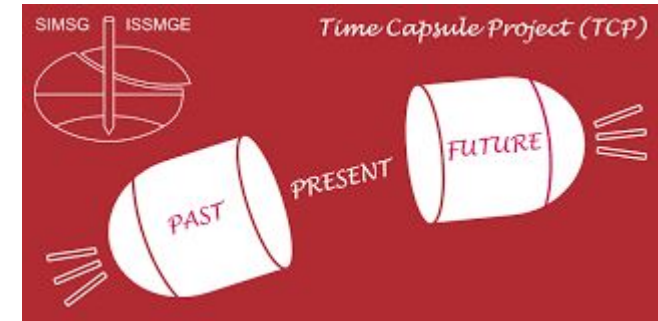


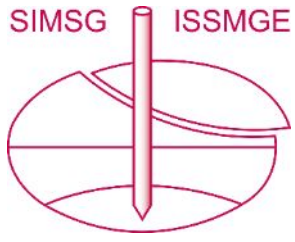
Time Capsule Project Report Review

Discoverer's Report for:

- ***Europe Region – Austrian Geotechnical Society***
- ***Europe Region – French Committee for Soil Mechanics and Geotechnics***
- ***Technical Committee TC103 on Numerical Methods in Geomechanics***

By Australasia Region Discoverer, Dr Asal Bidarmaghz
Australian Geomechanics Society (AGS)
University of New South Wales, Sydney
a.bidarmaghz@unsw.edu.au



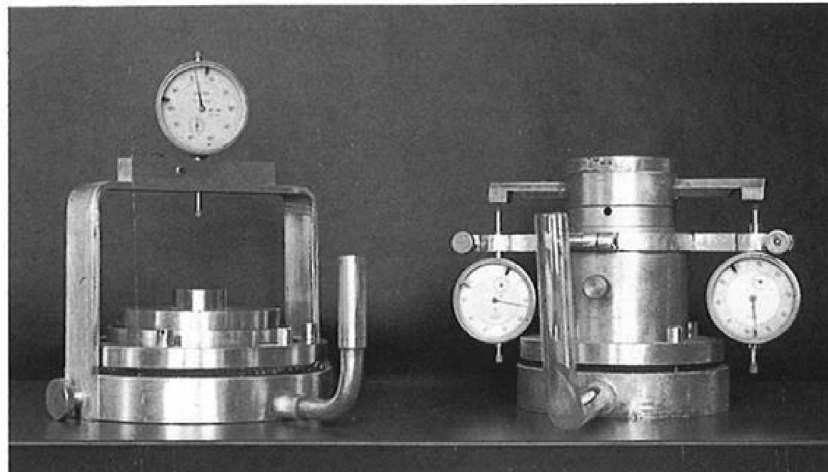


TCP Report – Austria

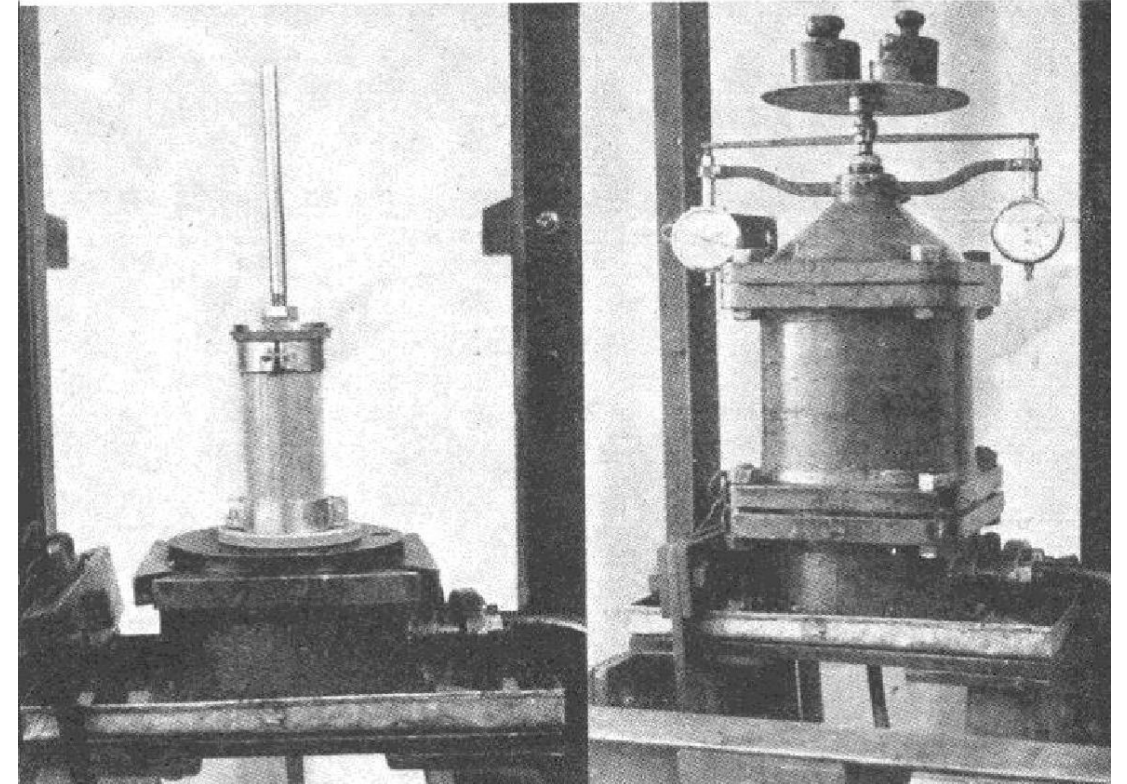
PAST ACHIEVEMENTS (Did you know?)

K. Terzaghi (1929-1938), A. Casagrande (1929-1932) and O. Frohlich (1940-1956) TU Wien

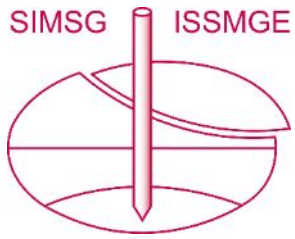
- First Oedometer
- First Triaxial Compression Apparatus
- Development of 1D Consolidation Theory



Original of first oedometer



First triaxial compression apparatus, 1934₂



TCP Report – Austria



PAST ACHIEVEMENTS (Did you know?)

C. Veder (1964-1978, Graz)

- Invention of Diaphragm Wall Techniques
- In-situ test on bored pile wall constructed with bentonite slurry
- Suggestions for stabilising Leaning Tower of Pisa

SCHEMA DER HERSTELLUNG DER BENTONITBOHRWAND AUS ZYLINDRISCHEN ELEMENTEN (System I.C.O.S., -Veder)

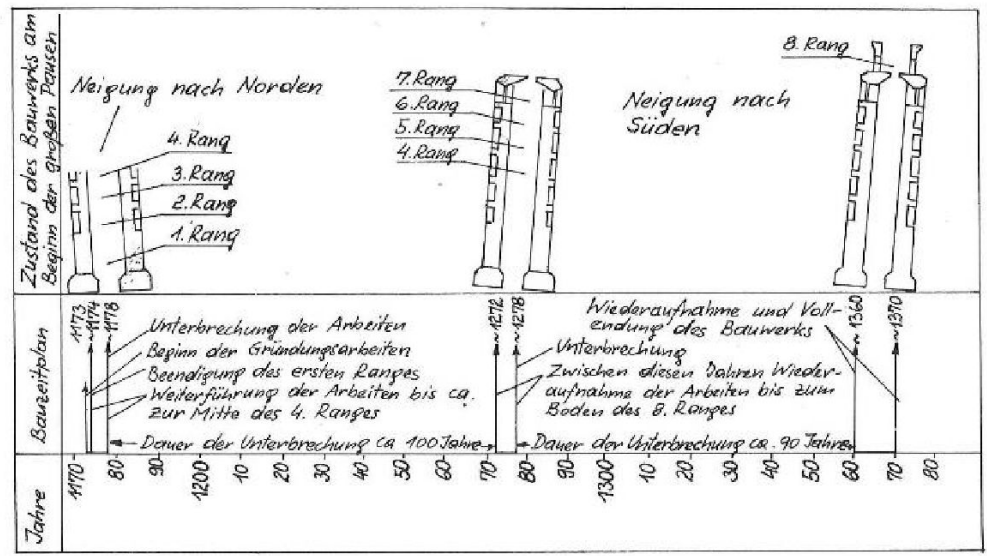
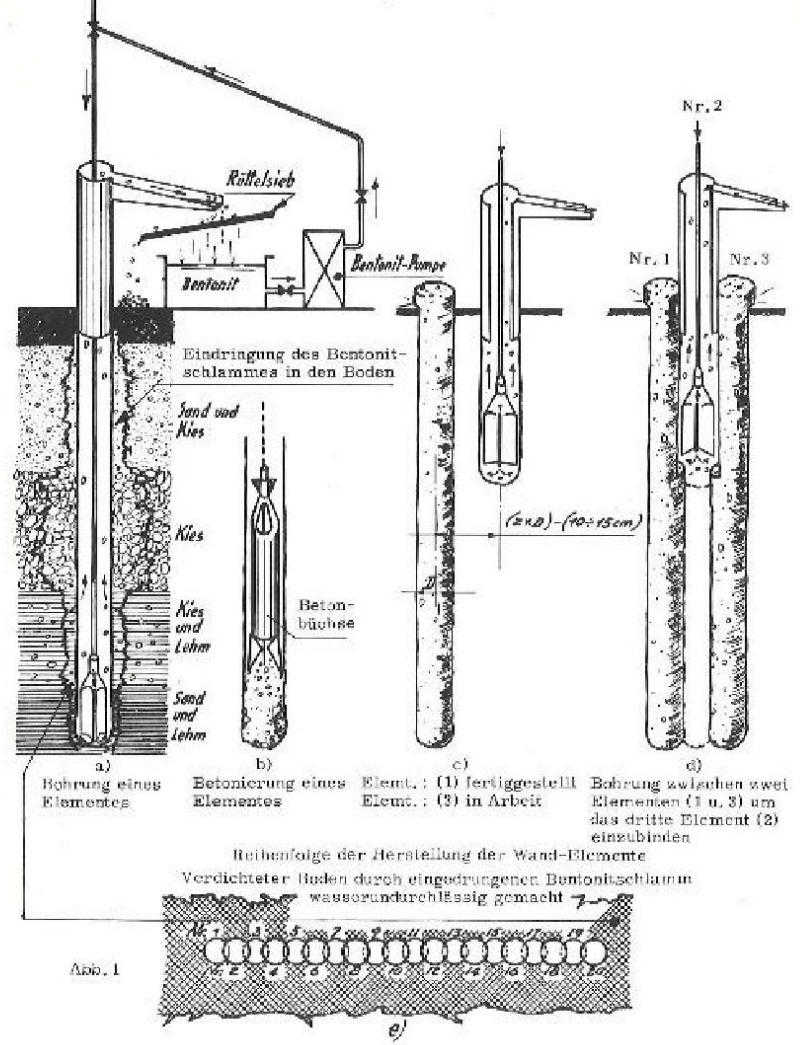


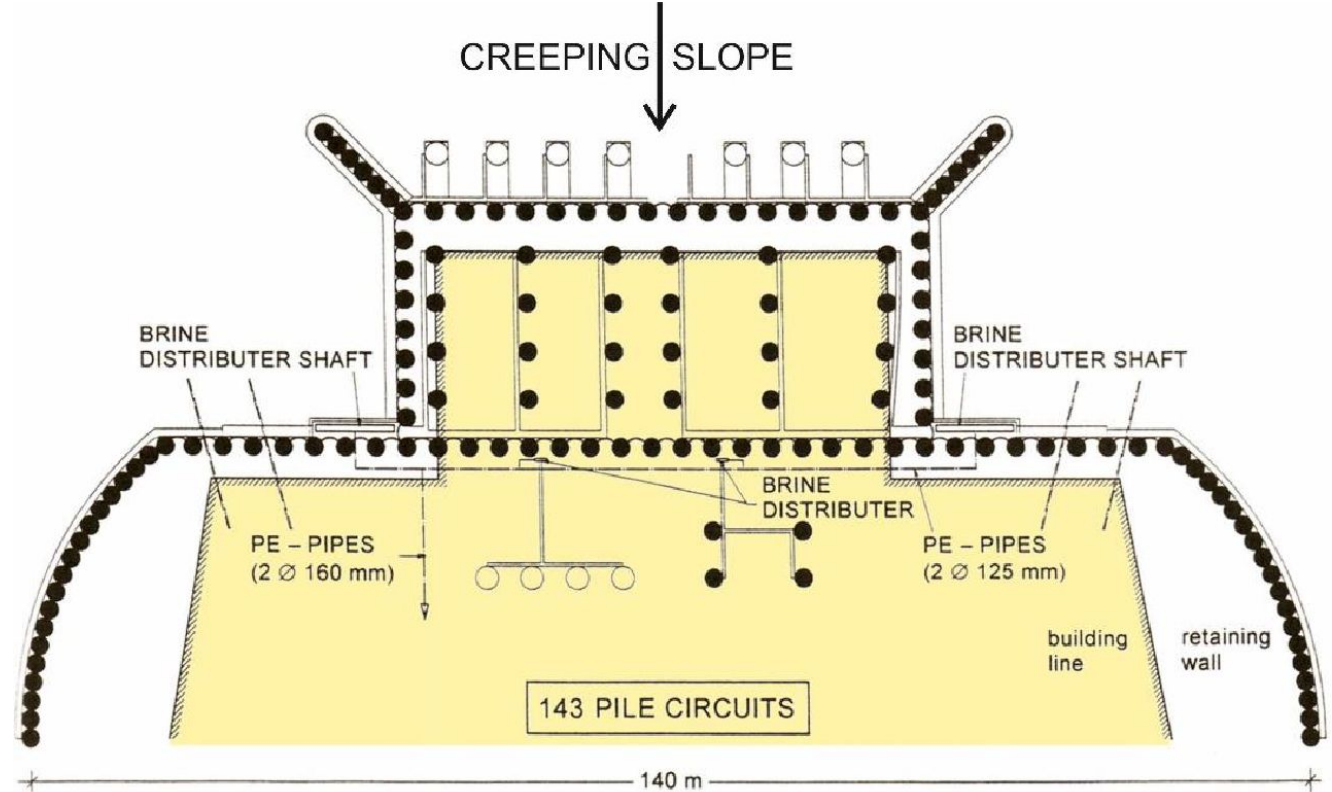
Abb. 1 Bauphasen des Turmes von Pisa (Ricerche e studi, 1971)
Stages of construction of the Tower of Pisa.

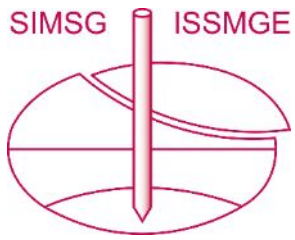
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PAST ACHIEVEMENTS (Did you know?)

H. Brandl (1981-2008, TU Wien)

- Innovative foundation and slope stabilisation techniques in Alpine Region
- Introduction of Energy Geo-structures for heating and cooling spaces (Energy Piles)



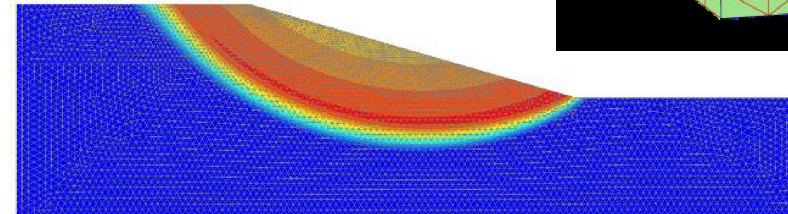
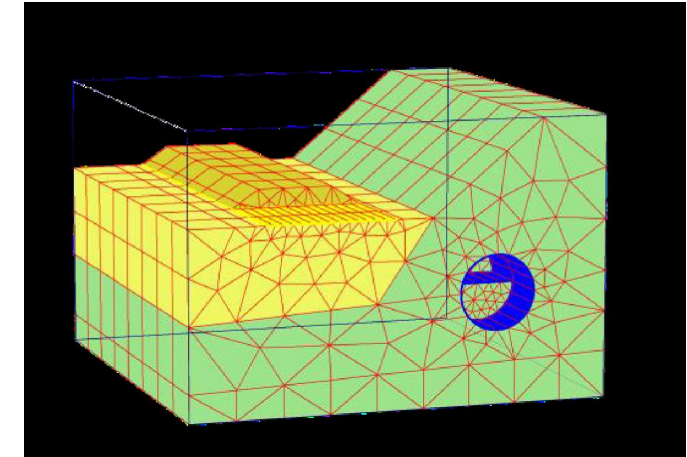
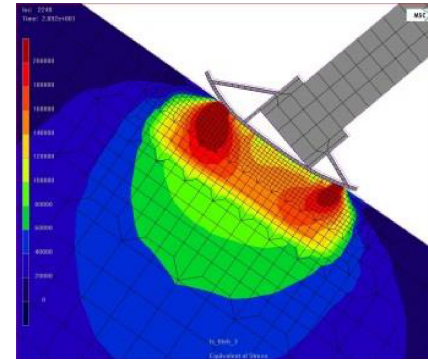


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CURRENT RESEARCH at TU Wien, Graz UT and Innsbruck

- Soil Characterisation techniques
- In-situ and laboratory soil testing
- Slope stability
- Piles and micro piles
- Constitutive modelling
- Debris flow and Avalanche modelling



COMMENTS:

As the direction of geotechnical research is evolving, it would be great to highlight some of the future-fit research topics such as:

- Sustainability and resilience in geotechnical engineering
- Smart infrastructures
- Geo-energy

TCP Report – France

PAST ACHIEVEMENTS (Did you know?)

Henri Cambefort (1912-1995)

- Was behind most of the techniques developed at that time for **foundation work, soil grouting** and author of numerous reference works

Louis Ménard (1931-1978)

- Is internationally known for the invention and the development of the **pressuremeter** as it is still employed nowadays.

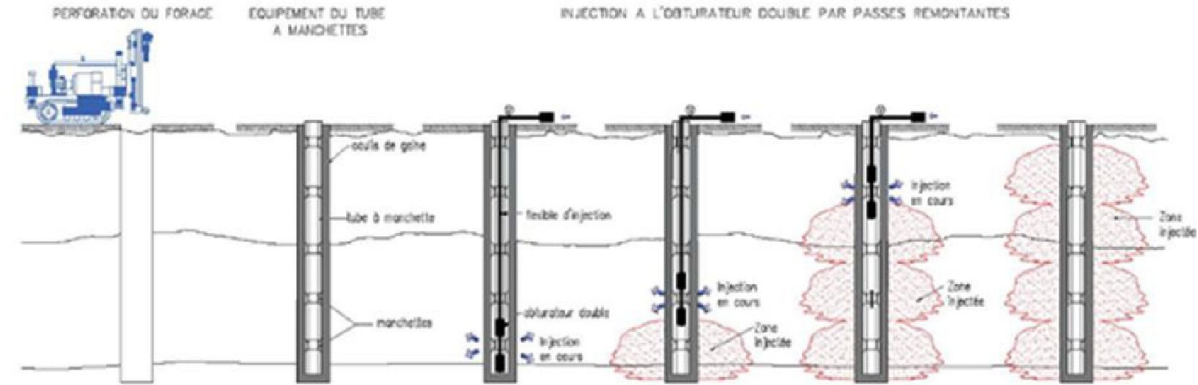
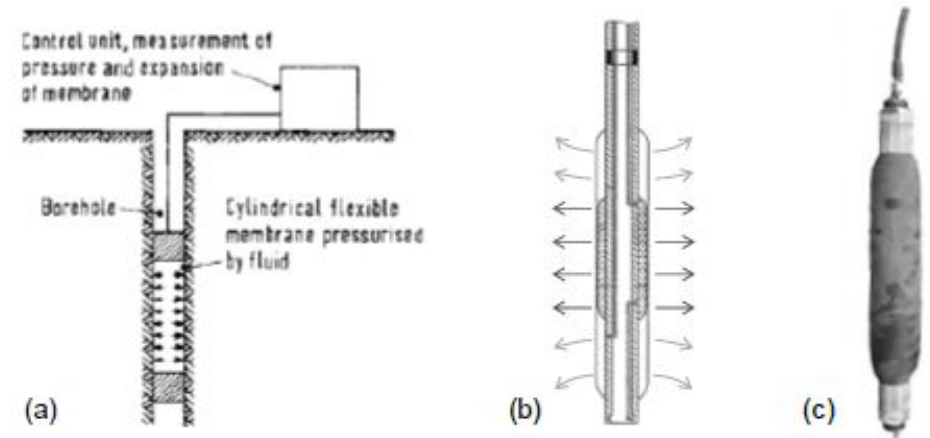
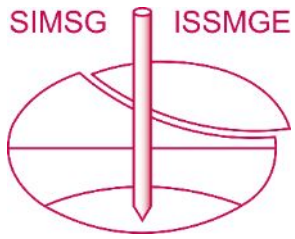


Figure n° 12 : principe de l'injection de cloquage - séquence des opérations



Principles of pressuremeter test



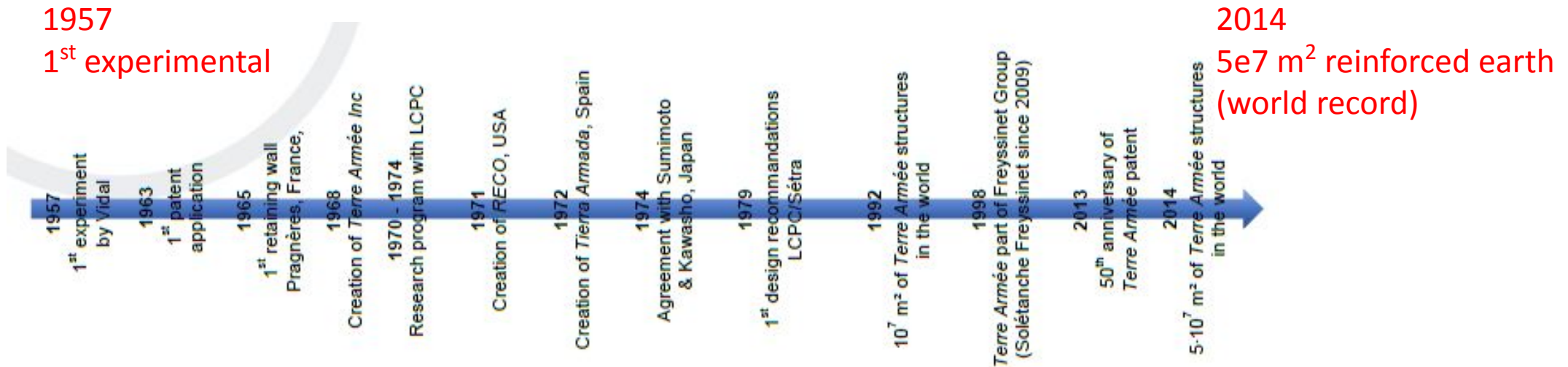
TCP Report – France



PAST ACHIEVEMENTS (Did you know?)

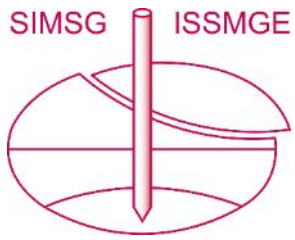
Henri Vidal (1924-2007)

- Inventor of reinforced earth technique



Did you know CFA technique has a French heritage??

From 1963, its development accelerated, with the publication of regulations, the rise of drilling machines and ever greater depth and diameter records for piles.



TCP Report – France



NATIONAL RESEARCH AND PROJECTS – HIGHLIGHTS

The French National Project Program aims to create new knowledge in civil and construction by regrouping researchers, engineering and construction companies.

CLOUTERRE I & II

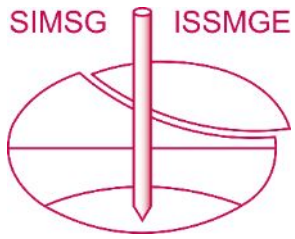
Publication of the XP 94-240 standard its transformation into the **European standard PR-94270** in 2009 for soil nailing.

ASIRI

to publish "Recommendations concerning the implementation and design of embankments and slabs on soil reinforced with rigid inclusions".

COMMENTS:

What is the role of ISSMGE member societies in this type of projects – as a society not individuals? Geotechnical focused training centres (funded by governments and supported by member societies of ISSMGE) can be the future of research and training within ISSMGE.



TCP Report – TC 103

NUMERICAL METHODS IN GEOMECHANICS

PAST

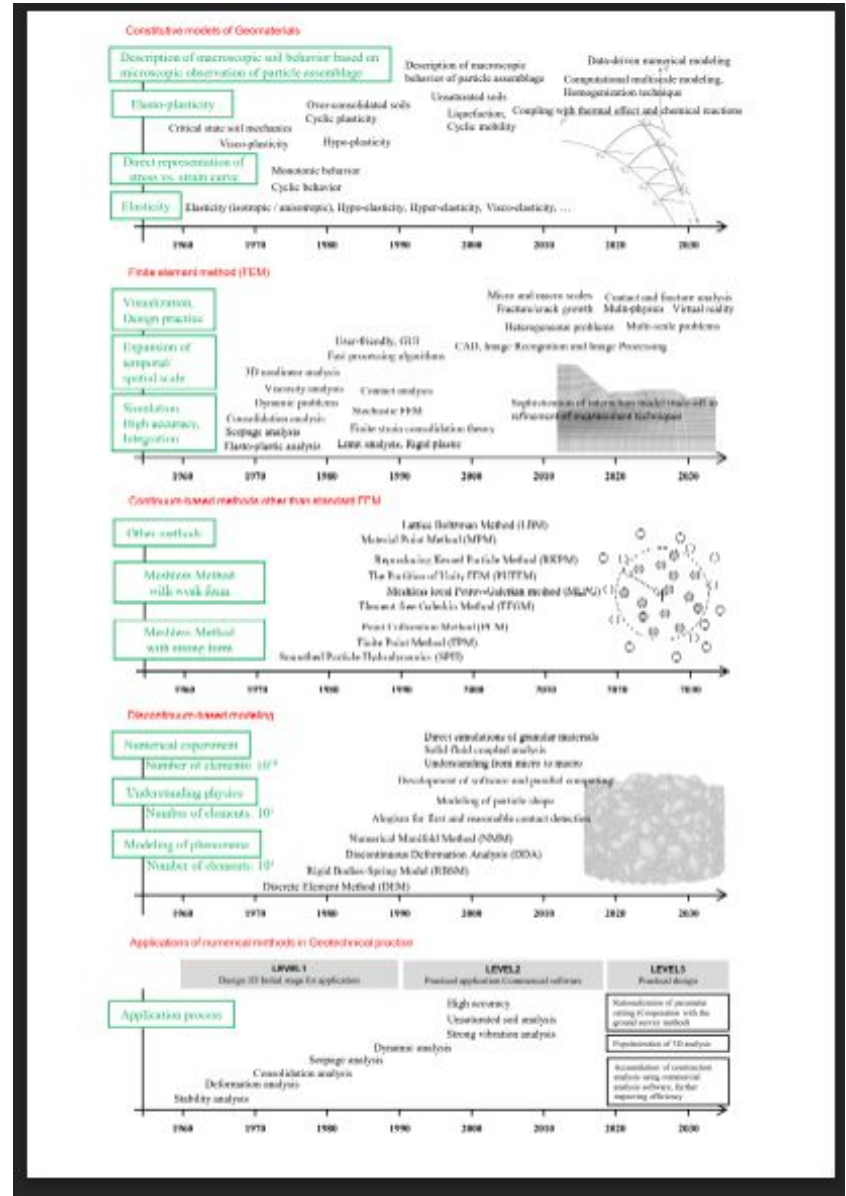
- 1D applications as early as 1950s:
 - stability to deformation analysis

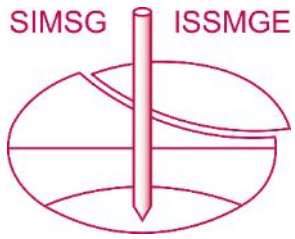
CURRENT

- Practical applications, early 2000:
 - unsaturated soil, deep foundation

FUTURE

- Practical design, >2020,
 - safety prediction and verification, simplification of inputs using available database





TCP Report – TC 103

NUMERICAL METHODS IN GEOMECHANICS

Survey results summary:

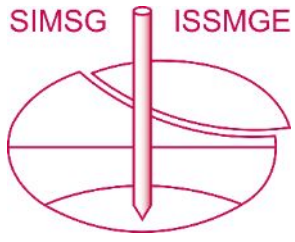
- >50% from Europe and mostly 36-45 years old
- Numerical methods are mainly used for ground improvement, Tunnelling, Risk an offshore

Interesting observations:

- From those who use numerical methods on regular bases (65%), around 90% use FEM for research and less than 1% for design verifications.
- High price deemed as the major reason hindering wide application of numerical methods outside academia.

This is indeed one of the key reasons for disconnections between the university and industry.

COMMENTS: *What can TC103 do to facilitate the utilisation of high accuracy numerical methods in industry, hence strengthening industry-university links?*



Time Capsule Project Report Review

THANK YOU

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