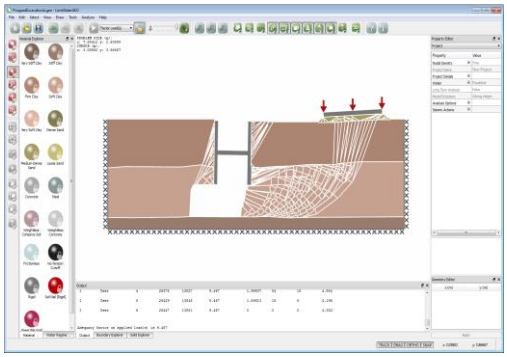
limitstate

analysis & design software for engineers

Technical Sessions | November 2015

Application of modern limit analysis methods in geotechnical practice.



Modern limit analysis methods are providing engineers with a rapid means of investigating the ultimate limit state, facilitating more intelligent geotechnical designs and delivering significant productivity gains.

Session overview and benefits:

Traditionally geotechnical practitioners have had access to two types of analysis and design software, those based on automated hand calculations, and those based on 'advanced' numerical methods, such as finite elements. However, the former are often too simplistic to adequately represent real-world problems and the latter too time consuming for routine use. But in recent years modern limit analysis methods have emerged as a powerful mainstream alternative. These numerically based methods unlock the power of limit analysis, making it readily available to engineers as a tool that can be used to rapidly establish the ultimate limit state (ULS) behaviour for a wide range of geotechnical problems. Many leading consultancies and contractors are reporting that their use is bringing significant benefits, facilitating more intelligent geotechnical designs and delivering significant productivity gains.

In this session the basis of limit analysis methods will be explained and it will be shown how modern tools can be used to develop more effective designs, and to react to client requests more rapidly. The LimitState:GEO limit analysis software, widely used in the industry, will be used throughout the session to illustrate many of the concepts covered and to clearly visualise the identified ULS collapse mechanisms for a wide variety of geotechnical stability problems.

Session description:

In this session, participants will gain a technical briefing on the following:

- The principles underpinning limit analysis methods, and how they differ from traditional limit equilibrium methods. Awareness of the approximations present in commonly used formulae, and common mistakes.
- How the Discontinuity Layout Optimization (DLO) limit analysis procedure used by the LimitState:GEO limit analysis software works.
- How to "think different" when conceptualising geotechnical limit analysis problems, and tips and tricks which enable engineers to get the best out of limit analysis.
- Use of limit analysis methods to model a wide range of practical geotechnical stability problems including foundations, slopes, retaining walls and reinforced soil.
- Use of limit analysis with Eurocode 7 to realise more creative, intelligent designs (modern limit analysis methods are allowing engineers to get the best out of Eurocode 7).

Who should attend:

The seminar is designed to benefit technical directors and geotechnical engineers of all levels working in consultancies and contracting firms, as well as others with a responsibility for, or exposure to, engineering problems involving interactions with the ground. The material covered will be relevant to both potential and current users of geotechnical analysis and design software.

Application of modern limit analysis methods in geotechnical practice.

Programme:

9:30 - 10:00	Arrival / tea and coffee	-
10:00 - 10:10	Welcome	Prof. Matthew Gilbert
10:10 - 10:40	Introduction to modern limit analysis methods	Prof. Matthew Gilbert
10:40 - 11:00	Application of methods in geotechnical practice	Dr Colin Smith
11:00 - 11:20	Tea / coffee break	-
11:20 - 11:40	"Thinking different" when conceptualising problems	Dr Colin Smith
11:40 - 12:05	Working with Eurocode 7	Dr Colin Smith
12:05 - 12:20	Modelling tips and tricks	Dr Tom Pritchard
12:20 - 12:30	Summing up / closure	Prof. Matthew Gilbert and Dr Tom Pritchard

Speakers:

The seminars will be delivered by world leaders in the development and application of modern limit analysis methods, Dr Tom Pritchard of LimitState and Dr Colin Smith and Professor Matthew Gilbert of the Department of Civil and Structural Engineering at the University of Sheffield.

Dr Colin Smith

MA PhD (Cantab.)

Dr Smith holds MA and PhD degrees from the University of Cambridge. He is the secretary to the International Society for Soil Mechanics and Geotechnical Engineering Technical Committee TC205 'Limit State Design' and is a member of several advisory groups involved with the development of the next version of Eurocode 7.

Dr Tom Pritchard

MEng PhD

Dr Pritchard joined LimitState in 2008 and heads up the technical support team at LimitState. He holds a MEng and PhD in Civil Engineering from the University of Sheffield.

Prof. Matthew Gilbert

BEng PhD CEng MICE MASCE

Prof. Gilbert is a chartered civil engineer who co-founded LimitState with Dr Smith in 2006 in order to bring the powerful methods developed in academia to a wider audience. He has a long track record of development and practical application of ultimate limit state analysis techniques.

Register online:

Manchester | 17th November | 9:30 – 12:30
http://ls-tech-sessions-manchester.eventbrite.co.uk

London | 18th November | 9:30 – 12:30
http://ls-tech-sessions-london.eventbrite.co.uk

Edinburgh| 24th November | 9:30 – 12:30
http://ls-tech-sessions-edinburgh.eventbrite.co.uk

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