Safety Assessment and Decision Support Software System of Dike

SADSS

Safety Assessment and Decision Support Software System of Dike (SADSS) is a practical system developed with the ability of the conventional process and probabilistic risk evaluation. This software system is simple to install, uses a mouse and/or keyboard control, and has pull-down menus and interactive dialog boxes, written in visual basic together with dataset platform of SQL Server.

This system has three functional modules: probabilistic and risk analysis; slope sliding analysis; seepage analysis. Based on the data of typical dike subsection, the real-time computing of the risk degree can be carried out at different flood water heights. Thus the dynamic risk diagram on a whole dike ring system can be submitted. Moreover, the different safety grade can be classified according to specified standards and rules, the corresponding strengthening measures or forecasting schemes can be obtained.

It provides a user-friendly interface that facilitates easy interaction with operator in data inputting and updating and editing graphics. It can run independently or GIS-based.

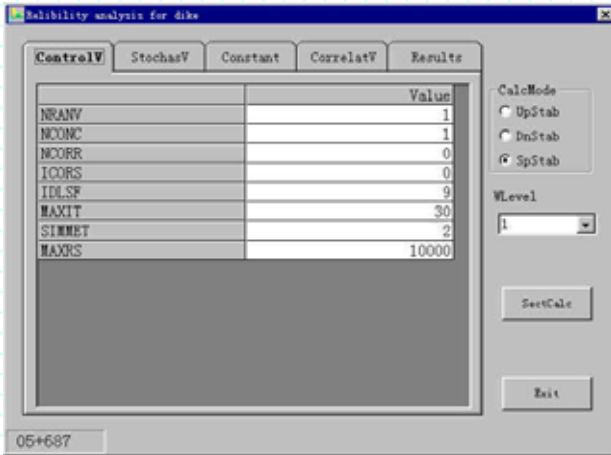**Slope sliding stability analysis**
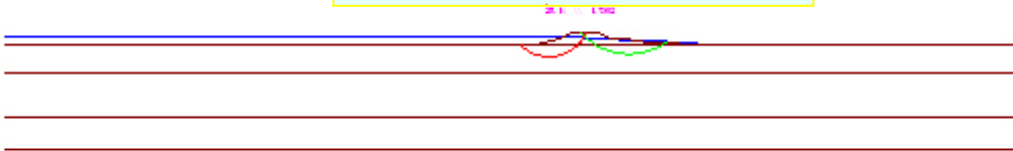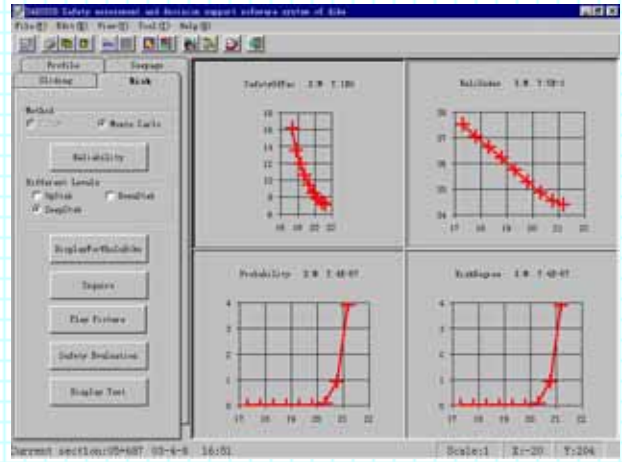
Automatical generation mesh
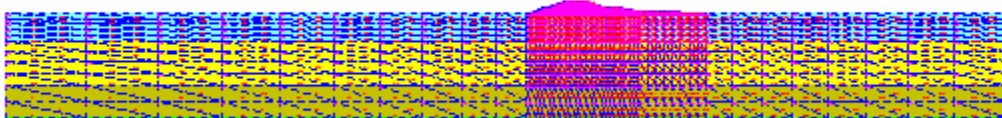
Seepage analysis

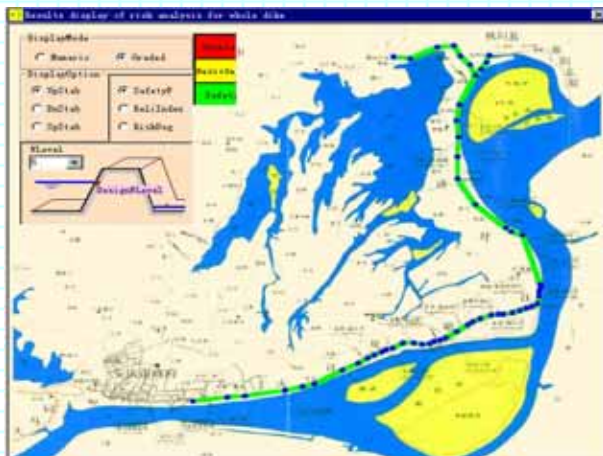e-mail: xingzhengwu@163.com

xingzhengwu@yahoo.com.cn

Probability analysis with MC method

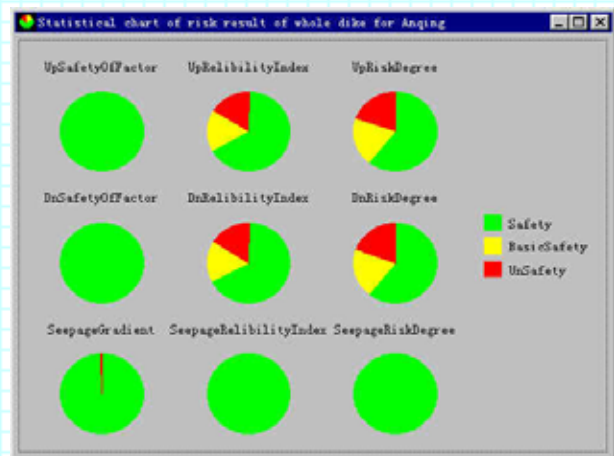## aevaluation index at various WL

Risk distribution along the dike on GIS map

Statistic pie chart of evaluation result

Statistic report forms

Data inquirying

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Features:

Some mathematical models and solution procedure and specified boundary condition have been modularized and visualization. Which can process a fully automated analyses, and it almost require no programming knowledge or skill of this field.

For a typical dike subsection, sliding and seepage analysis, probabilistic and risk analysis.

For a whole dike section, a graphic displaying based on GIS map enable the user to win a maximum of information from the calculating and to publish the results very easy.

Graphics are made on the screen, and may be exported to clipboard or to either bitmap (*.bmp). The graphics can be zoomed and the cursor position corresponding to coordinate value can be shown on the status bar.

First, second and third type boundary conditions are available for both flow and transport simulations. A 2D finite element model can simulate flow in both steady and unsteady. Solutions can be displayed as plots of flow vectors and head contours or as a complete flow net with equipotential lines and flow lines.

The Swedish and Bishop simplified method determine the stability of circular failure surfaces.

The Monte Carlo numerical simulation method has been employed to calculate the probability.