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ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

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189

Evert Hoek

A true giant in rock mechanics, rock engineering and in life

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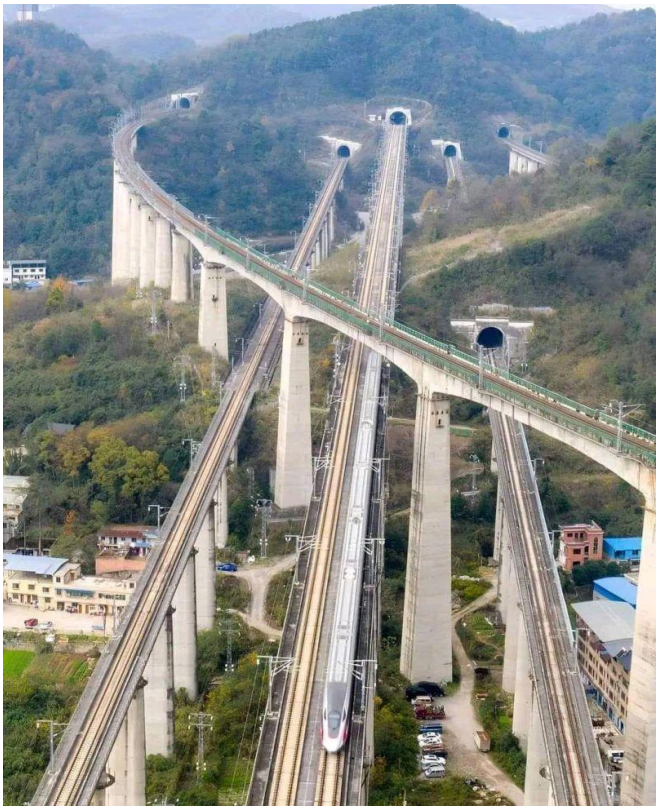
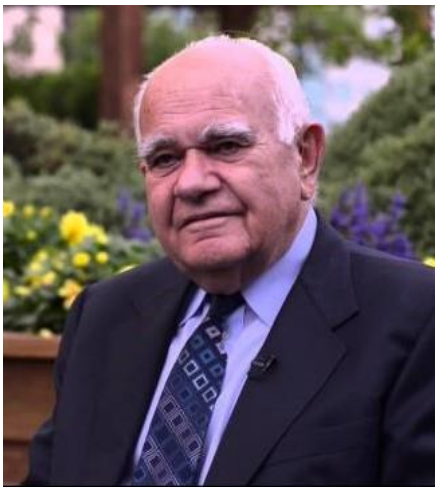


China (Civil Engineering Discoveries)

Evert Hoek
August 23, 1933 – July 6, 2024



Dr. Evert Hoek passed away on July 6, 2024 after a brief illness. Born in Rhodesia in 1933, he attended Cape Town University where he met his first wife, Theo. His son Peter and daughter Dorothy were born in South Africa and the family subsequently emigrated to England and then to Canada. After Theo passed away, Evert met and married Bonnie in 2014.

Evert was adored by his family as well as loved and respected by his colleagues and students. He was acknowledged as an international leader in the field of Rock Mechanics and was the proud recipient of two earned and three honorary doctorate degrees. He authored several books and many scientific papers.

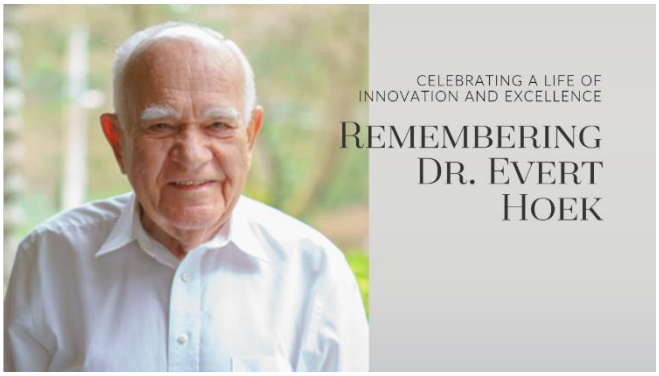
Hoek began his research for Rock Mechanics in 1958 (due to problems with brittle rock in deep gold mines in South Africa) and in 1965 at the University of Cape Town PhD (rock fracture under static stress conditions). From 1965, he was at Imperial College, where he set up one faculty-wide center for rock mechanics at the Royal School of Mines. He developed there, among others in 1968, a triaxial test for Rock Mechanics. Later, he became a professor at the University of Toronto in 1975 for twelve years as a senior consulting engineer at Golder Associates (where he was Senior Principal and Chairman) in Vancouver, then an independent consulting engineer with a private engineering firm in Vancouver.

The Hoek–Brown criterion was introduced in 1980 to provide input for the design of underground excavations in rock. The criterion now incorporates both intact rock and discontinuities, such as joints, characterized by the geological strength index (GSI), into a system designed to estimate the mechanical behaviour of typical rock masses encountered.

Hoek was elected a member of the National Academy of Engineering in 2006 for major worldwide contributions in the development and application of rational design procedures for engineered systems in rock. He was also a Fellow of the Royal Academy of Engineering and the Canadian Academy of Engineering.

He received honorary doctorates in the University of Toronto and the University of Waterloo. He received the first prize of the Mueller International Society of Rock Mechanics and was the 1983 Rankine Lecturer (Strength of jointed rock masses) and 2000 Terzaghi Lecturer (Big tunnels in bad rock).

Dr. Hoek has published more than 100 papers and 3 books. His classic *Rock Slope Engineering* has been updated by Duncan Wyllie to a 5th edition, published by CRC Press in 2017. Evert Hoek ResearchGate requests: All his significant publications, a 16 chapter eBook entitled Practical Rock Engineering and 6 professionally made videos on rock engineering are available for free download from https://www.rocscience.com/learning/hoeks-corner



A true giant in rock mechanics, rock engineering and in life

A tribute to Dr. Evert Hoek: August 23, 1933 – July 6, 2024

Over the last week, the world has had to come to terms with the passing on Saturday 6 July of Dr. Evert Hoek, a true giant in the fields of rock mechanics and rock engineering, whose work has guided technological developments in all aspects of this field of engineering and which shaped the minds of rock engineers and geotechnical engineering practitioners all over the world.

Evert Hoek was born in Zimbabwe in southern Africa in 1933 and graduated in mechanical engineering with a BSc and an MSc from the University of Cape Town in 1957. He became involved in rock mechanics in 1958 when he started working in research on problems of brittle fracture in rock associated with very deep mines in South Africa. His degrees include a Ph.D. from the University of Cape Town, a DSc (Engineering) from the University of London, and honorary doctorates from the Universities of Waterloo and Toronto in Canada and the Polytechnic University of Catalonia in Spain. He is a Fellow of the Royal Academy of Engineering (UK), an International Member of the US National Academy of Engineering, and a Fellow of the Canadian Academy of Engineering. He spent 8 years as a research engineer in the South African Council for Scientific and Industrial Research (CSIR), 9 years as a Reader and then Professor in the Imperial College of Science and Technology in London, 12 years as a consultant with Golder Associates in Vancouver, Canada, and 6 years as an Industrial Research Professor in the University of Toronto. For the 25 years prior to his retirement in 2018, he worked as an independent consultant on review and consulting boards on civil and mining engineering projects around the world.

Dr. Hoek followed in the footsteps of notable scientists and engineers such as Terzaghi, Griffiths and others, and building on their early work, helped establish the modern-day fields of 'rock engineering' and 'rock mechanics', subjects which still had to be invented when he started work on his PhD in 1958. A 2022 paper by Rocscience titled 'Principal Considerations in Rock Engineering Practice and Contributions from Africa celebrates contributions made by rock engineering experts of African origin or association since the 1940s and 1950s, and provides further insight into the impact Dr. Hoek's work had on this field of engineering.

Today, rock engineers and geotechnical engineering practitioners all over the world regularly visits Hoek's Corner2 which is an online collection of books, published research papers and an exclusive video lecture series by Dr. Hoek, maintained by Rocscience, and his rock engineering course notes 'Practical Rock Engineering' has become a seminal reference in the libraries of geotechnical engineering practitioners. Employing the engineering knowledge and understanding shared by Dr. Hoek of stress and deformation processes, and of the strength of rock materials both at an intact and at rockmass scale, and methods and techniques he helped develop to analyse and model complex rock engineering problems, geotechnical engineering practitioners are able to better design excavations in rock in both civil engineering and mine, to make the world a safer place to work and live in!

Those who worked with Dr. Hoek, remembers him as a true gentleman, and fondly recalls the kind and respectful manner in which he always engaged those he worked with, taught, and mentored, and it is a cherished memory indeed for those who were privileged enough to meet him in person before he retired in 2018.

Uli Vogler worked with Dr. Hoek at the CSIR in the 1950s and helped him develop several ISRM Suggested Methods for rock laboratory testing that are still in use today. He remembers Dr. Hoek as a talented and versatile engineer, and shared the following anecdote:

The 2017 Chuquicamata Geotechnical Review Board. From left to right: Dr. John Read, Dr. Oskar Steffen, Dr. Evert Hoek, Dr. Derek Martin, Dr. Alan Guest

In the late 1950s, during lunchtimes, Evert Hoek helped his neighbour, O.P.M. Prozesky with his research by wiring up instrumentation to record the temperature of bird eggs during incubation in hot desert conditions. Prozesky could thus prove that birds are able to cool off their eggs on hot days. Years later, Prozesky became a well-known ornithologist at the then Transvaal Museum and author of the authoritative 'A Field Guide to the Birds of Southern Africa'.

Evert Hoek was much loved by his family and admired and valued as a friend, teacher, and colleague. A true giant in rock mechanics, rock engineering and in life, we will miss him greatly. Our thoughts are with his family and friends.

The Southern African Institute of Mining and Metallurgy, July 22, 2024

Should we be concerned that the term "geoengineering" is now being used to refer to climate engineering rather than ground engineering?

Opinion contributed by Neil Parry, Director, Geotechnical Engineering Limited

Reading articles published in the media and in academic studies, the term "geoengineering" (or geo-engineering) now most commonly refers to the subject of climate engineering, including technologies that could manipulate the environment and offset the impacts of climate change.

Notably solar engineering and carbon dioxide removal. Alongside the word "geoscience", which is generally accepted as the scientific study of Earth, these "GEO" words have been universally adopted by the climate change community and are now more frequently recognised in this field than in our own engineering and geological disciplines. The term 'geo' is derived from the Greek for 'Earth', and is not limited to soil or rock materials, so it follows that as climate change affects everything on Planet Earth, not just the ground beneath its surface, it is an appropriate term to use for this purpose.

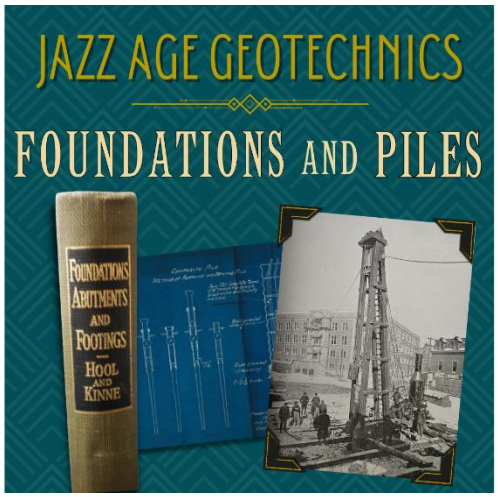
Some reference sources acknowledge the other uses of the term, noting that geoengineering may also refer to geological engineering, engineering geology, geotechnical engineering and geophysical engineering. It is, however, widely acknowledged that geology and engineering are not the first disciplines most people think of when coming across the term.

A creditable argument is that the climate crisis is much more important than geological sciences. Despite the possibility that we are at the beginning of a new geological Anthropocene Epoch caused by human activity, it is acknowledged in most academic and engineering circles that our focus should be on minimising our effect on the global climate. Our role as geologists, engineers and geoenvironmentalists in supporting this objective is becoming clearer as our understanding of the situation grows. We should embrace our part in this, celebrating the use of geoengineering to provide a positive contribution. What we should learn from this is the importance of being careful when using such terms to describe our work, as the fundamentals of our role could be easily misunderstood.

AGS Magazine - July 2024, p. 12, https://issuu.com/ags-magazine/docs/ags-magazine-july-2024

Foundations, abutments and footings
Section 3: Foundations (Part B)

Michael Bennett, P.E., M.ASCE



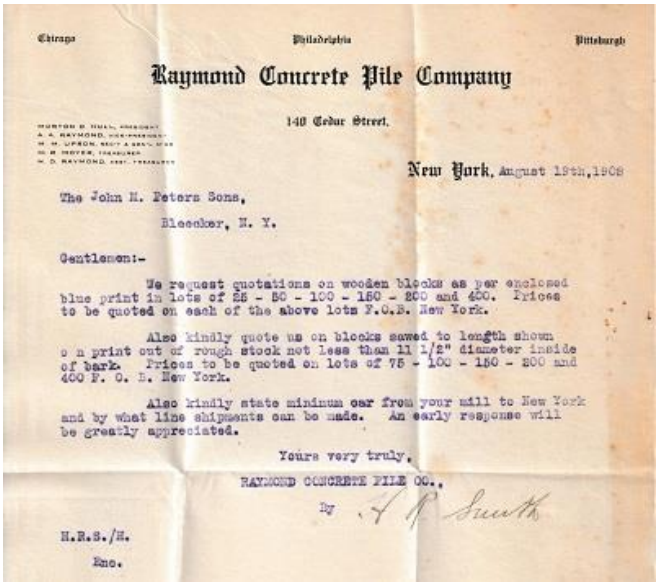
(Hool and Kinne, Eds., 1923)

The second half of Section 3 of *Foundations, abutments and footings* continued the first half's discussion of various foundation types and their construction. Walter Cahill, who penned most of the latter portion of Section 3, was a vice president of the Great Lakes Dredge and Dock Company in 1923. Then as now, Great Lakes was among the USA's largest contractors for port facilities. Cahill covered a multitude of facets of timber and concrete pile construction, including their manufacture, driving equipment and procedures, load testing, and common field issues. Frederick Avery, a bridge engineer of 25 years' experience, closed out Section 3 with a brief section on sheet piling. His writings consisted primarily of tabulated cross-sectional properties from the production catalogs of preeminent steel companies of the Roaring Twenties, including US Steel, Jones and Laughlin, and Lackawanna Steel (Avery 1923, Cahill 1923 A, Cahill 1923 B, GLDD 2024, Marquis 1922).

Cahill began his writing by covering the history of pile installation and construction. He started with the etymology of the word "pile," which comes from the Anglo-Saxon pil, i.e., sharp stake or arrow; the Latin pilum, i.e., javelin; and the Latin pila, i.e., pillar. Cahill wrote that timber piles had dominated the construction industry throughout most of human history and that human- or animal-powered drop hammers had mainly been used to drive them. He added that the technology had been in use for at least 2,000 years, since Julius Caesar's legions had driven thousands of pila to span rivers in modern France as they conquered it during the Gallic Wars. Several years later, when Caesar turned his ambitions inward, his pile-driven triumphs in Gaul had fueled the Roman Republic's transformation into an empire (Cahill 1923 A, PBS 2006, Van Houten 1932).

Cahill continued that pile-driving had remained a game of drop hammers and timber piles until the dawn of the Industrial Revolution. In 1845, Scotsman James Nasmyth successfully fitted a steam engine to a pile hammer. Drop hammers did not disappear immediately and remained common in certain sectors of construction even in 1923, but the steam hammer rapidly gained widespread use and kickstarted the modernization of pile foundations. The pile itself was next up for change. The reinforced concrete pile debuted in France in 1897 and first appeared in the United States in 1901. Pioneers of the technology, such as the Raymond Concrete Pile Company, were quick to point out that both precast and cast-in-place concrete piles saved time and money by having higher load capacities than timber piles, which meant installing fewer piles under smaller pile caps. Steel piles also came into vogue during the early 20th century, with I-beams predominating until Bethlehem Steel manufactured the first H-piles in 1908; their improved buckling strength allowed for deeper driving and better scour resistance at bridges. During the 1920s, even as Walter Cahill wrote his portion of Section 3, engineers in Weimar Germany pioneered the diesel combustion hammer. 100 years later, diesel hammers make up the bulk of most pile contractors' equipment (Cahill 1923 A, Van Houten 1932, Warrington 2009).

IMAGE 1: Steam-driven pile hammer in action at the University of Pennsylvania in Philadelphia, PA, circa 1900. Source: Simplex (1907).



Chicago Philadelphia Pittsburgh

Raymond Concrete Pile Company

140 Cedar Street,

New York, August 19th, 1908

The John H. Peters Sons,
Bleecker, N. Y.

Gentlemen:-

We request quotations on wooden blocks as per enclosed blue print in lots of 25 - 50 - 100 - 150 - 200 and 400. Prices to be quoted on each of the above lots F.O.B. New York.

Also kindly quote us on blocks sawed to length shown on print out of rough stock not less than 11 1/2" diameter inside of bark. Prices to be quoted on lots of 75 - 100 - 150 - 200 and 400 F. O. B. New York.

Also kindly state minimum car from your mill to New York and by what line shipments can be made. An early response will be greatly appreciated.

Yours very truly,
RAYMOND CONCRETE PILE CO.,
By A. P. Smith

H.R.S./H.
Enc.

IMAGE 2: Letter from Raymond Concrete Pile Co. to client for shipping of wooden cushions for pile driving, 1908. Source: Author's collection.

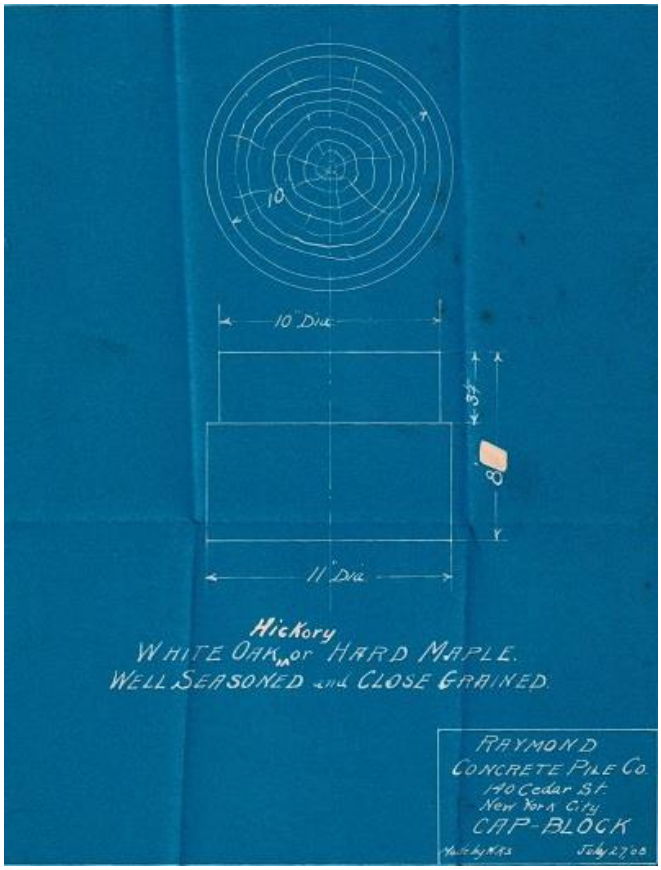


IMAGE 3: Blueprint by Raymond Concrete Pile Co. for wooden cushions for pile driving, 1908, which accompanied the letter in Image 2. Source: Author's collection.

Cahill offered pile-driving contractors plenty of advice in his write-up, much of which remains sound. His note that an experienced crew can typically drive 30 to 35 piles in a workday matches the expected output of a seasoned crew a century later. Cahill's guidance on the need to treat timber piles to preserve them from wetting-drying cycles, fungi, and marine borers also holds up, as does his suggestion to use creosote for the job. (Compounds such as chromated copper arsenate, aka CCA, have superseded his other recommended preservatives, crude oil and cement.) Modern geo-professionals might be especially interested to read Cahill's note that creating a bulb or pedestal at the bases of cast-in-place piles allows contractors to take advantage of "the higher bearing capacity generally existing in the lower strata of earth," an observation since explained by bearing capacity theory (Cahill 1923 A, Cahill 1923 B, Collin et al. 2016).

Others of Cahill's nuggets of purported wisdom typified the erroneous information that permeated foundation construction before the dawn of modern geotechnical engineering. He reviewed whether timber piles should be debarked before driving and ultimately sided with a grizzled contractor who stated: "'If the bark is loose, it comes off in driving, and if it stays on, it is as good as the pile itself and helps develop more friction due to its roughness.'" This take notwithstanding, all modern timber piles are debarked during manufacturing. Cahill also discussed how contractors could splice timber piles in the field using a "sleeve" of steel pipe, steel fishplates along the piles' perimeters, or – under extenuating conditions such as swampy environs – iron dowel pins placed at the piles' centers. 100 years later, the near impossibility of splicing timber piles reliably is so well-established that even the Timber pile design and construction manual, a trade group publication, lists "difficult to splice" as the chief drawback of timber piles (Cahill 1923 A, Cahill 1923 B, Collin et al. 2016).

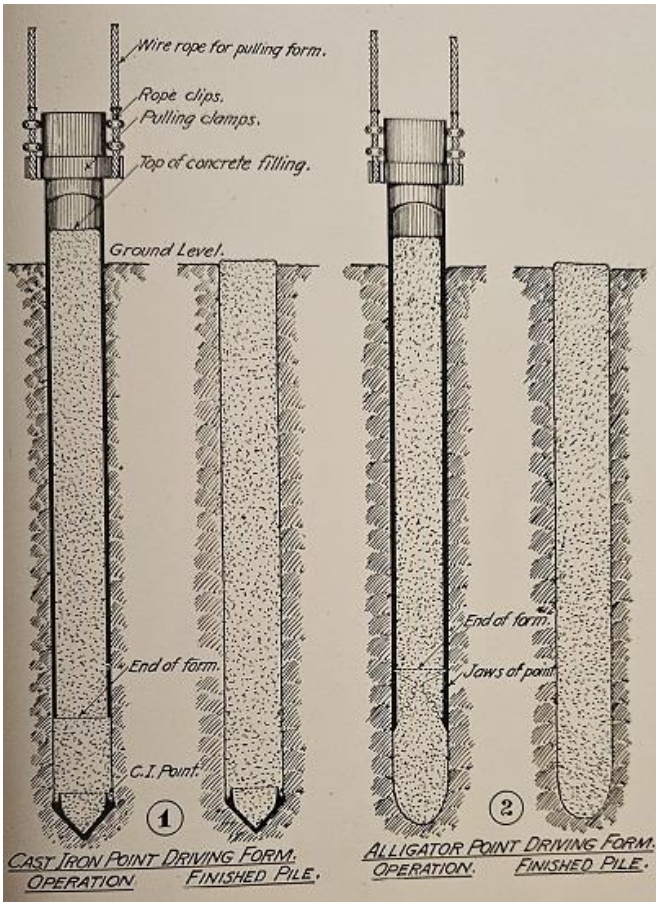


IMAGE 4: Diagram of the Simplex Concrete Piling Co.'s process for installing its cast-in-place piles. Source: Simplex (1907).

IMAGE 5: Simplex Concrete Piling Co. laborers pause for a photo while driving the firm's cast-in-place piles as shown in Image 4. Source: Simplex (1907).

Cahill's write-up also reflected that next to nothing was known about the theory of pile design in 1923. Contractors working on pile foundations back then had only dynamic formulas and static load tests available for estimating pile capacity. The first came into vogue after the steam hammer's debut began standardizing pile-driving. Subsequent civil engineers had used Newtonian mechanics to generate a plethora of formulas to estimate pile capacity using variables from driving such as the pile hammer's weight and fall height and the pile's penetration under each hammer blow. Most of the dynamic formulas also included a sizable constant referred to

as a "factor of safety" to account for the unknowns which then abounded in pile installation. Cahill mentioned dynamic formulas only in passing since a later section of Foundations, abutments and footings examined them at length. However, many contractors and engineers were acutely aware even during the Roaring Twenties that, as geotechnical legend Ralph Peck later groused, the formulas' "variety and number are matched only by their shortcomings." Most notably, they considered soil conditions and soil-structure interaction only via the extremely indirect metric of pile penetration. Vulcan Hammer, a prominent maker of pile hammers during the Jazz Age, went so far as to warn customers about using the formulas in its commercial literature (Cahill 1923 A, Cahill 1923 B, FHWA 2016, Peck et al. 1974).

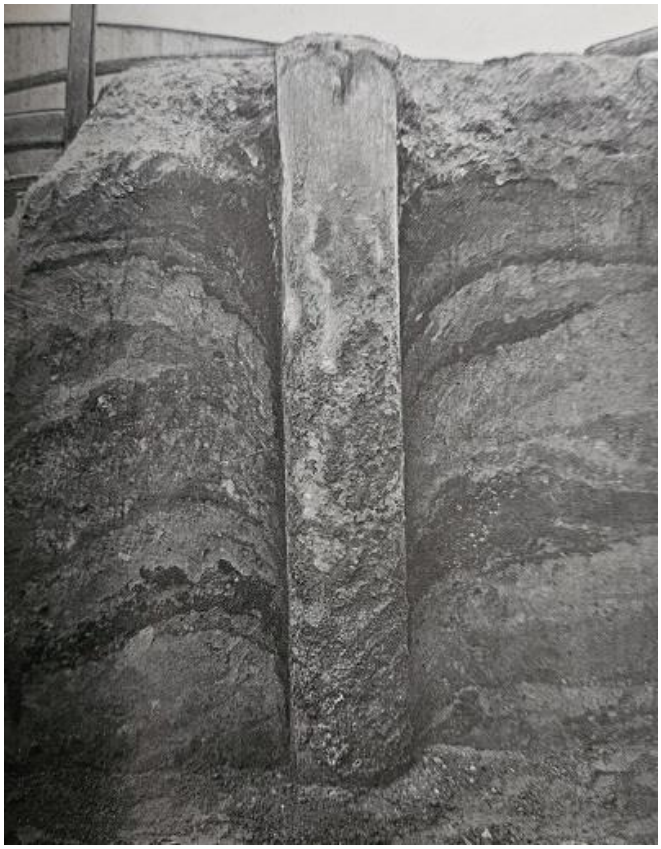


IMAGE 6: A cutaway of a pile and the surrounding soil after driving vividly illustrates the complexity of soil-static interaction during pile driving. Source: Simplex (1907).

IMAGE 7: A static load test underway on a pile group for a crane at a Westinghouse plant, Pittsburgh, PA, 1905. Source: Simplex (1907).

Static load tests in the 1920s involved installing a pile or pile group at a job site, loading the pile or group (often to several times its intended capacity), and measuring its subsequent settlement at intervals over some length of time. The tests, which remain in widespread use, show the field behavior of the loaded pile or group and reflect in situ geotechnical conditions to some extent by capturing the soil-structure interaction of the pile/s and the surrounding soil. They are thus better suited by orders of magnitude to assess pile capacity than dynamic formulas, and the FHWA describes static load tests as "the most accurate method of determining load capacity." However, the tests have drawbacks, such as unreliable prediction of pile settlement and multiple approved testing standards being in use. The latter problem was even worse during the Jazz Age; Cahill reviewed several static load test case histories in his portion of Section 3, and each test seems to have involved a unique procedure. On this basis, Ralph Peck accurately observed that foundation engineers and contractors of the Roaring Twenties placed "a somewhat misguided reliance on load tests in the field" – although he spared the tests the scorn he directed at dynamic formulas (Cahill 1923 B, FHWA 2016, IBC 2024, Peck 1993).

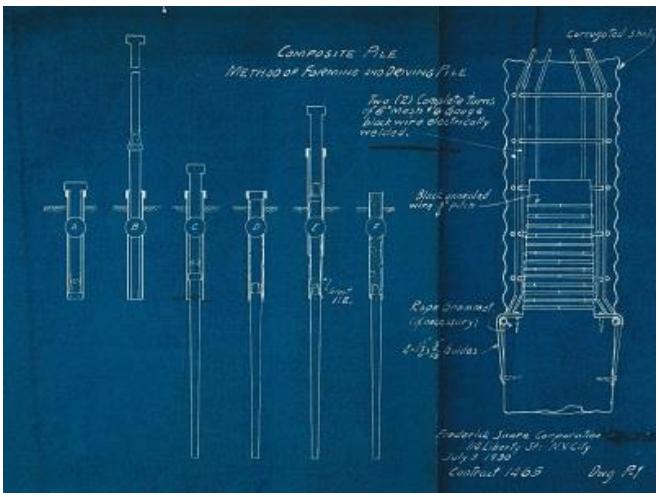
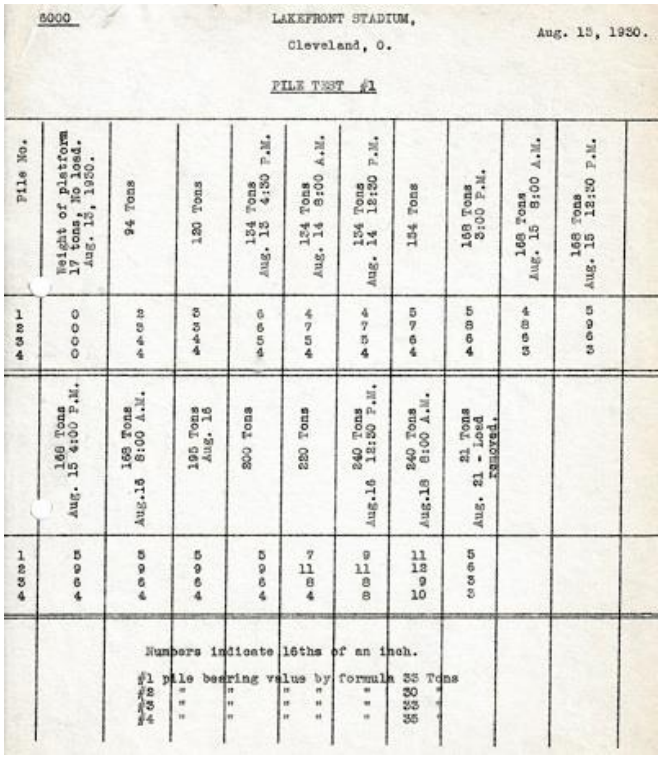


IMAGE 8: Blueprint by the Frederick Snare Corp. for piles used at Municipal Stadium in Cleveland, OH, 1930. The stadium was home to the MLB Indians and NFL Browns for decades. Source: Author's collection.

The challenge of further advancing pile-driving must have appeared Sisyphean to civil engineers of the 1920s. However, change lay just around the corner. Walter Cahill unwittingly put a finger on it when he shared an anecdote about a contractor who drove a reinforced concrete pile and found it had cracked at its leading end but not its top. A few years later, Australian civil engineer David Isaacs began pulling this thread and, ultimately, started unraveling the mysteries of dynamically assessing pile capacity. The topic was among the first that Isaacs, then in his mid-20s, researched during a distinguished career that included directing Australia's primary construction research laboratory for 25 years, developing techniques for the structural analysis of welded connections, and designing major bridges across his country. Isaacs also served in World War II, during which he played a key role in salvaging gold from an Australian liner sunk by German mines (AHP 2021, Cahill 1923 B, McInnes 2023).

In a 1931 paper on pile dynamics, Isaacs became one of the first civil engineers to point out that dynamic formulas' factors of safety were inaccurately named. He pointed out that true factors of safety accounted for aleatory uncertainty, while the "[factors] of ignorance" in the formulas accounted for the epistemic uncertainty then present in pile dynamics. Isaacs demonstrated the formulas' limits with an experiment in which he hung several pairs of thin steel rods horizontally. For each pair, Isaacs pulled the first rod back a given distance, released it and let it collide with the second

rod, measured the second rod's velocity after impact, and compared it to the predicted velocity of the rod after an elastic collision. He found that the second rod's measured velocity was consistently lower than Newtonian mechanics predicted, indicating that energy was not conserved during the collision. Isaacs also observed that the collisions became less and less elastic as he used increasingly longer second rods (Isaacs 1931).



6000 LAKEFRONT STADIUM, Cleveland, O. Aug. 15, 1930.

PILE TEST #1

File No.	Weight of platform 17 tons. No load. Aug. 12, 1930.	94 Tons	130 Tons	154 Tons Aug. 13 4:30 P.M.	154 Tons Aug. 14 8:00 A.M.	154 Tons Aug. 14 12:30 P.M.	154 Tons	168 Tons 8:00 P.M.	168 Tons Aug. 15 8:00 A.M.	168 Tons Aug. 15 12:30 P.M.
1	0	4	4	5	5	7	9	11	5	
2	0	4	4	5	5	11	11	12		
3	0	4	4	5	5	8	8	9		
4	0	4	4	5	5	4	8	10		
	166 Tons Aug. 15 4:00 P.M.	168 Tons Aug.16 8:00 A.M.	195 Tons Aug. 16	200 Tons	220 Tons	240 Tons Aug.16 12:30 P.M.	240 Tons Aug.16 8:00 A.M.	21 Tons Aug. 21 - Load removed.		

Numbers indicate 16ths of an inch.

#1 pile bearing value by formula 35 Tons

IMAGE 9: Results of static load tests on piles for Municipal Stadium (shown in Image 7) in Cleveland, OH, 1930. Source: Author's collection.

IMAGE 10: Australian salvagers pose with gold bars recovered during World War II from the wreck of the RMS Niagara. Source: AHP (2021).

Isaacs concluded from his experiment with colliding rods that energy transfer during the analogous process of pile driving was best examined using not Newtonian mechanics but wave mechanics. His conclusion, like so many scientific breakthroughs before and since, was simple yet startlingly profound. The failure of traditional elastic collision-based approaches to accurately describe the transfer of energy through a long, thin body impacted by a second, similar body explained why the dynamic formulas had never consistently and correctly predicted pile capacity and could never do so. Civil engineering codes still permit the use of dynamic formulas under certain circumstances, but Isaacs's discovery made clear exactly why they could not be trusted and why their use should always be discouraged (FHWA 2016, Isaacs 1931).

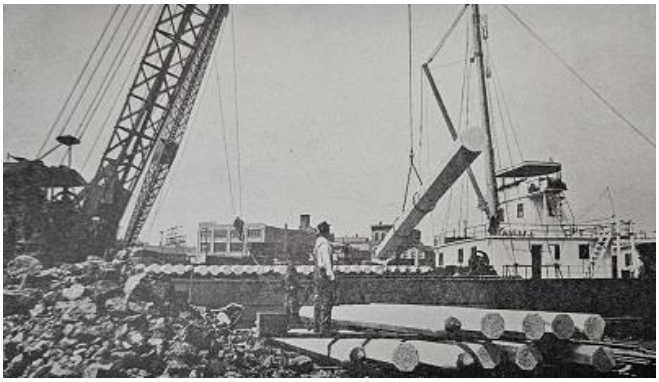


IMAGE 11: Octagonal reinforced concrete piles being unloaded at a dock. The knobs on the ends of some piles appear to be driving shoes. Source: Cahill (1923 B).

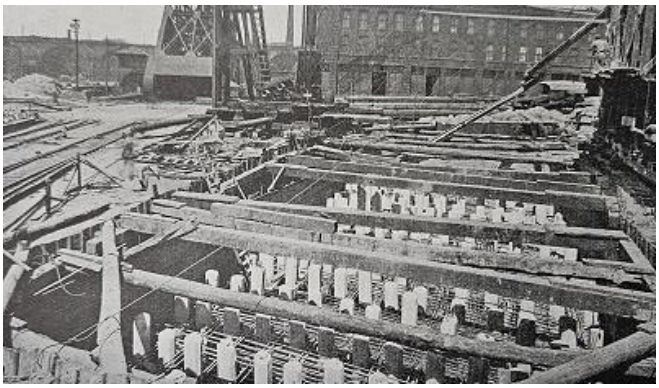


IMAGE 12: Square reinforced concrete piles driven for the Detroit-Superior Bridge, Cleveland, OH, mid-1910s. Source: Cahill (1923 B).

Having slain the Goliath of dynamic formulas, David Isaacs then laid out a new method for predicting pile capacity. First, he derived a series of equations to describe the behavior of impact-induced tension and compression waves through piles and hammers. Isaacs noted how the waves' intersections affected their amplitudes to a degree beyond what researchers in 1931 could quantify. He bypassed this issue by making the simplifying assumption that two intersecting waves' attenuation would be directly proportional to their amplitude; he added the caveat that further investigation of the phenomenon would be required. Next, Isaacs continued his wave equation derivations and showed that accounting for pile cushions and helmets made the equations significantly more complicated. Clearly, adding other pile-driving considerations such as geotechnical conditions and soil-structure interaction into the equations would make them untenably complex to derive, let alone apply. Instead, he turned his attention to how to expedite solving the equations he had already derived (Isaacs 1931).

Isaacs's solution for solving his wave equations for piles was just as ingenious as his decision to use the wave equations. He constructed a mechanical curve-sketching machine to create approximate plots of pile capacity versus penetration for a given pile, hammer, stroke, and cushion combination. The machine, which foreshadowed the need for more powerful computing tools for such problems, cut the time needed to sketch such a plot from several weeks to only 10 minutes. Isaacs then considered several hypothetical driving scenarios and compared the pile capacities he predicted using his plots to those predicted with several dynamic formulas. He deliberately chose values of pile penetration for which the formulas were known to be somewhat less unreliable. Isaacs found

that his plot-predicted capacities for these scenarios agreed well with those predicted using the formulas. He estimated that the plots predicted capacities with an accuracy of roughly ±30% and recommended a "factor of ignorance" for them of 1.25 – a dramatic reduction from those of the dynamic formulas (Isaacs 1931).

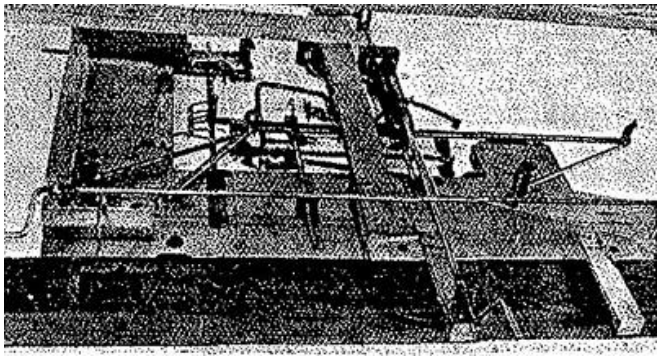


IMAGE 13: David Isaacs's mechanical curve sketcher for predicting pile capacity using wave mechanics, circa 1930. Source: Isaacs (1931).

Like many scientific pioneers, most notably Sir Isaac Newton himself, David Isaacs was well-attuned to his findings' limitations. "The new method cannot yet be taken as definitely giving all that is desired," he concluded, especially "in regard to the relationship between driving resistance and bearing resistance for various classes of ground, and the correlation of load tests with pile formulae." Isaacs never revisited pile dynamics in his research, but his discoveries on the subject paved the way for reliable techniques for dynamic pile assessment such as WEAP, PDA, and CAPWAP. The rise of modern computers made these breakthroughs possible, but all of them stemmed from Isaacs's painstaking derivations and brilliant curve-sketching machine. Any of these innovations may well have seemed like science fiction to Walter Cahill, Frederick Avery, and their civil engineering peers in 1923. The fact that such advances eventually came to fruition is a testament to their and Isaacs's determination to keep their field moving forward.

Acknowledgments

Sebastian Lobo-Guerrero, Ph.D., PE, BC.GE, M.ASCE (A.G.E.S., Inc.: Canonsburg, PA), reviewed the entry's technical content. Don Warrington, Ph.D., P.E., M.ASCE (Vulcan Foundation Equipment: Rising Fawn, GA) freely shared his expertise on pile driving's history and mechanics and suggested exploring Isaacs (1931) in more depth. Thomas Kennedy (Geopier: Davidson, NC), co-wrote a 2021 version of the entry posted on an independent webpage.

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(https://www.geoinstitute.org/news/jazz-age-geotechnical-engineering-part-4-foundations-and-piles)

ΝΕΑ ΑΠΟ ΤΙΣ ΕΛΛΗΝΙΚΕΣ ΚΑΙ ΔΙΕΘΝΕΙΣ ΓΕΩΤΕΧΝΙΚΕΣ ΕΝΩΣΕΙΣ

International Society for Soil Mechanics and Geotechnical Engineering

ISSMGE News
www.issmge.org/news

Opening of Abstract Submission for ICSE-12

ISSMGE Secretariat / TC213 / 02-07-2024

The Abstract Submission for the 12th International Conference on Scour and Erosion (ICSE-12) is now open at https://icse12.cqjtu.edu.cn/Submission/Abstract_Submission.htm.

2024 International Advanced School on SSI-OS and 2024 International Workshop on CompDSSI

ISSMGE IT Administrator / TC203 / 12-07-2024

We are excited to share the full programme for the 2024 International Advanced School on Soil-Structure Interaction in OpenSees: Strategies, Applications, and Perspectives (SSI-OS), taking place in Assisi from 9-11 September 2024, and the 2024 International Workshop on Computational Dynamics Soil-Structure Interaction (CompDSSI), scheduled for 11-13 September 2024.

2024 International Advanced School on SSI-OS

2024 International Workshop on CompDSSI

Important Dates:

- Final registration deadline: July 30, 2024
- 2024 SSI-OS: September 9-11, 2024
- 2024 CompDSSI: September 11-13, 2024

You can find more information on the official website: https://compdssi.altervista.org/.

We look forward to your participation and engagement in these exciting events.

In Memoriam Michel (Mike) GAMBIN

ISSMGE IT Administrator / General / 18-07-2024

En mémoire Michel (Mike) GAMBIN

Michel Gambin est décédé le 30 juin 2024 dans sa 94ème année. Il est diplômé de l'Ecole Nationale des Ponts et Chaussées (PARIS) en 1954 où il reçut entre autres les enseignements du Prof. Jean Kerisel, il obtint en 1955 un Master of Arts de lUniversité Harvard et M.I.T. (USA) où il suivit les cours de MM. Karl Terzaghi, Arthur Casagrande et Donald W Taylor.

Vice-président du Comité Français de Mécanique des Sols et de Géotechnique (CFMS) de 1998 à 2003, Michel Gambin a prononcé la conférence honorifique Coulomb en 2010 : «les théories et leur évolution face à la réalité en géotechnique» (https://lnkd.in/dr-v8-HD), partageant ainsi l'expérience de sa longue carrière commencée aux côtés de Louis Menard, poursuivie chez Soletanche puis Apagéo.

Michel Gambin est connu de toute la communauté géotechnique comme un des grands promoteurs de l'essai pressiométrique.

Co-directeur de la publication de la revue Sols-Soils, il fut un infatigable défenseur de la diffusion de la connaissance et de la pratique au sein de la communauté géotechnique, en particulier francophone, par de nombreuses actions dont nous citons ici les plus marquantes :

- Relecteur et éditeur interne de toute la documentation technique de Louis Ménard (les fameuses notices Ménard «D»)
- Fondateur, et rédacteur en chef de 1995 à Septembre 2007, de la Lettre de la géotechnique, il passe beaucoup de son temps à rassembler les informations, résumés de congrès internationaux, bibliographies, comptes-rendus de lectures, notices biographiques, etc. (https://lnkd.in/dKmpRc3d)
- Animateur de la Commission pour la coopération et la Francophonie en Géotechnique.
- Création en 1999 d'un Comité Transnational des Géotechniciens d'Afrique
- Présidence du groupe de normalisation européen «Essais d'expansion en forage»
- Organisateur et co-éditeur du Symposium IPS5-PRESSIO 2005 «50 ans de pressiomètres»
- Très nombreuses contributions scientifiques dans le monde entier : articles, conférences, organisation de congrès.

Le Prof. Roger Frank la interviewé en 2009 (Reminiscences, publié dans le Bulletin ISSMGE), ce qui nous permet de disposer de nombreux détails intéressants sur sa formation et sa carrière, sur ses travaux concernant les essais au pressiomètre Ménard, le compactage dynamique, etc. Il décrit également ses liens avec le CFMS et l'ISSMGE et ses activités

extrascolaires. Veuillez consulter: https://htc.issmge.org/uploads/contributions/Michel-Mike-Reminiscences-ISSMGE-Bull-June-2009.pdf

La bibliographie complète de Michel GAMBIN : https://www.apageo.com/bibliographie-de-michel-gambin

In Memoriam Michel (Mike) GAMBIN

Michel Gambin passed away on 30 June 2024 in his 94th year. He graduated from the Ecole Nationale des Ponts et Chaussées (PARIS) in 1954, where he was taught by Prof. Jean KERISEL. He also received a Master of Arts degree from Harvard University and M.I.T. (USA) where he was taught by Karl Terzaghi, Arthur Casagrande and Donald W Taylor.

Vice-president of the French Society for Soils Mechanics and Geotechnical Engineering (CFMS) from 1998 to 2003, Michel Gambin gave the honorary Coulomb lecture in 2010: "Theories and their evolution in the face of geotechnical reality" (https://lnkd.in/dr-v8-HD) , sharing the experience of his long career, which began alongside Louis Menard and continued at Soletanche and then Apagéo.

Michel Gambin is known throughout the geotechnical community as one of the great promoters of pressuremeter testing.

Co-publisher of the journal Sols-Soils, he was a tireless advocate of the dissemination of knowledge and practice within the geotechnical community, particularly in the French-speaking world, through a wide range of activities, the most notable of which are listed below:

- Proofreader and in-house editor of all Louis Ménard's technical documentation (the famous Ménard "D" notices)
- Founder and editor-in-chief of the Lettre de la géotechnique from 1995 to September 2007, he spent a great deal of his time gathering information, summaries of international conferences, bibliographies, book reviews, biographical notes, etc. (https://lnkd.in/dKmpRc3d)
- Coordinator of the *Commission pour la coopération et la Francophonie en Géotechnique*.
- Creation in 1999 of a Transnational Committee of Geotechnicians from Africa.
- Chair of the European standardisation group "Expansion tests in drilling".
- Organiser and co-editor of the IPS5-PRESSIO 2005 Symposium "50 years of pressure gauges".
- Numerous scientific contributions worldwide: articles, conferences, organisation of congresses.

His impressive bibliography is available in French here: https://www.apageo.com/bibliographie-de-michel-gambin

Prof Roger Frank interviewed M. Gambin in 2009 (Reminiscences, published in the ISSMGE Bulletin); this document gives many interesting details on his education and his career, on his work about Ménard Pressuremeter testing, dynamic compaction, etc. It also describes his links with CFMS and ISSMGE and his extra-curricular activities. Please, see: https://htc.issmge.org/uploads/contributions/Michel-Mike-Reminiscences-ISSMGE-Bull-June-2009.pdf

Benchmark examples for the 2nd Generation of Eurocode 7 - Submit your solution to test the new code

ISSMGE Secretariat / ERTC10 / 31-07-2024

At the finish line of development of the 2nd generation of Eurocode 7, within the process of its testing, a benchmarking exercise for basic design calculations has been developed. As ISSMGE ERTC10 on Evaluation of Eurocode 7, together with CEN TC250/SC7, **we would like to invite the geotechnical community to test the new version of the standard** using those examples:

- Link to design examples: Benchmark examples for the 2nd Generation Eurocode 7
- The deadline for submission of solutions is set for **September 15th, 2024**
- Solved examples (one or more) can be sent to the email address of CEN TC250/SC7 Secretary: Geert.Kraijema@nen.nl - starting the subject line with: *SC7-BENCHMARK-CALCULATIONS*
- The final draft version of the code can be obtained in European countries through respective National Standard Bodies.

The examples are a part of the set prepared under CEN TC250/SC7/Task Group B2 on Design examples, under leadership of prof. Loretta Batali. The full set of the examples will be published in open access later this year in a JRC Report.

The solutions prepared under TG-B2 with the summary of solutions provided by the community will be presented at the Eurocode 7 Seminar in Paris, France (21-22.10.2024). Information about this event can be found in the flyer.

If you would like to learn more about the new Eurocode 7, please have a look at the recordings of our joint ISSMGE ERTC10 / CEN TC250/SC7 / NEN webinars. If you want to find out more about the Eurocodes in general, please visit the dedicated website of the European Commission.

Kind regards,

Dr. Witold Bogusz, MEng PhD CEng MICE
Chair of ISSMGE ERTC10 Evaluation of Eurocode 7
witold.bogusz@jacobs.com

ISRM International Society for Rock Mechanics and Rock Engineering

47th ISRM Online Lecture

The 47th ISRM online lecture will be delivered by **Prof. Ranjith Pathegama Gamage**, from Australia. The lecture title is: "**Deep Geothermal Energy: A Key Player in the Sustainable Energy Mix**". It will be broadcast in September on a date to be announced, from the **Online Lecture's page**.

Prof. Ranjith Pathegama Gamage is a distinguished academic and researcher in the field of Geomechanics Engineering, currently holding a professorial position at Monash University. He obtained his BSc in Civil Engineering from the University of Moratuwa in Sri Lanka. He then pursued his PhD at the University of Wollongong in Australia, where his research focused on multiphase flow in fractured rock media. Prof. Ranjith began his academic career as an Assistant Professor at Nanyang Technological University in Singapore, where he served for three years. He then joined Monash University,

where he is currently the Professor of Sustainable Development of Energy and Resources. He is the founder and director of Deep Earth Energy Laboratory at Monash University.

Prof. Ranjith is a leading figure in sustainability, energy innovation, and geomechanics. His research tackles key challenges in sustainability, industry innovation, energy, and climate change, including advanced carbon sequestration and geothermal energy research. He also pioneers large-scale hydrogen storage in geological formations and innovative rock-breaking technology for mineral and energy extractions. Additionally, he invented ecogreen cement made from waste materials to promote sustainability and achieve carbon neutrality. He serves on the editorial boards of numerous journals, including as Editor-in-Chief of the Geomechanics and Geophysics for Geo-Energy and Geo-Resources journal.

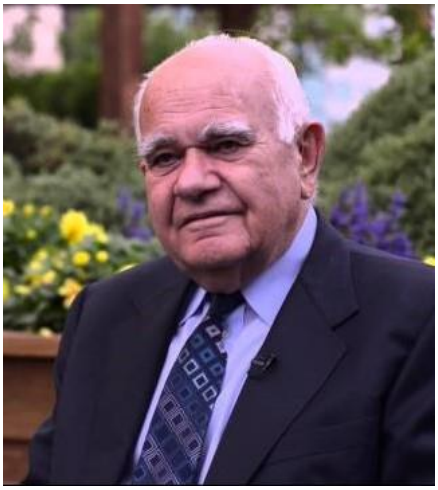
Prof. Ranjith has an impressive portfolio of over 600 peer-reviewed publications, including 1 book, 10 book chapters, and 490 journal papers spanning Earth Sciences, carbon sequestration, and energy. His commitment to academic mentorship is evident in the successful guidance of over 100 PhD graduates, including two Rocha Medallists, and 40 postdoctoral scholars.

Throughout his career, Prof. Ranjith has been honoured with numerous accolades and fellowships. He is an elected Fellow of the Australian Academy of Technology and Engineering, an International Fellow of the Chinese Academy of Engineering, a Foreign Fellow of the Indian National Academy of Engineering, and a member of the European Academy of Science and Arts

The lecture will broadcast in September, on a date to be announced.

News

https://www.isrm.net



Evert Hoek 1933-2024 2024-07-09

We were informed by Mark Diederichs, on behalf of Evert Hoek's family, that Dr. Evert Hoek passed away peacefully on the morning of Saturday, 6 July 2024.

Evert Hoek was much loved by his family and admired and valued as a friend, teacher and colleague. A true giant in rock mechanics, rock engineering and in life, we will miss him greatly. In the ISRM we don't forget his contributions, namely the memorable 1st ISRM Leopold Müller Lecture in 1991 "When is Design in Rock Engineering Acceptable". Our thoughts are with his family and friends.

News

https://about.ita-aites.org/news

Interested in Young Professional Think Deep Programme in Hong Kong? 08 July 2024

ISOCARP in partnership with ITACUS (International Tunnelling and Underground Space Association's Committee on Underground Space) have recently made an agreement with the Geotechnical Division of the Hong Kong Institution of Engineers HKIEGD – which entails a Young Professionals Think Deep Program (YPTDP) Workshop. The workshop will be on October 14-18, 2024 in Hong Kong.

The Young Professional Think Deep Programme to be hosted in Hong Kong is a 5-day comprehensive workshop. Participants from overseas and Hong Kong will collaborate to complete a fascinating capstone project on design of an industrial / a commercial / a combined industrial-commercial cavern development in Hong Kong, compared to existing examples of underground quarry-cum-cavern developments.

Join us in this fascinating project. It will be an unforgettable experience for all participants. Make sure you prepare an excellent application! The deadline for applications for both participants and coordinators is 21st July.

We are looking for senior Coordinator / Tutor: https://isocarp.org/app/uploads/2024/06/YPTDP-HK-Call-for-YPP-Coordinators.pdf

We are looking for young professionals below 35 years of age: https://isocarp.org/app/uploads/2024/06/20240625-YPTDP-HK-Call-for-YPP-Participants.pdf

Programme link: https://isocarp.org/2024-hong-kong-ypp/

ITA seeks a visionary leader as its Executive Director 08 July 2024

We are hiring:

- A leader with experience, vision, and drive,
- A professional with passion to implement a strategy for a progressive future,
- A manager who gets the best from the team,
- A citizen of the world who enjoys travelling and views the world as one.

Be the Executive Director of this 50-year established NGO, founded under the auspices of the United Nations, and be responsible for steering its Secretariat and building out its relevance and global engagement.

Lead and build the Secretariat and implement strategies for the next 50 years of the Association.

You are an experienced administrator and team manager, fluent in English (spoken and written) with additional language skills an asset. You will interact with the President and Executive Council to provide the support services essential for keeping the Association of 80 Member Nations relevant and effective.

Who? – Executive Director of the International Tunnelling and Underground Space Association (ITA), an association to promote the essential underground infrastructure that underpins our world.

What? – A fulltime leader of the Association's Secretariat for the smooth and efficient functioning of the Executive Council and relations with its Member Nations, Committees, Working Groups, and industry Prime Sponsors, supporters, members, and associates.

Click here to access a detailed job description.

When? – No time to lose! Closing date is 1 August 2024 for evaluation during August and a decision of appointment during September 2024.

Where? – You will work remotely for the Swiss - based Association, travel to in-person events, and join regular virtual group meetings.

Why? – Realise your career goals of directing an international organisation. Remuneration will reflect the global focus of the position and your leadership skills and experience.

How? – Enjoy the work, revel in the success and relevance of the Association through your efforts and dedication.

Send your letter of Interest and CV/Resume to itaedsearch@gmail.com

ITACET LUNCHTIME LECTURE SERIES #37 09 July 2024

The thirty-seventh instalment of the Lunchtime Lecture Series will focus on 'Health & Safety lessons from recent projects' in collaboration with ITA Working Group 5

This LLS#37 will run on July 9th at 13:00 CET time

The episode will feature three lectures and will finish with a Q&A with all speakers.

- Tunnel disaster response - an introduction in emergency management during construction phase - Michael Halwachs
- Emergency management in long deep tunnel during construction phase: smoke management and evacuation strategy - Walter Lanciano

Sign up for free subscription: Lunchtime lecture series#37 | Itacet

In memoriam - Olivier Vion (1962-2024) 20 July 2024

Through the past decades, the energy and foresight to lead the management of the ITA International Tunnelling and Underground Space Association has been in the hands of Olivier Vion, a man of dedication and commitment, going beyond the brief for the good of the Association and its mission. As Executive Director of the ITA from 2009 to 2023 and as part of the ITA family from the early 1990s as Editor of the ITA Tribune magazine, Olivier is widely known and respected as a guiding force of the Association and all its activeities.

In recognition of his dedication and leadership, it is with shock and deep sadness to announce that Olivier died on Saturday, 20 July 2024, in his hometown Toulouse, France, surrounded by his loving family and after a short illness related to an aggressive cancer.

Olivier was an experienced administrator and skilled diplomat, qualities that he called upon heavily in his more than 14 years as ITA Executive Director and in managing the ITA Secretariat, guiding the ITA Executive Council, and orchestrating the activities of the ITA community of 80 Member Nations, many Working Groups, several Committees, and the international industry of companies and individuals engaged in the promotion and development of underground space and infrastructure.

After an early education at Saint Jean Hulst, a private Catholic high school and college in Versailles from 1972 to 1980, Olivier earned an EUR-ACE diploma in engineering from the ESTP school of major projects in Paris in 1986, followed with a Masters' Degree in Human Resources from the PSL Dauphine University of organizational and decision sciences in 1987 and concluding with a further education course in 2010 at the CHEDD, Cycle of Advanced Studies in Sustainable Development designed to guide the strategic decisions of organizations by integrating the principles of sustainable development.

This education laid the foundation of Olivier's wide and varied career, dedicated in the most part to public service and civic duty. As well as his long association and leadership of the ITA, Olivier held administrative positions with several societies and local and national government and non-governmental organisations including:

- A member for more than 24 years of Eurosud-Transport, an organisation promoting the use of railways in South West Europe, rising to be a Vice-President and its Treasurer
- A member and President of the Midi Pyrenees branch of the Association URISMIP, Regional Union of Engineers and Scientists, that brings together, at the national level, French engineers and scientists with the mission to strengthen the network of the Ecole Centrale de Lille and promote synergy with other Central Network Schools in the region
- Member and President of the UDOGEC09-31 Union of Catholic Education Management Organizations in the Haute Garonne and Ariege regions of France, a non-profit association created by the Catholic Education Board to serve as an educational institution
- Member of the Toulouse CODEV, Council of Metropolitan Development, a participatory assembly that brings together numerous stakeholders and constitutes an interface between the Toulouse Métropole urban community and local civil society

- Member of the Board of Directors of ORQUASI, the Regional Observatory for the quality of infrastructures in the southern Occitanie region of France

As testament to his energy, these engagements were concurrent with Olivier's engagement with the ITA, prior to which he worked independently and with major companies in France promoting civil engineering and tunnelling as Managing Director of the marketing company Acrotere and Editor of its European Newsletter of Underground Works ; Commercial Deputy Director of DTP Terrassement in charge of bidding for large projects in earthmoving works all other France ; and as Development Engineer of Lafarge Aluminates, developing special cementitious products to be used in underground infrastructure.

From his earliest assignments as communications manager for ITA, Olivier was appointed in 2008 to the position of Executive Director, one of the most influential and responsible positions in the Association and across the international underground industry. As the right-hand man for six ITA Presidents, Olivier oversaw exponential growth of the ITA and its operations with Member Nations increasing from 54 in 2008 to 80 in 2024. This magnified the responsibility of the Executive Director and of the operations of the Secretariat that he directed.

Along with a tremendous increase in administrative tasks, the increase in Member Nations also required more extensive international travel to cement the links and guide the activities of the members. Untiringly and with total commitment, Olivier took on this duty as part of all efforts to advance the mission of the ITA.

When Olivier resigned from ITA in early 2023, to pursue further public and civic ambitions in France, he stayed on when asked, to be a consultant to manage the celebrations of the Association's 50th anniversary at the World Tunnel Congress and ITA General Assembly of 2024 in Shenzhen, China. After its founding in 1974, there was great cause for celebration. Under his efforts, seven of the 17 Presidents of the Association were at the event in person and a special plenary session of the near 3,000 delegates honoured the presidencies of part Presidents and the achievements of the Association through its history.

Everyone associated with the ITA through the years will have enduring memories of Olivier, of his presence at every General Assembly during his tenure as Executive Director, of his management of so many ITA events including the ITA Tunnelling Awards since their inception in 2015, and of his capable stewardship of all things associated with smooth management and operation of the Association and its universal mission as a recognised non-governmental organisation of the United Nations, to promote the vital development of underground infrastructure for the betterment of the lives of all human beings of the world.

Among his many personal qualities, Olivier will be remembered for his boundless sense of duty to serve, his unwavering commitment to obligations, his ability to bring people together, and his capacity to foster the best from his work colleagues and team players. His steady demeaner, cheerful approach to life, and ever pleasant manner, with a quick recourse to humour and laughter are traits that friends and colleagues will remember of being in Olivier's company.

Olivier has left an indelible mark on the ITA community and beyond. His leadership inspired many around the world to promote the use of underground space. His legacy will live on through the numerous projects and initiatives he championed and his memory will continue to inspire future generations of ITA leaders and guide its future endeavours and undertakings.

R.I.P. Olivier.

Scooped by ITA-AITES #120, 10 July 2024

GDC signs full funding agreement for Hudson Tunnel Project | U.S.A

China claims 10 world records for new bridge/tunnel sea crossing

'Faster, more reliable and direct': Inside the underwater rail tunnel linking Denmark and Germany

Chinese crews drill through Xinjiang glacial area for 'super-long' highway tunnel

Mary the tunnel boring machine makes U-turn after HRBT expansion work | U.S.A

Discover Montreal's hidden underground wonders | Canada

Registration opens for WTC2025 | Sweden

Europe's longest tunnel that an incredible £98m | Norway

Preferred bidder announced for SRL East tunnelling works | Australia

New release introduces children to tunnelling

Scooped by ITA-AITES #121, 30 July 2024

NEOM completes light rail tunnel and underground parking construction on THE SPINE | Saudi Arabia

Beyond drones: Why the future of delivery is going underground

New pumped storage hydro project planned for Scotland

Tunnelling under way on Polish road tunnel

Charting a sustainable future for India's GM crop policy: An urgent need for clarity and consensus | India

Incredible plan for new £100m tunnel connecting UK to remote islands

Digging deep to build Sydney's Western Harbour tunnel | Australia

Insane plan build massive new tunnel between London and New York

HS2 | TBM drive for 13.5km twin-bore Northolt Tunnel under London reaches halfway | UK

GDC signs full funding agreement for Hudson Tunnel Project | U.S.A

INTERNATIONAL GEOSYNTHETICS SOCIETY

www.geosyntheticssociety.org

News

Sustainability Boost For Iconic Dubai Museum With Geosynthetics July 5, 2024

A suite of geosynthetics materials has helped reinforce soil slopes and create a rich environment for greenery to thrive at a Dubai landmark.

The latest IGS Sustainability Case Study details how Maccaferri Middle East implemented a range of geosynthetics materials to support significantly varying inclines on which the Museum of the Future sits. A novel approach was needed to retain the soil structures and enable greenery to flourish into the future.

The profile details the considerable sustainability gains achieved through the use of geosynthetics as well as cost and time savings.

Launched in March, last year, the IGS Sustainability Case Study series shows how geosynthetics can offer a more sustainable solution in construction projects. Available as one-page pdfs, the profiles are easily downloaded and shareable.

Access the latest case study and more on the IGS Sustainability web page here, where you can also find more resources including eBooks, videos, and papers.

+++ Does your geosynthetics project demonstrate how geosynthetics benefit the environment? For a chance to feature in an IGS Sustainability Case Study, email IGS Secretariat Manager Elise Oatman at igssec@geosyntheticssociety.org with some basic details.

Watch The IGS Foundation's New Video July 8, 2024

A handy guide to the work of the IGS Foundation (IGSF) and how the geosynthetic community can get more involved is available to view now.

IGSF Board member Kent von Maubeuge hosts the short film, where he summarises the aims of the IGSF, the kinds of projects it has funded in the past, and how donors can get involved. Mr von Maubeuge also makes an impassioned plea for more people to apply for grants.

The video is aimed at raising awareness about the IGSF and to boost engagement. Its format is also a quick and easy way for IGS members and IGSF supporters to spread the word among their networks.

The film was created at the recent GeoAmericas 2024 conference in Toronto, Canada, where the IGSF sponsored the IGS Diversity Task Force Lunch event, and funded several places for students to attend.

Mr von Maubeuge said: "I'm delighted to launch this video which offers a potted picture of the IGSF's mission and objectives, summarising what we do and why it is so important for the geosynthetics industry to support our ambitions. I would urge IGS members to share the film with their networks so together we can grow our impact and effectiveness for the benefit of all."

Learn more about the IGS Foundation, donating, and applying for funding, by visiting its website here.

https://www.youtube.com/watch?v=wtqPdiytm7I

Eight Young Engineers Recognized At GeoAmericas Student Awards July 11, 2024

Young regional engineering talent was celebrated at the 5th GeoAmericas IGS Student Awards.

Organized by the IGS Young Member Committee, the accolades aim to showcase research and boost networking opportunities for students around the world. During each regional conference, Chapters from that region nominate their top student. For GeoAmericas 2024 students were also able to self-nominate for a number of open awards.

This year, diverse papers once again demonstrated the students' insight and passion for geosynthetics, winning their authors entry to the 5th GeoAmericas conference to present their papers, and certificates presented by IGS President Sam Allen.

This year, the GeoAmericas regional winners and their papers were:

- Etienne Gonzalez, IGS North America, University of Texas at Austin '*A sensitivity analysis of the parameters contributing to load development in geogrid pullout testing*'
- Dawie Marx, IGS North America, The University of Texas at Austin '*A sensitivity analysis of the parameters contributing to load development in geogrid pullout testing*'
- Antara Arif, IGS North America, Queen's University '*Evaluation of the performance of bituminous geomembranes (BGMs) as vapour barriers*'
- Han Wang, IGS North America, University of Illinois Urbana-Champaign '*Bender element sensor technology to quantify local stiffness enhancements of geogrid-stabilized aggregate specimens*'
- Ashray Saxena, IGS North America, The University of Texas at Austin '*Fracture characteristics of asphalt mixtures containing asphalt millings with geosynthetic fragments*'

- Ana Carolina Pires, IGS Brazil, University of Brasilia '*Evaluation of the behaviour of pipes buried in geosynthetic reinforced ground*'

- Jose Wilson da Silva, IGS Brazil, Federal University of Sao Carlos '*Effect of bentonite particle size on GCL hydration by lateritic soils*'

- Daniel Zuniga, IGS Chile, University of Chile/Axios Engineering '*GCL – LLDPE geomembrane interface friction angle evaluation and stability analysis of a valley fill leach pad project*'

Students expressed the value of being able to attend, network and advance their learning at such a global event.

Han said: "I got to know many manufacturers and distributors of geogrids/geotextiles which my research work is highly related to. It was [also] very fun and inspiring to make connections with all the young members."

Etienne said: "Overall, the conference provided an invaluable platform to showcase my work, engage in intellectual discussions, and establish connections with like-minded individuals in the field of geotechnical engineering."

Jose said: "It was three days of great learning and great lectures. The panel that discussed geosynthetics in mining and the plenary discussion on the standard for welding at low temperatures was the highlight of the event [for me]."

Antara said: "The inspiration received through the academic recognition and financial assistance from the student award was key. I was overwhelmed with joy to receive the certificate from the IGS President at the ceremony."

Daniel said: "The best highlight was the people I got to meet, engineers from other countries and students as well. Seeing and talking to professors who are legends in the field – it was an honor to meet them all. I hope to be able to give back in the future in some way for all the support I received."

Ashray said: "GeoAmericas 2024 was a fulfilling experience, offering opportunities for learning, collaboration, and recognition. I look forward to applying the knowledge gained and contributing further to the advancement of geosynthetics technology in the future."

And Ana was among students who said the GeoJeopardy geosynthetics quiz for student teams was among their event highlights.

Award-winner Dawie Marx, who is also chair of the IGS Young Members Committee, said: "These inspiring papers have again demonstrated students' rich understanding about the uses and applications of geosynthetics. The Committee is dlighted these awards continue to provide a platform for students to share and advance their ideas on a global stage."

IGS Student membership is free and entitles members to a host of privileges including access to journals and other online resources, discounted rates on IGS conference entry, and eligibility to enter IGS Awards. Join here.

IGS Guatemala Chapter Launched July 16, 2024

The IGS has welcomed its newest Chapter – IGS Guatemala.

Three years of hard work culminated in the Chapter being ratified at the recent 5th GeoAmericas conference in Canada. It is the first to form in the Pan-American region since IGS Panama launched in 2014.

Francisco Pizarro, chair of the IGS Pan-American Regional Activities Committee (RAC), which supported organizers in their Chapter journey, said: "This is a huge accomplishment. Creating a Chapter in Guatemala has been a long desire within our organization. Guatemala is a country with several challenges from the geography, climate and geotechnics, and we are confident this Chapter will plug the gap that currently exists in the knowledge and art of geosynthetics here.

"It is also a great news for the connections being made with the local geotechnical society. It shows how complementary they are and how we can cooperate with each other."

The Chapter's first President, and now Vice-President Alberto José Pérez Zarco said the journey had its challenges but support from the IGS Pan-American Committee including members Mr Pizarro and Professor Tim Stark assured its success.

"We are delighted with this achievement and what this will mean to advance the use and understanding of geosynthetics in the country," said Mr Pérez Zarco. "We already have 22 active members and one of our main focuses will be to grow this, especially in the student and corporate sectors, and in particular ensuring the engineering community understand the benefits and value of being part of the IGS."

The Chapter is already working on an inaugural event in September, and looking forward to presenting a keynote lecture at the National Congress of Earthquake and Geotechnical Engineering in October.

The Chapter's other Officers are:

- President – Hector Valdez
- Secretary – Ernesto Calzia
- Treasurer – Andres Fernando Herrera
- Director General – Rodolfo Semrau
- Directors – Luis Leiva and Pedro Rafael Pinetta Fortin

For more information about IGS Guatemala, contact Alberto José Pérez Zarco at jperezarco@gmail.com.

Interested in forming your own Chapter? Read how here.

*** Watch this space for an in-depth interview with Alberto in our '10 Questions With…' series.

IGS President's Mid-Year Message To Members July 22, 2024

Dear IGS Colleagues,

I hope this message finds you well as we have passed the mid-year point of 2024.

It's been good to see the rhythm of IGS events firmly re-established. Already this year, IGS North America hosted a fantastic 5th GeoAmericas conference in Toronto, with over 700 participants and 70 exhibitors from 46 countries.

In addition to the well-chosen technical focus on '*Connecting state of the art to state of practice*', the conference introduced several innovations including a plenary 'GeoJeopardy' quiz for IGS student members, a fascinating plenary session on how we can embrace diversity to drive innovation and leverage talent, and a dedicated session on climate change and geosynthetics. It was also encouraging to see engineering practitioners well-represented amongst the keynotes. While at Toronto we welcomed several new IGS Council members, met the leadership of our Pan American Chapters, agreed to establish our newest Chapter, in Guatemala, and selected our Colombian Chapter to host the 6th GeoAmericas in 2028.

IGS GeoJeopardy Student Champions at GeoAmericas 2024

As I write this message, I have just returned from a successful 2nd GEOANZ conference in Melbourne, with a focus on key issues of societal concern including mining, environmental containment, and sustainability. It's great to see the team in Australia and New Zealand in action as they prepare to host GeoAsia 8 in Brisbane, in just eleven months' time.

TC-Reinforcement and TC Hydraulics Barcelona Workshop attendees

Last month I had the pleasure to attend an excellent joint workshop organised by our Hydraulics and Reinforcement TCs in Barcelona on the theme of reinforcement and drainage in soil structures. In May, our Reinforcement TC ran a workshop at the GeoShanghai conference and the Stabilisation TC is working on plans for a workshop in Hyderabad, India in October.

While we have an active program of IGS events, I've been working to make our voice heard beyond our established audiences. Earlier this month I was a guest speaker at the Global Energy Transition Congress in Milan, where I had the opportunity to introduce geosynthetics to global leaders whose industries can benefit enormously from geosynthetics, but who have not previously heard of them. These opportunities to share our geosynthetics message to those related partners in the cause for a more sustainable future are key for our growing industry, and we are committed to leveraging them as often as possible.

Promoting geosynthetics at the Global Energy Transition Conference

Many of our IGS members are also actively involved in key standards bodies, working in particular with the European Committee for Standardization (CEN) across various working groups relating to leaching, environmental performance, circular economy and microplastics, and with the American Society for Testing and Materials (ASTM) on sampling practice for microplastic measurements and on a guide for carbon calculations, which will take advantage of the effort we have put into the IGS Sustainability Benefits Calculator. With strong IGS support, the possibility of new jointly published standards by ISO and ASTM International will serve our industry very well.

Signing a MOU with the GMA at GeoAmericas 2024

I have also been working to coordinate efforts with our industry lobbying groups including EAGM, GMA and ABINT. This was initiated in Rome at the 12th ICG and has continued with a joint cooperation agreement with the North American Geosynthetic Manufacturers Association. We are all interested in maximizing our effectiveness by not creating redundant efforts and instead, working together to progress our industry serving the functions we are each uniquely able to.

I want to say big "thank you" to the leadership of all our Chapters for responding to our Chapter Survey. We received full responses from almost every Chapter and this has been enormously helpful in providing a global picture of how our Chapters are delivering for Members, which we presented to the IGS Council at their recent meeting in Toronto. Since then we have discussed the findings in more detail with Regional Chairs. Your Vice President, Edoardo Zannoni is leading an exercise to contact Chapters to share the findings and discuss how we can provide further support to you.

Work continues at pace to develop the inaugural IGS Geosynthetics Handbook. We have completed a review of the first draft and aim to publish in early 2025. It will include an introduction to geosynthetics, with chapters devoted to specific applications. The Handbook will augment the very important IGS application-based professional development short courses.

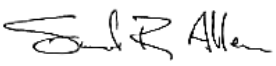
It's been great to see that with Member support, we are building up our library of corporate case studies and sustainability case studies. These are an ideal way to share good practice within our community and to showcase the benefits of geosynthetics to others. I encourage all Corporate Members to continue to submit case studies as well as your Corporate profiles.

Importantly, with the leadership of our IGS Treasurer, Dr. Jie Han, and the wisdom and courage of the 12th ICG general assembly delegates, the IGS has successfully turned the page on a 40-year fiscal policy that no longer served us, and today sits in a healthier financial condition. If you have not yet paid your corporate dues this year, I ask that you do so right away, as our resources are being used to educate, provide outreach and expand our markets.

I am so very grateful for the support of all our individual and corporate members that continue to sustain and grow our Society.

In our IGS, it's onward and upward!

Yours in Service,

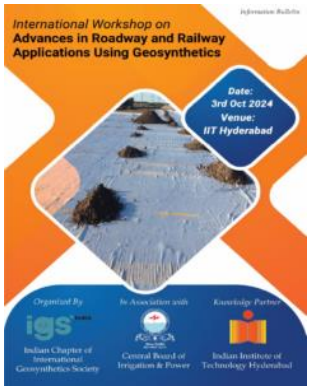


Samuel (Sam) R. Allen
President
International Geosynthetics Society

Register now for IGS India Stabilization Workshop July 23, 2024

The south-central Indian city of Hyderabad is set to host an unmissable IGS workshop on stabilization geosynthetics this fall.

IGS President Sam Allen will join the leadership team of the IGS Technical Committee on Stabilization (TC-S) to deliver a range of lectures on the theme '*Advances in roadway and railway applications using geosynthetics*', at the event on October 3.



The workshop, organized by IGS India, takes place at the Indian Institute of Technology in Hyderabad, and is set to cover the following applications:

- Mitigation of reflective cracking in structural asphalt overlays.
- Stabilization of unbound aggregate layers.
- Reduction of layer intermixing.
- Reduction of moisture in structural layers.
- Stabilization of soft subgrades.
- Mitigation of distress induced by expansive clay subgrades.

Mr Allen will give a keynote talk, along with fellow headliners Professors Erol Tutumluer and Jorge Zornberg, who are the President and Vice-Chair of the IGS TC-S respectively. Fellow TC-S Vice-Chair, Prof. Sivakumar Babu is also the President of IGS India.

The day will also include technical sessions, panel discussions, and interactive opportunities, offering attendees an ideal platform to exchange insights and discover the latest developments in pavement stabilization using geosynthetic materials.

The IGS TC-S was established in 2017 and aims to improve the know-how, technology and research around stabilization, helping to improve the performance of bases and subbases of high traffic areas such as roadways, railways, airfields, and working platforms.

For more information, and to register, email contact@geosyntheticsindia.org or Kamal Kumar kamal@cbip.org for a registration form.

*** IGS India invites submissions of case studies on topics related to the workshop theme. Full papers must be provided by **August 16**. For details and criteria, email Kamal Kumar at kamal@cbip.org.

Watch: Why IGS Membership Matters July 24, 2024

Education, information and collaboration. That's what many IGS members say they value most about being part of our learned Society.

We spoke to members at the recent 5th GeoAmericas conference in Toronto, Canada, about what they love about being part of the IGS. They were among some 800 attendees from more than 46 countries, with individual, Corporate and Young Members alike benefiting from four days of talks, courses and workshops at one of the most important regional conferences in the IGS calendar.

Among those was Deepaksh Gulati, a member through Layfield Canada Ltd's Corporate membership of the IGS, where he works in technical/product development.

"The IGS brings great value, it's a very active organisation, and a great way to learn about what's happening in the industry and the needs of the market. It's good to develop more contacts within the industry. The opportunities are unlimited and with environmental concerns there will be more growth. Geosynthetics are a growing field and it's a good time [to get involved]; the world is getting serious about climate change and it's an upward trajectory for jobs and opportunities."

Professor Juliana Reinert, of Queen's University, Canada, and member of IGS North America and IGS Brazil, had several reasons for valuing the IGS – one of them career-defining.

"Networking, support and education. Geosynthetics are complicated and the IGS helps with providing samples for learning. I started teaching in 2014 and I did the first Educate the Educators program – it was the first time I felt empowered enough to teach geosynthetics."

Legendary geosynthetics practitioner Professor Jorge Zornberg said both experienced engineers and those just entering the industry were equally valued in the IGS.

"The IGS is a learned society that has the right mixture of designers, industry, manufacturers, academics and we all have equally strong voices. We are putting an emphasis on Young Members and the IGS Foundation is making a difference," he said.

Tatiana Olinic, from the University of Agronomic Sciences and Veterinary Medicine of Bucharest, has been an IGS member for four . Her husband Ernest Olinic is President of IGS Romania. Her message was clear.

"You must stay in contact with the latest research and be up-to-date with everything involving your work; this is also why I attend the conferences. I'm very involved in all societies; this allows us to work together and exchange research, or research together," she said.

Watch here for what more members think:

https://www.youtube.com/watch?v=mjCDvGyxFxA

New to the IGS or need a refresher? Watch our chat with **IGS Chief Executive John Kraus** who gives an introduction about the organization, its aims and ambitions, and how members can get more involved.

https://www.youtube.com/watch?v=7TUA8i_UrDM

Got a question or feedback about membership? Get in touch with the IGS Secretariat Manager Elise Oatman at igs-sec@geosyntheticssociety.org.

Corporate Member Profile: Euroizol Geosynthetics July 26, 2024

Share your story!

IGS Corporate Members have the chance to share more of the great work they do with a wider audience. Corporate Members are invited to complete a short Q&A exploring their business, geosynthetic product or service offering, and key projects. Profiles will be showcased on the IGS website and social channels, widening the reach and awareness of our highly valued IGS corporate members.

Contact the IGS Secretariat at igssec@geosyntheticssociety.org to request a copy of the submission form.

Watch: IGS Geosynthetics Handbook Latest July 30, 2024

Learn more about the upcoming IGS Geosynthetics Handbook in our chat with its co-author Kent von Maubeuge.

Mr von Maubeuge explains the intent behind this unique resource, its expected content and contributors, timeline, and when members will be able access this one-stop technical reference guide suitable for all levels of experience in geosynthetics.

In the video, Mr von Maubeuge explains the guide, which will be available digitally and in print, will be a living document, regularly updated annually as research and applications develop. The information in the handbook will also augment the technical curriculum of future training courses.

The IGS Geosynthetics Handbook is just one of several new IGS education resources released or in the pipeline, including the IGS Sustainability Calculator which went live in fall 2023, and the IGS Professional Development Courses, which are in production.

Click the video below to play.

For more information about any of these resources, email IGS Secretariat Manager Elise Oatman at igssec@geosynthetics-society.org

https://www.youtube.com/watch?v=muR1a5sv2tU

BGA
THE BRITISH GEOTECHNICAL ASSOCIATION

News
https://www.britishgeotech.org/news

The August/September 2024 issue of Ground Engineering is available on line

The August/September 2024 issue of Ground Engineering is available on line. Online access to Ground Engineering (GE) is included in BGA subscriptions

The August/September issue of *Ground Engineering* reports on the University of Leeds' programme to test for geothermal energy underneath its campus, and the development of a saturation hazard matrix for Scotland's Rest and Be Thankful on the A83.

The issue also includes an interview with Engineering Group of the Geological Society (Eggs) chair Anna Morley on driving sustainability, a technical note on historical landsliding in Wales, the Ground Engineering winners special, and the second part of a technical paper that looks at a tool for the capacity curve of embedded retaining systems.

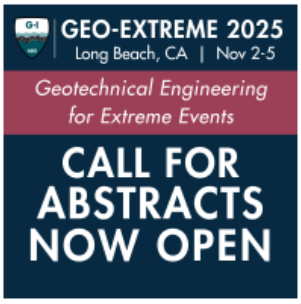
In addition, it includes an Engineering Insight Q&A with Arup geotechnical engineer Sayid Salim, as well as the latest news and opinion.

Use this LINK to view the latest digital issue.

To view the digital editions, along with the rest of GE's online news, opinions, features and technical papers, you need to be signed in. Use the email address you used for your BGA membership to sign in and use the reset password link if you have not yet set a password or have forgotten your password.

If you are having trouble with the signing in process, please contact GE's customer services team using the details listed here: https://www.geplus.co.uk/contact-us/

Call for Abstracts for Geo-Extreme 2025 is Now Open!
31 Jul 2024



Select one of the following topics:

- Big data and data analytics for extreme events and the modeling and assessment of compound and cascading events
- Case histories, lessons learned, and best practices
- Civil infrastructure and geo-materials under extreme loadings, including performance assessments and numerical simulations
- Climate model simulations and predictions, including climate-resilient and adaptive infrastructure systems
- Coastal sustainability and resilience under extreme events and changing climate
- Decision making, planning and risk management of extreme events, including anticipation, preparedness, response, and recovery from extreme events
- Geotechnical and geoenvironmental engineering for post-disaster materials management
- Geotechnical earthquake engineering, seismic slope instabilities, liquefaction, man-made earthquakes and associated geo-hazards
- Instrumentation and remote sensing of extreme events and their impacts
- Integrating equity and justice considerations into planning, design, and maintenance of climate-resilient infrastructure in the face of climate change
- Permafrost, the Arctic and cold regions
- Wildfires, debris flows and other post-wildfire hazards

For more information on abstract content, visit the full call for abstracts on the CATALYST submission site.

Submit Your Abstract in the CATALYST System

Abstracts are due November 1, 2024 at 11:59 PM EST.

ΠΡΟΣΕΧΕΙΣ ΓΕΩΤΕΧΝΙΚΕΣ ΕΚΔΗΛΩΣΕΙΣ

Για τις παλαιότερες καταχωρήσεις περισσότερες πληροφορίες μπορούν να αναζητηθούν στα προηγούμενα τεύχη του «περιοδικού» και στις παρατιθέμενες ιστοσελίδες.

5th ICITG 5th International Conference on Information Technology in Geo-Engineering, August 5-8, 2024, Golden, Colorado, USA, https://learn.mines.edu/ICITG

S3: Slopes, Support and Stabilization, August 6-8, 2024, Aurora, Colorado, USA, https://s3.amazonaws.com/xcd-shared/dfi/Media/S324/2024-S3-CFA-20230807.pdf

ECSMGE 24 XVIII European Conference on Soil Mechanics and Geotechnical Engineering, 26-30 August 2024, Lisbon, Portugal, www.ecsmge-2024.com

4ο Συνέδριο Φραγμάτων και Ταμιευτήρων, 10 και 11 Σεπτεμβρίου 2024, Αθήνα, www.gcold-conference.gr

ISIC 2024 4th International Conference of International Society for Intelligent Construction, 10 – 12 September 2024, Orlando, United States, www.is-ic.org/conferences/2024-isic-international-conference

International Symposium on Dams and Earthquakes, 7th Meeting of the EWG, 12 -13 September 2024, Athens, Greece, link.

GROUND ENGINEERING SUSTAINABILITY, 18 September 2024, London, United Kingdom, https://sustainability.geplus.co.uk/sustainability2024/en/page/home

NGM 2024 19th Nordic Geotechnical Meeting, 18th - 20th of September 2024, Göteborg, Sweden, www.ngm2024.se

ISRM International Symposium 2024 and 13th Asian Rock Mechanics Symposium (ARMS13), 22 to 27 September 2024, New Delhi, India, https://arms2024.org

IS-Grenoble 2024 Geomechanics from Micro to Macro, September 23-27, 2024, Grenoble, France, https://is-grenoble2024.sciencesconf.org

International Symposium on Dams and Earthquakes, 7th Meeting of EWG, September 25-27, 2024, Athens, www.eemf.gr

92nd ICOLD Annual Meeting & International Symposium on Dams for People, Water, Environment and Development, 29th September – 3rd October, 2024, New Delhi, India, www.icold2024.org

The 4th International Symposium on Risk Assessment and Sustainable Stability - Design of Slopes (ISRASSDS-Toronto 2024) September 29–October 4, 2024, Toronto, Canada http://www.icgdr.com/Home/Detail/87

5th European Conference on Physical Modelling In Geotechnics, 02 to 04 October 2024, Delft, Netherlands, https://tc104-issmge.com/ecpmg-2024

XVIII African Regional Conference on Soil Mechanics and Geotechnical Engineering, 06 ÷ 09 October 2024, Algiers, Algeria, https://algeos-dz.com/18ARC.html

Beyond a Tunnel Vision, October 16th, 2024, Antwerp, Belgium, https://beyondatunnelvision.eu

RMCC2023 1st International Rock Mass Classification Conference "Rock Mass Classification meets the Challenges of the 21st Century", 30-31 October 2024, Oslo, Norway, www.rmcc2024.com

CEES2024 1st International Conference on Civil and Environmental Engineering for Resilient, Smart and Sustainable Solutions, 3 - 5 November 2024, AL-Khobar, Saudi Arabia https://cees2024.org/

PANAMGEO CHILE 2024 17th Pan-American Conference on Soil Mechanics and Geotechnical Engineering, 12-17 November 2024, La Serena, Chile, https://panamge-ochile2024.cl

CouFrac 2024 The 4th International Conference on Coupled Processes in Fractured Geological Media: Observation, Modeling, and Application, November 13-15, 2024, Kyoto, Japan, https://www.ec-convention.com/coufrac2024/

3ο Διεθνές Συνέδριο Αρχαίας Ελληνικής και Βυζαντινής Τεχνολογία, 19-20-21 Νοεμβρίου 2024, Αθήνα, www.edabyt.gr

ICTG 2024 5th International Conference on Transportation Geotechnics 2024 "Sustainable and Evolving Technologies for Urban Transport Infrastructure", 20 – 22 November 2024, Sydney, Australia www.ictg2024.com.au

ICOMOS TheoPhilos ISC Conference Authenticity from a European Perspective: 30 Years of the Nara Document on Authenticity November 28-29, 2024, Thessaloniki, Greece, https://theophilos.icomos.org

Geotechnics for Sustainable Infrastructure, 28-29 November 2024, Kathmandu, Nepal, https://geomandu.ngeotechs.org

4th Asia-Pacific Conference on Physical Modelling in Geotechnics ACPMG 2024, 11 – 13 December 2024, Abu Dhabi, United Arab Emirates

ROCSCIENCE INTERNATIONAL CONFERENCE 2025, April 6-, 2025, Sydney, Australia, www.rocscience.com/events/rocscience-international-conference-2025

PMGEC LEBANON 2025 Pan Mediterranean Geotechnical Engineering Conference 2025, April 28 – 30, 2025, Phoenicia Beirut IHG, Lebanon https://pmgec-leb.com/

GEOTECHNICS REIMAGINED, May 21-23, 2025, Bruges, Belgium, https://dfi-events.org/dfi-effc25

ISFOG 2025 5th International Symposium on Frontiers in Offshore Geotechnics, June 9-13, 2025, Nantes, France, https://isfog2025.univ-gustave-eiffel.fr

World Tunnel Congress 2025 "Tunnelling into a sustainable future – methods and technologies", 9-15 May 2025, Stockholm, Sweden, www.wtc2025.se

EGRWSE-2025 6th International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering, June 11-14, 2025, Vigo, Spain, https://egrwse2025.webs.uvigo.es/

EUROCK 2025 - ISRM European Rock Mechanics Symposium Expanding the underground space - future development of the subsurface - an ISRM Regional Symposium, 16-20 June 2025, Trondheim, Norway, https://eurock2025.com

3rd International Conference on Energy Geotechnics - Implementing the Energy Transition, 17-20 June 2025, Paris, France, Kamelia Atefi-Monfared, catefi@yorku.ca

6th International Conference GEE2025: Charting the path toward the future Geotechnical Engineering Education July 2-4 2025, Nancy, France, https://gee2025.sciences-conf.org/

ISGSR2025 9th International Symposium for Geotechnical Safety and Risk, 24th – 27th August 2025, Oslo, Norway, www.isgsr2025.com

TKZ2025 XXI Technical Dam Control International conference, 09-12 September 2025, Chorzów, Poland https://tkz.is.pw.edu.pl/en/

GEOTECH ASIA 2025 - GEOVADIS: The Future of Geotechnical Engineering, October 7th to 10th, 2025, Goa, India, https://www.geotechasia.org

21st International Conference on Soil Mechanics and Geotechnical Engineering Geotechnical Challenges in a Changing Environment
14 – 19 June 2026, Vienna, Austria
www.icsmge2026.orgn

1925 Karl Terzaghi published the book „Erdbaumechanik auf bodenphysikalischer Grundlage" in Vienna which is widely regarded as the birth of modern soil mechanics. The Austrian Geotechnical Society and the Austrian Society for Geo-mechanics are proud to jointly celebrate the 100th anniversary of this milestone in geotechnical engineering. 1929 the first Institute and Laboratory for Soil Mechanics was established at the TU Wien. „Where it all began" is therefore the slogan of the 21st International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE) to be held in Vienna in June 2026. It will be an in-person event because I strongly believe that personal communication and networking is a key component of an international conference. Leading experts in the field have agreed to deliver state-of-the art lectures and for the first time in this series of conferences a plenary session will be organized by the European Federation of Foundation Contractors (EFFC), providing the industry with the opportunity to present their efforts in battling climate change and reducing CO2-footprint of construction industry. I can assure that the organising committee will do everything to make this conference a memorable event, in both, scientific and social aspects and I invite you to come to the beautiful city of Vienna, in the heart of Europe.

Helmut F. Schweiger
President Austrian Geotechnical Society
Chair ICSMGE 2026

Session Topics

The Session Topics correspond to the Technical Committees of the ISSMGE:

- Laboratory Testing of Geomaterials
- In-Situ Testing
- Numerical Methods
- Physical Modelling
- Geo-Mechanics from Micro to Macro
- Unsaturated Soils
- Tropical Residual Soils
- Geotechnical Aspects of Dykes and Levees and Shore Protection
- Transportation Geotechnics
- Geotechnical Earthquake Engineering
- Geotechnical Aspects of Underground Construction
- Safety and Serviceability in Geotechnical Design
- Observational Method
- Slope Stability
- Offshore Geotechnics
- Embankments and Dams
- Ground Improvement
- Deep Foundations
- Scour and Erosion
- Soft Soils
- Environmental Geotechnics
- Frost Geotechnics
- Land Reclamation
- Reinforced Fill Structures
- System Performance of Geotechnical Structures
- Field Monitoring
- Tailing and Mine Wastes
- Geotechnical BIM and Digital Twins
- Preservation of Historic Sites
- Forensic Geotechnical Engineering
- Coastal and River Disaster Mitigation and Rehabilitation
- Engineering Practice of Risk Assessment and Management
- Geotechnical Infrastructure for Megacities and New Capitals
- Geo-education
- Sustainability in Geotechnical Engineering
- Energy Geotechnics

- Machine Learning and Big Data
- Young Engineers Session

Contact

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Innsbrucker Bundesstraße 67
5020 Salzburg, Austria
Tel.: +43 662 875519
office@icsmge2026.org

AGS Austrian Geotechnical Society
c/o Österreichischer Ingenieur- und Architektenverein
Eschenbachgasse 9
A-1010 Vienna
Austria

ISFMG 2026 12th International Symposium on Field Monitoring in Geomechanics, 06 -10 August 2026, Indian Institute of Technology Indore, India, https://sites.google.com/view/isfmg2026/home

Eurock 2026
Risk Management in Rock Engineering - an ISRM Regional Symposium
14-19 June 2026, Skopje, Republic North Macedonia

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TC301 ATHENS 2026 International Symposium on the Preservation of Monuments & Historic Sites, 16 – 18 September 2026, Athens, Greece https://tc301-athens.com

ARMS14
14th Asian Rock Mechanics Symposium - ARMS14, an ISRM Regional Symposium
22-26 November 2026, Fukuoka, Japan

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16th International Congress on Rock Mechanics
Rock Mechanics and Rock Engineering Across the Borders
17-23 October 2027, Seoul, Korea

Scope

The scope of the Congress will cover both conventional and emerging topics in broadly-defined rock mechanics and rock engineering. The themes of the Congress include but not be limited to the following areas:

- Fundamental rock mechanics
- Laboratory and field testing and physical modeling of rock mass
- Analytical and numerical methods in rock mechanics and rock engineering
- Underground excavations in civil and mining engineering
- Slope stability for rock engineering
- Rock mechanics for environmental impact
- Sustainable development for energy and mineral resources
- Petroleum geomechanics
- Rock dynamics
- Coupled processes in rock mass
- Underground storage for petroleum, gas, CO2 and radioactive waste
- Rock mechanics for renewable energy resources
- Geomechanics for sustainable development of energy and mineral resources
- New frontiers & innovations of rock mechanics
- Artificial Intelligence, IoT, Big data and Mobile (AICBM) applications in rock mechanics
- Smart Mining and Digital Oil field for rock mechanics
- Rock Engineering as an appropriate technology
- Geomechanics and Rock Engineering for Official Development Assistance (ODA) program
- Rock mechanics as an interdisciplinary science and engineering
- Future of rock mechanics and geomechanics

Our motto for the congress is "Rock Mechanics and Rock Engineering Across the Borders". This logo embodies the interdisciplinary nature of rock mechanics and challenges of ISRM across all countries and generations.

ΕΝΔΙΑΦΕΡΟΝΤΑ ΓΕΩΤΕΧΝΙΚΑ ΝΕΑ

Massive earth crack appears in Tamaulipas, Mexico

A very large earth crack appeared in Congregación El Carmen in the municipality of Tula, Mexico's state of Tamaulipas, during heavy rains brought by Tropical Storm "Alberto" from June 19 to 21, 2024.

- The fissure is still growing and is estimated to be from 1 to 3 m (3.3 x 9.8 feet) wide, up to 4 m (13 feet) deep, and up to 7 km (4.3 miles) long.

- Residents in Congregación El Carmen, Ejido Vázquez Gómez, and Ejido San Juan are reporting damaged homes, some of which are cracked from floor to ceiling.

According to local media reports, the situation worsened when heavy rains began, resulting in a loud bang that frightened the inhabitants of Congregación El Carmen. By dawn, residents discovered a large, several-meter-deep crack, with subsequent reports indicating the fissure ranges from 3 km to 7 km (1.9 miles to 4.3 miles).

Residents of Congregación El Carmen are reporting cracked homes from floor to ceiling. "I'm afraid that the house will fall and cost me my life," one resident said.

In addition to threatening homes, cracks have also appeared on the road connecting these ejidos with the municipal capital, jeopardizing infrastructure and potentially isolating the communities if urgent measures are not taken.

The mayor of Tula, alongside a civil protection team, has requested support from state and federal authorities to address the situation immediately and prevent a possible tragedy. "We need a quick and effective intervention to safeguard the lives and property of our people," the mayor at a press conference.

State authorities, led by the Secretary of Public Works Pedro Cepeda Anaya, have begun studies to determine the severity of the failure in Tula.

Cepeda Anaya explained that the cracks are caused by cyclical underground drainage. "We went to the crack that appeared in Tula. It is underground runoff, a group of geologists went there. It was determined that it is an underground runoff that is cyclical. Every so many years, after certain droughts, it appears, however, this time there is also a state highway that cracked," he said.

Cepeda Anaya said about plans to conduct a geophysical study in the coming days to determine the exact depths and lengths of the crack and the extent of the subsoil damage.

Referring to cracks that have affected State Highway Route 136 (Tula-Santana de Nahola), Cepeda Anaya said they plan to build 'a structure on the state highway, a bridge, with a culvert to prevent further damage to the structure of the highway below.'

Technical data indicates that the crack has a varying width of 1 m to 3 m (3.3 feet to 9.8 feet) and a depth of 1 m to 4 m (3.3 feet to 13.1 feet) at certain points, running from north to south.

Geologists cautioned that the underground runoff will continue due to upcoming rains.

In the San Juan area, the fault is said to be superficial, damaging the pavement structure and continuing its course southward.

References:

[1] Se abre la tierra en Tula; aparecen grietas de más de tres kilómetros de longitud – El Manana – June 23, 2024

[2] Temor en Tamaulipas: Grietas de Tula preocupan a vecinos por daños en viviendas – El Universal – June 30, 2024

(Rishav Kothari / THE WATCHERS, Monday, July 1, 2024, https://watchers.news/2024/07/01/massive-earth-crack-appears-in-tamaulipas-mexico)

The El Kherba landslide in Algeria, reactivated by the 7 August 2020 Mila earthquake

A new paper describes a 26 million cubic metre landslide, which was triggered by an unusually small earthquake.

There is an interesting article (Bourenane and Mezouar 2024) in the *Bulletin of Engineering Geology and the Environment* about the El Kherba landslide in Algeria, which was reactivated by the 7 August 2020 Mila earthquake. Algeria is a country that has rarely featured on this blog, but parts of the country have a substantial landslide problem.

The El Kherba landslide is interesting for a number of reasons, and the authors have done a really good job of providing a comprehensive overview of the challenges that the slope presents. The failure is large – Bourenane and Mezouar (2024) calculate that it is about 2,170 m long and 1,800 m wide, with a volume of about 26 million cubic metres. It is located at [36.4484, 6.2391].

This is a Google Earth image of the site in February 2020, before the reactivation:-

Google Earth image of the El Kherba landslide in Algeria prior to reactivation. The image was collected in February 2020.

It is apparent from the image that this slope was already subject to instability, although it was not active prior to the earthquake.

This is the same site in January 2022:-

Google Earth image of the El Kherba landslide in Algeria after reactivation. The image was collected in January 2022.

And here is an image compare that highlights the impact of reactivation of the slope by the earthquake:-

The impact of the landslide was substantial – Bourenane and Mezouar (2024) indicate that it caused damage to 1,055 buildings, "including a primary school, a middle school, roads, and two water supply reservoirs".

A second very interesting aspect of this landslide is the trigger event. On 7 August 202, the Mw=4.9 Mila earthquake occurred about 10 km to the northeast of the site, which was sufficient to reactivate the landslide. Eyewitnesses observed signs of instability 15 minutes after the mainshock, so we can be confident that this induced failure.

This is an unusually small event to trigger major instability – Bourenane and Mezouar (2024) suggest that rainfall in the weeks leading up to the failure may have played a key role in inducing potential instability. Modelling suggests that the local peak ground accelerations may also have been quit high despite the modest scale of the earthquake.

This is a really interesting study that once again underscores the complex ways in which seismic loading can lead to damaging instability, even when the magnitude of the event is small. It seems likely that a very substantial proportion of the damage caused by this earthquake was the result of slope instability.

Reference

Bourenane, H. and Mezouar, N. 2024. Geomorphological, hydrogeological and geotechnical characteristics of the El Kherba large, deep-seated landslide induced by the August 7th, 2020 (Mw 4.9) earthquake in the city of Mila, northeast Algeria. *Bulletin of Engineering Geology and the Environment* **83**, 288 (2024). https://doi.org/10.1007/s10064-024-03781-z

(Dave Petley / THE LANDSLIDE BLOG, 1 July 2024, https://eos.org/thelandslideblog/el-kherba-landslide)

The 28 June 1974 Quebrada Blanca landslide disaster in Colombia

Last week marked the 50th anniversary of the 28 June 1974 Quebrada Blanca landslide disaster in Colombia, which killed at least 300 people.

The site of the 28 June 1974 Quebrada Blanca landslide disaster in Colombia, as it is today. Image from the Servicio Geologico Colombiano.

Last week marked the 50th anniversary of the 28 June 1974 Quebrada Blanca landslide disaster in Colombia, in which up to 500 people were killed. There is a good video, in Spanish, on Youtube that marks the anniversary. However, there is remarkably little detail of the landslide in English, and very few images of the aftermath of the accident.

The event has a Spanish Wikipedia page, which describes the sequence of events, and there is also a very good account in El Tiempo. The location was a major highway, the Carretera al Llano, which links the cities of Bogota and Villavicencio. In the Quebrada Blanca sector of the road, landslides were a constant problem, destroying infrastructure and closing the road. Stabilisation works were undertaken, but problems persisted.

In early June 1974, a large crack developed in the hillslope above Quebrada Blanca. The crack was 315 metres in length, indicating that a volume of about 473,000 cubic metres had become mobile.

A decision was taken by those managing the road to try to induce failure of the slope. Reports indicate that measures included the use of explosives, the injection of water into the mass and even the use of artillery to try to trigger the landslide.

On 22 June 1974, a small failure occurred, damaging a bridge. In the aftermath the road was cleared, and some movement of traffic was permitted.

The contemporary reports indicate that the management of traffic was exceptionally poor. Travelers trapped by the closure of the road actively demonstrated about the delay to their journey. A huge traffic jam developed through the landslide affected area, in part because the road was obstructed by a broken down vehicle.

Tragically, on 28 June at about 4 pm, on a Friday afternoon at the start of a holiday weekend, the slope collapsed. It is estimated that the final volume of the failure was between 500,000 and one million cubic metres. At the time of the failure, there were hundreds people on the road directly in the path of the landslide.

Estimates of the final death toll range from about 300 to over 600 people. The remains of only 27 people were recovered.

The Servicio Geologico Colombiano (the Colombian Geological Service) has a good webpage about the landslide (in Spanish), which includes this image of the site as it is today:-

The Servicio Geologico Colombiano article draws the following conclusion about the landslide:-

"In geo-environmental terms … all possible geological, climatic and anthropic conditions came together to give rise to the tragedy. On the one hand, the fact that the area is undergoing an active uplift of the mountain range had an influence, which not only generates earthquakes and constant movements due to the conflicting forces of the tectonic plates, but also the formation of convex slopes several kilometers long that are more prone to erosion by water."

"Added to this was the rainy season, which had forced the road to be closed weeks before due to small landslides that required earth removal work. The action of the water from the season's rainfall infiltrated the upper part of the terrace, saturating the materials. Additionally, permanent erosion prevented the growth of vegetation that would act as protection. Finally, the unpredictable fact that the landslide occurred on the Friday of a holiday weekend when more people than usual were rioting at the road closure, increased the dimension of the tragedy."

The highway between Cáqueza and Villavicencio continues to suffer from landslide issues. Work is now underway in the Quebrada Blanca catchment to better understand the hazard, in the hope that it will open the door to improved safety and resilience along the road.

(Dave Petley / THE LANDSLIDE BLOG, 2 July 2024, https://eos.org/thelandslideblog/quebrada-blanca-landslide)

Watching and Listening for Signs of Slope Failure

Ten years of data preceding a rockfall in the French Alps suggest the need for more comprehensive monitoring systems.

A road and major railway remain closed after a rockslide in the French Alps in August 2023 displaced 14,000 cubic meters of sandstone and shale. Credit: Pierre Bottelin

In August 2023, 14,000 cubic meters of sandstone and shale detached from a slope in the French Alps. This rockslide at La Praz closed a road and a major railway between France and Italy at least until the end of 2024.

Many systems that monitor unstable slopes depend solely on ground deformation measurements, using information about how much the surface of a slope moves to predict when it will fail completely. Such safety monitoring has been done at the La Praz site since 2006. But changes on the surface don't tell the full story about a slope's shifting stability or stiffness.

Bottelin and Baillet combined deformation monitoring data from the site with passive seismic monitoring data they collected over the 10 years prior to the landslide. By recording the slope's ground vibrations over a decade, they gathered information about the slope's fundamental resonance frequency, or the frequency at which the ground material naturally vibrates. This frequency changes depending on several factors, including the stiffness of the ground material.

Ground deformation monitoring indicated that the slope was steady between 2012 and 2018. A 0.15-meter-wide crack then formed in 2018, and seasonal changes such as fluctuating precipitation levels contributed to minor shifts throughout the subsequent years. In 2023, the deformation rate jumped from 0.3 to 1.5 centimeters per day. Fifteen hours before the rockslide occurred, it accelerated to 20 centimeters per day.

The passive seismic monitoring revealed additional information about La Praz's behavior that surface deformation monitoring was unable to detect. In the 6 months preceding the collapse, the researchers detected a 24% decrease in the slope's fundamental resonance frequency, indicating that the slope was becoming less stiff.

The researchers suggest that monitoring an active rock slope's fundamental resonance frequency alongside ground deformation can provide a more complete picture of the slope's behavior and help predict collapses, which could help protect lives and livelihoods. (*Geophysical Research Letters*, https://doi.org/10.1029/2024GL109139, 2024)

Citation: Owen, R. (2024), Watching and listening for signs of slope failure, *Eos, 105,* https://doi.org/10.1029/2024EO240301. Published on 17 July 2024.

Rebecca Owen / Science Writer, Geophysical Research Letters, 17 July 2024, https://eos.org/research-spotlights/watching-and-listening-for-signs-of-slope-failure

ΕΝΔΙΑΦΕΡΟΝΤΑ - ΛΟΙΠΑ

Ancient Egyptians used a hydraulic lift to build their 1st pyramid, controversial study claims

A massive water-treatment facility located near the Nile River may have been used to build the pyramid of Djoser.

The Pyramid of Djoser is a six-tiered, four-sided step pyramid that was built around 4,700 years ago. (Image credit: Prisma by Dukas Presseagentur GmbH via Alamy)

The ancient Egyptians may have used an elaborate hydraulic system to construct the world's first pyramid, a controversial new study claims.

Known as the Pyramid of Djoser, the six-tiered, four-sided step pyramid was built around 4,700 years ago on the Saqqara plateau, an archaeological site in northern Egypt, according to research posted to ResearchGate on July 24. The research has not yet been published in a peer-reviewed journal.

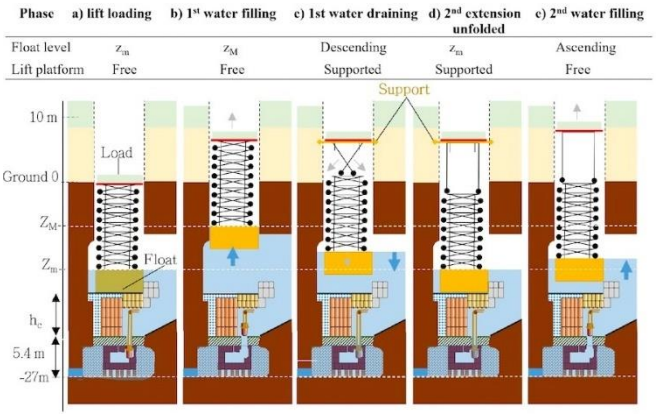
Archaeologists have long wondered how ancient workers accomplished such an architectural feat — the structure contains 11.7 million cubic feet (330,400 cubic meters) of stone and clay — before the advent of large machinery like bulldozers and cranes.

Because the pyramid sits near a long-gone branch of the Nile River, researchers hypothesize that the ancient Egyptians utilized the water source to build the 204-foot-tall (62 m) pyramid by designing a "modern hydraulic system" comprising a dam, a water treatment plant and a hydraulic freight elevator, all of which were powered by the river, according to a translated statement from the CEA Paleotechnic Institute, a research center in France. They posit that the mysterious Gisr el-Mudir enclosure near the pyramid worked as a structure that captured sediment and water.

"This is a watershed discovery," lead author Xavier Landreau, CEO of Paleotechnic, told Live Science. "Our research could completely change the status quo [of how the pyramid was built]. Before this study, there was no real consensus about what the structures were used for, with one possible explanation being that it was used for funerary purposes. We know that this is already subject to debate."

For the water-powered system to work, water would have flowed from the Nile to the dam, which would have stretched 1.2 miles (2 kilometers) long and had 49-foot-wide (15 m) walls lodged between the sides of two valleys to the west of the pyramid. The dam would have filtered out any sediment before the water traveled downstream to a treatment facility known as the "Deep Trench," which would have been 1,300 feet (400 m) long, 89 feet (27 m) deep and cut into existing rock. The facility would have contained several basins where sediment or particles would have settled at the bottom to prevent any clogs in the system.

From there, a series of underground conduits would have tunneled water 92 feet (28 m) beneath the pyramid to a water-powered elevator. The force of water pooling into a central well would have been used to "float" stones up and down a shaft, delivering the heavy construction materials to workers as they built the "volcano"-shaped pyramid, according to the statement.



An illustration of how the hydraulic elevator may have worked. (Image credit: Landrea, et al)

The elevator "would have played a crucial role allowing the water to fill inside the main shaft," Landreau said. "It's really a gigantic facility and shows that water was the fuel used to build the pyramid. The elevator would have had filling and emptying cycles that allowed the stones to go up to the construction level in a volcano-like fashion."

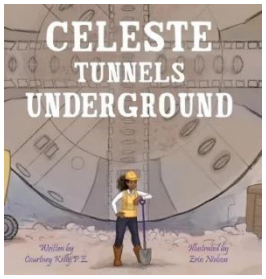
Landreau said this wouldn't be the first time the ancient Egyptians used water to move supplies; they often used the Nile to transport building materials down the river.

However, not everyone is convinced that the Egyptians used a hydraulic system to build the pyramid.

"My biggest concerns about the study are that no Egyptologists or archaeologists were directly involved and that the authors actually question the use of the Djoser Pyramid as a burial site," Julia Budka, an archaeologist at Ludwig Maximilian University of Munich, told Live Science in an email. "Scientifically, their hypothesis is not proven at all, and they themselves say at the end of the article that it would be necessary to conduct geological studies and sample analyses both inside and outside the areas in question to get a more accurate understanding of the proposed hydraulic system — not only of its operating time, but in general."

(Jennifer Nalewicki / LIVESCIENCE, July 30, 2024, https://www.livescience.com/archaeology/ancient-egyptians/ancient-egyptians-used-a-hydraulic-lift-to-build-their-1st-pyramid-controversial-study-claims)

ΝΕΕΣ ΕΚΔΟΣΕΙΣ ΣΤΙΣ ΓΕΩΤΕΧΝΙΚΕΣ ΕΠΙΣΤΗΜΕΣ



Celeste Tunnels Underground

Courtney Kelly

A new children's book published by this week introduces young readers to the world of tunnels and tunnelling.

"Celeste Tunnels Underground" tells the story of young civil engineer Celeste who is tasked with relieving traffic congestion in Dallas, Texas.

She gains inspiration from old and new tunnelling projects, such as the Channel Tunnel and the Fehmarnbelt Tunnel, and using this knowledge, she gives readers a glimpse into tunnel construction and showcases an appreciation for the people who design and build tunnels.

The self-published author and engineer, Courtney Kelly, said "Celeste Tunnels Underground" promotes an early interest in architecture, engineering, and construction by encouraging children to find ways to help their community using STEM.

Kelly is a commercial and heavy civil construction project management professional in Dallas. She holds Bachelor's degrees in civil engineering and maths, and a Masters in civil engineering from Southern Methodist University. She received an MBA from Lamar University and is a licensed professional engineer in the state of Texas. In 2023 she was recognised as an Engineering News-Record Texas & Louisiana Top Young Professional.

The new book follows the first in the series, Celeste Saves the City, which has been sold in 10 countries in English, German, French and Spanish versions.

Both books are available in hardback, paperback, and eBook.

(July 5, 2024)

ΗΛΕΚΤΡΟΝΙΚΑ ΠΕΡΙΟΔΙΚΑ

INTERNATIONAL GEOSYNTHETICS SOCIETY

IGS NEWSLETTER – July 2024

Κυκλοφόρησε το IGS Newsletter της International Geosynthetics Society με τα ακόλουθα περιεχόμενα:

Helping the world understand the appropriate value and use of geosynthetics

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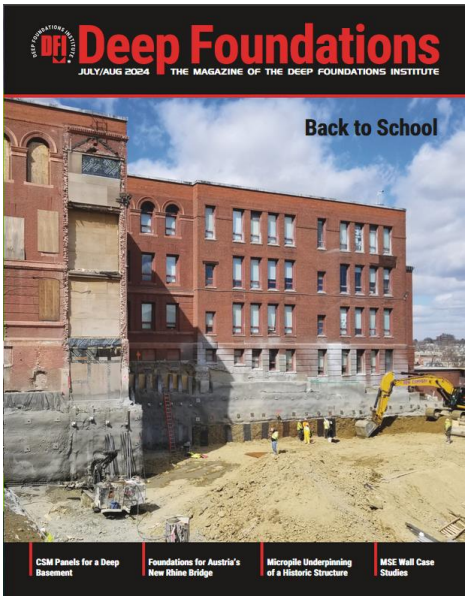

July/August

www.nxtbook.com/dfi/DEEP-FOUNDATIONS/july-august-2024/index.php#/p/Intro

Highlights of the July/August Issue:

- Cover Story: Composite Underpinning System in Harsh Winter Conditions
- Building the Deepest Basement in Downtown San Jose
- Developing Foundations for Austria's New Rhine Bridge
- Mind the Gap: Micropile Underpinning of a Historic Structure
- A Tale of Two Very Different MSE Wall Structures
- Member Profile: Aaron Gallant: Academic, Researcher, Mentor, a Definite "Three-Pointer"
- Foundations for a Sustainable Future: Planning for Future Foundation Reuse
- Risk Corner: Letting Purpose Determine Risk

ΕΚΤΕΛΕΣΤΙΚΗ ΕΠΙΤΡΟΠΗ ΕΕΕΕΓΜ (2023 – 2026)

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ΕΕΕΕΓΜ

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