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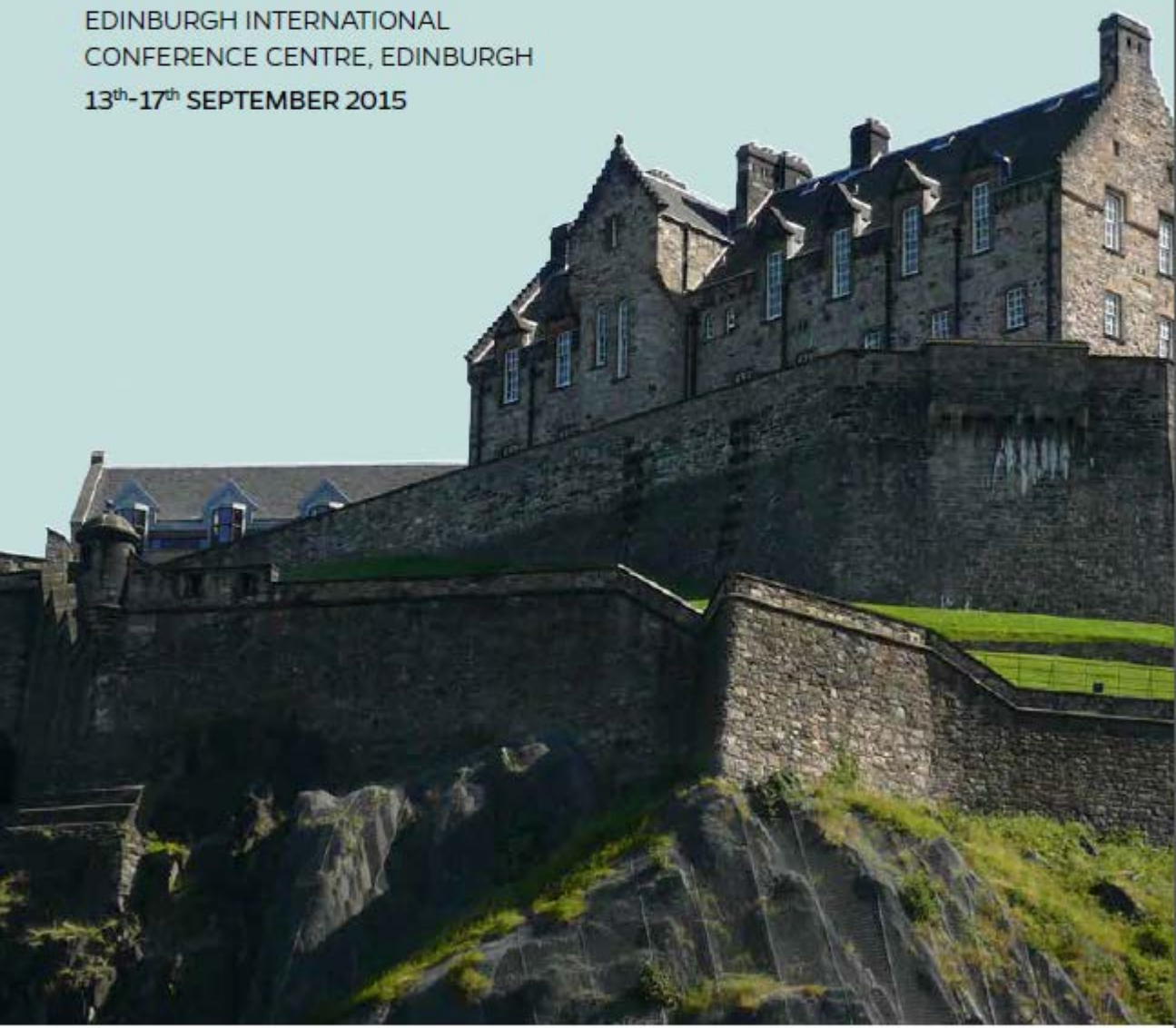

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Assessing load transfer mechanism in CMC-supported embankments adopting Timoshenko beam theory

Évaluation mécanisme de transfert de charge dans les remblais CMC soutenus par l'adoption de la théorie des poutres de Timoshenko

B. Ghosh*[1], B. Fatahi[1] , A. H. M. Kamruzzaman[2] and H. Khabbaz[1]

[1] *Centre for Built Infrastructure Research, School of Civil and Environmental Engineering, University of Technology Sydney (UTS), Sydney, Australia*

[2] *Asset Maintenance Division, Engineering Services Branch, Roads and Maritime Services (RMS), NSW, Australia*

ABSTRACT Controlled modulus columns (CMC) supported embankments are increasingly being used for construction of major highway embankments on expansive soils particularly near waterways or coastal regions. CMC is a faster, sustainable and economical ground improvement technology that stiffens the poor soil and transmits the load from the traffic to a lower bearing stratum. The key influencing elements of the load transfer mechanism include embankment fill, load transfer platform (LTP), CMC and the underlying soils. Use of LTP enhances the load distribution mechanism in the CMC improved soft ground and minimises the post construction settlement of the ground. In this paper, reinforced Timoshenko beam theory is introduced to simulate the LTP with one layer of geosynthetics resting on CMC improved soft soil. A parametric study is conducted to investigate the importance of the height of the embankment on the maximum settlement of the LTP, tension developed in the geosynthetics and stress concentration ratio (the ratio of the stresses acting on CMC and soft soils) for the CMC supported embankments. Special attention is given to the stiffness of soft soil and shear stiffness of the geosynthetic layer. It has been observed that height of the embankment, the stiffness of the soft soil and the shear stiffness of the geosynthetics significantly influence the maximum settlement of the LTP and the stress concentration ratio.

RÉSUMÉ Les remblais soutenus par des colonnes à modules contrôlés (CMC) sont de plus en plus utilisés pour la construction de grands remblais routiers sur sols expansifs, particulièrement près des cours d'eau ou des régions côtières. Les CMC est une technologie plus rapide, durable et économique qui renforce le sol pauvre et transmet la charge de la circulation à une strate de palier inférieur. Les clés majeures du mécanisme de transfert de charges comprennent le remplissage des remblais, la plateforme de transfert de charges (LTP), les CMC et les sols sous-jacents. L'utilisation de LTP améliore le mécanisme de répartition des charges dans les sols meubles contenant des CMC et minimise le tassement de la terre après implémentation. Dans cet article, une version améliorée de la théorie des poutres de Timoshenko est introduit pour simuler la LTP avec une couche de géosynthétiques reposant sur un sol meuble contenant des CMC. Une étude paramétrique a été menée afin d'évaluer l'importance de la hauteur de la digue sur le tassement maximal de la LTP, la tension développée dans les géosynthétiques et la proportion de concentration de contrainte (le rapport des contraintes agissant sur les CMC et les sols meubles) pour les remblais soutenus par des CMC. Une attention particulière est accordée à la rigidité du sol meuble et la rigidité de cisaillement de la couche géosynthétique. Il a été observé que la hauteur du remblai, la rigidité du sol meuble et la rigidité du cisaillement des matériaux géosynthétiques influencent significativement le tassement maximal de la LTP et la proportion de concentration de contrainte.

1 INTRODUCTION

In recent years, Controlled Modulus Columns (CMC) semi-rigid type of ground improvement method has been increasingly used for construction of highways and railways embankment on soft soil. CMC-supported embankments contain foundation soil, CMC, load transfer platform and embankment material. This type of embankment has the advantages of rapid construction and global stability when compared with other ground improvement methods such as preloading, preloading with vertical drain and pile

embankment. The CMC-soil matrix behaves as a composite mass of greater stiffness than the initial untreated soil, thus reducing settlements caused by the weight of the embankment and traffic load to permissible values. Geosynthetic reinforcement (GR) is used between two compacted granular layers in conjunction with CMC at the bottom of the embankment known as load transfer platform (LTP). It improves the efficiency of the load transfer and reduces the total and differential settlements of the soft ground. In addition, the use of GR in the LTP can facilitate reducing the quantity of granular material for construction. Minimum thickness of LTP should be greater than or equal to the half of the clear spacing. Practicing geotechnical engineers recognise the importance of soil-structure interaction (SSI) to analyse the impact of heavier structures on soft soils. To represent the soil medium in the SSI problems, some foundation models have been proposed in the literature, such as Winkler's model, Pasternak foundation, and Kerr foundation. Yin (Yin 2000) has derived ordinary differential equations for reinforced Timoshenko beam on elastic foundation excluding stabilising columns and provided the ana-lytical solution for point load on an infinite beam and for uniformly distributed vertical pressure for a finite beam. This paper extends Yin (Yin 2000) work to take into account the effect of rigid inclusions, as well as the pressures due to arching in the embankment.

2 BASIC DIFFERENTIAL EQUATION FOR TIMOSHENKO BEAM ON ELASTIC FOUNDATION

Yin (Yin 2000) has suggested the following basic differential equations for a reinforced Timoshenko beam on an elastic foundation, excluding the column reinforcement.

$$D\frac{d^2\psi}{dx^2} + C\frac{dw}{dx} - C\psi = 0 \tag{1}$$

$$C\frac{d\psi}{dx} - C\frac{d^2w}{dx^2} + k_s w = q \tag{2}$$

$$D\frac{d^4w}{dx^4} - \frac{Dk_s}{C}\frac{d^2w}{dx^2} + k_s w = q - \frac{D}{C}\frac{d^2q}{dx^2} \tag{3}$$

where w and ψ are the vertical deflection and rotation angle of a reinforced Timoshenko beam, respectively; q is the pressure loading; D and C are the bending stiffness and shear stiffness of the reinforced beam, respectively; and k_s is the modulus of subgrade reaction for soft soil. This paper considers BS8006 (2010) to calculate the distribution of vertical stresses on the LTP in the plane strain condition as below:

$$p_c' = \sigma_v'\left(\frac{C_c a}{H}\right)^2 \tag{4}$$

$$p_r' = \begin{cases} 1.4\gamma\dfrac{s^2 - a^2\left(\frac{p_c'}{\sigma_v'}\right)}{(s+a)}, H > 1.4\,(s-a) \\ \sigma_v'\dfrac{s^2 - a^2\left(\frac{p_c'}{\sigma_v'}\right)}{s^2 - a^2}, \; 0.7(s-a) \le H \le 1.4(s-a) \end{cases} \tag{5}$$

where p_c' and p_r' are the vertical stresses on top of the LTP above the CMC and the soft soil region, respectively; σ_v' is the factored average vertical stress on top of the LTP without arching; H and γ are the height and unit weight of the embankment fill, respectively; a and s are the width and spacing of the columns; and C_c is the arching coefficient (BS 8006).

3 CLOSED FORM SOLUTION

Yin (Yin 2000) proposed the following analytical solution for deformation (w) and rotation (ψ) of a finite beam with length L loaded with any type of pressure considering both ends of the beam to be free i.e. without any column supports.

$$w = e^{\alpha x}(c_1\cos\beta x + c_2\sin\beta x) + e^{-\alpha x}(c_3\cos\beta x + c_4\sin\beta x) + \frac{A_0}{k_s} + \sum_{n=1}^{\infty} a_n\cos\left(\frac{n\pi}{L}x\right) \tag{6}$$

$$\psi = e^{\alpha x}(c_5\cos\beta x + c_6\sin\beta x) + e^{-\alpha x}(c_7\cos\beta x + c_8\sin\beta x) + \sum_{n=1}^{\infty}\left\{\left[\frac{D}{C}\left(\frac{n\pi}{L}\right)^3 - \left(1 - \frac{Dk_s}{C^2}\right)\left(\frac{n\pi}{L}\right)\right]a_n - \frac{n\pi D}{LC^2}A_n\right\}\sin\left(\frac{n\pi}{L}x\right) \tag{7}$$

According to Yin (Yin 2000), the tension (T) developed in the reinforcement can be said as follows:

$$T = -E_r(y_r - y_c)\frac{d\psi}{dx} \quad (8)$$

Timoshenko (1921) proposed the following definitions of the shear force (Q) and the moment (M) for a beam:

$$Q = C\gamma = C\left(\frac{dw}{dx} - \psi\right) \quad (9)$$

$$M = -D\frac{d\psi}{dx} \quad (10)$$

where c_1 to c_4 are the only four independent constants and can be obtained from the boundary conditions; E_r is the tensile stiffness of GR; $E_r = E_r'A_r$, where E_r' and A_r are the Young's modulus and the cross sectional area of GR, respectively; γ is the shear strain of the beam. Supporting equations and additional details can be found in Yin (2000).

To obtain c_1, c_2, c_3 and c_4 for a reinforced Timoshenko beam on an elastic foundation with columns, the following simplifications are made in addition to the basic assumptions for Timoshenko beam theory: (1) The response of CMC and soft soil are assumed to be linearly elastic; (2) Friction between CMC and surrounding soft soil is ignored; (3) CMC rests on a rigid stratum; and (4) Pull-out resistance force of the GR from the surrounding granular material is neglected. Clear spacing (s') between two CMC is considered as the region loaded with embankment weight below the arch and resisted with the underneath soft soil as shown in Figure 1a.

Four boundary conditions to be adopted in Eq. (6) and Eq. (7) to obtain the constants are:

$$M = \begin{cases} 0, & x = 0 \\ 0, & x = s' \end{cases} \quad (11)$$

$$Q = \begin{cases} \left(P_c - K_{c,eq}w\right), & x = 0 \\ -\left(P_c - K_{c,eq}w\right), & x = s' \end{cases} \quad (12)$$

where P_c is the point load on LTP due to arching at the edge of the CMC (kN); M is the moment at the CMC edge (kN.m); Q is the shear force at the support (kN/m).

Figure 1b illustrates all the definitions used in Eq. (11) and Eq. (12). $K_{c,eq}$ is the equivalent modulus of subgrade reaction for CMC in plane strain model (kN/m).

The following two equations Eq. (13) and Eq. (14) can be derived from the boundary conditions as presented in Eq. (11):

$$c_1\left(\alpha^2 - \beta^2 - \frac{k_s}{C}\right) + 2c_2\alpha\beta + c_3\left(\alpha^2 - \beta^2 - \frac{k_s}{C}\right) - 2c_4\alpha\beta = R_1 \quad (13)$$

and

$$c_1e^{\alpha s'}(C_1\dot{C} - C_2\dot{S}) + c_2e^{\alpha s'}(C_1\dot{S} + C_2\dot{C}) + c_3e^{-\alpha s'}(C_1\dot{C} + C_2\dot{S}) + c_4e^{-\alpha s'}(C_1\dot{S} - C_2\dot{C}) = R_3 \quad (14)$$

Considering the boundary conditions as presented in Eq. (12), the following two equations Eq. (15) and Eq. (16) can be obtained:

$$c_1(C_5 - C_3 + K_c) + c_2(C_6 - C_4) - c_3(C_5 - C_3 + K_c) + c_4(C_6 - C_4) = R_2 \quad (15)$$

and

$$c_1e^{\alpha s'}[\alpha\dot{C}(C_5 - C_3 + K_c) + \beta\dot{S}(C_4 - C_6)] + c_2e^{\alpha s'}[\beta\dot{C}(C_6 - C_4) + \alpha\dot{S}(C_3 - C_5 + K_c)] + c_3e^{-\alpha s'}[\alpha\dot{C}(C_3 - C_5 + K_c) + \beta\dot{S}(C_4 - C_6)] + c_4e^{-\alpha s'}[\beta\dot{C}(C_6 - C_4) + \alpha\dot{S}(C_3 - C_5 + K_c)] = R_4 \quad (16)$$

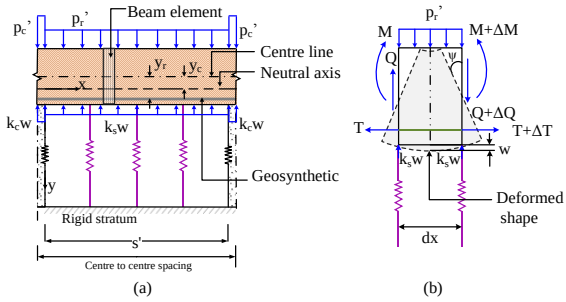

Figure 1. (a) Stresses on LTP of a CMC-supported embankment; (b) Details of internal and external forces acting in the finite LTP beam element

where

$$R_1 = \sum_{n=1}^{\infty}\left[a_n\left\{\left(\frac{n\pi}{s'}\right)^2 + \frac{k_s}{C}\right\} - \frac{A_n}{C}\right]; R_2 = P_c - K_c\left[\frac{A_0}{k_s} + \sum_{n=1}^{\infty} a_n\right]; R_3 = \sum_{n=1}^{\infty}\left[a_n\left(\frac{n\pi}{s'}\right)^2 + a_n\frac{k_s}{C} - \frac{A_n}{C}\right]\cos(n\pi); R_4 = K_c\left[\frac{A_0}{k_s} + \sum_{n=1}^{\infty} a_n\cos(n\pi)\right] + C\sum_{n=1}^{\infty}\sin n\pi\left[a_n\left(\frac{n\pi}{s'}\right) + \left\{\left[\frac{D}{C}\left(\frac{n\pi}{s'}\right)^3 - \left(1 - \frac{Dk_s}{C^2}\right)\left(\frac{n\pi}{s'}\right)\right]a_n - \frac{n\pi D}{s'C^2}A_n\right\}\right] - P_c; C_1 = \alpha^2 - \beta^2 - \frac{k_s}{C}; C_2 = 2\alpha\beta; C_3 = D(\alpha^3 - 3\alpha\beta^2); C_4 = D(3\alpha^2\beta - \beta^3); C_5 = \frac{\alpha D k_s}{C}; C_6 = \frac{\beta D k_s}{C}; \dot{C} = \cos\beta s'; \dot{S} = \sin\beta s' \quad (17)$$

Eqs. (13), (14), (15) and (16) can be expressed in a matrix form and the solution can be obtained easily using the basic parameters α, β, D, C, k_s and k_c.

4 PARAMETRIC STUDY

A parametric study is conducted to investigate the influence of the stiffness of the soft soil, shear stiffness of GR, bending and shear stiffness of granular material in the LTP, and the height of the embankment on the behaviour of CMC-supported embankment. One parameter is changed at a time to investigate the influence of that parameter on the maximum settlement of LTP, tension in the GR and the stress concentration ratio. The variation ranges of the parameters were considered covering the typical ranges of the factors in most actual projects.The modulus of subgrade reaction for the soft soil (k_s) and the CMC (k_c) is estimated using the equation proposed by Selvadurai (1979) considering the thickness of the soil. To make the results comparable, a baseline case with a typical configuration was selected in this study that is shown in Figure 2. In this study, stiffness of soft soil (E_s) is taken as 1MPa, 2MPa, 4MPa and 5MPa. It is assumed that the location of the GR is at quarter of the depth of the LTP below the centreline of the LTP.

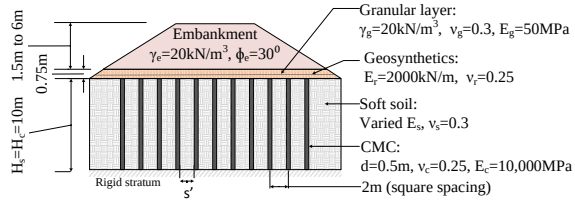

Figure 2. Typical cross section of a CMC-supported embankment.

5 RESULTS AND DISCUSSIONS

Key calculated material properties of LTP are summarised in Table 1. C, D and G_e are defined section 2. Figure 3 shows that the maximum settlement of LTP increases significantly with the increase in the embankment height (H_e) up to the critical embankment height ($H_{crit} = 1.4s' = 2.1m$). In addition, Figure 3 illustrates that when the soft soil stiffness increases from 1Mpa to 2MPa the maximum settlement of the LTP decreases almost 4.3%. Minimal reduction (roughly 1.2%) in the settlement of LTP due to the inclusion of shear stiffness of GR (as it increases the rigidity of reinforced LTP) is observed from the Figure 3. Tension developed in the GR depends upon the maximum settlement of LTP beam. Hence, when $H_e < H_{crit}$, the maximum tension developed in GR increases significantly with the rise of the embankment height as plotted in Figure 4. In contrast, when the stiffness of subsoil increases the maximum settlement of LTP decreases. For example, maximum

tension developed in the GR decreases 14% when stiffness of subsoil increases from 1MPa to 2MPa as shown in Figure 4. Figure 5 illustrates that the stress concentration ratio increases significantly with an increase in the height of the embankment up to H_{crit}. Shear stiffness of GR has very minimal effect on the stress concentration from the embankment to the CMC. Stiffer subsoil results in less settlement of the LTP over the sub-soil and in turn reduces the stress transfer from the embankment to CMC, which is revealed in Figure 5. It is also observed in Figure 6 that the maximum deflection of the LTP beam excluding the bending stiffness of the granular layer is nearly 5 times higher than that of the including bending stiffness of granular material. Similarly, the maximum deflection of the LTP excluding the shear stiffness of the granular layer is nearly 3 times higher than that of including shear stiffness of the granular material. A cracked section of LTP is assumed since the soil in the LTP does not carry tension. For this reason, similar to a cracked concrete section for earthquake design, the second moment of area and the shear modulus of the cracked LTP beam material have been reduced by factors of 0.25 and 0.5 respectively. There are several limitations of the proposed model as follows: (1) although it is assumed that the connection between the LTP beam and the CMC will not carry any moment, further investigation on the possibility of moment capacity at this connection is required; and (2) in this study, the settlement of LTP beam has been predicted at a particular time; however, time-dependent settlement of the LTP can be considered. It should be noted that the time-dependent settlement of the LTP can be significantly influenced by the soil cementation and creep (Nguyen et al. 2014; Le et al. 2015; Fatahi et al. 2013).

Table 1. Calculated material properties of 0.75m thick LTP beam.

Parameter	Including shear modulus of GR (E_c / E_s)		Excluding shear modulus of GR (E_c / E_s)	
	10,000	5,000	10,000	5,000
D (kN.m)	507	507	439	439
C (kN/m)	6,648	6648	6,007	6,007
G_e (kN/m^2)	10,641	10,641	9,615	9,615

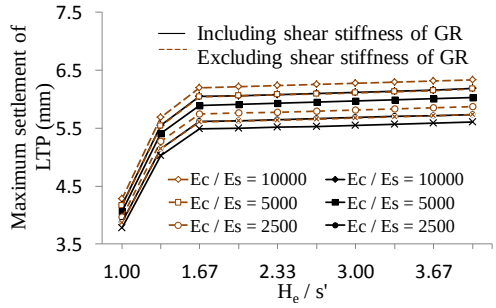

Figure 3. Effects of shear stiffness of geosynthetics and stiffness of soft soil on maximum settlement of LTP.

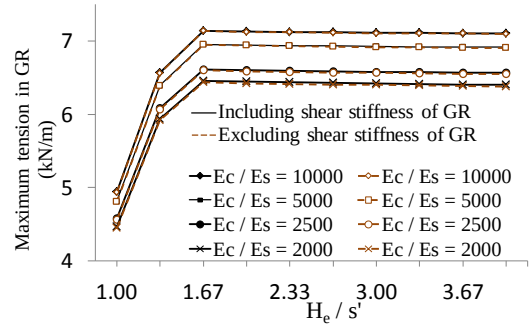

Figure 4. Effects of stiffness of soft soil on maximum tension developed in geosynthetic reinforcement.

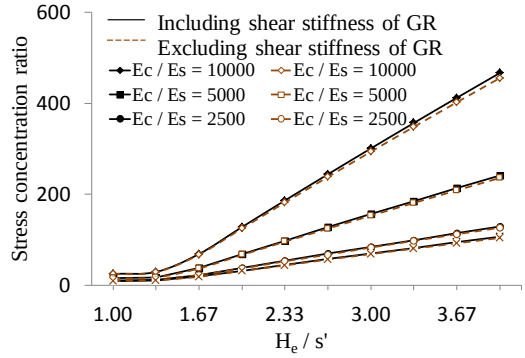

Figure 5. Effects of shear stiffness of geosynthetics and stiffness of soft soil on stress concentration ratio.

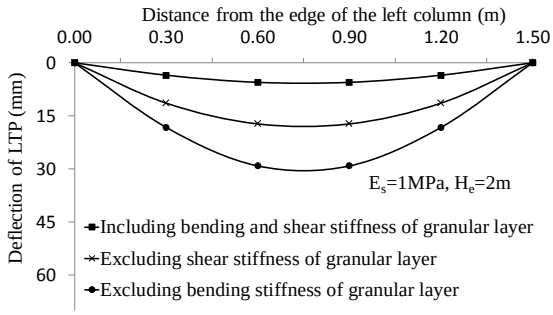

Figure 6 Effects of shear stiffness and bending stiffness of granular material in LTP on deflection of LTP.

6 CONCLUSIONS

In this study, the load transfer platform (LTP) of the CMC supported embankments has been simulated by a "reinforced Timoshenko beam". The results of the parametric study revealed that the inclusion of the shear stiffness of GR reduces the maximum settlement of LTP above the soft ground and facilitate the load transfer to the CMC. The results of this parametric study also indicated that the bending stiffness of the granular material in the LTP has a greater effect on the maximum settlement of the LTP than the shear stiffness of the granular material. It has been further observed that as the stiffness of the soft soil increases, the maximum settlement of LTP, the maximum tension in the GR and the stress concentration ratio decrease. It should be noted that in this study, the material properties of CMC have been used, but the outcomes can be applicable to the other types of column-supported embankments.

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Behzad Fatahi

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Prof. Mike Winter
mwinter@trl.co.uk
+44(0)7824303565
Head of Ground Engineering /
Honorary Chief Scientist
Transport Research Laboratory (TRL)
Chair of the Conference Organising Committee, XVI ECSMGE

Sara Armstrong
sara@in-conference.org.uk
+44(0)131 336 4203
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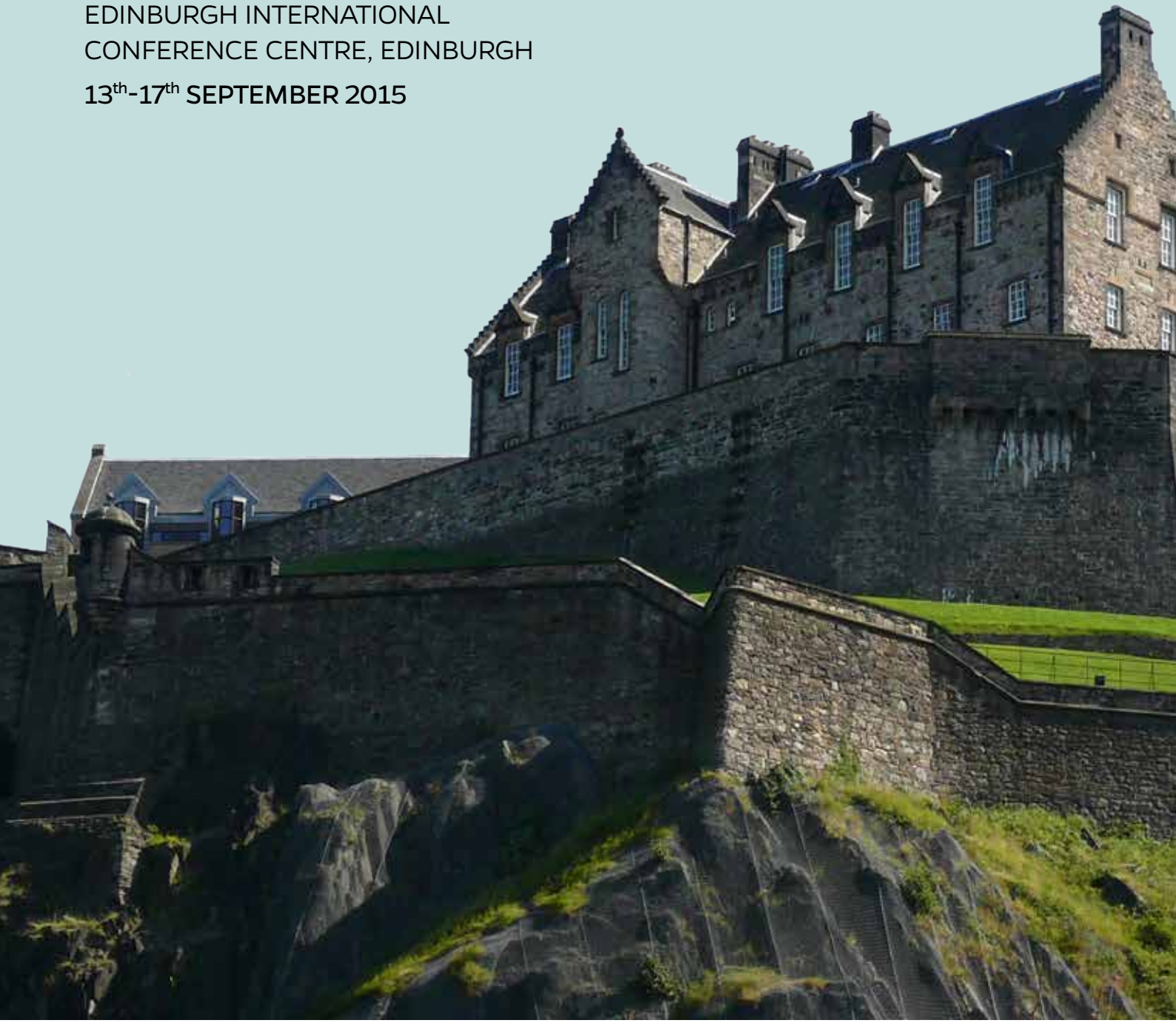

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→ **As a world leader in geotechnical and civil engineering**, working in more than 100 countries, Soletanche Bachy serves a wide range of clients in the public or private sectors. Soletanche Bachy brings both comprehensive main contracting skills in large infrastructures projects, whatever their complexity and scale, and special engineering works including the complete range of geotechnical processes, special foundations, underground works, ground improvement and pollution treatment and control. Bachy Soletanche, the UK subsidiary of Soletanche Bachy, is a leading geotechnical specialist and has recently the completed the installation of the diaphragm wall shafts on the Lee Tunnel in London. The MVB joint venture is constructing a four-mile tunnel as part of the wider Thames Tideway programme aimed at creating a cleaner, healthier River Thames.

↘

| Lee Tunnel **|** UNITED KINGDOM **|**

Construction of five deep shafts with a Hydrofraise. The 82.5 metre deep shafts are the largest ever built in the United Kingdom

BACHY SOLETANCHE

CONTENTS

Conference Organisers

In Conference Ltd
Unit 1, Q Court, Quality Street, Edinburgh EH4 5BP

Tel +44 (0) 131 336 4203
Email xviecsmge2015@in-conference.org.uk
Web xvi-ecsmge-2015.org.uk

WELCOME

I am delighted to welcome you to the XVI European Conference on Soil Mechanics and Geotechnical Engineering in Edinburgh. This is the latest in a long and distinguished line of such conferences to be held in Europe's great cities. It is the first to be held in Scotland and being located in the heart of Edinburgh, the capital, the venue is the equal of any of those of the past.

Our conference theme, Geotechnical Engineering for Infrastructure and Development, is broad and inclusive. We believe that this presents a multitude of opportunities for all parts of the industry (including consultants, contractors and materials and equipment manufacturers, as well as academics) and at all career stages to attend and to present papers.

The very active local geotechnical scene is reflected by the fact that we have a number of excellent technical visits, including to Scotland's current landmark project, the Queensferry Crossing, which includes substantial earthworks and major foundation works both onshore and offshore.

I wish you an excellent visit and hope that you enjoy both the technical and social aspects of the conference and that you find time to explore our wonderful city.

Prof Mike Winter
Chair of the Conference Organising Committee

COMMITTEES

Conference Organising Committee

Chair	**Mike Winter**, Transport Research Laboratory (TRL) & University of Portsmouth
Secretary	**Derek Smith**, Coffey Geotechnics Limited
Treasurer	**Peter Eldred**, Environmental Scientifics Group (ESG) & Honorary Treasurer, British Geotechnical Association (BGA)
Mike Brown	University of Dundee & Scottish Geotechnical Group (SGG)
Alastair Chisholm	Arup
Mike Chrimes	Institution of Civil Engineers
Ian Fraser	TCS Geotechnics
Chris Menkiti	Geotechnical Consulting Group & Chair, BGA
Helen Reeves	British Geological Survey (BGS) & Engineering Group of the Geological Society (EGGS)
Neil Smith	Applied Geotechnical Engineering & Honorary Secretary, BGA
David Toll	Durham University

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Ivan Vanicek, Vice-President of the ISSMGE for Europe 2009-2013
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Chris Menkiti, Chair of the BGA
John Burland, BGA-nominated Member
Michael Pachakis, Secretary of the XV ECSMGE (Athens)
Christos Tsatanifos, President of the HSSMGE

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Sarah Springman, Switzerland
S Feyza Cinicioglu, Turkey
Olga Areshkovych, Ukraine
David Toll, United Kingdom

PROGRAMME AT A GLANCE

Sunday 13th September 2015		Location
07:00 - 21:00	Registration	Strathblane Hall
08:00 - 17:00	IGS Reinforcement	Sidlaw
08:00 - 15:00	IGS Officers (invitation only)	Ochil 1
08:30 - 18:00	ISSMGE Council Meeting (invitation only)	Moorfoot
09:00 - 17:00	TC205	Fintry
09:00 - 12:00	TC105	Harris 1
09:00 - 11:00 / 12:00 -14:00	TC306, see page 10	Carrick 1, 2 & 3
10:30 - 12:30	TC206	Kilsyth
13:00 - 15:00 / 15:00 - 18:00	TC104, see page 10	Harris 1 & 2
13:00 - 15:00	ETC7	Ochil 2 & 3
13:00 - 18:00	TC207	Kilsyth
13:30 - 17:30	TC202	Tinto
15:00 - 17:00	TC215	Carrick 1, 2 & 3
16:00 - 18:00	TC208	Ochil 3
18:30 - 19:05	Cultural Event with Clann an Drumma	Pentland
19:05 - 21:00	Opening of Exhibition & Welcome Reception	Strathblane & Cromdale Halls

Monday 14th September 2015		Location
08:00 - 20:00	Registration	Strathblane Hall
09:00 - 20:30	Exhibition & Posters	Strathblane & Cromdale Halls
09:00 - 10:00	Opening Ceremony	Pentland
10:00 - 11:00	Keynote lecture 1: Skempton Lecture	Pentland
11:00 - 11:30	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
11:30 - 12:45	Main Session A1: Infrastructure	Pentland
11:30 - 13:00 / 14:00 - 16:00	TC307, see page 10	Carrick 1 & 2
11:30 - 13:30	IGS TC Hydraulics	Harris 2
12:45 - 14:00	Lunch / Exhibition & Posters - Poster Session 1	Strathblane & Cromdale Halls
13:30 - 17:00	IGS TC Barriers	Harris 2
14:00 - 15:45	Discussion Session A1.1 Linear Infrastructure - Roads and Railways	Pentland
14:00 - 15:45	Discussion Session A2.1 Urban Development and Environment – Foundations, Retaining Walls and Associated Structures	Sidlaw
14:00 - 15:45	Discussion Session B5 Settlement, Swelling and Manmade and Natural Cavaties	Fintry
14:00 - 15:45	Discussion Session C2 Landfill and Contaminated Land	Tinto & Moorfoot
14:00 - 15:45	Discussion Session E1 Parameter Selection	Kilsyth
14:00 - 18:00	19 ICSMGE Seoul (invitation only)	Harris 1

Monday 14th September 2015		Location
15:45 - 16:15	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
16:00 - 18:30	TC301	Ochil 1 & 2
16:15 - 18:00	Discussion Session A1.4 Queensferry Crossing and other Major Bridges	Pentland
16:15 - 18:00	Discussion Session A1.5 Crossrails and Other Major UK Infrastructures	Sidlaw
16:15 - 18:00	Discussion Session B1a Slope Instability	Fintry
16:15 - 18:00	Discussion Session C3 Hydrology and Hydrogeology	Tinto & Moorfoot
16:15 - 18:00	Discussion Session D3 Case Studies, Forensic Geotechnical Engineering and Monitoring	Kilsyth
18:00 - 19:00	BGA Session EYGEC Report and Papers Cooling Prize Paper and BGA Awards RoGEP	Pentland
19:00 - 20:00	Whisky Tasting	Strathblane & Cromdale Halls

Tuesday 15th September 2015		Location
08:00 - 20:30	Registration	Strathblane Hall
09:00 - 18:00	Exhibiton & Posters	Strathblane & Cromdale Halls
09:00 - 10:00	Keynote Lecture 2	Pentland
10:00 - 11:15	Main Session B Slopes, Geohazards & Problematic Materials	Pentland
11:15 - 11:45	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
11:45 - 13:00	Main Session C Environment, Water and Energy	Pentland
13:00 - 14:15	Lunch / Exhibition & Posters - Poster Session 2	Strathblane & Cromdale Halls
13:00 - 14:00	TC204	Harris 2
14:15 - 16:00	Discussion Session A1.2 Linear Infrastructure Tunnels	Pentland
14:15 - 16:00	Discussion Session B1b Slope Instability	Sidlaw
14:15 - 16:00	Discussion Session B6 Problematic Materials	Fintry
14:15 - 16:00	Discussion Session D1a Investigation and In-situ Testing	Tinto & Moorfoot
14:15 - 16:00	Discussion Session E3 Soil-Structure Interaction	Kilsyth
14:00 - 16:00	PIC Committee Meeting (invitation only)	Harris 1
14:00 - 16:00	TC211	Ochil 1, 2 & 3
14:30 - 16:30	TC106	Harris 2
16:00 - 16:30	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
16:30 - 18:15	Discussion Session A2.2a Urban Development and Environment - Piles and Columns	Pentland
18:30 - 20:30	TC102	Carrick 3

Tuesday 15th September 2015		Location
16:30 - 18:15	Discussion Session A2.4 Ground Reinforcement and Improvement	Sidlaw
16:30 - 18:15	Discussion Session B2a Landslides	Fintry
16:30 - 18:15	Discussion Session D1b Investigation and In-Situ Testing	Tinto & Moorfoot
16:30 - 18:15	Discussion Session F1 Developments in Education and Practice	Kilsyth
18:30 - 20:30	ISSMGE EMS Meeting (invitation only)	Kilsyth
18:30 - 20:30	ISSMGE Technical Oversight Committee (invitation only)	Harris 2

Wednesday 16th September 2015		Location
08:00 - 18:00	Registration	Strathblane Hall
09:00 - 18:00	Exhibition & Posters	Strathblane & Cromdale Halls
09:00 - 10:00	Keynote Lecture 3	Pentland
09:00 - 10:30	TC212	Carrick 1, 2 & 3
10:00 - 11:15	Main Session D Investigation, Classification, Testing and Forensics	Pentland
10:00 - 11:00 / 11:00 - 12:30	CAPG (invitation only), see page 11	Harris 1
11:15 - 11:45	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
11:45 - 13:00	Main Session E Parameter Selection and Modelling	Pentland
13:00 - 14:15	Lunch / Exhibition & Posters - Poster Session 3	Strathblane & Cromdale Halls
14:00 - 17:00	ETC3 - Piles	Carrick 1 & 2
14:00 - 16:00	JTC2	Harris 2
14:15 - 16:00	Discussion Session A2.2b Urban Development and Environment - Piles and Columns	Pentland
14:15 - 16:00	Discussion Session B2b Landslides	Sidlaw
14:00 - 16:00	Discussion Session B4 Earthquake Geotechnical Engineering and Liquefaction	Fintry
14:00 - 16:00	Discussion Session D2a Classification and Laboratory Testing	Tinto & Moorfoot
14:00 - 16:00	Discussion Session E2a Modelling	Kilsyth
16:00 - 16:30	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
16:30 - 18:15	Discussion Session A1.3a Non-linear Infrastructure	Pentland
16:30 - 18:15	Discussion Session A2.3 Near Shore and Offshore Development and the Marine Environment	Sidlaw
16:30 - 18:15	Discussion Session C1a Sustainability, Climate Change, Waste and Energy	Fintry
16:30 - 18:15	Discussion Session D2b Classification and Laboratory Testing	Tinto & Moorfoot
16:30 - 18:15	Discussion Session E2b Modelling	Kilsyth

Wednesday 16th September 2015		Location
16:30 - 18:15	TC203	Ochil 2 & 3
19:30 - 00:00	Conference Dinner	National Museum of Scotland

Thursday 17th September 2015		Location
08:00 - 14:00	Registration	Strathblane Hall
09:00 - 11:00	Exhibition	Strathblane & Cromdale Halls
09:00 - 10:15	Main Session A2 Development	Pentland
10:15 - 10:45	Coffee Break / Exhibition & Posters	Strathblane & Cromdale Halls
10:45 - 12:30	Discussion Session A1.3b Non-linear Infrastructure	Pentland
10:45 - 12:30	Discussion Session B3 Earthworks, Dams and Dykes	Sidlaw
10:45 - 12:30	Discussion Session C1b Sustainability, Climate Change, Waste and Energy	Fintry
10:45 - 12:30	Discussion Session D2c Classification and Laboratory Testing	Tinto & Moorfoot
10:45 - 12:30	Discussion Session E2c Modelling	Kilsyth
12:30 - 13:30	Closing Ceremony	Pentland
13:30 - 14:00	Lunch	Strathblane Hall
14:00 - 16:00	ELGIP Board Meeting (invitation only)	Harris 2

TECHNICAL COMMITTEE MEETINGS AND WORKSHOPS

Saturday 12th September 2015		Location
08:00 - 15:00	ISSMGE Board Meeting	Kilsyth

Sunday 13th September 2015		Location
08:00 - 15:00	IGS Officers	Ochil 1
08:00 - 17:00	IGS TC on Reinforcement	Sidlaw
08:30 - 18:00	ISSMGE Council Meeting	Moorfoot
09:00 - 11:00	TC306 - Workshop on Geo-Engineering Educations	Carrick 1,2 & 3
09:00 - 12:00	TC105 - Seminar/Workshop on Geo-Mechanics from Micro to Macro	Harris 1
09:00 - 17:00	TC205 - Workshop on Safety and Service in Geotechnical Design	Fintry
10:30 - 12:30	TC206 - Seminar/Workshop on Interactive Design in Geotechnic Engineering Products	Kilsyth
12:00 - 14:00	TC306 - Committee Meeting – Geo-Engineering Education	Carrick 1,2 & 3
13:00 - 15:00	TC104 – Committee Meeting – Physical Modelling	Harris 1 & 2
13:00 - 15:00	ETC7 – Seminar/Workshop on Numerical Methods in Geotechnical Engineering	Ochil 2 & 3
13:00 - 18:00	TC207 – Structure Interaction and Retaining Walls	Kilsyth
13:30 - 17.30	TC202 - Railroad Geotechnics	Tinto
15:00 - 17:00	TC215 – Committee Meeting – Environmental Geotechnics	Carrick 1, 2 & 3
15:00 - 18:00	TC104 – Workshop on Physical Modelling	Harris 1 & 2
16:00 - 18:00	TC208 – Committee Meeting and Open Forum on Slope Stability, Education and Training Needs	Ochil 3

Monday 14th September 2015		Location
11:30 - 13:00	TC307 – Workshop on Sustainability in Geotechnical Engineering	Carrick 1 & 2
11:30 - 13:30	Seminar/Workshop - IGS TC on Hydraulics	Harris 2
13:30 - 17:00	Seminar/Workshop - IGS TC on Barriers	Harris 2
14:00 - 16:00	TC307 – Committee Meeting – Sustainability in Geotechnical Engineering	Carrick 1 & 2
14:00 - 18:00	19 ICSMGE Seoul Board Meeting	Harris 1
16:00 - 18:30	TC301 – Workshop on the Preservation of Monuments and Historic Sites	Ochil 1 & 2

Tuesday 15th September 2015		Location
13:00 - 14:00	TC204 - Committee Meeting - Underground Construction in Soft Ground	Harris 2
14:00 - 16:00	Committee Meeting - Professional Image Committee	Harris 1
14:00 - 16:00	TC211 - Workshop on Ground Improvement	Ochil 1,2 & 3
14:00 - 16:30	TC106 - Workshop on Unsaturated Soils	Harris 2
18:30 - 20:30	TC102 - Committee Meeting - Ground Property Characterization from In-Situ Tests Meeting	Carrick 3
18:30 - 20:30	ISSMGE European Member Societies Meeting	Kilsyth

All meetings are open for delegates to attend with the exception of those in red as these are by invitation only

Tuesday 15th September 2015		Location
18:30 - 20:30	ISSMGE Technical Oversight Committee	Harris 2

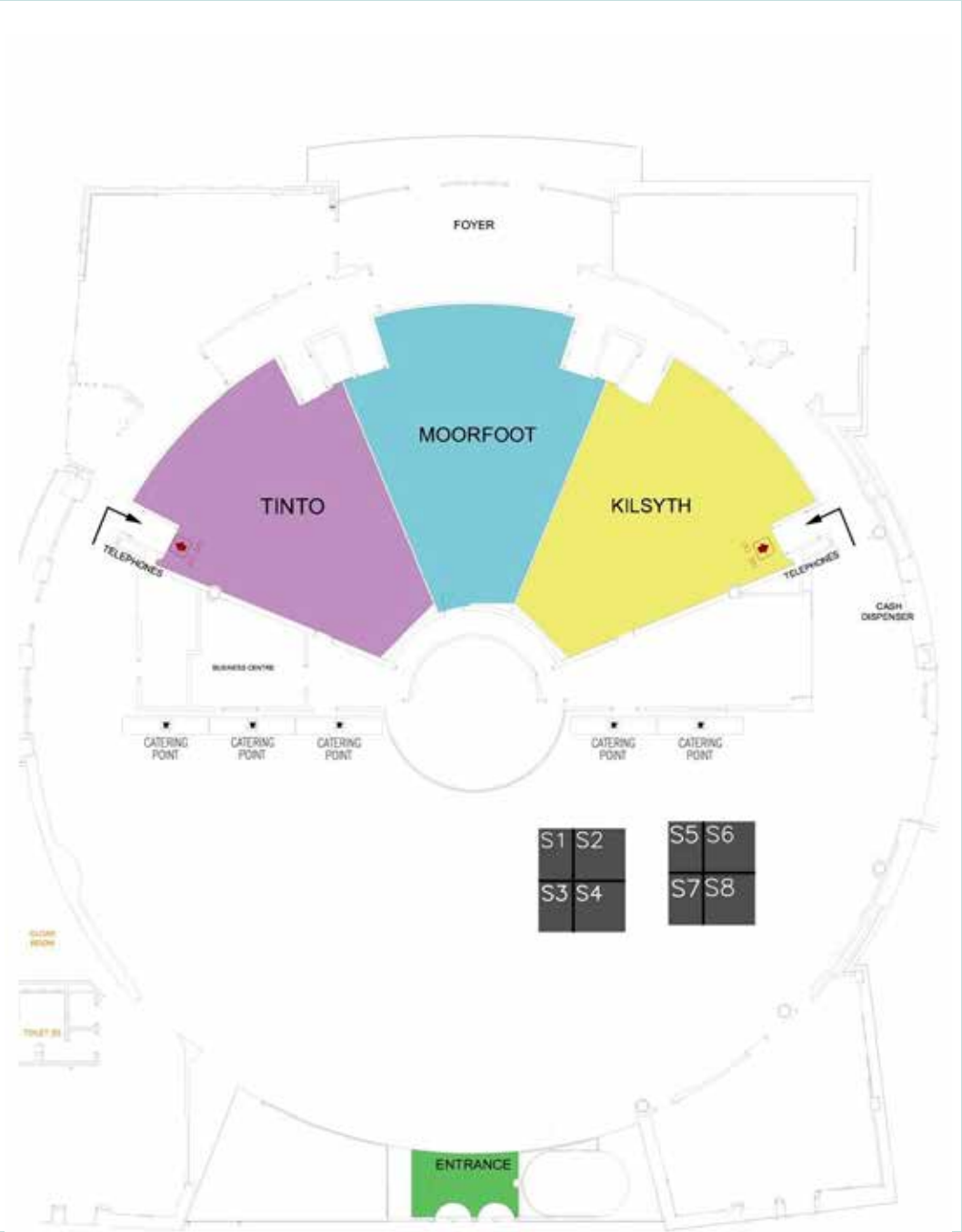
Wednesday 16th September 2015		Location
09:00 - 10:30	TC212 - Committee Meeting - Deep Foundations	Carrick 1,2 & 3
10:00 - 11:00	Corporate Associates Presidential Group (CAPG)	Harris 1
11:00 - 12:30	Corporate Associates Presidential Group (CAPG) Committee Meeting on Bridging State of the Art (SAO) and State Practice (SOP) in Geotechnics	Harris 1
14:00 - 16:00	JTC2, Workshop on Geo-Eng Data	Harris 2
14:00 - 17:00	Committee Meeting – ETC3 Piles	Carrick 1 & 2
16:30 - 18:00	TC208 – Seminar/Workshop on Views on the Treatment of Slope Stability in Textbooks	Harris 1
16:30 - 18:15	TC203 – Seminar on Earthquake Geotechnical Engineering and Associated Problems	Ochil 2 & 3

Thursday 17th September 2015		Location
14:00 - 16:00	ELGIP, Board Meeting – European Large Geotechnical Institute Platform	Harris 2

All meetings are open for delegates to attend with the exception of those in red as these are by invitation only

EXHIBITION FLOORPLAN

Strathblane Floorplan



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S4 - APAGEO
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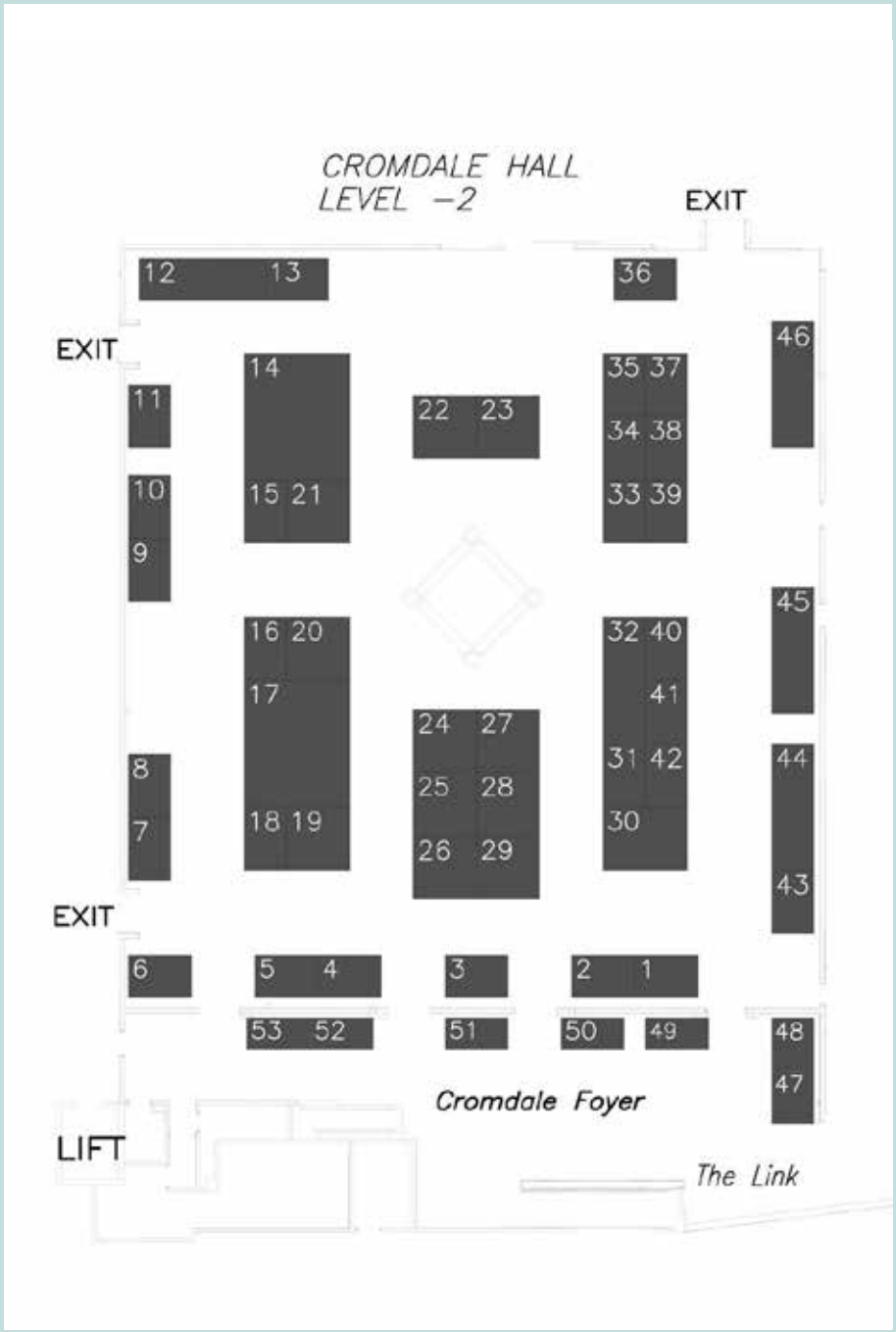
S6 - OASYS
S7 - DECAGON DEVICES INC
S8 - I2 ANALYTICAL

Cromdale Floorplan



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14 - SOLETANCHE BACHY / MENARD
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52 - IOS PRESS
53 - INSTITUTION OF ENGINEERING AND TECHNOLOGY

GENERAL INFORMATION

Date

XVI ECSMGE 2015 will take place from Sunday 13 September to Thursday 17 September 2015

Venue

Edinburgh International Conference Centre (EICC), The Exchange, Edinburgh, EH3 8EE.
EICC telephone number: 0131 300 3000

Registration

Registration desk will be located in the Strathblane Hall and will remain open during the following times:

- Sunday 13 September 08:00 – 21:00
- Monday 14 September 08:00 – 20:00
- Tuesday 15 September 08:00 – 20:30
- Wednesday 16 September 08:00 – 18:00
- Thursday 17 September 08:00 – 14:00

Exhibition

The Exhibition will be located in both The Cromdale Hall and Strathblane Hall and will be open at the following times:

- Sunday 13 September 18:00 – 21:00
- Monday 14 September 09:00 – 20:30
- Tuesday 15 September 09:00 – 18:00
- Wednesday 16 September 09:00 – 18:00
- Thursday 17 September 09:00 – 11:00

App

The Conference App gives all the information necessary about the event, including presenters, delegates list, programmes and sessions. This can be downloaded free from Playstore or Applestore to a smartphone, laptop or tablet. It can be accessed off-line and will update with any changes when you are at Conference, where there is free wifi. There is a 'newsfeed' section of the app where all programme changes and messages will be loaded. **http://bit.ly/ECSMGE**

Poster Viewing

The E-Posters and Posters will be located in the Strathblane Hall and will remain open during the conference from 08:00 - 18:00.

Poster Presentation

Poster Session 1

Monday 14th September 13:00 - 14:00
Even Numbers 13:00 - 13:30
Odd Numbers 13:30 - 14:00

Themes

- A1.1 Linear Infrastructure- Roads and Railways
- A1.2 Linear Infrastructure- Tunnels
- A1.3 Non-linear Infrastructure
- A1.4 Queensferry Crossing and other Major Bridges
- A1.5 Crossrail and Other Major UK Infrastructure
- A2.1 Urban Development and Environment- Foundation, Retaining Walls and Associated Structures
- A2.2 Urban Development and Environment- Piles and Columns
- A2.3 Near Shore and Offshore Development, and the Marine Environment
- A2.4 Ground Reinforcement and Improvement
- B1 Slope Instability

Poster Session 2

Tuesday 15th September 13.15 - 14.15
Even Numbers 13.15 - 13.45
Odd Numbers 13.45 - 14.15

Themes

- B2 Landslides
- B3 Earthworks, Dams and Dykes
- B4 Earthquake Geotechnical Engineering and Liquefaction
- B5 Settlement, Swelling, and Manmade and Natural Cavities
- B6 Problematic Materials
- C1 Sustainability, Climate Change, Waste and Energy
- C3 Hydrology and Hydrogeology
- D1 Investigation and In-situ Testing

Poster Session 3

Wednesday 16th September 13.15 - 14.15
Even Numbers 13.15 - 13.45
Odd Numbers 13.45 - 14.15

Themes

- D2 Classification and Laboratory Testing
- D3 Case Studies, Forensic Geotechnical Engineering and Monitoring
- E1 Parameter Selection
- E2 Modelling
- F1 Developments in Education and Practise

You will find the complete list of posters on page 51 of this programme.

Refreshments & Lunch Arrangements

Catering points will be located in the Strathblane Hall in the Conference Centre. Please follow the directions of the staff at the Conference Centre. If you have requested a special diet at the time of registering (other than vegetarian), then you should have a voucher in your welcome pack and you should show this to the catering staff who will provide you with your selected food.

Speaker Preview Room

This is located in Soutra Room on Level 0. All presenters are required to check in their presentation a minimum of 4 hours prior to their presentation. Technical staff will be on hand to assist. Presentations will be loaded on the main session computer and should be provided on a USB stick. Please note that if movie/video files are included in your presentation, then the original video files must be supplied separately. The speaker preview area will be open:

- Sunday 13 September 13:00 - 18:00
- Monday 14 September 08:00 - 18:00
- Tuesday 15 September 08:00 - 18:00
- Wednesday 16 September 08:00 - 18:00
- Thursday 17 September 08:00 - 12:00

Badges

Your name badge must be worn at all times otherwise you will not be permitted entry to the Conference Centre. Please leave any luggage or belongings with the staff at the cloakroom. This will be manned during the normal opening hours of the conference.

WIFI

WIFI access within the EICC is included in the delegate registration fee. Please visit the Registration Desk for login codes.

Business Centre

This is located on the ground floor of the EICC, Strathblane Hall and will be open during normal conference hours. Please note that there will be a charge for services used.

Conference Etiquette

Delegates are advised that they are not allowed to take photographs of any posters or presentations without the author's/presenter's consent. Photographs are not permitted in the auditorium. Mobile phones should be switched off or placed on 'silent' during sessions.

First Aid

Should you require any assistance please contact an EICC staff member or a member of the In Conference team located at the registration desk.

Message Board

There will be a notice board next to the registration desk for those wishing to leave messages or notifications during the meeting.

Transportation

The EICC is situated in the heart of the historic city of Edinburgh and is just a short walk from Princes Street, Edinburgh Castle and the Royal Mile.

Walking - Edinburgh is a city for walking. Many of its delights can only be found on foot, especially in the Old and New Towns. The EICC is a 12 minute walk from Haymarket train station, 5 minutes from Lothian Road, and 10 minutes from Princes Street.

Taxis - There is a taxi rank located directly outside of the EICC main entrance. Alternatively, local taxi companies can be contacted on the following numbers:

City Cabs: **+44 (0)131 228 1211**
Central Taxis: **+44 (0)131 229 2468**

Trains - The mainline rail network serves the centre of Edinburgh via two railway stations. Edinburgh Waverley (main station) is situated at the east end of Princes Street, and Haymarket Station which is closest to the EICC is at the west end of the city and a 12 minute walk to the EICC. A Taxi from Haymarket to the EICC will cost approximately £5.00 and from Waverley approximately £7.00. Taxi journey times can be up to 5-10 minutes depending on the time of day. National Rail Enquiry Service (24 hours): **+44 (0) 8457 484950** or visit **www.nationalrail.co.uk**

Coaches - All national coach services to Edinburgh arrive close to St Andrew's Square, situated at the east end of Princes Street. For details contact National Express **+44 (0)8705 808080** or visit **www.nationalexpress.com**

City Buses & Tram Services - Public transport throughout Edinburgh is of a high quality and inexpensive to use. There are frequent bus services with local bus companies, however tickets are not interchangeable. Tickets for single journeys and day tickets can be purchased on the bus. Exact fare is required and change is not provided. Bus schedules are subject to change and enquiries should be made to Lothian Region Transport prior to your journey. Further details can be found on the Lothian Buses website **www.lothianbuses.com** or download their excellent app, giving maps and routes, to your smartphone. Alternatively you can telephone (24hrs) **+44 (0)131 555 6363**. Further information on local bus and rail routes and times, call Traveline: **+44 (0) 800 232323** or visit **www.traveline.info** A single tram line now runs from Edinburgh Airport through Haymarket Station to St. Andrew's Square in the East End. Tickets must be purchased before boarding at the automated machines at stations. Please note if you are travelling to the EICC, the closest tram stop is at Haymarket.

Disclaimer

The Conference organisers cannot accept liability for personal injuries or for the loss or damage to property belonging to delegates, either during, or as a result of the Conference. Please check the validity of your own personal insurance.

KEYNOTE / INVITED LECTURERS

Keynote Lecturers

Prof Kenichi Soga
University of Cambridge, UK

Title: The Role of Distributed Sensing in Understanding the Engineering Performance of Geotechnical Structures

Kenichi Soga is Professor of Civil Engineering and the Head of the Geotechnical Group at the University of Cambridge. He obtained his BEng and MEng from Kyoto University in Japan and PhD from the University of California at Berkeley in 1994. His current research activities are innovative monitoring and long-term performance of geoinfrastructure, energy geomechanics, and modeling of geotechnical construction processes. He has published more than 300 journal and conference papers and is co-author of "Fundamentals of Soil Behavior, 3rd edition" with Professor James K Mitchell. He is recipient of many awards including George Stephenson Medal (2006) and Telford Gold Medal (2010) from the Institution of Civil Engineers and Walter L. Huber Civil Engineering Research Prize (2007) from the American Society of Civil Engineers. He is Fellow of the Royal Academy of Engineering and Fellow of the Institution of Civil Engineers.

Prof Antonio Gomez Correia
University of Minho, Portugal

Title: Geotechnical Engineering for Sustainable Transportation Infrastructure Portugal

Graduated in Civil Engineering from the Technical University of Lisbon - IST in 1977, and received a Doctor-Engineer Degree by "Ecole Nationale des Ponts et Chaussées"- Paris in 1985. In 1987 he received the Doctor degree in Civil Engineering by the Technical University of Lisbon – IST and also in 1998 the "Habilitation in Civil Engineering. In 1987 he gained the specialist degree at the National Laboratory of Civil Engineering (LNEC), distinguished with Manuel Rocha Award. In 2001 he gets the degree of specialist in Geotechnique attributed by the Portuguese Association of Engineers. In 1998, he created the Geotechnical Research Centre at the Technical University of Lisbon – IST and he was its President until 2000.

He is since 2003 Full Professor at the University of Minho and from 2010 to 2013 Director of the Research Centre of Territory, Environment and Construction. He is also from 2010 chair of the Doctoral program in Civil Engineering and from 2013 Vice-Dean of School of Engineering of the University of Minho. He participated in over 35 national and international research projects. He was Vice-Chairman of COST 337 – Unbound Granular Materials for Road Pavements, member of CEN TC227/WG4/TG2 on test methods for Unbound Granular Materials and was also a member of COST 348 - Reinforcement of Pavements with Steel Meshes and Geosynthetics. He was an evaluation member of COST 351 WATMOVE "Water Movements in Road Pavements and Embankments".

He is since 2013 expert (external member) of "Agência de Avaliação e Acreditação do Ensino Superior" (Agency for Assessment and Accreditation of Higher Education - A3ES) for the scientific area of Civil Engineering being enrolled in 2013 as a panel member in the evaluation of undergraduate and graduate courses for three institutions in Portugal. He was from 1998 to 2001 Chairman of the ISSMGE - European Technical Committee - ETC 11 - Geotechnical aspects in design and construction of pavements and rail track and from 2001 chairman of the International Technical Committee - TC 3 – Geotechnics for pavements of the ISSMGE, renamed from 2009 as TC 202 – Transportation Geotechnics. He was serving TC 202 until 2014.

Prof Giulia Viggiani
Roma Tor Vergata, Italy

Title: Artificial Ground Freezing: From Applications and Case Studies to Fundamental Research

Prof. Giulia Viggiani obtained a Laurea in Civil Engineering from Università di Napoli Federico II in 1989 and a PhD in Geotechnical Engineering from City University, London, in 1994. She is currently Full Professor of Geotechnics at Roma Tor Vergata where she teaches Excavations and Earth Retaining Structures, Foundations, and Geotechnical Earthquake Engineering and is Head of the Board of Studies in Civil and Environmental Engineering. Prof. Viggiani has a strong involvement in the activities of the geotechnical international scientific community. She is a member of ISSMGE TC204 – Underground Construction in Soft Ground and of ISSMGE TOC - Technical Oversight Committee. She has been Academic Visitor at Imperial College, UK (JLE-Link Project), Max Planck Institute Leipzig, DE, University of Minnesota, USA, and Cambridge University, UK. Her research interests and areas of expertise span from soil mechanics to geotechnical engineering: mechanical behaviour of soils and soft rocks at small strain; experimental investigation and constitutive modelling of the mechanical behaviour of granular soils with crushable grains; geotechnical characterisation of natural deposits; stability of excavation and cuts; numerical modelling of bored and open excavations, and of the interaction of tunnels and structures; evaluation of compensation grouting; physical and numerical modelling of retaining structures, tunnels, and foundations under seismic actions; artificial ground freezing. She has been the recipient of research funding from the Italian Ministry of University and Research (PRIN/MIUR), the European Community (EC/FP7), and Industry.

Invited Lecturers

Professor Dietmar Adam
Vienna University of Technology, Austria

Title: Ground Improvement versus Hybrid Foundation and Deep Foundation: Three Case Histories of European Significance

Professor Dietmar Adam is Head of the Institute of Geotechnics at Vienna University of Technology and Professor for Ground Engineering, Soil and Rock Mechanics (first chair Prof. Karl von Terzaghi). He has about 25 years of wide academic, research and professional experience in civil and geotechnical engineering. He obtained his PhD from Vienna University of Technology. His main research interests are theoretical and experimental soil dynamics, compaction and compaction control, ground improvement, innovative materials, low-pressure grouting, ground freezing, and thermo-active foundations, structures and tunnels.

His research is reflected in more than 240 publications in International Journals and Conference Proceedings and more than 200 invitations to presentations, keynote and special lectures at International Conferences on Soil Mechanics and Geotechnical Engineering. Between 1992 and 2009 he received several awards for his scientific achievements, amongst others the Austrian state award for sustainability in climate protection for transportation technologies.

He was chairman of the 15th Danube-European Conference on Geotechnical Engineering and member of the organizing committee of all Austrian National Conferences in Geotechnical Engineering since 1997. As a member of several national and international committees he was and is involved in formulating guidelines and recommendations in particular for earthworks and earth structures in practical geotechnical engineering.

He is secretary of the Austrian National Society of ISSMGE, expert in the commission of large dams and authorised expert in tunnelling.

Moreover, he is owner of a consulting company and together with his staff he has engineered about 900 projects in more than 40 countries all over the globe.

Kyriazis Pitilakis
Aristotle University of Thessaloniki, Greece

Title: Vulnerability assessment of buildings exposed to co-seismic permanent slope displacements

Professor Kyriazis Pitilakis graduated from Aristotle University of Thessaloniki, Greece, and took his PhD in Ecole Centrale Paris. He has more than thirty years of intensive academic, research and professional activities in civil, earthquake and geotechnical engineering. He is Chairman of the Technical Committee "Geotechnical Earthquake Engineering and Associated Problems" (TC203), of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), President of the Greek Society of Earthquake Engineering and Vice Chairman of the European Association of Earthquake Engineering. Head of the Civil Engineering Department of Aristotle University (1997-2001) and Chairman of the Institute of Earthquake Engineering and Engineering Seismology in Greece (ITSAK) are among his numerous administrative positions. Coordinator of several important EU research projects namely EUROSEISTEST (http://euroseis.civil.auth.gr) and SYNER-G (www.syner-g.eu) and participant in numerous European, national and international research projects. His main fields of interest are in geotechnical earthquake engineering, soil dynamics, site effects and microzonation, lifeline earthquake engineering, vulnerability and risk assessment of structures and systems. He has been state-of-the-art and keynote lecturer in numerous international conferences, author of more than 450 scientific papers (h factor 25), and reviewer in numerous scientific journals and international research projects. He is member of the editorial advisory board in Springer (series of Geotechnical, Geological and Earthquake Engineering), member of many international societies in earthquake and geotechnical engineering and member of national and international committees for seismic standards

Professor Pierre Delage
Ecolé des ponts ParisTech, France

Title: Thermo-Hydro-Mechanical Issues in Claystones: Application to Radioactive Waste Disposal at Great Depth

Pierre Delage is professor of geotechnical engineering at Ecole des ponts ParisTech. His research interests include the relationship between microstructure and the behaviour of geomaterials (soft clays, deep marine sediments, shales, loess, chalk, oil sand). He also works on unsaturated soils and multiphase geomaterials and on the thermal behaviour of clays and claystones, in link with radioactive waste disposal at great depth. Other application fields include the behaviour of oil reservoir chalk, soil contamination, the stability of chalk quarries, collapsible loess and, more recently, the mechanical behaviour of Martian simulants in relation with the forthcoming InSight NASA mission. He is Honorary editor of Géotechnique Letters and Board member of various journals (Computers and Geotecnics, Geotechnical Testing Journal, Geomechanics and Geoengineering. He is the Chair of the Technical Oversight Committee of ISSMGE and past Vice-Chair of TC106 (Unsaturated soils) and of the French Geotechnical Association (CFMS).

Joek Peuchen
Fugro, The Netherlands

Title: Reassessment of Geotechnical Conditions After an Offshore Well Incident

Joek Peuchen is a geotechnical engineer at Fugro, Netherlands. He has over 30 years of experience in geotechnical site characterization, geohazards, special foundation solutions, offshore & onshore, mainly for the global energy sector and major infrastructure. His main technical interests are in integrated site characterisation, with particular focus on geotechnical parameter values. Other areas include innovative development of In-situ test equipment and knowledge transfer by guest lectures at the Fugro Academy, Delft University of Technology and other institutes. Mr Peuchen is author or co-author of more than 40 publications on geotechnical topics, invited speaker at international specialty conferences including keynotes, and peer reviewer of journal and conference publications. Professional memberships include geotechnical societies and ISO standardization.

Professor Helmut F. Shweiger
Graz University of Technology, Austria

Title: On the Merits of Using Advanced Models in Geotechnical Engineering

Prof. Helmut F. Schweiger is Head of the Computational Geotechnics Group at the Institute for Soil Mechanics and Foundation Engineering of the Graz University of Technology in Austria and has over 25 years of experience in developing and applying numerical methods in geomechanics. He obtained his Ph.D. form the University of Wales, Swansea, UK. His main research interests are the development of multilaminate models for soils, application of Random Set Theory to finite element analysis and the assessment of the influence of the constitutive model for solving practical problems, in particular deep excavations, deep foundations and tunnels. Application of numerical methods in accordance with the design approaches defined in Eurocode7 is another topic he is involved in. His group was a member of several research projects funded by the European Commission. His research is reflected in more than 200 publications in International Journals and Conference Proceedings and invitations to keynote and plenary lectures at International Conferences on Soil Mechanics and Computational Geotechnics. He serves on a number of editorial boards of international journals and was chairman of 6th European Conference on Numerical Methods in Engineering. As a member of several committees Helmut is involved in formulating guidelines and recommendations for the use of finite elements in practical geotechnical engineering.

In 2005 he received the "Excellent Contributions Award Regional" of the International Association for Computer Methods and Advances in Geomechanics, the "Best Paper Award" of the Japanese Geotechnical Society and in 2010 the "George Stephenson Medal" of the Institution of Civil Engineers, London, UK for a paper published in Geotechnique.

Dr Mike Long
University College Dublin, Ireland

Title: Developments in the use of Geophysics in Geotechnical Engineering of Soft Ground

Mike Long is a civil engineering graduate of University College Cork and subsequently University College Dublin. Having spent 11 years or so in industry he has been a lecturer in geotechnics at University College Dublin since 1996 and a visiting professor at NTNU, Trondheim, Norway. His main research interests comprise the characterisation of natural soils and the behaviour of deep basements in urban areas.

CONFERENCE PROGRAMME

Sunday 13th September 2015		Location
08:00 - 18:00	**REGISTRATION**	Strathblane Hall
18:30 - 18:35 18:35 - 19:05	**CULTURAL EVENT** **Welcome and Introduction** M Winter, Chair of the Conference Organising Committee **Entertainment**	Pentland
19:05 - 21:00	**OPENING OF EXHIBITION & WELCOME RECEPTION**	Strathblane & Cromdale Halls

Monday 14th September 2015		Location
08:00 – 18:00	**REGISTRATION**	Strathblane Hall
09:00 – 20:30	**EXHIBITION OPEN**	Strathblane & Cromdale Halls
09:00 – 10:00 09:00 – 09:15 09:15 – 09:30 09:30 – 09:40 09:40 – 09:50 09:50 – 10:00	**OPENING SESSION** Introduction and Welcome M Winter, Chair of the Conference Organising Committee Derek Mackay, MSP, Minister for Transport & Islands A Gens, ISSMGE VP-E R Frank, ISSMGE President C Menkiti, BGA	Pentland
10:00 - 11:00	**KEYNOTE LECTURE 1: SKEMPTON LECTURE** Chair: R Frank (France) & UK Co-Chair: C Menkiti **The Role of Distributed Sensing in Understanding the Engineering Performance of Geotechnical Structures** / Le Rôle des Systèmes de Mesure Distribuée par Fibre Optique dans L'analyse de la Performance des Ouvrages Géotechniques K Soga (UK)	Pentland
11:00 – 11:30	**COFFEE BREAK** **EXHIBITION & POSTERS**	Strathblane & Cromdale Halls
11:30 – 12:45 11:30 – 11:35 11:35 – 12:05 12:05 – 12:15	**MAIN SESSION A1: INFRASTRUCTURE** Chair: L Shackman (UK) & UK Co-Chair: N Smith Invited Lecture: D Adam (Austria) **Ground Improvement Versus Hybrid Foundation and Deep Foundation: Three Case Histories of European Significance** / Amélioration du Sol Contre Fondation Hybride et Fondation Profonde: Trois cas D'importance Européenne **Ground Movements Induced by TBM Excavation Under an Historic Church in Napoli** / Mouvements de Terrain Induits par TBM Excavation Sous une Église Historique à Naples E Bilotta (Italy)	Pentland

Monday 14th September 2015		Location
12:15 – 12:25	**Geotechnical Aspects of an Airport Extension, on Soils of Very Low Strength** / Aspects Géotechniques de L'Extension d'un Aéroport, sur des Sols de Faible Résistance C Sagaseta (Spain)	**Pentland**
12:25 – 12:35	**High Speed Railway Tunnel Crossing of Downtown Barcelona: Design, Construction and Performance** / Tunnel de TGV Traversant le Centre de Barcelone: Conception, Construction et Performance E Alonso (Spain)	
12:35 – 12:45	**The Benefits of a Risk Based Soil Survey for the A4 Highway Delft – Schiedam** / Les Avantages d'une Étude de Risque Basée sur les Sols pour L'Autoroute A4 Delft – Schiedam H van Meerten (The Netherlands)	
12:45 – 14:00	**LUNCH** **EXHIBITION & POSTERS - Poster Session 1**	**Strathblane & Cromdale Halls**
14:00 – 15:45	**Discussion Session A1.1: Linear Infrastructure – Roads and Railways**	**Pentland**
14:00 – 14:05	Chair: F Buggy (Ireland) & UK Co-Chair: G Edmond	
14:05 – 14:13	**Design, Construction and Monitoring of 18m Thick Embankment on Top of Very Soft Peat using BeauDrain Vacuum Consolidation** / Dimensionnement, Construction et Suivi d'un Talus de 18m de Hauteur sur une Tourbe Très Molle avec un Système de Consolidation Accélérée Beaudrain J Dijkstra (The Netherlands)	
14:13 – 14:21	**Movement of Vibrating and Oscillating Drums and its Influence on Soil Compaction /** Mouvements Vibratoires et Oscillatoires d'un Rouleau et Son Influence sur le Compactage du Sol J Pistrol (Austria)	
14:21 – 14:29	**Modern Optimization in Earthwork Construction** / L'Optimisation Moderne dans les Travaux de Terrassement M Parente (Portugal)	
14:29 – 14:37	**Assessment of the Mechanical Performance of Recycled Unbound Materials for Pavement Subbase Layers** / Evaluation du Comportement Mécanique des Matériaux Recyclés non Liés pour les Couches de (Sous-) Fondations Routières. C Grégoire (Belgium)	
14:37 – 14:45	**Shakedown of Multi-Layered Pavements Under Repeated Moving Surface Loads** / Etat Limite de Chaussées Multi-Couches Sous Sollicitations de Surface en Mouvement Répétées S Liu (UK)	
14:45 – 14:53	**Effects of Pervious Surfacing Materials and Subbase Structures on Stormwater Ground Infiltration** / Effets des Matériaux de Revêtements Drainants et des Fondations sur L'Infiltration des Eaux de Ruissellement dans le Sol K Loimula (Finland)	
14:53 – 15:01	**New Mechanistic Design Approach for Subgrade Rutting of Low Volume Roads** / Nouvelle Approche de Conception Mécaniste de Plate-Forme des Ornières de Routes à Faible Volume P Kolisoja (Finland)	
15:01 – 15:09	**Resilient Modulus of Unsaturated Silty Sand Subgrade** / Module Élastique de Insaturé Limoneux Plate-Forme de Sable S Erlingsson (Iceland)	
15:09 – 15:17	**Geotechnical Hazard Assessment for the Highways Agency's Strategic Road Network** / Evaluation des Risques Géotechniques pour le Réseau Structurant de la Highways Agency T Bird (UK)	
15:17 - 15:45	Open Discussion	

Monday 14th September 2015		Location
14:00 – 15:45	**Discussion Session A2.1: Urban Development and Environment – Foundations, Retaining Walls and Associated Structures**	Sidlaw
14:00 – 14:05	Chair: J Logar (Slovenia) & UK Co-Chair: Y Ainsworth	
14:05 – 14:13	**Foundation, Deep Excavation, and Dewatering Scheme for a 250m Tall High-Rise Building in Vienna** / Fondation, Fouille Profonde et Schéma de Rabattement d'un Terrain – Immeuble de Grande Hauteur (250m) - à Vienne D Adam (Austria)	
14:13 – 14:21	**Application of Artificial Ground Freezing** / Application Artificielle de Congélation du Sol A Auld (UK)	
14:21 – 14:29	**The Vilnius Cathedral Square: Reinforcement of Pavement by Steel Meshes** / Renforcement du Pavé de la Place de la Cathédrale de Vilnius par le Treillis en Acier L Furmonavičius (Lithuania)	
14:29 – 14:37	**Flexible Retaining Structures Supported by Anchor Beams: The Problem of Tie Rod Length** / Parois de Soutènement Flexibles Supportées par des Rideaux D'Ancrages: le Problème de la Longueur de L'Ancrage N Guerra (Portugal)	
14:37 – 14:45	**Utilisation of Crushed Concrete Aggregate in Urban Earth Construction: Streets and Pipe Trenches** / Utilisation de Granulat à Béton Concassé dans la Construction Urbaine: Routes et Tranches de Canalisation T Dettenborn (Finland)	
14:45 – 14:53	**The Construction of a 12m High Embankment Over Weak Soils in St Petersburg, Russia, Utilizing the Use of a Cellular Foundation Mattress System** / La Construction d'un Haut Remblai de 12m sur des Sols Faibles à Saint-Pétersbourg, en Russie, en Utilisant L'Utilisation d'un Système de Matelas de Base Cellulaire A Kuznetsova (UK)	
14:53 – 15:01	**Investigation of the Influence of Soil-Structure Interface Properties on the Performance of Deep Excavations** / Étude de L'Influence de Propriétés de L'Interface Sol-Structure sur la Performance des Excavations Profondes H Burd (UK)	
15:01 – 15:09	**Estimation of Elastic and Non-Linear Stiffness Coefficients for Suction Caisson Foundations** / Estimation des Coefficients de Rigidité Élastique et Non-Linéaire Pour des Fondations de Caissons À Succion G Gazetas (Greece)	
15:09 – 15:17	**Retaining Structures and Underpinning Solutions at the Deep Excavation of the Porto Bay Hotel, in Lisbon** / Ouvrages de Soutènement et des Solutions de Sous-Tendent pour L'excavation Profonde de la Baie de Porto Hôtel à Lisbonne A Pereira (Portugal)	
15:17 – 15:25	**Assessment of Bearing Capacity and Failure Mechanism of Interfering Strip Footings** / Evaluation de la Capacité Portante et du Mécanisme de Rupture de Fondations Superficielle a Influence Mutuelle A Alimardani Lavasan (Germany)	
15:25 – 15:45	Open Discussion	
14:00 – 15:45	**Discussion Session B5: Settlement, Swelling and Manmade and Natural Cavaties**	Fintry
14:00 – 14:05	Chair: J Maertens (Belgium) & UK Co-Chair: D Gibson	
14:05 – 14:13	**Seasonal Ground Movements of Swelling Clay Subgrades** / Effet du Gonflement des Sols sur les Chaussees D Simic (Spain)	
14:13 – 14:21	**Historic Mining Photography - Some Lessons for Development in Areas Affected by Shallow "Pillar and Stall" Coal Mine Workings** / Photographie Historique Minier - Quelques Lecons pour le Dévelopement dans les Zones Touchées par les Mines de Charbon Peu Profond "Pilier et Pièce" K Nicholls (UK)	

Monday 14th September 2015		Location
14:21 – 14:29	**A Holistic Approach to the Treatment of Abandoned Chalk Mines** / Une Approche Holistique du Traitement des Mines de Craie Abandonnées C Milne (UK)	**Fintry**
14:29 – 14:37	**Applied Rock Engineering for the Investigation and Restoration of Mine Workings, Case Example - Dudley Limestone Mines** / Ingénierie Appliquée Rock pour les Enquêtes et la Restauration des Chantiers Miniers, Affaire Exemple - Mines de Calcaire de Dudley R MacKean (UK)	
14:37 – 14:45	**The Identification of Pyrite Induced Foundation Heave by Chemical and Structural Assessments** / L'Identification de la Pyrite Induite Pilonnement par des Produits Chimiques et Évaluations Structurels A Taylor (UK)	
14:45 – 14:53	**Shallow Coal and Ironstone Mine Workings on the A465 Highways Project in South Wales; Assessment, Mitigation and Treatment** / Mines de Charbon et de Pierre de Fer de Surface sur la Construction de L'Autoroute A465 au Sud du Pays de Galles; Évaluation, Atténuation et Traitement D Raynor (UK)	
14:53 – 15:01	**Reduction of the Plasticity and Swelling Potential of Bentonite Using Magnesium Hydroxide, Seawater and Olive Mill Wastewater** / Reduction de la Plasticité et du Potentiel de Gonflement du Sol de Bentonite en Utilisant de l'hydroxyde de Magnésium, L'eau de Mer et de OMW C Ureña Nieto (UK)	
15:01 – 15:09	**Multiphase Modelling of Desiccation Cracking in the Near-Surface of Compacted Soils** / Modélisation Multiphasique de Fissures de Dessiccation dans la Proximité de la Surface des Sols Compactés R Stirling (UK)	
15:09 – 15:17	**Engineering Geological Characterization of the Host Rocks of Underground Cellars in Avas Hill, Northern Hungary** / Ingénierie Géologique Caractérisation des Roches Hôtes de Caves Souterraines dans Avas Colline, Hongrie du Nord P Görög (Hungary)	
15:17 – 15:45	Open Discussion	
14:00 – 15:45	**Discussion Session C2: Landfill and Contaminated Land**	**Tinto & Moorfoot**
14:00 – 14:05	**Chair: E Pasqualini (Italy) & UK Co-Chair: S Jefferis**	
14:05 – 14:13	**Geotechnical Investigation and Design Aspects of Developing Sloping Landfill Sites** / Étude Géotechnique et Aspects de Conception Lies au Développement de Site D'Enfouissement en Pente T Y Irfan (UK)	
14:13 – 14:21	**Hydrodynamic Dispersion Coefficient of Ammonium in Undisturbed Soil Columns** / Coefficient de Dispersion Hydrodynamique D'Ammonium dans les Colonnes de Sol non Perturbés V Godoy (Brazil)	
14:21 – 14:29	**A Landfill with Innovative Reinforcing Solutions: History, Experience, Solution Flexibility** / Un ISDN avec Solution de Renforcement Innovante: Histoire, Expérience, Solutions Flexible D Alexiew (Germany)	
14:29 - 14:37	**Application of Alternative Methods of Slope Stability Improvement on Landfills** / L'Application des Méthodes Alternatives D'Amélioration de la Stabilité de la Pente sur les Décharges Municipales E Koda (Poland)	
14:37 – 14:45	**Interface Shear Strength for Multilayered Liner Systems - Some Problems in Determination /** La Résistance au Cisaillement de L'Interface pour les Systèmes Linéaires Multicouches - Certains Problèmes dans la Determination K Zabielska-Adamska (Poland**)**	
14:45 – 14:53	**Mechanical Characterization of MSW Using Field Tests** / Détermination des Propriétés Mécaniques des Déchets Solides Urbains avec des Essais In-situ P Lapeña (Spain)	

Monday 14th September 2015		Location
14:53 – 15:01	**Hydraulic Conductivity and Swelling Pressure of GCLs Using Polymer Treated Clays to High Concentration CaCl2 Solutions** / Conductivité Hydraulique et Pression de Gonflement de GCLs Utilisant des Argiles Traitées avec Polymères à Hautes Concentrations de CaCl2 R D Verastegui-Flores (Belgium)	Tinto & Moorfoot
15:01 – 15:09	**Large-Size Controlled Degradation and Simple Shear Testing of Municipal Solid Waste From Michigan** / Résistance au Cisaillement Simple de Déchets Ménagers (sur Grandsspécimens) Issus du Site ou Dégradés en Simulateur D Zekkos (USA)	
15:09 – 15:17	**Investigations and Remediation of a 25 Year Old Landfill Capping** / Etude d'un Site d'enfouissement des Déchets de 25ans: Problèmes Soulevés et Solutions Adoptées E Gallagher (UK)	
15:17 – 15:25	**Geotechnics for Land Use at Coastal Landfills** / Géotechnique pour L'Aménagement des Décharges Côtières T Katsumi (Japan)	
15:25 – 15:45	Open Discussion	
14:00 – 15:45	**Discussion Session E1: Parameter Selection**	Kilsyth
14:00 – 14:05	Chair: B Schuppener (Germany) & UK Co-Chair: T O'Brien	
14:05 – 14:13	**Consolidation and Creep: Hypotheses A and B Revisited** / Consolidation et Fluage: Réexamen des Hypothèses A et B V Szavits-Nossan (Crotia)	
14:13 – 14:21	**Permeability Testing Problems in Rock** / Problèmes avec les Essais de Perméabilité D Hartwell (UK)	
14:21 – 14:29	**Sensitivity of Simplified Pile Settlement Calculations to Parameter Variation in Stiff Clay** / Sensibilité des Calculs Simplifiés de Règlement des Tas de Variation de Paramètre dans L'Argile Raide P Vardanega (UK)	
14:29 – 14:37	**The Selection of Appropriate Loads for Static Load Testing of Piles Subjected to Negative Skin Friction** / Détermination des Charges pour Essais de Chargement Statique des Pieux Sous Forme de Frottement Négatif N Bux (UK)	
14:37 – 14:45	**A Study on the Behavior of Weathered Crust in the Perniö Failure Test** / Étude du Comportement de la Croûte Sèche dans le Test de Rupture de Perniö M D'Ignazio (Finland)	
14:45 – 14:53	**Establishing the Characteristic/Design Curves for the Foundation Soil Compressibility Based on the Strain Complementary Energy** / Établir les Courbes Caractéristiques/de Calcul qui Caractérisent la Compressibilité des Sols de Fondation, Sur la Base de L'Énergie Potentielle Complémentaire de Deformation I Lungu (Romania)	
14:53 – 15:01	**Ground Characteristics Based on Geomorphological Landform Analysis** / La Caractérisation du Sol Basée Sur L'Analyse du Relief Géomorphologique K Garbulewski (Poland)	
15:01 – 15:09	**Geotechnical Characterisation for Underground Structures - Recent Developments and Applications** / Characterization Géotechnique pour les Ouvrages Souterrains-Developments Récentes et Applications T O'Brien (UK)	
15:09 – 15:17	**Calibration Procedure for Embedded Pile Modeling Based on In-situ Pile Load Tests** / Procédure de Calibration pour la Modélisation de Pile Intégrée Basée Sur des Tests de Chargement de Pieux In-situ F Tradigo (Italy)	

Monday 14th September 2015		Location
15:17 – 15:25	**Choice of Constitutive Models in the Design of Excavations in Coarse-Grained Soils Supported by Cantilever Walls** / Choix du Modèle de Comportement Dans le Dimensionnement d'excavations Dans un Sable Grossier Soutenues par Murs en Console G M Rotisciani (Italy)	**Kilsyth**
15:25 – 15:45	Open Discussion	
15:45 – 16:15	**COFFEE BREAK** (sponsored by SOLETANCHE BACHY / MENARD) **EXHIBITION & POSTERS**	**Strathblane & Cromdale Halls**
16:15 – 18:00	**Discussion Session A1.4: Queensferry Crossing and other Major Bridges**	**Pentland**
16:15 – 16:20	Chair: S Erlingsson (Iceland) & UK Co-Chair: I Webber	
16:20 – 16:28	**Geotechnical Verification of the South Anchor Block of the İzmit Bay Suspension Bridge in Turkey** / Vérification Géotechnique de la Culeé D'Ancrage Sud du Pont Suspendu Tranversant la Baie d'Izmit en Turquie A Augusteen (UK)	
16:28 – 16:36	**The Queensferry Crossing - Development of a Ground Model for the Northern Approach Roads** / Le Queensferry Crossing - le Développement d'un Modèle de Terrain pour les Routes d'accès Nord S Deykin (UK)	
16:36 – 16:44	**Evaluation of Bridge Foundation Design Over River Danube in Bratislava** / Évaluation de la Position du Pont sur le Danube à Bratislava P Turcek (Slovakia)	
16:44 – 16:52	**Adaptation of the Foundation of a Railway Bridge over the River Waal near Nijmegen (NL)** / Adaptation de la Fondation d'un Pont de Chemin de Fer Sur la Rivière Waal Près de Nimègue (NL) R Spruit (The Netherlands)	
16:52 – 17:00	**The Queensferry Crossing - The Role of the Employer's Delivery Team in the Management of Geotechnical Risk** / Le Queensferry Crossing - le Rôle de l'Equipe de Mise en Oeuvre de Projet de l'Employeur dans la Gestion du Risque Géotechnique P Mellon (UK)	
17:00 – 17:08	**The Queensferry Crossing - Design Development of the Caisson Foundations** / Le Queensferry Crossing - Design Développement des Fondations sur Caissons S West (UK)	
17:08 – 17:16	**The Queensferry Crossing - Foundation Construction Trials to Manage Geotechnical Risk** / Le Queensferry Crossing - les Essais de Construction de Fondations Visant à Gérer le Risque Géotechnique A Chisholm (UK)	
17:16 – 17:24	**The Queensferry Crossing - Construction of the Caisson Foundations** / Le Queensferry Crossing - La Construction des Fondations en Caissons D Johnston (UK)	
17:24 – 17:32	**Some Aspects of Foundation Design on Suspension Bridge Over Vardar River** / Certains Aspects de la Conception de la Fondation sur le Pont Suspendu Au-Dessus de la Rivière Vardar B Bogoevski (Macedonia)	
17:32 – 17:40	**Foundation Design of the Third Bosphorus Bridge** / Dimensionnement des Fondations du Troisième Pont sur le Bosphore C Cremer (Italy)	
17:40 – 18:00	Open Discussion	

Monday 14th September 2015		Location
16:15 – 18:00	**Discussion Session A1.5: Crossrail and Other Major UK Infrastructures**	**Sidlaw**
16:15 – 16:20	Chair: O Areshkovych (Ukraine) & UK Co-Chair: J Standing	(sponsored by GCG)
16:20 – 16:28	**M25 Widening DBFO - Engineering in the Fast Lane** / Elargissement de L'Autoroute M25 - Histoire d'un Dimensionnement en Voie Rapide P Nowak (UK)	
16:28 – 16:36	**Variation in Permeability and Dewatering Performance for Part of the Crossrail Route in East London** / Variation de la Perméabilité et de la Performance de Déshydratation pour Une Partie de la Voie Crossrail dans l'est de Londres U Lawrence (UK)	
16:36 – 16:44	**Crossrail Compensation Grouting** / L'Injection de Compensation à Crossrail O Francis (UK)	
16:44 – 16:52	**Borders Railway Project - A Best Value Approach to Reuse and Repair of Existing Earthworks Assets** / Le Projet Borders Railway - Une Approche Rentable de Réutilisation et Réparation de Terrassements Existants W Cannon (UK)	
16:52 – 17:00	**The Lambeth Group in the Crossrail Project of London, UK - The Geological Model** / Le Lambeth Group Dans le Projet Crossrail de Londres, Royaume-Uni - le Modèle Géologique J Skipper (UK)	
17:00 – 17:08	**The Geology and Geotechnical Properties of the Thanet Sand Formation - An Update From the Crossrail Project** / Les Propriétés Géologiques et Géotechniques de la Formation Sableuse « Thanet Sand » - Une Mise à Jour Issue du Projet Crossrail C Menkiti (UK)	
17:08 – 17:16	**Swansea Bay Tidal Lagoon Phase 1 Ground Investigation - Challenges, Geological Model and Geotechnical Design Considerations** / Reconnaissance de Sol pour la Production d'Energie Marémotrice par la Création d'un Lagon à Swansea Bay - Challenges, Model Géologique et Conception Géotechnique S Holt (UK)	
17:16 – 17:24	**Construction Impacts of Crossrail Liverpool Street Station on the Royal Mail Tunnel** / Impacts de la Construction de la Station Crossrail Liverpool Street sur le Tunnel Royal Mail M Devriendt (UK)	
17:24 – 17:32	**The Geotechnical Aspects of the London Bridge Station Redevelopment** / Les Aspects Géotechniques du Réaménagement de London Bridge Station A Wiles (UK)	
17:32 – 17:40	**Scheme Design of Piles for Approach Viaducts to the Mersey Gateway Bridge** / Dimensionnement des Pieux pour les Viaducs d'accès du Mersey Gateway Bridge H Wood (UK)	
17:40 – 18:00	Open Discussion	
16:15 – 18:00	**Discussion Session B1a: Slope Instability**	**Fintry**
16:15 – 16:20	Chair: J Frankovska (Czech & Slovak Republic) & UK Co-Chair: I Nettleton	
16:20 – 16:28	**Back-Analysis of the Collapse of the Clamart Chalk Underground Quarry - Paris (France)** / Rétro-Analyse de L'Effondrement de la Carrière de Clamart - Paris (France) M Al Heib (France)	
16:28 – 16:36	**Analytical Strain Estimation of Curved Buried Pipelines Due to Permanent Ground Displacements** / Estimation Analitique des Tensions dans les Conduites Courbes Enterrées en Cas de Déplacements Permanents du Sol D Karamitros (UK)	
16:36 – 16:44	**Design Principles and Construction Insights Regarding the Use of Electrokinetic Techniques for Slope Stabilisation** / Principes de Désigne et Aperçus de Construction Sur L'Utilisation des Techniques Électrocinétiques dans la Stabilisation des Pentes D Alder (UK)	

Monday 14th September 2015		Location
16:44 – 16:52	**Finite Element Investigation of Vertical Stabilisation Piles in a Stiff Clay Excavated Slope Using a Nonlocal Strain Softening Model** / Etude par la Méthode des Éléments Finis de Pieux Stabilisateurs Verticaux sur Une Pente Excavée dans des Sols Argileux Rigides à l'aide d'une Modélisation Non-Local de L'Amollissement F Summersgill (UK)	Fintry
16:52 – 17:00	**Water Repellent Soils for Slope Stability /** Sols Hydrophobiques pour la Stabilité des Talus S Lourenco (Hong Kong)	
17:00 – 17:08	**Slope Stability Analysis for Fill Slopes using Finite Element Limit Analysis** / Analyse de Stabilité des Pentes pour Remplir Pentes en Utilisant Finis Éléments Limite Analyse K Lim (Australia)	
17:08 – 17:16	**Evolving Techniques for Characterising and Monitoring the Stability of Infrastructure Slopes** / Le Développement de Techniques pour la Caractérisation et la Surveillance de la Stabilité des Talus K Lynch (UK)	
17:16 – 17:24	**Instability Problems of Cut Slopes During the Construction of Expressways in Slovakia** / Les Problèmes d'instabilité des Pentes de Coupes Pendant la Construction des Autoroutes en Slovaquie J Frankovská (Slovakia)	
17:24 – 17:32	**Probabilistic Slope Stability Analysis in Sensitive Clay Area** / Analyse Probabiliste de la Stabilité de Pente sur Argile Sensible Z Liu (Norway)	
17:32 – 17:40	**3D Effects in Undrained Slope Stability Analysis of Clays** /Effets 3D sur L'Analyse de Stabilité de Pentes Argileuses Non-Drainées H P Jostad (Norway)	
17:40 – 18:00	Open Discussion	
16:15 – 18:00	**Discussion Session C3: Hydrology and Hydrogeology**	Tinto & Moorfoot
16:15 – 16:20	Chair: M Karstunen (Sweden) & UK Co-Chair: M Preene	
16:20 – 16:28	**Erodibility Factor of Three Types of Soil** / Facteur D'Èrodabilité des Trois Sols E Dapena (Spain)	
16:28 – 16:36	**Optimisation of Dewatering Systems** / L'Optimisation des Systèmes de Dénoyage M Preene (UK)	
16:36 – 16:44	**Multi-Aquifer Pressure Relief in East London** / Contrôle de Pression dans Multiple Aquifères dans l'est de Londrès E Linde (UK)	
16:44 – 16:52	**Biochemical Soil Treatment for Erosion Control Against Desertification** / Traitement des Sols Bio-chimique pour le Contrôle de L'Érosion Contre la Désertification I Chang (Republic of Korea)	
16:52 – 17:00	**Analysis and Prediction of Extreme Groundwater Levels for Hinkley Point C Nuclear Power Station, (United-Kingdom)** / Analyse et Prédiction des Niveaux Extrêmes des Eaux Souterraines Sur le Site de la Centrale Nucléaire d'Hinkley Point C (Royaume-Uni) F Lalbat (UK)	
17:00 – 17:08	**Résistance à L'Érosion des Sols Traités à la Chaux** / Resistance to Erosion of Lime Treated Soil C Chevalier (France)	
17:08 – 17:16	**Managing the Clogging of Groundwater Wells** / Gérer le Bouchage des Puits D'eau Souterraine M Preene (UK)	
17:16 – 17:24	**Sub-Surface Dewatering for an Inclined SCL Tunnel** / Le Contrôle des Eaux Souterraines pour un Tunnel Incliné en Béton Projeté (SCL) T Roberts (UK)	

Monday 14th September 2015		Location
17:24 – 17:32	**Comportement Hydromécanique et Érodabilité des Sols Traités: Impacts à Court Terme et Durabilité** / Hydro-Mechanical Behavior and Erodibility of Treated Soils: Short Term Effects and Sustainability A Mehenni (France)	**Tinto & Moorfoot**
17:32 – 17:40	**Stabilization of Collapsible Soils: A Biological Technique** / Stabilisation des Sols Effondrables: Une Technique Biologique E Nikooee (Iran)	
17:40 – 18:00	Open Discussion	
16:15 – 18:00	**Discussion Session D3: Case Studies, Forensic Geotechnical Engineering and Monitoring**	**Kilsyth**
16:15 – 16:20	Chair: M Korff (The Netherlands) & UK Co-Chair: P McCombie	
16:20 – 16:28	**Soil Behaviour Type Index: A Tool to Measure Ground Improvement After Vibrocompaction** / Indice de Comportement du Sol: un Outil pour Mesurer L'amélioration du Sol Après Vibrocompactage J M Debats (France)	
16:28 – 16:36	**Methodologies for Geotechnical Characterization in Railways in Operation. An Experience** / Méthodes pour la Caractérisation Géotechnique de Chemin de Fer en Utilisation. Une Experience N Cruz (Portugal)	
16:36 – 16:44	**Settlement Prediction of Bored Piles in Stiff Clay at a Site in the Moscow Region** / Prédiction des Tassements des Pieux Forés In-situ dans Une Argile Raide dans la Région de Moscou P Vardanega (UK)	
16:44 – 16:52	**Reassessing a 1997 Bridge Failure in a Semiarid Region of the United States with Geotechnical Scour Number** / Réévaluation de la Défaillance d'un Pont en 1997 dans Une Région Semi-Aride des Etats-Unis Utilisant un Chiffre D'Affouillement Géotechnique J Keaton (USA)	
16:52 – 17:00	**The Geological Context and Evidence for Incipient Inversion of the London Basin** / Contexte Géologique et Arguments en Faveur de L'Inversion Naissante du Bassin Londonien R Ghail (UK)	
17:00 – 17:08	**Air Losses Through the Tunnel Face in Compressed Air Tunnelling; A Case Study** / Pertes de L'Air à Travers la Face du Tunnel en Tunnel à Air Comprimé; Une Étude de Cas A Ahangar-Asr (UK)	
17:08 – 17:16	**Precise Videogrammetry** / Videogrammetrie Précise D Cox (UK)	
17:16 – 17:24	**Advances in the Assessment of Drystone Retaining Walls - Some Case Studies** / Les Progrès Dans L'Évaluation des Murs de Soutènement en Pierres Sèches : Études de Cas P McCombie (UK)	
17:24 – 17:32	**The Benefits of Combining Test Methods and Knowledge From Different Fields of Expertise** / Les Avantages de Combiner Méthodes D'Essai et Connaissance de Différents Domaines D'Expertise G Franzén (Sweden)	
17:32 – 17:40	**Earthworks Ground Model Development Using Surface Wave Surveys** / Développement d'un Modèle de Terrain des Travaux de Terrassement en Utilisant des Enquêtes à Ondes de Surface D Gunn (UK)	
17:40 – 18:00	Open Discussion	
18:00 - 19:00	BGA Session EYGEC Report and Papers Cooling Prize Paper and BGA Awards RoGEP Registration	**Pentland**
19:00 - 20:30	**WHISKY TASTING**	**Strathblane & Cromdale Halls**

Tuesday 15th September 2015		Location
08:00 – 18:00	**REGISTRATION**	**Strathblane Hall**
09:00 – 18:00	**EXHIBITION OPEN**	**Strathblane & Cromdale Halls**
09:00 - 10:00	**KEYNOTE LECTURE 2:** Chair: A Gens (Spain) & UK Co-Chair: P Eldred **Geotechnical Engineering for Sustainable Transportation Infrastructure** / Ingénierie Géotechnique pour des Infrastructures de Transport Durables A Gomes Correia (Portugal)	**Pentland**
10:00 – 11:15 10:00 – 10:05 10:05 – 10:35 10:35 – 10:45 10:45 – 10:55 10:55 – 11:05 11:05 – 11:15	**MAIN SESSION B: Slopes, Geohazards & Problematic Materials** Chair: F Cotecchia (Italy) & UK Co-Chair: M Chrimes **Invited Lecture - K Pitilakis (Greece)** **Vulnerability Assessment of Buildings Exposed to Co-Seismic Permanent Slope Displacements** / Evaluation de la Vulnérabilité des Bâtiments Exposes aux Mouvements Sismiques des Pentes **Flow-Liquefaction of Mine Dumps During Rising of Groundwater-Table in Eastern Germany – Reasons and Model-Tests** / Liquéfaction des Sols des Terrils Miniers Pendant la Montée des Nappes Phréatiques dans l'Est de l'Allemagne - Raisons et Essais sur Maquettes T Rosenzweig (Germany) **Visualisation of Internal Erosion of a Granular Material Via a New Transparent Soil Permeameter** / Visualisation de L'Érosion Interne d'un Matériaux Granulaire par un Nouveau Perméamètre pour Sols Transparents E Bowman (UK) **Permafrost Slopes – An Emerging Geohazard in a Warming Climate** / Pentes Pergélisol - Un Géorisque Émergents dans un Contexte de Réchauffement Climatique R Lyle (Canada) **The Collapse of Clays Covering a Karst Cavity: In-situ Investigation, Conceptual Model, and Prediction** / L'affaissement des Argiles Couvrant Une Cavité Karstique: La Reconnaissance en Place, le Modèle Conceptuel et le Pronostic V Khomenko (Russia)	**Pentland**
11:15 – 11:45	**COFFEE BREAK** (sponsored by TENCATE) TENCATE materials that make a difference **EXHIBITION & POSTERS**	**Strathblane & Cromdale Halls**
11:45 – 13:00 11:45 – 11:50 11:50 – 12:20 12:20 – 12:30 12:30 – 12:40 12:40 – 12:50	**MAIN SESSION C: Environment, Water and Energy** Chair: C Jommi (The Netherlands) & UK Co-Chair: A Chisholm **Invited Lecture - P Delage (France)** **Thermo-Hydro-Mechanical Issues in Claystones: Application to Radioactive Waste Disposal at Great Depth** / Sur le Comportement Thermo-Hydro-Mécanique des Argilites: Application au Stockage des Déchets Radioactifs à Grande Profondeur **Development of the Engineering Barrier and Closure System at the Romanian LILW Radioactive Waste National Repository, Baita-Bihor County /** Systèmes D'Étanchéité et de Couverture pour le Centre National Roumain de Stockage de Déchets Radioactifs (LILW), Baita - Bihor L Batali (Romania) **Thermal Response Testing and Performance of Quadratic Cross Section Energy Piles (Vejle, Denmark)** / Test de Réponse Thermique et Performance des Piles Quadratique de L'Énergie de Coupe (Vejle, Danemark) M Alberdi (Denmark) **Design and Construction Experience of Deep Bunkers for Energy From Waste Projects** / Conception et la Construction de L'Expérience de Profonds Bunkers de L'Énergie des Projets de Déchets M Bickley (UK)	**Pentland**

Tuesday 15th September 2015		Location
12:50 – 13:00	**Technical-Biological Bank Protection for Waterways** / Protection des Berges Technique - Bologique J Kayser (Germany)	**Pentland**
13:00 – 14:15	**LUNCH** **EXHIBITION & POSTERS - Poster Session 2**	**Strathblane & Cromdale Halls**
14:15 – 16:00	**Discussion Session A1.2: Linear Infrastructure – Tunnels**	**Pentland**
14:15 – 14:20	Chair: A Bezujen (The Netherlands) & UK Co-Chair: A Stenning	
14:20 – 14:28	**Construction of a Deposit of Tunnel Muck on Soft Soil** / Construction d'un Dépôt de Déblai sur Terrain Mou W Steiner (Switzerland)	
14:28 – 14:36	**Back Analyses of the Instability Mechanism Encountered During the Construction of Tunnel Suhodol** / Analyses de Régression du Mécanisme D'Instabilité Rencontré au Cours de la Construction du Tunnel de Suhodol V Jovicic (Slovenia)	
14:36 – 14:44	**Monitoring and Analysis of Pore Water Pressure Increase During Two TBM Passages** / Analyse et Surveillance de L'Augmentation de la Pression Interstitielle Pendant Deux Passages des Tunneliers R de Nijs (The Netherlands)	
14:44 – 14:52	**Semi-Analytical Prediction of Ground Movements Due to Shallow Tunnels in Sand** / Prédiction Semi-Analytique des Mouvements de Terrain dus aux Tunnels Peu Profonds dans les Sables A Franza (UK)	
14:52 – 15:00	**Design, Construction and Monitoring of an Underwater Retaining Wall Close to an Existing Immersed Tunnel** / Conception, Construction et Observation d'un Soutènement à Proximité d'un Tunnel Immergé Existant C Bauduin (Belgium)	
15:00 – 15:08	**Influence of Pile Raft Stiffness on Building Behaviour in a Tunnel-Pile Clash Scenario** / Influence Entre Raideur d'un Massif sur Pieux et Comportement d'un Bâtiment dans un Scenario de Collision Tunnel-Pieu V Dubasaru (UK)	
15:08 – 15:16	**Design of a Compensation Grouting to Mitigate Movements Due to Tunnelling** / Conception d'une Injection de Compensation pour Atténuer les Mouvements Causés par L'Excavation d'un Tunnel A Ledesma (Spain)	
15:16 – 15:24	**The Engineering Geology of the Lee Tunnel** / La Géologie du Lee Tunnel M Bellhouse (UK)	
15:24 – 15:32	**Experimental Study on a 1g Reduced Scale Model of TBM: Impact of Tunnelling on Piled Structures** / Etude Expérimentale sur Modèle Réduit 1g de Tunnelier à Pression de Terre: Impact du Creusement sur des Fondations Profondes J Bel (France)	
15:32 – 15:40	**Observation of Ventilation Effects Around a Tunnel Excavated in Argillaceous Materials** / Observation des Effets de Ventilation Autour d'un Tunnel Creusé dans Matériaux Argileux A Gens (Spain)	
15:40 – 16:00	Open Discussion	
14:15 – 16:00	**Discussion Session B1b: Slope Instability**	**Sidlaw**
14:15 – 14:20	Chair: J Br. Papic (Macedonia) & UK Co-Chair: G Swift	
14:20 – 14:28	**An Image Based Water Uptake Model Applied to Simulate Water Uptake by Plant Roots** / Un Modèle D'Absorption D'eau Incluant des Données Provenant D'Images avec Application à L'Absorption D'eau par la Racine des Plantes. K Shang (UK)	
14:28 – 14:36	**Large-Scale Field Tests With Flexible Slope Stabilization Systems** / Test Grandeur Réelle avec des Systèmes Souples de Stabilisation de Pente A Roduner (Switzerland)	

Tuesday 15th September 2015		Location
14:36 – 14:44	**Hooley Cutting Stabilisation** / Projet de Stabilisation de la Voie Ferrée de Hooley A O'Donovan (UK)	**Sidlaw**
14:44 – 14:52	**Performance of Strength Reduction Finite Element techniques for Slope Stability Problems** / Performance de la Réduction de la Résistance Analyse par Éléments Finis pour des Problèmes de Stabilité des Talus F Tschuchnigg (Austria)	
14:52 – 15:00	**SQI – A Quality Assessment Index for Rock Slopes** / SQI - Indice D'evaluation des Talus Rocheux J Tinoco (Portugal)	
15:00 – 15:08	**Comparison of New In-situ Root-Reinforcement Measuring Devices to Existing Techniques** / Comparaison de Nouveaux Appareils de Mesure In-situ pour Sols Renforcés par des Racines avec des Techniques Existantes G Meijer (UK)	
15:08 – 15:16	**Static Stability of Po River Banks on a Wide Area** / Evaluation de la Stabilité des Digues de Protection du Pô à L'Échelle Régionale L Tonni (Italy)	
15:16 – 15:24	**Fibre Optics Applied for Slope Movements Monitoring** / Utilisation des Fibres Optiques pour la Surveillance des Mouvements de Pente K Capova (Czech Republic)	
15:24 – 15:32	**Application of End Effects in Slope Stability Analysis** / Application des Effets D'Extrémité dans L'Analyse de Stabilitédes Déblais. S Thomas (UK)	
15:32 – 15:40	**Construction of a High Anchored Wall at Highway EX-A1 (Spain)** / Construction d'un Mur avec Ancrages dans une Autoroute A Soriano (Spain)	
15:40 – 16:00	Open Discussion	
14:15 – 16:00	**Discussion Session B6: Problematic Materials**	**Fintry**
14:15 – 14:20	Chair: P van den Berg (The Netherlands) & UK Co-Chair: M Czerewko	
14:20 – 14:28	**Mechanical Behaviour of Methane Hydrate Bearing Sands During Gas Production** / Comportement Mécanique D'hydrate du Méthane Qui Porte des Sables Pendant production du Gaz M Hyodo (Japan)	
14:28 – 14:36	**Engineering Significance of Sulfur/Sulfate in Glacial Tills** / L'Importance dans L'Ingénierie du Soufre/Sulfate dans les Tills Glaciaires A B Hawkins (UK)	
14:36 – 14:44	**The Characterisation of Operational Shear Strength for Peats Through Full Scale Trials Combined With Laboratory and Field Testing** / La Caractérisation de la Résistance au Cisaillement de Tourbes par Essais In-situ à Taille Réelle Combinés à des Essais de Terrain et en Laboratoire R Jardine (UK)	
14:44 – 14:52	**Benefits of a Granular Construction Interface in Highway Construction Over Pyritic Subgrades for Mitigating Against Deleterious Ground Effects** / Les Avantages d'une Interface de Construction Granulaire dans la Construction de Routes sur des Sols de Fondation Pyrite pour Atténuer Contre les Effets Délétères de Sol M Czerewko (UK)	
14:52 – 15:00	**Improvement of Difficult Soils by Mixing With Mineral Materials and Inorganic Waste: Experimental Projects and Case Studies From Romania** / Amélioration des Sols Difficiles par Mélange avec des Matières Minérales et les Déchets Inorganiques: Projets Expérimentaux et des Études de Cas en Roumanie E Olinic (Romania)	
15:00 – 15:08	**MASW for Assessing Liquefaction of Loose Sites** / MASW pour Évaluer les Sites Libres de Liquéfaction E Olafsdottir (Iceland)	

Tuesday 15th September 2015		Location
15:08 – 15:16	**Silt Influence on Static Liquefaction of Sands** / L'influence du Silt Sur la Liquéfaction Statique des Sables M M Monkul (Turkey)	Fintry
15:16 – 15:24	**Carbonation in Stabilised Peat: An Accelerated Pilot Study** / Carbonatation dans la Tourbe Stabilisée: Une Étude Pilote Accélérée A Duggan (Ireland)	
15:24 – 15:32	**Rheological properties of Colloidal Silica as a Means for Designing Passive Stabilization of Liquefiable Soils** / Propriétés Rhéologiques de Silice Colloïdale Comme un Moyen pour le Calcul de Stabilisation Passive des Sols Liquéfiables G Agapoulaki (Greece)	
15:32 – 15:40	**Numerical Analysis of Strain Mechanisms of Cavities Excavated in Jointed Chalk** / Analyse Numérique des Mécanismes de Déformation des Cavités Creusées dans la Craie Fissure S Burlon (France)	
15:40 – 16:00	Open Discussion	
14:15 – 16:00	**Discussion Session D1a: Investigation and In-situ Testing**	Tinto & Moorfoot
14:15 – 14:20	Chair: A Viana da Fonseca (Portugal) & UK Co-Chair: J McDougal	
14:20 – 14:28	**Offshore Pile Load Tests in Chalk** / Essais de Chargement de Pieux en Mer à la Craie P Barbosa (UK)	
14:28 – 14:36	**Analysis of the Correlation Between Static and Dynamic Plate Load Tests** / Analyse de Corrélations Entre L'Essai à la Plaque Sous Charge Statique et L'Essai à la Plaque Dynamique R Katzenbach (Germany)	
14:36 – 14:44	**Influences on the Mechanical Behavior of Grouted Soil** / Les Influences Sur le Comportement Mécanique du Sol Injecté A Kainrath (Austria)	
14:44 – 14:52	**Evaluation of Bearing Capacity of Cast in Place Piles From In-situ Tests Based Methods** / Évaluation de la Capacité Portante des Pieux Coulés en Place des Méthodes In-situ L Dhimitri (Albania)	
14:52 – 15:00	**Very Small Strain Stiffness of Lisbon Miocene Clayey Formation From In-situ Tests** / Rigidité pour Trés Petite Déformation de la Formation Argileuse du Miocène de Lisbonne Obtenue par Essais In-situ A Viana da Fonseca (Portugal)	
15:00 – 15:08	**Method of Determination of Nonlinear Soil Model Parameters From In-situ Test Data** / Méthode de Détermination de Paramètres du Modèle de Sol Non Linéaires D'Après les Données de Test In-situ A Alekhin (Russia)	
15:08 – 15:16	**Recent advances of Rapid Load Testing in Asia and Europe** / Progrès Progrès Récents de Test Chargement Rapide en Asie et en Europe S H Chew (The Netherlands)	
15:16 – 15:24	**Design Parameters for Rock Sockets in Scottish Carboniferous Rocks** / Paramètres de Design pour Pieux D'Ancrage dans les Roches Carbonifères Écossaises P Boyd (UK)	
15:24 – 15:32	**Interface Interaction** / L'Interaction de L'Interface G Baykal (Turkey)	
15:32 – 15:40	**Three-Dimensional Soil Profiles Based on the Geotechnical Probes Data Clustering** / Le Trois Dimensionnel Profils de Sol sur la Base du Regroupement des Données des Sondes Géotechniques P Bilski (Poland)	
15:40 – 16:00	**Open Discussion**	

Tuesday 15th September 2015		Location
14:15 – 16:00	**Discussion Session E3: Soil-Structure Interaction**	**Kilsyth**
14:15 – 14:20	Chair: M Vaníček (Czech Republic) & UK Co-Chair: H Skinner	
14:20 – 14:28	**The Effect of Cracking on the Response and Design of Diaphragm Walls and Adjacent Buildings** / L'Effet de Fissuration à la Réponse et le Dimensionnement de Parois Moulées et aux Bâtiments Adjacents E Comodromos (Greece)	
14:28 – 14:36	**Seismic Performance Evaluation of an Irregular RC Frame Building** / L'Expertise de la Performance Séismiques d'un Immeuble Éxistant en BA avec la Structure de Géometrie Irrégulière Z Szilvágyi (Hungary)	
14:36 – 14:44	**The Influence of Rigid Wall on Soil Deflected Mode** / L'Influence de la Paroi Rigide sur le Sol en Mode Dévié S Shulyatev (Russia)	
14:44 – 14:52	**Physical Modelling of Soil-Structure Interaction in Stone Column Foundations** / Modelisation Physique de L'Interaction Sol Structure des Collones de Pierre. P Kelly (UK)	
14:52 – 15:00	**SLS Analysis of Soil-Structure Interaction Using Direct Methods** / Analyse SLS des Interactions Sol-Structure par des Méthodes Directes C Smith (UK)	
15:00 – 15:08	**Physical Modelling of a Pipeline Subjected to an Embankment Load** / Modélisation Physique d'une Pipeline Soumis à Une Charge Remblai J R M S Oliveira (Brazil)	
15:08 – 15:16	**Calibrating Plane Strain Models to Simulate 3 Dimensional Arching Effect in Sprayed Concrete Lining Tunnel** / Calibrage de Modèles Dilatation Plane pour Simuler en 3 Dimensions les Effets D'Arc dans la Doublure Béton Pulvérisé (SCL) d'un Tunnel K Neaupane (UK)	
15:16 – 15:24	**Geotechnical Design of the Reconstruction of the Bloudek Jumping Hill in Planica** / Conception Geotechnique de la Reconstruction du Tremplin de Saut a Ski Bloudek a Planica B Pulko (Slovenia)	
15:24 – 15:32	**Soil-Structure-Interaction of Power Plant Foundations - Monitoring and Numerical Calculation of an Extensive Spread Foundation** / Interaction Sol-Structure de Fondations de Centrales Électriques - Surveillance et Calcul Numérique d'une Fondation Étalée Extensive C Pohl (Germany)	
15:32 – 15:40	**Soil-Structure Interaction Effects** / Les Effets de L'interaction Sol-Structure M B Lisyuk (Russia)	
15:40 – 16:00	Open Discussion	
16:00 – 16:30	**COFFEE BREAK** **EXHIBITION & POSTERS**	**Strathblane & Cromdale Halls**
16:30 – 18:15	**Discussion Session A2.2a: Urban Development and Environment - Piles and Columns**	**Pentland**
16:30 – 16:35	Chair: F Tschuchnigg (Austria) & UK Co-Chair: M Brown	
16:35 – 16:43	**Performance-Based Assessment of Rammed Aggregate Piers** / Une Evaluation Sur le Comportement des Colonnes Ballastees Pilonnees K O Cetin (Turkey)	
16:43 – 16:51	**Reliability-Based Design of Stone Columns for Ground Improvement Considering Two Settlement Failure Modes. The Necessity of Pre-Loading** / Conception par Approche de Fiabilité des Colonnes Ballastées pour le Renforcement des Sols Suivant Deux Modes de Défaillance du Tassement. La Nécessité du Préchargement R Jimenez Rodriguez (Spain)	

Tuesday 15th September 2015		Location
16:51 – 16:59	**Strengthening and Underpinning Foundations of the Ministry of Employment and the Economy of Finland on Alexander Street 10** / Renforcement et Reprise en Sous - Oeuvre des Fondations du Ministère de L'Emploi et L'économie de la Finlande à la Rue Alexandre 10 K C Avellan (Finland)	Pentland
16:59 – 17:07	**Pile Group Settlement, Methods, Examples of Calculations Referred to Measurement Results Carried Out in Field Tests** / Tassement des Pieux en Groupe, Méthodes, Exemples de Calcul Relatives Aux Resultats de Mesures du Terrain K Gwizdala (Poland)	
17:07 – 17:15	**Full-Scale Field Test (Sheet) Pile Drivability In Antwerp (Belgium)** / Monitoring In-situ de L' Installation de Palplanches et Pieux Tubulaires à Anvers (Belgique) R de Nijs (The Netherlands)	
17:15 – 17:23	**Reaction of a Pile Group Against Deep Swelling** / Réaction d'un Groupe de Pieux Soumis à un Gonflement du Sol en Profondeur E Alonso (Spain)	
17:23 – 17:31	**Pile Response to Lateral Spreads: Analysis of Ultimate Soil Pressures** / Réponse d'un Pieu à L'Écoulement Lateral: Analyse des Pressions de Sol Ultimes Y Chaloulos (Greece)	
17:31 – 17:39	**King Sheet Piling (KSP) – A Major Advance in Sheet Pile Retaining Wall Design and Installation** / King Sheet Piling (KSP) - Un Grand pas en Avant dans la Conception et L'installation de Rideaux de Palplanches D Baker (UK)	
17:39 – 17:47	**Enhancing the Lateral Capacity of Monopiles in Sand Using Reinforced Concrete Footings** / Amélioration de la Capacité Latérale de Piles Uniques de Sable en Utilisant des Semelles de Béton Armé G Madabhushi (UK)	
17:47 – 17:55	**Jet Grouting Column Diameter in Terms of the Drilling and Grouting Specific Energies** / Diamètre de la Colonne de Jet Grouting en ce Qui Concerne les Énergies Spécifiques de Forage et de Grouting G Armijo Palacio (Spain)	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session A2.4: Ground Reinforcement and Improvement**	Sidlaw
16:30 – 16:35	Chair: P Kvasnièka (Croatia) & UK Co-Chair: C Doulala-Rigby	
16:35 – 16:43	**Assessing the Value of PBS**/Bithess Geosynthetic in Military Contexts / Evaluation de la Valeur des PBS/Bithess Géosynthétiques dans des Contextes Militaires E M Gallagher (UK)	
16:43 – 16:51	**Characterization of the Interface Between Sand and Welded Steel Mesh by Pull-Out Tests** / Caractérisation de L'interface Sable / Treillis Soudé par Essais D'arrachement S H Lajevardi (France)	
16:51 – 16:59	**High Steep Bridge Approach Embankment From Reinforced Soil on Motorway** / Remblai Approche Pont Escarpé Haut de Sol Renforcé sur Autoroute M Vanicek (Czech Republic)	
16:59 – 17:07	**High Reinforced Vertical Slope - Danger of Overturning** / Haute Pente Verticale Renforcée - Danger de Retournement D Jirásko (Czech Republic)	
17:07 – 17:15	**Dynamic Compaction of Collapsible Soils - Case Study From a Motorway Project in Romania** / Compactage Dynamique des Sols Pliants - Cas Réel D'après un Projet D'Autoroute en Roumanie G Tsitsas (Romania)	
17:15 – 17:23	**Characterisation of Reinforced Granular Transitions on Freight Railways for Static and Dynamic Effects** / Caractérisation des Transitions Granulaires Renforcées pour les Voies Ferrées de Fret Sous Effets Statiques et Dynamiques M Merry (Australia)	

Tuesday 15th September 2015		Location
17:23 – 17:31	**Working Platforms for Tracked Plant - An Alternative Design Approach to BR470 Using Hexagonal Geogrid Mechanically Stabilised Layers** / Plates-Formes de Travail D'usine de Chenilles, Une Approche de Conception Alternatives à Une BR470 Utilisant Une Couche Stabilisé Mécaniquement avec Une Géogrille Hexagonal M Dalwadi (UK)	**Sidlaw**
17:31 – 17:39	**Soil-Geogrid Interaction in Pullout Conditions: Influence of Soil Moisture Content and Density** / L'Interaction Sol-Géogrille dans des Conditions D'Arrachement: L'Influence de la Teneur en Eau et de la Densité du Sol P Miguel Peixoto Pereira (Portugal)	
17:39 – 17:47	**Serviceability Limit State Check in Reinforced Soil Desig**n / L'état Limite en Service pour la Conception des Murs en Sol Renforcé M Dobie (UK)	
17:47 – 17:55	**Performance of Mechanically Stabilised Layer (MSL) for Working Platform Over Soft Soil** / Performance de la Couche Stabilisée Mécaniquement (MSL) pour la Plateforme de Travail Sur un Sol Mou M Khan (UK)	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session B2a: Landslides**	**Fintry**
16:30 – 16:35	Chair: F Pardo de Santayana (Spain) & UK Co-Chair: D Hughes	(sponsored by TRL)
16:35 – 16:43	**Landslide Surveys for Road Remediation Projects in Polish Carpathians** / Enquêtes de Glissements de Terrain pour des Projets D'assainissement de la Route dans les Carpates Polonaises Z Bednarczyk (Poland)	
16:43 – 16:51	**Coastal Slope Instability in Contrasting Geoenvironmental Conditions** / L'instabilité des Pentes Côtières en Conditions Géo-Environnementaux Contrastés S B Mickovski (UK)	
16:51 – 16:59	**Study of the Seasonal Response of a Scree Slope and a Debris Flow Catchment in the Swiss Alps** / Etude de la Réponse Saisonnière d'une Pented'éboulis et d'un Bassin Versant de Lave Torrentielle Dans les Alpes Suisses. D Lucas (Switzerland)	
16:59 – 17:07	**Geologic and Geotechnical Mitigation for a "Megaslide" Rock Slope Failure, Arizona, USA** / Atténuation Géologique et Géotechnique pour un "Megaslide" Rock Glissement de Terrain, Arizona, Etats-Unis W McCormick (USA)	
17:07 – 17:15	**Soil Nailing The Green Way: Sustainable Stabilisation of a Failing Slope Using Innovative Soil Nail Head Designs to Give a Fully Vegetated Green Slope Finish** / Sol Clouer la Voie Verte: La Stabilisation Durable de la Pente Défaillant Via les Conceptions Innovantes pour les Ongles du Sol pour Donner Une Finition de Pente Verte Entièrement Végétalisée M J Smith (UK)	
17:15 – 17:23	**Evaluating the State of Activity of Slow-Moving Landslides by Means of DInSAR Data and Statistical Analyses** / L'évaluation de L'état de L'activité de Lents Glissements de Terrain par L'intermédiaire des Données DInSAR et des Analyses Statistiques D Peduto (Italy)	
17:23 – 17:31	**Application of Markov Chains in the Prediction of Rock Slopes Degradation** / Application des Chaines de Markov Dans la Prévision de la Dégradation de Talus Rocheux J Tinoco (Portugal)	
17:31 – 17:39	**Hazard and Risk Assessment of Landslides in the National Forest Estate** / Évaluation Des Dangers et des Risques de Glissements de Terrain dans le Domaine Forestier National I Nettleton (UK)	
17:39 – 17:47	**Landslides Susceptibility on Large Surfaces Triggered by Rain-Histories** / Les Grandes Surfaces et la Tendance Aux Glissements de Terrain Déclenchés par les Précipitations R Passalacqua (Italy)	

Tuesday 15th September 2015		Location
17:47 – 17:55	**Modeling Rainfall Induced Shallow Landslides in the Landslide Early Warning Integrated System Project** / Modélisation des Glissements de Terrain Provoqués par la Pluie dans le Projet "Systèmes intégrés pour la préfiguration des glissements de terrain" G Capparelli (Italy)	**Fintry**
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session D1b: Investigation and In-situ Testing**	**Tinto & Moorfoot**
16:30 – 16:35	Chair: S Aversa (Italy) & UK Co-Chair: P Reading	
16:35 – 16:43	**Field Measurement of Poisson's Ratio for Municipal Solid Waste** / Mesures de Champ du Coéfficient de Poisson des Déchets Usuels Solides A Ponomaryov (Russia)	
16:43 – 16:51	**Load Tests on Grouted Shaft Helical Micropiles in Some U.K.Soils** / Epreuves de la Charge sur Arbre Jointoye Micropieux Helcoidale das Quelqes U.K.Sols A Lutenegger (USA)	
16:51 – 16:59	**Vertical Cyclic Loading on Soil Reinforcement by Rigid Piles: Multi-Scale Experimental Analysis** / Chargement Cyclique Vertical des Sols Renforcés par Inclusions Rigides: Analyse Expérimentale Multi-Échelles O Jenck (France)	
16:59 – 17:07	**Compression Properties of an Organic Clay** / Propriétés de Compression d'une Argile Organique B Westerberg (Sweden)	
17:07 – 17:15	**Applying Site and Laboratory Studies to Determine Frost-Heave Coefficient** / L'application des Études de Site et en Laboratoire pour Déterminer le Coefficient Gel Soulèvement L Korkiala-Tanttu (Finland)	
17:15 – 17:23	**Comportement Hydromécanique à Long Terme D'Ouvrages en Sol Traité** / The Long Term Behaviour of Hydro-Mechanical Treated-Soil Structures A Mehenni (France)	
17:23 – 17:31	**Some Geotechnical Characteristics of a Soft Structured Soil in Northern Ireland** / Certaines Caractéristiques Géotechniques d'un Sol Meuble Structuré en Irlande du Nord P Quigley (Ireland)	
17:31 – 17:39	**Geological-Geotechnical and Hidrogeological Investigations for Safety Upgrade of Nuclear Power Plant Krsko** / Les Recherches Géologiques, Géotechniques et Hydrogéologiques pour Une Mise à Jour de Sécurité de la Centrale Nucléaire de Krško V Vukadin (Slovenia)	
17:39 – 17:47	**The Use of Hydro Test Results for Prediction of Final Consolidation - A Case History** / L'emploi des Résultats des Essais Hydrauliques pour la Prédiction de la Consolidation Finale – Histoire De Cas L Matešić (Croatia)	
17:47 – 17:55	**Efficiency in Standard Penetration Test** / Efficacité L'Essai de Pénétration Standard (SPT) **J Lukiantchuki (Brazil)**	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session F1: Developments in Education and Practice**	**Kilsyth**
16:30 – 16:35	Chair: L Bozo (Albania) & UK Co-Chair: B Simpson	
16:35 – 16:43	**A Competency Based Approach to Managing Skills in Geotechnical Numerical Analysis** / Une Gestion du Savoir-Faire en Analyse Numérique Géotechnique Basée sur les Compétences A Lees (Cyprus)	
16:43 – 16:51	**The German Initiative on "Improving the Practicability of Technical Rules for Building Constructions" - Results for Eurocode 7 Geotechnical Design** / L'Initiative Allemande sur "L'amélioration de la Praticabilité des Règles de Conception pour les Constructions" - Résultats pour L'Eurocode 7 Calcul Géotechnique B Schuppener (Germany)	

Tuesday 15th September 2015		Location
16:51 – 16:59	**Geotechnics and Policy of the Environment's Management in Albania** / Géotechnique et de la Politique de Gestion de L'environnement en Albanie L Bozo (Albania)	**Kilsyth**
16:59 – 17:07	**Learning Styles of Civil Engineering Students and Tailoring Geotechnical Engineering Courses Accordingly** / Styles D'Étudiants en Génie Civil Apprentissage et L'Adaptation des Cours D'Ingénierie Géotechnique Conséquence I Bozbey (Turkey)	
17:07 – 17:15	**Eurocode 7 Section 8 - Ground Anchors: Development of the UK National Annex** / Eurocode 7 Section 8 - Ancrages: Développement de L'Annexe Nationale du Royaume-Uni B Simpson (UK)	
17:15 – 17:23	**Planned Changes in Eurocode 7 for the Second Generation of Eurocodes** / Les Changements Prévus dans L'Eurocode 7 pour la Deuxième Génération des Eurocodes A Bond (UK)	
17:23 – 17:31	**The ASK Network: Developing a Virtuous Cycle of Subsurface Data and Knowledge Exchange** / Le Réseau ASK: L'Élaboration d'un Cycle Vertueux de Données de Subsurface et L'Échange de Connaissances H Reeves (UK)	
17:31 – 17:39	**The Use of Observational Method to Substitute Deep Foundation to Shallow Foundation on a Deep Marine Fill** / Utilisation D'une Méthode D'observation pour Remplacer des Fondations Profondes par des Fondations Peu Profondes dans un Remblais Profond sur la Mer J Häkkänen (Finland)	
17:39 – 17:47	**Geotechnical Engineering Education in Italy: A Survey** / Enseignement de L'Ingénierie Géotechnique en Italie: Une Enquête M Calvello (Italy)	
17:47 – 17:55	**Recommended Changes to Eurocode 7** / Modifications Recommandées à L'Eurocode 7 T Orr (Ireland)	
17:55 – 18:15	Open Discussion	

Wednesday 16th September 2015		Location
08:00 – 18:00	**REGISTRATION**	**Strathblane Hall**
09:00 – 18:00	**EXHIBITION OPEN**	**Strathblane & Cromdale Halls**
09:00 – 10:00	**KEYNOTE LECTURE 3:** **Artificial Ground Freezing: From Applications and Case Studies to Fundamental Research** / Congélation Artificielle des Sols: des Applications et Études de cas á la Recherche Fondamentale G M B Viggiani (Italy) Chair: I Vaníček (Czech Republic) & UK Co-Chair: D Smith	**Pentland**
10:00 – 11:15 10:00 – 10:05 10:05 – 10:35 10:35 – 10:45 10:45 – 10:55 10:55 – 11:05 11:05 – 11:15	**MAIN SESSION D: Investigation, Classification, Testing and Forensics** Chair: E Olinic (Romania) & UK Co-Chair: S Stallebrass **Invited Lecture - J Peuchen (The Netherlands)** Reassessment of Geotechnical Conditions After an Offshore Well Incident / Reevaluation des Conditions Geotechniques Apres un Incident de Puits de Forage in Mer **Some Trends From Recent Ground Investigation Contracts in Ireland** / Quelques Tendances Provenant de Récents Contrats D'étude de Sols en Irlande P Quigley (Ireland) **Forensic Engineering in Geotechnics, the Dutch approach on CPT Interpretation** / Forensic-Ingénierie en Géotechnique, L'approche Hollandais de L'interprétation CPT E de Jong (The Netherlands) **Investigation of Rock Anchorage Failures and Cutting Remediation at Glyn Bends, North Wales, UK** / Investigation de Tirants D'ancrage Défectueux et Travaux de Remédiation D'une Coupe À Glyn Bends, Nord Du Pays de Galles, Royaume-Uni S Solera (UK) **Geotechnical Characterization of Peat and Gyttja by Means of Different In-situ Tests** / Caractérisation Géotechnique de Tourbe et Gyttja au Moyen de Différents Essais In-situ J Wierzbicki (Poland)	**Pentland**
11:15 – 11:45	**COFFEE BREAK** (sponsored by SOLETANCHE BACHY / MENARD) **EXHIBITION & POSTERS**	**Strathblane & Cromdale Halls**
11:45 – 13:00 11:45 – 11:50 11:50 – 12:20 12:20 – 12:30 12:30 – 12:40 12:40 – 12:50 12:50 – 13:00	**MAIN SESSION E: Parameter Selection and Modelling** Chair: S F Çinicioğlu (Turkey) & UK Co-Chair: D Toll **Invited Lecture - P H Schweiger (Austria)** **On The Merits of Using Advanced Models in Geotechnical Engineering** / Sur les Avantages D'utiliser des Modèles Avancés en Ingénierie Géotechnique **3D FEM Analysis of a NATM Tunnel With Shotcrete Lining Homogenization and Stiffness Anisotropy** / Analyse 3D par la MEF du Tunnel NATM avec le Béton Projeté Homogénéisation Du Revêtement Interne et L'anisotropie de Rigidité D Masin (Czech Republic) **Comparison of Numerical Modelling Techniques to Predict the Effect of Climate Change on Infrastructure Slopes** / Comparaison des Techniques de Modélisation Numérique pour Prédire L'effet du Climat sur les Talus en Infrastructures D Hughes (UK) **Impact of Anchor Failure for Deep Excavation in Soft Clay Based on 3D FEM Analyses /** Modélisation 3D par Éléments Finis de L'effet de la Rupture D'ancrages dans des Excavations Profondes en Argiles Molles Ø Torgersrud (Norway) **Modélisation des Voutes Parapluies et Impact de la Loi de Comportement du Sol** / Modelling of Pipe Roof Umbrella Focusing on Constitutive Models Influence N Gilleron (France)	**Pentland**

Wednesday 16th September 2015		Location
13:00 – 14:15	**LUNCH** **EXHIBITION & POSTERS - Poster Session 3**	**Strathblane & Cromdale Halls**
14:15 – 16:00	**Discussion Session A2.2b: Urban Development and Environment – Piles and Columns**	**Pentland**
14:15 – 14:20	Chair: A Hettler (Germany) & UK Co-Chair: P Ingram	
14:20 – 14:28	**LNG Terminal in China: Tank Seismic Design and Corrective Actions for Shorter Piles** / Terminal GNL en Chine - Dimensionnement Sismique des Réservoirs et Actions Correctives pour des Pieux Courts Y Zaczek (Belgium)	
14:28 – 14:36	**Pile Driving and Pile Installation Risk in Weak Rock** / Battage de Pieux et Risque D'installation dans les Rochestendres V Terente (UK)	
14:36 – 14:44	**Analysis of an Extended Field Test Database Regarding Driven Pile Ageing in Sands** / L'analyse D'une Base de Données a Partir de Campagnes D'essais sur le Terrain Concernant le Vieillissement de Pieux dans les Sables R Jardine (UK)	
14:44 – 14:52	**Causes of Unexpectedly Large Settlements Induced by Deep Excavations in Soft Clay** / Origines des Larges Tassements Lies aux Excavations Profodes dans les Argiles Molles J Langford (Norway)	
14:52 – 15:00	**Centrifuge Model Tests on Mitigation Against Liquefied-Soil Lateral Flow by Using Cement-Treated Soil Columns** / Essais sur Modèle en Centrifugeuse sur la Mitigation des Écoulements Latéraux de Sols Liquéfies par des Colonnes de Sols Traitées au Ciment I Towhata (Japan)	
15:00 – 15:08	**Settlement Reduction Potential of Vibro Stone Columns in Creep-Prone Soils** / Le potentiel de la Réduction du Tassement des Colonnes de Roches Compactées dans des Sols à Risque de Fluage B Sexton (Ireland)	
15:08 – 15:16	**Axial Pile Forces in Piled Embankments, Field Measurements** / Forces Axiales dans les Piles dans les Remblais Empilées, Mesures sur le Terrain S J M van Eekelen (The Netherlands)	
15:16 – 15:24	**Influence of Pile Offset Behind an MSE Wall on Lateral Pile Resistance** / L'influence de Pilotis Compensé Derrière un Mur de MSE sur la Résistance de Pilotis latéral K Rollins (USA)	
15:24 – 15:32	**Case Study of a Static-Dynamic Pile Load Test Programme in Hungary** / Le Programme de Chargement - D'essai Dynamiques et Statiques en Hongrie Etude Akos Wolf (Hungary)	
15:32 – 15:40	**Behaviour of Large Diameter Bored Piles With Enlarged Base; The Results of a Large Scale Instrumented Load Test** / Comportement des Pieux Forés à Base Élargie; Résultats d'un Essai Instrumenté à Grande Echelle I Raileanu (Romania)	
15:40 – 16:00	Open Discussion	
14:15 – 16:00	**Discussion Session B2b: Landslides**	**Sidlaw** (sponsored by Coffey)
14:15 – 14:20	Chair: J Laue (Sweden) & UK Co-Chair: H Wood	
14:20 – 14:28	**Citywide Early Warning Systems for Rainfall-induced Landslides** / Systèmes D'alerte Précoce Municipaux pour Glissements de Terrain Induits par Précipitations M Calvello (Italy)	
14:28 – 14:36	**Climate Change and Slope Failures in Gibraltar** / Le Changement Climatique et la Pente Échecs à Gibraltar J Smith (UK)	
14:36 – 14:44	**Sliding Potential of Tuff** / Le Potentiel de Glissement du Tufs E Togrol (Turkey)	

Wednesday 16th September 2015		Location
14:44 – 14:52	**The Influence of Slope Geology on Landslide Occurrence During Extreme Rainfall** / L'influence de la Géologie de la Pente sur Glissement de Terrain lors de Précipitations Extrêmes D Muddle (UK)	**Sidlaw**
14:52 – 15:00	**UK Rock Fall, Debris Flow and Landslide Protection** / Royaume-Uni Chutes de Pierres, les Coulées de Débris et de la Protection des Glissements de Terrain J Shields (UK)	
15:00 – 15:08	**Multiscalar Analysis of Subsidence Phenomena via DInSAR Data** / Analyse Multi-échelle des Effets D'affaissement par des Données DInSAR D Peduto (Italy)	
15:08 – 15:16	**Displacement Rates of Extremely Slow Landslides** / La Vitesse de Déplacement de Glissement de Terrain Extrêmement Lentes L Simeoni (Italy)	
15:16 – 15:24	**The Use of Slope Stabilising Piles and Soil Nailing to Stabilise Part of a Large Landslide Complex at Lyme Regis, UK** / Utilisation de Pieux et Sol Cloué pour Stabiliser une Partie d'un Grand Complexe D'éboulement à Lyme Regis, R-U D Daskalopoulos (UK)	
15:24 – 15:32	**Geotechnical and Thermal Aspects for Underground Houses on Sliding Slopes** / Aspects Géotechniques et Thermiques pour les Maisons Souterraines sur les Pentes Glissantes V S Farcas (Romania)	
15:32 – 15:40	**Semi-Quantitative Risk Assessment in Road Design** / Évaluation des Risques Semi-Quantitative dans la Conception des Routes I Shipway (Australia)	
15:40 – 16:00	**Open Discussion**	
14:15 – 16:00	**Discussion Session B4: Earthquake Geotechnical Engineering and Liquefaction**	**Fintry**
14:15 – 14:20	Chair: K Pitilakis (Greece) & UK Co-Chair: G Madabhushi	(sponsored by ICE Publishing)
14:20 – 14:28	**Seismic and Mass Movement Hazard in a Lignite Opencast Mine** / Risque de Mouvement Sismique et la Masse dans une Mine à Ciel Ouvert de Lignite Z Bednarczyk (Poland)	
14:28 – 14:36	**Seismic Performance of Gravity Retaining Walls Subjected to Strong Excitation** / Performance Séismique de Murs de Rétention Gravitationnelle Soumis à une Forte Excitation G Gazetas (Greece)	
14:36 – 14:44	**Simplified Estimation of Elastic Response Spectra for Liquefied Ground** / Estimation Simplifiée des Spectres de Réponse Élastique pour Sol Liquéfié Y Chaloulos (Greece)	
14:44 – 14:52	**On the Seismic Response of Shallow Rectangular Tunnels in Soft Soils** / Etude Expérimentale et Numérique du Comportement Sismique des Tunnels Rectangulaires en Terrain Meubles K Pitilakis (Greece)	
14:52 – 15:00	**Explosions Below the Soil Surface - A Decision Support for the Assessment of the Safe Distance of Buildings** / Les Explosions Sous-terraines - Une Aide à la Décision pour L'évaluation de la Distance Inoffensive des Bâtiments C Boley (Germany)	
15:00 – 15:08	**Soft Grouting for the Mitigation of Seismic Risk** / Injections de Coulis pour la Réduction du Risque Sismique A Flora (Italy)	
15:08 – 15:16	**Analysis of Strip Foundation Performance on Liquefied Ground With Limited Ground Improvement** / Analyse du Comportement des Foundations Superficielles sur du Sol Liquefiable Après L'amelioration du Sol Limitée Y Chaloulos (Greece)	

Wednesday 16th September 2015		Location
15:16 – 15:24	**Modelling Liquefaction Phenomena During the May 2012 Emilia-Romagna Earthquake (Italy)** / Modélisation des Phénomènes de Liquéfaction Pendant le Tremblement de Terre du 2012 en Emilia-Romagna (Italie) L Tonni (Italy)	**Fintry**
15:24 – 15:32	**Numerical Analysis of the Seismic Response of Sand Passively Stabilized Against Liquefaction** / Analyse Numérique de la Réponse Sismique de Sable Stabilisé Passivement Contre la Liquéfaction A Papadimitriou (Greece)	
15:32 – 15:40	**Influence of Geotechnical Parameters and Numerical Modelling on Local Seismic Response Analysis** / Influence des Paramètres Géotechniques et Modélisation Numérique sur L'analyse de la Réponse Sismique Local S Grasso (Italy)	
15:40 – 16:00	Open Discussion	
14:15 – 16:00	**Discussion Session D2a: Classification and Laboratory Testing**	**Tinto & Moorfoot**
14:15 – 14:20	Chair: R Katzenbach (Germany) & UK Co-Chair: J Powell	(sponsored by RGI)
14:20 – 14:28	**Ultimate Bearing Capacity of Rectangular Foundation on Sand under Eccentric Loading** / Capacité Portante Ultime d'une Fondation Rectangulaire sur Sable Sous Chargement Excentrique B Das (USA)	
14:28 – 14:36	**Determination of the Time-dependent Deformation Behaviour of Soft Soils for Infrastructure Applications** / Détermination du Comportement de Déformation des Sols Mous en Fonction du Temps - Application aux Infrastructures R Katzenbach (Germany)	
14:36 – 14:44	**Characterization of Active Failure Wedge for Cohesionless Soils** / Le Caractérisation de Coin de Rupture Actif pour les Sols Sans Cohesion O Cinicioglu (Turkey)	
14:44 – 14:52	**An Approach for Improving Wesley Engineering Classification. The Case of Porto Granites** / Une Approche pour Améliorer la Classification Génie de Wesley. Le cas des Granites de Porto N Cruz (Portugal)	
14:52 – 15:00	**An Investigation of Possible Yield Stress and Thixotropy in Polymer Excavation-Support Fluids** / Etude sur les Contraintes Seuils D'écoulement et les Propriétés Thixotropes des Fluides de Forage à Base de Polymers S Jefferis (UK)	
15:00 – 15:08	**Development of a New Temperature-Controlled Triaxial Apparatus for Saturated Soils** / Développement d'un Nouvel Appareil Triaxial avec Contrôle de Température pour les Sols Saturés D Martinez Calonge (UK)	
15:08 – 15:16	**Strength and Stiffness Development of Cement Mixed Clay** / Développement de la Résistance et de la Rigidité du Mélange Argile-ciment S C Chian (Singapore)	
15:16 – 15:24	**Microstructural Interpretation of Compression Behaviour of Kaolin Clay** / L'interprétation Microstructurale du Comportement à Compression de la Kaolinite B C F L Lopes (UK)	
15:24 – 15:32	**A Study of the Water Retention Curve of a Lime-Treated High Plasticity Clay** / Étude de la Courbe de Rétention D'eau d'une Argile Plastique, Traitée à la Chaux M Gunn (UK)	
15:32 – 15:40	**Étude Multi-échelle des Propriétés de Matériaux Argileux Gonflants** / Multi-scale Investigation of the Swelling Clay Material Properties O Cuisinier (France)	
15:40 – 16:00	Open Discussion	

Wednesday 16th September 2015		Location
14:15 – 16:00	**Discussion Session E2a: Modelling**	Kilsyth
14:15 – 14:20	Chair: C Sagaseta (Spain) & UK Co-Chair: M Davies	
14:20 – 14:28	**Numerical Study of the Use of Actively-Tensioned Polymeric Strips for Reinforced Soil Walls** / Etude Numérique de L'utilisation de Bandes Polymériques Précontraintes dans des Murs en Sol Renforcé I P Damians (Spain)	
14:28 – 14:36	**On Factors of Safety** / Sur les Coefficients de Sécurité M Gunn (UK)	
14:36 – 14:44	**Stiffness Anisotropy and is Effect on the Behaviour of Deep Excavations** / L'anisotropie de Déformabilité et ses Effets sur les Modes de Comportement des Excavations Profondes A Grammatikopoulou (UK)	
14:44 – 14:52	**Numerical Investigation of Track Bed Stability on Soft Soils** / Etude Numérique de la Piste Stabilité de Lit sur Sols Mous S Rapp (Germany)	
14:52 – 15:00	**Stress-Strain State of the Gravity Base Substructure of the Fixed Offshore Platform at Seismic Impacts** / Une Analyse de Précontraintes et de Déformations dans la Structure Porteuse de la Plate-forme du Type Gravitationnel sous L'impact des Séismes V Glagovsky (Russia)	
15:00 – 15:08	**Couplages Chémo-mécaniques dans les Sols Compactés Traités à la Chaux** / Coupling Between Chemical Processes and Mechanical Behaviour in Lime-treated Soils O Cuisinier (France)	
15:08 – 15:16	**Experimental and Numerical Study on Sand for Liquefaction Research** / Etude Expérimentale et Numérique sur le Sable pour la Recherche de Liquéfaction J Bojadjieva (Macedonia)	
15:16 – 15:24	**Use of Digital Image Correlation to Directly Derive Soil Stress-Strain Response From Physical Model Test Data** / Utilisation de Techniques par Corrélation D'images pour Obtenir Directement la Courbe de Réponse en Contrainte-déformation d'un Sol à Partir de Données Issues D'essais sur un Modèle Physique C Smith (UK)	
15:24 – 15:32	**Analysis of Embankment Widening Problems** / L'Analyse des Problèmes D'élargissement de Remblais S F Çinicioğlu (Turkey)	
15:32 – 15:40	**Numerical Simulation of Consolidation Problem** / Simulation Numérique de Problème de Consolidation K Edip (Macedonia)	
15:40 – 16:00	Open Discussion	
16:00 – 16:30	**COFFEE BREAK** **EXHIBITION & POSTERS**	Strathblane & Cromdale Halls
16:30 – 18:15	**Discussion Session A1.3a: Non-linear Infrastructure**	Pentland
16:30 – 16:35	Chair: T Durgunoglu (Turkey) & UK Co-Chair: L Zdravkovic	
16:35 – 16:43	**Geotechnical Aspects of Earthen Construction Materials** / Aspects Géotechniques des Matériaux de Construction en Terre C Augarde (UK)	
16:43 – 16:51	**Full Scale Field Test - Drilling of Anchors to Bedrock in Soft Clay** / Tests de Terrain a Grande Echelle: Installation D'ancrages dans le Roc a Travers des Argiles Molles E J Lande (Norway)	

Wednesday 16th September 2015		Location
16:51 – 16:59	**Design and Construction of a Strengthened Embankment for an Intermodal Transfer Facility** / Conception et Construction d'un Remblai Armé pour une Installation de Transfert de Marchandises Intermodal C Smith (UK)	**Pentland**
16:59 – 17:07	**Experimental Investigation of Frost Induced Suction Stresses in Fine Grained Materials** / Études Expérimentales sur Ll'aspiration au Cours de la Congélation de Matériaux à Grains Fins C Boley (Germany)	
17:07 – 17:15	**Geotechnical Engineering for Wind Farms on Peatland Sites** / Géotechnique des Parcs Éoliens sur les Sites de Tourbières P Jennings (Ireland)	
17:15 – 17:23	**Self-healing Materials and Structures for Geotechnical and Geo-Environmental Applications** / Matériaux et Structures Autoréparateurs pour des Applications Géo-techniques et Géo-environnmentales M Harbottle (UK)	
17:23 – 17:31	**An Observational Approach to Design of a New Grout Curtain at Wimbleball Dam** / Une Approche Observationnelle de la Conception d'un Nouveau Rideau D'injection au Barrage de Wimbleball C Key (UK)	
17:31 – 17:39	**Development of Resistance Factors for Drilled Shafts in Sand** / Développement des Facteurs de Résistance pour Puits Forés à Sand D Basu (Canada)	
17:39 – 17:47	**Value Engineering as Basis for Safe, Optimised and Sustainable Design of Geotechnical Structures** / Principe D´analyse de la Valeur est la Base pour un Dimensionnement Sécurisé, Optimisé et Durable de Structures Géotechniques R Katzenbach (Germany)	
17:47 – 17:55	**Design, Construction and Performance of Single Bore Multiple Anchored Diaphragm Wall** / Conception, Construction et Performance d'une Paroi Moulée Stabilisée par Tirants a Ancrage Multiple avec Forage Unique A Gokalp (UK)	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session A2.3: Near Shore and Offshore Development, and the Marine Environment**	**Sidlaw**
16:30 – 16:35	Chair: E Togrol (Turkey) & UK Co-Chair: B Byrne	
16:35 – 16:43	**Geotechnical Challenges of Overhauling the Naval Port Wilhelmshaven** / Défis Géotechniques liés à la Rénovation du Port Naval de Wilhelmshaven U Matthiesen (Germany)	
16:43 – 16:51	**Soil Investigations for Sustainable Foundations in Arctic Coastal Areas** / Etudes de Sols pour Fondations Durables dans les Régions Littorales d'Arctique A Sinitsyn (Norway)	
16:51 – 16:59	**Rock Fill Ship Barriers for the Oslo Opera House and for New Residential Buildings** / Construction de Digues en Pierre Concassée pour l'Opéra d'Oslo et de Nouveaux Bâtiments Résidentiels A Eggen (Norway)	
16:59 – 17:07	**Coastal Vulnerability Mapping for Swedish Municipalities** / Cartographie de la Vulnérabilité des littoraux pour les Communes Sédoises P Danielsson (Sweden)	
17:07 – 17:15	**Emergency Response to Breach and Consequent Failure of Coastal Infrastructure** / Réaction d'urgence à une Brèche et à la Rupture de L'infrastructure Côtière qui en Résulta A Wheeler (UK)	
17:15 – 17:23	**Preliminary Test on Modified Clays for Seawater Resistant Drilling Fluids** / Essais Préliminaires sur les Argiles Modifiées pour Fluides de Forage Résistant à L'eau de Mer R D Verastegui-Flores (Belgium)	

Wednesday 16th September 2015		Location
17:23 – 17:31	**Field Testing of Large Diameter Piles Under Lateral Loading for Offshore Wind Applications** / Essais sur Site de Pieux de Large Diamètre Soumis à des Chargements Latéraux pour des Applications dans le Domaine de L'éolien Offshore H Burd (UK)	**Sidlaw**
17:31 – 17:39	**Lime Treatment for the Reuse of Dredged Marine Sediments** / Traitement à la Chaux pour la Réutilisation des Sédiments Marins de Dragage G Russo (Italy)	
17:39 – 17:47	**Numerical Modelling of Offshore Pile Driving** / Modélisation Numérique de Battage de Pieux en Mer V Zania (Denmark)	
17:47 – 17:55	**Discussion of Offshore GBS Foundation Design According To Eurocode 7** / Discussion de la Vérification Selon Eurocode 7 d'une Fondation Gravitaire Offshore D A Kort (Norway)	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session C1a: Sustainability, Climate Change, Waste and Energy**	**Fintry**
16:30 – 16:35	Chair: L Korkiala-Tanttu (Finland) & UK Co-Chair: F Loveridge	
16:35 – 16:43	**Effet de la Variation de la Température sur les Paramètres Pressiométriques d'un Sol Illitique Compacté** / Effect of Temperature Variation on the Pressuremeter Test Parameters of a Compacted Illitic Soil H Eslami (France)	
16:43 – 16:51	**A New Modelling Approach for Piled and Other Ground Heat Exchanger Applications** / Une Nouvelle Approche de Modélisation pour Pieux et Autres Applications Géothermiques F Cecinato (Italy)	
16:51 – 16:59	**Sustainability: An Emerging Discipline Within Geotechnical Engineering** / La Durabilité: un Émergents Discipline au Sein Géotechnique D Basu (Canada)	
16:59 – 17:07	**Permeation Groutingand Shale Gas "Fracking", Inconsistent Technologies?** / La Perméation de Cimentation et de Gaz de Schiste "Fracking", Technologies incompatibles? D Hartwell (UK)	
17:07 – 17:15	**Use of Demolition Waste in Soil Improvement** / Utilisation de Déchets Minéraux pour Amendement du Sol C Henzinger (Germany)	
17:15 – 17:23	**Proof of the Minimum Amount of Residual Water From the Float Energy By- Product** / Preuve de la Quantité Minimale D'eau Résiduelle à Partir de L'énergie de Flotteur Sous-produit P Cernoch (Czech Republic)	
17:23 – 17:31	**Sustainable Improvement of an Expansive Soil Using Recycled Materials** / Amélioration Durable d'un Sol Expansif par L'utilisation de Matériaux Recycles M Dimitriadi (UK)	
17:31 – 17:39	**Numerical Modelling of Open-Loop Ground Source Energy Systems** / Modélisation Numérique de Systèmes Géothermiques en Boucle Ouverte K A Gawecka (UK)	
17:39 – 17:47	**Capital & Operational Carbon – An Assessment of the Permanent Dewatering Solution at Stratford International Station** / Carbone - Capital & Opérationnel - Une Évaluation de la Solution de Déshydratation Permanente à Stratford International Station G Casey (UK)	
17:47 – 18:15	Open Discussion	

Wednesday 16th September 2015		Location
16:30 – 18:15	**Discussion Session D2b: Classification and Laboratory Testing**	**Tinto & Moorfoot**
16:30 – 16:35	Chair: F Masrouri (France) & UK Co-Chair: S Wheeler	
16:35 – 16:43	**One-Dimensional Consolidation Behavior of Cement Treated Lateritic Soil** / Comportement de Consolidation Unidimensionnelle d'un Sol Latéritique Traité au Ciment E Mengue (France)	
16:43 – 16:51	**Clayey Soils Rheological Model Under Triaxial Regime Loading** / Modèle Rhéologique des Sols Argileux lors D'essais Régime de Charge Triaxiaux I T Mirsayapov (Russia)	
16:51 – 16:59	**Inhomogeneous Granulometric Composition Impact on the Mechanical Properties of Soils in Foundations and Structures** / L'impact de L'hétérogénéité de la Distribution des Tailles des Particules sur les Propriétés Mécaniques des Sols de Fondation et de Terrassement A Mirnyy (Russia)	
16:59 – 17:07	**Evaluation of Frost Heave and the Temperature-Moisture Migration Relationship Using a Modified Laboratory Method** / Évaluation de Soulèvement par le Gel et la Relation de Migration Température - Humidité en Utilisant une Méthode de Laboratoire Modifié A Sarsembayeva (UK)	
17:07 – 17:15	**Adaptive Control Implementation for the Dynamic Cyclic Testing of Soil Specimens** / Mise en Œuvre d'une Régulation Adaptative pour Essais Cycliques Dynamiques de Specimens de Sol S Rees (UK)	
17:15 – 17:23	**Soil Strength for Design of Reinforced Soil Walls** / La Résistance du Sol pour la Conception des murs en Sol Renforcé J Fannin (Canada)	
17:23 – 17:31	**Liquid Limit Testing - Only Use the Cone Penetrometer!** / Essais de la Limite de Liquidité - N'utiliser que le Pénétromètre à Cone J J M Powell (UK)	
17:31 – 17:39	**Cement-Stabilized Recycled Aggregate Base Course Under Coupled Wet-Dry Cycles and Repeated Loading** / Les Effets de Cycles de Combinaison Mouillé-sec et Charge Mécanique Répétée sur les Agrégats Recyclés et Stabilisés avec du Ciment K Sobhan (USA)	
17:39 – 17:47	**Observing the Stiffness Change of a Soil-structure System by Shifts in Eigenfrequencies** / Observer le Changement de la Rigidité d'un Système Sol-Structure par des Changements dans les Fréquences Propres M Pors (The Netherlands)	
17:47 – 17:55	**Effect of Lime Treatment on the Hydraulic Conductivity of a Silty Soil** / Effet du Traitement à la Chaux sur la Conductivité Hydraulique d'un Sol Limoneux A M Tang (Belgium)	
17:55 – 18:15	Open Discussion	
16:30 – 18:15	**Discussion Session E2b: Modelling**	**Kilsyth**
16:30 – 16:35	Chair: H P Jostad (Norway) & UK Co-Chair: A Grammatikopoulou	
16:35 – 16:43	**Discrete Element Simulation: Modelling and Calibration of a Plate Load Simulation** / Simulation par Éléments Discrets: Modélisation et Calibration d'une Simulation d'une Plaque de Chargement. H Jas (The Netherlands)	
16:43 – 16:51	**Numerical Modelling of Wave Attenuation Through Soil** / Modélisation Numérique de la Propagation dans le Sol des Vibrations R Collombero (UK)	
16:51 – 16:59	**Experimental and Numerical Strain-Response-Envelopes for Granular Soils: Performance of Different Constitutive Models for Monotonous and Low Cycle Loading** / Enveloppes de Réponse Expérimentales et Numériques sur la Déformation des Sols Granulaires: Performance de Différents Modèles Constitutifs pour des Charges Monotones et Basses-cycliques S Danne (Germany)	

Wednesday 16th September 2015		Location
16:59 – 17:07	**Analysis of Soldier Pile Wall With Jet-Grouting as Retaining System for Deep Excavation** / Analyse de Mur de Soutènement avec „Jet-grouting" Comme Système de Retenue pour Excavation Profonde J Josifovski (Macedonia)	**Kylsith**
17:07 – 17:15	**Discrete Element Simulation: Modelling and Analysis of a Geogrid Stabilized Sub-Base While Loaded With a Moving Wheel** / Simulation par Éléments Discrets: Modélisation et Analyse d'une sous Couche Stabilisé par Géogrille sous une Charge d'une Roue Mobile H Jas (The Netherlands)	
17:15 – 17:23	**EC7 - Which Design Approach is Appropriate for Numerical Methods?** / EC7 - Quelle Approche de Calcul est Appropriée pour les Méthodes Numériques? M Herten (Germany)	
17:23 – 17:31	**The Evaluation of Ultimate Axial-Loading Capacity of Piles Using Artificial Intelligence Methods** / L'Évaluation de la Capacité Définitive de la Portance des Pieux de Fondation Chargés de Manière Axiale, qui Utilise les Techniques d'intelligence artificielle M Jaksa (Australia)	
17:31 – 17:39	**Physical and Numerical Modelling of Climate-Change Influenced, Poorly-Compacted Glacial Till Embankments** / Modélisation Physique et Numérique de Talus de Till Mal Compactés Affectés par le Changement Climatique P Hudacsek (Hungary)	
17:39 – 17:47	**Finite Element Analysis of a Cantilever Wall in Dublin Boulder Clay** / Analyse d'un Mur Cantilever dans L'argile à Blocaux de Dublin par la Méthode des Eléments Finis N Kovacevic (UK)	
17:47 – 17:55	**Numerical and Analytical Modelling of Pile-raft Interaction in Sands** / Modélisation Numérique et Analytique de L'interaction Entre les Radiers et les Pieux dans le Sable A Mandolini (Italy)	
17:55 – 18:15	Open Discussion	
19:30 – 00:00	**CONFERENCE DINNER**	**The National Museum of Scotland**

Thursday 17th September 2015		Location
08:00 – 14:00	**REGISTRATION**	**Strathblane Hall**
09:00 – 11:00	**EXHIBITION OPEN**	**Strathblane & Cromdale Halls**
09:00 – 10:15	**MAIN SESSION A2: Development**	**Pentland**
09:00 – 09:05	Chair: A Pfaffhuber, (Norway) & UK Co-Chair: I Fraser	
09:05 – 09:35	**Invited Lecture, M Long (UK)** **Developments in the Use Of Geophysics in Geotechnical Engineering of Soft Ground** / Développements dans L'utilisation de la Géophysique en Géotechnique dans un Sol Mou	
09:35 – 09:45	**Design Formula for the Safety Against Hydraulic Heave** / Formules de Calcul pour la Sécurité Contre la Rupture par Soulèvement Hydraulique B Aulbach (Germany)	
09:45 – 09:55	**Large Direct Shear Testing of Sand Reinforced With Polyethylene (Plastic) Shopping Bag Waste Material** / Les Essais de Cisaillement Direct à Grande Echelle sur le Sable Renforcé par les Morceaux de sac en Polyethylene (Plastique) à Provision D Kalumba (South Africa)	
09:55 – 10:05	**Stabilized Sediments in Port Constructions - Important Considerations and Key Experiences** / Utilisation de Sédiments Stabilisés dans les Constructions Portuaires - Considérations Essentielles et Expériences Clés G Holm (Sweden)	
10:05 – 10:15	**Reinforced Soil Design Using a Two-Part Wedge Mechanism: Justification and Evidence** / Conception de Sol Renforcé par un Mécanisme de Deux Blocs: la Justification et la Prevue M Dobie (UK)	
10:15 – 10:45	**COFFEE BREAK** **EXHIBITION & POSTERS**	**Strathblane & Cromdale Halls**
10:45 – 12:30	**Discussion Session A1.3b: Non-linear Infrastructure**	**Pentland**
10:45 – 10:50	Chair: M Lisyuk (Russia) & UK Co-Chair: C Augarde	
10:50 – 10:58	**The Use of CSM Technology in Permanent or Temporary Retaining Structures With a Cofferdam Effect** / L'utilisation de la Technologie du CSM pour des Parois de Soutènements Temporaires et Permanents avec L'affect de Batardeau M Neves (UK)	
10:58 – 11:06	**Peanut Shaped Diaphragm Wall Cofferdam Creates Self-Supporting, 18m Deep Excavation in Very Soft Clays at The Isle Of Grain** / Une Paroi Moulée Autostable en Forme de Cacahuète Permet une Excavation de 18m de Profondeur dans de L'argile Molle sur le Chantier « d'Isle of Grain » en Angleterre D Puller (UK)	
11:06 – 11:14	**Back Analysis of Geotechnical Models for a Deep Excavation in Claystone Based on Monitoring Data** / Réévaluacion des Modèles Géotechniques pour une Excavation Profonde dans Argile sur Données de Surveillance H Montenegro (Germany)	
11:14 – 11:22	**The Importance of Lift-Off and Structural Flexibility in Wind Turbine Base Design** / L'importance de la Perte de Contacte de Sol et de la Flexibilité Structurelle dans le Dessin des Bases Éolienne A Ross (UK)	
11:22 – 11:30	**The Use of Fibre Optic Instrumentation to Monitor the O-Cell Load Test on a Single Working Pile In London** / L'utilisation de la Fibre Optique Instrumentation pour Surveiller le Test de Charge O-Cell sur un Tas de Travail Unique à Londres Y Ouyang (UK)	
11:30 – 11:38	**Use of Discrete Element Modelling to Assess the Internal Instability of Dam Filters** / Utilisation de la Méthode des Éléments Discrets pour Évaluer la Stabilité Interne des Filtres de Barrages T Shire (UK)	

Thursday 17th September 2015		Location
11:38 – 11:46	**The New Ship Lift Niederfinow** / Le Nouvel Ascenseur à Bateaux de Niederfinow C Puscher (Germany)	Pentland
11:46 – 11:54	**Design of Deep Excavations Under Consideration of Spatial Earth Pressure** / Dimensionnement de Basses Excavations Considérant la Pression Spatiale du Sol Active L Klein (Germany)	
11:54 – 12:02	**Lomé Container Terminal** / Terminal a Conteneurs de Lomé R Tomásio (Portugal)	
12:02 – 12:10	**HDD Drillings for Special Applications in Infrastructure Works and Environmental Geotechnics** / Forages FDH pour des Applications Spéciales dans les Travaux D'infrastructure et Géotechnique Environnementale C Kummerer (Austria)	
12:10 – 12:30	Open Discussion	
10:45 – 12:30	**Discussion Session B3: Earthworks, Dams and Dykes**	Sidlaw
10:45 – 10:50	Chair: Z Lechowicz (Poland) & UK Co-Chair: S Glendinning	
10:50 – 10:58	**Stabilization of Embankments on Inclined Surfaces by Micropiles** / Stabilisation of Terrassements Appuies sur Surfaces Inclinées Moyen Micropieux C S Oteo Mazo (Spain)	
10:58 – 11:06	**Design of Reservoir for Snow-Covering in High Tatra** / La Conception du Réservoir pour la Production de Neige Synthétique en Hautes Tatra P Turcek (Slovakia)	
11:06 – 11:14	**A Hybrid Model to Verify the Internal Stability of Slurry Supported Earth Faces** / Un Modèle Hybride Destiné à Vérifier la Stabilité Interne des Parois de Terre Supportées à L'aide de Boue C Thienert (Germany)	
11:14 – 11:22	**Applications of the ICOLD Bulletin on Internal Erosion in Geotechnical Engineering** / Applications du Bulletin CIGB sur L'érosion Interne en Génie Géotechnique R Bridle (UK)	
11:22 – 11:30	**Embankment Failure Remediation on the M5 Junction 7 - A Case History of Electrokinetic Treatment** / Embankment Défaut D'assainissement sur la M5 Junction 7 - une Histoire du Traitement Electrokinetic C Jackson (UK)	
11:30 – 11:38	**A Systematic Approach to Health Monitoring of Dams, Dikes and Levees** / Une Approche Systématique pour la Surveillance de la Condition des Barrages, des Digues et des Levées A Koelewijn (The Netherlands)	
11:38 – 11:46	**Constraints in Using Site-won Calcareous Clayey Silt (loam) as Fill Materials** / Contraintes à L'utilisation de Calcaire Argileux Limon pour Construire Terrassement A Assadi Langroudi (UK)	
11:46 – 11:54	**The Design of Steep Slopes Using Low-Permeability Fill and Draining Geogrids** / La Conception des Pentes Raides avec Sol peu Perméable et Géogrilles Drainantes P Naughton (Ireland)	
11:54 – 12:02	**Compressive Stresses at Yesa Dam Due to Ground Squeezing** / Contraintes de Compression au Barrage de Yesa Dues au Fluage du Terrain J González (Spain)	
12:02 – 12:10	**An Advanced Numerical Approach to Optimise the Construction Stages of an Earth Dam Resting on Fine Grained Strata** / Une Méthode Numérique Avancée pour L'optimisation de la Construction d'un Barrage en Terre sur des Sols à Grains Fins A Amorosi (Italy)	
12:10 – 12:30	Open Discussion	

Thursday 17th September 2015		Location
10:45 – 12:30	**Discussion Session C1b: Sustainability, Climate Change, Waste and Energy**	Fintry
10:45 – 10:50	Chair: L Batali (Romania) & UK Co-Chair: D Manning	
10:50 – 10:58	**Use of Peat as an Engineering Material: An Engineering Case Study** / L'utilisation de la Tourbe Comme un Génie des Matériaux;une Étude de cas en Genie P Jennings (Ireland)	
10:58 – 11:06	**Alkali Activated Soil-Ash Mixtures** / Activation Alcaline de Mélanges Sol-cendre S Rios (Portugal)	
11:06 – 11:14	**Group Thermal Response Testing for Energy Piles** / Les Essais Réponse Thermique de Groupe pour les Pieux Énergétiques F Loveridge (UK)	
11:14 – 11:22	**Valorisation of Recycled Construction and Demolition Wastes as Backfill Material for Geosynthetic Reinforced Structures** / Valorisation de Déchets de Construction et de Démolition Recyclés Comme Remblai pour Ouvrages Renforcé par Géosynthétiques P Pereira (Portugal)	
11:22 – 11:30	**Dynamic Properties of Gravel-Recycled Rubber Mixtures: Resonant Column and Cyclic Triaxial Tests** / Propriétés Dynamiques de Mélange de Gravel-caoutchouc Recyclé a L'aide des Essais a la Colonne Résonnante et Triaxiale Cyclique K Pitilakis (Greece)	
11:30 – 11:38	**Sustainability Assessment of Earth Retaining Wall Structures: Preliminary Model and Simplified Application** / Evaluation de la Durabilité des Structures de Retenue de Terres: Modèle D'application Préliminaire Simplifié I P Damians (Spain)	
11:38 – 11:46	**Modelling the Mechanical Behaviour of an Energy Pile** / Modélisation du Comportement Mécanique d'un Pieu Énergétique A M Tang (France)	
11:46 – 11:54	**Choix d'une Méthode de Détermination de la Conductivité Thermique dans le Cadre d'un Projet de Metro** / Selecting a Method for Determining the Thermal Conductivity in the Context of a New Metro Line Project P Reiffsteck (France)	
11:54 – 12:02	**Physical Properties and Mechanical Behaviour of Soil Treated With Fluidal Fly Ash and Lime** / Propriétés Physiques et Comportement Mécanique d'un Sol Traité avec des Cendres Volantes et de la Chaux G Russo (Poland)	
12:02 – 12:30	Open Discussion	
10:45 – 12:30	**Discussion Session D2c: Classification and Laboratory Testing**	Tinto & Moorfoot
10:45 – 10:50	Chair: A H Augustesen (Denmark) & UK Co-Chair: W W Sim	
10:50 – 10:58	**Laboratory Studies on the Effect of Gas Bubbles on Clay** / Des Études en Laboratoire sur L'effet de Bulles de Gaz sur Terre Battue S Yang (Norway)	
10:58 – 11:06	**Correlation Between Compression Index and Index Parameters for High Plasticity Palaeogene Clays** / Corrélation Entre L'indice de Compression et L'indice Paramétrique des Argiles Paléogène de Très Plastique K K Sorensen (Denmark)	
11:06 – 11:14	**Buried Pipelines Subjected to Normal Fault: Simulation vs Experiment** / Pipelines Enterrées Soumis à Faille Normale: Analyse par Rapport à L'expérience A Tsatsis (Greece)	
11:14 – 11:22	**The Mechanical Behaviour of a Clean Sand Stabilized With Colloidal Silica** / Le Comportement Mécanique du Sable Propre Stabilisé à l'aide de Silice Colloïdale A Vranna (Greece)	

Thursday 17th September 2015		Location
11:22 – 11:30	**Water Content Characteristics of Mechanically Compacted Clay Soil Determined Using the Electrical Resistivity Method** / Teneur en Eau Caractéristiques des Compacté Mécaniquement Sol Argileux Déterminées en Utilisant la Méthode de Résistivité Électrique D Toll (UK)	Tinto & Moorfoot
11:30 – 11:38	**Rheological Models Creation on the Results Triaxial Tests of Sands** / Construction de Modèles Rhéologiques de Sol Sablonneux sur les Résultats des Tests Triaxiaux A Ter-Martirosjan (Russia)	
11:38 – 11:46	**Investigation of the Shear Strength of Unsaturated Sand Using a Modified Direct Shear Apparatus** / Etude de la Résistance au Cisaillement de Sable Insaturés en Utilisant un Appareil de Cisaillement Direct Modifiée C Smith (UK)	
11:46 – 11:54	**Ultimate Loads for Eccentrically Loaded Skirted Strip Footings on Sand** / Charges Ultimes pour Excentrée Consolés Semelles Bande sur Sable Y Türedi (Turkey)	
11:54 – 12:02	**Influences of Testing Device Layout on Geosynthetic Interface Friction Parameters** / Influences des Appareillages d'essais sur les Paramètres de Frottement d'interfaces de Produits Géosynthétiques C Stoewahse (Germany)	
12:02 – 12:10	**Large Size Plane Strain Compression Tests on Sands and 2D DEM Calibrations** / Essais de Compression en Déformation Plane sur de grands Échantillons de Sable et Calibration 2D par la Méthode des Éléments Discrets S van Eekelen (The Netherlands)	
12:10 – 12:30	Open Discussion	
10:45 – 12:30	**Discussion Session E2c: Modelling**	Kilsyth
10:45 – 10:50	Chair: J F Semblat (France) & UK Co-Chair: C O'Sullivan	
10:50 – 10:58	**Comparison of Advanced Numerical Methods for Geomechanical Problems With Large Deformations** / Comparaison des Méthodes Numériques Avancées pour les Problèmes Géomécaniques avec Grande Déformation C Moormann (Germany)	
10:58 – 11:06	**Ultimate Limit State Design of Retaining Wall Using Finite Element Method and Advanced BRICK Soil Model** / Dimensionnement, à l'état Limite Ultime, d'un mur de Soutènement en Utilisant la Méthode des Éléments Finis et le Modèle de Sol Avancé BRICK H C Yeow (UK)	
11:06 – 11:14	**Numerical Development of P-Y Curves For Soft Clays** / Développement Numérique des Courbes p-y pour les Argiles Molles K P Tzivakos (Greece)	
11:14 – 11:22	**A New Stress-Based Approach for the Verification of Safety Against Hydraulic Heave Based on EC 7** / Un Nouvel Procédé pour la Vérification de la Securité Contre Renard Hydraulique sur la Base de Contraintes Suivant le EC 7 O Stelzer (Germany)	
11:22 – 11:30	**Plane Strain Capacity of a Two Layered Clay: Squeezing of Upper Layer** / Capacité Portante d'un Bicouche Argileux: Squeezing de la Couche Supérieure M Ramos da Silva (Belgium)	
11:30 – 11:38	**Finite Element Modeling of a Piled Raft for a Tall Building on Cohesionless Soil** / Modèle par Éléments Finis de un Radier sur Pieux pour un Haut Bâtiment sur Sols Granulaires M Minno (Italy)	
11:38 – 11:46	**TTS Model for Thermo-Mechanical Behavior of Clay** / Modèle TTS pour L'étude du Comportement Thermo-mécanique de L'argile D M Zymnis (USA)	

Thursday 17th September 2015		Location
12:30 - 13:30	**CLOSING CEREMONY** M Winter, Chair Prof. Dong-Soo KIM, Chair 19th ICSMGE Seoul Organising Committee XVII ECSMGE 2019 A Gens, ISSMGE VP-E (including XIII Baltic, XVII Nordic & XVI Danube Conference) C Menkiti, BGA Thanks M Winter, CLOSURE & THANKS	**Pentland**
13:30	**LUNCH**	**Strathblane Hall**
14:00	**TECHNICAL TOURS** All delegates who are participating in the Technical Tours meet in Strathblane Hall, EICC	**Strathblane Hall**

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POSTERS

POSTER SESSION 1 - MONDAY 14 SEPTEMBER 2015
13:00 - 14:00

A1.1 Linear Infrastructure - Roads and railways

P1 - Evaluation of Elastic Modulus of Fly Ash Embankment by Repeated Load CBR Test / Évaluation du module d'élasticité de cendres volantes remblai par charge répétée essai CBR
S. Bhattacharjee (India)

P4 - The Geotechnics of Infrastucture Development in Dublin, Ireland / La Géotechnique de L'Infrastructure de Transport á Dublin en Irlande
M Friedman (Ireland)

P5 - Construction et Comportement à Long Terme de L'Autoroute de Contournement de Kingston (Jamaïque) Sur Sols Compressibles / Construction and Long-Term Behaviour of the Highway of Bypassing of Kingston (Jamaica)
Y Guerpillon (France)

P6 - Procédés Constructifs Innovants dans la Réalisation de Stations du Tramway T6, en Région Parisienne / Innovative Methods within Construction of the Underground Section of Tramway T6, in the Paris Region
S Monleau (France)

P7 - Screw Grout Injection Piled Foundations for Major Bridge Strengthening in Utrecht / Pieux Rotation-Déplacement à L'Injection de Coulis pour un Renforcement Majeur de Pont à Utrecht
T Hocombe (UK)

P8 - Winner of German Road Innovation Price: "Peaty Soils become Suitable Foundation Ground of a Federal High-Way by Implementing the Vacuum System" / Vainqueur du prix allemand Routes catégorie Innovation": «Amélioration de Sols Tourbeux en Sol de Fondation d'une Route Nationale à L'Aide de la Méthode par le Vide »
J Kirstein (Germany)

P9 - Consolidation Settlements in Dublin Boulder Clay / Tassement de Consolidation dans L'Argile à Blocaux de Dublin
M Long (Ireland)

P10 - Bridge and Ballast Interaction at a Viaduct Structural Expansion Joint on a High Speed Railway / Ponts et Ballast Interaction à un Joint de Dilatation du Viaduc sur une Ligne à Grande Vitesse
D Milne (UK)

P11 - A465 Dualling between Brynmawr and Tredegar, South Wales / L'Élargissement de L'Autoroute A465 Entre Brynmawr et Tredegar, Pays de Galles
K Nunn (UK)

P12 - Contracting the Incalculable / Contracts pour des Travaux "Incalculable"
E Saurer (Austria)

P13 - The Stabilisation of a Slope-Viaduct System without Closing Traffic / La Stabilisation d'un Système Pente-Viaduc sans Arrêter le Trafic
C Valore (Italy)

P14 - The Use of Physical Model Testing in the Development of Models for Potential Impact Assessment on the UK Rail Network / L'Utilisation des Essais de Modèles Physiques dans le Développement des Modèles D'Évaluation des Effets Potentielles pour le Réseau Ferroviaire du Royaume-Uni.
G Taylor (UK)

A1.2 Linear Infrastructure- Tunnels

P16 - The Use of Laboratory Testing in the Characterisation of Embankment Clay Fill from the UK Rail Network / L'Utilisation des Essais en Laboratoire dans la Caractérisation de L'Argile des Remblais du Réseau Ferroviaire du Royaume-Uni.
G Taylor (UK)

P17 - Line II of Warsaw Underground: The Excavation of Tunnel Connector (Centrum Nauki Kopernik Station) Under Existing Wislostrada Tunnel / Ligne II du Métro de Varsovie: L'Excavation du Tunnel de Connexion (Station Centrum Nauki Kopernik) sous le Tunnel Existant Wislostrada
L Alessandro (Italy)

P19 - Geotechnical Considerations in the Design of Pipeline Installation Across Major Water Courses by Horizontal Directional Drilling (HDD) / Considérations Géotechniques dans la Conception D' Installation des Conduits à Travers des Rivières par Forage Directionnel Horizontal (FDH)
R MacKean (Greece)

P20 - Artificial Ground Freezing in Cross Passage Construction for the Yangtze River Tunnel of Wuhan Metro Line 2 / L'Utilisation de la Méthode de Congélation du Sol Artificiel dans la Constrution des Passage de Connexion pour le Tunnel du Fleuve Yantze de la Ligne 2 du Métro de Wuhan
E J Chen (China)

P22 - Shallow Tunneling in an Urban Environment: Geotechnical Modelling and Assessment of Risk / Tunnellisation en Cas de Faible Profondeur dans un Environnement Urbain: Modélisation Géotechnique et Évaluation du Risqué
G Dounis (UK)

P23 - Analytical Investigation of Soil Deformation Patterns Above Tunnels in Sandy Soil / Etude Analytique des Modes de Déformation des Sols Au-Dessus de Tunnels dans les Sols Sableux
A Franza (UK)

P24 - Movement Predictions and Observational Design for Bridge Demolition over a Shallow Bored Tunnel / Prédiction des Mouvements et Design Observationnel pour la Démolition d'un Pont Au-Dessus d'un Tunnel Foré à Faible Profondeur
P Ingram (UK)

P25 - The Effect of a Forepole Umbrella System on the Stability of a Tunnel Face in Clay / Effet d'une Voûte Parapluie sur la Stabilité du Front de Taille en Terrain Argileux
B Le (UK)

P27 - Design and Construction of a Spray Concrete Lined Shaft Adjacent to Running Tunnels / Dimensionnement et Construction d'un Puits Construite avec un Revêtement en Béton Projeté Adjacent aux Tunnels en Fonctionnement
P Rutty (UK)

P28 - Research into the Effect of Tunnelling on Existing Tunnels / Etudes des Effets de la Percee de Tunnels a Proximite de Tunnels Existants
J Standing (UK)

A1.3 Non-linear Infrastructure

P29 - Two-Dimensional Experimental and Numerical Modelling of a Soil-Filled Masonry Arch / Un Modèle a Deux Dimensions Expérimental et Numérique d'une Voute en Maçonnerie de Terre
L Augusthus-Nelson (UK)

P30 - Assessing Load Transfer Mechanism in CMC-Supported Embankments Adopting Timoshenko Beam Theory / Évaluation du Mécanisme de Transfert de Charges dans les Remblais Soutenus par des CMC en Adoptant la Théorie des Poutres de Timoshenko
B Ghosh (Australia)

P32 - The History of UK Experience in the Use of Fibre Optic Monitoring of Geotechnically Associated Installations / L'Histoire de UK Expérience dans L'Utilasation de la Surveillance de la Fibre Optique des Installations Géotechnique Associés
Y Ouyang (UK)

P33 - Cracking Effects on Underground Construction in Soft Soil: Design and Construction / Effets de Fissuration sur la Construction Souterraine dans le Sol Mou: La Conception et la Construction
J L Rangel-Núñez (Mexico)

A1.4 Queensferry Crossing and other Major Bridges

P34 - The Tresfjord Bridge - Large Scale Pile Works in Difficult Soil Conditions / Le Pont de Tresfjord- Travaux à Grande Échelle de Pieux dans des Conditions des Terren Tres Difficiles
A Andenæs (Norway)

P35 - The Queensferry Crossing - Modular Precast Cofferdam Construction for the Central Tower / Le Queensferry Crossing - La Construction du Batardeau Préfabriqué Modulaire pour la Tour Centrale
J Brown (UK)

P36 - The Queensferry Crossing - Assessing the Effect of Blasting on Underwater Rock Formation / Le Queensferry Crossing - L'Évaluation de L'Effet du Dynamitage sur la Formation Rocheuse Sous-Marine
I Bews (UK)

P37 - The Queensferry Crossing - The Marine Ground Investigation / Le Queensferry Crossing - L'Étude du Fond Marin
J Brown (UK)

P38 - Successful Combination of Rigid Inclusions (CMC) and Trenchmix (TM) Soil Improvement Solutions / Combinaison Inédite des CMC et du Trenchmix
F Mathieu (France)

P39 - The Queensferry Crossing - Formation Inspection in the Marine Environment / Le Queensferry Crossing - L'Inspection de la Formation dans L'Environnement Marin
J Symons (UK)

A1.5 Crossrail and Other Major UK Infrastructure

P40 - The Use of Tyre Bales to Raise Ground Levels Behind a Fragile Floodwall at London Gateway Port / Utilisation de Balles de Pneus pour Élever le Niveau du Sol Derrière un Mur D'Endiguement Fragile au Port de London Gateway
S D'Agostino (UK)

P41- Scheme Design of Foundations for Cable Stayed Bridge to the Mersey Gateway Bridge / Dimensionnement des Fondations des Pylons du Pont Haubané du Mersey Gateway Bridge
H Wood (UK)

A2.1 Urban Development and Environment- Foundation, Retaining Walls and Associated Structures

P42 - The Determination of Deformation of Soil Nailed Structures by a Simplified Method / Détermination par Une Méthode Simplifiée de la Déformation d'une Paroi Clouée
C Bridges (Australia)

P45 - Retaining Wall and Deep Foundation Solution for High Rise Building in Maputo – Mozambique / Mur de Soutènement et Solutions de Fondations Profondes pour Bâtiments de Grande Hauteur à Maputo - Mozambique
R Tomásio (Portugal)

P47 - Apartment Building Foundations on Very Soft Cohesive Soils Using Controlled Modulus Columns Design-Construction-Inspection / Fondation de Trois Batiments D'Habitations dans de Sols Cohesifs Très Mous avec des Inclusions Rigides Colonnes a Module Controlée
R Valiente (Spain)

P48 - Case Study of Barrette Retaining Wall, Kent, UK / Etude de Cas d'un Mur de Soutenement en Barrettes, Kent, GB
L von der Tann (UK)

A2.2 Urban Development and Environment- Piles and Columns

P49 - Innovative Use of Micro-Pile Groups to Replace Hand Dug Under Ream Piles at 5 Broadgate, London / Utilisation Innovante de Groupes de Micropieux en Lieu et Place de Pieux à Pointe Élargie Creusée à la 5 Broadgate Londres.
Z Baldwin (UK)

P50 - Non-Linear Analysis of Piled Rafts / Analyse Non Linéaire des Fondations Mixte Radier-Pieux
F Basile (Italy)

P52 - Jet Grouting Columns Operating as Reaction Platform for Building Uplift and Soil Liquefaction Mitigation - Christchurch Art Gallery, New Zealand / Colonnes de Jet Grouting Opérant Comme une Plate-Forme de Réaction pour le Soulèvement du Bâtiment et L'Atténuation de la Liquéfaction des Sols - Christchurch Art Gallery, New Zealand
D Brito (Portugal)

P53 - Analysis of Trial Loading Tests Results of Jet Grouting Columns / Analyse des Résultats D'Essais de Chargement de Colonnes de Jet Grouting
A Juzwa (Poland)

P54 - Transformational Functions for Displacement Columns Performed in Cohesive Low-Bearing-Capacity Soils / Fonctions de Transformation pour des Colonnes Exécutées dans les Sols Cohésifs de Faible Capacité Portante
P Pietrzykowski (Poland)

P56 - Construction, Design for Soil Structure Interaction and Monitoring of the Pile Foundation of a High-Rise Building / Construction, Dimensionnement Basé sur L'Interaction Sol Structure et Mesure de Tassement d'une Fondation sur Pieux d'un Bâtiment de Grande Hauteur
J Maertens (Belgium)

P57 - A Study of Helical Pile Design and Construction Practices / Etude de Conception de Pieux Vissés et Pratiques de Construction
S Reid (UK)

P59 - An Alternative Approach to Load Capacity Validation and Quality Assurance of Vibrated Concrete Columns/ Une Approche Alternative pour Charger la Validation des Capacités et L'Assurance de la Qualité des Colonnes en Béton Vibré
S Reid (UK)

P61 - Assessment of Group Efficiency in Sands Using Finite Element Method / Évaluation de L'Efficacité de Groupe de Barrette dans les Sables en Utilisant la Méthode des Éléments Finis
B Teymur (Turkey)

P62 - Behaviour of Reinforced Polyurethane Resin Micropiles: Experimental Measurements and Analytical Modelling / Conduite de Micropieux Fait en Résine Polyurethane Reinforcée: Essais Experimentaux et Modélisation Analythique
R Valentino (Italy)

P63 - Load-Settlement Behaviour of Three Pile Groups: A Case Study / Le Comportement de Trois Groupes de Pieux Visés: Étude d'un Cas Réel
P van Impe (Belgium)

A2.3 Near Shore and Offshore Development, and the Marine Environment

P65 - Evaluating Geotechnical Uncertainty for Offshore Wind Turbine Foundation Design at St. Brieuc Wind Farm / Évaluation de L'Incertitude Géotechnique pour la Conception des Fondations de Turbines Éoliennes Offshore au Parc Éolien de St Brieuc
A Bertossa (UK)

P66 - Interface Shear Characteristics of Scottish Rock Samples from Sites with Tidal Energy Potential / Caractéristiques D'Interface de Roches Écossaises de Sites avec L'Énergie Marémotrice Potentielle
M Brown (UK)

P67 - Results of Driven Steel Pipe Pile Trials in Deltaic Deposits in Northern Africa / Résultats de Conduits en Acier Sentiers de Velours Conduit à des Dépôts Deltaïques en Afrique du Nord
W Duffy (UK)

P68 - A Comparative Evaluation of Structural Repair Techniques for Corrosion-Damaged Marine Piles / Étude Comparative de Techniques de Réparation Structurelle de Pieux Sous-Marins Endommagés par la Corrosion
D Reddy (USA)

P70 - Comparison of Settlement Calculation Methods for the Design of a Gravity Base Foundation in Deep Water / Comparaison des Méthodes de Calcul de Règlement pour la Conception d'une Fondation Gravitaire en Eau Profonde
S B Mickovski (UK)

P71 - Conception et Dimensionnement du Puits D'Accès et de la Station de Pompage du Terminal Méthanier de Dunkerque / Design and Calculation of the Pumping Station and the Tunnel Shaft of the LNG Terminal in Dunkerque
S Monleau (France)

P72 - Real-Time Quality Monitoring and Result Verification by Static and Dynamic Pile Load Testing in Marine Clay / Monitoring de Qualité en Temps Réel et Vérification par Essais de Chargement Statiques et Dynamiques de Pieux dans L'Argile
J Wehr (Germany)

A2.4 Ground Reinforcement and Improvement

P73 - Feasibility Study of Random Fibre Reinforced Railway Ballast Using Image-Based Deformation Measurements / Étude de Faisabilité du Ballast Ferroviaire aux Fibres Aléatoires Renforcées Utilisant des Mesures de Déformation Basées sur Images
O Ajayi (UK)

P74 - Case Histories: Comparative Behavior of Geocomposite Reinforced Earth Systems / Exemples: Comportement Comparatif de Systèmes Terrestre en Géocomposite Armé
C Bommer (Switzerland)

P75 - A Finite Element Model for Heavy Tamping on Dry Sand / Un Modèle par Éléments Finis pour le Compactage Lourd sur Sable Sec
A C Bradley (Australia)

P76 - Chemical Stabilization of a Soft Soil with Multiwall Carbon Nanotubes / Stabilisation Chimique d'un Sol Mou avec des Nanotubes de Carbone Multi-Paroi
A A S Correia (Portugal)

P78 - Mass Stabilisation Method - A New Handbook for Design, Execution and Quality Control / Méthode de Stabilisation Massive - Un Nouveau Manuel pour la Conception, L'Exécution et le Contrôle de la Qualité
J Forsman (Finland)

P79 - Experimental and Analytical Approaches of the Design of Geosynthetic-Reinforced Load Transfer Platforms over Rigid Inclusions / Approches Expérimentales et Analytiques du Dimensionnement de Renforcements Géosynthétiques au Sein de Plateformes de Transfert de Charges sur Inclusions Rigides
A Huckert (France)

P81 - Prise en Compte des Géogrilles dans un Modèle Biphasique Simplifié d'un Sol Renforcé par Inclusions Rigides / Introducing Contribution of Geogrids in a Simplified Biphasic Model of Soil Reinforced by Rigid Inclusions
B Simon (France)

P82 - Assessment of Strength of Cement Admixed Soils by Deep Mixing Method / Etude de la Résistance des Sols Traités au Ciment par la Méthode du Deep Mixing
F Szymkiewicz (France)

P83 - Guideline for Road Noise Barriers as Longitudinal Waste Deposits - Lined Slopes with Geosynthetics Protecting the Environment / Barrières Anti-Bruit Constituées de Matériaux Résiduels
K P von Maubeuge (Germany)

P84 - Dynamic Replacement Columns with Aggregate Transition Zone Stabilized by Geosynthetics for Embankment Foundation over Weak Deposits / Les Colonnes de Remplacement Dynamique avec une Zone de Transition Stabilisé d'une Géosynthétique pour une Fondation d'un Remblai Construit sur le Sol Faible
J Kawalec (Poland)

P85 - Dynamic Soil Improvement by Hybrid Technologies / L'Amélioration de la Dynamique des Sols par les Technologies Hybrides
M Wyroslak (Poland)

B1 Slope Instability

P89 - A1 Morpeth Bypass Northeastern Cutting Slope Failure, Preventative Maintenance / La Rocade de Morpeth sur la Route Nationale A1, Rupture du Remblai de Situation Nord-Est et Mesures Preventatives
C Jackson (UK)

P90 - Rockfall Protection in Gibraltar / Protection des Chutes de Pierres à Gibraltar
S Lightbody (UK)

P95 - Effects of Roots and Mycorrhizal Fungi on the Stability of Slopes / Effets des Racines et des Champignons Mycorhiziens sur la Stabilité des Pentes
A Yildiz (Switzerland)

POSTER SESSION 2 – TUESDAY 15 SEPTEMBER 2015
13:15 - 14:15

B2 Landslides

P97 - A Risk-Based Approach to the Management of Upland Highways: A628 Case Study / Une Approche Fondée sur les Risques de L'Aménagement des Routes Montagne: Étude de Cas de la Route Nationale A628
R Brooks (UK)

P98 - The Design of an Anchored Pile Retaining Structure to Control Landslide Regression at Lyme Regis, UK / Conception et Calcul d'une Structure de Retenue Ancrée en Pieux Foré Afin de Contrôler L'Évolution d'un Glissement de Terrain à Lyme Regis, au Royaume-Uni
D Daskalopoulos (UK)

P100 - Hydrological Effect of Vegetation against Shallow Landslides: A Technical Approach / Effet Hydrologique de la Végétation Contre les Glissements Superficiels: Une Approche Technique
A Gonzalez Ollauri (UK)

P102 - Discussion on Rock Slope Management in Scotland / Discussion sur la Gestion des Pentes Rocheuses en Ecosse
C Jack (UK)

P103 - The 2010 Flash Floods in Madeira Island: Characteristics and the Role of Soil Water Repellency in Future Events / Les Inondations de 2010 sur L'Île de Madère: Caractéristiques et le Rôle de L'Hydrophobicité du Sol dans les Évènements Futurs
S Lourenco (Hong Kong)

P104 - Slope Instabilities in Clayey Marls: Two Case Studies / Glissement de Talus en Marnes Argileuses: Deux Cas Examinés
G Gazetas (Greece)

P106 - Determination of Soil Pressure on Landslide Retaining Structures Based on Stress State Analysis of Landslide Area / Détermination de la Pression sur les Structures Contre Glissements de Terrain Basée sur L'Analyse D'Etat du Tension dans la Région Rampante
A Ponomaryov (Russia)

P108 - On the Predictive Landslide Susceptibility under Climate Change Conditions / Sur la Susceptibilité Prédictive de Glissement de Terrain dans le Changement Climatique
K J Shou (Taiwan)

P109 - A Landslide's Restoration in a Highway of Southwest Greece / Restauration de Glissement du Terrain d'une Autoroute de la Grèce Sud-Ouest
G Vlavianos (Greece)

P110 - Fairlight Cove Landslip Remediation: A Case History of Ongoing Resident Management / Fairlight Cove Éboulement Assainissement: Une Histoire de la Gestion de Résident Permanent de Cas
J Windle (UK)

P111 - Stabilisation and Restoration of a Landslip using Soil Nailing Technology / Stabilisation et la Restauration d'un Landslip en Utilisant la Technolo-gie de Clouage du Sol
A Bowey (UK)

B3 Earthworks, Dams and Dykes

P113 - Embankment Slope Stability: A Case History / La Stabilité des Talus: Une Histoire de Cas
A Bowey (UK)

P114 - Geotechnical Investigations at the DredgDikes Research Dikes / Investigation Géotechnique sur les Digues de Recherche DredgDikes
S Cantré (Germany)

P115 - Implementation of Geotechnical Risk during Realization of the Slag Dam based on the Sediments in Former Sludge Lagoon / La Mise en Œuvre de Risques Géotechniques lors de la Réalisation du Barrage de Scories sur la Base des Sédiments dans L'Ancienne Lagune de Boues
P Cernoch (Czech Republic)

P117 - Vertically Inserted Geotextile used for Strengthening Levees against Internal Erosion / Géotextile Inséré Verticalement Utilisé pour la Consolidation des Digues Face à L'Érosion Interne
U Förster (The Netherlands)

P118 - Pontoon Based Flood Embankment Stabilisation Works at Wheatley Cut, Doncaster / Travaux de Stabilisation d'une Digue D'Aléa D'inondation Depuis Ponton, Wheatley Cut, Doncaster
A Hearne (UK)

P119 - Surface Stability Analysis of Dikes Subject to Overtopping and Infiltration / L'Analyse de la Stabilité à la Surface de Digue Submergée et Perméable
U Karim (The Netherlands)

P120 - Numerical Modeling of Levees According to Eurocode 7 / Modélisation Numérique of Digues Conformément à l'Eurocode 7
E Koch (Hungary)

P121 - Assessment of Embankment Slope Stability with Geomembrane Sealing / L'Évaluation de la Stabilité des Talus avec Géomembrane Étanche
Z Lechowicz (Poland)

P122 - Flooding of Regulated Riverbank: Causes and Protection Solutions / Les Inondations de la Rivière Réglementée: Les Causes et les Solutions pour Protection
J Br. Papic (Macedonia)

B4 Earthquake Geotechnical Engineering and Liquefaction

P126 - Permeation Potential of Colloidal Silica for Passive Stabilization of Liquefiable Soils / Potentiel D'Infiltration de la Silice Colloïdale pour la Stabilisation Passive des Sols Liquéfiables
G Agapoulaki (Greece)

P128 - Numerical Analysis of Liquefaction Affected Shallow Foundations Performance on Improved Ground / Analyse Numérique du Comportment des Fondations Superficielles sur du Sol Amélioré Contre la Manifestation de la Liquefaction
Y Chaloulos (Greece)

P129 - Loess Liquefaction Potential Analysis in Galati, Romania / L'Analyse du Potentiel de Liquéfaction du Loess à Galati, Roumanie
A Damian (Romania)

P131 - Cyclic Response of Liquefiable Sand Under Stress-Controlled and Strain-Controlled Triaxial Testing / Réponse Cyclique de la Liquéfaction du Sable Soumis à des Essais Triaxiaux en Conditions Contrôlées de Tension et de Déformation
S Du (Singapore)

P132 - Seismic Rockfall - How to Predict its Impact, Assess its Risks and Manage the Effects / Chutes de Rochers Causées par L'Action Sismique - Comment Prédire les Impacts, Évaluer les Risques, et Gérer les Effets.
P Eastwood (UK)

P133 - Effect of Earthquake Characteristics on the Seismic Behaviour of Highway Embankments with Tire Waste Inclusions / Effet des Caractéristiques du Tremblement de Terre sur le Comportement Sismique des Remblais de la Route avec des Inclusions de Déchets de Pneus
A Edincliler (Turkey)

P134 - Evaluation of Horizontal Subgrade Reaction of Pile Foundation in Volcanic Ash Ground During Earthquake by Centrifuge Model Test / Réaction Horizontale du Sol à des Secousses Sismiques sur des Pieux de Fondation dans un Sol de Cendres Volcaniques, Évaluée à L'Aide de Modélisations en Centrifugeuse
T Egawa (Japan)

P136 - Nonlinear Analyses of Soil Amplification in the MJMA8, 2003 Tokachi-Oki Earthquake / Analyse Non Linéaire des l' Amplification des Sols Pendant le Tremblement de Terre de Tokachi-Oki (MJMA8, 2003)
G Taylor (UK)

P137 - Numerical Modelling of the Seismically Induced Deformation of Tailings Dam / Modélisation Numérique de la Déformations D'Une Digue à Stériles Induites par Séismes
A Korzec (Poland)

P139 - New Mitigation Method for Pipelines Under the Effect of Buoyancy Forces During Seismic Events / Nouvelle Méthode de Mitigation pour Pipelines Soumis à une Poussée Verticale Pendant les Évènements Sismiques
D Taeseri (Switzerland)

P140 - Development of Vs30 Ground Profiles for UK Strong Motion Sites / Développement de Profils Vs30 de Sol sous les Stations Sismiques Mesurant les Mouvements Forts du Sol au Royaume-Uni.
S Tallett-Williams (UK)

P141 - Soil Liquefaction in Bulgaria - Examples, Prognoses and Counter Measures / La Liquéfaction du Sol en Bulgarie – Exemples,Prognostics et Contre – Mesures
H Zayakova (Bulgaria)

B5 Settlement, Swelling, and Manmade and Natural Cavities

P142 - Interaction Between Infrastructures and Karst. Protekarst Analysis Method / L'Interaction Entre les Infrastructures et le Karst. La Méthode D'Analyse Protekarst
P Jiménez Gavilán (Spain)

B6 Problematic Materials

P144 - Comprehensive Study on the Influence of Non-Plastic Fines in the Static and Cyclic Response of Sands / Étude Approfondie sur L'Influence des Fines Non-Plastique dans le Comportement Statique et Cyclique des Sables
I Towhata (Japan)

P146 - Ancient Fluvial Sediments: Their Widespread Occurrence and Problems for Site Investigation / Les Anciens Sédiments Fluviaux: Leur Existence Mondiale et des Problèmes se Rapportant à L'Étude due Site
J Smethurst (UK)

P147 - Investigation of Destructive Ground Heave Affecting New-Build Properties Constructed Using Pyrite Bearing Fill in the Dublin Area of Ireland / Enquête de Soulèvement de Masse Destructrice Affectant Nouvelles-Propriétés Construit en Utilisant Portant Pyrite Remplir dans la Région de Dublin, Irlande
M Czerewko (UK)

P148 - Sur la Sensibilité à L'Eau des Argilites / On the Water Sensitivity of Claystones
P Delage (France)

P149 - Assessment of Ground Conditions for Development of Wind Turbines Ground Support in an Area of Challenging Ground at Carsington Pasture, Derbyshire, UK / L'Évaluation des Conditions de Base pour le Développement de L'Appui au Sol des Éoliennes dans une Zone de Terrain Difficile à Carsington Pâturage, Derbyshire, Royaume-Uni.
M Czerewko (UK)

P150 - Practical Experience from the Construction Industry of Anomalous Ground Conditions in the London Basin / L'Expérience Pratique de L'Industrie de la Construction sur D'Anormales Conditions du Sol dans le Bassin de Londres
A Dewar (UK)

P151 - Estimation of Hydraulic Conductivity in Peat and Organic Clay Deposits / Estimation de la Conductivité Hydraulique dans les Dépôts de Tourbe et D'Argile Organique
H Hayashi (Japan)

P152 - Natural Gas Pipeline Construction in Sensitive Peatland Environment, Western Ireland / Construction d'un Pipeline de Gaz Naturel dans L'Environnement des Tourbières Sensibles, Ouest de l'Irlande
P Jennings (Ireland)

P153 - Pozzolanic Additives Induced Strength Behavior of Expansive Soil: A Comparative Study / Additifs Pouzzolaniques Induite Comportement Force Expansive des Sols: Une Étude Comparative
A K Jha (India)

P154 - Preloading of Interbedded Lake and Dunal Deposits / Préchargement du lac Interstratifié et Dépôts Dunaires
R Moyle (Australia)

P155 - On the Intrinsic Expansiveness of Soils / Sur L'Expansivité Intrinsèque des Sols
D Schreiner (UK)

C1 Sustainability, Climate Change, Waste and Energy

P156 - A Soil Remediation Solution by Deep Soil Mixing Under Low Headroom Conditions / Une Solution de Dépollution des Sols par Malaxage In-Situ Sous Hauteur Limitée
F Mathieu (France)

P157 - Experimental Study of Heating-Cooling Cycles on the Bearing Capacity of CFA Piles in Sandy Soils / Etude Expérimentale des Cycles de Chauffage-Refroidissement sur la Capacité Portante des Pieux Tarière Creuse dans des Sables
F Szymkiewicz (France)

P160 - Environment and Historical Monuments in Albania / Environnement et Monuments Historiques en Albanie
L Bozo (Albania)

P161 - Geotechnical Considerations for Mining in an Era of Uncertainty and Change / Considérations Géotechniques à L'Extraction Minière dans un Contexte D'Incertitude et de Changement
M Griffin (UK)

P162 - Sustainable Urban Carbon Capture: Engineering Soils for Climate Change (SUCCESS) / Capture Urbaine et Durable de Gaz Carboniques: Ingénierie des Sols dans le Cadre du Changement Climatique (SUCCESS)
M E Jorat (UK)

P163 - Limed Soils as a Replacement for Construction Sand in Stabilized Sands / Sols Chaulés en Remplacement de Sable de Construction dans les Sables Stabilisés
J Benoot (Belgium)

P164 - Development of Design and Procurement for Earthworks with Recycled Materials - Finnish UUMA2 Programme / Elaboration du Design et Acquisitions pour les Travaux de Terrassement avec des Matériaux Recyclés - Programme de UUMA2 Finlandais
K Koivisto (Finland)

P166 - Numerical Modeling of Gas Hydrate Bearing Sediments / La Modélisation Numérique des Hydrates de Gaz Sédiments
M Sanchez (USA)

P167 - Technology and Effective Use of Coal Fly Ash as Ground Materials in Japan / Technologie de L'Usage Efficace à Fondé Matières de la Cendre du Charbon au Japon
K Sato (Japan)

C3 Hydrology and Hydrogeology

P171 - Interaction between Groundwater and Underground Structures. Case Study: Bucharest Area, Romania / Interaction Entre L'Eau Souterraine et les Structures Souterraines. Etude de Cas: Bucarest, Roumanie
L Batali (Romania)

P172 - Earth Embankment Dam Leak Sealing / Colmater les Fuites des Barrages de Terre en Remablai
O Francis (UK)

P174 - Bio-Stabilisation of Dispersive Soils / Bio-Stabilisation des Sols Dispersifs
E Nikooee (Iran)

P175 - Impacts from Groundwater Control in Urban Areas / Impacts de Contrôle des Eaux Souterraines dans les Zones Urbaines
M Preene (UK)

D1 Investigation and In-situ Testing

P177 - Site Characterization by CPTu, SDMT and PMT Tests for « Mémorial ACTe » in Guadeloupe / Caractéristiques de Sol Définies par des Sondages CPTu, SDMT et PMT pour le Mémorial ACTe en Guadeloupe
J Wehr (France)

P178 - Sample Quality Examination on Silty Soils / Qualité des Echantillons dans Sols Limoneux
M Arroyo (Spain)

P179 - Behavior of Compression Piles in Sandy Soil Underlain by Clay / Comportement des Pieux de Compression dans un Sol Sablonneux Reposant sur L'Argile
R Bakr (Egypt)

P181 - Re-Interpretation of Undrained Shear Strenght of CPTU Taking Negative Pore-Water Pressure into Consideration / Re-Interprétation de Tests CPTU et des Mesures de Résistance au Cisaillement non Drainé en Prenant en Compte les Pressions Interstitielles Négatives
H Heyerdahl (Norway)

P182 - Shear Strength of Unsaturated Soils Using the Borehole Shear Test / Résistance au Cisaillement des Sols non Saturés avec le Test de Forage au Scissomètre
A Irigoyen (USA)

P183 - Face Logging in Copenhagen Limestone, Denmark / Face Logging à Calcaire de Copenhague, Danemark
L Jakobsen (Denmark)

P185 - Geotechnical Characterization of Albanian Soils by In-Situ and Laboratory Tests / Caractérisation Géotechnique des Sols Albanais à Partir D'Essais In-Situ et en Laboratoire
A Kosho (Albania)

P186 - Testing of Self-Drilled Hollow Bar Soil Nails / Tests de Clous Self Percés Hollow Bar
S Mickovski (UK)

P187 - Advances in the Characterisation of Soft Alluvium Using Cone Penetration Techniques / Avancées dans la Caractérisation des Alluvions Molles à L'Aide des Épreuves de Pénétromètre Statique (CPT).
W MacPherson (UK)

P188 - Advances in Seismic Piezocone Testing / Avances dans les Essais Sismique Piézocône
P Mayne (USA)

P189 - Estimation of Vertical Subgrade Reaction Modulus for Sands from CPT Investigations / Estimation de la Plate-Forme Verticale Module de Réaction pour les Sables D'Enquêtes du CPT
K Nicholls (UK)

P190 - Fehmarnbelt Fixed Link – Trial Excavation / Le Tunnel de Fehmarn Belt - Etudes à Grande Échelle
P Morrison (UK)

P191 - Dynamic Compaction Evaluation Using In-Situ Test / Suivi et Control avec des Essais In-Situ d'un Traitment de Compactage Dynamique Profound
T Perez (Spain)

P193 - Analysis of Research Results on Soil Compaction by Light Falling Weight Deflectometer (LFWD) with the Application of Artificial Neural Networks / Analyse des Résultats de Recherche pour Contrôle de Compactage par Plaque Dynamique Légère à L'Aide des Réseaux de Neurones Artificiels
M Sulewska (Poland)

P194 - EC7 Class 1 Sampling and Testing of Scottish Glacial Till / EC7 Classe 1 Échantillonnage et D'Essai de Till Ecossais
M Sullivan (UK)

P195 - Advanced Analyses of Cone Penetration Tests / Analyse Avancée Tests de Penetration au Cône
M Uhlig (Germany)

POSTER SESSION 3 – WEDNESDAY 16 SEPTEMBER 2015
13:15 - 14:15

D2 Classification and Laboratory Testing

P196 - Modeling Temperature Effects on the Soil Water Retention Curve: A Pore Network Approach / Modélisation des Effets de la Température sur la Courbe de Rétention d'eau des Sols: Une Approche de Réseau de Pores
E Nikooee (Iran)

P198 - Dynamic Behavior of Silica Sand under Repeated Cyclic Loading / Comportement Dynamique de Sable Siliceux sous Chargement Cyclique Répété
J Benoot (Belgium)

P200 - Dissolution Influences on the Geotechnical Properties of Artificially-Prepared Gypseous Soils / L'Influence de la Dissolution sur les Propriétés Géotechniques des Sols Gypseux Artificiellement Préparée
P Collins (Iraq)

P201 - Analysis of the Mechanical Behaviour of a Partially Saturated Lime-Treated Clay / Analyse du Comportement Mécanique d'une Argile Partiellement Saturée, Traitée à la Chaux
M Gunn (UK)

P202 - An Investigation of the Accuracy of the Use of Point Load Index Test Results to Predict the Unconfined Compressive Strength of Calp Limestone in Ireland / Une Étude Concernant la Précision Lors de L'Utilisation de Résultats de Tests de Point D'Indice de Charge pour Prédire la Résistance en Compression Simple de Calp Calcaire en Irlande
P Casey (Ireland)

P203 - Triaxial Testing of Saturated Lime-Treated High Plasticity Clay / Essais Triaxiaux sur une Argile Plastique Saturee, Traitee a la Chaux
M Gunn (UK)

P204 - Measuring Travel Time in Bender/Extender Element Tests / Mesure du Temps de Propagation des Ondes de Compression et de Cisaillement dans les Milieu Piézo-Céramiques
A Hasan (UK)

P205 - Effects of Grain Size Distribution on the Initial Small Strain Shear Modulus of Calcareous Sand / Effets de la Distribution des Grains sur la Module de Cisaillement Initial du Sable Calcaire
P van Impe (Belgium)

P206 - Investigations on the Settlement Behaviour, Shear Strength and Classification of Fine-Grained Soils with Organic Components / Investigations sur le Comportement des Affaissements, Résistance au Cisaillement et la Classification des Sols à Grains Fins avec des Composants Organiques
M Löwen (Germany)

P207 - The Strength of Fibre Reinforced Clays / La Force de L'Argile Renforcées par des Fibres
P Naughton (Ireland)

P209 - The Importance of Coupling and Sample Geometry in Bender Element Testing / L'Importance du Couplage et de la Géométrie des Éprouvettes dans les Essais avec "Bender Elements"
M Parente (Portugal)

P210 - Mechanisms for the Disaggregation of Soil Cuttings in Slurries / Mécanismes pour la Désagrégation des Sédiments de Sol dans les Boues
N Phillips (UK)

P211 - Synergy between Mechanical Damage and Abrasion of a Composite Geosynthetic and its Variability / Synergie Entre le Dommage Mécanique et l'Abrasion d'un Composite Géosynthétique et sa Variabilité
M Pinho-Lopes (UK)

P212 - Resonant Column and Cyclic Torsional Shear Experiments on Soils of the Trentino Valleys (NE Italy) / Expérimentations sur Sols dans la Vallée du Trentin (NE Italie) avec Colonne de Résonnance et Cisaillement Cyclique Torsionnel
P L Raviolo (Italy)

P213 - Mechanical Properties of Sand-TDA Mixtures in Large Scale Direct Shear Test / Propriétés Mécaniques des Mélanges Sable-TDA à Grande Échelle Essai de Cisaillement Direct
P Riahi (Iran)

P214 - Oedometer Relaxation Test / L'Essais Oedometric Relaxation
A Lavasan (Hungary)

P218 - The Effect of Temperature on the Physical Properties of Mauthausen Granite (Austria) / L'Effet de la Température sur les Propriétés Physiques de Mauthausen Granite (Autriche)
P Görög (Hungary)

P220 - Determination of Consistency Limits of Clay by Means of Extrusion Tests / Détermination des Limites de Consistance D'Argiles au Moyen D'Essais D'Extrusion
R D Verastegui-Flores (Belgium)

D3 Case Studies, Forensic Geotechnical Engineering and Monitoring

P222 - Monitoring of Ground Improvement at Bridge Abutments on the A75 Dunragit Bypass / Suivi D'Essai de L'Amélioration du Sol aux Culées de Pont sur le Contournement A75 Dunragit Bypass
S Guasti (UK)

P223 - Strength and Structure of Boulder Clays (Lodgement Till) with Reference to the Scale of the Proposed Construction / Résistance et Structure des Argiles à Blocaux (Tillites de Fond de Glacier) Selon les Dimensions d'une Construction
R D Boyd (UK)

P224 - Reduction of Cone Resistance due to Excavations - New Insights / Réduction du Resistance du Pointe Ainsi Excavations - Nouveau Perspicacitées
R Brouwer (The Netherlands)

P225 - Uncertainties of Construction Quality in Soil-Cement Reinforcement at Metro TBM Work Shaft / Les Incertitudes de la Qualité de la Construction du Renforcement du Sol-Ciment dans L'Axe de Travail TBM de Métro
E J Chen (China)

P226 - Geotechnical Problems on Transylvanian Historical Buildings Consolidation / Problèmes Géotechniques du la Consolidation de Bâtiments Historiques de Transylvanie
V S Farcas (Romania)

P227 - Sismic Monitorization of Landslides. Reactivation Criteria and Early Warning / Monitorization Sismique des Glissements de Terrain. Critères de Réactivation et D'Alerte Précoce
C López Casado (Spain)

P228 Behaviour of Constrained Deformation of Busan Clay: A Case Study / Comportement de Déformation Limitée D'Argile de Busan: Un Cas D'Étude
M T Le (Republic of Korea)

P229 - Volumetric Water Content Determination by TDR Sensors and Decagons in Gravelly Soils / Détermination de la Teneur Volumétrique en eau dans un Sol Graveleux par Capteurs TDR et Decagons
D Lucas (Switzerland)

P231 - Monitoring Measurements on Retaining Walls for Deep Excavations in Similar Sites – Database Creation / Suivi des Parois de Soutènement pour Excavations Profondes dans des Sites Similaires - Création d'une Base de Données
D Marcu (Romania)

P232 - Comparison Study of Selected Geophysical and Geotechnical Parameters / Étude Comparative de Paramètres Géophysiques et Géotechniques Particuliers
R W Nissen (Denmark)

P233 - Prediction of Ground Heave due to Compaction Grouting. Validation Against the Results in a Large Trial Area / Prédiction du Soulèvement du Sol due à des Injections de Compactage. Validation par Rapport à des Résultats dans un Site Expérimental
C Sagaseta (Spain)

P234 - Effect of Peat Bogs on the Properties of Underlying Sand Layers / Effet des Tourbières sur les Propriétés des Couches de Sable Sous-Jacente.
A Shidlovskaya (Russia)

P235 - Two Examples of Structural Damage Caused by Inadvertent Hydraulic Fracture / Deux Exemples de Dommages Structuraux Causés par la Fracturation Hydraulique par Inadvertence
N Smith (UK)

P236 - Inspection of Historic Bath Stone (Jurassic) Workings using 3D Laser Scanning prior to Proposed Surface Redevelopment / Inspection d'une Site D'Exploitation Minière Historique de "Bath Stone" (Jurassic) Abandonée a L'Aide d'un Scanneur laser 3D Avant le Projet de Réaménagement.
P Taylor (UK)

E1 Parameter Selection

P237 - Sand Behaviour in Terms of the Grading Curve / Comportement de Sable en Termes de Courbe Granulométrique
A Lavasan (Hungary)

P238 - The Effective Stress in Over-Consolidated Clays / La Tension Effective dans les Argiles sur Consolidées
J Garai (Hungary)

P240 - Comparison of Free-Field Ground Movements Caused by Mechanized and Open-Face Tunnelling / Étude Comparative des Déplacements de Surfaces Libres dus à L'Excavation au Tunnelier à Pression de Terre et à Bouclier Ouvert
E Leronymaki (USA)

P241 - Scientific Selection of Cone Penetration Test Nk Correlation Factors / Sélection Scientifique des Nk Facteurs de Corrélation pour CPT
P Knight (UK)

P242 - A Parameter Study of CPTs in Palaeogene Clays / Une Étude des Paramètres de CPT dans les Argiles du Paléogène
A Krogsbøll (Denmark)

P243 - Tomographic Analyses in Geotechnical Assessment of Soil Media / Analyse Tomographique dans L'Évaluation Géotechnique du Sol
M Kumor (Poland)

P244 - A Toolbox of Constitutive Models for Geomaterials / Une Boîte à Outils de Lois de Comportement de Géomatériaux
D Remaud (France)

P245 - Application of Cyclic CBR Test for the Estimation of Resilient Modulus in the Pavement Construction / Application du Critère CBR Cyclique pour L'Estimation de Module D'Élasticité dans la Construction de la Chaussée
W Sas (Poland)

P246 - Statistical Analysis of Dam Settlement Data / L'Analyse Statistique de Tassement de Barrage
F G Sigtryggsdottir (Iceland)

P247 - Prediction of Torsion Shear Tests based on Results from Triaxial Compression Tests / Prédiction des Essais de Cisaillement Lors de Torsion sur la Base des Résultats des Essais de Compression Triaxiale
N Trads (Denmark)

P248 - Additional Parameters Measured in a Single CPT using Click-On Modules / Mesure de Paramètres Additionnels lors d'un Essai CPT Simple, par L'Utilisation de Modules Connectables
M Woollard (The Netherlands)

P250 - Implementation of a Viscoplastic Mohr-Coulomb Material Model for the Simulation of Time Effects in Tunnel Excavations / La Mise en Œuvre d'un Modèle Viscoplastique de Matériau Mohr-Coulomb pour la Simulation des Effets du Temps dans les Fouilles de Tunnels
F Karaoulanis (Greece)

E2 Modelling

P251 - Finite Element Analysis of a Large Span Precast Arch Structure for the A465 Dualling, Section 3 / Analyse par Eléments Finis d'une Arche Préfabriquée à Longue Travée pour le Dédoublement de l'A465, Section 3
K Nunn (UK)

P252 - Numerical Investigation of the Compression Modulus of Block-in-Matrix Pattern Type Geomaterials / Etude Numérique du Taux de Compression des Modèles Matrice par Blocs Géomatériaux
F Karaoulanis (Greece)

P253 - Back-Analysis of an Anchored Retaining Structure of a Deep Excavation / Analyse Inverse d'une Paroi de Soutènement Ancrée d'une Excavation Profonde
H Popa (Romania)

P254 - Experimental and Numerical Studies on the Lateral Pressure Acting on Piles due to Horizontal Soil Movements / Des Études Expérimentales et Numériques de la Pression Latérale Agissant sur Pilotis en Raison de Mouvements de Sol Horizontaux
O Reul (Germany)

P257 - Cyclic Loading and Fabric Evolution in Sand: A Constitutive Investigation / Sollicitation Cyclique et Évolution de Tissue sur Sable: Une Enquête de Comportement
Z Gao (UK)

P260 - A Numerical Study of Wall Installation Effects on the Performance of Diaphragm Wall Shafts / Étude Numérique des Effets de la Phase D'Installation sur la Performance de Parois Moulées de Puits D'Accés
A S Jensen (Denmark)

P262 - The Modelling of Settlements Caused by Groundwater Drawdown in Soft Soil Areas / La Modélisation de Tassement Causée par le Rabattement de la Nappe Phréatique dans des Sites avec du Sol Mou
L Korkiala-Tanttu (Finland)

P263 - Numerical Modelling of Physical Experiments with Passive Pressure of Unsaturated Soils / Modélisation numérique des expériences de physique utilisant la pression passive des Sols non saturés
P Koudelka (Czech Republic)

P264 - Numerical Interpretation of the Coupled Hydro-Mechanical Behaviour of Expansive Clays in Constant Volume Column Tests / Interprétation Numérique du Comportement Hydromécanique D'Argiles Expansibles Lors de Test en Colonnes à Volume Constant
V Mantikos (UK)

P268 - Determination of the Parameters for Numerical Modeling of Soil Deformations when using Finite Element Calculation in Course of Utilities Tunnelling / Détermination des paramètres de modélisation numérique des déformations du Sol employant la méthode des éléments finis en cours de la construction des tunnels des réseaux enterrées
R Sharafutdinov (Russia)

P269 - Numerical Analyses of Cross and Buttress Walls Effectiveness / Analyse Numérique de L'Efficience des Murs de Contention "Cross Wall" et "Buttress Walls"
F M Soccodato (Italy)

P270 - Numerical Analysis of Anchored Bored Piles in Fractured Rock Masses / Analyse Numérique de Pieux Forés Ancrés dans des Massifs Rocheux Fracturés
S Spasojevic (Serbia)

P271 - Finite Element Formulation of Unsaturated Soil and its Application on Bearing Capacity Problems / Formulation par Éléments Finis du Sol non Saturé et son Application sur les Problèmes de Capacité Portante
Y Tang (Australia)

F1 Developments in Education and Practise

P274 - Does the Education of Engineers in Europe Fail to Meet Practical Requirements? / La Formation Pratique des Ingénieurs en Europe est-elle Défaillante?
W J Wehr (Germany)

P275 - Project-Based Learning in Consecutive Modules on Geotechnics: Foundations / Apprentissage Basée aux Projets en Modules Consécutive aux Géotechnique: Fondations
M Pinho-Lopes (UK)

P276 - Simple Calculation Method for Soil-Foundation-Pile-Slab Interaction / Méthode de Calcul Simple pour L'Interaction Sol-Fondation-Pieu-Dalle
K C Avellan (Finland)

P277 - Training and Education in Ground Investigation - Can we make Quality Count? / Formation et L'Éducation dans les Enquêtes de Terrain - Pouvons-Nous Faire Compte de la Qualité ?
M Baldwin (UK)

P279 - Data Analytics to Support Monitoring for Underground Construction Projects / Analytics Données à L'Appui de Suivi des Projets de Construction Souterraine
M Devriendt (UK)

P281 - The Geological Society of London Engineering Group Working Party on Periglacial and Glacial Engineering Geology / Société Géologique de Londres Engineering Group Groupe de Travail sur Périglaciaireet Glaciaire Géologie de l'Ingénieur
D Giles (UK)

P282 - Eurocode 7 and New Design Challenges using Numerical Methods with Different Soil Models / Eurocode 7 et de Nouveaux Défis de Conception en Utilisant des Méthodes Numériques avec Différents Modèles de Sol
G Katsigiannis (UK)

P284 - An Overview of Research Activities and Achievement in Geotechnics from the Scottish Universities Geotechnics Network (SUGN) / Une Vue D'Ensemble des Activités de Recherche et la Réalisation de Géotechnique de la Géotechnique Réseau Écossais Universités (SUGN)
A Leung (UK)

P285 - Geoconservation and Geodiversity - What? Who? Where? - And Why Should I Care? / La Géoconservation et la Géodiversite: Ques-ce Que C'est? - et Pourquoi Devrais-je, M'y Interesser?
K Nicholls (UK)

P286 - Safety Considerations for the HYD Limit State / Considérations en Matière de Sécurité de L'État Limite HYD
B Simpson (UK)

SOCIAL PROGRAMME
EVENING EVENTS

The social programme of the conference is an important part of the event itself. It provides the opportunity for participants from different countries to meet outside the busy scientific sessions!

Introduction, Cultural Event and Welcome Reception

Pentland, EICC
Sunday 13th September 2015, 18:30 - 19:05

Welcome and Introduction from M Winter, Chair of the Conference Organising Committee (UK) followed by entertainment by Clann an Drumma

Opening of Exhibition and Welcome Reception

Strathblane & Cromdale Halls, EICC
Sunday 13th September 2015, 19:05 - 21:00

Delegates are invited for the Welcome Reception whilst enjoying wine and canapés. This will be an excellent opportunity to network and mingle with exhibitors, meet old friends and colleagues, and to make new ones.

The Welcome Reception is included in the full registration fees.

Whisky Tasting

Strathblane & Cromdale Halls, EICC
Monday 14th September 2015, 19:00 -20:00

We would like to thank all of the exhibitors who are sponsoring the Whisky Tasting and ask that you take time to visit each of the stands and sample some of Scotland's finest drams from the Highlands to the Lowlands.

Look out for your whisky tasting map in your registration pack.

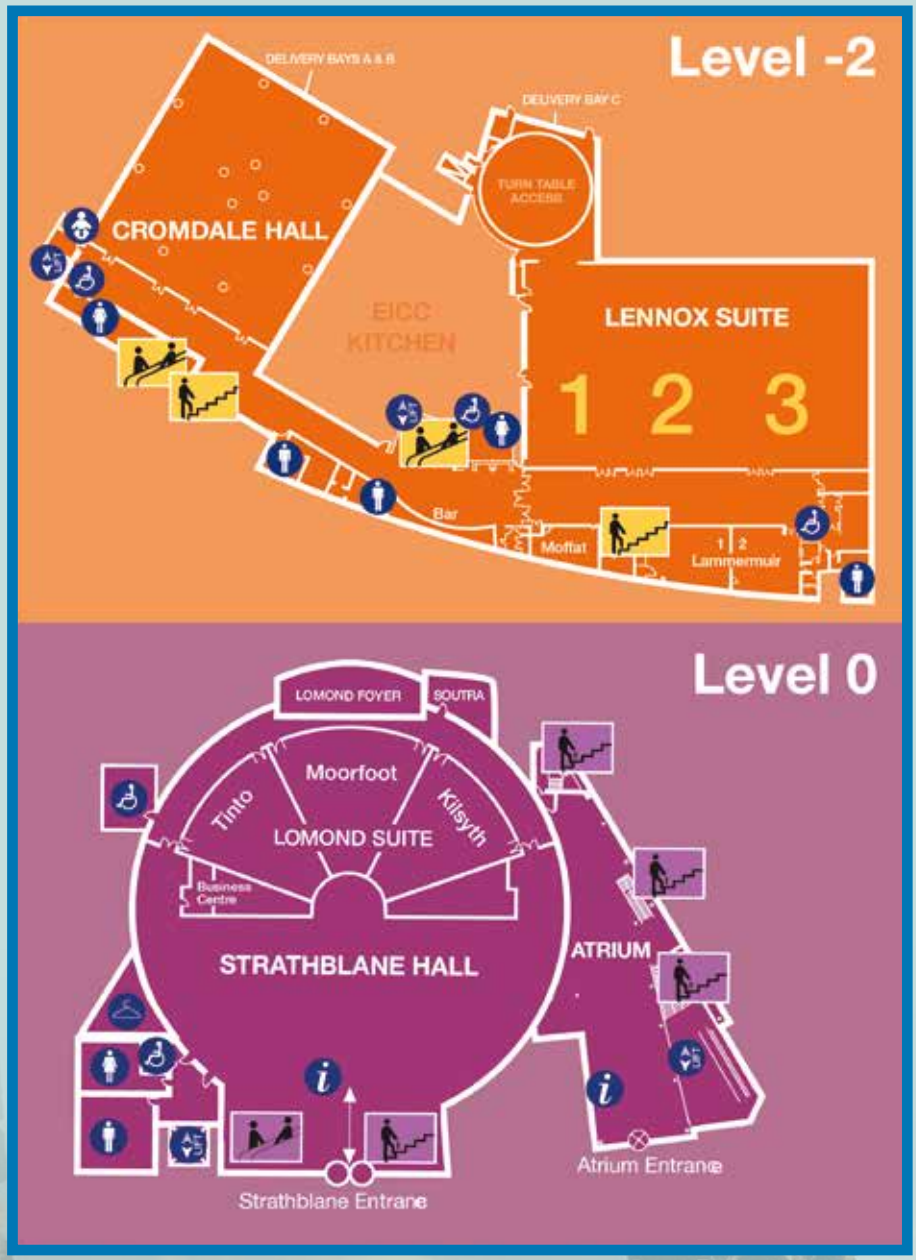
Conference Dinner

The National Museum of Scotland, Chambers Street, Edinburgh, EH1 1JF
Wednesday 16th September 2015, 19:30 – 00:00

The Conference Dinner will take place at the stunning National Museum of Scotland on Chambers Street. The National Museum of Scotland has been the country's treasure house of both national and world collections for almost 150 years. The grandeur of this building is a spectacular backdrop for the 2015 conference dinner. Delegates will be provided with a 3 course dinner and some entertainment.

This is a ticketed event and pre booked tickets need to be purchased at the time of registration. Admission strictly by ticket.

VENUE MAP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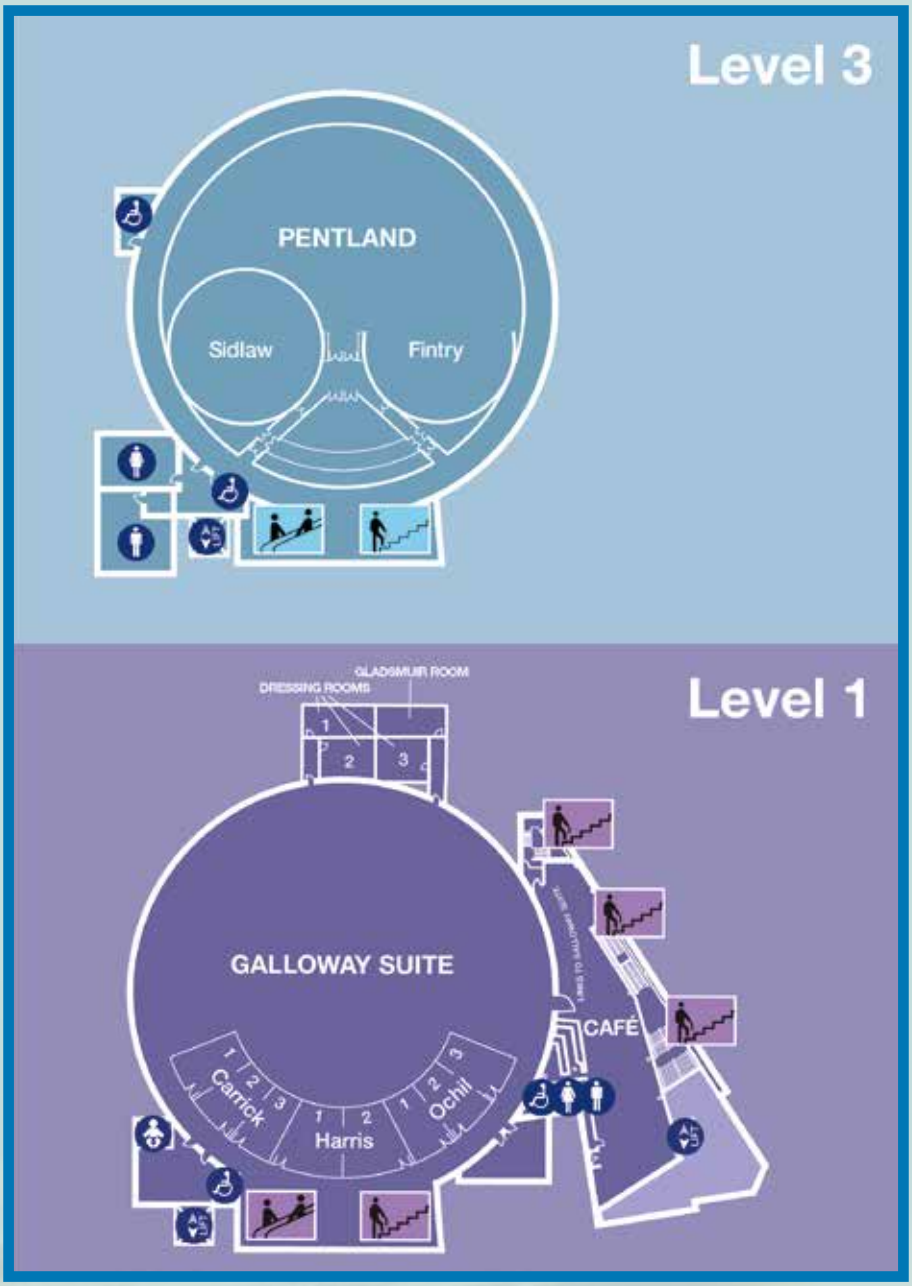
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Contact: Peter Boyd
Tel: + 44 (0) 1727 535000
Email: peter.boyd@aecom.com
Website: www.aecom.com

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Contact: Guillaume Bégué
Tel: + 33 (0) 1 30 52 35 42
Email: g.begue@apageo.com
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200 Broomielaw, Glasgow, G1 4RU, UK
Contact: Steve Revill
Tel: + 44 (0) 141 220 2310
Email: steve.revill@atkinsglobal.com
Website: www.atkinsglobal.com

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Contact: Olu Oke Tel + 44 (0) 7554 111110
Email: Olu.oke@bentley.com
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Contact: Kellie Vodo
Tel: + 44 (0) 1622 793182
Email: kellie.vodo@bomag.com
Website: www.bomag.co.uk

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Contact: John Marshall
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Email: john.marshall@bonar.com
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+ 44 (0) 1543 440440
Email: nigel@newgrids.com /
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Tel: + 44 (0) 1923 423100
Email: Brandon.ferreira@skanska.co.uk
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Contact: Jo Davenport
Tel: + 44 (0) 1355 225688
Email: Jo.davenport@nafems.org
Website: www.cogan.eu.com

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Tel: + 44 (0) 207 017 6178
Email: sara.kehoe@tandf.co.uk
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Contact: Ian Smith
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Email: ian@dando.co.uk
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2365 NE Hopkins Court, Pullman, 99163, USA
Contact: Matt Galloway
Tel: + 1 (0) 509 332 2756
Email: matt@decagon.com
Website: www.decagon.com

Decagon Devices manufactures equipment for measuring and monitoring hydrological processes in soil. Among their products are in situ soil moisture sensors, hydraulic conductivity meters, and equipment for generating soil water characteristic curves. They also have sensors for microclimate monitoring of the environment, measuring parameters such as windspeed, RH, temperature, and rainfall.

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Stand 43

PO BOX 117, Delft, 2600 MH, The Netherlands
Contact: Roeli Suiker
Tel: + 31 6 13 67 14 07
Email: Roeli.suiker@deltares.nl
Website: www.deltares.nl

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Stand 36

Northfield Road, Southam, CV47 0FG, UK
Contact: Chris Irvin
Tel: + 44 (0) 1926 813980
Email: Chris.irvin@dywidag.co.uk
Website: www.dywidag.co.uk

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Stand 41

ESG House, Bretby Business Park, Ashby Road, Burton on Trent, DE15 0YZ, UK
Contact: Sales Team
Tel + 44 (0) 845 603 2112
Email: sale@esg.co.uk
Website: www.esg.co.uk

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52A Cromwell Road, London, SW7 5BE, UK
Contact: Chris Menkiti
Tel: + 44 (0)207 581 8348
Email: c.o.menkiti@gcg.co.uk
Website: www.gcg.co.uk

GCG, an independent limited liability partnership formed in 1983 in London, comprises a group of highly qualified consultants pooling their wide range of skills and experience to provide specialist geotechnical consulting services to industry and governments worldwide. GCG liaises closely with major universities and applies recent research to engineering projects.

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Stand 27

Unit 32, Murrell Green Business Park, London Road, Hook, Hampshire, RG27 9GR, UK
Contact: James Hopkins
Tel: + 44 (0) 1256 382450
Email: james@gdsinstruments.com
Website: www.gdsinstruments.com

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Stand 3

Aachstrasse 11, CH-8590 Romanshorn, Switzerland
Contact: Eberhard Gröner / Carole Bickel
Tel: + 41 71 466 81 55
Email: eberhard.groener@geobrugg.com / carole.bickel@geobrugg.com
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Contact: Arthur Patch
Tel + 1 (0) 603 448 1562
Email: apatch@geokon.com
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Stand 37

Westbaan 240, 2841MC Moordrecht,
The Netherlands
Contact: Volker Berhorst
Tel: + 31 (0) 172 427 800
Email: saled@geomil.com
Website: www.geomil.com

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Industrial Estate, Ipswich, Suffolk, IP1 5AP, UK
Contact: Karen Deed
Tel: + 44 (0) 1473 462046
Email: Karen@geoquipservices.co.uk
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Tel: + 44 (0) 1359 270457
Email: claire.brown@geosense.co.uk
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Tel: + 1 (0) 403 269 2002
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Unit A3, Crosland Road Industrial Estate,
Netherton, Huddersfield, West Yorkshire,
HD4 7DQ, UK
Contact: Haroon Aswat
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Email: haroon@geospec.uk.com
Website: www.geospec.uk.com

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Stand 13

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Contact: Thomas Fechner
Tel: + 49 2631 778135
Email: info@geotomographie.de
Website: www.geotomographie.de

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Contact:
Tel: + 49 2542 7010
Email: info@HUESKER.de
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Stand S8

7 Woodshots Meadow, Croxley Green Business Park, Watford, WD18 8YS, UK
Contact: Dee Theis
Tel: + 44 (0) 1923 225404
Email: reception@i2analytical.com
Website: www.i2analytical.com

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Website: www.keller.co.uk

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Website: www.naue.com

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Central SQ, Forth Street, Newcastle upon Tyne,
NE1 3PL
Contact: Nick Niknam
Tel: + 44 (0) 191 238 7559
Email: nick.niknam@arup.com
Website: www.oasys-software.com

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Stand 44

Hawton Lane, Balderton, Newark, NG24 3BU
Contact: Leon Woods
Tel: + 44 (0) 1636 611140
Email: lwo@aarsleff.co.uk
Website: www.aarsleff.co.uk

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Stand 28

98-235 Błaszki ul. Przemysłowa 10, Poland
Contact: Tomasz Zaremba
Tel: + 48 (0) 43 829 20 51
Email: t.zaremba@pietrucha.pl
Website: www.pietrucha.pl

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Kingsfield Business Centre, Philanthropic Road,
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Contact: Janine Stoevelaar
Tel: + 31 (0) 15 251 7740
Email: sales@plaxis.com
Website: www.plaxis.nl

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Stand 34

Limaweg 17, Waddinxveen, 2743 CB,
The Netherlands
Contact: Angela van Rietschoten
Tel: + 31 (0) 182 640 964
Email: sales@profound.nl
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439 University Ave Ste 780, Toronto,
M5G 1Y8, Canada
Contact: Brigid Cami
Tel: + 1 (0) 416 698 8217
Email: brigid.cami@rocscience.com
Website: www.rocscience.com

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Contact: Robin Yeomans
Tel: + 44 (0) 1283 525006
Email: robin.yeomans@roger-bullivant.co.uk
Website: www.roger-bullivant.co.uk

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Website: www.russellgeotech.co.uk

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Stand 15

Via Bracciano 38, Roma, 00189, Italy / Via Cazzulini, 15A-15010 Ricaldone (AL)
Contact: Simona Rebottini / Mario Lovisolo
Tel: + 39 (0) 630 311240 /
+ 39 (0) 144 74277
Email simona@marchetti-dmt.it /
mario.lovisolo@csgsrl.eu
Website: www.marchetti-dmt.it /
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Stand 24

Cunningham Court, Shadsworth Business Park,
Blackburn, BB1 2QX
Contact: Marc Hughes
Tel: + 44 (0) 1254 266 842
Email: mhughes@tensar.co.uk
Website: www.tensar.co.uk

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Stand 33

42-52 quai de la Râpée, CS 71230 - 75583
PARIS Cedex 12, France
Contact: Vivien Moreau
Tel: + 33 (0) 1 82 51 52 00
Email: v.moreau@terrasol.com
Website: www.terrasol.com

A recognized leader in geotechnical engineering in France and abroad, Terrasol (setec group) supports its customers, whether owners, contractors or civil engineering firms:

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TERRE ARMÉE
Stand 9

280 avenue Napoléon Bonaparte - CS 60002,
92506 Rueil-Malmaison Cedex, France
Contact: Guillaume Billaroch
Tel: + 33 (0) 1 47 76 42 62
Email: Guillaume.billaroch@sf-group.com
Website: www.terre-armee.com

Terre Armée has forged an unrivalled level of expertise in reinforced backfill applications and soil-structure interaction. Since 1963, Terre Armée has been the leader in reinforced earth structures and has carried out over 50,000 projects worldwide in a wide range of applications: Roads & motorways, Environment, Railways, Hydraulic structures, Mines, Industry, Energy.

TEXINOV
Stand 10

56 route de Ferrossière, BP 201 – Saint Didier de la Tour, F-38354 La Tour Du Pin Cedex, France
Contact: Christine Lièvre
Tel: + 33 (0) 474 97 44 75
Email: clievre@texinov.fr
Website: www.texinov.fr

Since 1985 TEXINOV based near Lyon in France has been developing and producing high strength reinforcement geosynthetics intended for road construction and civil engineering applications, offering high performance levels in material strength and behavior in soil. Our product ranges include innovative geogrids, geocomposites and erosion-control products.

THE GEOLOGICAL SOCIETY OF LONDON
Stand 51

The Geological Society, Burlington House, Piccadilly, London, W1J 0BG
Contact: Jenny Davey
Tel: + 44 (0) 20 7434 9944
Email: jenny.davey@geolsoc.org.uk
Website: www.geolsoc.org.uk

The Geological Society of London was founded in 1807 and is the UK national society for geosciences with over 11,000 members. GSL is a major Earth Science publisher, publishing the Quarterly Journal of Engineering Geology and Hydrogeology, the renowned Special Publications series, Engineering Geology Special Publications and Memoirs.

TNO DIANA BV
Stand 40

Delftechpark 19a, Delft, 2628 XJ, The Netherlands
Contact: Steve Owen
Tel: + 31 (0) 88 3426200
Email: info@tnodiana.com
Website: www.tnodiana.com

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TRL

Crowthorne House, Nine Mile Ride, Wokingham, Berkshire, RG40 3GA, UK
Contact: Mike Winter
Tel: + 44 (0) 1344 770848
Email: mwinter@trl.co.uk
Website: www.trl.co.uk

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VJ TECH LTD
Stand 23

Unit 1, io Trade Centre, Deacon Way, Reading, Berkshire, RG30 6AZ, UK
Contact: Qusai Al-Qudah
Tel: + 44 (0) 118 945 3737
Email: Qusai@vjtech.co.uk
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VJ Tech Ltd is a leading UK manufacturer of material testing equipment. Since founded in 1991, VJ Tech has supplied high quality testing equipment to the geotechnical engineering industry & continues to grow & develop innovative solutions for commercial, research and field testing that comply with the major international standards.

WILLE GEOTECHNIK
Stand 19

Götzenbreite 12, Rosdorf, 37124, Germany
Contact: Svetlana Golovin
Tel: + 49 (0) 551 30752 126
Email: sgolovin@wille-geotechnik.com
Website: www.wille-geotechnik.de

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WYKEHAM FARRANCE
Stand 32

Via Salvo D'Acquisto 2 - 20060, Liscate (Mi), Italy
Contact: Medeo Olivares
Tel: + 39 (0) 02 32184
Email: controls@controls.it
Website: www.wfi.co.uk/eng

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TECHNICAL TOURS

All delegates who are pre booked on the Technical Tours should meet in the Strathblane Hall, EICC. Coaches and walking tours will depart at 14:00

All personal belongings must be collected from the EICC Cloakroom by 14:30 hrs

Firth of Forth: Queensferry Crossing

Delegates will take a boat trip on the Maid of the Forth to view the construction works for the Queensferry Crossing cable-stayed bridge and the existing cantilever rail and suspension road bridges. There will also be a visit to the Education and Contact Centre for the Queensferry Crossing where the investigation and construction of Scotland's landmark project will be explained.

Haymarket Rail Tunnel Upgrade

Visit to inspection and monitoring work at Haymarket Tunnel, a key part of the Edinburgh rail infrastructure, dating back to the 1830s. Edinburgh's Haymarket Rail Station is the most congested in Scotland having achieved passenger growth of 138% in the 15 years to 2012 (compared to the 47% national average). The tunnel works are an important part of the overall upgrade of the station to cope with radically increased passenger traffic.

Antonine (Roman) Wall

The Antonine Wall is the most northerly of the Roman Empire's defenses and part of the World Heritage "Roman Frontiers" site. The visit will include Rough Castle, the best preserved for with highly visible earthworks construction; Watling Lodge with excellent surviving sections of ditch and bank; and the Castlecary section of the wall, where the effects of mining collapse will be discussed.

Falkirk Wheel

A visit to one of the 21st century engineering wonders, the visitor centre provides excellent details of the construction of the canals and the unique boat lift which links the Union, and Forth-Clyde Canals. Delegates will take a boat trip on the lift that link the two canals.

Edinburgh Geological Tour

A series of walking tours of Edinburgh's Geology, based around Edinburgh Castle, Holyrood Park, George Square Buildings, Carlton Hill building stone and possibly the Geology of Queensferry Oil Shales. (The cost of these tours includes a donation of £10 per head to the Edinburgh Geological Society to help support their very valuable educational activities in the future).

The Railway Research Centre

The Railway Research Centre at Heriot- Watt University investigates the main issues for modern rail networks which include the need to cope with more traffic, heavier loads and higher speeds. It includes the UK's biggest purpose built laboratory test track bed, which can predict the effects of high speed trains and simulate the effects of decades of operation on major lines

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