ΕΛΛΗΝΙΚΗ
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ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ
& ΓΕΩΤΕΧΝΙΚΗΣ
ΜΗΧΑΝΙΚΗΣ

Τα Νέα της Ε Ε Ε Ε Γ Μ

21

Δύο τραγικά συμβάντα, σημαντικά και από γεωτεχνική άποψη, «περιείχε» το δίμηνο που μας πέρασε.

Το απόγευμα της Τρίτης 3 Μαρτίου 2009 ένα μεγάλο τμήμα του κτίριου του Ιστορικού Αρχείου της Κολωνίας και γειτονικά σε αυτό κτίρια κατέρρευσαν, προκαλώντας τον θάνατο δύο ατόμων. Η κατάρρευση οφείλεται, κατά πάσα πιθανότητα, στην αστοχία των τοίχων αντιστήριξης του ορύγματος για την κατασκευή, με την μέθοδο της Εκσκαφής και Επανεπίχωσης, τμήματος του ΜΕΤΡΟ της πόλης δίπλα στο κτίριο του αρχείου (βλέπε σελ. 4).

Νωρίς το πρωί της Δευτέρας 6 Απριλίου 2009 σεισμός μεγέθους 6.3 κτύπησε την Κεντρική Ιταλία – περιοχή Abruzzo, προκαλώντας τον θάνατο περισσοτέρων των 300 ατόμων, τον τραυματισμό περισσοτέρων των 1200 και εκτεταμένες ζημιές, οι περισσότερες των οποίων εντοπίσθηκαν στην μεσαιωνική πόλη L'Aquila και τα πέριξ αυτής χωριά (βλέπε σελ. 8).

Αεροφωτογραφία: Εκκλησία Santa Maria Paganica στην L'Aquila

Αρ. 21 – ΑΠΡΙΛΙΟΣ 2009

SIMSG ISSMGE

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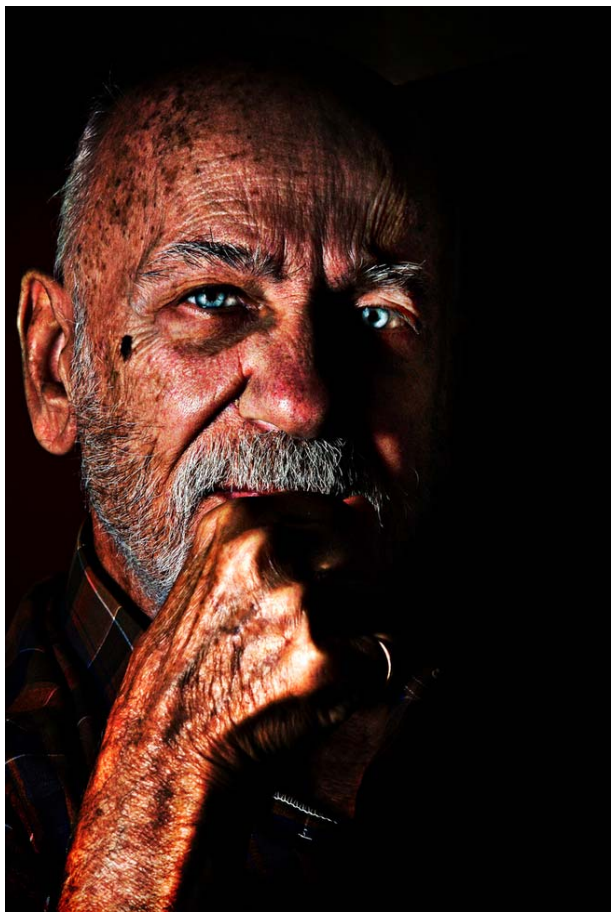
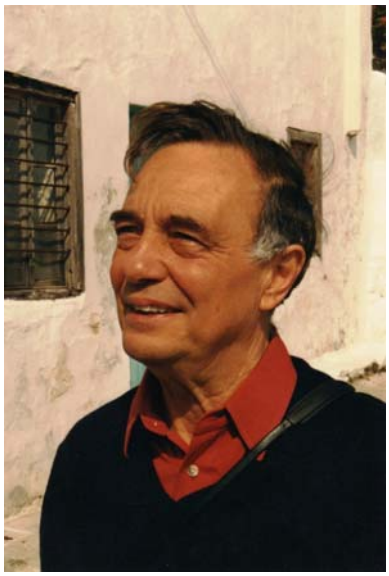


Είναι ο Ευάγγελος Λεβέντης, μέλος της ΕΕΕΕΓΜ, Πολιτικός Μηχανικός, παλαιό στέλεχος των εταιρειών ΕΛΛΗΝΙΚΗ ΕΤΑΙΡΕΙΑ ΘΕΜΕΛΙΩΣΕΩΝ και ΕΔΡΑΣΗ Χ. ΨΑΛΛΙΔΑΣ

ΑΡΙΣ ΣΤΑΜΑΤΟΠΟΥΛΟΣ



Την Μεγάλη Παρασκευή (17 Απριλίου 2909) έφυγε ο Άρις Σταματόπουλος. Γεννήθηκε το 1930 στην Αθήνα. Πέρασε δύσκολα παιδικά χρόνια επειδή στον πόλεμο έχασε τον πατέρα του. Τελείωσε το Βαρβάκειο και μετά σπούδασε στο McGill του Καναδά Πολιτικός Μηχανικός. Για να ανταπεξέλθει στα έξοδα δούλευε όλα τα καλοκαίρια. Τελείωσε πρώτος και έγινε δεκτός με υποτροφία στο MIT της Βοστόνης, στον τομέα της εδαφομηχανικής για μεταπτυχιακό. Είχε για καθηγητές τους διάσημους Taylor και Lambe.

Μετά από εργασία σε αμερικάνικες εταιρίες στην Αμερική και στο Ιράκ, με τον συνεργάτη του Παναγώτη Κοτζιά ίδρυσαν το 1960 την εταιρία Κοτζιάς-Σταματόπουλος. Η ανάπτυξη της εταιρίας ήταν ραγδαία. Δεν είναι αναληθές να αναφερθεί ότι η εταιρία καθιέρωσε την εδαφομηχανική στην Ελλάδα. Είχε συμμετοχή σχεδόν σε όλα τα σημαντικά έργα της Ελλάδας από την δεκαετία του 60. Αρχίζοντας από το φράγματα των Κρεμαστών και του Καστρακίου, συνεχίζοντας στα μεγάλα οδικά έργα καθώς και τα μεγάλα εργοστάσια. Επίσης, στην δεκαετία του 70 επεκτάθηκε στο εξωτερικό εκτελώντας γεωτεχνικές μελέτες σε πάνω από 30 χώρες στην Μέση Ανατολή, στην Ασία, στην Αφρική και στην Λατινική Αμερική.

Με την συνταξιοδότηση του Παναγιώτη Κοτζιά το 2000, ο Άρις με τον γιό του Κωνσταντίνο, συνέχισαν την εταιρία, που μετονομάστηκε σε Σταματόπουλος και Συνεργάτες ΕΠΕ. Η εταιρία πρόσφατα επεκτάθηκε σημαντικά και στην έρευνα, με συμμετοχή ή/και συντονισμό ερευνητικών προγραμμάτων χρηματοδούμενων από την Ευρωπαική Ένωση και την Ελλάδα.

Ο Άρις Σταματόπουλος στην εργασία του πάντα ενδιαφερόταν για τις βέλτιστες λύσεις και τις επιστημονικά τεκμηριωμένες μεθόδους. Είχε πάνω από 50 δημοσιεύσεις σε διεθνή περιοδικά και συνέδρια. Ανέπτυξε και εφήρμοσε με επιτυχία την μέθοδο της προφόρτισης. Το βιβλίο του "Soil Improvement by preloading", που εκδόθηκε από τον εκδοτικό οίκο John Whiley το 1985 και έχει μεταφρασθεί και στα Ισπανικά και Περσικά είναι διεθνώς ότι τα καλύτερο υπάρχει στο θέμα της προφόρτισης.

Ο Άρις αφήνει πίσω του την γυναίκα του Μάνια το γένος Σγούτα, και τους γιους του Κωνσταντίνο, δρ Πολιτικό Μηχανικό και Μίλτο, δρ. Ηλεκτρολόγο Μηχανικό – Επιχειρησιακό Ερευνητή.

Πάντα σεμνός, απέριττος, χωρίς ίχνος έπαρσης, με μοναδικό μυαλό, τεράστια ευρύτητα γνώσεων, και σοφία, θα μας λείψει απεριόριστα.

ΔΙΑΛΕΞΕΙΣ

Δευτέρα 18 Μαΐου 2009, 19:00
Αίθουσα Εκδηλώσεων
Σχολής Πολιτικών Μηχανικών ΕΜΠ
Πολυτεχνειούπολη Ζωγράφου

«Ο Σεισμός της L'Aquila της 6ης Απριλίου 2009: Επισκόπηση, Παρατηρήσεις Γεωτεχνικού και Σεισμολογικού Ενδιαφέροντος»

Γιώργος ΜΥΛΩΝΑΚΗΣ
Πολυτεχνικη Σχολή Πανεπιστημίου Πατρών

Τετάρτη 3 Ιουνίου 2009, 19:00
Αίθουσα Εκδηλώσεων
Σχολής Πολιτικών Μηχανικών ΕΜΠ
Πολυτεχνειούπολη Ζωγράφου

«Μη γραμμική 3Δ προσομοίωση της σταδιακής κατασκευής, πλήρωσης, και σεισμικής απόκρισης φραγμάτων λιθορριπής (CFRDs) και αξιολόγηση της επίδρασης σημαντικών παραμέτρων»

Πάνος ΝΤΑΚΟΥΛΑΣ
Πολυτεχνικη Σχολή Πανεπιστημίου Θεσσαλίας

ΚΑΤΑΣΤΡΟΦΗ ΤΟΥ ΙΣΤΟΡΙΚΟΥ ΑΡΧΕΙΟΥ ΤΗΣ ΚΟΛΩΝΙΑΣ

Το απόγευμα της Τρίτης 3 Μαρτίου 2009 ένα μεγάλο τμήμα του κτίριου του Ιστορικού Αρχείου της Κολωνίας και γειτονικά σε αυτό κτίρια κατέρρευσαν, προκαλώντας τον θάνατο δύο ατόμων. Η καταστροφή αποδίδεται σε αστοχία της αντιστήριξης του προσωρινού ορύγματος για την κατασκευή τμήματος του ΜΕΤΡΟ της πόλης.

Από τα παρατιθέμενα στοιχεία προκύπτει ότι πρέπει να υπήρχαν ενδείξεις, πριν από την αστοχία, για τα προβλήματα που είχε ήδη δημιουργήσει η κατασκευή του ΜΕΤΡΟ, χωρίς όμως να αξιολογηθούν και να ληφθούν κάποια πρόσθετα μέτρα.

Επίσης πρέπει να σημειωθή ότι σε οποιοδήποτε μέρος του κόσμου, οσοδήποτε προηγμένη γνώση και τεχνολογία διαθέτει, οι αστοχίες κατά την διάρκεια κατασκευής υπογείων έργων δεν είναι κάτι το ασύνηθες. Είναι τέτοια η φύση των γεωτεχνικών προβλημάτων και τόσες οι αβεβαιότητες σχετικά με την συμπεριφορά του εδάφους, που καθιστούν εξαιρετικά δύσκολη την πρόβλεψη της συμπεριφοράς του.

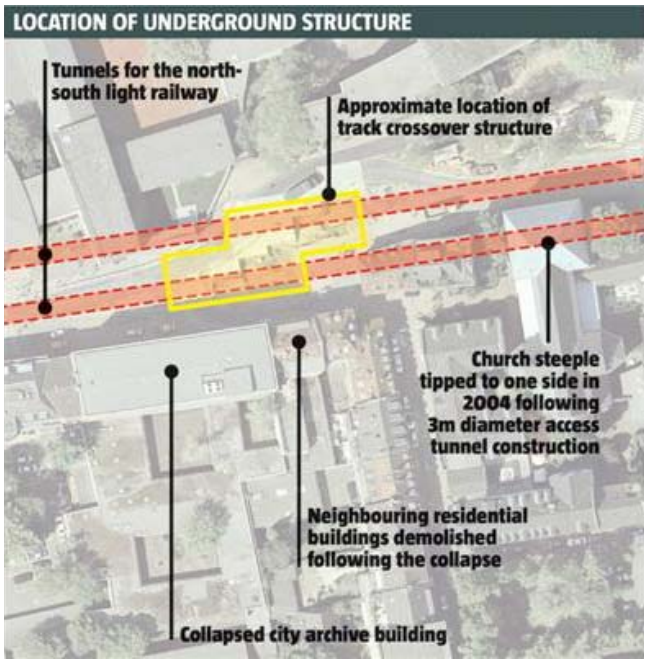
Παραθέτουμε στη συνέχεια δημοσιογραφικές ανταποκρίσεις και φωτογραφίες από την αστοχία (οι φωτογραφίες δεν αντιστοιχούν στα γειτονικά τους κείμενα).

COLOGNE ARCHIVE CATASTROPHE

Were Subway Builders Cautious Enough?

By SPIEGEL Staff

Many in Germany's fourth biggest city are asking if the collapse of one of Europe's most important historical archives was caused by the construction of an underground railway line. One report suggests work on the line wasn't done as carefully as it should have been.



Early on Sunday morning, emergency workers in Cologne recovered the body of one of the two men missing following the dramatic collapse of the city's historical archive on March 3. He was a 17-year-old baker's apprentice who is believed to have been sleeping in one of the apartments next to the archive that were also destroyed in the disaster. On Monday, firefighters and emergency workers continued the search for a second man believed perished.

Last Tuesday afternoon, the Cologne Historical Archive, one of Europe's most important collections of records dating as far back as 922, suddenly disappeared into a cloud of dust and a pile of rubble. After the sounds of buckling began, archive staff and visitors had enough time to escape the building, but its vast historical holdings didn't prove as fortunate.

Increasingly, evidence is suggesting the catastrophe was caused by construction of an underground railway line beneath a densely populated street in Germany's fourth-largest city. The Cologne-based *Kölner Stadt-Anzeiger* newspaper and SPIEGEL both reported over the weekend that city officials may not have taken earlier expert reports warning of potential problems seriously enough.

Quoting an unnamed source close to the investigation into the accident, the *Kölner Stadt-Anzeiger* reported Monday that the tragedy was likely caused by ground water seepage at the construction site. "Everything points to a problem with the ground water," the source told the paper. City prosecutors have now appointed several experts to determine exactly what happened at the underground railway construction site. They are trying to determine whether water seeped in through the more than one-meter thick concrete side wall or came up through the floor, which hadn't been finished. They are also looking into whether the problems might be related to rising levels of the Rhine River, which is located very close to the archive.

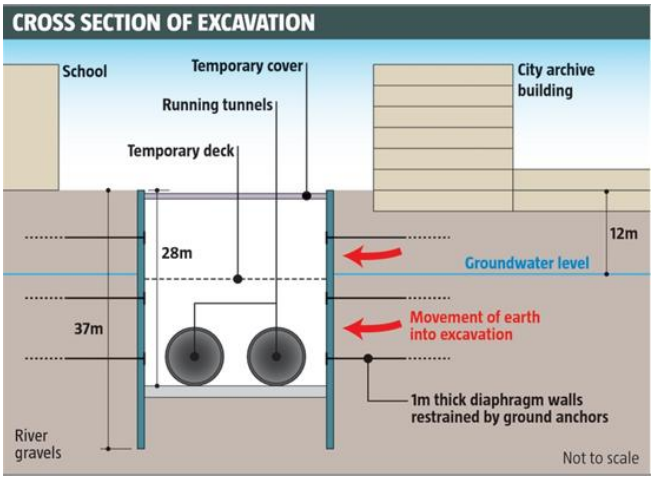
Last week's disaster has left residents in the city, which recently celebrated its world-famous Carnival season, shaken and angry. A nearby school remains evacuated and apartments next to the archive were also sucked into the 28-meter sinkhole. Many locals are afraid of the next accident.

"I have lost trust," said retiree Eva Böll. After all, engineers, politicians and managers at KVB had kept on making assurances that the construction of the city's north-south underground railway line was absolutely safe. They continued to make that claim even as an increasing number of residents whose homes were located above the 4 kilometer-long tunnel reported cracks and subsidence in their homes, and costs soared from a planned €630 million to close to €1 billion.

Doubts began to surface right at the beginning over whether the Cologne underground line was being constructed using the utmost professional standards.

In autumn 2004, experts commissioned by the company that insures KVB began to investigate the nearby St. Johann Baptist Church, whose tower (just a few hundred meters down the street from the archive), was suddenly listing like the Leaning Tower of Pisa. The listing church steeple was the first sign in the city that construction of the underground line might be creating serious problems for the Severin neighborhood.

So far, city officials, KVB and companies involved in the construction are deflecting responsibility or blame for the deadly accident that also saw the loss of much of the city's historical legacy. Among those backpeddling was Cologne Mayor Fritz Schramma, who right after the accident decried the tunneling of an underground train line in such a densly populated area to be "almost irresponsible," only to back away from his statement later under pressure from public transport officials.



A spokesman for the mayor did concede last week, however, that spot tests of the soil around the city archive had only been conducted before the city made the tender offer and prior to the begin of construction on the underground line. There were no subsequent soil tests once construction work had started. The city followed the standard procedure. But given the nature of Cologne's soil -- a mixture of gravel and sand -- and its abundant ground water, many are now asking if standard procedures had been enough.

Workers at Bilfinger Berger, the German company leading construction of this part of the underground line, have said internally that planners may have forgotten to take account of the particular impact that the weight of the books and the water were having on this problematic soil.

It's also possible that city administrators failed to take a recent report on structural damage at the city archive as seriously as it should have. A worker at an engineering firm in the nearby city of Leverkusen inspected eight conspicuous areas within the building: an expansion joint in the concrete ceiling, in which a crack the size of a hand had formed, and cracks in the flooring in the basement boiler room. In a "static respect, harmless," the expert wrote. In order to "prevent further damage to the structure," though, he advised that other experts be brought in.

Reported by Matthias Bartsch, Andrea Brandt, Guido Kleinhubbert and Mathias Schreiber.

New Civil Engineer

Ground anchors could hold key to Cologne metro collapse

12 March | By Jessica Rowson

Ground anchor failure could have triggered progressive collapse of diaphragm wall which swallowed up the Cologne city archive building say geotechnical engineers

Weak ground and a high water table could have contributed to the archive building collapse in Cologne last week.

Engineers believe it is possible that ground anchor failure could have led to the collapse of one of the diaphragm walls supporting the area in front of the archive building.

The 37m deep diaphragm wall supporting the excavation in the collapse area had been bolstered by ground anchors. Contractors were working on the base slab between the diaphragm walls at the time of the collapse.

One British geotechnical engineer said that if an anchor was to hit a pocket of weaker than expected gravels, it could have led to a systematic failure of the wall.

"I expect that they [investigators] would be looking at the homogeneity of the soil, the nature of the anchors and the support system and the sequence with which it was installed," said Card Geotechnics director Nick Langdon.

"It might be difficult to assess the true strength of the gravels. If there's a variation, when one anchor goes, a higher load would be put on another, leading to progressive failure."

The fluvial ground conditions in Cologne are highly variable, making it difficult to assess accurately the strength of the soil. The high water table would have complicated matters further.

University of Cologne Institute for Geology and Mineralogy professor Reiner Kleinschrodt said the collapsed building was on the innermost fluvial terrace of the River Rhine. This comprises river gravels.

"The complete newly constructed subway is situated within these river sediments or even within anthropogenic constructions of the Roman and Medieval periods," said Kleinschrodt. "The sediments are rich in groundwater, which was a problem, and tremendous amounts of water had to be pumped out of the construction area."

River sediments typically create highly variable ground conditions. "Such ground is highly variable and contains pockets of coarse and fine material, old river courses and such like," said HPR director Scott Steedman.

"It's likely that they [construction workers] hit some void or local pocket of very loose material and this provoked a collapse, possibly a sinkhole type of feature outside the excavation."

The variability of the soil would have meant that the construction works required close monitoring

"In those kinds of ground conditions with that kind of water, nothing is standard," said Imperial College London emeritus professor and senior research investigator Professor John Burland.

"Fluvial material may have layers of compressible material and is likely to be highly variable. It would be a very challenging set of conditions in which to excavate. What might work brilliantly in one area might not in another."

The City of Cologne legal department is currently investigating what initiated last week's collapse. Cologne mayor Fritz Schamma confirmed last week that as well as looking at the construction work it would examine local geology. Cologne transit authority Kölner Verkehrs-Betriebe is carrying out its own investigation.

"A big hole has opened up which means the wall has been pushed in bodily," said Geotechnical Consulting Group director Hugh St John.

"It implies the anchors have failed. However, we don't know the sequence [of the collapse] - whether there was a failure at the toe, which then progressively led to the anchors failing or whether the anchors failed first."

Diaphragm walls probed after Cologne collapse

12 March | By Jessica Rowson

Investigations into the fatal collapse of the six storey city archive building in Cologne are focusing on neighbouring underground excavations for a new light railway.

It has emerged that diaphragm walls supporting the investigation had been in place for two years before excavation of the ground between them began late last year. The base slab for the structure had not been cast at the time of the collapse.

The archive building collapsed on 3 March along with residential properties on either side (*News last week*). One person was killed and another was still missing as *NCE* went to press on Tuesday.

Cologne police said the collapse was caused by the ground under the building slipping into the underground excavation. "Earth under the archive building slid into the tunnel of the subway, causing the building to collapse," said a city of Cologne spokesman.

"The whole building has collapsed, everything has gone including the two buildings to the left and right of it." The north to south light rail line – known as Nord-Sud Stadtbahn Köln – run at 28m depths (to the base of the bored tunnels).

These give way to a cut and cover crossover section in front of the archive building. The crossover section is built between two 37m deep diaphragm walls using a bottom up technique.

The diaphragm walls were constructed first before the ground between them was excavated. Ground anchors were inserted to support the diaphragm walls.

The reinforced concrete base slab was then to be cast immediately below the base of the tunnels. The diaphragm walls for the underground structure had been constructed in 2005, but excavation work between them did not start until the end of 2008.

"In some areas, they were still excavating [at the time of the collapse] and in some areas they had reached bottom and were laying reinforcement," said a city transport authority Kölner Verkehrs-Betriebe (KBV) spokesman.

The 1m thick diaphragm walls for the cut and cover crossover structure were supported by ground anchors in predominantly river gravels.

The groundwater level in Cologne is relatively high at about 12m below the surface and the site of the collapse was around 300m from the River Rhine.

Work on this section of the project was being carried out by a joint venture comprising Bilfinger Berger, Weiss & Freytag and Züblin.

It refused to comment. Cracks had been noticed in the archive building since 2007 but the structure had been declared safe by structural engineers.

"[The cracks] were supervised by specialists who said that there was no problem for stability. There was a second examination in 2008 by another specialist who also said there was no danger," said the city spokesman.

constructionEUROPE

Mysterious collapse of Cologne's archive building

Written by Becca Wilkins - 16 Mar 2009

The underground excavations for the new section of Cologne's light railway have come under the spotlight following the collapse of the city's archive building, which killed two people earlier this month.

It is thought the building had not been underpinned or compensation grouted, despite its proximity to work being carried out for the 3,9 km north-south light railway tunnel.

Local news reports about what caused the collapse vary but there are concerns over the diaphragm walls for the underground structure, which had been in place for two years before excavation of the ground between them began late last year.

It is thought the contactor for this section of the project - a joint venture between Bilfinger Berger, Weiss & Freytag and Züblin- was working on the base slab between the diaphragm walls at the time of the collapse. The JV has so far declined to comment.

The diaphragm walls were supported by ground anchors in predominantly river gravels. Local news reports state that failure of the anchors could have led to the collapse of one of the diaphragm walls supporting the area in front of the archive building.

Residential properties also collapsed on either side of the 1971-built six-storey archive structure.

According to reports staff first noticed cracks in the archive's cellar early last year but the building was deemed safe.

Cologne police stated the collapse was caused by the ground under the building slipping into an underground excavation. However, authorities are still investigating the cause of the collapse.

Modernisation of Cologne's tram network has been ongoing, having first begun in 1956. City tram routes and interurban routes were amalgamated in 1968 and the 15-route tram system upgraded. Most subways in the city centre were constructed up until 1974 and the tunnel networks gradually expanded in the following decades.

The north-south tunnel, which will run between Breslauer Platz/Hauptbahnhof to Bonntor via Heumarkt, Severin-straße and Chlodwigplatz, is set for completion in 2011.

Some of Germany's most valuable documents may have been destroyed in the collapse of the archive building including manuscripts and essays written by Karl Marx, letters written by philosopher Hegel and lyrics and notes written by composer Jacques Offenbach. The earliest document stored in the building dated back to AD.922.

New Civil Engineer

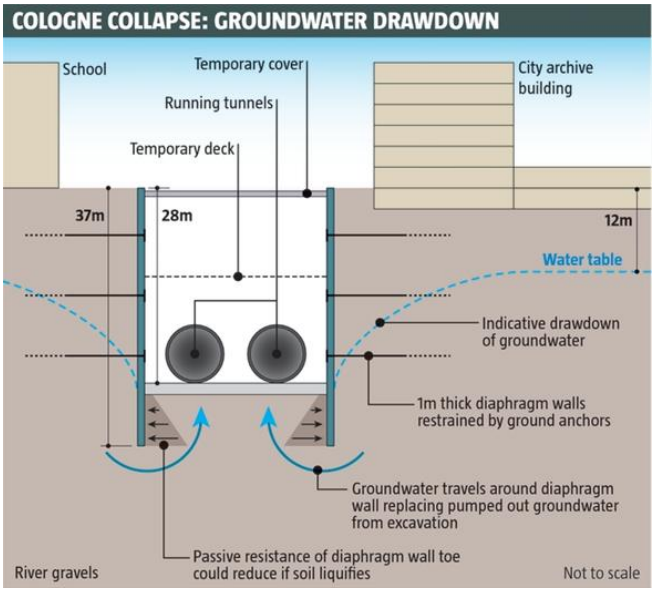
Cologne: groundwater extraction method probed

19 March 2009 | By Jessica Rowson

Investigations into the collapse earlier this month of the six storey archive building in Cologne this week focused on groundwater extraction.

It has emerged that contractors exceeded authorised dewatering limits while excavating a section of crossover tunnel for the city's subway.

Cologne City Authority investigators said that groundwater pumping logbooks showed that main contractor Bilfinger Berger/Weiss & Freytag/Züblin joint venture, had built 15 extraction wells when it only had permission to build four.



The records also showed that from December last year this had nearly doubled the amount it was allowed to pump from 450m3/hour to 750m3/h.

A Bilfinger Berger spokesman said that the JV could not discuss the scheme's construction methods.

The archive building collapsed on 3 March. Two people died and Cologne police said the collapse was caused by the ground under the building slipping into the excavation.

The joint venture was building the cut and cover crossover to allow light rail trains to switch tracks on the new Nord-Sud Stadtbahn Köln. The cavern site is in front of the building which collapsed and is just 300m from the river Rhine.

A Cologne Transit Authority (KVB) spokesman said work on the 28m deep excavation was at full depth or nearing full depth when the building collapsed. The 1m thick diaphragm walls supporting the excavation were supported by ground anchors in predominantly river gravel.

Groundwater level in Cologne is about 12m below the surface. Geotechnical experts said if the ground was more porous than initially thought, the volume of groundwater that had to be removed could have been greater than expected.

"[The amount of overpumping] means that there was far more water coming into the excavation than they expected and they were probably struggling to control it," said HPR director Scott Steedman.

"There could have been underground channels or voids that were producing the flow."

The transportation of fine material out of the soil matrix during pumping along with the high groundwater velocities could have combined to cause soil erosion and the formation of sink holes behind the diaphragm wall.

"If they were over-pumping the water they could be pumping fines – probably silt and fine sands – with the water and basically causing internal erosion in the material behind the wall," said Card Geotechnics director Nick Langdon.

"You could wash out the fine gravel and silt in patches to leave clays and gravels [if present] that are not as easily transported without the matrix that held them together.

"That in itself would not directly cause the collapse but if this internal erosion happened near an anchor then the anchor would lose strength and 'unzip', closely followed by a few more and then of course the wall follows.

"The key will be the physical interrelationship of the dewatering points and the anchors if this is indeed the mechanism."

A KVB spokesman said there were measuring devices on the diaphragm walls which did not show anything unusual immediately before the accident. Groundwater experts said the removal of fines should have been monitored and rectified.

"The flow of water carrying fines into wells can accumulate to the point of mining but that would be noticed early on," said WJ Groundwater chairman professor Jim White.

"You would monitor for fines and if they [excessive amounts in groundwater extractions] were found to be a problem, the well would be turned off. [Overpumping] would be no reason to cause a catastrophic collapse, it would be more likely to be a dewatering failure."

Experts also suggested that the increase in groundwater flow and corresponding pumping could have increased the hydraulic gradient under the excavation to the point where the ground liquefied, losing the passive resistance of the toe of the retaining wall.

"The hydraulic gradient [pressure loss/distance] would be at its steepest due to the confined space. If the critical hydraulic gradient or velocity is reached, the soil fluidises.

"The diaphragm walls would have a great deal of restraint from passive resistance of the toe. "If it was taken away, the wall would fail," said independent consultant Andrew Hawkes/

Cologne mayor Fritz Schamma has ordered KVB and the environment department to give a full explanation of all aspects of the dewatering this week.

Ο ΣΕΙΣΜΟΣ ΤΗΣ 6ης ΑΠΡΙΛΙΟΥ 2009 ΣΤΗΝ L'AQUILA

Όπως έχει ήδη ανακοινωθή, την Δευτέρα 16 Μαΐου 2009 το μέλος της ΕΕΕΕΓΜ Δρ. Γιώργος Μυλωνάκης, Αναπληρωτής Καθηγητής της Πολυτεχνικής Σχολής του Πανεπιστημίου Πατρών, θα παρουσιάση λεπτομερώς τις παρατηρήσεις και τα συμπεράσματα από την επίσκεψή του, μαζί με τον Καθηγητή Γεώργιο Αθανασόπουλο, ως μέλη της διεθνούς αναγνωριστικής αποστολής του GEER, στην L'Aquila, αμέσως μετά τον καταστροφικό σεισμό της 6ης Απριλίου 2009.

Παραθέτουμε στη συνέχεια, για ενημέρωση των μελών μας που αδυνατούν να παρακολουθήσουν την διάλεξη, μια «δημοσιογραφική» παρουσίαση των αιτίων και των αποτελεσμάτων του σεισμού, όπως αυτή παρατίθεται στην Wikipedia. Σημειώνουμε ότι το υλικό της διάλεξης του Καθηγητού Γιώργου Μυλωνάκη θα «αναρτηθή» στην ιστοσελίδα της ΕΕΕΕΓΜ.

Όπως θα δείτε, ο «ιός» της πρόγνωσης του σεισμού χτύπησε και την Ιταλία, όπου ο υπεύθυνος πολιτικής προστασίας υποχρέωσε έναν από τους «προγνώστες» να αποσύρη από το διαδίκτυο τα στοιχεία της πρόγνωσής του, ενώ ο ίδιος «προγνώστης» εκλήθη στην αστυνομία, όπου του έγιναν συστάσεις για να μην σπέρνη τον πανικό μεταξύ των πολιτών.

2009 L'Aquila earthquake

From Wikipedia, the free encyclopedia

The **2009 L'Aquila earthquake** was an earthquake of 6.3 moment magnitude that occurred in the central Italian region of Abruzzo on 6 April 2009, following a series of about a hundred minor tremors since January 2009, including a 4.0-magnitude one on 30 March. The majority of the damage occurred in the medieval city of L'Aquila (capital city of the Abruzzo region) and the surrounding villages. As of 12 April at 20.00 CEST, at least 294 people are known to have died, making this the deadliest earthquake to hit Italy since the 1980 Irpinia earthquake.

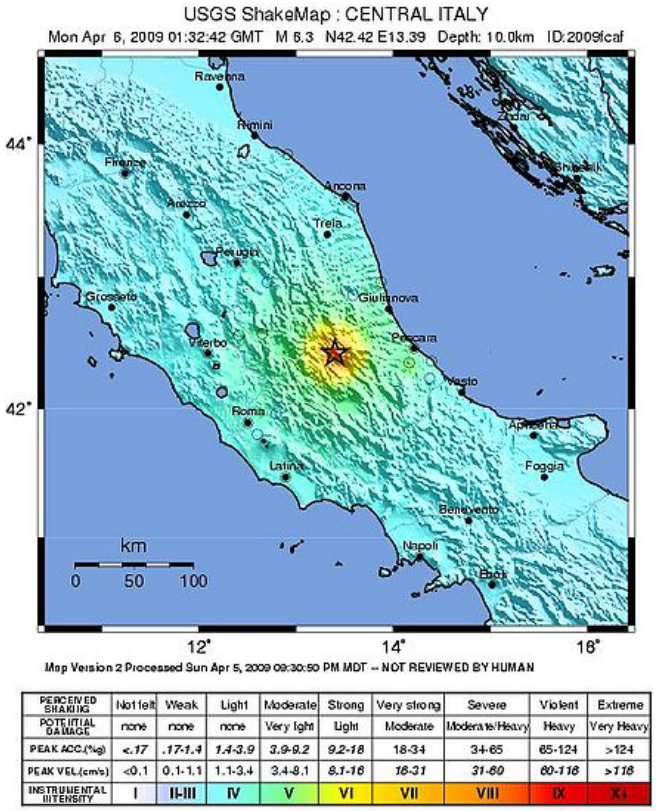
Cause

This earthquake was caused by movement on a NW-SE trending normal fault according to moment tensor solutions. Although Italy lies in a tectonically complex region, the central part of the Appenines has been characterised by extensional tectonics since the Pliocene epoch (i.e. about the last 5 million years), with most of the active faults being normal in type and NW-SE trending. The extension is due to the back-arc basin in the Tyrrhenian Sea opening faster than the African Plate is colliding with the Eurasian Plate.

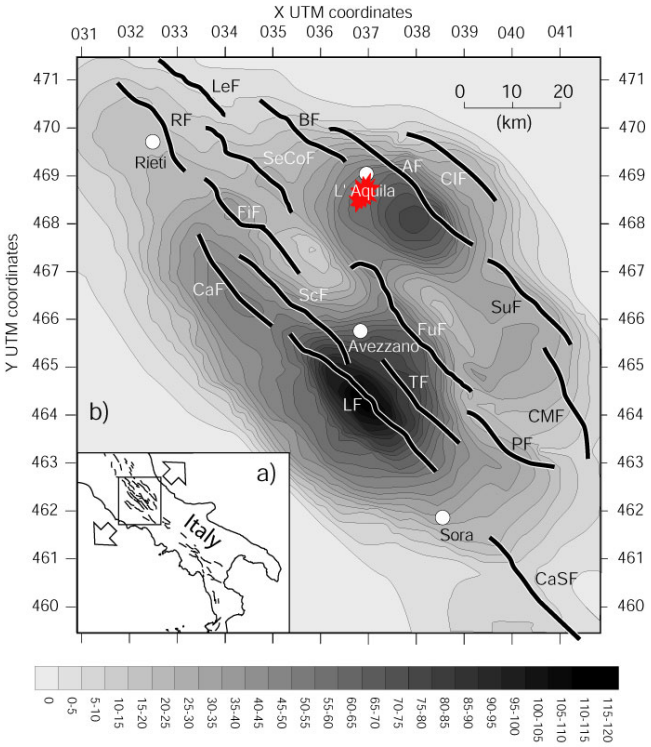
The earthquake occurred at 01:32 GMT (03:32 CEST local time) at the relatively shallow depth of 10 kilometres (6.2 mi) and with an epicentre at 42.423°N, 13.395°E or approximately 90 kilometres (60 mi) north-east of Rome, at the village of Paganica near to the city of L'Aquila. The earthquake was reported to measure 6.3 on the moment magnitude scale.

Historical context

Italy frequently experiences earthquakes but it is uncommon for them to be very deadly. The last major earthquake was the 5.9 magnitude 2002 Molise earthquake which killed more than 25 people and was the deadliest in 20 years. Earthquakes mark the history of L'Aquila, a city built on the bed of an ancient lake, providing a soil structure that amplifies seismic waves. The city was struck by earthquakes in 1315, 1349, 1452, 1501, 1646, 1703, and 1706. The earthquake of February 1703, which caused devastation across much of central Italy, largely destroyed the city and killed around 5,000 people.



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+



(Preliminary report on the L'Aquila M_w=6.2 (M_L=5.8) earthquake (6th of April 2009), Abruzzo, central Apennines, Italy – I. Papanikolaou, E. Lekkas and I. Fountoulis)

Effects

The earthquake caused damage to between 3,000 and 11,000 buildings in the medieval city of L'Aquila. Several buildings also collapsed. At least 295 people have been killed by the earthquake, including two Czechs, five Romanian citizens, two Palestinians, one Greek citizen, one French citizen, one Ukrainian citizen and one Israeli citizen, and around 1,000 people were injured. Ten people remain missing and around 28,000 people have been made homeless. 20 of the victims were children. All but one of the victims have been identified.

An aerial view of the destruction in the city of L'Aquila

The main earthquake was preceded by two smaller earthquakes the previous day. The earthquake was felt as far away as Rome (92 kilometres (57 mi) away), in other parts of Lazio, as well as Marche, Molise, Umbria and Campania. Schools remained closed in the Abruzzo region. Most of the inhabitants of L'Aquila abandoned their homes and the city itself; in the city centre of L'Aquila, and the nearby village of Paganica which was also badly damaged, many streets were impassable due to fallen masonry. The hospital at L'Aquila, where many of the victims were brought, suffered damage in the 4.8 aftershock which followed the main earthquake an hour later. Powerful after-shocks, some only slightly weaker than the main shock, were felt throughout the following 2 days.

The Duomo Cathedral of San Massimo is seen damaged in the town center of L'Aquila

Villages in the valley along Strada Statale 17 just outside l'Aquila suffered the greatest damage while medieval mountain hill towns lying high above the valley suffered little damage. Onna was reported to be mostly leveled with 38 deaths among the 350 residents. The villages of Villa Sant'Angelo and San Pio delle Camere were badly damaged. Fatalities were reported in Poggio Picenze, Tornimparte, Fossa, Totani and San Pio delle Camere.

An Italian military carabinieri walks on debris past destroyed buildings after an earthquake, in downtown Aquila

Many of L'Aquila's medieval buildings have been damaged. The apse of the Basilica of Saint Bernardino of Siena, L'Aquila's largest Renaissance church was seriously damaged, and its campanile has collapsed. Almost the whole dome of the 18th-century church of Anime Sante in Piazza Duomo has fallen down. The 13th-century Basilica di Santa Maria di Collemaggio collapsed from the transept to the back of the church and Porta Napoli, the oldest gate to the city, was destroyed in the quake. The third floor of Forte Spagnolo, the 16th-century castle housing the National Museum of Abruzzo, has collapsed, as has the cupola of the 18th-century Baroque church of St Augustine, damaging L'Aquila's state archives. This church was rebuilt after it was destroyed in the 1703 earthquake. The Cathedral of L'Aquila has lost part of its transept and maybe more with the effects of the aftershocks. Slight damage was also reported to the Baths of Caracalla in Rome, but other Roman monuments such as the Colosseum and Roman Forum were unharmed.

The damaged Santa Maria Church in the town of Paganica

While most of l'Aquila's medieval structures suffered damage, many of its modern buildings suffered the greatest damage, for instance, a dormitory at the university of l'Aquila collapsed. Even some buildings that were believed to be "earthquake-proof" were damaged. L'Aquila Hospital's

new wing, which opened in 2000 and was thought capable of resisting almost any earthquake suffered extensive damage and had to be closed.

A view of Santa Maria Paganica church, severely damaged after the earthquake

Homeless camps

Around 24,138 people made homeless by the earthquake have found accommodation in tented camps and a further 10,000 are housed in hotels on the coast. Prime Minister Silvio Berlusconi caused a controversy when he said, in an interview to the German station n-tv, that the homeless victims should consider themselves to be on a "camping weekend" - "They have everything they need, they have medical care, hot food... Of course, their current lodgings are a bit temporary. But they should see it like a weekend of camping." To clarify his thought, he also told the people in a homeless camp: "Head to the beach. It's Easter. Take a break. We're paying for it, you'll be well looked after." The billionaire prime minister offered his own houses to some of the survivors.

Destroyed houses in the village of Onna are seen in this aerial view near L'Aquila

Building standards

Poor building standards or construction materials seem to have further contributed to the large number of victims. According to firefighters and other rescuers, some concrete elements of the fallen buildings "seemed to have been made poorly, possibly with sand". An official at Italy's Civil Protection agency, Franco Barberi, said that "in California, an earthquake like this one would not have killed a single person." According to Italian media, L'Aquila's chief prosecutor has opened a probe into possible criminal blame for the collapses.

Aftershocks

The epicentral region saw dozens of significant aftershocks following the main earthquake. The strongest, which hit on 7 April at 19:47 CEST local time, measured magnitude 5.3 M_L and caused further damage. According to the Italian National Geophysics Institute director Boschi, the aftershock epicentres have migrated south-east, thus lessening the risk of other major shocks that are near to populated areas.

Aftershocks cause safety issues for rescue crews with cranes and backhoes who are searching for injured people among precarious loose bricks and broken timbers of structures in the historic center of L'Aquila, a medieval city. Even a small aftershock can trigger the collapse of seriously damaged walls or parapets. Aftershocks also cause sustained psychological trauma to small children and elderly who have already been traumatized by the main earthquake of 6 April 2009. The Italian government is aware of this psychological trauma situation, and therefore has temporarily relocated thousands of citizens away from the epicentral area.

An aerial view of Santa Maria Paganica church in L'Aquila

Within two weeks, it is expected that both the rate and magnitude of aftershocks will decay. During April and May 2009, seismologists will study the full extent of the oval-shaped fault-rupture surface, as illuminated by the sequence of aftershocks, and then make a final determination of the "official" moment magnitude.

As a result of aftershocks, the dome of the Anime Sante Basilica in L'Aquila, already heavily damaged by the main shock, has almost entirely collapsed. Further buildings have collapsed in L'Aquila and in neighbouring boroughs. The aftershock was so strong as to be felt in Rome, where it caused an elderly man to die of cardiac arrest.

Prior warning controversy

Italian laboratory technician Giampaolo Giuliani predicted a major earthquake on Italian television a month before, after measuring increased levels of radon emitted from the ground. He was accused of being alarmist by Director of the Civil Defence Guido Bertolaso, and forced to remove his findings from the Internet (old data and descriptions are still on line). He was also reported to police a week before the main quake for "causing fear" among the local population when he predicted an earthquake was imminent in Sulmona, about 50 km (31 mi) from L'Aquila, on 30 March where a 4° quake happened (later Sulmona only suffered minor damages by the 6 April earthquake.) Enzo Boschi, the head of the Italian National Geophysics Institute declared: "Every time there is an earthquake there are people who claim to have predicted it. As far as I know nobody predicted this earthquake with precision. It is not possible to predict earthquakes." Predicting earthquakes based on radon emissions has been studied by scientists since the 1970s, but enthusiasm for it has faded due to inconsistent results.

ΑΝΑΣΚΟΠΗΣΗ ΓΕΓΟΝΟΤΩΝ ΓΕΩΤΕΧΝΙΚΟΥ ΕΝΔΙΑΦΕΡΟΝΤΟΣ

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Διάλεξη Norbert Vogt

Την Δευτέρα, 16 Μαρτίου 2009, πραγματοποιήθηκε στην Αίθουσα Εκδηλώσεων της Σχολής Πολιτικών Μηχανικών ΕΜΠ στην Πολυτεχνειούπολη Ζωγράφου η έβδομη εκδήλωση του εφετεινού κύκλου των δραστηριοτήτων της ΕΕΕΕΓΜ με την διάλεξη του Dr. Noerbert Vogt «The Implementation of EC7 on German DIN Standards».

Περίληψη Διάλεξης

DIN 1054 is the traditional geotechnical code in Germany. Its version from 1976 was the basis for geotechnical design for three decades and all active German Civil Engineers were used to apply it.

With the partial safety concept and the harmonized European codes the German Geotechnical Engineers did not want to come to essential changes of safety levels and physical dimensions of foundation constructions which were well validated with thousands of foundation constructions.

Thus the German mirror group to EC 7 worked intensively parallel during the final development of EN 1997-1. The implementation of design approach DA 2 with its special forming of DA 2* into EC 7 is one of the results of the activities of the German mirror group. EN 1997-1 in its present version was published in 2005. A new DIN 1054 which already implemented the partial safety concept was published 2003 and updated 2005 to its actual version. It is meanwhile introduced as mandatory geotechnical code in all federal states in Germany. However, it contains many regulations which are also included in EN 1997-1 and as in the near future national concurrent regulations to EN 1997-1 are not possible a committee of German geotechnical engineers developed a new national code system. It is strongly based on EC 7-1 and a related national annex. The annex gives reference to a new German Standard DIN 1054 (its first version called DIN 1054-101 has just been published to be discussed by the general public) which contains complementary rules. They give more precisely details which are asteemed to be important to maintain traditional principles of German geotechnical design practice within the new partial safety concept.

The presentation will present this new German code system which is intended be published as a combined code handbook in its general characteristics and in some details such as Geotechnical Categories, Design Situations, Choice of Design Approaches, Application of Combination Rules, Allowable Bearing Pressures and Consideration of Overturning.

Βιογραφικά Στοιχεία

1983 - 2001: Consultant Engineer: Partner and manager of Smoltczyk & Partner GmbH, Stuttgart.

Since 2001: Chair of Foundation Engineering, Soil Mechanics, Rock Mechanics and Tunneling at the Technische Universität München.

Board member of the German Society für Geotechnics (DGGT).

Member of the National Committee to develop DIN 1054 (mirror group to EC 7) and to introduce EN 1997-1 in Germany.

Member of SC 7 as German delegate

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Διάλεξη Sarda Sarma

Την Τετάρτη, 1 Απριλίου 2009, πραγματοποιήθηκε στην Αίθουσα Εκδηλώσεων της Σχολής Πολιτικών Μηχανικών ΕΜΠ στην Πολυτεχνειούπολη Ζωγράφου η όγδοη εκδήλωση του εφετεινού κύκλου των δραστηριοτήτων της ΕΕΕΕΓΜ με την διάλεξη του Dr. Sarada Sarma «Seismic Slope Safely Assessment».

Περίληψη Διάλεξης

The presentation reflected on several aspects of seismic slope safety analysis.

The response analysis of slopes is quite complicated and there is no known simplified analysis of the problem. Even for finite element methods, it is complicated because of the boundary conditions. Wave form analysis gives some idea of the complications involved.

The presentation included a discussion on the limit equilibrium technique of determining the critical acceleration, which included the problem of the infinite solutions, the need for the acceptability criterion and the new method of using the acceptability criterion as a prerequisite for analysis in determining the critical surface. The verification of the solutions by the new method with the finite element method waw discussed.

Seismic safety analysis is not complete without the sliding block technique of displacements analysis. Both the simple single sliding block and the multi-block sliding were discussed.

Finally, the effect of vertical acceleration on the safety was presented.

Βιογραφικά Στοιχεία

Since 2004, he is Emeritus Reader in Engineering Seismology and Senior Research Fellow in the Civil Engineering Department in Imperial College London.

After graduation in 1960 with First Class (honours) from Institute of Technology and working as an engineer in the construction of an earth dam in Assam, India, he started research under Professor Nick Ambraseys at Imperial College in 1964 in the field of Engineering Seismology, and particularly on the seismic design of earth dams and slopes. He obtained the degree of PhD in 1968. Since then he

worked at IC, first as a research assistant, then as a lecturer and finally retired as a Reader in 2004.

Sarma is continuing research and post graduate lecturing after retirement.

He is internationally known for Sarma's Methods of slope stability analysis.

He is visiting professors at many international universities such as University of British Columbia, Canada, Wollongong University, Australia, IHT, Delft, Netherlands etc and given invited lectures at many other institutions.

Key Experience gathered during the working life:

- Internationally recognised expert in Engineering Seismology & Geotechnical Earthquake Engineering
- Seismic design of earth dams and embankments.
- Seismic and static design and analysis of slopes.
- Seismic design of foundations
- Seismic hazard analysis of engineering sites
- Investigation of effects of major earthquakes.

He was a drafting member of the EC8, Part 5.

He has published about 80 Journal and refereed conference papers, two of which were awarded prizes.

He has worked as consultants to many engineering firms in UK and internationally.

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Διάλεξη Γιώργου Μυλωνάκη

Την Δευτέρα, 13 Απριλρίου 2009, πραγματοποιήθηκε στην Αίθουσα Εκδηλώσεων του ΤΕΕ η ένατη εκδήλωση του εφετεινού κύκλου των δραστηριοτήτων της ΕΕΕΕΓΜ με την διάλεξη του Γιώργου Μυλωνάκη «Νέες Μέθοδοι Υπολογισμού Μεγέθους και Κατανομής Ωθήσεων σε Κατασκευές Αντιστήριξης για Βαρυτικά και Σεισμικά Φορτία».

Περίληψη Διάλεξης

Παρουσιάστηκε νέα κλειστή αναλυτική λύση τύπου οριακών τάσεων για τον υπολογισμό του μεγέθους και της κατανομής σεισμικών ωθήσεων σε τοίχους βαρύτητας και προβόλους σχήματος L ή αντεστραμμένου T, οι οποίοι αντιστηρίζουν συνεκτικό-κορεσμένο ή μη-συνεκτικό ξηρό πρανές. Η λύση είναι μια προσεγγιστική μέθοδος γραμμών διαρροής, η οποία υπερεκτιμά τις ενεργητικές ωθήσεις και υποεκτιμά τις παθητικές. Συγκριτικά με τις ιστορικές λύσεις των Coulomb και Mononobe-Okabe, η παρούσα λύση είναι απλούστερη, ακριβέστερη – ειδικά για τον υπολογισμό των παθητικών ωθήσεων – και ασφαλής. Επιπλέον παρέχει τη δυνατότητα ορθολογικού υπολογισμού της κατανομής των ωθήσεων, και επομένως του σημείου εφαρμογής της σεισμικής δράσης επί του τοίχου. Η ειδική περίπτωση Rankine, η οποία αντιστοιχεί σε ευθύγραμμες χαρακτηριστικές για κεκλιμένο τραχύ τοίχο και κεκλιμένο πρανές εξετάστηκε διεξοδικά και παρουσιάστηκαν τα κριτήρια ισχύος της.

Στο δεύτερο μέρος της παρουσίασης προτάθηκε μεθοδολογία για την εκτίμηση της επίδρασης της κινηματικής του προβλήματος (π.χ., στροφή του τοίχου περί τη βάση) στην κατανομή των ωθήσεων. Στη συνέχεια η λύση επεκτείνεται στη δυναμική περιοχή με χρήση κυματικών εξισώσεων για την απόκριση του επιχώματος και διερευνάται η επίδραση του δυναμικού χαρακτήρα της διέγερσης στο μέγεθος και κατανομή των ωθήσεων.

Τα αποτελέσματα συγκρίθηκαν με υπάρχουσες αριθμητικές λύσεις, πειραματικά αποτελέσματα και κανονιστικές διατάξεις. Τέλος σχολιάστηκαν θεωρητικές αδυναμίες των κλασικών ελέγχων ευστάθειας αντιστηρίξεων οι οποίες βασίζονται στην υπόθεση οριακών καταστάσεων σε ολίσθηση και ανατροπή.

Βιογραφικά Στοιχεία

Ο Γεώργιος Εμμ. Μυλωνάκης είναι Αναπληρωτής Καθηγητής στο Τμήμα Πολιτικών Μηχανικών του Πανεπιστημίου Πατρών, όπου διδάσκει Γεωτεχνική Σεισμική Μηχανική, Υπολογιστικές Μεθόδους και Δυναμική Αλληλεπίδραση Εδάφους-Κατασκευής.

Σπούδασε στο Εθνικό Μετσόβιο Πολυτεχνείο απ΄ όπου απεφοίτησε το 1993. Πραγματοποίησε μεταπτυχιακές σπουδές με υποτροφία στο Εθνικό Κέντρο για Αντισεισμική Έρευνα του Πολιτειακού Πανεπιστημίου της Νέας Υόρκης (SUNY), απ' όπου έλαβε Διδακτορικό Δίπλωμα το 1996. Διετέλεσε Επίκουρος και στην συνέχεια Μόνιμος Αναπληρωτής Καθηγητής στο City University της Νέας Υόρκης, από το 1997 έως το 2004.

Οι διακρίσεις του περιλαμβάνουν το Διεθνές Βραβείο Έρευνας Prakash (2002) (νεαρότερος αποδέκτης στην 19χρονη ιστορία του), το Βραβείο Εξαιρετικής Απόδοσης του City University of New York (1999) (πρώτος αποδέκτης), πρόταση για το Βραβείο καλύτερης επιστημονικής δημοσίευσης από την Ιαπωνική Εταιρία Σεισμικής Μηχανικής (2001), και τιμητικές θέσεις Επισκέπτη Ερευνητή στα Πανεπιστήμια Bristol και UCLA. Ο χρόνος ολοκλήρωσης των μεταπτυχιακών σπουδών του, 2 χρόνια και 4 μήνες, είναι ο ταχύτερος στην ιστορία του Τμήματος Πολιτικών Μηχανικών του SUNY.

Έχει διατελέσει επιστημονικός υπεύθυνος σε περισσότερα από 15 χρηματοδοτούμενα ερευνητικά προγράμματα από την National Science Foundation (NSF), το Multidisciplinary Center for Earthquake Engineering Research (MCEER), την Shimizu Corporation, και άλλους φορείς.

Είναι συγγραφέας ή συ-συγγραφέας περισσοτέρων από 100 επιστημονικών δημοσιεύσεων (άνω των 30 σε διεθνή περιοδικά) και κριτής σε 26 διεθνή περιοδικά. Έχει δώσει περισσότερες από 30 διαλέξεις κατόπιν προσκλήσεως σε διάφορες χώρες. Είναι μέλος του Εκδοτικού Συμβουλίου του *Journal of Geotechnical and Geoenvironmental Engineering* της Αμερικανικής Εταιρίας Πολιτικών Μηχανικών (ASCE), Guest Editor στο *Soil Dynamics & Earthquake Engineering* και εκλεγμένο μέλος της Εθνικής Επιτροπής Εδαφοδυναμικής της ASCE. Είναι ενεργό μέλος πολλών επιστημονικών επιτροπών και επαγγελματικών συλλόγων στην Ελλάδα και το εξωτερικό.

Η επαγγελματική εμπειρία του ως Συμβούλου Μηχανικού περιλαμβάνει σειρά από έργα όπως μνημεία, γέφυρες, σήραγγες, βαθιές εκσκαφές, πυρηνικούς σταθμούς καθώς επίσης και εργαστηριακές δοκιμές.

ΤΙΜΗΤΙΚΕΣ ΔΙΑΚΡΙΣΕΙΣ ΕΛΛΗΝΩΝ ΓΕΩΤΕΧΝΙΚΩΝ - ΝΙΚΟΣ ΑΜΒΡΑΖΗΣ

Ο Δρ. Νίκος Αμβράζης, Ακαδημαϊκός, Ομότιμος Καθηγητής του Imperial College και ιδρυτής και επί σειρά ετών διευθυντής του Τμήματος Τεχνικής Σεισμολογίας τιμήθηκε τα τελευταία χρόνια με μια σειρά διακρίσεων για την μακρόχρονη ακαδημαϊκή και ερευνητική προσφορά του:

1. Το 2006 τιμήθηκε με το Medal of the Seismological Society of America for "Outstanding Contributions in Seismology and Earthquake Engineering".

Imperial College
London

Department of Civil & Environmental Engineering

Newsfile: June 2006

Nick Ambraseys top US award

Emeritus Professor Nick Ambraseys has just been awarded the Medal of the Seismological Society of America for "Outstanding Contributions in Seismology and Earthquake Engineering". Established 100 years ago (immediately after the San Francisco earthquake of 1906), it has only been awarded on 25 occasions; just five of these have been to non-Americans, Nick is the third recipient from the UK. Coincidentally, not only does Nick's award coincide with the Centenary of the Medals inception; it also coincides with the 50th Anniversary of his continuous association with Imperial.

2. Το 2007 θεσπίστηκε από την European Association for Eathquake Engineering η Nicholas N. Ambraseys Lecture, η οποία θα δίνεται κάθε τέσσερα χρόνια κατά την διάρκεια του European Conference on Eathquake Engineering

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

Agenda:

1. Establishment of EAEE Lectureship to be presented in each ECEE

2. Guidelines for European Conferences on Earthquake Engineering

3. Miscellaneous

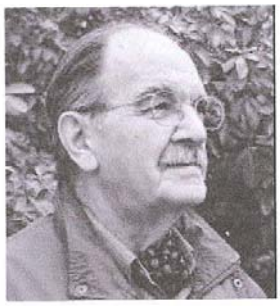
……

Item 6: Secretary General proposed **the establishment of EAEE Lecture to honour Prof. Nicholas N. Ambraseys of Imperial College to be presented in the future in every European Conference on Earthquake Engineering.** The two main motivations for such a lecture was; (1) To award European leading researchers, to promote EAEE and (2) To honour Prof. Nicholas Ambraseys who has been a pioneer on Earthquake Engineering in Europe. Establishment of the EAEE Lecture – with a full paper from the Lecturer was approved by Executive Committee Members. Carlos Oliveira stated that four years period for the Lecture may be quite long and his preference was this Lecture to be given in every two years. **This suggestion was also accepted such that after the first Lecture to be held in 14th ECEE, Skopje; the Prof. Nicholas Ambraseys Lecture can be hosted by the Universities, Institutes etc. in Europe and can be broadcasted online.**

3. Το 2008, μαζί με τους Robert D. Hanson και Joseph P. Nicoletti Earthquake Engineering Research Institute του Πανεπιστημίου του Berkeley, California, USA. Ο Νίκος Αμβράζης βραβεύτηκε για την "distinguished career in the field of engineering seismology".

News of the Institute

Ambraseys, Hanson, and Nicoletti Named EERI Honorary Members



Nicholas Ambraseys

The EERI Board of Directors voted to name Nicholas N. Ambraseys, Robert D. Hanson, and Joseph P. Nicoletti as honorary members of the Institute. Honorary membership is awarded to recognize members who have made sustained and outstanding contributions either in the field of earthquake engineering or to EERI and the pursuit of its objectives.

Nicholas N. Ambraseys received the award for his distinguished career in the field of engineering seismology. He has served as Professor at Imperial College of Science (ICS), London, since 1970, and is currently Senior Research Professor. His main research areas, on which he has published about 300 papers and four books, are in soil dynamics, strong motion, long-term hazard assessment, and historical seismicity and tectonics. His design and field experience include the design of earth dams and foundations of large engineering structures, and the conservation and preservation of historical monuments in seismic regions. Ambraseys is co-editor of the *Journal of Earthquake Engineering*, and was founder and first chairman of the British National Committee for Earthquake Engineering. He was also a founder of the European Association for Earthquake Engineering and its Vice President for two decades. He has been Director of the International Association for Earthquake Engi-

neering and has chaired or served on various international UN and UNESCO advisory committees and commissions. A native of Greece, he has received many honors and awards from British and European scientific organizations. In his thanks to EERI, he was particularly appreciative of being the first honorary member who is not an American citizen.

EERI Newsletter, February 2008 Volume 42, Number 2

4. Επίσης το 2008 ανακυρήχθηκε κατά την διάρκεια του 14th World Conference on Earthquake Engineering στο Πεκίνο, μαζί με 12 άλλους διεθνούς φήμης επιστήμονες (ζώντες και αποθανόντες), ως Legend in Earthquake Engineering για την "exceptional and lasting contribution made to the research frontier and the professional practice of earthquake engineering".

A living legend

Professor Nick Ambraseys, Civil Engineering, has been named a Legend of Earthquake Engineering, for his exceptional and lasting contribution made to the research frontier and the professional practice of earthquake engineering. Prof Ambraseys was one of 13 Legends named at the 14th World Conference on Earthquake Engineering in Beijing in October, drawn from nominations from over 125 earthquake organisations worldwide.

Imperial College News Bulletin November 2008

LEGENDS OF
EARTHQUAKE ENGINEERING

ANCER

NICHOLAS AMBRASEYS
Senior Research Fellow
Imperial College, London, U.K.

TAKUJI KOBORI
(1920-2007)
Professor (Emeritus)
Kyoto University
Kajima Corporation

KIYOSHI MUTO
(1903-1989)
Professor (Emeritus)
University of Tokyo, Japan

THOMAS PAULAY
Professor (Emeritus)
University of Canterbury
New Zealand

RAY W. CLOUGH
Professor (Emeritus)
University of California, Berkeley, USA

JAI KRISHNA
(1912-1999)
Formerly Vice-Chancellor
University of Roorkee
India

NATHAN M. NEWMARK
(1910-1981)
Professor (Emeritus)
University of Illinois at Urbana-Champaign

JOSEPH PENZIEN
Professor (Emeritus)
University of California,
Berkeley, USA

H. BOLTON SEED
(1922-1989)
Professor
University of California,
Berkeley, USA

GEORGE W. HOUSNER
Professor (Emeritus)
California Institute of
Technology, USA

HUIXIAN LIU
(1912-1992)
Professor
Institute of Engineering
Mechanics, China

SHUNZO OKAMOTO
(1909-2004)
Professor (Emeritus)
University of Tokyo, Japan
Saitama University, Japan

EMILIO ROSENBLUETH
(1926-1994)
Professor (Emeritus)
National University of
Mexico

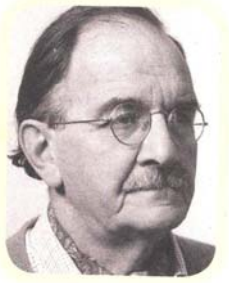
5. Τέλος, τον Σεπτέμβριο 2008 τιμήθηκε από το Imperial College για την πενηντάχρονη προσφορά του στο Κολλέγιο.

reporter

ISSUE 195 ▸ 18 SEPTEMBER 2008

celebrating long service

50 years



Professor Nicholas Ambraseys,
Senior Research Investigator
(Civil and Environmental Engineering)

Emeritus Professor Nicholas Ambraseys started at Imperial in September 1955 as a researcher in the Department of Civil Engineering, specialising in seismology—the scientific study of earthquakes. He describes the College in the 1950s: "It was a time of little paperwork where everyone had a secretary and where we'd discuss problems in the lab over coffee at the SCR; it was a big family really."

In 1963 Dr Ambraseys spent a year working in the University of Illinois but he returned to the College as he preferred Imperial's style of teaching. He says: "This is one of the only institutions I know which allows students to sip knowledge through a straw and really gives them time to absorb and work with what they have learnt before giving them more information."

One of Professor Ambraseys's favourite aspects of his job is getting to see his research used around the world. In 1967 he worked with Professor Alec Skempton to create the Mangla Dam in Pakistan—something he is particularly proud of. He went on to work with the United Nations on projects that included helping local people in Saudi Arabia to produce earthquake-resistant building designs in 1983. He sits on a number of high profile boards and was a member of the Channel Tunnel Safety Authority until 1989.

Consultancy aside, he really enjoys working as a mentor for his students. He says: "It's great being a catalyst and working out how to help students progress. After being here for so long you begin to recognise patterns of behaviour and can use your experience of helping one student 10 years ago to help a student with a similar problem today."

While the College has changed around him, Professor Ambraseys explains what has kept him here for a monumental 50 years: "Because I'm surrounded by friends who always give me fantastic advice."

ΠΡΟΣΕΧΕΙΣ ΓΕΩΤΕΧΝΙΚΕΣ ΕΚΔΗΛΩΣΕΙΣ

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

ERES – Seventh International Conference on Earthquake Resistant Engineering Structures, 11 - 13 May 2009, Cyprus, www2.wessex.ac.uk/09-conferences/eres-2009.html

ISSMGE • TC 18 International Conference on Deep Foundations - CPRF and Energy Piles, 15 May 2009, Frankfurt am Main, Germany, www.geotechnik.tu-darmstadt.de

Géotechnique Symposium in Print "Thermal Behaviour of the Ground Characterisation, Modelling and Application", Monday 18 May 2009, Institution of Civil Engineers, London, UK, events.ice.org.uk/gsip

SINOROCK2009 International Symposium on Rock Mechanics "Rock Characterization, Modelling and Engineering Design Methods", 19 - 22 May 2009, Hong Kong, www.hku.hk/sinorock

SINOROCK2009 Extra-terrestrial rock mechanics.

"Safe Tunnelling for the City and Environment" ITA-AITES World Tunnel Congress 2009 and the 35th ITA-AITES General Assembly, Budapest Congress and Word Trade Center, Budapest, Hungary, 23 - 28 May 2009 - www.wtc2009.org

Géotechnique SYMPOSIUM IN PRINT 2009, May 2009, www. geotechnique-ice.com

3rd International Conference on New Development in Rock Mechanics and Engineering & Sanya Forum for the Plan of City and City Construction (NDRM'2009), 24 - 26 May 2009, Sanya, Hainan Island, China, www.ndrm2008.cn

International Symposium on Prediction and Simulation Methods for Geohazard Mitigation IS-Kyoto, 25 – 27 May 2009, Kyoto, Japan, nakisuna2.kuciv.kyoto-u.ac.jp/tc34/is-kyoto

THE TWELFTH MALLET MILNE LECTURE
27th May 2009
Institution of Civil Engineers
One Great George Street, Westminster, London SW1P 3AA
www.seced.org.uk

The Seismic Future of Cities

The final projected doubling in Earth's population in the next half century requires a projected additional 1 billion housing units, more dwellings constructed in a single generation than at any time in Earth's history. Earth's tenfold increase in population has occurred during a time that is short compared to the return time of damaging earthquakes. In the next century, therefore, earthquakes that had little impact on villages and towns will be shaking supercities housing upwards of 12 million people. In the past, catastrophic earthquakes have killed more than 10% of the epicentral population, hence, an epicentral hit on one of our new urban agglomerations has the potential to cause 1 million fatalities. Earthquake resistant construction often takes a backseat to perceived more pressing needs in the developing nations. Never has a generation of earthquake engineers been faced with such a grave responsibility to exercise their skills, both political and technical, as now.

Speaker: Professor Roger Bilham, Professor of Geology, University of Colorado

Roger Bilham was awarded degrees in Physics (1966) and Geology (1967) at the University of Wales, Cardiff, and in 1971 a PhD in Geophysics from Cambridge University. From 1975-85, following a post-doctoral appointment in Cambridge, he joined the earthquake deformation monitoring program at Columbia University's Lamont Doherty Earth Observatory, ultimately as a Doherty Fellow. In 1986 he was appointed a Professor of Geology at the University of Colorado, where he co-founded UNAVCO, the US consortium to apply GPS techniques to tectonic studies. His more than 180 articles of the past three decades describe new instruments for tilt and creep monitoring, historical archive studies of pre-instrumental earthquakes, and details of ongoing plate boundary deformation processes occurring in Iceland, the Caribbean, Venezuela, the US, Africa, India, Pakistan and Tibet. He is a Fellow of the American Geophysical Union and an Associate Director of CIRES, University of Colorado.

2nd International Seminar "Earthworks in Europe", 3rd & 4th June 2009 – Royal Geographical Society, London, www.geolsoc.org.uk/gsl/groups/specialist/engineering/page4425.html

Shotcrete for Underground Support XI
June 7 - 10, 2009, Davos Congress Center
Davos, Switzerland
www.engconfintl.org

Engineering Conferences International (ECI), in conjunction with the International Tunnelling Association (ITA), the Swiss Tunnelling Society (FGU) and several other European Associations is sponsoring the Shotcrete for Underground Support XI Conference. The conference will be held at the Davos Congress Center, Davos, Grisons, Switzerland from June 7 - 10, 2009.

This conference is the eleventh in a series of conferences on the theme of Shotcrete for Underground Support, that were sponsored by Engineering Foundation, predecessor of ECI. The first conference was held in South Berwick, Maryland, USA in 1973. The most recent five conferences on this theme were held in Uppsala, Sweden (1990); Niagara-on-

the-Lake, Ontario, Canada (1993); Telfs, Austria (1995); Campos Do Jordao, Brazil (1999); Kyoto, Japan (2002); Whistler, Canada (2006). In 2009 the conference will be held again in Europe.

The main purpose of this conference is to bring together specialists from around the world, from industry, government and academia to present and discuss the latest state-of-the-art of shotcrete in general and shotcrete for underground support in particular. There is an increasing use of shotcrete in underground infrastructures as well as in mining and considerable technological progress has been made and is still made in this field. This conference provides a unique opportunity for presenting latest developments and case-history examples worldwide.

CONFERENCE TOPICS

- Design for underground support using shotcrete and other support components.
- Shotcrete making materials including: binders (cement and supplementary cementing materials), aggregates, admixtures and shotcrete accelerators.
- Steel and synthetic fibre reinforcement.
- Testing and properties of plastic and hardened shotcrete, including rebound and early age properties.
- Testing for toughness of fibre reinforced shotcretes, including beam and panel tests.
- Design, specification and testing for durability of shotcrete.
- Shotcrete batching, mixing supply and application equipment.
- Application of shotcrete using hand nuzzling, remote arms and robotic control.
- Shotcrete Quality Assurance (QA) and Quality Control (QC) including shotcrete nozzleman certification and project qualification.
- Case history examples of innovative shotcrete projects in both civil engineering and mining applications.
- Health, safety and environmental issues relating to shotcrete use.
- Other related topics

Conference Chair: F. Amberg, M.o.S. ETHZ, SIA
CEO Amberg Group, President Swiss Tunnelling Society
Tel: +41 81 725 31 13; Fax: +41 81 725 31 02; Email: famberg@amberg.ch

Engineering Conferences International
32 Broadway, Suite 314 - New York, NY 10004, USA
Phone: 1 - 212 - 514 - 6760, Fax: 1 - 212 - 514 - 6030
www.engconfintl.org – info@engconfintl.org

Short Course
SETTING UP A GEOTECHNICAL SOIL INVESTIGATION PROGRAMME
9 - 11 June 2009, Deltares, Delft, the Netherlands
www.geodelftacademy.nl//EN/page277.asp

Failure and delay during construction are often caused by unforeseen behaviour of the subsoil. The public's tolerance for these mishaps is fading, while uncertainties and risks will always be reality in geo-engineering. Therefore, setting up a tailor made soil investigation program is essential for the success of each construction job.

Considering different variables will help to determine the ideal type and scale of a soil investigation program and its interpretation.

Failure and delay during construction are often caused by unforeseen behaviour of the subsoil. The public's tolerance for these mishaps is fading, while uncertainties and risks will always be reality in geo-engineering. Therefore, setting up a tailor made soil investigation program is essential for the success of each construction job.

Considering different variables will help to determine the ideal type and scale of a soil investigation program and its interpretation.

Aim of the course

This three-day course provides participants with a systematic risk-driven planning of soil investigation programs, including many practical cases.

Topics are:

- cone penetration testing and drilling methods
- various other measurement methods to determine in situ geotechnical parameters
- geophysical survey methods
- laboratory testing
- risk analyses and geotechnical baseline reporting
- an overview of the state-of-the-art techniques
- aspects of the interpretation of the measurement data and correlations
- workshop on planning a soil investigation program.

Course leaders

Tom Lunne, Norwegian Geotechnical Institute
Victor Hopman, Deltares

More information

For more information, please contact the course coordinator, Marion Arkesteijn (telephone +31 (0)88 335 7500, telefax +31 (0)15 2610821 or e-mail sales@deltaresacademy.com).

Geo-Environmental Engineering, 9th Canada-France-Japan-Korea Joint Conference on Geo-Environmental Engineering (GEE 2009), The University of British Columbia, Vancouver, British Columbia, Canada, June 10 - 12, 2009, gee2009.civil.ubc.ca

2009 RETC Rapid Excavation & Tunneling Conference & Exhibit, June 14-17, 2009, Las Vegas, Nevada, USA, www.retc.org

IS-Tokyo 2009 "International Conference on Performance-Based Design in Earthquake Geotechnical Engineering - from case history to practice", 15 – 17 June 2009, Tokyo, Japan, www.comp.tmu.ac.jp/IS-Tokyo

COURSE ON TUNNEL DESIGN & CONSTRUCTION
15-19 JUNE 2009, BRUNEL UNIVERSITY, MIDDLESEX, UK
www.britishtunnelling.org.uk/events.php

The BTS Tunnelling Course is organised and run by the British Tunnelling Society (BTS), an affiliate member of the Institution of Civil Engineers. The purpose of the course is to provide a comprehensive introduction to all aspects of tunnelling. For 2009 the course has been modelled to reflect changes in the tunnelling industry and to improve its presentational style. The course will follow the project life and will contain worked examples and workshop sessions to allow improved interaction between delegates and speakers. It is aimed at the wide range of professional services that support the tunnelling industry, including clients, tunnel operators and members of the financial and insurance sectors that may have a vested interest in tunnelling enterprises. It is an invaluable introduction to tunnelling for young engineers from the construction and consultancy sectors to those more experienced engineers who wish to maintain their skills at the leading edge of industry developments. The course speakers are all recognised industry experts in their own fields. The BTS Tunnelling Course is recognised within the industry as providing the highest standard of technical content with the course material being presented in a format designed to engage and inform attendees from a wide range of backgrounds.

British Tunnelling Society
c/o Mott MacDonald
20-26 Wellesley Road
Croydon CR9 2UL
t: +44 (0)20 8774 2291
f: +44 (0)20 8681 5706
e: lynn.richman@mottmac.com

Rock Dynamics Workshop 2009
Lausanne, 17-19 June 2009
isrm.net/fotos/noticias/Rock_Dynamics_Workshop_2009.pdf

The ISRM Commission on Rock Dynamics, together with the Swiss Federal Institute of Technology (EPFL) Rock Mechanics Laboratory will organise an International Workshop at the EPFL in Lausanne, Switzerland, 17-19 June 2009. Dr Zhou Yingxin, Chairman of the Commission, will be the Workshop Co-ordinator.

The Rock Dynamics Workshop aims to bring together leading researchers and practitioners to share and exchange knowledge and experience in rock dynamics research and its application to rock engineering design. The workshop will feature presentations on the state of the art in research and engineering practice and provide ample time for discussion.

Interested parties are invited to contact Dr Yingxin ZHOU via email:zyingxin@dsta.gov.sg.

WCCE – ECCE – TCCE Joint Conference "EARTHQUAKE & TSUNAMI", 22 – 24 June 2009, Istanbul, Turkey - www.imo.org.tr/eqt2009

5th SYMPOSIUM ON STRAIT CROSSINGS, 22 - 25 June 2009, Trondheim, Norway, www.straitcrossings.com

"3D Finite Element Analysis for Geotechnical and Tunnel Engineering"
25-26 June, 2009, Delft, the Netherlands
www.midas-diana.com

TNO DIANA cordially invites you to attend its 2-days training course: **3D Finite Element Analysis for Geotechnical and Tunnel Engineering**.

The course consists of a balanced mixture of lectures and hands-on computer tutorials and exercises using the 3D FEA software midasGTS.

This course is part of the promotional campaign of midasGTS and will therefore be **FREE of CHARGE**. Due to the limited space available (maximum 30 participants), registration is on a first come, first served basis.

For registration, please fill in the enclosed form and return to us by fax (+31 15 2763019), or Email: courses@tnodiana.com before June 12th 2009.

For more information, please contact Dr. Ahmed Elkadi at +31 15 27 63250 or e-mail info@tnodiana.com.

The 3rd International Geotechnical Symposium (IGS2009) on Geotechnical Engineering for Disaster Prevention and Reduction, July 22 ÷ 25, 2009 Harbin, China, igs2009.hit.edu.cn

TCLEE 2009 – Lifeline Earthquake Engineering in a Multihazard Environment, June 28 – July 1, 2009, Oakland, California, USA, content.asce.org/conferences/tclee2009

Asheville 2009
43rd U.S. Rock Mechanics Symposium
4th U.S.-Canada Rock Mechanics Symposium
June 28- July 1, 2009, Asheville, North Carolina, USA
www.armasymposium.org

This symposium encompasses all aspects of rock mechanics, rock engineering, and geomechanics. We invite scientific and engineering papers addressing geology and geophysics, civil, mining, petroleum, and underground construction applications. We especially aim to focus on fundamentals that are of common interest to all disciplines. Examples of such fundamentals are:

- Lab and in situ testing, characterization, upscaling

- Fractured rock, discontinuities, rock masses
- In situ stress measurement, prediction, and modeling
- Weak rocks, shales, granular materials
- Numerical/analytic/constitutive modeling of rock processes
- Salt and creeping materials
- Rock excavation and breakage, dynamic loading
- High- and low-temperature geomechanics
- Rock physics and geophysics
- Stability/support of underground openings (all sizes)
- Slope and open pit stability, foundations, dams
- Fracture mechanics and fracture propagation
- Coupled processes, flow and transport
- Remote sensing, monitoring, seismicity
- Compaction, yielding, pore collapse, plasticity
- Waste disposal, seal integrity, underground storage
- Uncertainty/stochastics/probability

Contact ARMA:
Peter Smeallie, Executive Director
(P) 703.683.1808 (F) 703.683.1815
(E) smeallie@armarocks.org

STREMAH 2009
Eleventh International Conference on Structural Repairs and Maintenance of Heritage Architecture
22 - 24 July 2009, Tallinn, Estonia
www.wessex.ac.uk/09-conferences/stremah-2009.html

Introduction

STREMAH 2009 is the 11th International Conference on Studies, Repairs and Maintenance of Heritage Architecture. The meeting, which has taken place on a regular basis over more than 20 years, has become an event attracting specialists from all over the world. It offers a channel for state-of-the-art technology and the most up-to-date scientific discoveries to be applied to the conservation of our architectural heritage.

The importance of the architectural heritage for the historical identity of a region, town or nation is now widely recognised throughout the world. In order to take care of our heritage we need to look beyond borders and continents to benefit from the experience gained by others and to gain a better understanding of its cultural background.

This series of conferences marks an important contribution as each meeting gathers the most recent advances in research and up-to-date studies of heritage buildings and makes them accessible to wide circles of interested people. STREMAH is now well established as the most important conference of its type.

The conference will aim to bring together scholars and professionals to discuss a variety of topics related to architectural and maritime heritage. In addition to the regular topics covered during STREMAH conferences, the meeting will discuss the future of historic harbours, dockyards and other similar maritime structures in today's world, as well as the function of historic vessels and their heritage value. This leads to problems such as the role of development schemes and the relationship between tourism and maritime heritage and the need to protect the latter by suitable legislation and support initiatives.

Who Should Attend

STREMAH 2009 brings together scientists, architects, curators, engineers, art historians, surveyors, archaeologists and building specialists to exchange opinions and experiences, present the most recent scientific and practical findings, and discuss problems and solutions in relation to studies repairs and maintenance of heritage buildings.

Topics

- Heritage architecture and historical aspects
- Regional architecture
- Structural issues
- Seismic behaviour and vibrations
- Surveying and monitoring
- Material characterisation and problems
- Simulation and modelling
- Environmental damage
- Assessment and retrofitting
- Structural restoration of metallic structures
- Reuse of heritage buildings
- Preservation of archaeological sites
- Modern (19th/20th Century) heritage
- Social and economic aspect in heritage
- Maritime heritage
- Historical ports, dockyards, shipyards and buildings
- Underwater heritage
- Ship preservation and shipwrecks
- Oral traditions and stories
- Economics of preservation
- Experimental validation and verification

Conference Secretariat
Claire Shiell
STREMAH 2009
Wessex Institute of Technology
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The 3rd International Geotechnical Symposium (IGS2009) on Geotechnical Engineering for Disaster Prevention and Reduction, 22 - 25 July 2009, Harbin, China, igs2009.hit.edu.cn

GeoHunan International Conference: Challenges and Recent Advances in Pavement Technologies and Transportation Geotechnics, 3 – 6 August 2009, dchen@dot.state.tx.us

PROTECT2009, Second International Workshop "Performance, Protection & Strengthening of Structures under Extreme Loading", nan Village Center, Hayama, Japan, August 19-21, 2009, www.nda.ac.jp/cc/users/fujikake/protect2009

GeoAfrica 2009 "Geosynthetics For Africa", 2 – 5 September 2009, Cape Town, South Africa, www.gigsa.org

17th International Conference on Soil Mechanics and Geotechnical Engineering "Future of Academia & Practice of Geotechnical Engineering", 5 – 9 October 2009, Alexandria, Egypt - www.2009icsmge-egypt.org

Sardinia 2009 Twelfth International Waste Management and Landfill Symposium, 5 - 9 October 2009, S. Margherita di Pula (Cagliari), Sardinia, Italy, www.sardiniasymposium.it

Symposium
Mechanics of Natural Solids
Horto, Pelion, Greece 7th - 9th September 2009
geotechnik.uibk.ac.at

The symposium aims to deliver a paradigm for the interconnection of the mechanics of soil, rock, ice and snow and also for the interdisciplinary character of the related research. Therefore, the lectures will be of fundamental character and address the possible interfaces and the fascinating contents of the several subjects.

Natural solids (soil, rock, ice, snow) are characterised by inhomogenety and by properties that vary in a very large range. For example, granite is usually very hard, but weathered granite can be kneaded by hand. Rock can be continuous or jointed, large rock strata undergo in the course of millions of years enormous deformations, they can be folded and/or upheaved by several kilometers. Continuous disintegration transforms rock to soil, a granular material that exhibits peculiar properties the most striking of which is that it can undergo extremely large deformations and then resume solidity, when the individual grains are pressed against each other. Sand shares with rock the ability to undergo large deformation, provided that rock is deformed in completely different time scales from sand. Thus, strength and rigidity (stiffness) of rock are a matter of deformation rate, and sand can be considered as an archetype of all natural solids.

The inherent similarity that connects rock and soil holds also for ice and snow. Snow is a sintered material but shares some properties with soil, whereas glacier ice behaves like a low viscosity rock.

SPEAKERS AND LECTURES

- Eduardo Alonso, Barcelona "Size effects and long term behaviour of coarse granular media"
- Gary Couples, Edinburgh "Nature: A very sophisticated experimentalist"
- Itai Einav, Sydney "Confined comminution in granular materials: from discrete to continuum"
- Steve Hall, Grenoble "When geophysics meet geomechanics: elastic-wave imaging of geomechanical properties and processes"
- Dimitrios Kolymbas, Innsbruck "Sand as an archetypical natural solid"
- Mario Liu, Tübingen "Physical foundations of sand mechanics"
- Jacques Meyssonnier, Grenoble "Experimental studies of the viscoplasticty of ice and snow"
- Carlos Santamarina, Georgia "Particle-level processes in the development of discontinuities in granular materials
- Martin Schneebeli, Davos "Snow mechanics in view of the transition between a sintered and granular material"
- Martin Schöpfer, Dublin "Distinct Element Method (DEM) modelling of laboratory to outcropscale fracturing of natural rocks"
- Erland Schulson, Dartmouth, New Hampshire "Fracture of Ice"
- Antoinette Tordesillas, Melbourne "Are we there yet?: Following the energy trail in cohesionless granular solids"
- Cino Viggiani, Grenoble "Mechanisms of localized deformation/damage in geomaterials: an experimental insight"
- Teng Fong Wong, New York "Grain crushing, pore collapse and strain localization in porous rock"

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AMIREG 2009 - 3rd International Conference Advances in Resources & Hazardous Waste Management Towards Sustainable Development, 7 – 9 September 2009, heliotopos.conferences.gr/amireg2009

Jubilee Symposium on Polymer Geogrid Reinforcement, Institution of Civil Engineering, London, 8 September 2009

Geological Engineering Problems in Major Construction Pojects, Chengdu, China, September 9th - 11th, 2009, www.iaeg2009.com

EURO:TUN 2009 Computational Methods in Tunnelling, 9-11 September 2009, Bochum, Germany, www.eurotun.rub.de

9th International Symposium on Tunnel Construction and Underground Structures, 16-18 September 2009, Ljubljana, Slovenia, www.drustvo-dpgk.si

1st International Symposium on Rockfill Dams, 18 ÷ 21 October 2009, Chengdu, China, chincold@iwhr.com, zhangyaook@gmail.com

ISRM 1st annual technical and cultural field trip, Florence, Italy, 21-22 September 2009

3ο Ελληνο – Ιαπωνικό Συμπόσιο:
ΑΝΤΙΣΕΙΣΜΙΚΟΣ ΣΧΕΔΙΑΣΜΟΣ ΘΕΜΕΛΙΩΣΕΩΝ:
Εμφαση στα Εργα Υποδομής
22 – 23 Σεπτεμβρίου 2009, Σαντορίνη
www.ntua.gr/gj-workshop

Το Ελληνικό Τμήμα Αντισεισμικής Μηχανικής (ΕΤΑΜ), σε συνεργασία με το Εργαστήριο Εδαφομηχανικής του ΕΜΠ, και το Τμήμα Σεισμικής Μηχανικής του Συλλόγου Πολιτικών

Μηχανικών της Ιαπωνίας συνδιοργανώνουν στις 22 και 23 Σεπτεμβρίου 2009, στο Συνεδριακό Κέντρο "Πέτρου Νομικού" στα Φηρά της Σαντορίνης, το 3ο Ελληνο–Ιαπωνικό Συμπόσιο με θέμα: ΑΝΤΙΣΕΙΣΜΙΚΟΣ ΣΧΕΔΙΑΣΜΟΣ ΘΕΜΕΛΙΩΣΕΩΝ: Εμφαση στα Εργα Υποδομής.

Μετά τα δύο πρώτα επιτυχημένα Συνέδρια (στην Αθήνα το 2005 και στο Τόκυο το 2007), το 3ο Συμπόσιο είναι το τελευταίο προγραμματισμένο της σειράς αυτής επί Ελληνικού εδάφους. Η έμφαση του Συμποσίου θα δοθεί αυτή την φορά στην παρουσίαση νέων, καινοτόμων μεθόδων θεμελιώσεως πάσης φύσεως έργων υποδομής (συμπεριλαμβανομένων γεφυρών και υπογείων κατασκευών), και στην πειραματική επιβεβαίωσή τους σε μεγάλης κλίμακας και φυγοκεντρικές δοκιμές.

Θέματα Συμποσίου

- Αντισεισμικός σχεδιασμός επιφανειακών θεμελίων, πασσάλων και φρεάτων
- Σεισμική συμπεριφορά αντιστηρίξεων
- Σχεδιασμός έναντι ρευστοποιήσεως
- Επισκευή – Αναβάθμιση θεμελιώσεων
- Δυναμική αλληλεπίδραση Εδάφους–Θεμελίου–Ανωδομής
- Ο σεισμός του Wenchuan 2008 (Κίνα)
- Διδάγματα από πρόσφατους σεισμούς

Τα θέματα του συμποσίου θα καλυφθούν από 8 κύριους ομιλητές από την Ιαπωνία, την Ελλάδα, την Γαλλία και τις ΗΠΑ και 10–15 προγραμματισμένες, κατόπιν προσκλήσεως, παρουσιάσεις. Θα υπάρξει φυσικά έκθεση poster.

Θα συμμετάσχουν ως προσκεκλημένοι ομιλητές, καταξιωμένοι επιστήμονες από τον διεθνή χώρο, οι οποίοι θα αναπτύξουν θέματα όπως :

T. O' Rourke (Cornell University)
"The 49th Rankine Lecture: Geohazards and large geographically distributed systems"

K. Kawashima (Tokyo Institute of Technology)
(a) "Rocking Isolation of Bridge Supported by Spread Foundations"
(b) "Damage of Bridges in 2008 Wenchuan, China Earthquake"

K. Toki (Kyoto University)
"Seismic Stability of Historical Masonry Structures"

M. Hamada (Waseda University)
"Global Increase of Natural Disasters and International Cooperation for Disaster Mitigation"

I. Shahrour (University of Lille, France)
"Seismic Behavior and Design of Micropiles"

N. Sitar (University of California, Berkeley)
(*θα ανακοινωθεί συντόμως*)

Περισσότερες πληροφορίες στην ιστοσελίδα: www.ntua.gr/gj-workshop, καθώς και στα τηλέφωνα του Εργαστηρίου Εδαφομηχανικής ΕΜΠ: *210-772.4076, 210-772.3383*. e-mail: soildyn@civil.ntua.gr

58th Geomechanics Colloquy 2009
8-9 October 2009, Salzburg, Austria
www.oegg.at

The 58th Geomechanics Colloquy will be held on October 8th and 9th, 2009, in the Salzburg Congress Centre.

Session topics will be:

- Projects in Austria
- Grouting in rock
- Deep tunnels
- Reuse of tunnel excavation material

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16ο ΣΥΝΕΔΡΙΟ ΣΚΥΡΟΔΕΜΑΤΟΣ, 21 ÷ 23 Οκτωβρίου 2009, Κύπρος, www.tee.gr/Διεθνείς Σχέσεις/Συνέδρια–Εκδηλώσεις

HYDRO 2009 Progress - Potential – Plans, Lyon, France, 26-28 October 2009, www.hydropower-dams.com

EUROCK'2009 Rock Engineering in Difficult Ground Conditions - Soft Rocks and Karst, 29 - 31 October 2009, Dubrovnik-Cavtat, Croatia, www.eurock2009.hr

Submarine Mass Movements and Their Consequences, 4th International Symposium, Austin, Texas, November 8 – 11, 2009,
www.beg.utexas.edu/indassoc/dm2/Conference2009

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

12th International Conference of ACUUS
Using the Underground of Cities: for a Harmonious and Sustainable Urban Environment
November 18-19, 2009, Shenzhen City (China)
www.acuus.qc.ca/coming.html

The main themes of the conference will include the following topics:

- Underground space development & utilization
- Future challenges in underground development
- Strategy of underground space development
- Environmental and safety of underground space
- Planning and design of underground traffic
- Aesthetics of underground environments
- Risk assessment of underground projects
- Underground project technology
- Economy of underground development
- Legislation and proprietary rights of underground space
- Underground architecture and planning of underground space
- Underground freight transport
- Development of technology for deep and large underground projects

Conference Secretariat:
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ACUUS2009@163.com

6th WBI-International Shortcourse Rock Mechanics, Stability and Design of Tunnels and Slopes

November 26 to 30, 2009
Christmas market time
WBI - head office, Aachen, Germany

After five successful events in the past 5 years, we will organize our shortcourse in 2009 again.

Following the proposals of participants, we included additional subjects, such as e.g. slopes, and extended the duration to five consecutive days. During these days, acknowledged experts in their field will

- share their knowledge with you,
- illustrate the basics of rock mechanics to you,
- demonstrate the application of the WBI-developed finite element computer codes for static and hydraulic analyses on the basis of case histories,
- present interesting case studies for tunneling, slope design and construction in rock.

There will be plenty of room for questions and discussion.

Professor Dr.-Ing. W. Wittke
Beratende Ingenieure für Grundbau und Felsbau GmbH (WBI)
Henricistraße 50, D-52072 Aachen
Telefon: (0241) 88 98 7-0
FAX: (0241) 88 98 7-33
e-mail: wbi@wbionline.de
Internet: http://www.wbionline.de

5th Colloquium "Rock Mechanics - Theory and Practice" with "Vienna-Leopold-Müller Lecture", November 26th and 27th , 2009, christine.cerny@tuwien.ac.at

www.stuva.de/STUVA-Conference-09.tagung.0.html?&L=1

The next STUVA Conference will take place on December 1-3, 2009 at Congress Center Hamburg (CCH).

The presentations will be covering the following main topics:

- Tunnelling under difficult ground conditions, the latest technical developments in all areas of underground construction,
- Major international projects with focus on Scandinavia,
- Design/Construction/Maintenance/Refurbishment/Upgrading/Research,
- Safety during construction and operation of tunnels,
- Sustainability, recovery and use of energy in underground constructions,
- Economics/Contractual issues/Financing.

International Symposium on Geotechnical Engineering, Ground Improvement, and Geosynthetics for Sustainable Mitigation and Adaptation to Climate Change including Global Warming

3 to 4 December 2009, Bangkok, Thailand
www.set.ait.ac.th/acsig/conference

During the recent past, the intensity of torrential rainfall and its subsequent destructive influence on human community has become severe and unpredictable due to climate change including global warming. Major water related hazards in the soil slopes with weak geological conditions are sedimentrelated hazards or debris flows that initiate from rain-triggered landslide, massive slope failure or soil erosion or simply remobilization of deposited materials on high-gradient rainfall run-off channel beds.

The effect of climate change including global warming, however, is not only limited in causing landslide disasters with an increased frequency but also in increasing the frequency of occurrence of a variety of natural disasters. The intergovernmental panel on climate change (IPCC) reports that residences of many more millions of people are projected to be flooded every year through the 2080s because of rising sea level. These, densely populated and low–lying areas where adaptive capacity is insufficient, and which are already under threat owing to tropical storms, land subsidence, river bank and coastal erosion, are at an increased risk. Moreover, recent news items, in support of the above IPCC reporting, has identified that insurance companies blaming bad weather slashing down their profit forecasts by millions of dollars. Consequently, the insurance companies have been forced to raise the insurance premium to recoup their losses.

Recent technological advancements in general and those particularly in the areas of Geotechnical Engineering, Ground Improvement together with Geosynthetic Engineering have been contributing greatly in undertaking scientific

and systematic methodologies for assessing the risk associated with natural hazards of all kinds as well as the associated sustainable mitigation and adaptation strategies. In the interest of sharing the advancements in the state-of-the-art, and as a follow up to the previous International Symposium on Geotechnical Engineering, Ground Improvement and Geosynthetics for Human Security and Environmental Preservation held in December 2007, an International Symposium on Geotechnical Engineering, Ground Improvement and Geosynthetics for Sustainable Mitigation and Adaptation to Climate Change including Global Warming is jointly organized by Southeast Asian Geotechnical Society (SEAGS), International Geosynthetics Society Thailand (IGS-Thailand) and Asian Center for Soil Improvement and Geosynthetics(ACSIG) from 2 to 3 December 2009 to be held in Bangkok, Thailand.

THEMES OF THE SYMPOSIUM

- Geosynthetics for Climate Change due to Global Warming
- Geosynthetics for Coastal and Riverbank Erosions
- Geosynthetics for Sustainable Infrastructures including Limited Life Geosynthetics
- Geosynthetics for Human Security
- Geosynthetics for Water Conservation
- Geosynthetic for Food and Agriculture
- Landslides and Debris Flows due to Rainfall during Storms and Typhoons
- Mechanics of Rain-Triggered Landslides and Debris Flows
- Early Warning System for Landslides and Debris Flows
- Risk Assessment of Rain-Triggered Landslides and Debris Flows
- Case Studies of Coastal Erosion and Mitigation
- Case Histories of Riverbank Erosion and Mitigation

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International Symposium on Ground Improvement Technologies and Case Histories (ISGI09), 9 to 11 December 2009, Singapore, ISGI09@nus.edu.sg

www.icsge2009.com

INTRODUCTION

After the rewarding success of the previous twelve conferences, 25 year-conferences since 1984 to 2009, the Structural Engineering Department of the Faculty of Engineering, Ain Shams University invites you to attend the 13th International Conference on Structural and Geotechnical Engineering (13th ICSGE), to be held in Cairo, Egypt on 27-29 December, 2009 at The Cairo International Conference Center.

Participants are invited to discuss and exchange ideas and information as well as to promote the recent developments of Structural and Geotechnical Engineering. International experts will present Keynote lectures in different fields . Exhibition on the stem of construction products and equipments will be held during the conference. Details of the provisional program, social events, technical visits and hotel accommodation are covered in the conference website.

WHO SHOULD ATTEND

The conference is intended for civil and structural engineers, architects and associated professionals concerned with the state-of-the-art design, construction, monitoring, and performance of structures, e.g. bridges and buildings. Participants will therefore represent consultants, researchers, owners, contractors, suppliers and regulatory authorities.

THEMES OF THE CONFERENCE

Themes related to Structural Engineering

- Research on New Materials
- Advanced Analysis and Design of Structures
- Numerical Modeling and Software Development
- Advanced Technology of Construction Methods
- Rehabilitation and Retrofit of Structures
- Durability of Structures and Bridges
- Advanced Composite Materials: Research & Applications
- Earthquake Engineering: Design, Codes and Applications

Themes related to Geotechnical Engineering

- Applications for Recent Foundations Systems
- Soil – Structure Interaction
- Tunnels and Underground Structures
- Soil Improvement
- Numerical Modeling & In-Situ Monitoring
- Soil Dynamics & Liquefaction
- Geoengineering and Geoenviornment
- Geotechnical Characteristics (Lab. & In-Situ)

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GeoFlorida

Advances in Analysis, Modeling & Design

Februart 20-24, 2010, Wesi Palm Beach, Florida, USA

content.asce.org/conferences/geoflorida2010/index.html

GeoFlorida 2010, the annual geo-congress of the Geo-Institute of ASCE, will present a broad perspective on new developments in geotechnical engineering analysis, model-

ing and design. Technical topics will crosscut all areas of the profession, including constitutive modeling of soil and rock, site assessment and characterization, computational modeling, stability analysis, geoenvironmental engineering, mitigation of geohazards, earthquake engineering, LRFD methods, alternative contracting for geotechnical projects, and case histories. GeoFlorida 2010 will provide practitioners, consultants, researchers, educators, and students with opportunities to share new knowledge and to learn about innovative advances and emerging technologies that are at the leading edge of current geotechnical analysis, modeling and design. GeoFlorida 2010 will offer technical sessions, plenary lectures, panel discussions, short courses, workshops and the annual student competition. The conference will also include an extensive Exhibit Hall and post-conference field trips.

Overview of Technical Program

In the past 10-15 years, there has been considerable progress in the modeling of fundamental soil behavior and the analysis of geotechnical problems. Additionally, there are important trends in place concerning design practices, such as the use of Load and Resistance Factor Design (LRFD) for transportation infrastructure and a greater need to understand and quantify risk. GeoFlorida 2010 will have a strong focus on these advances in understanding and modeling soil behavior and the solution of practical problems.

Papers will address the following themes:

Modeling of Geotechnical Materials (examples of topics: micromechanical and nano-level modeling of geomaterials, characterization of recycled materials, characterization of problematic soils, material testing, constitutive modeling)

In Situ Testing and Site Characterization (examples of topics: nondestructive testing and assessment technologies, subsurface characterization and monitoring, visualization of the subsurface, imaging applications, advanced in situ testing, applications of geophysics, cone penetration testing)

Advances in Geotechnical Analysis, Computational Geotechnics and Software (examples of topics: computational analysis, finite element analysis, stability analysis, soil-structure interaction, soil dynamics, flow through porous media, unsaturated flow and coupled processes, rock mechanics, benchmark problems, advanced software and software demonstrations)

Reliability Analysis, LRFD and Risk Assessment (examples of topics: advances in risk assessment, practical reliability-based methods and LRFD, applications of risk analysis, random field representation of soil deposits)

Mitigation of Geohazards (examples of topics: earthquake engineering, landslides, settlement and ground collapse, rock engineering, problematic soils, ground improvement)

Geotechnical Applications and Design (examples of topics: dam and levee design and construction, foundations, retaining walls, reinforced soil, landfills, pavements, excavations, tunnels and underground space, sustainable design and construction, alternative contracting issues for geotechnical projects)

Representative topics within these themes include:

- Material testing, characterization and modeling (soil, rock, geosynthetics, waste materials)
- Constitutive modelling
- Site characterization and insitu testing and monitoring
- Nondestructive assessment methods
- Computational modelling
- Finite element analysis
- Stability analysis
- Reliability-based methods and LRFD
- Geotechnical analysis and design
- Soil dynamics and earthquake engineering
- Rock mechanics and geological engineering
- Granular pavement systems
- Geohazard mitigation
- Applications of geosynthetics
- Geoenvironmental engineering
- Sustainable design
- Case histories

In addition to a number of invited keynote lectures, GeoFlorida 2010 will feature the annual Terzaghi and Peck Lectures.

Technical Program Questions?
Contact Rodrigo Salgado (rodrigo@ecn.purdue.edu) or Patrick Fox (fox.407@osu.edu)

Conference Questions?
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Geo-Institute Staff:
Carol Bowers, Director, cbowers@asce.org
Lauren Tighe, Board and Meetings Specialist, ltighe@asce.org

CAVING 2010 Second International Symposium on Block and Sublevel Caving, 20 – 22 April 2010, Perth, Australia, www.caving2010.com

CPT'10 2nd International Symposium on Cone Penetration Testing, May 9 - 11, 2010, Huntington Beach, California, USA.

ITA – AITES 1010 World Tunnel Congress and 36th General Assembly "TUNNEL VISION TOWARDS 2020", Vancouver, Canada, May 14 - 20, 2010, www.wtc2010.org

12ο Διεθνές Συνέδριο της Ελληνικής Γεωλογικής Εταιρείας, Πάτρα, 19 - 22 Μαΐου 2010 www.synedra.gr

IX International Conference on Geosynthetics, Guarujá, Brazil, 23 – 27 May 2010 - www.igsbrasil.org.br/icg2010

Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics and Symposium in Honor of Professor I. M. Idriss, May 24 – 29, 2010, San Diego, California, USA, 5geoegconf2010.mst.edu

International Geotechnical Conference
GEOTECHNICAL CHALLENGES IN MEGACITIES

7 – 10 June 2010, Moscow, Russia
www.GeoMos2010.ru

INVITATION

Russia is nowadays living through a construction boom. Multiple and various underground structures and high-rise buildings are being erected in its big cities. Moscow with its historical and architectural heritage of more than eight centuries and still growing population of about fifteen millions is the leader of russian construction industry.

New structures in Moscow are being built in the restrained urban conditions. As this takes place, domestic and foreign researchers and designers are facing and solving complex problems of geotechnical engineering. Therefore Moscow is the proper place to play host of the meeting of the specialists in the field of geotechnics as in 1973 when it was the venue of VIII International Congress on Soil Mechanics and Foundation Engineering.

Now we have the honour of inviting you to participate in the International Conference "Geotechnical Challenges in Megacities", which will take place on 7-10 June 2010 in Moscow. The conference will enjoy participation of the leading international and Russian geotechnical specialists.

The organization of the conference has been supported by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and Russian Society for Soil Mechanics, Geotechnics and Foundation Engineering (RSSMGFE). The Organizing Committee will try to help all the participants in obtaining new information, exchanging ideas and enjoying their stay in Moscow.

OBJECTIVES

Megacities are the stages of interaction for new and old buildings, highways, lifelines, other surface and underground structures. The corresponding geotechnical risks are significantly aggravated by the presence of enormous quantities of inhabitants in high density.

The complexity of new challenges to be solved by geotechnics in urban agglomerations demands close cooperation and expertise exchange among the broad international audience. So for the first time in the practice of international conferences four technical committees of ISSMGE (TC28, TC32, TC38 and TC41) will unite their efforts in solving the common problems of geotechnical engineering of megacities.

The aim of the Conference is to provide an opportunity for engineers and scientists working in the field of geotechnical engineering to identify new challenges and find out new solutions to the existing problems. The synergetic effect is expected from the interaction of the specialists with different background working in different fields.

CONFERENCE TOPICS

Construction in restrained urban areas:

- Foundations for high-rise buildings
- Deep excavations, retaining structures, diaphragm walls
- Tunnels for underground transport infrastructures and other networks
- Foundations of city bridges and elevated roads
- Construction on problematic soils

Preservation of existing structures taking into account soil-structure interaction:

- Effect of new buildings and constructions on underground structures
- Effect of new underground structures on existing buildings and networks
- Preservation of historical buildings
- Strengthening and reconstruction of foundations
- Interaction of foundations

Urban environmental geotechnics:

- Geofailures and risk assessment
- Construction on contaminated soils
- Preservation of hydrogeological situation
- Improved soils
- Geoecological problems
- Geological risks in urban planning

For all these topics, papers presenting recent developments concerning the following problems will be welcome:

- Technological developments and construction methods
- Design and calculation methods
- Observational method
- Soil-structure interaction analysis
- Case histories
- Monitoring
- Codes of practice
- Geotechnical risk analysis and management

Secretariat addresses:
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- Russia 198005, Saint Petersburg, Izmaylovsky Prospect 4, office 414 NPO "Georeconstruction-Fundamentproject" (GRF)
  Tel.: +7 812 575 35 87

E-mail: info@GeoMos2010.ru

International Conference Underground Construction Prague 2010 Transport and City Tunnels, 14 – 16 June 2010, Prague, Czech Republic, www.ita-aites.cz

Rock Mechanics in Civil and Environmental Engineering, European Rock Mechanics Symposium (EUROCK 2010) ISRM Regional Symposium on Rock Mechanics, Lausane, Switzerland, 15 – 18 June 2010, lmr.epfl.ch

7th International Conference on Physical Modelling in Geotechnics
Zurich, Switzerland, 28 June - 1 July 2010
www.icpmg2010.ch

The aim of the conference is to disseminate the research and innovation based on physical modelling to research students, academics, practitioners and society, as well as to bring together geotechnicians to discuss the current state-of-the-art in modelling and design.

The forerunner to the International Conferences on Physical Modelling in Geotechnics began in the early eighties with the early conference in Geotechnical Centrifuge Modelling, and were so named up to 1998, before embracing all forms

of geotechnical physical modelling. Researchers using 1g small and large scale models, calibration chambers, shaking tables, as well as geotechnical centrifuges, are expressly encouraged to submit papers to this conference, and to come to Zurich at the end of June 2010 to create an inspirational environment in which ideas, innovation and technological development can be shared.

Conference Themes

Research and Innovation using Geotechnical Physical Modelling:

Broad themes

- Soil – Structure – Interaction
- Natural hazards
- Earthquake engineering
- Soft soil engineering
- New geotechnical physical modelling facilities
- Advanced experimental techniques
- Comparisons between physical and numerical modelling

Specific topics

- Offshore engineering
- Ground improvement and foundations
- Tunnelling, excavations and retaining structures
- Dams and slopes
- Process modelling
- Geoenvironmental modelling
- Education

Special discussion (Quo vadis?) sessions

- TC2 catalogue on scaling laws
- Impact on industry practice

Public lecture

- Role of physical modelling in combating climate change

Contact

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ICPMG 2010
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The 11th International Conference on Asphalt Pavements 2010
Nagoya, Japan
www.isap-nagoya2010.jp

Geologically Active 11th IAEG Congress, 5 – 10 September 2010, Auckland, New Zealand, www.iaeg2010.com

11th International Symposium on Concrete Roads, Seville (Spain) 13th - 15th October 2010, www.2010pavimentosdehormigon.org

ARMS – 6 2010 Asian Rock Mechanics Symposium, New Delhi, India, 23 – 27 October 2010, www.cbip.org

6ICEG 2010
Sixth International Congress on Environmental Geotechnics
November 8-12, 2010, New Delhi, India
www.6iceg.org

The Indian Geotechnical Society (IGS) will host the 6th International Congress on Environmental Geotechnics (6ICEG) at New Delhi during November 8-12, 2010 on behalf of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). Over 400 delegates, including 250 from abroad, will gather to discuss latest developments. The Congress comes to India after being held at Edmonton, Canada (1994), Osaka, Japan (1996), Lisbon, Portugal (1998), Rio de Janeiro, Brazil (2002) and Cardiff, UK (2006)

The Congress is being organized by an Organizing Committee guided by a Conference Advisory Committee as well as TC5 (Technical Committee on Environmental Geotechnics) of ISSMGE and a National Advisory Committee of IGS. The theme of the Congress is "Environmental Geotechnics for Sustainable Development".

The Congress will be held during November 8-12, 2010 (Monday to Friday). It will have four days of Technical Sessions (Monday to Thursday) and one day of Field visits (Friday).

The Congress will be held in a five star equivalent environment of India Habitat Centre, New Delhi. The Centre has a state-of-the-art convention centre with a number of big and small halls equipped with modern amenities to hold plenary and keynotes sessions, parallel sessions, workshops, poster sessions and exhibition.

Technical Themes
Theme 1: MSW and Hazardous Waste Landfills
- Liners
- Covers
- Leachate collection
- Gas collection
- Waste mechanics
- Nuclear waste
- Case histories

Theme 2: Slurry Ponds
- Coal ash ponds
- Tailings Ponds
- Dredging and mineral sludge ponds
- Dykes and Dams
- Stability and Settlement
- Drainage aspects
- Control and Management
- Case histories

Theme 3: Contaminated Land, Groundwater and Abandoned Landfills
- Vertical Barriers
- Covers and liners

- Drainage systems
- Reactive walls
- Subsoil pollutant extraction methods
- Subsoil pollutant inactivation methods
- Bio-remediation
- Case histories

Theme 4: Geosynthetics and New Materials
- Hydraulic Barriers
- Drains and pipes
- Reinforcements
- Separators
- Filters
- Erosion controllers
- Composites and Geotubes
- Case histories
- India Gate (1921 A.D.)

Theme 5: Sustainability, Professional Practice and Education
- Educational issues
- Regulations and policy
- Land and groundwater management
- Climate change issues
- Carbon dioxide sequestration
- Subsoil energy reclamation
- Geotechnical re-use of waste materials
- Risk assessment

Theme 6: Geohazards, Disaster Mitigation and Management
- Landslides
- Floods
- Earthquakes
- Erosion
- Microzonation
- Mitigation strategies and policies
- Disaster management
- Case histories

Theme 7: Testing, Monitoring and Performance Evaluation
- Testing of soils, pore liquids, pore gases
- Site investigations
- Characterization and design parameters
- Monitoring of subsurface environment
- Geophysical methods
- Remote sensing methods
- Instrumentation and sensors

Theme 8: Physical and Numerical Modelling
- Environmental Geomechanics
- Contaminant transport
- Coupled processes
- Energy transport
- Advanced methods

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International Conference on Tunnelling and Trenchless Technology
1-3 March 2011, Kuala Lumpur (Malaysia)
www.iem.org.my/external/tunnel/index.htm

WTC2011 Helsinki
AITES-ITA 2011 World Tunnel Congress and 37th General Assembly
21-25 May 2011, Helsinki, Finland
www.ril.fi/web/index.php?id=641

Finland has been selected to host the World Tunnel Congress 2011.

The multi dimensional innovative utilization of underground resources especially by building infrastructure and underground multipurpose spaces in urban areas is traditionally at a very high level in Finland. Currently, and in the visible future, there is a boom in Finnish tunnelling. Expansion of the capital metro system has just been decided, underground airport transit is under implementation, Finland investigates and plans one of the first final underground storages for spent nuclear fuel.

The Main theme of the Congress is **Underground Spaces in the Service of a Sustainable Society**.

Sub-themes:

- New dimensions of rock engineering/construction
- Municipal services
- Operational technologies
- Traffic and logistics
- Geologic disposal of nuclear waste
- Renewable energy
- Project management

Training Tunneling Course will be organized prior to the AITES-ITA 2011 Congress. The theme of the training tunneling course will be "The use of modern equipment technology for tunnelling and underground space".

XIV Asian Regional Conference Soil Mechanics and Geotechnical Engineering, Hong Kong, China, 23 - 28 May 2011

XV African Regional Conference on Soil Mechanics and Geotechnical Engineering Maputo, Mozambique, 13 - 16 June 2011.

XV European Conference on Soil Mechanics and Geotechnical Engineering, 12 – 15 September 2011, Athens, Greece.

24th WORLD ROAD CONGRESS, 25 – 30 September 2011, Mexico City, Mexico

XIV Panamerican Conference on Soil Mechanics and Geotechnical Engineering (October) & V PanAmerican Conference on Learning and Teaching of Geotechnical Engineering & 64th Canadian Geotechnical Conference, Toronto, Ontario, Canada, 2 - 6 October 2011

Beijing 2011, 12th International Congress on Rock Mechanics, 16 – 21 October 2011, Beijing, China, www.isrm2011.com

ΕΝΔΙΑΦΕΡΟΝΤΑ

Water Supply Infrastructure - Vancouver digs deep to reduce earthquake risks

Metro Vancouver is planning on building water tunnels beneath the Fraser River and Burrard Inlet to ensure the region's key water supply infrastructure can withstand a major earthquake.

"Right now we are just at the stage of detailed design, which includes finishing contract documents, specifications and drawings," said Frank Huber, division manager of engineering support and technical services with Metro Vancouver.

"We are within a month of completing this and are also trying to get a team together for the construction stage. We are just about there after four to five years of investigations and design."

The Port Mann tunnel is expected to be one kilometre long and 3.2 metres in diameter, with a pipe inside hauling water from Coquitlam to North Surrey.

"Within Metro Vancouver, we have a program to build a water supply system to survive a major earthquake and provide water immediately after an earthquake," he said.

"The new Port Mann tunnel is a key component in a system that will allow the provision of water after an earthquake."

A map shows where the proposed tunnel will cross Burrard Inlet.

According to Huber, tunnels are designed to withstand the worst possible earthquake scenario.

That would be a quake of about an eight or a nine on the Richter scale that would hit 200 or 300 miles away off the coast of Vancouver Island or a closer earthquake with a magnitude of about seven on the Richter scale.

The existing pipeline crossing, which was constructed in 1974, consists of a 1200 mm diameter welded steel pipe about one kilometre long.

The pipeline crosses the Fraser River just downstream of the Port Mann Bridge and is a primary water supply link to municipalities south of the river.

There is no damage potential to the pipeline for a minor earthquake, but the crossing would fail during a moderate or a major tremor.

In 1997, this crossing was damaged by river bed scour, which caused significant water supply problems to several municipalities.

Water restrictions were placed on residents and water was rerouted from other crossings.

The repair was completed in 1998 and consisted of replacing the damaged section of the watermain and providing a limited protective apron to protect against future scour.

"We patched the pipe and figured it would last for 10 to 15 years, which would give us time to come up with a tunnel design for a new crossing that would be seismically secure and secure from river scour or erosion," explained Huber.

The tunnel will be constructed using a Tunnel Boring Machine similar to the one used on the construction of the Canada Line.

The machine will install a lining as it goes through soft ground and sandy deposits.

The pipe will fit inside the tunnel, which will be filled with cementitious grout.

"All three structural components will act in unison to give the strength and ductility needed to resist seismic forces or major earthquakes," said Huber.

In October 2008, Metro Vancouver issued a Request for Proposals (RFP) for the provision of construction management services for the Port Mann water tunnel.

The RFP, which was due in November, generated responses from Sandwell Engineering, Hatch Mott MacDonald and Pacific Liaicon and Associates.

The contract was awarded to Hatch Mott MacDonald.

"We still have to get the permits in place from the Fraser River Estuary Management Program and the Port of Vancouver," said Huber.

"We hope to have the prequalification stage for construction to go out in June or July, but that will depend on the permits. We will short list the contractors through prequalification and hopefully in the fall we will be in a position to make the final award."

The budget for the design, construction and pipeline work for the project is about $200 million.

Construction is scheduled to start in January 2010 and the project will be completed in 2013.

The Second Narrows tunnel will be even bigger, at 4.1 metres in diameter, with the pipe inside being three metres in diameter. The pipeline would supply the bulk of water from the Seymour watershed across the Burrard Inlet to Burnaby.

"We just finished the conceptual design on the Second Narrows tunnel, which means we are at where we were five years ago on the Port Mann tunnel. But, we hope to get through the design phase faster and start construction in three years."

Metro Vancouver's conceptual design for the tunnel has identified a need to locate the south exit of the tunnel in northwest Burnaby within city-owned land at Montrose Park.

The three North Shore crossings that currently supply water were built in the 1940s and wouldn't survive even a minor earthquake.

The Second Narrows tunnel is estimated to cost about $150 million.

(**The Journal of Commerce** (Canada), RICHARD GILBERT - staff writer, 27 April 2009)

New Porous Pavement Comes From Recycled Glass

Hard surface gives concrete-like ride; porosity minimizes stormwater runoff; use can earn LEED points

A new kind of hard-surfaced porous pavement made from recycled glass is beginning to make its mark around the country, from the Northeast to Florida, Colorado, and now Wisconsin.

The new environmentally friendly pavement, called FilterPave™, combines a durable and decorative surface with porosity that minimizes runoff by quickly percolating stormwater into the ground or an underground storage system.

A completed section of path shows the color and smoothness of the finish. Water percolates through the pavement into the ground, where it is returned to the water table naturally.

Recycled Glass Key Component

Although various kinds of porous pavements have been around for more than 25 years, the FilterPave system is the first to use recycled glass as one of its components.

Presto Geosystems, Appleton, WI, and Kaul Corporation, Lakewood, CO, designed the patented FilterPave pavement for driveways, parking lots, walkways, golf-cart paths, landscaped areas, or anywhere else that needs to combine a smooth, hard surface with environmentally friendly stormwater control.

Presto Geosystems Director Bill Handlos, P.E., says that Presto chose recycled glass as a main component because glass meets the application's physical requirements and is plentiful everywhere at low cost.

"A bottle manufacturer usually wants recycled glass in just one trademark color," he says, "so recycled glass of mixed color often ends up in landfills. We know how to turn that unwanted glass into aggregate for FilterPave porous pavements."

Handlos says the recycled glass undergoes a special process to round its edges and reduce the particles into specifically sized and shaped "glass aggregate" that is harder than stone aggregate but no more brittle when bound.

The recycled glass is supplied through certified glass suppliers.

Structure Combines Strength With Porosity

The FilterPave system's other key ingredients are an open-grade clear-stone base course, small various-colored granite and the tough but flexible elastomeric glue that binds the glass-and-granite surface layer together, yet leaves it porous.

Although the binder is strong, it is safe for use around plants and animals.

The elastomeric binder, granite chips and glass aggregate set up strong and hard, with a top surface that's smooth, like finished concrete, and an inner structure that is about 38 percent porous.

The depths of the base course and the top layer are matched to each application's water-handling needs and strength requirements.

Handlos explains, "Usually, a top layer and base deep enough to hold and pass the required amount of water will also provide more than enough pavement strength. But if needed, one or both layers can be deepened to make the pavement even stronger."

Design Minimizes Or Eliminates Runoff

The main reason for choosing a porous pavement is to handle stormwater in minimum space without building an extensive storm sewer or large detention pond.

The porosity of the FilterPave system lets water percolate quickly down through the top layer and base course into the soil or a stormwater-retention system below.

That quick percolation minimizes or eliminates runoff and erosion.

Handlos says that a properly designed FilterPave system takes advantage of nature, and can often return water to the water table by natural infiltration through the soil, minimizing or eliminating runoff.

The system also permits stormwater to be collected in an underground storage system for later use in landscaping or facility operation.

Installation Method Similar To Concrete Paving

Installation is similar to paving with hand-placed concrete.

First, the ground is graded and compacted. Then forms are set. After that, the open-graded base course of clear stone is placed, compacted and leveled.

The FilterPave glass, granite and bonding agent are mixed and placed, then finished with screeds and trowels. Within a few hours, the surface hardens to useable strength.

Opportunity For LEED Credits

According to Handlos, FilterPave has the potential to rack up valuable credits under the U.S. Green Building System's Leadership in Energy and Environmental Design (LEED) program — particularly in the categories of reduced site disturbance, stormwater management, reduced heat-island effect, recycled material content, and regionally sourced materials.

Says Handlos, "In trying to qualify for higher LEED certifications, projects need every point they can collect. The FilterPave system has the potential to help earn lots of LEED points."

"Although the FilterPave system is not the answer to every paving need," says Handlos, "when a project could benefit from an environmentally friendly, hard-surfaced porous pavement, FilterPave offers one more excellent alternative to consider."

Installation At International Crane Foundation

One very environmentally focused location now installing FilterPave is the International Crane Foundation's (ICF) 225-acre preserve in south-central Wisconsin — the only place in the world that houses all 15 species of the slender, long-necked, and, in some cases, endangered birds.

Within the preserve, the ICF is creating a 5-acre refuge especially for the African Crane. All of the walking paths and observation areas in the new refuge are being paved with the FilterPave system.

Refuge designer MSA Professional Services, Inc., Baraboo, specified FilterPave for the 20,000 square feet of walkways and observation areas in the new refuge.

The pathways average about 12 feet wide, but some areas are as narrow as 6 feet wide. Nearly 1,700 linear feet of path meanders through the site.

Vinton Construction, Manitowoc, WI — a well-know concrete paving company and a certified FilterPave installer — completed about two-thirds of the pavement last fall and is returning to pave the remaining third this spring.

A Vinton representative noted that the only piece of equipment significantly different between installing concrete and FilterPave is the volumetric mixing truck.

When paving with concrete, he explained, the concrete's ingredients are measured by weight at a batch plant, then loaded into a ready-mix truck whose rotating drum mixes the concrete on the way to the project site.

FilterPave, on the other hand, uses a volumetric mixing truck that is located right on the project site and measures the mixture's key ingredients by their volumes (not weights).

The ingredients are mixed by an auger as they are propelled through the mixer's discharge chute.

The Vinton representative confirms that placing and finishing FilterPave is much like paving with concrete, except that FilterPave has an effective working time of about 15 minutes and its working strength is reached in a few hours, instead of days.

(Associated Construction Publications / Western Builder, MIKE LARSON, Editor, 6 April 2009)

Rapid impact compactors at work in Qatar

Contractor, RIC-Middle East, is using four RIC9000 rapid impact compactors (RIC) from BSP International Foundations (BSP) at the "Cultural Village Project" (CVP) in Doha, Qatar.

United Arab Emirates (UAE) contractor, RIC-Middle East, is using four RIC9000 rapid impact compactors (RIC) from BSP International Foundations (BSP) at the "Cultural Village Project" (CVP) in Doha, Qatar.

The units are working in the West Bay area of the city at the CVP - a scheme to reflect the heritage of Qatar through traditional architecture. Buildings include libraries, art galleries and museums, heritage centres and other academic facilities.

The 99 ha site is being developed by the government of Qatar and will provide 40 types of low-rise buildings together with a large amphitheatre, which will be the main feature of the village.

The RICs, mounted on Kobelco and Caterpillar hydraulic excavators, began work on the project in March 2008 and completion of this phase of the project is expected in June this year.

RIC-Middle East is contracted to treat 578000 m² of the sand and gravel fill at ground level. The ground, originally reclaimed from the sea, provides the base on which the CVP is to be built.

BSP said the next phase is to raise the ground level by 30 m in a succession of 4 m lifts using granular fill imported from quarries across Qatar. This will create an enclosed hillside community. Compaction of the fill will be carried out as each level is placed.

BSP said compaction indicators for the existing ground showed an improvement in Core Penetration Test (CPT) measurements from 1.5 Mega Pascals (MPa) to an average of 7 MPa.

The granular fill material has average Standard Penetration Test N values of 30 following RIC compaction and the plate load modulus average was greater than 40 MPa when taken at 0.9 m intervals through the fill material.

Cansult Maunsell was commissioned by the Doha Cultural Village committee to undertake the master planning, design, construction management and supervision of the US$ 82 million CVP development.

(INTERNATIONAL CONSTRUCTION, Becca Wilkins, 13 March 2009)

ΝΕΑ ΑΠΟ ΤΟΝ ΚΟΣΜΟ

Indonesia dam breaks, 77 die in flooding

JAKARTA, March 27 (Reuters) - A dam on the outskirts of the Indonesian capital, Jakarta, burst on Friday, killing 77 people and flooding hundreds of houses nearby, officials said. Authorities were searching for than 100 people still missing, officials said on Saturday.

The dam, which was used to retain water in Lake Situ Gintung in Tangerang District, 20 km (12 miles) southwest of Jakarta, broke early on Friday morning. The dam dated from the 1930s in the Dutch colonial era, according to local media reports.

"The dam was an old dam, 16 meters deep," said Ratu Atut Chosiyah, governor of Banten province, where the lake is located. There had been heavy rain in the area but so far the cause of the accident is not known.

"Last night, because of heavy rain, the dam could not hold back the water so it broke," she added.

"Hundreds of houses are flooded, tens of houses damaged, it was like a small tsunami," Rustam Pakaya, an official at the health ministry, told Reuters.

" ... it was like a small tsunami," said health ministry official Rustam Pakaya, adding hundreds of houses were under 2 metres of water.

Heavy rain overflowed the dam's wall, sending water and mud crashing into a crowded residential area nearby.

The dam collapse flattened at least 300 houses and about another 200 houses remained flooded, Kardono said.

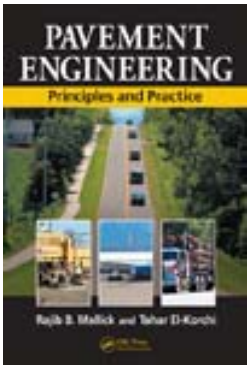
While landslides and floods are common during the rainy season in Indonesia, the latest disaster was probably caused by torrential rain and poor maintenance, some officials said, reflecting years of under-investment in much of the country's crucial infrastructure.

Lukman Farid, a resident, told Reuters Television the water rushed past his house around dawn.

"I was in front of my door and I saw my neighbor tried to drive his car. But the water was turbulent, fast, and in seconds it was already high. The water was about 2.5 meters at the time."

(REUTERS, 27-30 March 2009)

ΝΕΕΣ ΕΚΔΟΣΕΙΣ ΣΤΙΣ ΓΕΩΤΕΧΝΙΚΕΣ ΕΠΙΣΤΗΜΕΣ



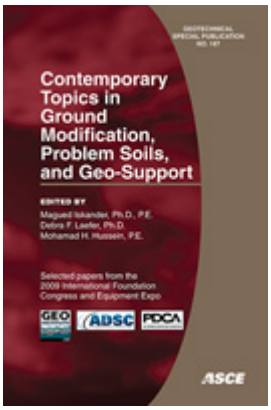
Pavement Engineering: Principles and Practice

Rajib B. Mallick and Tahar El-Korchi

From soil preparation and composition to structural design and load implications, this book covers the full range of construction. The first part of the text, which can be offered as a general course for upper level undergraduates, discusses the selection of materials, mix and structural design, and construction. The second part of the text, which is appropriate for an introductory graduate course, provides laboratory and field tests as well as advanced and new concepts. A unique feature is the emphasis on the fact that mix and structural design are linked, and a concurrent discussion of both design. The author also describes and explains pavement evaluation and rehabilitation.

- Presents the full range of construction, from soil preparation to structural design and life-cycle analysis
- Includes examples, problems, laboratory tests, and a solutions Manual
- Discusses methods for the rehabilitation of distressed pavements
- Covers concrete and asphalt pavement engineering
- Addresses environmental and green engineering issues

(Press, Taylor & Francis Group, 24 September 2008)



Contemporary Topics in Ground Modification, Problem Soils, and Geo-Support

M. Iskander, D. F. Laefer and M. H. Hussein (Editors)

Contemporary Topics in Ground Modification, Problem Soils, and Geo-Support contains 78 peer-reviewed papers presented at the International Foundations Congress and Equipment Expo in Orlando, Florida, from March 15 to 19, 2009. This Geotechnical Special Publication combines the 2009 annual meetings of the Geo-Institute of ASCE, the International Association of Foundation Drilling, and the Pile Driving Contractors Association. This proceedings covers technological advances, case histories, present challenges related to foundations, ground support, and earth retention. Topics discussed include: earth-retaining structures; ground improvement; geosynthetics; pavements and subgrade issues; shallow foundations; landfill issues and foundations in waste; and foundations in problem soils. This publication will be invaluable to geotechnical professors and students, design engineers, contractors, geotechnologists, and others involved in geotechnical engineering.

(ASCE Press, 2009)

Contemporary Topics in Deep Foundations

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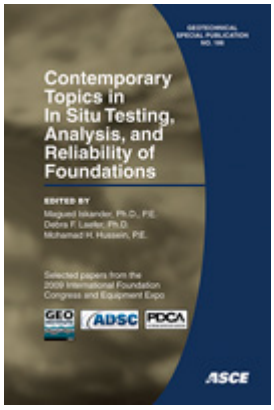
(ASCE Press, 2009)



Contemporary Topics in In Situ Testing, Analysis, and Reliability of Foundations

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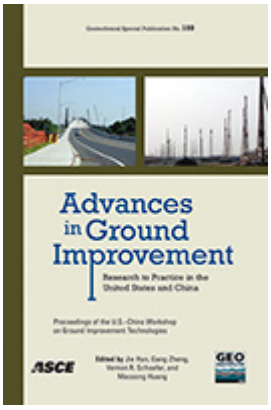
(ASCE Press, 2009)



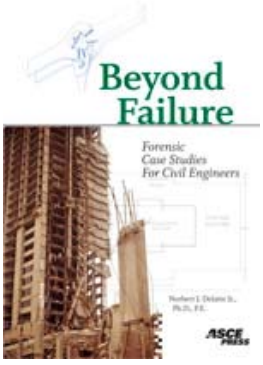
Advances in Ground Improvement

Research to Practice in the United States and China

J. Han, G. Zheng, V. R. Schaefer and M. Huang (Editors)

Advances in Ground Improvement: Research to Practice in the United States and China contains 33 peer-reviewed technical papers presented at the U.S.–China Workshop on Ground Improvement Technologies held in Orlando, Florida on March 14, 2009. The Geo-Institute of ASCE Soil Improvement Committee and the Chinese Institution of Soil Mechanics and Geotechnical Engineering jointly organized this workshop. This proceedings covers recent advances in research and practical applications in ground improvement technologies, including column-supported embankments, column technologies, ground modification, and accelerated consolidation. Ground Improvement topics include: slope movement analysis and stability; column-supported embankments; column technologies for ground improvement; and Ground modification and accelerated consolidation. This publication is extremely useful for researchers and engineers in geotechnical, structural, highway, and railway engineering.

(ASCE Press, 2009)



Beyond Failure

Forensic Case Studies for Civil Engineers

Norbert J Delatte Jr.

Engineering failures get a lot of attention—inciting morbid curiosity and fueling concern over the condition of our infrastructure. But every engineering loss is the start of a forensic investigation into how, why, and what can be done to prevent future failures. As with scientific failures, engineering failures can be very instructive in teaching us what does not work. *Beyond Failure* presents the circumstances of important failures that have had far-reaching impacts on civil engineering practice. Each case study narrates the known facts: design and construction, the failure, subsequent investigation or analysis, and, where appropriate, additional issues such as technical concerns, ethical considerations, professional practice issues, and long-term effects. The case studies are organized around eight common topics of undergraduate engineering courses and include teaching points and a reading list, so this book is useful to engineering faculty and students. With more than 40 full cases, including the Silver Bridge collapse in Point Pleasant, WV; the levee breaches in New Orleans, LA; and the Challenger space shuttle explosion, this book will also appeal to practicing engineers with an interest in forensic investigations or the analysis of historic failures.

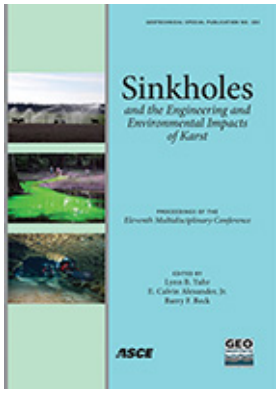
(ASCE Press, 2009)

Building a Sustainable Future

Samuel T. Ariaratnam and Eddy M. Rojas (Editors)

Construction Research Congress 2009 contains 152 peer-reviewed papers presented at the conference held in Seattle, Washington, April 5–7, 2009. Sixteen countries were represented: Australia, Brazil, Canada, China, Colombia, Hong Kong, India, Israel, Korea, Japan, Saudi Arabia, Singapore, South Africa, Thailand, Turkey, and the United Kingdom. The papers are organized into general state-of-knowledge research areas in construction engineering and management. Topics discussed include: project control, general Operations issues, procurement and contracting, organizational leadership and management, advances in project planning, design, and construction, sustainable construction and facilities, project risks and safety, project planning and control, project/process integration and improvement, lean construction, quantitative methods and models, infrastructure management and disaster mitigation, underground construction, construction simulation, education, and research methods.This proceedings is invaluable to construction engineers and researchers, contractors, and others involved in the field of construction.

(ASCE Press, 2009)



Sinkholes and the Engineering and Environmental Impacts of Karst

Proceedings of the Eleventh Multidisciplinary Conference

(Geotechnical Special Publication No. 183)

This Geotechnical Special Publication contains 71 papers concerning the unique problems and innovative solutions surrounding karst terrain. The technical program for the Karst 2008 conference struck a balance between the environmental and engineering aspects of working in karst and sinkhole-prone areas. It reflects a distinct shift to integrated approaches for investigations and the expanding range of tools that are available to engineers and scientists. These papers were presented at the Eleventh Multidisciplinary Conference held September 22–26, 2008, in Tallahassee, Florida. Topics discussed include: formation of karst

and sinkholes; application of geophysics; GIS morphing and computer databases; unique investigation techniques; risk assessment; hydrology of Woodville Karst Plain; water management, monitoring, and remediation; modeling in karst; groundwater tracing; planning and regulation; foundation design and construction; sinkhole mitigation and repair; grouting techniques; and engineering human infrastructure. *Sinkholes and the Engineering and Environmental Impacts of Karst* will be valuable to geotechnical engineers, environmental engineers, and all those involved in sinkholes and the impacts of karst.

(ASCE Press, September 2008)

DESIGN OF PILE FOUNDATIONS IN LIQUEFIABLE SOILS

G. Madabhushi, J. Knappett & S. Haigh

Pile foundations are the most common form of deep foundations that are used both onshore and offshore to transfer large superstructural loads into competent soil strata. This book provides many case histories of failure of pile foundations due to earthquake loading and soil liquefaction. Based on the observed case histories, the possible mechanisms of failure of the pile foundations are postulated. The book also deals with the additional loading attracted by piles in liquefiable soils due to lateral spreading of sloping ground. Recent research at Cambridge forms the backbone of this book with the design methodologies being developed directly based on quantified centrifuge test results and numerical analysis.

The book provides designers and practicing civil engineers with a sound knowledge of pile behaviour in liquefiable soils and easy-to-use methods to design pile foundations in seismic regions. For graduate students and researchers, it brings together the latest research findings on pile foundations in a way that is relevant to geotechnical practice.

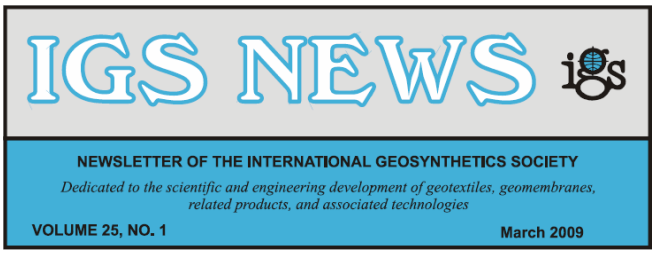
Readership: Researchers, academics, designers and graduate students in earthquake engineering, civil engineering and ocean/coastal engineering.

(Scheduled Fall 2009)

ΗΛΕΚΤΡΟΝΙΚΑ ΠΕΡΙΟΔΙΚΑ

www.geoengineer.org

Κυκλοφόρησαν τα Τεύχη #51 και #52 του Newsletter του Geoengineer.org (Μάρτιος και Απρίλιος 2009) με πολλές χρήσιμες πληροφορίες για όλα τα θέματα της γεωτεχνικής μηχανικής. Υπενθυμίζεται ότι το Newsletter εκδίδεται από τον συνάδελφο και μέλος της ΕΕΕΕΓΜ Δημήτρη Ζέκκο (secretariat@geoengineer.org).



www.geosyntheticssociety.org

Κυκλοφόρησε το Τεύχος No. 1, του Τόμου 25 του Newsletter της International Geosynthetics Society (Μάρτιος 2009).

Geosynthetics International
www.thomastelford.com/journals

Κυκλοφόρησαν τα τεύχη αρ. 1 του 16ου τόμου (Απρίλιος 2009) του περιοδικού Geosynthetics International.

Geotextiles & Geomembranes
www.geosyntheticssociety.org/journals.htm

Κυκλοφόρησε το τεύχος αρ. 1 του 27ου τόμου (Απρίλιος 2009) του περιοδικού Geotextiles & Geomembranes.

www.isrm.net/adm/newsletter

Κυκλοφόρησε το Τεύχος No. 5 - March 2009 Newsletter της International Society for Rock Mechanics.

Κυκλοφόρησε το Τεύχος No. 16 (Μάρτιος 2009) της World Road Association (PIARC).

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