NEWS CIRCULAR
JUNE 2018

The Roles of AIT & Southeast Asian Geotechnical Society (SEAGS): From 1976 to 2017: Dennes T. Bergado, Prof. Emeritus AIT & Past Secretary SEAGS & Editor AGSSEA-SEAGS Journal

Preamble: This article covers the roles played by AIT and SEAGS over a period from 1976 to 2018 as described by Prof. Dennes Bergado. It covers how the Rangsit Campus has developed and the Faculty & AIT Aumni as selected by Prof. Bergado. Also brief comments on the establishment of SEAGS; SEAGC – the SEAGS conferences organized and the organization of conferences, symposia, seminars & lectures as well as in publishing the Society Journal. Photos of Rangsit Campus; Key players contributed in the developments; also as taken in the conferences and graduation. Novel equipment in the AIT-GTE Laboratory including those developed by Prof. Bergado, major research areas. Ground improvement was the subject of research by Prof. Bergado & the subsidence studies carried out by the team of Prof. Prinya, foundation studies by Surachat Sambhandhararaka, involvement of the work on Swarnabhumi International Airport since 1970, and the short courses conducted are worthy of praise.

AIT Campus

AIT Rangsit Campus and Trees Growing with Time

Selected Faculty Colleagues:

- **Prof. Prinya Nutalaya (1975-2000)**
- **Dr. Peter Brenner (1974-1980)**
- **Prof. Balasubramaniam (1973-2001)**

Selected Thai Colleagues and AIT Alumni:

Dr. Surachat Sambhandaraksa, Dr. Warakorn Mariang, Prof. Dennes T. Bergado, Dr. Noppadol Phienwej, Dr. Yongyuth Taesiri, and Dr. Wanchai Teparaksa

SEAGS

The Southeast Asian Society of Soil Engineering (SEASSE) was established in Bangkok, Thailand after the first SEASEC regional conference in 1967 through the leadership of Dr. Za Chieh Moh.

The SEA Soil Engineering Conference (SEASEC) was the first international/regional activity in the field of geotechnical engineering held in Bangkok under the support of the Asian Institute of Technology (then the SEATO Graduate School of Engineering).

SEAGS Activities: To organize conferences, symposia, seminars & lectures in the various countries of SEA region as well as to publish Geotechnical Engineering Journal (since 1970).

First Southeast Asian Soil Engineering Conference (SEASEC) in 1967

When SEASSE was formed

Chai Muktabhant , Sirilak ChanDrangsu & The Famous Moh,

Brand & Nelson – Played Key Roles in early Days of SEAGS

http://www.seags.ait.ac.th/
http://www.agssea.org/

SEAGS Journal: SEAGS Web, Journal, Bulletin, etc.

Annual International Conferences Organized in Bangkok
(1977 to 2012)

1) International Symposium on Soft Clay (1977).
2) International Symposium on Geotechnical Aspects of Highway Engineering (1979).
3) International Conference on Engineering for Protection from Natural Disasters (1980).
4) International Symposium on Coastal and Offshore Structures (1981).
5) International Symposium on Soil and Rock Improvements (1982).
6) International Symposium on Lab/Field Tests and Analysis of Geotech Problems (1983)
7) International Symposium on Mass and Material Transportation (1984).
8) International Symposium on Environmental Geotech. and Problematic Soils (1985)
9) International Symposium on Computer Aided Design/Physical Modelling (1986)
10) Ninth Southeast Asian Geotechnical Conference (1987)
11) International Symp. on Restoration of Infrastructures and Historical Monuments (1988)
12) International Symposium on Underground Excavations of Soils and Rocks (1989).
13) International Symposium on Lab/Field Tests in Geotechnical Engineering Practice (1990).
14) Ninth Asian Regional Conf. on Soil Mechanics and Geotechnical Engineering (1991).
15) International Symp. on Prediction versus Performance in Geotech. Engineering (1992).
16) Second Young Geotechnical International Conference (1994).
17) International Symposium on Tunneling and Underground Space Development (1995)
18) International Course on Natural Hazards and Environmental Geotechnics (1995)
19) International Course on Numerical Analysis in Geotechnical Engineering (1996)
20) International Course on Estimation of Design Parameters for Soils and Rocks (1996)
21) International Course on Problematic Soils and Ground Improvement Techniques (1996)
22) International Course on Advanced Geotechnical Analysis (1997)
23) International Course on Geotechnical Hazards and Dam Construction (1997)
24) Symposium on Deep Foundations, Excavations, Ground Improvements (1997)
25) International Conference on New Frontiers and Challenges Civil Engineering (1999)
26) International Symposium on Soft Ground Improvement and Geosynthetics (2001).
27) International Symposium on Ground Improvement and Waste Containment (2003).
28) Fifteenth Southeast Asian Geotechnical Conference (2004).
29) International Symposium on Tsunami Reconstruction with Geosynthetics (2005).
30) International Symposium on Geotech. Aspects for Second Bangkok Intl. Airport (2006).
31) International Symposium on Human Security and Environmental Protection, 2007.
32) International Symposium on Sustainable Mitigation to Climate Change (2009).
33) International Symposium on Challenges and Opportunities on Climate Change (2010).
34) International Symposium on Sustainable and Green Technology for Climate Change and Retirement Symposium of Prof. Dennes T. Bergado (2012)
35) Fifth Asian Regional Conference on Geosynthetics, Bangkok, Thailand, 2012.

Selected Photos:

BKK-1977: 5th SEAGC Soft Clays

9th SEAGC: Bangkok : 1987

Flooding of AIT Campus and Bangkok

Retirement Symposium of Prof. Bergado was originally scheduled in December 2011. Postponed to 2012 due to Exceptional Flooding in October/December 2011.

The Flooding Affected Large Areas in the Central Plains including AIT Campus and Bergado House in Muang Ake 2.

AIT Entrance

Engineering Building

Flood Damage to Prof. Bergado House & Water Mark

Evacuation by Albert Bergado

Retirement Symposium Prof. Bergado

Conferences, Seminars etc.

Organizing Conferences, Seminars, Etc.

Glimpses of Geotech Equipment at AIT (Mostly developed by Prof. Bergado)

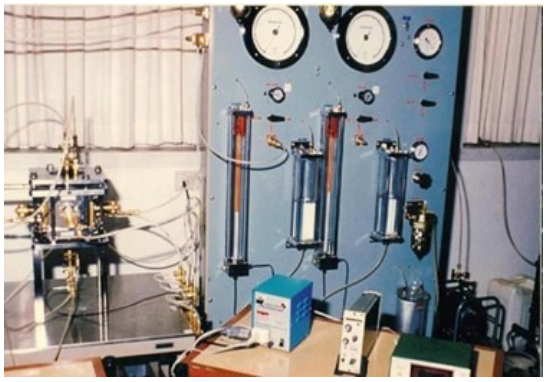


Fig. A-16 Large Consolidometer with Central Drainage

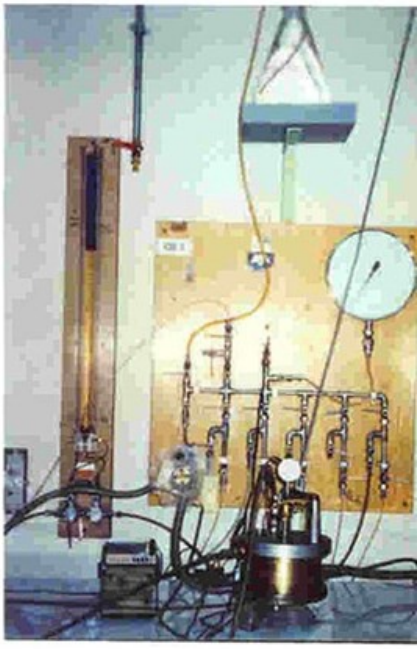
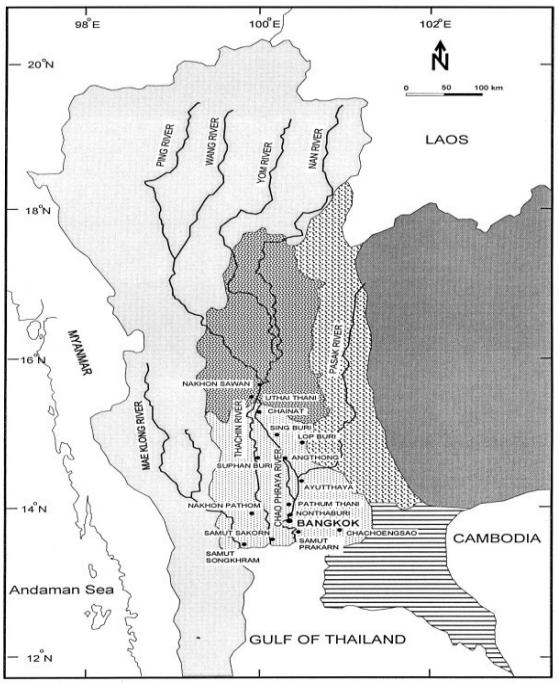


Fig. A-17 Rowe Cell Test Apparatus

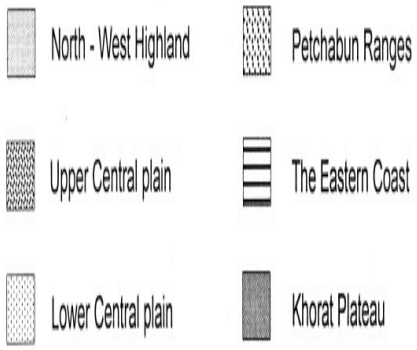
Selected Equipment at GTE Laboratory

Famous Soft Clay Research on Bangkok Clays

Engineering Properties of Soft Clays in SE Asia: Studied extensively by many Researchers after the leadership of Moh, Brand & Nelson and others. Balasubramaniam, Bergado et al (1985) Edited Engineering Behavior of Soils in Southeast Asia

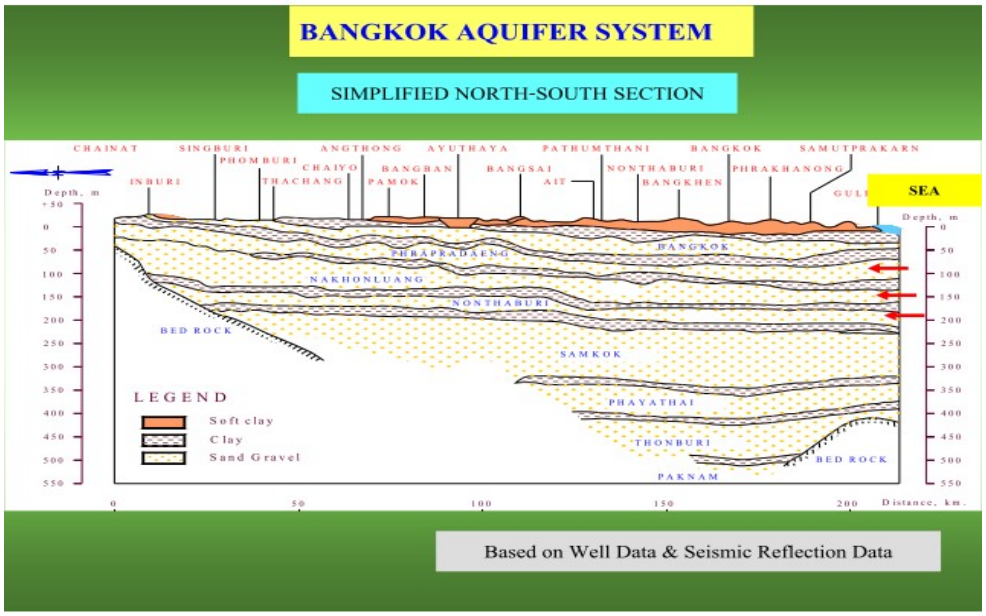


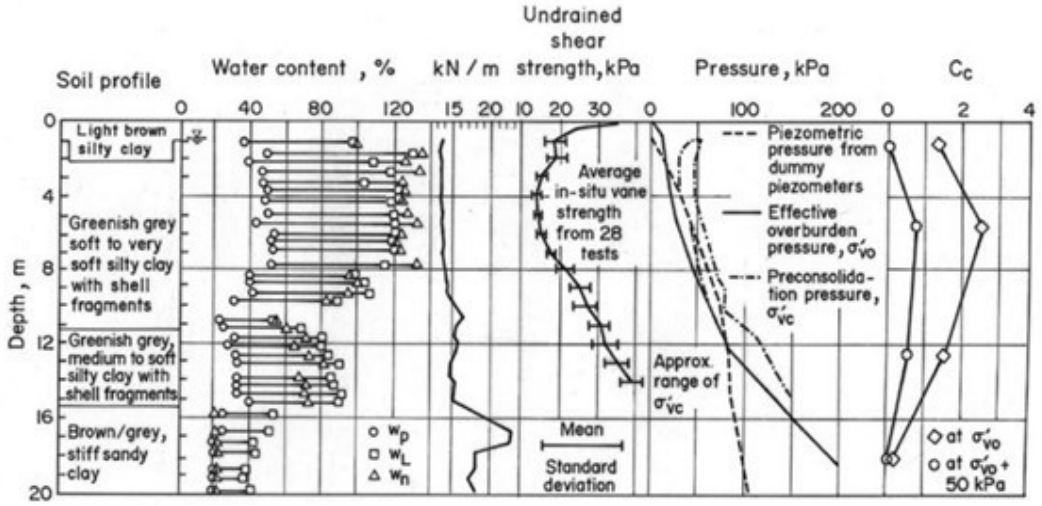
The Central Plain of Thailand



The Central Plain of Thailand

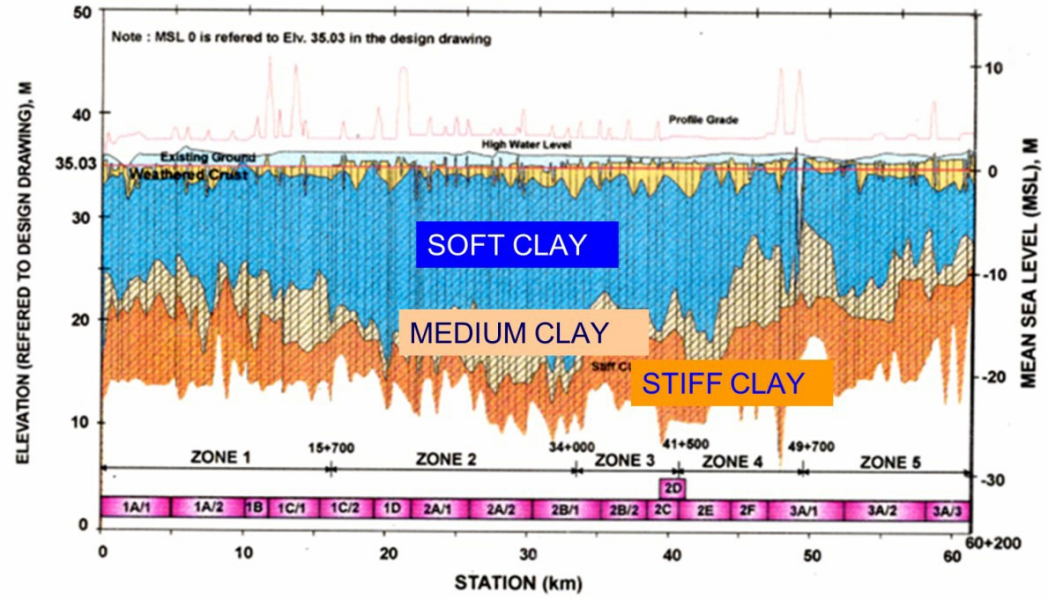
Prof. Prinya's Research on Bangkok Aquifers and Subsidence



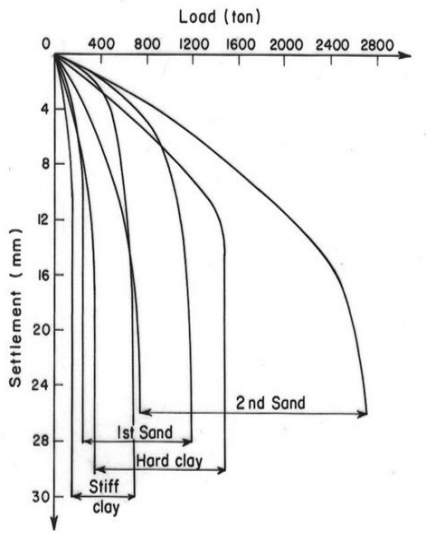


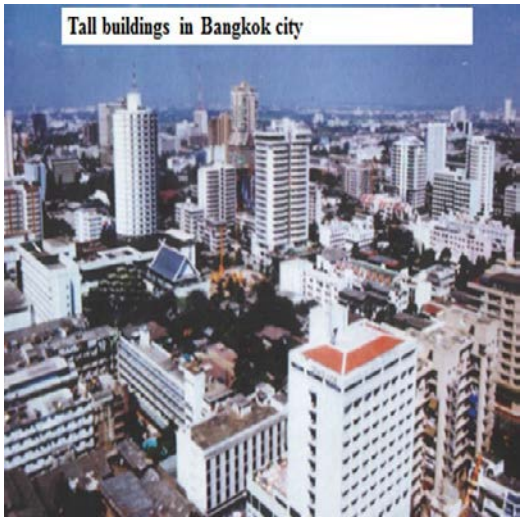
Properties of Soft Bangkok Clay at Nong Ngu Hao. Now: Suvarnabhumi International Airport

Soft Clay Deposit along Bangkok-Chonburi Motorway



Deep Foundation Research



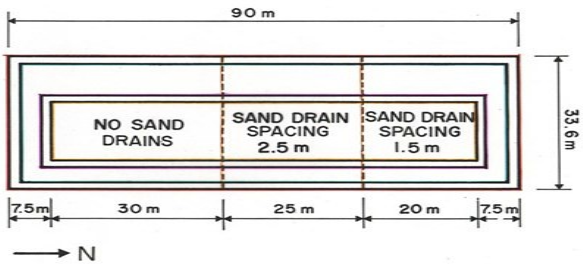


Increasing capacity of Foundations: From Driven piles to bored piles: Dr. Surachat Contribution for Tall Buildings: Dr. Surachat is an excellent Engineer in the Academic Circle (at AIT too)

Expressway Project Research

First Expressway (Din Daeng to Dong Muang) Foundation Project (Prof. Balasubramaniam)

Pioneering Research on Vertical Drains 1975

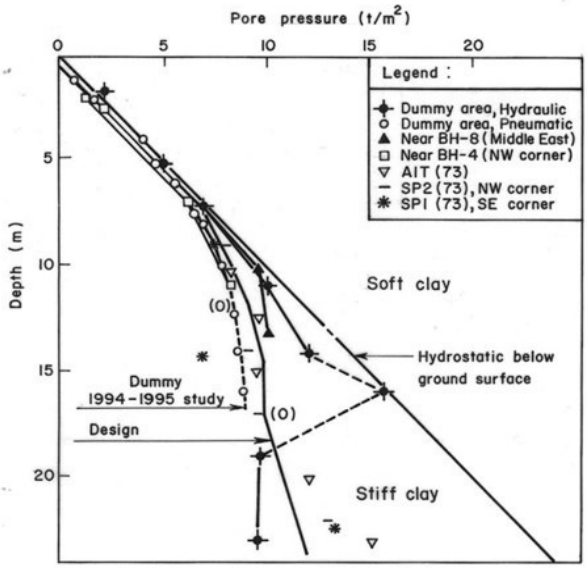


Test Embankment using Wick Drains at Royal Thai Navy (RTN) Dockyard by Prof. Balasubramaniam.

Driven Piles and Soil Movements

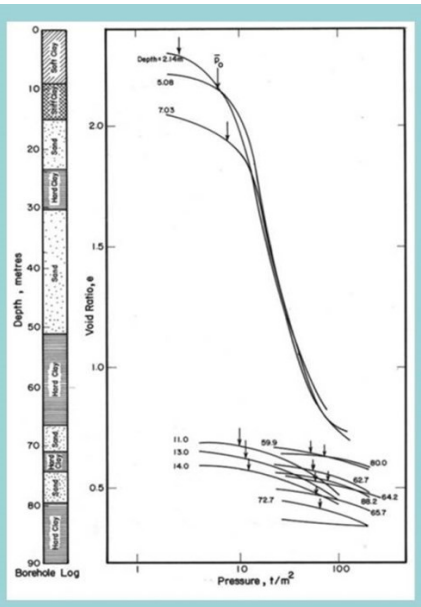
Extensive Driven Piling Works at RTN Site: Peter Brenner did some excellent work in monitoring pile movements; some 20,000 piles were installed up to 28m.

Piezometric Drawdown & Subsidence



Piezometric Drawdown due to excessive ground water pumping: Original work by Titi Paveenchana & John Nelson, Ted Brand and others

Bangkok Subsidence by Prof. Prinya Nutalaya



Compressibility characteristics for Subsidence studies of Bangkok Plain ; many AIT Alumni worked and also Prof Prinya Nutalaya: His pioneering work on subsidence was used in many major projects: Expressways, foundations, Swarnbhumi airport works, MRT works etc

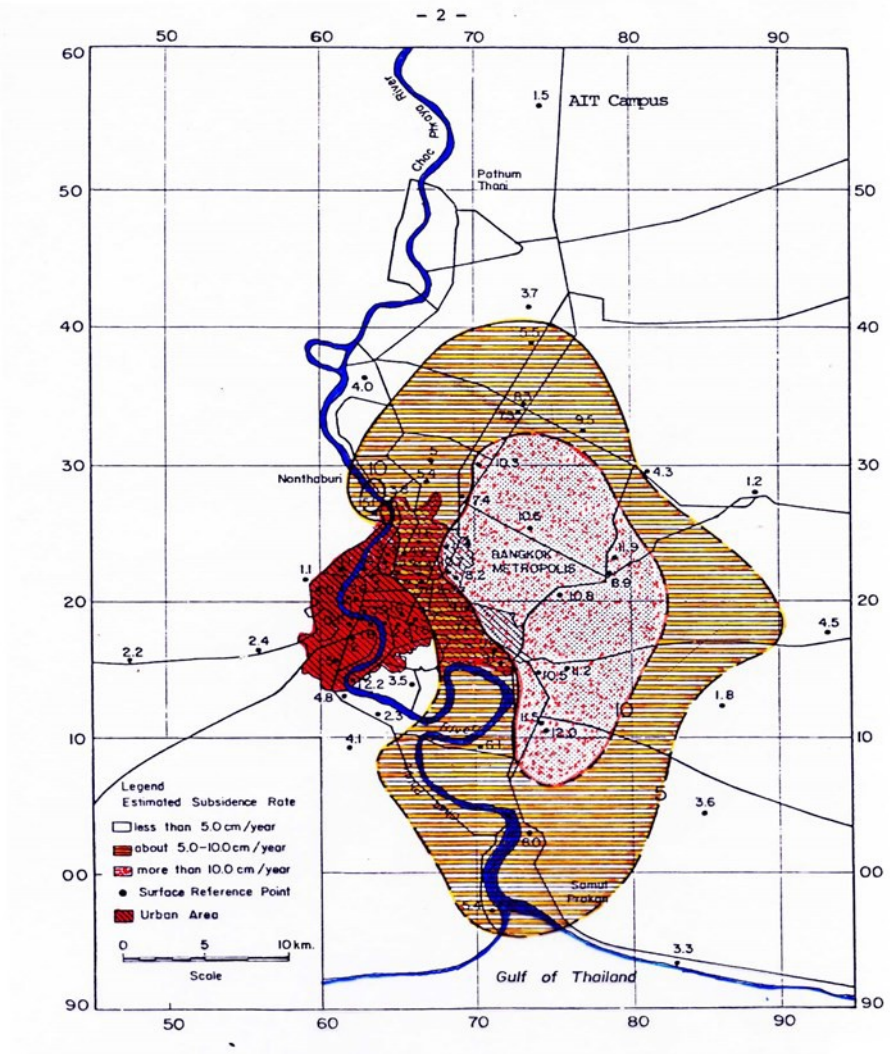


Fig. 1 Subsidence rate in Bangkok (cm / year)
(After AIT, 1982)

Subsidence Rate in Bangkok (cm/year) by

Prof Prinya Nutalaya

Problems of Subsiding Ground in Soft Bangkok Clay

Research work with PVD: Swarnabhmi International Airport Site

Geotechnical Investigation at Nong Ngo Hao Airport Site

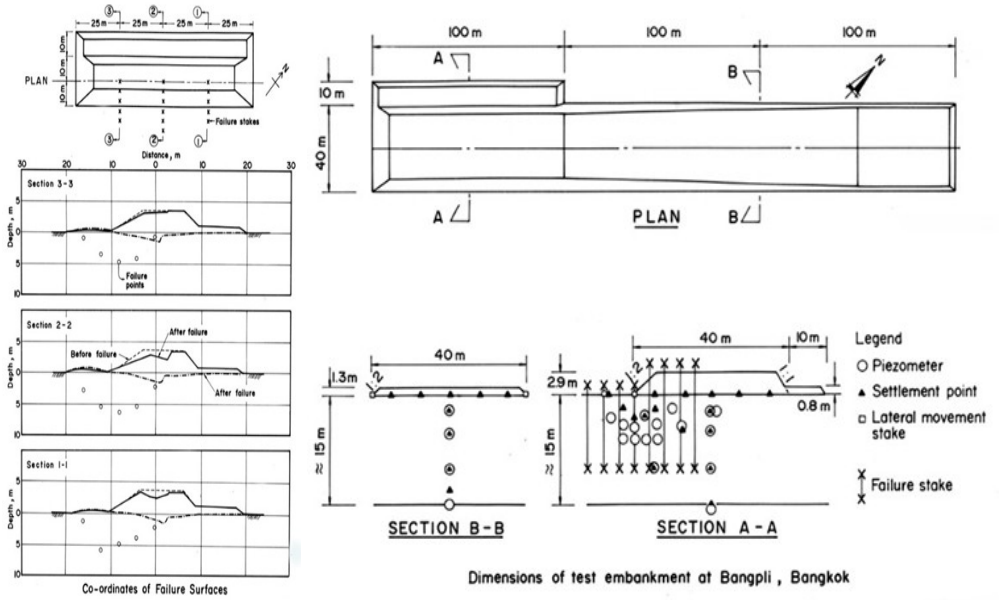
Phase	Year	Title
I	1972 - 1974	Geotechnical Investigations by Asian Institute of Technology and N.D. Lea and Associates, Kampsax
II	1983 - 1984	Pre-loading with Sand Drains, and , Vacuum-Drains; Moh and Associates and NACO
III	1992	An Independent Soil Engineering Study; Norwegian Geotechnical Institute in cooperation the STS Engineering Consultant Co. Ltd.
IV	1993 - 1995	Full scale Field test of Prefabricated vertical drains by the Asian Institute of Technology

So many AIT Theses, RA's, Publications etc etc

Now Swarnabhumi

PVDs were also used to improve the underlying soft clay foundation of Bangkok-Pattaya Motorway & Eastern Ring Road

Pioneering Research with Test Embankments

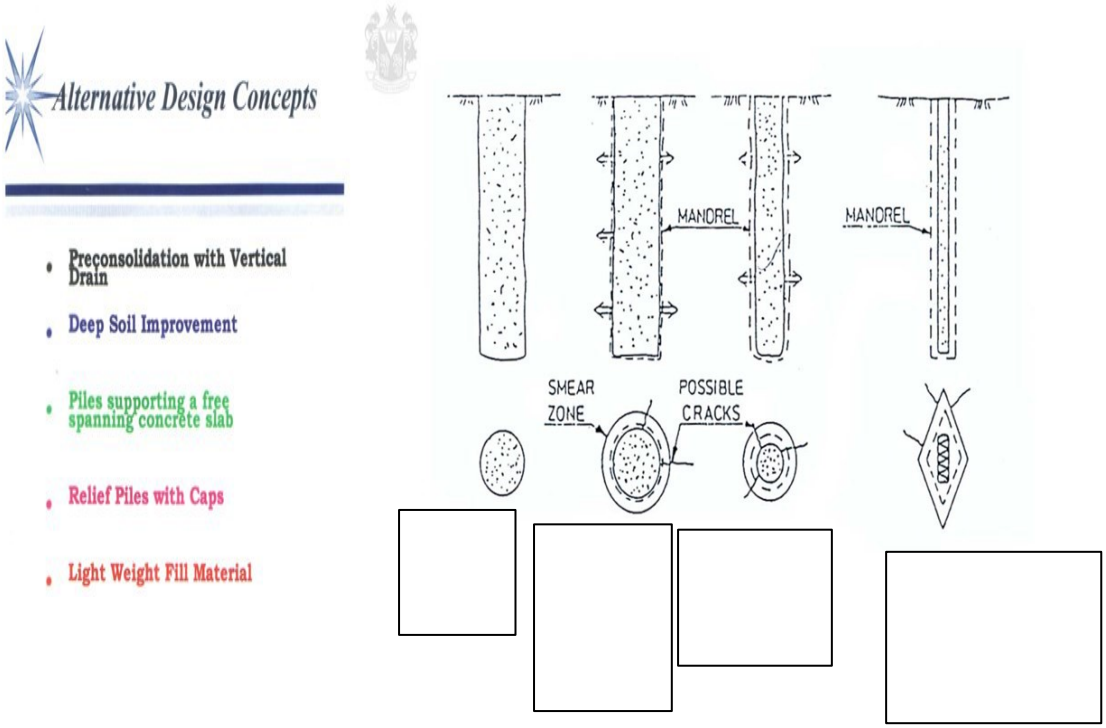


Dimensions of test embankment at Bangpli , Bangkok

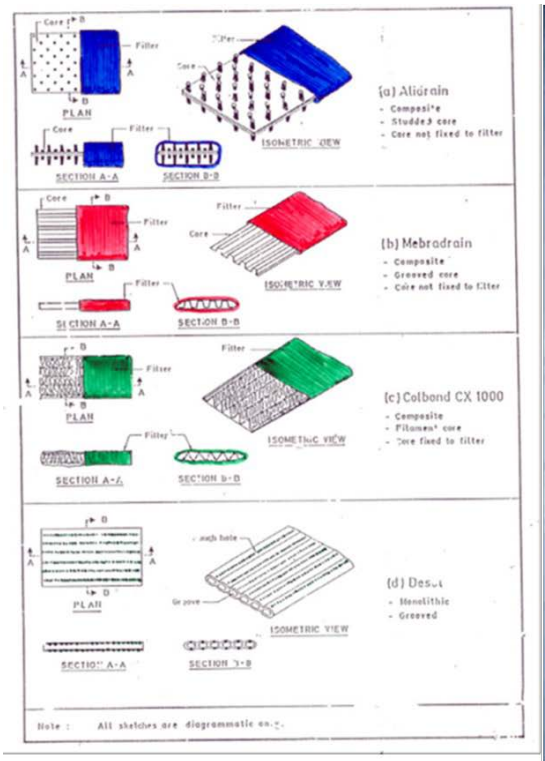
Test Embankments in the 1970s at Nong Ngu Hao by Dr Za Chieh Moh and his Team (Now Suvarnabhumi Air Port)

Famous Prof. T.W. Lambe Jetted Sand Drains

Dr. Moh's team at site



NGI Recommendations including use of PVD with Surcharge: Prof. Bergado obtained for the AIT Team: $1M Project for Laboratory & Test Embankment Studies (1992 to 1996)

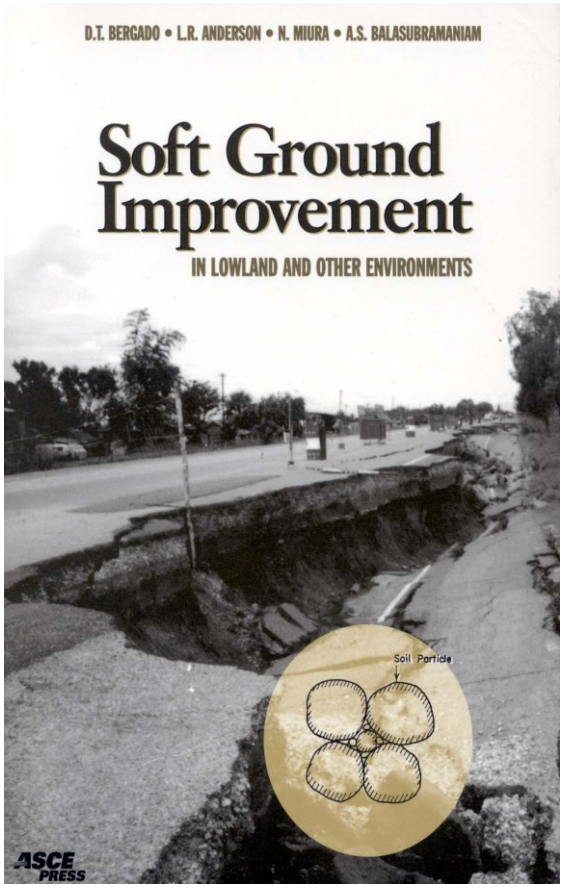


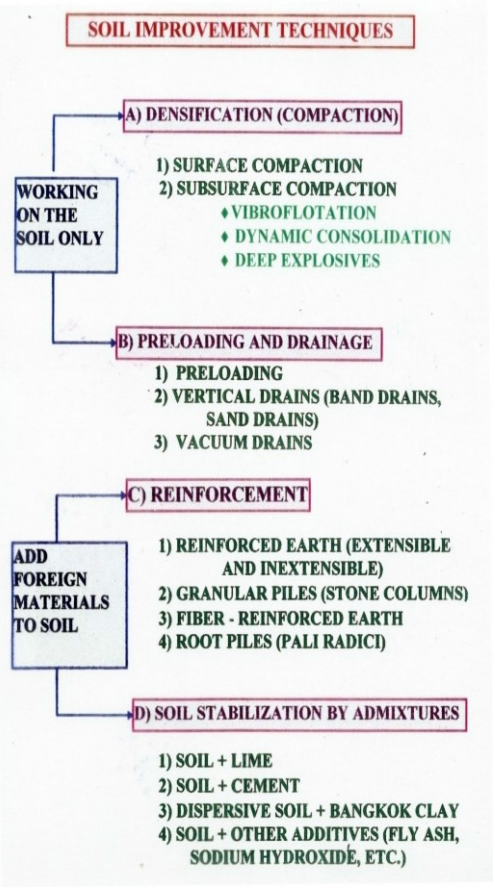
Configurations of Different Drain Types

Available PVD Types

PVD Types and Selection for Airport Study by AIT

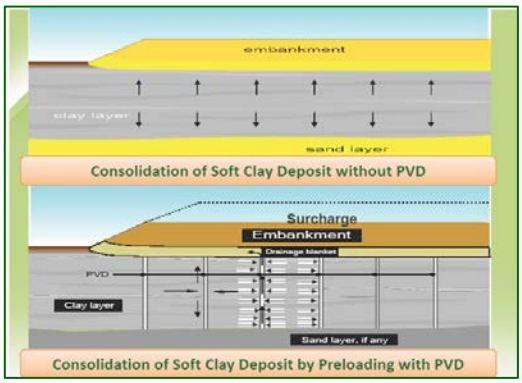
Selection of Ground Improvement Technique

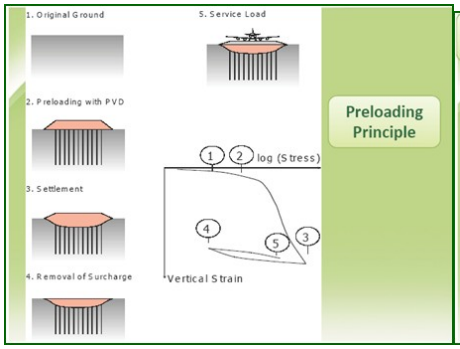


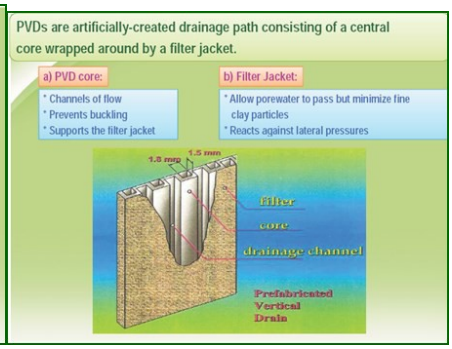


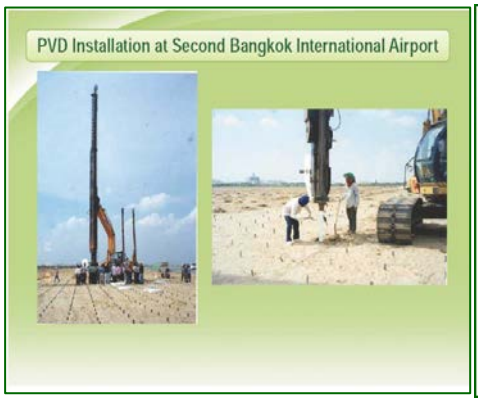
Ground Improvement Research by Prof. Bergado

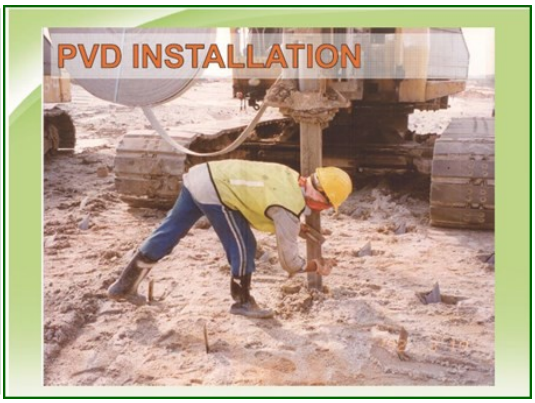
Recent Developments of Soil Improvement using PVDs with Vacuum & Heat Preloading





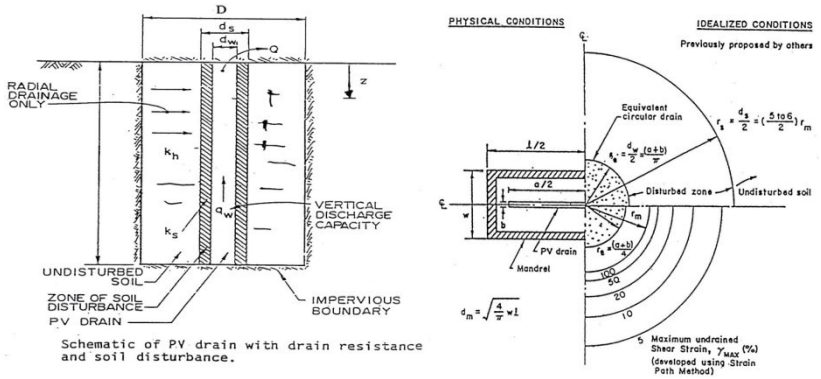






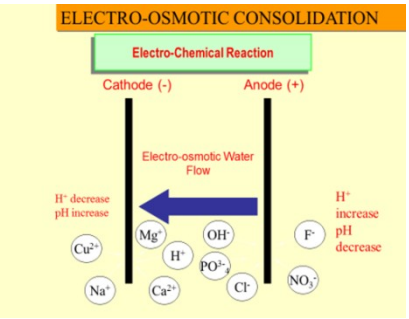
Recent Research on PVD Works

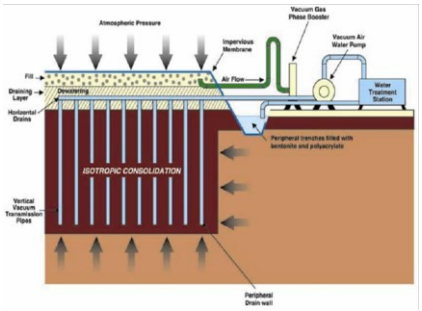
Smeared Zone Due to PVD Installation

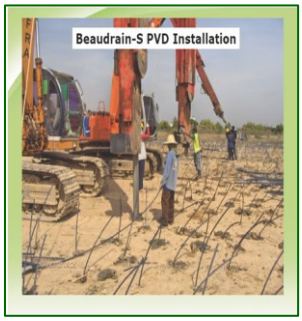


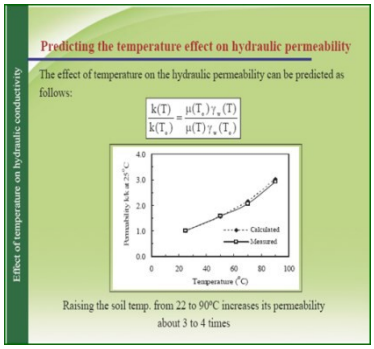
Schematic of PV drain with drain resistance and soil disturbance.

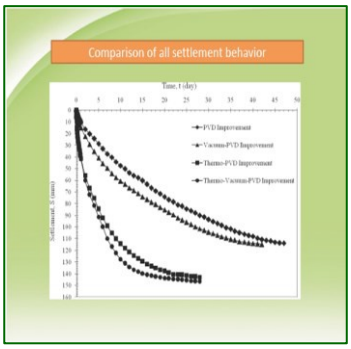
Developments of Soil Improvement using PVDs with Vacuum & Heat Preloading



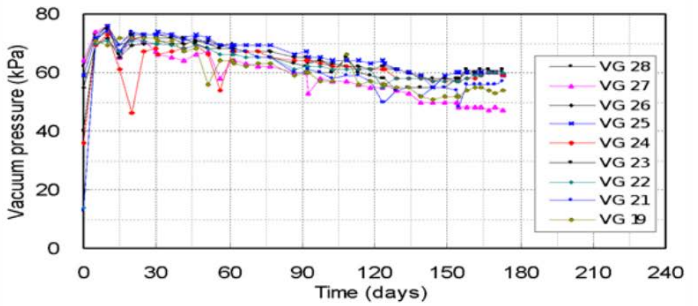




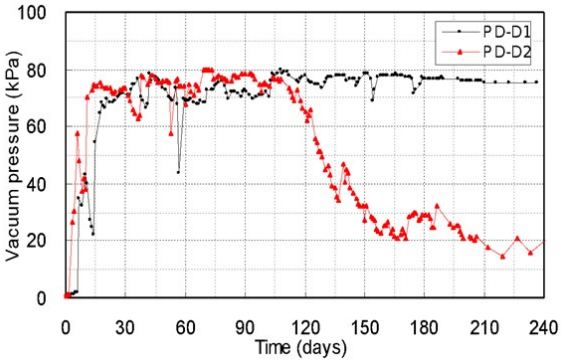




Other Methods of Applying Vacuum Preloading

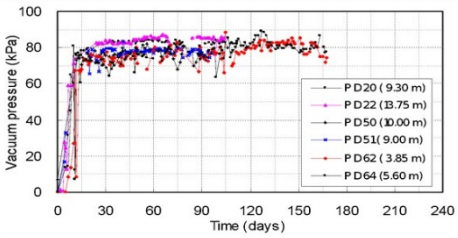


Measured vacuum pressure in sand blanket Using VCM-MS method)



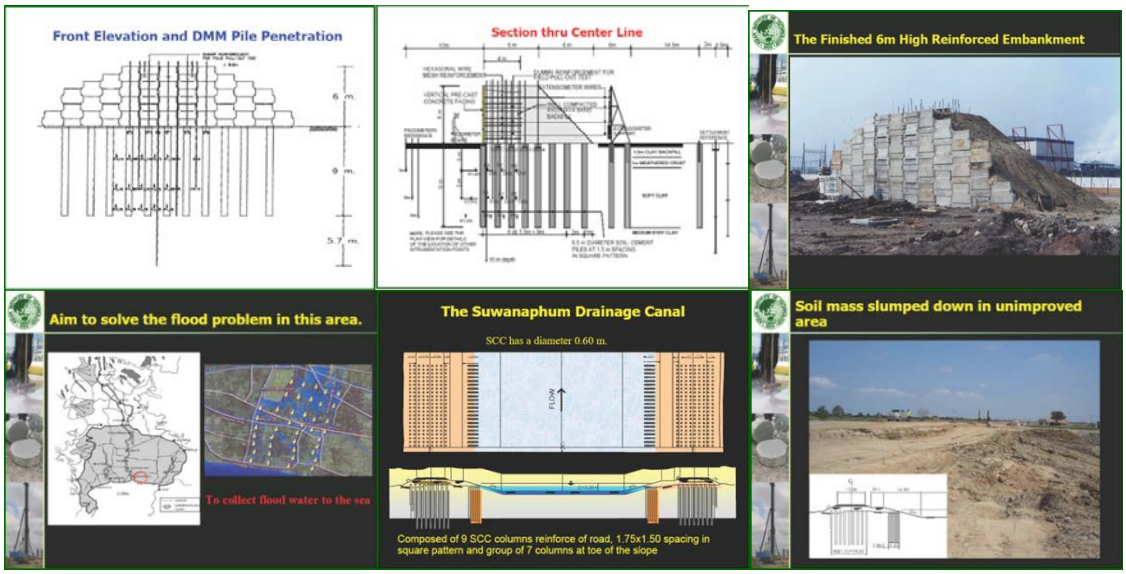
Measured vacuum pressure in PVD

Sections using VCM-MB method

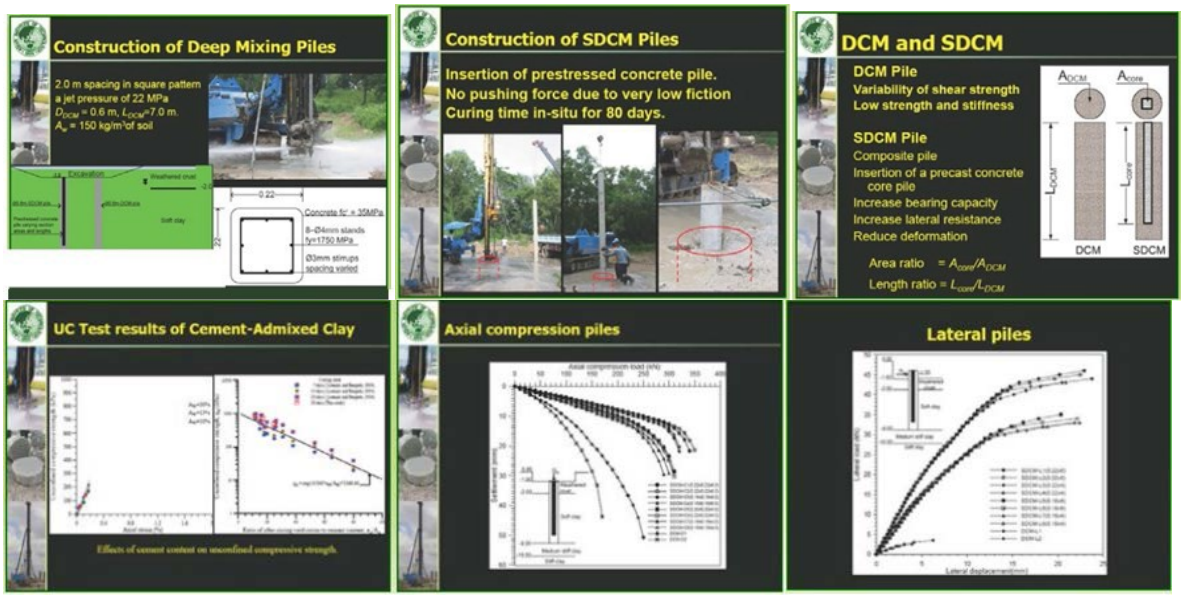


Measured vacuum pressure in PVDs for Sections using VCM-MT technique

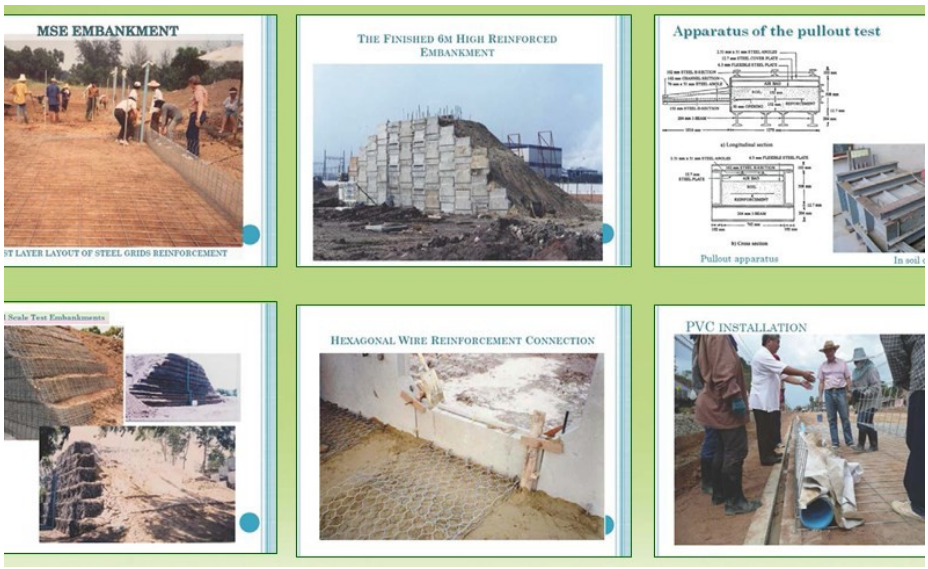
Deep Cement Mixing (DCM) Method: New Approach: High & Optimum Water Contents



Stiffened Deep Cement Mixing (SDCM) Method

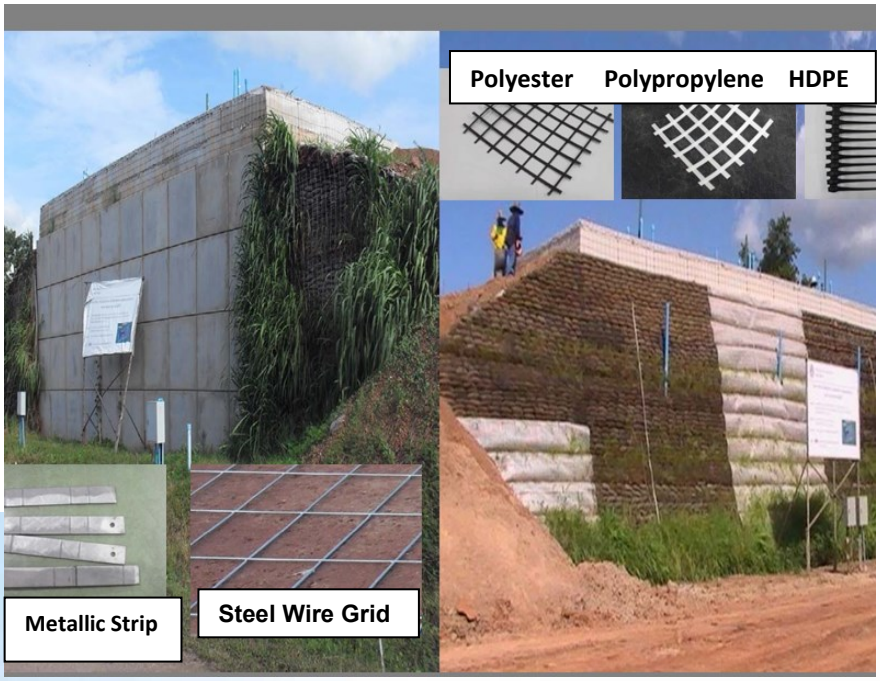


Mechanically Stabilized Earth (MSE) and Interactions of Soil and Rigid Inclusions



MSE (Steel Wire Grid and Metallic Strip)

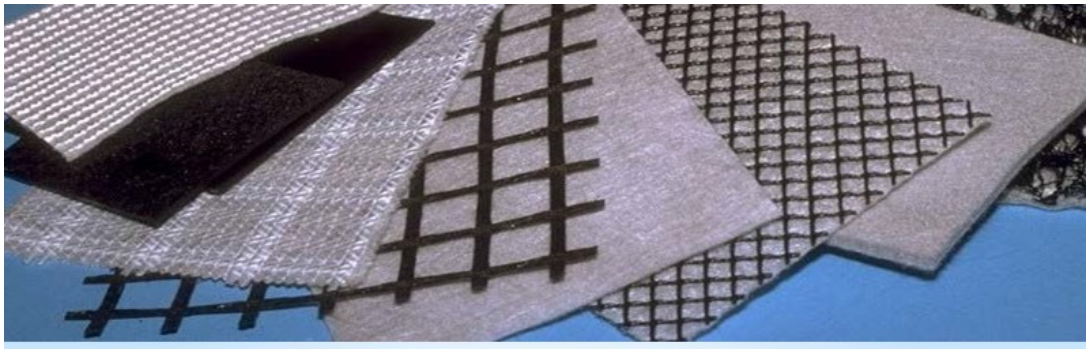
Reinforced Steep Slope (HDPE, PP, PET Grids)



ASIAN CENTER for SOIL IMPROVEME

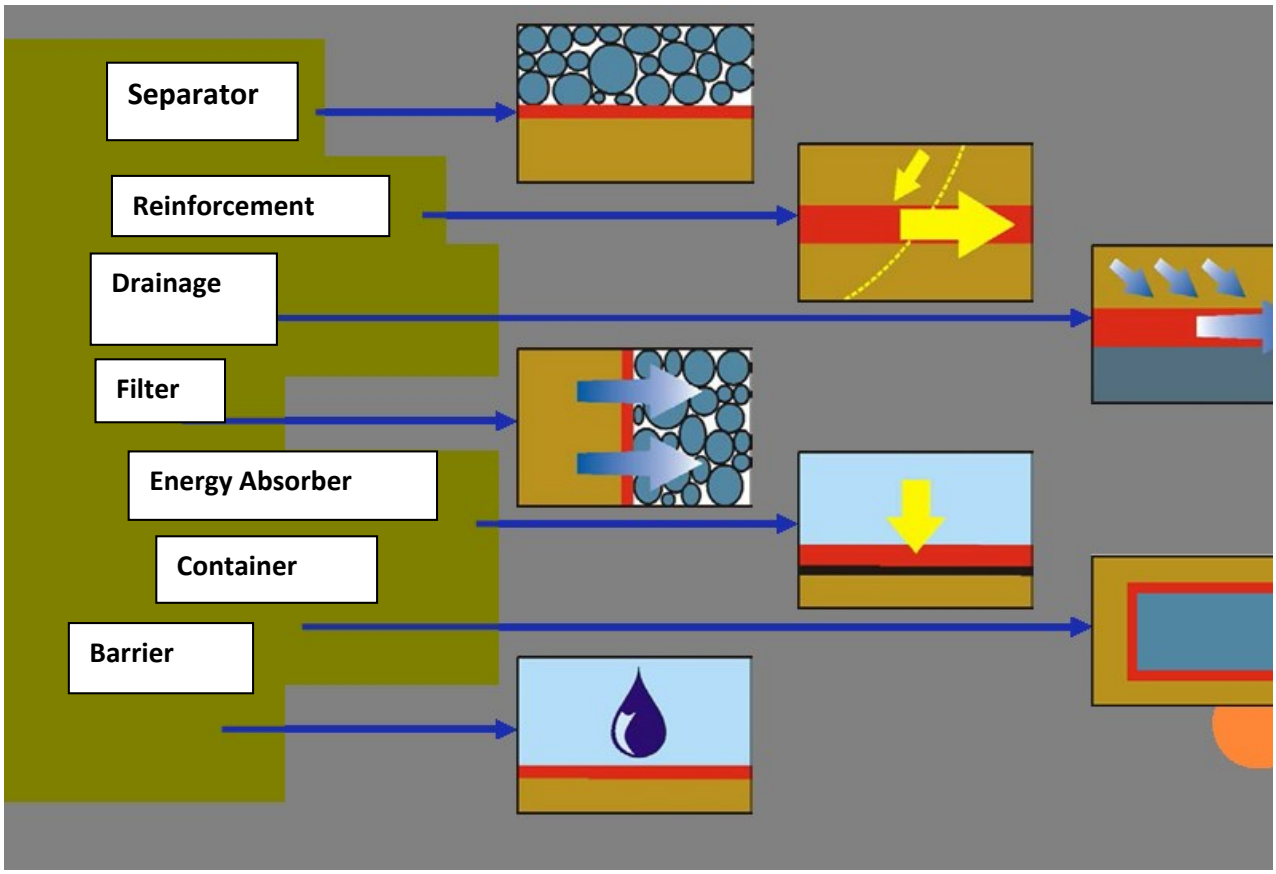
ASIAN CENTER for SOIL IMPROVEMENT and GEOSYNTHETICS (Established: 1998) (ACSIG)

Geosynthetics Products

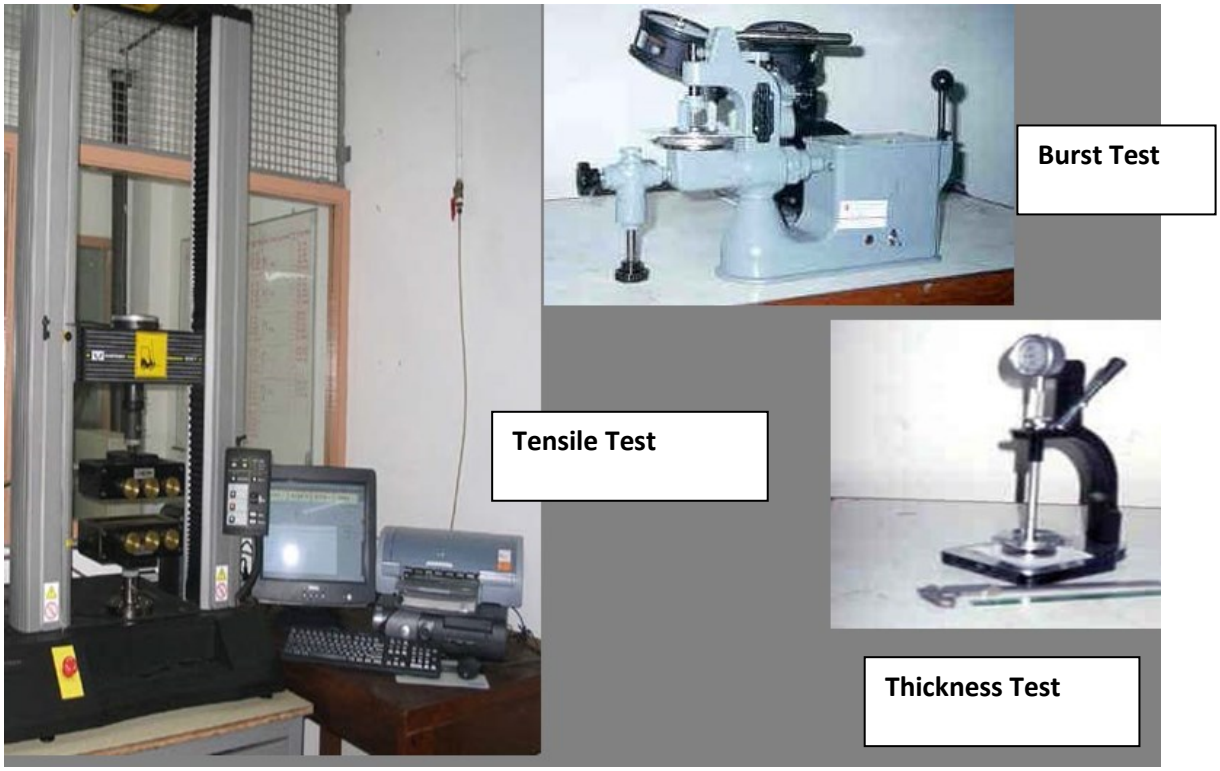


Geosynthetics = thin, flexible, sheet-like materials enhancing the engineering performance of soils

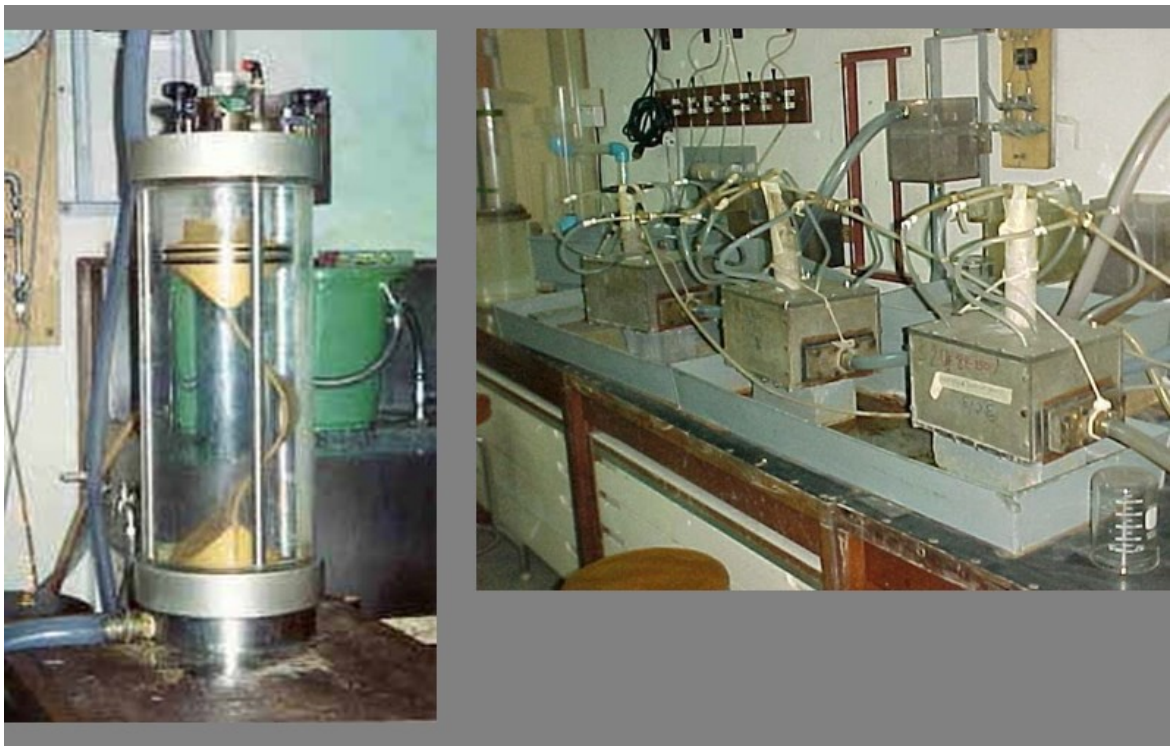
Roles of Geosynthetics

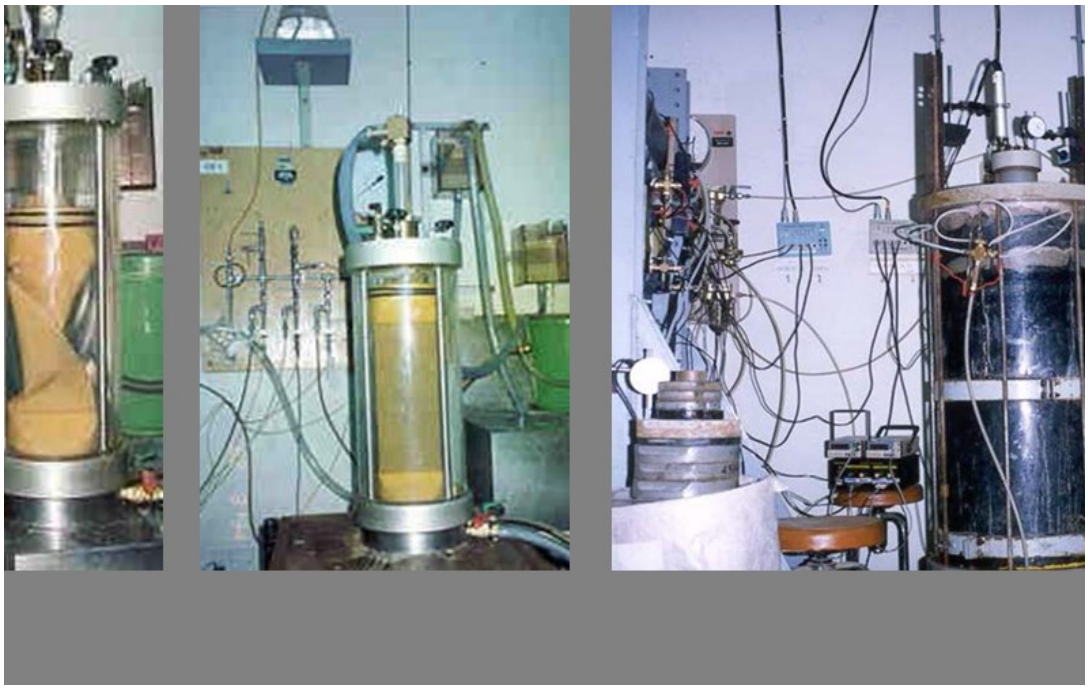


Laboratory Equipment for Quality Control and Quality Assurance Tests



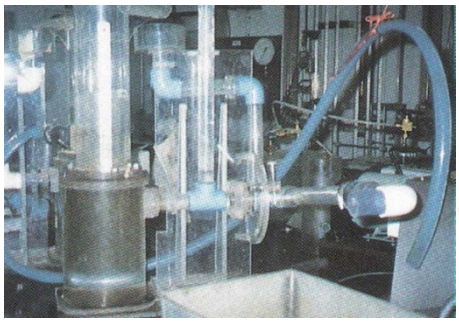
Discharge Tests



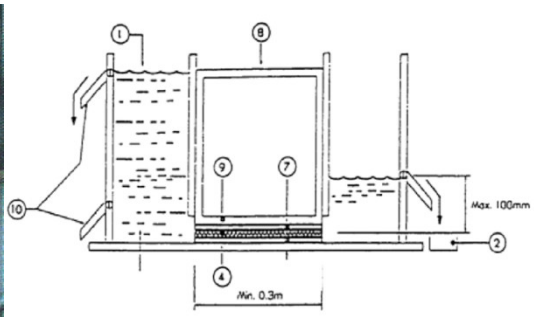


Discharge Capacity & Consolidation Test for PVD

Hydraulic Properties



Water Permeability normal to the plane without load Permittivity Test Apparatus (ASTM D4491)



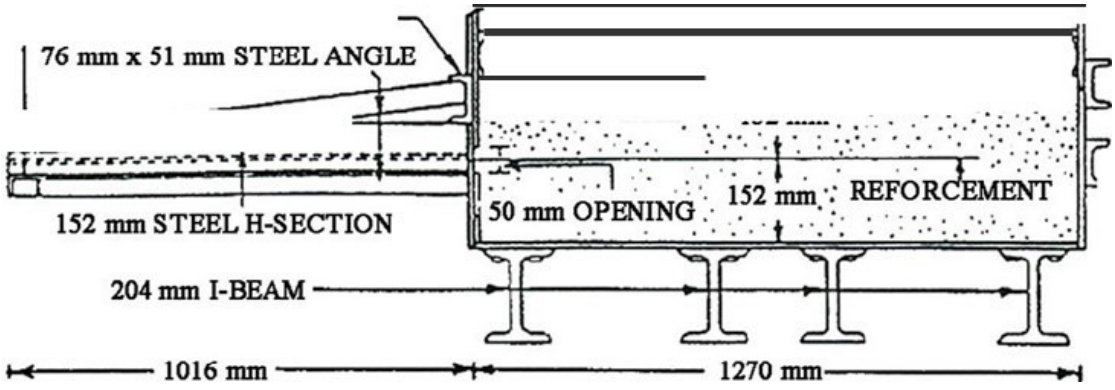
Water Flow along the plane = Transmissivity Schematic Diagram

Mechanical Properties

Puncture Resistance BS 6906 Part 4

Apparent Opening Size

Large Scale Pullout Test



Geomembrane Liner at Solid waste Landfill

Sakaew Province Thailand