ΤΑ ΝΕΑ ΤΗΣ ΕΕΕΕΘ

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ ΚΑΙ ΘΕΜΕΛΙΩΣΕΩΝ

Επί του «πιεστηρίου»:

Ενεκρίθη από το Πρωτοδικείο Αθηνών η τροποποίηση του καταστατικού της ΕΕΕΕΘ, η οποία αφορά στο όνομα, που πλέον γίνεται «ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ ΚΑΙ ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ» και στον τρόπο διεξαγωγής των αρχαιρεσιών για την ανάδειξη των μελών της Εκτελεστικής και της Εξελεγκτικής Επιτροπής (δυνατότητα ταχυδρομικής αποστολής ψηφοδελτίου).

Περιεχόμενα

Ανασκόπηση Γεγονότων Γεωτεχνικού Ενδιαφέροντος

Ημερίδα «Εφαρμογές Γεωσυνθετικών Υλικών»

Στα πλαίσια των δραστηριοτήτων της Ειδικής Επιστημονικής Εδαφομηχανικής και Θεμελιώσεων του ΤΕΕ, συνδιοργανώθηκε από το ΤΕΕ και την Ελληνική Εταιρεία Γεωσυνθετικων Υλικών (HGS) ημερίδα

με θέμα ***«Γεωτεχνικές Εφαρμογές Γεωσυνθετικών Υλικών»*** την Πέμπτη 11 Ιανουαρίου 2007 στο Εμπορικό και Βιομηχανικό Επιμελητήριο Αθηνών με εξαιρετικά μεγάλη επιτυχία τόσο από πλευράς συμμετοχής όσο και από πλευράς παρουσιάσεων.

Σκοπός της ημερίδας ήταν η:

α. Ενημέρωση για τους διάφορους τύπους γεωσυνθετικών υλικών που διατίθενται σήμερα και οι τομείς εφαρμογής τους.

β. Ανάδειξη των τομέων γεωτεχνικού ενδιαφέροντος, στους οποίους έχουν εφαρμογή τα γεωσυνθετικά υλικά.

γ. Ενημέρωση των συναδέλφων μελετητών και κατασκευαστών Πολιτικών Μηχανικών σχετικά με θέματα σχεδιασμού και κατασκευαστικής πρακτικής των γεωσυνθετικών υλικών.

Κατά την διάρκεια της πρωινής συνεδρίας της ημερίδας παρουσιάστηκαν γενικές εισηγήσεις για τις γεωτεχνικές εφαρμογές των γεωσυνθετικών υλικών, ενώ κατά την απογευματινή συνεδρία έγινε παρουσίαση περιπτώσεων από την πράξη (σχεδιασμό και κατασκευαστική πρακτική).

Ημερίδα
«Νέες Εξελιγμένες Μέθοδοι Μηχανικής Διάνοιξης Σηράγγων»
tunnelling.metal.ntua.gr/gts

Η ημερίδα διοργανώθηκε από κοινού από την Ειδική Επιστημονική Επιτροπή Εδαφομηχανικής & Θεμελιώσεων του ΤΕΕ, την Ελληνική Επιτροπή Σηράγγων και Υπογείων Έργων και τον Ελληνικό Πολυτεχνικό Σύλλογο και πραγματοποιήθηκε την Πέμπτη 1 Φεβρουαρίου 2007 στο Εμπορικό και Βιομηχανικό Επιμελητήριο Αθηνών με εξαιρετικά μεγάλη επιτυχία τόσο από πλευράς συμμετοχής όσο και από πλευράς παρουσιάσεων.

Σκοπός της ημερίδας ήταν η ενημέρωση για διάφορους τύπους μηχανημάτων διάνοιξης σηράγγων, των προτερημάτων και των μειονεκτημάτων τους. Επίσης, η ανάδειξη του ρόλου των γεωλογικών – γεωτεχνικών συνθηκών στην κατάλληλη επιλογή του τύπου μηχανικής διάνοιξης των σηράγγων. Τέλος, η παραδειγματική εφαρμογή διαφόρων τύπων μηχανημάτων διάνοιξης σηράγγων από τον Διεθνή και τον Ελληνικό χώρο.

Η Οργανωτική Επιτροπή συνίστατο από τα μέλη των

Ειδική Επιστημονική Επιτροπή Εδαφομηχανικής & Θεμελιώσεων ΕΜΠ: Απέσου Μαρία, Γκλαβά Γεώργιο, Δρέττα Ιωάννα, Κόττα Νικοδώρα, Κούμουλο Δημήτριο, Μυγδάλη Χαράλαμπο, Ντουνιά Γεώργιο, Παπαδημητρίου Αχιλλέα, Πλατή Αθανάσιο, Τζιρίτα Αντιόπη, Τρίγκα Στυλιανή, Φίκιρη Ιωάννη, Ψαρρόπουλο Πρόδρομο,

Διοικητικού Συμβουλίου Ελληνικής Επιτροπής Σηράγγων και Υπογείων Έργων: Γεωργίου Δημήτριο, Καζίλη Νικόλαο, Μπακογιάννη Ιωάννη, Αναστασόπουλο Κωνσταντίνο,

Ελληνικού Πολυτεχνικού Συλλόγου: Ματρακίδη Ιωάννη, Οικονομόπουλο Ιωάννη, Παπασπύρου Σπύρο, Τσιαμπάο Γεώργιο.

Κατά την διάρκεια της ημερίδας παρουσιάστηκαν γενικές εισηγήσεις επί του θέματος της Μηχανικής Διάνοιξης Σηράγγων, όπως:

Εισαγωγή στη μηχανοποιημένη διάνοιξη σηράγγων, από τον Ιωάννη Οικονομόπουλο, Καθηγητή ΕΜΠ

TBM Full face driving – Recent innovations, από τον Siegmund Babendererde, Dr.-Ing. E.h.

Γεωλογικοί περιορισμοί και γεωτεχνικά θέματα στη μηχανική διάνοιξη σηράγγων: Ιδιαίτερα σημαντικά περιστατικά, από τον Παύλο Μαρίνο, Καθηγητή ΕΜΠ

Application of foam in expanding TBM capabilities, από τον Ulrich Maidl, Dr Ing.

TBM Design considerations: Selection of Earth Pressure Balance or Slurry Pressure Balance Tunnel Boring Machines, από τον Rick Lovat, P. Eng.

Double shield TBMs, από τον Remo Grandori, Ing.

Activity of ITA Work Group 14 on Mechanized Tunnelling, από τον Katsuji Fukumoto, Συντονιστή της Ομάδας Εργασίας WG14 της ITA

καθώς και παρουσιάσεις εφαρμογών από έργα στην Ελλάδα:

Διάνοιξη σηράγγων Γκιώνας & Κήρφεως, από τον Πέτρο Λαμπρινάκο, Μεταλλειολόγο Μηχανικό και Παύλο Μαρίνο, Καθ. ΕΜΠ

Σήραγγα αποχετευτικού δικτύου Θεσσαλονίκης, από τον Πέτρο Λαμπρινάκο, Μεταλλειολόγο Μηχανικό

Η Σήραγγα Ευήνου - Μόρνου, από τον Ιωάννη Μπακογιάννη, Μεταλλειολόγο Μηχανικό και Δημήτρη Νικολάου, Πολιτικό Μηχανικό

Διάνοιξη της σήραγγας προσαγωγής Μεσοχώρας με μηχανή ολομέτωπου κοπής πετρωμάτων (TBM) – Τεχνικογεωλογικές ιδιαιτερότητες, από τον Νίκο Καζίλη, Δρ Τεχνικό Γεωλόγο και Γ. Θανόπουλο, Πολιτικό Μηχανικό

Πρόσφατες εμπειρίες από τη μηχανική διάνοιξη σηράγγων στο ΜΕΤΡΟ της ΑΘΗΝΑΣ, από τον Νίκο Μπούσουλα, Προϊστάμενο Γεωτεχνικών Μελετών Α.Μ.

Προσεχείς Επιστημονικές Εκδηλώσεις

2ο Ιαπωνο–Ελληνικό Συμπόσιο
Αντισεισμικός Σχεδιασμός, Παρατήρηση Συμπεριφοράς, και Αναβάθμιση Θεμελιώσεων
3–4 Απριλίου, 2007
Τόκυο, Ιαπωνία
www.civil.tohoku-gakuin.ac.jp/yoshida/2JGW/index.html

Το συμπόσιο διοργανώνεται από το Τμήμα Σεισμικής Μηχανικής του Συλλόγου Πολιτικών Μηχανικών της Ιαπωνίας και το Ελληνικό Τμήμα Αντισεισμικής Μηχανικής (ΕΤΑΜ) σε συνεργασία με την Japanese Geotechnical Society και την Japan Association for Earthquake Engineering.

Στο Συμπόσιο θα δοθεί έμφαση σε παρουσιάσεις, συζητήσεις και ανταλλαγή απόψεων σε θέματα αντισεισμικού σχεδιασμού, παρατήρησης της συμπεριφοράς και αναβάθμισης θεμελιώσεων, συστημάτων αντιστήριξης, και υπογείων κατασκευών. Στα θέματα του Συμποσίου περιλαμβάνονται:

- Βλάβες θεμελιώσεων και συστημάτων αντιστήριξης σε πρόσφατους σεισμούς
- Αντισεισμικός σχεδιασμός πασσάλων, επιφανειακών και εγκιβωτισμένων θεμελιώσεων
- Αντισεισμικός σχεδιασμός συστημάτων αντιστήριξης
- Αντισεισμικός σχεδιασμός υπογείων κατασκευών
- Αναβάθμιση και επισκευή υφιστάμενων θεμελιώσεων

Επικοινωνία: Καθ. Γ. Γκαζέτας, τηλ. 210.7723747, gazetas@ath.forthnet.gr

3rd Symposium on Construction Processes in Geotechnical Engineering

Το συνέδριο θα διεξαχθή στις 19 και 20 Απριλίου 2007 στο Λονδίνο και διοργανώνεται από το Geotechnical Engineering Research Centre του City University.

Mitigating the effects of geotechnical construction increasingly requires the development and implementation of innovative construction techniques and processes. The Symposium provides an opportunity to discuss, present and debate many of the different construction processes that are being used in Europe today. Discussion will focus particularly on differences in the procedures used across Europe.

Discussion will address recent developments and innovative solutions related to:

- Ground improvement
- Grouting
- Groundwater control
- Ground monitoring
- Ground movement control
- Nailing, anchoring, reinforcing
- Deep foundations
- Tunnels and retained excavations

Πληροφορίες από: Dr Andrew McNamara, Email: cpige@city.ac.uk, Tel: +44 (0)20 7040 8149 Fax: +44 (0)20 7040 8832.

International Symposium on Seismic Risk Reduction
JICA Technical Cooperation Project in Romania

26-27 April 2007
Bucharest, Romanian Academy

cnrrs.utcb.ro//issrr2007/issrr2007.html

In the 5th year of the Japan International Cooperation Agency (JICA) Technical Cooperation Project with Romania entitled "Seismic risk reduction for buildings and structures", the implementing agency in Romania - National Center for Seismic Risk Reduction (NCSRR) - is inviting you to participate in the International Symposium on Seismic Risk Reduction, to be held in Bucharest, 26-27 April 2007, at the Romanian Academy Library.

The Symposium will be organized with the support of JICA, Ministry of Transports, Constructions and Tourism of Romania (MTCT), Romanian Academy - Geonomical Sciences Department, and with the participation of the partner institutions of NCSRR within JICA Project: Technical University of Civil Engineering Bucharest (UTCB), Building Research Institute (BRI), Tsukuba, Japan, National Institute for Land, Infrastructure and management (NILIM), Tsukuba, Japan, and National Building Research Institute (INCERC).

Seismic risk reduction is a key issue in Romania, not only in the professional environment, but also at governmental level. The JICA project in Romania represents an important achievement of Japan-Romanian cooperation, and it is believed that it will significantly contribute to the development of earthquake engineering in Romania.

The Symposium will gather specialists from research, education and industry. The first day will be devoted to the presentation of the results of JICA project, and the second day will contain presentations from contributors. In both days keynote lectures will be given by leading specialists from Japan and Europe on subjects like ground motion, soil-structure interaction, seismic evaluation and seismic rehabilitation, seismic knowledge dissemination, etc.

Περισσότερες πληροφορίες από την γραμματεία του συμποσίου, E-mail: issrr2007@utcb.ro

ITA-AITES WORLD TUNNEL CONGRESS 2007
"UNDERGROUND SPACE –
THE 4TH DIMENSION OF METROPOLISES"
and the 33rd ITA-AITES GENERAL ASSEMBLY
www.wtc2007.org

Το συνέδριο θα διεξαχθή στην Πράγα της Τσεχίας, το διάστημα 5 – 10 Μαΐου 2007 με την διοργάνωση της Czech Tunnelling Committee ITA-AITES και με την παρακάτω θεματολογία:

- Underground city design, planning of underground constructions
- Geotechnical survey and improvement of ground mass
- Research, development and design of underground constructions in built-up areas
- Urban tunnelling and its monitoring: conventional and mechanized tunnelling
- Underground constructions executed from surface in built-up areas
- Concrete in underground construction
- Distribution and management of risks and accidents during tunnelling.
- Tunnel equipment: fire and operational safety
- Historical underground constructions; maintenance and reconstruction of underground constructions

Πληροφορίες από την γραμματεία του συνεδρίου:

Secretariat of the WTC 2007 Organizing Committee
METROPROJEKT Praha a.s.
I. P. Pavlova 2
120 00 Praha 2
Czech Republic
Τηλ. +42.0 296 337 171
Κιν. +42.0 723 885 649
Τοτ. +42.0 296 337 179
Ηλ.Δι. office-wtc2007@metroprojekt.cz
ita-aites@metrostav.cz
Ιστοσελίδα www.wtc2007.org

4th International Conference on Earthquake Geotechnical Engineering
www.4icege.org

Το συνέδριο θα πραγματοποιηθή στην Θεσσαλονίκη το διάστημα 25 – 28 Ιουνίου 2007 με την διοργάνωση της Technical Committee TC4 Earthquake Geotechnical Engineering and Associated Problems της ISSMGE, του Εργαστηρίου Εδαφομηχανικής, Θεμελιώσεων και Γεωτεχνικής Σεισμικής Μηχανικής του Τμήματος Πολιτικών Μηχανικών του Αριστοτελείου Πανεπιστημίου Θεσσαλονίκης και της Ελληνικής Επιστημονικής Εταιρείας Εδαφομηχανικής και Θεμελιώσεων. Η θεματολογία του συνεδρίου έχει ως εξής:

1. Soil dynamics: Field and Laboratory testing
2. Soil-site characterisation and dynamic soil modelling
3. Analytical and numerical methods
4. Seismic hazard and strong ground motion
5. Site effects and microzonation
6. Soil-structure interaction
7. Soil liquefaction and liquefaction countermeasures
8. Slopes, embankments, dams and waste fills
9. Earth-retaining and waterfront structures
10. Surface and deep foundations
11. Underground structures
12. Lifeline earthquake engineering
13. Vulnerability assessment of geotechnical structures
14. Seismic performance and vulnerability of monuments and historical centres related to geotechnical engineering
15. Blasting and other artificially made dynamic loading
16. Performance based design
17. Active and passive control of response related to geotechnical engineering
18. Codes, policy issues, insurance and standard of practice
19. Case histories, observation and lessons from recent and past earthquakes

Παράλληλα με το συνέδριο θα διοργανωθούν workshops με τα παρακάτω θέματα:

1. Large Scale Facilities, Geotechnical Strong Motion Arrays and Experimental Sites.
2. Geotechnical Earthquake Engineering Related to Monuments and Historical Centres.
3. Recent Advances in Codes (round table discussion).

Περισσότερες πληροφορίες από την κα Αναστασία Αργυρούδη (Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, Ταχ. Θυρ. 450, Θεσσαλονίκη, Τ.Κ. 54124, ηλ δι. anastarg@civil.auth.gr, τηλ. / τοτ. 2310.995842 και από την Symvoli (Ιωάννου Τσαλουχίδη 16-20, Θεσσαλονίκη, Τ.Κ. 542 48, τηλ. 2310. 433099, τοτ. 2310.433599, ηλ.δι. symvoli@symvoli.com.gr.

Για πληροφορίες σχετικά με την υποβολή περιλήψεων και άρθρων επικοινωνήστε με την γραμματεία του συνεδρίου στην ηλ.δι. secretariat@4icege.org.

www.isrm2007.org

Το συνέδριο διοργανώνεται από την Πορτογαλική Εθνική Επιτροπή της ISRM και θα διεξαχθή στο CCL – *Lisbon Congress Centre* στο "Park of Junqueira" της Λισαβώνας, Πορτογαλία, από τις 9 μέχρι τις 13 Ιουλίου 2007.

Session Themes

T1 - Rock Engineering and Environmental Issues
T2 - The Path from Characterization to Modelling
T3 - Slopes, Foundations and Open Pit Mining
T4 - Tunnel, Caverns and Underground Mining
T5 - Earthquake Engineering and Rock Dynamics
T6 - Petroleum Engineering and Hydrocarbon Storage
T7 - Safety Evaluation and Risk Management

Specialized Sessions

- S01 – Rockfall – Mechanism and Hazard Assessment
- S02 – Rock Mechanics Data: Representation and Standardisation
- S03 – Innovations in Underground Construction
- S04 – Application of Geophysics to Rock Engineering
- S05 – Maintenance and Repair of Underground Structures
- S06 – Mine Closure
- S07 – Mining
- S08 – Rock Blasting Induced Vibrations
- S09 – 3D Laser Scanning Applied to Geotechnical Problems
- S10 – Underground Waste Disposal: Progress and Challenges

International Workshops

Workshop 1
Underground Works under Special Conditions (Madrid, Spain)

Workshop 2
2nd Workshop on Volcanic Rocks (Ponta Delgada, Azores, Portugal)

Workshop 3
Preservation of Natural Stone and Rock Weathering
(Madrid, Spain)

Short Courses

Course A
Numerical Simulation of Underground Construction – New Trends and Developments

Course B
Geomechanical Parameter Evaluation in Rock Engineering Practice

Course C
Block Theory and Its Applications for Surficial and Underground Rock Excavations

Περισσότερες πληροφορίες από την γραμματεία του συνεδρίου:

11th ISRM CONGRESS
SOCIEDADE PORTUGUESA DE GEOTECNIA
LNEC – Av. do Brasil, 101
1700-066 Lisboa, PORTUGAL
Phone: + 351 21 844 33419
Fax: + 351 21 844 30 21
Email: isrm2007@lnec.pt
http://www.isrm2007.org

Annual Conference

Dam Safety 2007
www.damsafety.org

Το συνέδριο διοργανώνεται από την Association of State Dam Safety Officials και θα διεχαχθή στο Austin, Texas, USA, την Κυριακή 9 Σεπτεμβρίου 2007.

ASDSO invites all persons interested in the safety of dams to submit abstracts of papers to be considered for presentation at the ASDSO 24th Annual Conference. Engineers, geologists, hydrologists, dam owners, state, local or federal officials, industry representatives and others working in the field of dam safety are invited to share their experiences.

Suggested Topics

Dam Failures & Incidents

- Failure forensics
- Failure hydraulics (breach and downstream routing modelling)
- Effectiveness of emergency action programs Hydrology & Hydraulics
- Risk analysis/assessment
- PMF/PMP
- Hydraulic modelling and spillway capacity evaluations

Geotechnical Issues

- Pipes and penetration issues
- Overtopping protection
- Grouting and rock anchors
- Slope stability analyses and design
- Seismic evaluations and designs
- Seepage and seepage control
- Instrumentation and monitoring

Emergency Preparedness

- Emergency operations and actions
- Flood warning systems
- Emergency Action Plans
- Inundation mapping applications
- Disaster mitigation

New Dam and Dam Rehabilitation Design

- Unique design challenges
- Innovative design

Dam Inspections

- Outlet works, gates and appurtenant works
- Dam owner experiences and solutions
- Inspection techniques
- Underwater and confined space techniques

Removal of Dams & Environmental Issues

- Hydraulic issues of dam removal
- Fish passage

- Innovative removal techniques
- Environmental effects of dam removals
- Economic and societal issues of dam removals

Dam Safety Regulatory Programs

- State and Federal programs
- Public awareness, relations and outreach
- Programs in other countries
- Staff and program management lessons
- Public verses private inspections

Low Head Dam Hydraulics and Public Safety

- Remediation methods
- Low head dam hydraulics
- Reducing, preventing or eliminating safety problems

Owner Issues

- Hazard creep and downstream development
- Lake management issues
- Operation of dams
- Public safety at dams
- Ownership responsibilities, liabilities and insurance
- Upstream and downstream owners rights issues
- Rehabilitation funding issues

Dam Construction

- Contractor experiences
- Case studies
- Innovative construction techniques
- Underwater operations

General Information or Student Presentations

- Student capstone projects related to design and analysis
- Current technical research and new applications
- Model testing

Security at Dams

- Lessons learned
- Vulnerability assessments
- Security Inspections
- Upgrading security and integrating security issues into EAPs.

Πληροφορίες από: CONFERENCE COORDINATOR Susan Sorrell, ASDSO, 450 Old Vine St, Lexington, KY 40507 Texas, USA, sasorrell@damsafety.org.

ASSOCIATED RESEARCH CENTERS FOR URBAN UNDERGROUND SPACE
ASSOCIATION DES CENTRES DE RECHERCHE SUR L' UTILIZATION URBAINE DU SOUS-SOL

11th ACUUS Conference "Underground Space: Expanding the Frontiers"
www.acuus2007.ntua.gr

Το συνέδριο θα διεξαχθή το διάστημα 10 – 13 Σεπτεμβρίου 2007 στην Αθήνα με την διοργάνωση της ACUUS (Associated Research Centers for Urban Underground Space) και του Εργαστηρίου Μεταλλευτικής and Περιβαλλοντικής Τεχνολογίας της Σχολής Μεταλλειολόγων και Μεταλλουργών Μηχανικών του Εθνικού Μετσοβίου Πολυτεχνείου και με την παρακάτω θεματολογία:

- Underground space utilization
- Environmental aspects of underground development
- Risk assessment and rock engineering
- Underground projects
- Economics of underground development
- Legislation and proprietary rights of underground space
- Aesthetics and architectural planning of underground environments
- Public acceptance of urban underground development
- Visualization of underground environments
- Future challenges in underground development

Πληροφορίες από την γραμματεία του συνεδρίου:

Αθανάσιος Μαυρίκος
Ηρώων Πολυτεχνείου 9, 15780 ΖΩΓΡΑΦΟΥ
Τηλ. 210.7722190
Τοτ. 210.7722156
Ιστοσελίδα : http://www.acuus2007.ntua.gr/
Ηλ.Δι. contact@acuus2007.ntua.gr

Euro: Tun 2007
Computational Methods in Tunnelling
eurotun.tuwien.ac.at

Το συνέδριο θα διεξαχθή το διάστημα 17 – 19 Σεπτεμβρίου 2007 στην Βιέννη με την διοργάνωση του Vienna University of Technology και με την παρακάτω θεματολογία:

- Spatial and temporal discretisation strategies for realistic and efficient numerical analyses in underground engineering
- Advanced in viscid as well as time-dependent, multi-phase and multi-scale constitutive models for materials used for the support and for soils and jointed, swelling or squeezing rocks
- Methods for prediction of tunnel face stability
- Simulation models for shield tunnelling
- New developments in boundary and hybrid methods
- Procedures for parameter identification
- Soft computing, visualisation, data mining, and expert systems in tunnelling
- Sensitivity analysis, back analysis

Πληροφορίες από τους:

Mondial Congress & Events
Operngasse 20b, A-1040 Vienna, Austria
Τηλ. +43 (1) 588 04 0
Τοτ. +43 (1) 588 04 185
Ηλ.Δι. info@mondial.at

Martina PÖLL (Secretary General)
Vienna University of Technology
Institute for Mechanics of Materials and Structures
Karlsplatz 13, A-1040 Vienna, Austria
Τηλ. +43 (1) 588 01-20211
Τοτ. +43 (1) 588 01-20297, 20299
Ηλ.Δι. office@eurotun.tuwien.ac.at
Ιστοσελίδα http://eurotun.tuwien.ac.at/

INTERNATIONAL SYMPOSIUM ON
STUDIES ON HISTORICAL HERITAGE
17 – 21 September 2007 Antalya, Turkey

www.ta-mir.org

Το συνέδριο διοργανώνεται από το YILDIZ TECHNICAL UNIVERSITY RESEARCH CENTER for PRESERVATION of HISTORICAL HERITAGE στην Antalya, Τουρκία, από τις 17 έως τις 21 Σεπτεμβρίου 2007. Τα θέματα του συνεδρίου περιλαμβάνουν:

A - Historical Aspects
B - Architectural Aspects
C - Archaeological Aspects
D - Information System – Documentation
E - Evaluation - Experimental Methods and Tests
F - Structural Behavior - Static, Dynamic
G - Numerical Analysis
H - Intervention, Restoration and Prevention Techniques
I - Preservation in Museum Exhibitions and Storage Areas
J - Environmental Aspects
K- Planning the Future of Historic Urban Areas
L - Heritage Management
M - Case Studies

Πληροφορίες από: F. Aköz, Yıldız Technical University, Research Center for Preservation of Historical Heritage, 34349 Yıldız, Istanbul, Turkey, Tel : + 90 212 2612004, Fax : + 90 212 2585140, e-mail : shh07@yildiz.edu.tr.

MADRID 2007

XIV European Conference on Soil Mechanics and Geotechnical Engineering
www.ecsmge2007.org

Το συνέδριο θα διεξαχθή στην Μαδρίτη, Ισπανία το διάστημα 24 – 27 Σεπτεμβρίου 2007 και διοργανώνεται από την Spanish Society for Soil Mechanics and Geotechnical Engineering. Το συνέδριο έχει σαν γενικό θέμα «Geotechnical Engineering in Urban Environments» και η επί μέρους θεματολογία του έχει ως εξής:

1. Foundation in urban areas. Codes and standards
   1.1. Implementation of Eurocodes (EC-7 and EC-8)
   1.2. Proactive foundation design. Observational method
   1.3. Foundation incidents and failures
2. Deep excavations and slopes
   2.1. Effect of open excavations on nearby structures and facilities
   2.2. Dealing with groundwater
   2.3. Permanent protection of slopes against erosion. Rivers and shorelines
3. Underground works
   3.1. Use of underground space
   3.2. Ground deformations associated with urban tunnelling
   3.3. Innovative tunnelling construction methods
4. Rehabilitation of buildings and infrastructures
   4.1. Allowable movements of old and modern structures
   4.2. Underpinning of existing foundations. Case histories
   4.3 Preserving cities and monuments
5. Ground improvement
   5.1. Settlement compensation by grouting
   5.2. Static and dynamic methods for soil improvement
   5.3. Soil reinforcement
6. Site investigation and mapping
   6.1. New techniques for site investigation in urban areas
   6.2. Mapping and geotechnical data management
   6.3. Site investigations in harbour and shoreline environment

FMGM 2007

7th International Symposium on Field Measurements in Geomechanics
www.fmgm.org

Το συμπόσιο θα διεξαχθή στην Boston, ΗΠΑ το διάστημα 24 – 27 Σεπτεμβρίου 2007 και διοργανώνεται από το Geo-Institute της American Society of Civil Engineers. Αντικείμενο του συμποσίου είναι η παρουσίαση γεωτεχνικών, δομητικών, περιβαλλοντικών και γεωφυσικών μεθόδων ενοργάνωσης και εφαρμογών για την παρακολούθηση της συμπεριφοράς κατασκευών.

Theme 1: **Case Studies.** The role of field performance measurements in problem solving, research, safety assessment, risk assessment or improving the design of civil engineering structures and works.

- Case histories and monitoring applications
- Instrumentation for innovating design
- Instrumentation and geo-hazards

Theme 2: **State-of-the-Art and Future Trends.** The latest in measurement technology, equipment, communication methods, data management and interpretation, and visions for future development.

- Geotechnical, structural, geodetic, environmental and geophysical instrumentation methods and equipment
- Real-time monitoring
- Remote monitoring, wireless systems
- Early warning systems
- Data acquisition systems
- Databases and data management systems
- Analysis and presentation software
- Performance, cost and reliability data
- Capabilities and limitations
- Future trends and needs
- Emerging new technologies
- Fiber optic sensors
- Internet applications
- Global Positioning Satellite Systems (GPS)
- Automated Total Stations
- Problems and pitfalls
- Avoiding electromagnetic interference (EMI)
- Protecting equipment against damage during electrical storms

- Dynamic measurements

Theme 3: **The Business Side of Instrumentation.** Demonstrating and quantifying the benefits of field performance measurements to project management teams, owners, engineers, contractors, regulators and insurers.

- Benefits of monitoring to owners
- Benefits of monitoring to engineers
- Benefits of monitoring to contractors
- Role of monitoring in risk management

Πληροφορίες σχετικά με το συνέδριο μπορούν να αναζητηθούν στην ιστοσελίδα του http://www.fmgm.org

Richard Widmann Colloquy 56th Geomechanics Colloquium 2007
www.oegg.at

Το συνέδριο διοργανώνεται από την Austrian Society for Geomechanics στο Salzburg, Αυστρία, στις 11 και 12 Οκτωβρίου 2007 με την παρακάτω θεματολογία:

- Hydropower and Geomechanics
- Documentation, evaluation and interpretation in the field of geotechnics
- Special cross sections in underground works
- Distribution of responsibility and risk in shield tunnelling

και με δύο ειδικές συνεδρίες με θέμα:

- Interdisciplinary conflicts in the design of traffic tunnels
- Computational methods in Geomechanics

Πληροφορίες από: salzburg@oegg.at.

NEW APPROACHES FOR A NEW ERA
www.hydropower-dams.com

Το συνέδριο διοργανώνεται από το περιοδικό HYDROPOWER & DAMS στην Granada, Ισπανία, από τις 15 έως τις 17 Οκτωβρίου 2007. Αντιγράφουμε από το πληροφοριακό φυλλάδιο του συνεδρίου:

Without question, new impetus has been given to water resources development worldwide, in particular hydropower, as a result of advances in planning methods and tools, new approaches to financing, and greater emphasis on economy, efficiency, environmental aspects, public acceptance, and benefit sharing.

Hence, the theme of **HYDRO 2007** will be '**New Approaches for a New Era**'.

This international gathering of the world hydropower community will focus on practical ways of advancing hydropower development:

- In the developing and emerging countries, where it can play a vital role in socio-economic development; and,

- In industrialized nations, where there is a huge potential to upgrade existing schemes, retrofit hydraulic works designed for other purposes, and in some countries continue to build new hydro and pumped-storage plants.

High level delegations from all countries with major programmes in progress or ahead will meet in the beautiful town of Granada, in Andalucia, southern Spain, to exchange experience and to enhance international collaboration. Those from countries with long experience of hydro development will share their knowledge and experience with colleagues in countries embarking on new development programmes,

More than **70** countries are expected to be represented at **HYDRO 2007**, approximately half of which will be developing nations. Important side-events are planned by ICOLD, ESHA and IEA. Presentations, workshops and panel discussions will be of practical value. Outcomes will be constructive. If you are active in any aspect of hydropower development, your input will be valuable, and your presence warmly welcomed.

Πληροφορίες από: Mrs Margaret Bourke, Aqua~Media International, Westmead House, 123 Westmead Road, Sutton, Surrey SM1 4JH, UK. Fax: + 44 20 8643 8200. Email: mb@hydropower-dams.com.

ISGSR2007

First International Symposium on Geotechnical Safety & Risk
www.isgsr.org

Το συνέδριο διοργανώνεται από το Tongji University και το Geotechnical Safety Network (GEOSNet) από τις 18 έως τις 19 Οκτωβρίου 2007 στην Shanghai, China. Αντιγράφουμε από το πληροφοριακό φυλλάδιο του συνεδρίου:

There is a need for geotechnical design, construction, and other aspects of practice to keep pace with the globalization pressure to harmonize across national boundaries, the regulatory pressure to harmonize with structural engineering, rising public expectations in health & environment, and increasing complexities of big projects with their associated financial and insurance risks.

There are significant practical, educational, and research challenges. These challenges are quite unique to geotechnical engineering because of the complex uncertainties and variabilities in the geo-

environment and our relatively slower pace of embracing risks more explicitly and more systematically in practice and education in contrast to other disciplines.

In response to these challenges, there is a groundswell of related activities taking place in national code committees and international professional societies, within and without geotechnical engineering. A series of thematic symposiums/workshops related to limit state design has been organized since the early nineties.

The time is ripe to form a network to promote coordination between related groups, to broaden participation beyond geotechnical engineering, to garner support from stakeholders from the industry and government agencies, and to support a more regular series of activities. The idea for a geotechnical safety network grew out of a series of discussions. A call for the establishment of a network was made by KK Phoon on behalf of all concerned parties during the discussion forum (chaired by CT Chin) at Taipei 2006. The Geotechnical Safety Network (GEOSNet) was formed after the first meeting held on 3 Nov. 2006. The First International Symposium on Geotechnical Safety and Risk (ISGSR2007) is the first major event jointly organized between Tongji University and the Geotechnical Safety Network (GEOSNet), under the initiative of HW Huang. Shanghai is the ideal venue for this inaugural event given the volume and complexity of underground projects and the pressing need for risk assessment and management techniques. One key purpose of ISGSR2007 is to grow GEOSNet into a common platform where all concerned parties in research, industry, and government can participate in a constructive way to debate and advance topics relating to geotechnical safety and risk.

Στη θεματολογία του συνεδρίου περιλαμβάνονται:

- Geotechnical uncertainty and variability
- Geohazard and risk
- Reliability and risk analysis
- Design code development based on risk
- Risk assessment and management in geotechnical and
- underground engineering project
- Harmonization between geotechnical and structural safety
- Maintenance and life cycle

Πληροφορίες από: Dongmei Zhang ή Qunfang Hu, Department of Geotechnical Engineering, Tongji University, 1239 Siping Road, Shanghai 200092, China, Tel: 86-21-65982986 Fax: 86-21-65982986 E-mail: dmzhang@mail.tongji.edu.cn (Dongmei Zhang), huqunf@mail.tongji.edu.cn (Qunfang Hu) isgsr2007@gmail.com.

International Conference on Ground Anchorages and Anchored Structures in Service 2007

ice.org.uk

Το συνέδριο διοργανώνεται από το British Geotechnical Association / Institution of Civil Engineers του Ηνωμένου Βασιλείου το Νοέμβριο 2007 στο Λονδίνο. Στη θεματολογία του συνεδρίου περιλαμβάνονται:

- Inspection procedures and physical condition recorded in service
- Service behaviour monitoring procedures and performance in service
- Dam rehabilitation
- Rock bolts in tunnels and mines
- Non-destructive integrity testing
- Corrosion protection systems
- Case histories of satisfactory performance, shortcomings and failures in service
- Recommendations and standards of practice related to inspection and monitoring

Πληροφορίες από Jade Donovan, Societies Administrator, Engineering, Policy & Innovation, Institution of Civil Engineers, One Great George Street, Westminster, London SW1P 3AA, t +44 (0) 207 665 2233, f +44 (0) 207 799 1325, e jade.donovan@ice.org.uk

GeoAmericas 2008 - The First Pan American Geosynthetics Conference and Exhibition
2-5 March 2008
Hilton Cancún Beach & Golf Resort · Cancún, Mexico

www.geoamericas.info

Το συνέδριο διοργανώνεται από τις International Geosynthetics Society (IGS), North American Geosynthetics Society (NAGS), IGS Peru και IGS Brasil από τις 2 έως τις 5 Μαρτίου 2008 στο Cancun, Mexico.

www.geocongress.org

Το συνέδριο διοργανώνεται από το Geo-Institute of ASCE στην Νέα Ορλεάνη, Louisiana, USA, από τις 9 έως τις 12 Μαρτίου 2008.

Η θεματολογία του συνεδρίου περιλαμβάνει:

• Sustainability - including sustainable design and construction, lifecycle assessment and management, brownfield redevelopment, wetland restora-

tion, sustainable water management practices, mitigation of climate change effects, enhancement of community resiliency, geothermal energy solutions, and sustainable use of underground space;

• Geo-hazard Mitigation - including flood control, landslides, seismic design, tsunamis, soil erosion control and soil sealing by development (hard-cover), drought management, and expansive and collapsible soils;

• Waste Management - including management of solid and hazardous wastes, radioactive waste, mine tailings, sludges, and sediments, landfill design and performance, surface impoundments, innovative barrier materials, innovative covers, bioreactor landfills, waste mechanics, and materials reuse and recycling, and sustainable stewardship; and

• Site Assessment and Remediation - including innovative site characterization and monitoring techniques, remote sensing, geophysical methods, contaminant fate and transport, subsurface barriers, technologies to remediate contaminated soils, groundwater and sediments, and emerging phyto- bio- and nano- technologies.

Representative topics within these themes include:

- Adaptive management strategies
- Analysis and design
- Applications of geophysics
- Applications of geosynthetics
- Case studies
- Coupled flow and transport processes
- Economic and societal issues
- Educational activities
- Material properties (soil, waste, geosynthetics, composites)
- Modelling and computational methods
- Optimization
- Regulations and policy making
- Risk assessment and management
- Site characterization and in situ testing and monitoring (invasive and non-invasive methods and sensing systems)
- Sustainability, indicators, drivers, deliverables

VI International Symposium
Geotechnical Aspects of Underground Construction in Soft Ground – IS - Shanghai 2008
www.tc28-shanghai.org

Το συμπόσιο θα διεξαχθή στην Shanghai, Κίνα το διάστημα 10 – 12 Απριλίου 2008 και διοργανώνεται από το Tongji University με την υποστήριξη των Hong Kong Geotechnical Society, Geotechnical Division, Hong Kong Institution of Engineers, Hong Kong University of Science and Technology, China Civil Engineering Society, Chinese Society for Rock Mechanics and Engineering, Shanghai Society of Civil Engineering υπό την αιγίδα της International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) TC28 Committee on Underground Construction in Soft Ground.

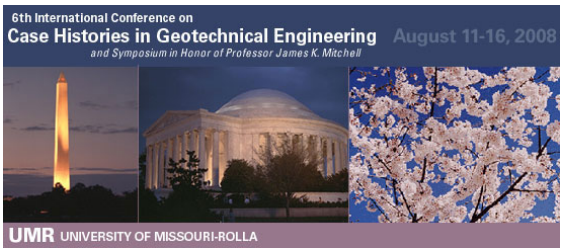
Το συμπόσιο αποτελεί το 6ο της σχετικής σειράς συμποσίων [προηγήθηκαν στο New Delhi (1994), London (1996), Tokyo (1999), Toulouse (2002) και Amsterdam (2005)], που διοργανώνονται από την TC28 στα πλαίσια του στόχου της για "consolidating technical information and sharing technical knowledge and experience in the investigation, design and construction of underground works in the urban environment, including tunnels, shaft adits, caverns and deep excavations, etc".

Η θεματολογία του συμποσίου είναι η ακόλουθη:

- Tunnels, Caverns and Associated Facilities in Soft Ground and weathered Rock
- Deep Excavations
- Numerical Analysis & Deformation Prediction
- Ground Treatment, Control of Groundwater Inflow and Deformation
- Monitoring of Performance
- Safety, Risk and Hazard Management

Πληροφορίες από την γραμματεία του συμποσίου:

Dr. Xiongyao Xie
Department of Geotechnical Engineering,
Tongji University, 1239, Siping Rd.,
Shanghai 200092, China
Τηλ. 0086-21-65982986
Τοτ. 0086-21-65982986
Ηλ.Δι. secretary@tc28-shanghai.org
Ιστοσελίδα www.tc28-shanghai.org



6th International Conference on
Case Histories in Geotechnical Engineering and
Symposium in Honor of Professor James K. Mitchell
http://www.6icchge2008.org

Το συνέδριο θα διεξαχθή στο Arlington, Virginia, Washington, D.C., USA το διάστημα 11-16 Αυγούστου 2008 με την διοργάνωση του University Missouri – Rolla και την παρακάτω θεματολογία:

1. Case Histories of Unexpected Behavior and Failure of Shallow, Deep and other Foundations
2. Case Histories on Failures of Slopes, Dams, Embankments and Landfills

3. Case Histories and Failure of Geotechnical Earthquake Engineering
4. Case Histories of Engineering Vibrations, Vibration Control for Underground and Surface Constructions
5. Case Histories and Failure of Retaining Structures, Slurry Walls, and Deep Excavations," Dewatering, Stability
6. Case Histories and Failure of Geological, Rock and Mining Engineering

7a. Case Histories of Soil Property Improvement, Expansive and Collapsible Soils

7b. Case Histories of Environmental Contamination and Problems

8a. Case Histories of Problems of District of Columbia, Maryland and Virginia

8b. Case Histories of Forensic Geotechnical Engineering

8c. Case Histories of Health Monitoring and Retrofit of Infrastructure

9. Case Histories of Offshore Geotechnics
10. Application of Geotechnical Engineering in Outer Space

Παράλληλα με το συνέδριο, το διήμερο 11-12 Αυγούστου 2008 θα διεξαχθή Soil Dynamics Short Course, στο οποίο θα διδάξουν οι Shamsher Prakash και Ahmed Elgamal τα παρακάτω θέματα: Dynamic Soil Properties, Elementary Seismology, Ground Motion Amplification, Liquefaction Analysis of Soils, Stability of Rigid Retaining Walls, Bridge Abutments, Pile Foundations, etc.

Πληροφορίες: Dr. Shamsher Prakash, Conference Director, prakash@umr.edu και Distance & Continuing Education 103 ME Annex Rolla, MO 65409-1560, Τηλ. 001-573-341-4442, Τοτ. 001-573-341-4992, 6icchge@umr.edu.

Central Board of Irrigation and Power
A window to the Power & Water sectors in India
ISO 9001-2000 Organization

2008 World Tunnel Congress
"Underground Facilities
for Better Environment & Safety"
and 34th ITA General Assembly
www.cbip.org

Το συνέδριο θα διεξαχθή το διάστημα 22 – 27 Σεπτεμβρίου 2008 στο New Delhi, India, με την διοργάνωση του Central Board of Irrigation and Power (CBIP) και της Adhering Committee of ITA (India), υπό την αιγίδα της ITA-AITES και με την παρακάτω θεματολογία:

I. Planning, Investigation and Design of Tunnel, Cavern & Underground Projects

II. Tunnel & Cavern Construction Technologies and Equipment

III. Risk Management

IV. Environmental and Social Impacts

V. Safety Issues – Standards and Policies

VI. Contract Management and Financing of Underground Construction Works

VII. Research & Development

Πληροφορίες από τον γραμματέα του συνεδρίου:

Mr. G. N. Mathur
Central Board of Irrigation and Power
CBIP Building, Plot No. 4, Institutional Area
Malcha Marg, Chanakyapuri
New Delhi - 110021, INDIA
Τηλ. +91 11 2615984 / 26116567
Τοτ. +91 11 26116347
Ηλ.Δι. sunil@cbip.org, cbip@cbip.org, cbip@vsnl.com
Ιστοσελίδα: http://www.cbip.org/

International Association for Computer Methods and Advances in Geomechanics

The IACMAG conference series has covered computer methods, material modelling and testing, applications to a wide range of geomechanical problems, and recent advances in various areas that may not necessarily involve computer methods. The first conference in this series was held at Waterways Experiment Station, Vicksburg, (USA)-1972, and the subsequent were held in Blacksburg (USA)-1976, Aachen (Germany)-1979, Edmonton (Canada)-1982, Nagoya (Japan)-1985, Innsbruck (Austria)-1988, Cairns (Australia)-1991, Morgantown (USA)-1994, Wuhan (China)-1997, Tucson (USA)-2001, and Turin (Italy)–2005.

The 12th Conference (1 to 6 October 2008, to be held in Goa, India) will address recent developments and relevant issues in computer methods, constitutive models and applications to different areas of Geomechanics, and emerging and important topics, and future needs, documented case studies with integration of theory, laboratory and field tests, and validation procedures. This will be consistent with the continuing theme of IACMAG conferences and the International Journal of Geomechanics, namely **Fundamentals *through Applications***.

The special theme for the 12th International Conference has been chosen as ***Geomechanics in the Emerging Social & Technological Age***. The conference will endeavor to stress on problems raised by the present day society due to rapid industriali-

zation and globalization, in addition to the objectives covered by the previous conferences. The conference aims to focus on some very recent and emerging trends in geomechanics such as mechanics of unsaturated soils, micromechanics, nanomechanics, bio-geo interface, infrastructure geomechanics and geomechanics for ancient monuments.

Topics for the Conference

1. Computational Advances in Numerical and Analytical Methods, Direct and Inverse problems, Practical Applications
2. Constitutive Modelling for Soils and Rocks, and Interfaces and Joints
3. Micro cracking, Fracture. Localization, Failure
4. Coupled Phenomena, Hydro- Thermo-Chemico- Mechanical Response of Geomaterials, Electrical and Thermal Properties of Clays, Clay Membrane Behavior
5. Testing and Modelling: Laboratory and Field Testing, Physical Modelling, Geotechnical Centrifuge Modelling.
6. Artificial Intelligence Techniques/Methods: Neural Networks, Expert Systems, Reliability, Data-mining, Case-based Reasoning, Risk Analysis, Genetic Algorithms
7. Computers and Information Technology: Real-time Instrumentation and Monitoring, Risk Assessment and Management
8. Emerging Geomechanics: Unsaturated Soil and Rock Mechanics, Carbon sequestration, Multi-physics & Multi-scale, Micromechanics, Nanomechanics, Bio-Geo Interface: Molecular mechanics and Molecular Interactions in clays
9. Geoenvironmental Engineering: Waste Disposal, Containment, Isolation, Alternative Covers, Remediation, Recycled Materials, Mining issues
10. Flow and Contaminant Transport in Porous Media: Seepage, Contaminant Transport, Fractured Media
11. Earthquake Engineering and Soil Dynamics: Wave Propagation, Liquefaction, Blast Loading, Dynamic Soil-Structure Interaction
12. Geo-Hazard Mitigation: Earthquakes, Hurricanes, Typhoons, Cyclones, Landslides, Tsunamis
13. Foundation Engineering: Shallow and Deep Foundations, Offshore and Petroleum Geomechanics
14. Soil Improvement: Staged Construction, Preloading, Dynamic Deep Compaction, Shallow and Deep Soil Mixing, Soil Additives, Reinforcement, Geosynthetics, prefabricated Vertical Drains, Vacuum consolidation.
15. Geotechnical Structures: Retaining Structures, Finite and infinite Slopes, Dams, Levees, Pipes, Caverns, Mines, Tunnels, Bore-well stability, Sustainable Construction, Quality control.
16. Infrastructure Geomechanics: Transportation Geotechnology, Airports, Canals, Pavements, Ports and Harbours, Railroads
17. Slope Stability: Natural Slopes, Deep Seated Gravitational Movements, Landslides, Rock Avalanches, Rock Falls, Flows and Glacier Mechanics
18. Case Histories: Prediction, Performance and Evaluation, Forensic Studies, Back Analysis: Pre-failure and Failure
19. Geomechanics for Ancient Monuments, Preservation and Rehabilitation
20. Geotechnical Education and Professional Practice

IX International Conference on Geosynthetics
www.igsbrasil.org.br/icg2010

Το συνέδριο θα διεξαχθή στην Βραζιλία τον Ιούνιο 2010 με την διοργάνωση των Brazilian Chapter of International Geosynthetics Society (IGS Brazil) και Brazilian Society for Soil Mechanics and Geotechnical Engineering (ABMS) και με στόχο «Το divulgate the latest findings of geosynthetics behavior and the recent developments concerning design and performance of geosynthetic (on lab and on site). Besides that the event will create an excellent opportunity for Brazilian and South American geologist, geotechnical, mining and environmental engineers to be involved with, to learn and discuss geosynthetic subjects with specialists from the other parts of the globe».

Περισσότερες πληροφορίες στην ιστοσελίδα του συνεδρίου και στις ηλεκτρονικές διευθύνσεις igsbrasil@igsbrasil.org.br icg2010@igsbrasil.org.br

XVII International Conference on Soil Mechanics and Geotechnical Engineering
www.2009icsmge-egypt.org

Το συνέδριο θα διεξαχθή στην Βιβλιοθήκη Αλεξανδρείας - Bibliotheca Alexandrina, Αίγυπτο το διάστημα 5 - 9 Οκτωβρίου 2009 και διοργανώνεται από την Egyptian Geotechnical Society. Το συνέδριο έχει σαν γενικό θέμα «Future of Academia & Practice in Geotechnical Engineering».

Διεθνή Νέα

Sao Paulo subway collapse

Construction of Sao Paulo, Brazil's Yellow Line 4 (see *iC* October 2005) has been halted after the collapse of several concrete walls at Pinheiros Station on Friday 12 January.

Witnesses told police a minibus fell into the 60 m wide, 30 m deep crater when the construction site collapsed next to Castelo Branco Highway, one of Sao Paulo's busiest highways, according to local media reports.

Several pedestrians were reported to have fallen into the crater, as were three dump trucks working at the construction site, and a minibus containing at least four people. All are feared trapped beneath the rubble, said the government's Agencia Brasil news agency.

Rescuers came close to reaching the trapped minibus on Sunday, but were forced to turn back because officials feared the unstable ground might give way again, burying them.

A 55 tonne crane teetering on the edge of the hole is also hampering rescue efforts as officials said it could topple at any moment.

On Monday police found the body of 75-year-old Abigail Rossi de Azevedo, who was walking near the site at the time of the collapse, in the rubble. Three other bodies have also been found, however, no formal identification has yet taken place.

Fire-fighters have created a 300 m exclusion zone around the collapse, evacuated nearby houses and business, and set up clear airspace in an effort to hear any trapped survivors.

Conflicting eyewitness reports cite an explosion before the landslide, others say the structure simply gave way. An investigation is now underway.

Consorcio Via Amarela, the consortium of Brazilian companies building the subway station, which includes Constructora Norberto Odebrecht the country's largest construction company, said in a statement that heavy tropical rains this year may have contributed by softening the underground area around the construction site.

INTERNATIONAL CONSTRUCTION NEWS, January 15, 2007, Editor: Richard High).

The consortium denied the accident was caused by negligence.

Με αφορμή την αστοχία αυτή, η βρετανική γεωτεχνική κοινότητα αμφισβήτησε για μια ακόμη φορά την δυνατότητα εφαρμογής της ΝΑΤΜ, βεβαίως κατά τον τρόπο που την αντιλαμβάνονται οι Βρετανοί. Παραθέτουμε στη συνέχεια σχετικό άρθρο από το περιοδικό New Civil Engineer, το οποίο αναδημοσιεύθηκε, εν μέρει, στο τεύχος του Φεβρουαρίου 2007 του περιοδικού Geotechnical Engineering.

TUNNELLING EXPERTS this week questioned contractors' decision to use the New Austrian Tunnelling Method (NATM) on the section of the Sao Paulo Metro which collapsed earlier this month.

They pointed out that ground conditions made NATM a risky tunnelling option especially as the city has a history of similar failures.

The collapse on 15 January at the site of Pinheiros station, near Sao Paulo University killed seven people (News last week).

The tunnel failure occurred close to a junction with a 40m diameter, 40m deep access shaft, whose sprayed concrete wall also collapsed.

The victims were passers by who were sucked into the crater that opened up as the tunnel caved in. Four were in a mini-bus.

It was the fourth NATM failure on Sao Paulo Metro projects in 25 years.

NATM is an "open face" excavation technique. Small sections of the tunnel are worked at a time, with thin layers of sprayed concrete and steel girders providing support. Tunnel walls are usually monitored for movement, with additional concrete applied to halt excessive deformation.

The 18.5m diameter 45m long section of tunnel that collapsed was designed to house two platforms, either side of the Metro's twin tracks. It was being excavated in three stages. A 4m high heading had already been dug and work was underway on the first of two 4m bench excavations.

"It seems there's been a failure to learn from past experience," UK-based NATM expert John Anderson told NCE. Anderson led the Health & Safety Executive's investigation into the October 1994 Heathrow Express NATM collapse.

He added: "After NATM collapses in Sydney, Lausanne and Barcelona within the last two years, there are enough messages around for people to know that this can be a dodgy method in certain conditions."

A spokesman for turnkey contractor Consortio Via Amarela, consisting of Odebrecht, OAS, Queiroz Galvao, Andrade Gutierrez and Camargo Correa, confirmed that the 18.5m diameter tunnel was

being built using NATM to designs by Sao Paulo based consultant Engecorps.

NATM was being used to excavate the 18.5m diameter station tunnel as part of the Metro's £735M Line 4, or Yellow Line. The dig was being carried out in gneiss overlain by tertiary sediments, consisting of stiff clays and compact sand.

An engineer on the project said that a bored tunnel was not considered because "there is no equipment for such dimensions".

"A tunnel of 18.5m diameter is very large," said Anderson. "If you have an open face in dodgy ground and it starts giving way because it's wet or it has low shear strength there's not a lot you can do other than run away," he said.

Another tunnelling specialist, who asked not to be named, questioned the choice of NATM in soft or variable ground.

"Open face tunnelling is cheap. NATM is much less expensive than a soft ground TBM, but much less safe," he said.

A combination of explosives and mechanical excavation techniques were being used.

"The top heading of the failed tunnel was fully excavated in rock. There was approximately 6m of rock above the tunnel," the consortium spokesman said.

Support consisted of steel arch girders at 800mm centres, and 350mm thick steel fibre reinforced sprayed concrete.

"Vertical downward displacements measured at the tunnel crown were in the range of 3mm when the top heading excavation was completed.

"Two to three days before the accident, the rate of those displacements increased, and they reached 15mm to 20mm.

"The decision was made to install additional support consisting of rock bolts."

But the spokesman said the collapse happened before any anchors could be installed.

Anderson expressed surprise that NATM was being used to create such a large tunnel in potentially poor ground.

"Generally a single track metro tunnel is 7m across. The running tunnel [for the Yellow Line] is designed for twin tracks and is 9m across, which is big.

The sections adjoining the station shaft were even larger at 18.5m." The 6m of rock cover over this large tunnel was "thinnish", Anderson said.

The contractor also described the gneiss as heavily fissured and fractured. It blamed heavy rain for the collapse. The Pinheiros River is also only a few hundred metres from the tunnel.

These fractures could have provided routes for water into the tunnel, and could have resulted in sudden changes in rock strength and integrity.

Tunnelling expert Sir Alan Muir-Wood said: "You have to assume the ground and its behaviour. Ground water is a feature you don't want to meet, and if you have perched ground water it'll tend to cause a wash out [when punctured].

"The presence of water in ground that is otherwise stable can cause problems."

He also warned: "If you have blocky ground you may have chunks displaced by ground water pressure, which may have built up over time."

The water table across Sao Paulo state is typically only a couple of metres below ground.

Anderson added that creating interfaces between tunnels and shafts was notoriously difficult, whatever tunnelling method is used. He said it was particularly problematic using NATM.

Because NATM excavation involves nibbling away at the ground the tunnel profile is asymmetrical during construction, with forces acting on it out of equilibrium.

Andrew Mylius

NATM failures: the facts

There have been 67 NATM collapses since 1973, research published by the Health & Safety Executive last year revealed.

The risk to third parties from bored tunnelling in soft ground lists three NATM failures on Sao Paulo Metro alone:

- December 1981. Tunnel collapses during excavation in soft ground, leading to local instability. Buildings have to be demolished.
- November 1991. Tunnel in soft ground collapses and floods.
- November 1993. A sink hole opens up following a collapse in soft ground.

The report also highlights that:

- 90% of NATM tunnel incidents occur close to the face, before the structure is complete.
- Over half of collapses result in a surface crater.
- The primary cause of failures is unpredicted ground conditions.

The report emphasises "the necessity for a good prior understanding of the ground and for thorough contingency and emergency pre-planning.

"It is also possible for ground conditions to change rapidly over short tunnel advances and this can result in sudden unstable open tunnel faces."

UK NATM expert and co-author of the guidance, John Anderson, warned: "You can get pockets of soft material, perched water, boulders – things that don't allow you any mistakes.

"You have to design your tunnelling system to maintain safety in all circumstances.

"The Heathrow Express tunnel was excavated in London Clay, which is very well understood and is

generally a good, consistent material. If you can get NATM wrong there you can get it wrong anywhere," he said. «You have to have a very exact knowledge of the kind of ground you are operating in."

The tunnel collapsed in October 1994 but was only fully explain in February 1999 (NCE 18 February 1999).

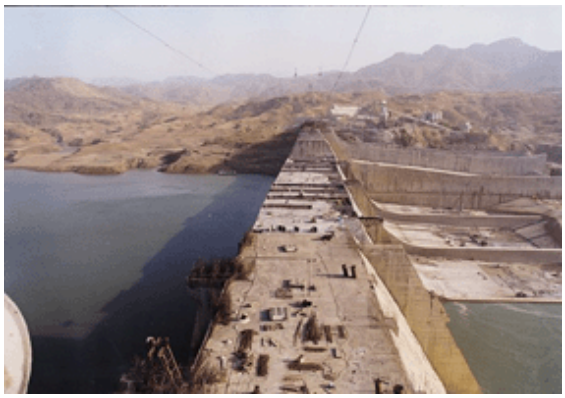
The 10 most recent NATM collapses

- November 2000. Dulles Airport, US. Walkway tunnel. Soft ground.
- August 2001. Herzogberg, Austria. Road tunnel. Rock
- September 2001. Istanbul, Turkey. Metro tunnel. Soft ground.
- February 2002. Chienberg, Switzerland. Rock.
- August 2002. Hukou, Taiwan. Rail tunnel. Soft ground.
- October 2002. Hukou, Taiwan. Rail tunnel. Soft ground.
- January 2003. Athens, Greece. Metro tunnel. Soft ground.
- February 2005. Barcelona, Spain. Rail tunnel. Rock.
- February 2005. Lausanne, Switzerland. Rail tunnel. Soft ground.
- November 2005. Lane Cove, Sydney, Australia. Road tunnel. Rock.

(NEW CIVIL ENGINEER, 25.01.07, Report No:7302)

Προβλήματα τύπου Εκτροπής Αχελώου υπάρχουν και αλλού ...

Construction work on India's Sardar Sarovar Dam in the state of Gujurat has been completed almost 20 years after work at the site first started. The reservoir behind the dam is being fed by India's fifth largest river, the Narmada.



Work on the US$ 7.7 billion dam began in 1987 but construction was halted for almost a decade following a dispute between rival states over how to divide power and water from the dam, and environmental protests also added to delays.

According to officials, the 1.25 km long, 122 m high dam will connect an 86000 km network of canals and provide irrigation for 1.8 million hectares of land. The reservoir is also expected to provide drinking water for 20 million people in Gujurat and the neighbouring states of Rajasthan, Madhya Pradesh and Maharashtra.

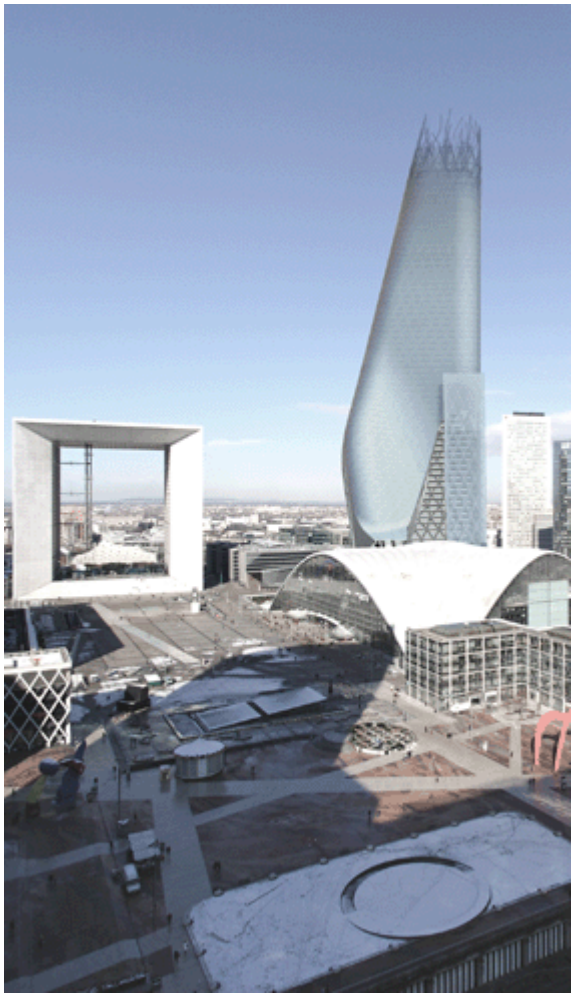
Chief Minister of Gujurat Narendra Modi also said, during a speech to commemorate completion of the project, that the dam will help control flooding in the region and its two hydropower plants will generate up to 1450 MW of power for the region.

Nonetheless, activists from Narmada Brachao Andolan (Save the Narmada Movement) have said that few of the 320000 people relocated during construction of the dam have been properly compensated. They also claim that the authorities have overstated the benefits of the scheme.

(INTERNATIONAL CONSTRUCTION NEWS, December 7, 2006, Editor: Claire Symes)

Εντυπωσιακές Νέες Κτιριακές Κατασκευές

La Phare Tower illuminates La Défense



US-based architectural practice Morphosis has won an international competition to design a new tower for French property developer Unibal, in partnership with the Public Body for the Development of La Défense (EPAD), Paris, France.

The futuristic tower, called La Phare (The Lighthouse), forms the keystone to the redevelopment of the La Défense district, which is 3 km to the west of central Paris.

At 300 m high, the 68-storey tower, which will contain over 130000 m2 of office space, will be the tallest tower in a cluster that aims to re-establish the district as a centre of world finance and business following stiff competition from other European cities, including Barcelona and London.

Bernard Bled, chief executive of the EPAD, and Minister of the Interior and Regional Development, Nicolas Sarkozy, announced the redevelopment of La Défense in July last year.

Between 2007 and 2013 over 450000 m2 of office space will be created, alongside new transport links and new public spaces.

It is estimated that the total cost of the redevelopment will be € 9 billion.

(CONSTRUCTION EUROPE NEWS, January 8, 2007, Editor: Richard High).

Η Κοσμογονία του Dubai

Dubai Towers unveiled

TVS (Thompson, Ventulett, Stainback & Associates) has unveiled designs for the mixed-use Dubai Towers, the centrepiece of its master planned AED 65 billion (US$ 18 billion) central business district named "The Lagoons" in Dubai, the United Arab Emirates (UAE).

The four towers range from 54 to 97 storeys and, according to developer Sama Dubai, the international real estate development and investment arm of Dubai Holding, represent four candles blowing in the wind.

The buildings include, retail outlets, restaurants, an entertainment complex, health spas, gymnasiums, a hotel and residential apartments. With culture now top of the agenda in the UAE the development also includes a planetarium, museum, art centre, theatre and the city's first opera house.

Sama Dubai's 'The Lagoons', which is located on the Dubai Creek, covers 6.5 million m2 and will have over 40 km of waterfront. Consisting of seven man-made islands it is located next to the Ras Al Khor Wildlife sanctuary, home to thousands of flamingos.

As such it is one of the first projects in Dubai undergoing an Integrated Environmental Impact Assessment (EIA) following international standards across all phases of the project.

Construction of the islands started in April of 2006. The entire project, including the Dubai Towers, should be completed by 2010, with construction of all four towers proceeding simultaneously.

The Palm, Jumeirah

The Palm, Jebel Ali

The World

Διακρίσεις

Ανάληψη Προεδρείας και Γραμματείας Κανονιστικής Τεχνικής Επιτροπής CEN / TC 341

Στα πλαίσια της συμμετοχής του στην Ευρωπαϊκή Κανονιστική διαδικασία, ο ΕΛΟΤ ανέλαβε τον Οκτώβριο του 2006 από τη CEN τη Γραμματεία της Κανονιστικής Τεχνικής Επιτροπής CEN/TC 341 «Διερεύνηση του Υπεδάφους: Εργαστηριακές και Επιτόπου Δοκιμές». Ως Γραμματέας της ανωτέρω Επιτροπής ορίστηκε ο συνάδελφος και μέλος της ΕΕΕΕΘ Πρόδρομος Ψαρρόπουλος, Δρ. Πολιτικός Μηχανικός ΕΜΠ. Την Γραμματεία της TC 341 κατείχε την τελευταία εξαετία ο Γερμανικός Οργανισμός DIN, με Γραμματέα τον κ. R. Cors και Πρόεδρο τον Καθηγητή κ. R. Katzenbach. Η ανωτέρω επιτροπή, καθώς και η Επιτροπή CEN/TC 288: «Ειδικά Γεωτεχνικά Έργα», είναι ουσιαστικά συμπληρωματικές Επιτροπές του Ευρωκώδικα 7: Γεωτεχνικός Σχεδιασμός.

Στα μέσα Ιανουαρίου 2007 πραγματοποιήθηκε στην Αθήνα, με την διοργάνωση του ΕΛΟΤ, συνεδρίαση της TC 341, στην οποία παρέστησαν 15 εκπρόσωποι των χωρών-μελών της Ευρωπαϊκής Ένωσης. Κατά τη συνάντηση αυτή έγινε και εκλογή για ανάδειξη νέου Προέδρου της TC 341, για την τριετία 2007 – 2010. Ο εκπρόσωπος του ΕΛΟΤ στην υπ' όψη Επιτροπή συνάδελφος Ανδρέας Αναγνωστόπουλος, Ομότιμος Καθηγητής ΕΜΠ και Γενικός Γραμματέας της ΕΕΕΕΘ, εξελέγη παμψηφεί ως Πρόεδρος.

Ενημερωτικά - Επιστημονικά Άρθρα

Bimrocks – Part 1: Introduction

Edmund W. Medley

(Senior Consultant, Geosyntec Consultants, Oakland, California, USA; emedley@geosyntec.com)

INTRODUCTION

Bimrocks (block-in-matrix rocks) include weathered rocks, fault rocks, and melanges. Bimrocks can be found in many geologic regions of the world, including Northern Greece and many Greek Isles. Despite different formative processes, these globally common soil/rock mixtures have a similar fabric of relatively hard blocks of rock surrounded by weaker matrix rocks. Characterization, design and construction with in bimrocks is challenging because of their considerable spatial, lithological and mechanical variability, and geotechnical engineers and engineering geologists often mischaracterize them.

Two articles are presented in this Bulletin to increase awareness by geotechnical engineers. Recognition of bimrocks and implementation of the available procedures for their characterization may result in significant reduction in the expensive surprises that often occur in slope and landslide analyses, and in the design and construction of foundations, earthwork, deep excavations and tunnels. This first article presents some fundamental attributes of bimrocks. In the next Bulletin, the second article will present case history experiences and some guidelines to characterization.

The information presented in the articles is abstracted from comprehensive resources freely provided at http://bimrocks.geoengineer/resources.html .

TYPES OF BIMROCKS

The term "block-in-matrix rocks" was originally coined by Raymond (1984) for melanges and olistostromes, geological words which have firm and important connotations for geologists but are generally meaningless to engineers. To focus on the fundamental engineering problems related to the characterization of these and many other "rock/soil" mixtures, Medley (1994) coined the neutral word "bimrocks", which has no geological connotations. Bimrocks are defined as *"a mixture of rocks, composed of geotechnically significant blocks within a bonded matrix of finer texture."* The expression "geotechnically significant blocks" means that there is mechanical contrast between blocks and matrix, and the volume and size of the blocks influence the rock mass properties at the scales of engineering interest.

Bimrocks are widespread and include weathered rocks, which are mixtures of decomposed soil surrounding fresher corestones (Figure 1). Fault rocks (Figure 2) exist at many scales, with blocks ranging between several tens to hundreds of meters in size to millimeter-sized fragments within gouge (Riedmüller et al, 2001, 2004). Melanges (French: *mélange* or "mixture") are heterogeneous, complex geological mixtures containing competent blocks of varied lithologies, embedded in sheared matrices of weaker rock (Figure 3). Melanges and olistostromes are found in over 60 countries and are associated with mountainous areas in ancient and modern tectonic subduction zones (including Greece, Crete, Italy and Turkey: Medley, 1994). Although the geological literature contains thousands of references on melanges, there are few treatments related to geoengineering (Medley, 1994).

Figure 1: Decomposed granite: a weathered rock located in the Sierra Nevada mountains of California. Hard blocks (corestones) surrounded by "gruss", granite completely decomposed to dense sandy soil. (Photo: E. Medley).

Figure 2: Wall of a quarry located within major fault zone, California. Sheared rock surrounds hard blocks of relatively intact rock. Blocks range between centimeters to tens of meters in size. (Photo: E. Medley/Geosyntec Consultants).

Figure 3: Franciscan Complex melange, northern California. Blocks buttress base of slope between landslides in sheared shale matrix. (Photo: E, Medley/Exponent, Inc.).

Geoengineers often neglect the contributions of blocks to overall bimrock strength, choosing instead to design on the basis of the strength of the weak matrix. However, this practice may be too conservative for many bimrocks and often results in ignoring the presence of blocks altogether, to the detriment of accurate characterizations. As block proportions increase, stiffness increases and deformation decreases depending on the relative orientation of blocks to applied stresses (Lindquist, 1994; Lindquist and Goodman, 1994). Stress distributions in bimrocks depend on the lithologies; size distributions; orientations and shapes of blocks; and the orientations of matrix shears, all of which influence slope stability (Medley and Sanz, 2004) and underground excavations (Button et al, 2003: Moritz et al, 2004; Riedmueller and Schubert, 2002).

SOME ENGINEERING CHARACTERISTICS OF MELANGES

The melanges of the Franciscan Complex (the Franciscan") of northern California are similar to melanges in appearance, properties and the problems they present globally to geoengineers. Melanges are the most difficult of bimrocks to characterize, hence lessons learned from studies of Franciscan melanges can be applied to the characterization of other, more tractable bimrocks. The matrix of Franciscan melanges is composed of shale, argillite, siltstone, serpentinite or sandstone, sometimes pervasively sheared to the consistency of soil. Landslides are common in block-poor Franciscan melanges (Medley and Sanz, 2004) but large blocks appear to add buttress support (Figure 3).

Medley (1994) estimated that the greatest proportion of blocks in Franciscan melanges were greywacke sandstone, with lesser proportions of volcanic, chert, serpentininite, limestone and exotic metamorphic blocks. Large blocks in melanges and fault rocks tend to be ellipsoidal to irregular in shape. Blocks are relatively erosion-resistant and often protrude above the ground surface in melange landscapes, a characteristic of melanges also evident in Greece (Figure 4).

The weakest elements in bimrocks are the contacts between blocks and matrix (Figure 5). Only modest mechanical contrast between competent blocks and weaker matrix is required to force failure surfaces to negotiate tortuously around blocks (Medley, 1994; Sönmez et al, 2004, 2006a, 2006b). Matrix shears generally pass around blocks via the block/matrix contacts (Figure 6) with the most intense shearing often present adjacent to the largest blocks. Blocks within the shears are often entrained within, and oriented sub-parallel, to shears. Since shears have a tortuous path through the rocks mass, the overall orientation of entrained blocks can also abruptly change from place to place within the rockmass.

Figure 4; Blocks in melange protrude from hillside along proposed right-of-way, Egnatia Highway, Greece. (Photo: late Professor Gunter Riedmueller/GGG, Austria)

Figure 5: Weakest element in a bimrock is generally the block/matrix contact. Gwna Melange, Anglesey, Wales. (Photo: E. Medley).

PROBLEMS WITH MAPPING AND DRILLING OF BIMROCKS

A very common error is to map outcrops in melanges, fault rocks and other bimrocks as part of continuous strata, although that mistake is less likely to be made by a knowledgeable geologist (Wakabayashi and Medley, 2004). When mapped, the largest dimension of exposed blocks can be recorded. When drilled, the block dimensions are indicated by chords, the lengths of the intersection between blocks and the drilled core. However, the observed dimensions of blocks generally underestimate their "sizes" (Figure 6). Accordingly, the word "size" or "diameter" should not be used when describing the dimensions of blocks, unless those are known.

Having a mental picture like Figure 6 is essential when characterizing bimrocks. Despite the apparent interlayered appearance of drill core recovered from bimrocks, it is preferable not to log borings in bimrocks with expressions such as "interbedded shales and sandstones" since this term implies stratal continuity (Figure 6). Boring logs in bimrocks provide suspect basis for drawing continuous stratigraphic contacts between borings, such as shown in Figure 7 (Wakabayashi and Medley, 2004).

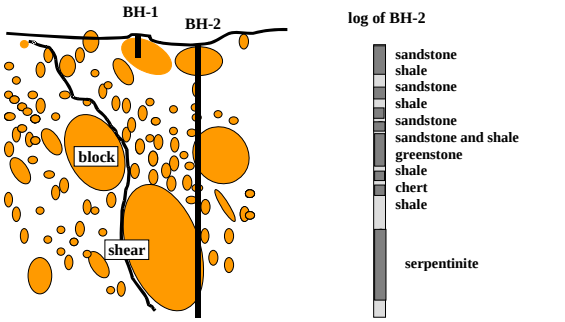


Figure 6: Block/core intersections (chords) do not generally indicate true block sizes. Sandstone/shale sequence in core is not "interbedded shale and sandstone"!! Improbable juxtaposition of rocks (e.g.: greenstone and shale) strongly suggest melange. Note that shears in the matrix negotiate tortuously around blocks.

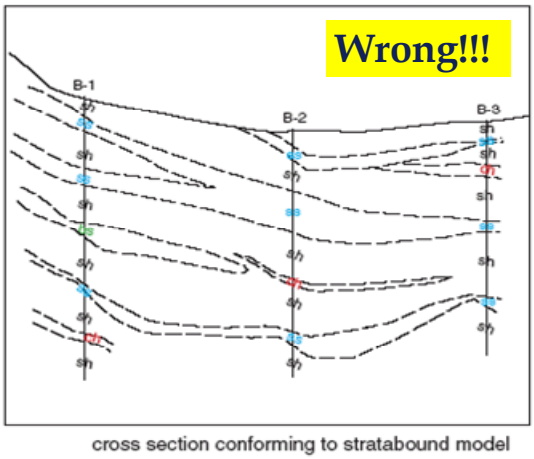


Figure 7: Bimrocks generally cannot be accurately characterized on cross-sections (Wakabayashi and Medley, 2004). Borehole contacts should be shown with question marks and not connected between borings.

WHAT IS BLOCK AND WHAT IS MATRIX?

It is important to recognize that block sizes in Franciscan melanges (which are typical of melanges world-wide) can exceed seven orders of magnitude, ranging between millimeters and tens of kilometers (Medley, 1994; Medley and Lindquist, 1995). Figure 8 and its insert are photographs taken at different scales of the same outcrop of Franciscan melange. Small blocks at one scale of interest (detail photo in Figure 8) are part of the matrix at the larger scale photo of Figure 8. Blocks at one scale that are assigned to matrix do not contribute to the mechanical behavior of the bimrock and relative to the definition of bimrocks, are not "geotechnically significant" at that scale, although they may be at larger scales.

Since blocks exist at many scales of engineering interest in bimrocks: what is block and what is matrix? Because of the scale independence of block sizes (Medley and Lindquist, 1995) a "*characteristic engineering dimension*, L_c" must be defined (Medley, 1994) which is analogous to the scale bar in the insert photograph of Figure 8. The characteristic engineering dimension changes as scales of interest change at a project. L_c may variously be: 1) an indicator of the size of the entire site, such as the square root of A ($\sqrt{A}$) where A is the area of the site; 2) the size of the largest block (d_{max}) at the site; 3) the thickness of a failure zone beneath a landslide; 4) the height of a slope or excavation; 5) a tunnel diameter; 6) a footing width or; 7) the dimension of a laboratory specimen; and so on.

Figure 8: Franciscan Complex melange, northern California. Note shearing in "matrix" adjacent large headland block with blocks oriented sub-parallel to shearing. Block sizes range between tens of meters and meters. Detail shows "matrix" in at circled area also has block-in-matrix fabric at scale of 3.1 meter long bar. (Photo: E. Medley).

The smallest geotechnically significant block within a volume of bimrock is about 0.05 L_c, which is the threshold size between blocks and matrix at the chosen scale (Medley, 1994). For any given volume of bimrock, blocks smaller than 0.05 L_c constitute greater than 95 percent of the total number but contribute less than 1 percent to the total volume of bimrock and thus have negligible effect on the bimrock strength. The largest block (d_{max}) is approximately 0.75 L_c .

BIMROCK STRENGTH

Geotechnical engineers and engineering geology practitioners commonly follow soil mechanics tradition and assume that the mechanical behavior of bimrocks is adequately represented by the properties of the weak matrix materials. In many circumstances, this assumption is too conservative. Lindquist (1994) and Lindquist and Goodman (1994) determined that the overall strength of a bimrock is related to the volumetric proportions of the blocks. As shown in Figure 9, Lindquist (1994) conservatively established that below about 25 percent volumetric block proportion the strength and deformation properties of a bimrock is that of the matrix; between about 25 percent and 75 percent, the friction angle and modulus of deformation of the bimrock mass proportionally increase (and cohesion decreases); and, beyond 75 percent block proportion, the blocks tend to touch and there is no further increase in bimrock strength. Goodman and Ahlgren (2000) identified contributions to overall bimrocks strength at volumetric block proportions much lower than 25 percent.

The overall strength of a bimrock is independent of the strength of the blocks. Blocks greater than the block/matrix threshold contribute to strength: as long as there is sufficient mechanical contrast, the presence of blocks with a range of sizes adds strength to a bimrock by forcing tortuous failure surfaces to tortuously negotiate around blocks (Irfan and Tang, 1993; Lindquist, 1994; Lindquist and Goodman, 1994; Goodman and Ahlgren, 2000; Sönmez, et al, 2006a, 2006b).

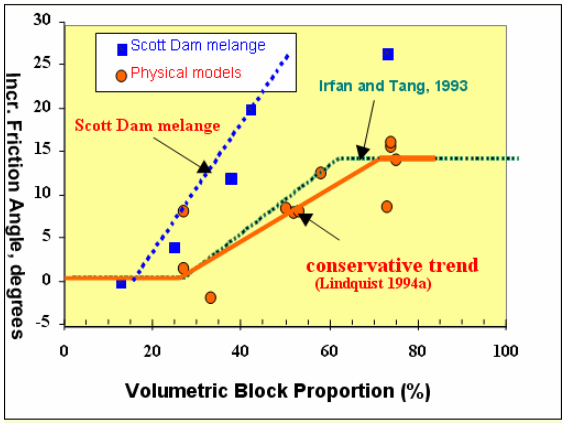


Figure 9: Strength of bimrocks increases with volumetric block proportion. The increase is added to the strength of the matrix. (After Medley, 1999; from data of Lindquist, 1994a; Irfan and Tang, 1993).

ESTIMATION OF VOLUMETRIC BLOCK PROPORTIONS

As indicated above, to predict the mechanical properties of bimrocks, the volumetric block proportion must be estimated. The volumetric block proportion of a bimrock can be approximated by measuring linear block proportions of drilled cores which, given enough sampling, are equivalent to volumetric proportions (Weibel, 1980, Medley, 1994). The linear block proportion is the ratio of the total lengths of blocks intersected to the total length of sample lines. Other methods include measurement of the areal block proportions from outcrops using image analysis (Medley, 1994). However, erroneous estimates will result if volumetric block proportions, bimrocks strengths, and total block volumes are estimated from a few borings (or outcrops), as indicated by the typically extreme variability indicated by Figure 10. During earthwork construction very useful information may be collected to refine the strength estimate of the bimrock and evaluate the assumptions made (Medley, 1997).

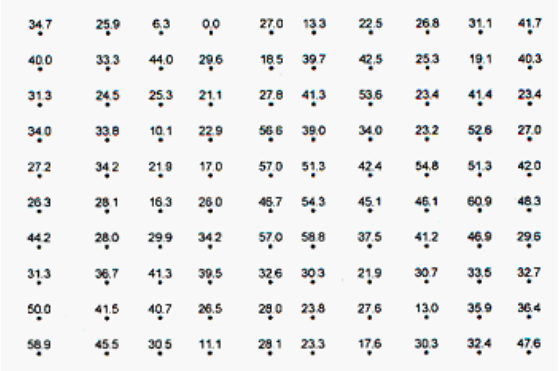


Figure 10: Plan view of an array of 100 linear block proportions ranging between 0% and 61% measured for a physical model bimrock with actual volumetric block proportion of 32%. The range in spatial variability is indicated by the circled values (After Medley, 1997).

CONCLUSIONS

Bimrocks are common and problematic for geotechnical engineers in many countries, including Greece. Bimrocks should be purposefully characterized for design and construction even where there is great uncertainty in the characterization, or when the volumetric proportion of blocks is too little to provide geomechanical benefit. Conceptual understanding of the nature of bimrocks aids accurate characterizations. Procedures to characterize and analyze bimrocks are available. Implementation of these procedures may reduce expensive surprises by focusing the practitioner's attention on the difficulties that may be encountered during design and construction.

The second article in this series will present case histories and some guidelines for performing disciplined characterizations of bimrocks. Readers with questions arising from this first article may email the author at emedley@geosyntec.com and where possible answers will be included in the next article.

ACKNOWLEDGEMENTS

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BIOGRAPHY

Dr. Edmund Medley is a Senior Consultant with Geosyntec Consultants, Inc. (www.geosyntec.com) Dr. Medley has over 30 years of international experience in geological and geotechnical engineering, and is professionally licensed as both an engineer and geologist in the USA, Canada and the United Kingdom. He has contributed to over 30 publications, presented more than 100 lectures, taught several Short Courses, testified at trials and in depositions, appeared in TV documentaries, and

Photo: Geosyntec Consultants

is an Editor of two international geoengineering Journals.

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Νέες Εκδόσεις

5th ICEG - Environmental Geotechnics: Opportunities, Challenges and Responsibilities for Environmental Geotechnics (Set of 2 books)

Edited by H.R. Thomas

This set of books presents the proceedings of the International Society of Soil Mechanics and Geotechnical Engineering's (ISSMGE) 5th International Congress on Environmental Geotechnics, held in Wales, UK in June 2006. The congress brings together practitioners, academics and the public sector to highlight the latest ideas and developments in environmental geotechnics and related fields.

Consisting of 1,658 pages with contributions from over 200 eminent authors from across the globe, this 2-volume set presents current thinking and practice and demonstrates how issues associated with environmental geotechnics continue to be a major concern for governments, public and private organizations and the worldwide community in general.

To ease usability and searches, the papers in these books are organized according to the session during which they were presented at the congress.

Thomas Telford, 2006.

Soil and Rock Behavior Modeling

Proceedings of the Geo-Shanghai Conference held in Shanghai, China from June 6-8, 2006

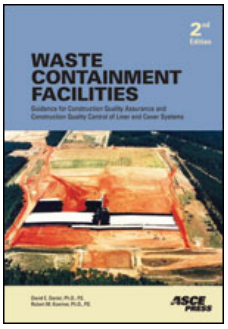
(Geotechnical Special Publication No. 150)

R. Luna, Z. Hong, G. Ma and M. Huang, Editors

Soil and Rock Behavior and Modeling represents the latest advances in the static and dynamic behavior of soils and rocks, including constitutive modeling and numerical methods. This Geotechnical Special Publication contains 65 international papers that were presented at the GeoShanghai Conference held in Shanghai, China from June 6-8, 2006.

The book begins with two keynote articles that discuss soil constitutive modeling. The first section of the book discusses theoretical concepts and experimental procedures of soil behavior and laboratory testing. The second section's papers span from advanced concepts in rock mechanics to the interactions in constructed facilities. It also includes numerical applications of problems in rocks. The third section focuses on modeling soil behavior, with many of the papers using field and laboratory experimental data to verify their findings. Finally, the fourth section discusses the latest advances in soil and soil structure interactions under dynamic excitation. It contains results from work using shaking tables, wave induced loading, vibrations and numerical simulations.

American Society of Civil Engineers, 2006



Waste Containment Facilities, Second Edition

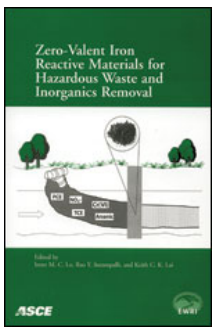
Guidance for Construction Quality Assurance and Construction Quality Control of Liner and Cover Systems

David Daniel
Robert Koerner

Properly constructed and carefully maintained waste containment facilities protect human health and the environment. In *Waste Containment Facilities, 2nd Edition,* Daniel and Koerner provide technical guidance for the complex task of ensuring construction quality control and assurance of geosynthetics used to contain waste, as well as manufacturing quality assurance and control of these materials.

This book covers all types of waste containment facilities, including hazardous waste landfills and impoundments, municipal solid-waste landfills, non-hazardous-waste liquid impoundments, and final covers for new facilities and site remediation projects. The new edition updates and expands the previous edition to reflect recent developments in test methods, specifications, and field practice. Engineers and managers involved in the design, construction, permitting, and operation of waste containment facilities and in the fabrication of geosynthetic material will find this book an essential technical resource.

American Society of Civil Engineers (ASCE Press), 2007.



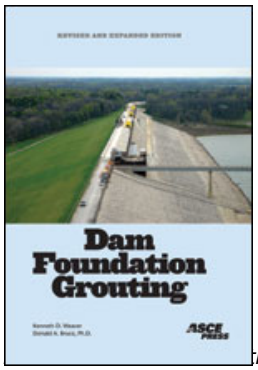
Zero-Valent Iron Reactive Materials for Hazardous Waste and Inorganics Removal

I. M. C. Lo, R. Surampalli and K. C. K. Lai, Editors

This committee report provides a tool for engineers or decision-makers to evaluate the applicability of Zero-valent iron (Fe0) and give them the technical solutions about the engineering application of Fe0 to contaminated sites. Written from both theoretical and practical viewpoints, this book covers the

comprehensive principles, latest research findings, and innovative development of Fe0 in hazardous waste and inorganics removal. The approaches of design, installation and performance evaluation of Fe0-based PRBs are also covered.

American Society of Civil Engineers, 2007.



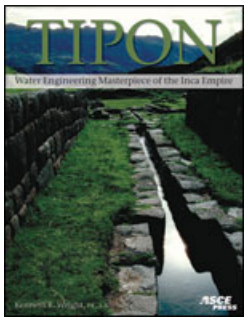
Dam Foundation Grouting, revised and expanded

Ken Weaver
Donald Bruce

ting: Revised and Expanded Edition provides a state-of-the-practice review of all aspects of drilling and grouting-based technologies used for dam foundation treatment. Like its first edition, this book provides readers with background information and guidance to help them understand and deal more confidently with issues related to the design, construction, supervision, analysis, and review of grouting programs.

This new edition of *Dam Foundation Grouting* has been revised to reflect contemporary grouting practice and has been substantially enlarged to include coverage of geologic considerations and to address remedial grouting issues. In addition to providing extensive information on grouting technology, equipment, and procedures, it also provides guidance of specifications and contracts. Dam engineers, dam construction engineers, grouting supervisors and inspectors, field personnel of dam safety reviewing agencies, and engineering students will all benefit from this book.

American Society of Civil Engineers (ASCE Press), 2007.



Tipon: Water Engineering Masterpiece of the Inca Empire

Kenneth Wright

Tipon: Water Engineering Masterpiece of the Inca Empire reveals the beauty and the ingenuity of this little-known jewel of the Inca Empire.

Located down the Huatanay River Valley by the Inca capital of Cusco, Tipon is a 500-acre, self-contained, walled settlement that served as an estate for Inca nobility. This historic agricultural site, which has been farmed and partially irrigated for more than 450 years, is a stunning civil engineering achievement by the Inca, who were masters of irrigation and hydraulic technology. They designed buildings, waterworks, and massive structures to be visually and functionally in harmony with the natural environment. In planning a place that would integrate water, soil, agriculture, and topography, the Inca created a virtual water garden that impresses all who visit. Kenneth R. Wright takes readers on a tour of Tipon's canals, plazas, aqueducts, and fountains—infrastructure that transformed a remote mountainside into a true engineering marvel.

Along with a detailed walking guide and beautiful photographs, this book provides modern engineers and casual tourists alike with an appreciation of the Inca civilization through the great works they left behind.

American Society of Civil Engineers (ASCE Press), August 2006.

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ΕΘΝΙΚΟΥ ΜΕΤΣΟΒΙΟΥ ΠΟΛΥΤΕΧΝΕΙΟΥ
Πολυτεχνειούπολη Ζωγράφου
15780 ΖΩΓΡΑΦΟΥ

Τηλ. 210.7723434
Τοτ. 210.7723428
Ηλ-Δι. geotech@central.ntua.gr
Ιστοσελίδα www.ntua.gr/civil (υπό κατασκευή)

«ΤΑ ΝΕΑ ΤΗΣ ΕΕΕΕΓΜ» Εκδότης: Χρήστος Τσατσανίφος, τηλ. 210.6929484, τοτ. 210.6928137, ηλ-δι. pangaea@otenet.gr