SAGE
CRISP

CRISP NEWS

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Editorial

Good progress has been made with the CRISP Consortium over the past few months (see article in CRISP News No.2). It has been officially registered as a company, Amir Rahim has accepted the post of FE developer, and the inaugural meeting of the Board of Directors has taken place.

For the first time in the history of CRISP, a formal mechanism now exists for its users to influence future development of the program. More details will follow in a separate mailshot.

In this issue, we begin a series of short technical articles on CRISP; David Press kicks off with something which will be of interest to all retaining wall analysts.

Elsewhere, Mike Gunn gives us his impressions of Vietnam following a recent trip on CRISP business, whilst Geoff Watson makes a heartfelt plea to all users to do more to "help themselves" before calling upon his technical support services. So - another varied issue, ending with the usual request for contributions!

Rick Woods
University of Surrey

CRISP GOES TO VIETNAM

From 27th - 30th January 1997, the Water Resources University, Hanoi, hosted the well known course "Advanced Geotechnical Analysis using the Finite Element Program SAGE CRISP". Andrew Schofield and Mike Gunn gave lectures on Critical State Soil Mechanics and this was then followed by lectures on finite elements and SAGE CRISP from Mike Gunn and Roger Chandler. The course attracted 72 Vietnamese participants from academic institutions and industry. 40 of these took part in the traditional "hands-on" practical sessions. The course was supported by the British Council in Hanoi who also presented two copies of SAGE CRISP to the Water Resources University. The course was judged a success by those who attended and this was due in no small part to the organising efforts of Professor Nguyen Man of the Water Resources University. Thanks are also due to Mr. Minh of the Hanoi Architectural University who ably translated the majority of a challenging set of lectures from English into Vietnamese.

Vietnam is at an interesting state of its development. There are only a few major buildings in Hanoi more than five storeys tall (although this is obviously going to change soon). The most popular form of transport is the bicycle, closely followed by the motor bike and there are relatively few cars (mostly taxis). There is not much in the way of public transport. The lecturers' preference for travel by bicycle was regarded with some amusement by their Vietnamese hosts! Small (private) businesses have recently been encouraged and this is most obviously seen in the huge number of small shops in both the centre of Hanoi and its suburbs, selling all sorts of consumer goods. Larger businesses apparently have state involvement, if not control. Vietnamese Soil Mechanics has a strong Soviet flavour which is not surprising remembering the recent history of Vietnam and the fact that many senior academics have followed undergraduate or postgraduate courses in the Soviet Union. Thus the theory of plasticity and the work of Sokolovski (for example) are perhaps better known in Vietnam than they are in the U.K.. The lecturers were given a warm welcome by their hosts and hope that there will be further activities and contacts in the future with the geotechnical community in Vietnam.

Mike Gunn
South Bank University

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ANALYSIS OF HINGE JOINT CONNECTIONS IN CRISP

CRISP has been used in the design of the Aldershot Road Underpass, which is situated on the recently completed A331 trunk road. The underpass comprises T-section diaphragm walls permanently propped at carriageway level by a reinforced concrete slab, which is hinged at both wall connections and in the centre. The faces of these connection are coated with a neoprene rubber lining in order to reduce friction. The slab has been so designed in order to accommodate long term swelling pressures in the underlying clay. The River Blackwater lies a short distance away and local groundwater levels are very high.

In CRISP, the wall-slab hinge was initially modelled with a 'node-to-node' connection between a linear strain triangle (LST) at the end of the prop slab and a linear strain quadrilateral (LSQ) forming part of the wall, Figure 1.

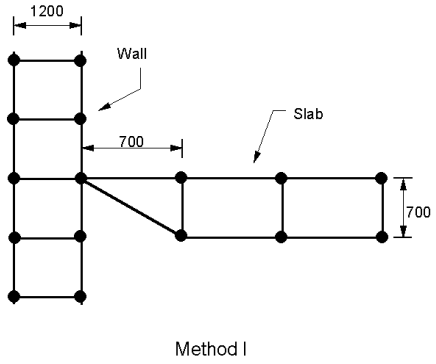
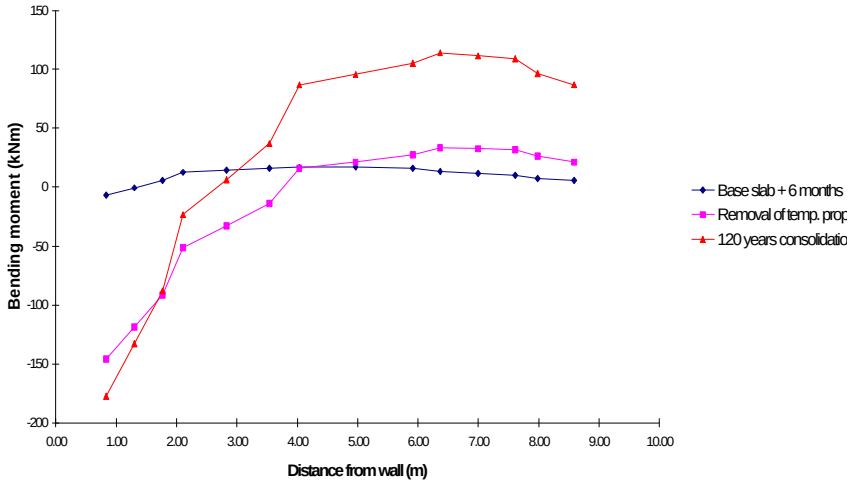


Figure 1.
N.B. Only structural elements shown for clarity
All dimensions in mm

The triangular element was given the same properties as the other (quadrilateral) elements comprising the slab.

Figure 2 - Bending moments along base slab

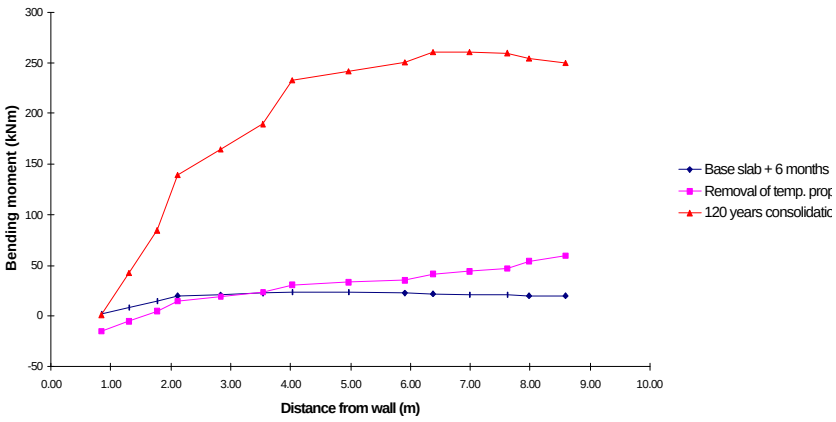


Bending moment profiles within the permanent prop slab at three different stages of the analysis were calculated from horizontal stresses at integration points across the width of the slab. The distribution of integration points within an LST element makes it difficult to calculate bending moment from element stresses, and so the profile stops just short of the triangle.

The bending moment profiles obtained using this technique are plotted in Figure 2.

It can clearly be seen that this method was unsuccessful in reducing the bending moments towards the hinge connection to (the expected) zero values. Indeed, bending moments near the hinge
were the largest on the whole profile at each stage following bulk excavation.

Figure 4 - Bending moments along base slab



The analyses were then repeated, with the hinge connection modelled using a different arrangement of elements, as shown in Figure 3.

Rather than one triangular element, three quadrilaterals were used in a 'bow-tie' configuration, with all three elements having the properties of the reinforced concrete slab.

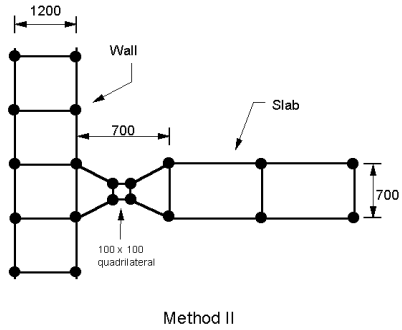


Figure 3.
N.B. Only structural elements shown for clarity
All dimensions in mm

Bending moments were then calculated for this configuration at the same three analysis stages and the results are presented in Figure 4.
It is clear that this method has been far more successful in reducing the bending moments near the slab/wall connection. As a consequence, the position of the maximum bending moment in the long term has moved well away from the wall, and the values obtained are considered to be more realistic.

David Press
University of Surrey

The CRISP Consortium

The CRISP Consortium aims to provide a forum for education, research ar development in the area of finite element methods in geotechnical engineering

The company's structure and services are currently being unveiled on its we site, WWW.CRISPConsortium.com

CRISP users and developers are strongly encouraged to visit this site f information on:-

- The CRISP Consortium structure, current members, joining instructions
- The CRISP finite element engine for developers
- New features such as the initial excess pore pressure feature recent introduced in SAGE CRISP version 3.02. This includes data files for cas studies which can be downloaded from the web page.

The site is being constantly updated with information as it becomes availabl Please email any comments on the site to webmaster@crispconsortium.com Any other questions or queries should be addressed Enquiry@CRISPConsortium.com

Amir Rahi
CRISP Consortiu

10th CRISP User Group Meeting - CALL FOR PAPERS 26 September 1997

Every year users of the CRISP program gather at the CRISP User Gr meeting to exchange views and experiences on the CRISP program. meetings have always sparked lively debates on the direction of program and the methods of its use and are an ideal opportunity to r consultants and academics working within similar fields to yourself.

This year celebrates the 10th CRISP User Group meeting and to mark occasion we are planning a bigger and better User group meeting. It be held at City University in London and will concentrate on Consul and Academic analyses and future development of the engine interface.

Papers are requested that cover any topic relating to CRISP. Papers r be up to 10 pages long and must be received by 31/8/97.

THE USER GROUP MEETING SHOULD NOT BE MISSED BY A ACTIVE USER OF THE PROGRAM OR THOSE WHO WISH TH WERE ! See Diary Dates for Contact Information

Diary Dates

25-27 June 1997
Advanced Geotechnical Analysis using SAGE CRISP,
Dong-A University, Pusan, Korea
Contact: Sung-Gyo Chung
Email: sgchung@seunghak.donga.ac.kr

2-4 July 1997
6th Int. Symp. on Numerical Models in Geomechanics (NUMOG 6), Montreal.
Contact: g.n.pande@uwcs.ac.uk

14-17 July 1997
Advanced Geotechnical Analysis using SAGE CRISP,
Cambridge University
Contact: Clarie Derbyshire
Fax: (44) 1223 302233
Email: CPI@hermes.cam.ac.uk

6-12 September 1997
XIV International Conference on Soil Mechanics and Foundation Engineering Hamburg, Germany
Contact: XIV ICSMFE97
Fax: (49) 40670 3283

16-19 September 1997
Advanced Geotechnical Analysis using SAGE CRISP, ETH Zurich
Contact: Clarie Derbyshire
Fax: (44) 1223 302233
Email: CPI@hermes.cam.ac.uk

26 September 1997
10th CRISP Users Workshop,
City University, London
Contact: Sarah Stallebrass
Fax: 0171 477 8571
Email: S.E.Stallebrass@city.ac.uk

HELP YOURSELF

As the Technical Support Manager for SAGE CRISP, I'm often asked by customers: “What can I do in order to help you to help me?". Well, in an ideal world, this would be true

In the **real** world, people fax me saying, "SAGE CRISP isn't working properly". It would be marvellous if I could turn the real world into something which resembled, at least vaguely, the ideal world. That is the purpose of this article.

Supporting software is, in essence, no different from fixing cars. The major differences are that there are a lot more things that can go wrong with software and, with cars, you never have to ask if the car with the problem has recently been driving on the same road as a car from a different manufacturer.

The more you tell us, the quicker we can sort out your problems. So here is list of tips which will help us to help you:

1. Installation:

a) Have you read the “readme.txt” file on the first disk? Read it. as it may explain your problem.

b) If you have a non-UK/US version of Windows, check your International Settings - details of how to do this are in the “readme.txt” file.

c) Email/fax us, telling us exactly what problem you are experiencing, together with a copy of your installation log file (c:\sagecrsp\sageinst.log). This will let us know which parts of the installation have succeeded, and where it is having problems.

2. Interface:

a) If the program crashes, it will often give an error message. Let us know exactly what it was, including the text in the header of the error dialogue box.

b) Try rebooting the machine and see if the problem is still there.

c) Run “sagediag.exe” from the diagnostics disk (details in the “readme1.txt” file on disk) and fax or email the output (c:\sagecrsp.dat), along with a description of the problem.

d) For non-crashing problems, just give us as much information as possible, regardless of how trivial it may seem. As Sherlock Holmes remarked: "Think Watson, even the minutest detail may be of crucial importance".

3. Analysis:

a) Has DBOS been installed on your machine? If not, install it now.

b) If the analysis crashes part way through the Main program, have a look at the results in the Post-Processor. It is quite possible that geotechnical reasons are the cause of the crash. Check the stress state codes to see if the whole soil mass is yielding, etc..

4. General:

a) Give us some information on your hardware, e.g. amount of RAM, processor type and speed, free space on the hard disk. This is especially important in the case of installation/ mesh generator problems.

b) Send us data files - the only one we need is filename.scd.

And finally...

This is not an effort to reduce my workload, rather an effort to save your time. After all it's a waste of your time to call out your car rescue service if your car stops running... when you have a spare can of fuel in the boot, and it turns out that you've run out of fuel.

Geoff Watson
SAGE Engineering

***** STOP PRESS ***** STOP PRESS ***** STOP PRESS ***** STOP PRESS *****

NEW RELEASE - SAGE CRISP 3.02

The new release of SAGE CRISP was launched on the 28th April 1997 and has been shipped to all maintenance customers. If you have forgotten to renew your maintenance, you are currently missing out on the following new enhancements:-

- Easier Bending Moment selection process
- Bending moment plots overlaid on the graphics Window
- File clean up
- Open current files options
- Direct transfer between pre and post processors
- View Outline
- Excess Pore water pressures at in situ stage
- Cut and paste material properties and zones
- Group Select ordering
- Deletion of graphs
- Selective Output and reduced file sizes
- …. And many more features

Call SAGE to renew your support and get instant access to these new features.

***** STOP PRESS ***** STOP PRESS ***** STOP PRESS ***** STOP PRESS *****

CRISP Users discussion list

Not on the discussion list yet? E-mail the following message to “mailbase@mailbase.ac.uk” to subscribe:

join crisp-users firstname lastname
stop