stone columns arranged in square and triangular patterns were investigated. Irrespective of the material used, lateral displacement was reduced by half for encased stone columns. Apart from tensile strength of encasing material, the amount of material used for

encasement in the form of additional encasement layer was found to be crucial. The cost of using the polypropylene encasing material is only a third of the commercial geotextiles; however, the performance is inferior to woven geotextiles but far superior to non-woven geotextiles.

The behavior of annulus stone columns in soft clays is significantly influenced by the outer-to-inner diameter ratio. For this reason, a comprehensive experimental investigation program was undertaken in the laboratory on a soft clay from Warangal, India, by varying its water content for achieving different undrained shear strength values and to determine the load-carrying capacity of conventional and annulus stone columns with different outer-to-inner diameter ratios that were double-encapsulated with geotextile. Investigations were also extended to determine the optimum L/D ratio and spacing between the groups of annulus stone columns. Based on these studies, a theoretical framework is developed for interpreting and determining the load-carrying capacity of the stone columns. The studies presented in this paper offer a novel ground improvement technique to enhance the load-carrying capacity of soft soils.

TOPIC: INNOVATIVE MATERIALS FOR STABILIZATION OF PROBLEMATIC SOIL

Date: 23.05.2023, Time: 01.45 p.m to 02:45 p.m

Presented by: Dr. Sivapriya S.V, Associate Professor, Department of Civil Engineering, SSN College of Engineering, Chennai.

The talk covers the introduction about the types of soil and most problematic soil not suitable for construction. That includes about Collapsible Soil, Expansive Soil and Dispersive Soil. The speaker further discussed about the difference between the conventional chemical soil stabilizer (lime and cement). Addressing the given topic, the speaker spoke about natural waste, industrial waste as a partial replacement material along with conventional material for soil stabilization. The natural material discusses are Tamarind Kernel Powder, Eggshell powder/ Eggshell ash (ESA), Sugarcane Bagasse Ash (BA), Rice Husk Ash (RHA), Groundnut shell Ash (GSA) and Straws as reinforcement. The industrial waste includes Fly Ash (FA), Ground granulated Blast Furnace Slag (GGBS), Marble Dust (MD), Copper and Steel Slag, Cement Kiln Dust (CKD), Glass Powder (GP). The function of nano material is also discussed in the session. The material discussed are nano – Alumina and nano- Silica.

TOPIC: SOIL STABILIZATION TECHNIQUES AND GEOTECHNICAL APPLICATIONS.

Date: 23.05.2023, Time: 03.00 p.m to 04:00 p.m

Presented by: Dr. S. Bhuvaneshwari, Assistant Professor, CEG Campus, Anna University, Chennai.

The talk covers, expansive soils are one among the problematic soils which can imbibe large amount of water when it comes in contact with water. This phenomenon causes a large volume increase which manifests as heaving phenomenon and imposes a very high swelling pressure on structures. Besides, on removal of moisture content due to evaporation, the soil shrinks and there is a volume reduction. This behaviour of volume increase and decrease can cause huge damage on light weight structures and pavement surfaces. The most frequent method to counter the behaviour of the expansive soil is to resort to chemical stabilization methods. Over the years, the chemical stabilization methods have been very effective in curtailing the swelling behaviour of the soil. The conventional additives which are efficiently used are lime, cement, flyash and other industrial by-products. These additives, curtail the swelling behaviour and increase the mechanical properties of the amended soil. However, can cause leaching of the heavy metals, impart alkaline environment to the soil and cause corrosion of buried pipelines. An alternative solution could be non-traditional additive such as biopolymers, resins, ionic compounds and agricultural waste. The stabilization mechanism is greatly influenced by the soil type, mineralogy, additive composition, quantity and the interaction between the soil and the additive.

The efficiency of any additive to curtail the swelling mechanism is evaluated through basic index property tests and mechanical property determination. The change in the properties and increase in the strength magnitude can be effective markers of stabilization mechanism. A comparative analysis is made between lime, a conventional additive and lignosulphonate, non- traditional additive through index, engineering and microstructure analysis. The microstructural analysis through analytical techniques such as the X-Ray diffractograms, SEM analysis and BET surface area could depict the changes at the microstructural level of the additive-amended soil. Lime amended soil depicts a typical brittle behaviour and profound increase in strength due to the pozzolanic reaction mechanism and

long-term strength development. However, the non-traditional stabilizer does not depict an equivalent strength development due to the absence of time bound pozzolanic reactions. Thus it has to be understood that for any traditional or non-traditional additive to come into practical application, the understanding of the reaction mechanism with soil is very crucial, in addition to the focus on the magnitude of the improvement of the properties.

TOPIC: EMERGING TRENDS IN SUSTAINABLE FOUNDATION TECHNOLOGIES FOR COMPLEX GROUND CONDITIONS

Day II (Date: 24.05.2023, Time: 09.30 a.m to 11:00 a.m)

Presented by: Er. Madan Kumar, Head of Engineering, Keller India, Chennai.

The talk covers the types of Ground Improvement
Densification • Principle: Reduction of voids between particles (coarse grained soils) • Example: Vibro Compaction, Blast Densification, Compaction Grouting

1. Reinforcement • Principle: Introduction of reinforcing element to carry the loads • Example: Vibrostone columns, geogrids
2. Consolidation • Principle: Shortening of Drainage Paths + Increase of Effective Stress • Example: PVD + Surcharge; Vacuum Consolidation
3. Chemical Modification • Principle: Introduction of Chemical Binder that causes with time • Example: Injection Grouting, Deep Mixing, Jet Grouting
4. Ground Improvement Techniques such as Deep Vibro Techniques can be used to provide Optimal Foundation Solutions • Design & Build expertise with Reliable Soil Investigation data will ensure savings in Cost & Time • International Standard of Practices using latest equipment ensures the success of a project
5. Execution of Specialized Foundation Techniques requires state-of-the-art experience with Operational Excellence and Best Practices • Usage of Native Materials are economical and influential in Carbon Reduction.

TOPIC: RECENT SOIL IMPROVEMENT TECHNIQUES

Date: 24.05.2023, Time: 11.15 a.m to 12:30 p.m

Presented by: Dr. V. Balakumar, Senior Consultant, Simplex Infrastructure Limited, Chennai.

The presentation covers the every structure has got two essential requirements to be satisfied during its lifespan. They are •Serviceability requirement •Ultimate failure conditions

On many occasions the loading on the structure never reaches the ultimate limit state, but the serviceability conditions can get affected. In foundation design the serviceability is governed by the permissible settlement, which is a function of performance requirement. The settlement can be short term and then long term as in the case of compressible deposits, and immediate settlement in the case of cohesion less deposits. More than the total settlement it is the differential settlement, which will create the problem. Hence the foundation design for supporting the structures sensitive for settlement becomes a challenging assignment, particularly when the supporting soil is problematic. Presently there are various methods of ground improvement, the application of which largely depends upon the soil condition, the serviceability requirements and the time frame. In the present, we shall concentrate on drains, stone column sand compaction as they are very popular in our country. We still will have a basic study on the other methods depending on the time. This presentation has made an attempt to provide the audience a glimpse of various ground improvement methods. Still there are few more methods like jet grouting and soon. The design methods adopts one dimensional consolidation theory and earth pressure theory.

TOPIC: ADVANCED TECHNIQUES IN SOIL IMPROVEMENT AND REINFORCEMENT

Date: 24.05.2023, Time: 01.30 p.m to 02:30 p.m

Presented by: Er. M. Kumaran, Head - Engg & Tech, L&T Geo Structure, Chennai.

The talk covers, the deep soil mixing (DSM) is a ground improvement technique that involves mechanically mixing or blending the soil in situ with a binder material to improve its engineering properties. It is commonly used in construction projects to enhance the stability, load-bearing capacity, and stiffness of soft or loose soils. Geostuctural elements, also known as soil mix columns or soil crete columns,

are created through deep soil mixing. These elements are formed by injecting a cementitious or lime-based binder into the soil while simultaneously rotating a mixing tool. The binder material reacts with the soil particles, resulting in the formation of columns with improved strength and stiffness. Geostруктурал elements offer several benefits and are used for various applications:

Ground improvement: Deep soil mixing with geostруктурал elements can significantly increase the strength and stiffness of weak or loose soils, enabling them to support heavy structures or loads.

Foundation support: The columns can be designed to provide support for foundations, reducing settlement and improving overall stability. They are commonly used for buildings, bridges, and other infrastructure projects.

Slope stabilization: Geostруктурал elements can be installed horizontally to stabilize slopes and prevent landslides. The improved shear strength of the soil helps maintain slope stability.

Seismic mitigation: Deep soil mixing can enhance the soil's resistance to seismic forces, reducing the potential for liquefaction and improving the overall seismic performance of the ground.

Environmental applications: The use of geostруктурал elements can be beneficial in environmental remediation projects. They can provide a barrier to contain contaminants and prevent their migration into the surrounding soil or groundwater. Overall, deep soil mixing with geostруктурал elements is a versatile ground improvement technique that offers effective solutions for a wide range of geotechnical challenges. It can be tailored to meet specific project requirements and has been successfully applied in various construction and infrastructure projects around the world.

TOPIC: LUNAR SOIL IMPROVEMENT TECHNIQUES FOR LUNAR STRUCTURES - ONLINE

Date: 24.05.2023, Time: 02.30 p.m to 03:30 p.m

Presented by: Dr. T. Prabu, Post-Doctoral Associate, Newyork University, Abu Dhabi.



The talk covers, the establishment of lunar structures for human-crewed missions and lunar habitation on the lunar surface was the planned Global Exploration Roadmap of space research organizations (SRO). Lunar habitation was the most

challenging task that included all engineering disciplines for developing lunar structures, construction materials, metals, alloys, and basic needs such as water, oxygen, etc., for human life. In that, the design of lunar structures will differ from the terrain structures, which are not designed to adopt the most extreme lunar environmental conditions such as radiation, temperature, vacuum, low gravity, moonquakes, etc. Also, it necessitated a unique design, analysis, construction materials, and methods for the lunar structures. The possible extraction of metals and binders, such as polymers, sulphur, etc., from lunar soil narrates the possible production of ISRU-based habitation materials such as concrete, mortar, bricks, blocks, etc. In connection with the lunar structures, proposing a suitable foundation system was utterly dependent on the geo mechanical properties such as shear strength parameters (angle of internal friction and cohesion), bulk density, relative density, compressibility, bearing capacity, and static and dynamic properties of the lunar soil. So far, lunar soil simulants (mare land & highland) have been developed to represent the actual lunar soil properties and used for lunar missions, ISRU-based research, and assessing the geotechnical and geo mechanical properties of the lunar soil.

In this respect, the Indian Space Research Organization (ISRO) has developed a lunar highland soil simulant (LSS-ISAC-1) and performed lander rover wheel and lunar soil interaction studies to execute their planned Chandrayaan Missions. In such a way, this presentation explains the possible use of LSS-ISAC-1 for ISRU-based research by assessing the similarity in bulk chemistry and mineralogy of LSS-ISAC-1 with actual lunar soil and past-developed lunar highland soil simulants. The geotechnical, geomechanical, and dynamic properties of the LSS-ISAC-1 under different relative densities and confining pressures. Also, the bearing capacity and slope stability of the LSS-ISAC-1 were assessed considering the low gravity ($1/6g$) effect on the lunar surface for the possible design of foundation systems of the lunar structures. In the view of lunar material production, the LSS-ISAC-1 was mixed with sulphur to make the lunar material, such as concrete, cube, and blocks for lunar habitation. The mechanical strength properties of the developed lunar sulphur mortar blocks and cubes were determined and compared with the past-developed blocks and cubes using other lunar soil simulants. Also, the blocks were subjected to assess the effect of the

temperature variation on the lunar surface. Then an attempt was made to make a lunar pile using the lunar sulphur mortar for the foundation systems of the proposed lunar structures of the ISRO. The uplift capacity of the lunar pile foundation system was estimated theoretically and experimentally for the developed lunar pile to suggest a suitable foundation system. Overall, the essential properties of the LSS-ISAC-1 for the design of lunar structures were determined for the possible making of lunar structures using ISRU techniques and to adopt the lunar environmental conditions.

 <p>The Institution of Engineers (India)- Kancheepuram Local Centre Under the aegis of Civil Engineering Division in association with</p> <p></p> <p>B.S.ABDUR RAHMAN CRESCENT INSTITUTE OF SCIENCE & TECHNOLOGY SCHOOL OF INFRASTRUCTURE DEPARTMENT OF CIVIL ENGINEERING Student Chapter (IEI)</p> <p><i>Cordially invite you for the Inauguration of</i> <i>Two Day All India Seminar on</i> Recent Advancements in Ground Improvement Techniques for Problematic Soil</p> <p><i>on 23rd May 2023, 09.30 am</i> <i>at CSB Seminar Hall, Architecture Block, 6th floor.</i> <i>B.S. Abdur Rahman Crescent Institute of Science and Technology</i></p> <p>Dr. D. ELANGO, FIE <i>National Council Member & Chairman, IE(I) - Kancheepuram Local Centre</i> <i>Presidential Address</i></p> <p>Dr. N. RAJA HUSSAIN <i>Registrar</i> <i>Felicitates</i></p> <p><i>Chief Guest</i> Dr. C. SIVATHANUPILLAI, <i>B.E. (Civil), M.E. (Structure), M.S. (Civil), Ph.D. (Civil)</i> <i>Former Chief Engineer (Civil), Associate Director,</i> <i>CEG, IGCAR, Kalpakkam.</i> <i>Inaugural Address</i></p> <p><i>Vote of Thanks</i> Dr. M. S. HAJI SHEIK MOHAMMED <i>Professor & Dean (Sol)</i></p> <p>Dr. VASANTHI PADMANABHAN, FIE <i>Professor</i> <i>Student Advisor & Convener</i></p>	 <p>The Institution of Engineers (India)- Kancheepuram Local Centre Under the aegis of Civil Engineering Division in association with</p> <p></p> <p>B.S.ABDUR RAHMAN CRESCENT INSTITUTE OF SCIENCE & TECHNOLOGY SCHOOL OF INFRASTRUCTURE DEPARTMENT OF CIVIL ENGINEERING</p> <p><i>Two Day All India Seminar</i> <i>on</i> Recent Advancements in Ground Improvement Techniques for Problematic Soil</p> <p><i>23rd and 24th May 2023, 09.30 am</i> <i>CSB Seminar Hall, Architecture Block, 6th Floor, B.S. Abdur Rahman Crescent Institute of Science and Technology</i></p> <p><i>Chief Guest</i> Dr. C. SIVATHANUPILLAI, B.E. (Civil), M.E. (Structure), M.S. (Civil), Ph.D. (Civil) <i>Former Chief Engineer (Civil), Associate Director,</i> <i>CEG, IGCAR, Kalpakkam.</i></p> <p><i>Guest of Honour</i> Dr. D. ELANGO, FIE <i>National Council Member & Chairman, IE(I) - Kancheepuram Local Centre</i></p> <p><i>Convener</i> Dr. M. S. HAJI SHEIK MOHAMMED <i>Professor & Dean (Sol)</i></p> <p><i>Convener</i> Dr. VASANTHI PADMANABHAN, FIE <i>Professor</i></p>
<p>Invitation for Two Day All India Seminar on Recent Advancements in Ground Improvement Techniques for Problematic Soil</p>	<p>Banner for Two Day All India Seminar on Recent Advancements in Ground Improvement Techniques for Problematic Soil</p>

<p>The Institution of Engineers (India) A Century of Service to the Nation</p> <p>All India Seminar On</p> <p>Recent Advancements in Ground Improvement Techniques for Problematic Soil [23.05.2023 to 24.05.2023]</p> <p>Organized by</p>  <p>The Institution of Engineers (India)</p> <p>The Institution of Engineers (India) Hosted by</p> <p>Kancheepuram Local Centre</p> <p>Under the aegis of Civil Engineering Division, IEI & In association with</p> <p>SCHOOL OF INFRASTRUCTURE DEPARTMENT OF CIVIL ENGINEERING</p> <p>B.S. Abdur Rahman™</p>  <p>Crescent Institute of Science & Technology Deemed to be University u/s 3 of the UGC Act, 1956</p>	<p>REGISTRATION FORM</p> <p>Name..... Mobile.....</p> <p>Designation.....</p> <p>Organization.....</p> <p>Address for Communication.....</p> <p>Mobile.....</p> <p>E-Mail.....</p> <p>Cash Rs. (.....)</p> <p>I/We enclose a Cheque/Demand Draft for Rs..... in favour of "The Institution of Engineers (India), Kancheepuram Local Centre" Payable at Kancheepuram & Drawn on (Bank Particulars) Cheque / Demand Draft No..... Dated.....</p> <p>Date..... Signature.....</p> <p>Registration Link: https://forms.gle/YagyhSX49sCFch3H8</p> <p>NATIONAL ADVISORY COMMITTEE</p> <p>Chairman: Er. C. Debnath, FIE, President, IEI</p> <p>Co-Chairman: Er. M. Nagaraj, FIE, Chairman, Civil Engineering, DB, IEI</p> <p>Conveners: Mr. M. Duraisami, FIE, IEI KLC</p> <p>Members: Dr. Hemant O. Thakare, FIE Immediate Past President, IEI Er. Narendra Singh, FIE, Past President, IEI Er. Ambikesh Natvarlal Padhiya, FIE, Member CVDB, IEI Er. Anil Joseph, MIE, Member, CVDB, IEI Prof. (Dr.) D. Elango, FIE, Member, CVDB, IEI Er. Ezekiel Lyngdoh, FIE, Member, CVDB, IEI Dr. I. Satyanarayana Raju, FIE, Member, CVDB, IEI Er. K. Lalaswamela, FIE, Member, CVDB, IEI Er. Kishanrao M. Godbole, FIE, Member, CVDB, IEI Er. M. Lakshmana, FIE, Member, CVDB, IEI Er. M. Shyamprasad Reddy, FIE, Member, CVDB, IEI Er. M. Sivaramasubramanian, FIE, Member, CVDB, IEI Er. Masarrat Noor Khan, FIE, Member, CVDB, IEI Er. Nripendra Nath Patwari, FIE, Member, CVDB, IEI</p>	<p>Er. P. Surya Prakash, FIE, Member, CVDB, IEI Er. Pravin Kumar Mohanbhai Chaudhari, FIE, Member, CVDB, IEI Er. Rajesh Bisaria, FIE, Member, CVDB, IEI Er. Rakesh Kumar Rathore, FIE, Member, CVDB, IEI Prof. (Dr.) S. Shanmugam, FIE, Member, CVDB, IEI Sandeep B. Vasava, FIE, Member, CVDB, IEI Er. Shivanand Roy, FIE, Member, CVDB, IEI Er. Sukhvir Singh Mundi, FIE, Member, CVDB, IEI Er. V. B. Singh, FIE, Member, CVDB, IEI Er. Vishwa Mohan Joshi, FIE, Member, CVDB, IEI</p> <p>Honorary Secretary: Dr. Shanmugasundar, M.E., Ph.D., FIE, IEI KLC</p> <p>RESOURCE PERSONS</p> <p>Dr. V. Balakumar, Senior Consultant, Simplex Infrastructure Ltd, Chennai. Dr. V.K. Stalin, Professor, CEG, Anna University, Chennai. Er. Madan Kumar, Head of Engineering, Keller India, Chennai. Er. M. Kumaran, Head, Engg & Tech, L&T Geo Structure, Chennai. Dr. P.T. Ravichandran, Professor & Head, SRM University, Chennai. Dr. S. Bhuvaneshwari, Associate Professor, SRM University, Chennai. Dr. Sivapriya S.V., Associate Professor, SSN College of Engineering, Chennai. Dr. T. Prabu, Post-Doctoral Associate, New York University, Abu Dhabi.</p> <p>ORGANIZING COMMITTEE</p> <p>Chairman: Dr. D. Elango, FIE, IEI, KLC</p> <p>Convenor & IEI Advisor: Dr. P. Vasanthi, FIE Professor, Civil, BSACIST</p>
--	--	---

<p>ABOUT THE INSTITUTION OF ENGINEERS (INDIA):</p> <p>The Institution of Engineers (India) or IEI is the largest multidisciplinary professional body that encompasses 15 engineering disciplines and gives engineers a global platform to share professional interest. IEI has membership strength of over 0.8 million.</p> <p>Established in 1920, with its headquarters at 8 Gokhale Road, Kolkata - 700020, IEI has served the engineering fraternity for over nine decades. In this period of time it has been inextricably linked with the history of modern-day engineering.</p> <p>In 1935, IEI was incorporated by Royal Charter and remains the only professional body in India to be accorded this honour. Today, its quest for professional excellence has given it a place of pride in almost every prestigious and relevant organization across the globe. IEI functions among professional engineers, academicians and research workers. It provides a vast array of technical, professional and supporting services to the Government, Industries, Academia and the Engineering fraternity, operating from 125 Centres located across the country. The Institution provides grant-in-aid to its members to conduct research and development on engineering subjects.</p> <p>IEI conducts Section A, B Examinations in different Engineering disciplines, the successful completion of which is recognized as equivalent to Degree in appropriate field of Engineering of recognized Universities of India by the Ministry of Human Resources Development, Govt. of India. Every year as many as 90000 candidates appear for these exams. For details, please see: www.ieindia.org</p> <p>ABOUT THE ASSOCIATE ORGANIZATION</p> <p>B.S. Abdur Rahman Crescent Institute of Science and Technology, a deemed to be University in Chennai is a 4-Star rated QS world university Rankings varsity with over 38 years of academic excellence. The institute aspires to be a leader in education, Training and Research in Engineering, Science, Technology and management, and play a vital role in the socio-economic progress of the country. B.S. Abdur Rahman Crescent Institute of Science and Technology, Vandavur is located in the outskirts of Chennai city on the G.S.T. Road, (Chennai-Trichy National Highway). Since being adjacent to the Arignar Anna Zoological Park, it is easily accessible by city buses.</p>	<p>ABOUT THE DEPARTMENT</p> <p>The Department of Civil Engineering started in 1984 is one of the oldest departments of this Institute. The department offers B.Tech. in Civil Engineering, M.Tech. in Structural Engineering, M.Tech. in Construction Engineering & Project Management and Ph.D. in various disciplines of Civil Engineering. The department gives emphasis on 'quality and skill based education', 'application-oriented research' (through network with eminent academic institutions and research laboratories) for the holistic development of students. The department also offers testing & consultancy services to government, semi-govt., and private sectors.</p> <p>AIM OF THE PROGRAM</p> <p>The ground improvement techniques play a vital role in ensuring the stability and suitability of soil for construction purposes. The need for ground improvement techniques arises from various factors, including unstable soil conditions, risk of liquefaction, high water table, flood-prone areas, and soft soil. The objectives of ground improvement techniques are to increase the load-bearing capacity, reduce the risk of settlements and soil failure, reduce the risk of liquefaction, reduce the risk of flooding, and protect against erosion and landslide. Ground improvement techniques are often necessary in areas where the soil is either too weak, too soft, or has poor load-bearing capacity to support the weight of a building. This seminar will serve as a comprehensive programme to learn about new innovative techniques available for improvement of problematic soil.</p> <p>Topics Covered</p> <ul style="list-style-type: none"> Advanced techniques in soil improvement and reinforcement Development of new experimental techniques for soils Prefabricated vertical drains Geosynthetics for sustainable infrastructure developments Use of geosynthetics for coastal zone stabilisation Modern soft ground tunneling technology Encased stone columns Software and numerical modelling for stabilisation of soil Innovative materials for stabilisation of problematic soil <p>FEES</p> <p>Member of IEI : Rs 100/- Non Member of IEI : Rs 150/-</p>	<p>SPEAKERS</p> <p>Speakers and Delegates are invited from various reputed Institutions & Organizations.</p> <p>IMPORTANT DATES:</p> <p>Workshop Dates: 23 & 24 May, 2023 Last date of Registration: 21 May, 2023</p> <p>CONTACT PERSON AND NUMBERS:</p> <p>Dr. P. Vasanthi, Ph.D., FIE, Professor, Department of Civil Engineering, B.S. Abdur Rahman Crescent Institute of Science and Technology, Vandavur, Chennai - 600 048, Mobile: 99400 58415 Email: vasanthi@crescent.education</p> <p>Dr. G. Shanmugasundar, M.E., Ph.D., FIE, Honorary Secretary IEI KLC, Professor & Dean R&D, Department of Mechanical Engineering, Sri Sai Ram Institute of Technology, Chennai - 600044, Mobile: 99413 80398 Email: shanmugasundar.mech@sairamit.edu.in</p> <p>Dr. D. Elango, Ph.D., FIE, Chairman IEI KLC, SRM Valluam Engineering College, Kattankulathur - 603203, Mobile: 94440 50687 Email: gandurajielango@gmail.com</p> <p>Co-ordinator: Dr. M. Kirithika, Ph.D., Post-Doctoral Fellow Mobile: 99947 57700 Email: kirithika_civil_pdr2023@crescent.education</p>
--	--	--

Vasanthi P.

Dr. Vasanthi Padmanabhan, Professor
Convenor

M. S. Hajj Sheik Mohammed

Dr. M.S. Hajj Sheik Mohammed
Dean, School of Infrastructure