

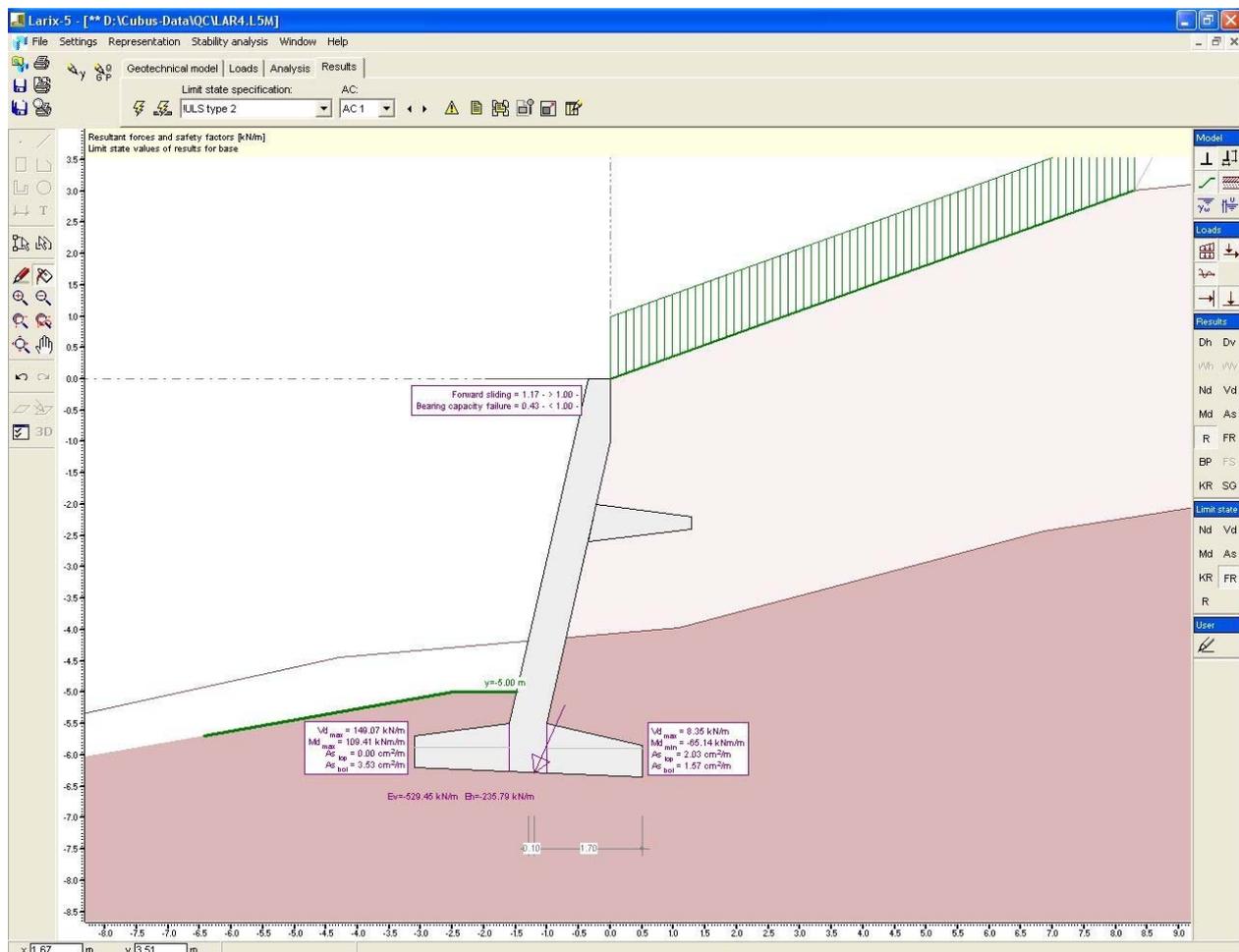
# LARIX-5M

## Geotechnical Engineering

Retaining walls

New Codes

Windows Environment



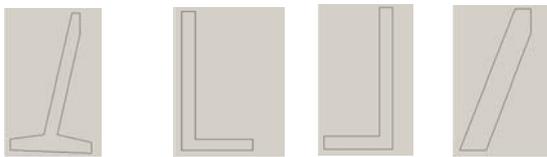
With the module LARIX-5M retaining walls can be analyzed and dimensioned. Both gravity and cantilever (inverted T-shaped) retaining walls with cantilevers behind (heel) and in front (toe) of the wall and with one or more ledges can be analyzed.

## Geotechnical model

- Arbitrary, polygonally-bounded soil layers
- Ground surface polygonal behind the wall, and horizontal, inclined or singly broken in front of the wall
- Polygonally-defined water table
- Influence of seepage using pore pressure contours (isobars)

## Retaining wall

- Wall geometry produced from following parametric basic types and extendable behind the wall with ledges



## Loading

- Concentrated loads
- Trapezoidally-distributed loads
- Horizontal and vertical earthquake loading
- Loads acting directly on the wall

## Solution procedure

- Earth pressure analysis with generalized Culmann E-line
- Selectable magnitude of the active earth pressure up to the earth pressure at rest for the complete analysis or just for the internal forces and moments and the dimensioning of the wall reinforcement
- Taking into account of secondary slip surfaces with ledges and for cantilever retaining walls with a cantilever behind the wall
- Taking into account of effects of dead zone with ledges
- Static bearing capacity verification
- Overturning verification
- Sliding verification with or without cohesion component, possibly with foundation key
- Settlements and verification of rotational effects
- Dimensioning of required size of foundation
- Dimensioning of required reinforcement, in the wall, in the foundation and in the ledges

## Results

- Secondary slip surfaces and dead zones
- Horizontal and vertical earthquake loading
- Section forces and reinforcement

- Resultant force acting on foundation, soil pressures, settlements, rotation
- Safety against: bearing failure, overturning, sliding

## Overall stability of retaining wall

- The determination of the global stability can be investigated with the module LARIX-5S
- If the boundary conditions for the verification with the bearing capacity formula of Terzaghi are not fulfilled (homogeneous soil conditions, homogeneous groundwater conditions, etc.) the safety with respect to static bearing capacity failure can also be investigated with the module LARIX-5S
- All input data for the module LARIX-5M are automatically imported into the overall stability verification

## Safety concept

- Dimensioning according to the ultimate limit states for structural safety and serviceability (compatible with the Eurocodes)
- Uncertainties in the actions, the soil and material properties, the geometrical properties and the analytical model are taken into account by means of partial safety factors
- Tabular management of all - partly limit state-dependent safety factors
- Automatic building of all necessary action combinations for the required limit states
- User-defined action combination
- Dimensioning according to the old safety concept with a global safety factor is possible

## Results and limit states

- Dimensioning and verifications are carried out in the prescribed limit states
- Results for each limit state and each action combination
- Limit values over all action combinations

## User interface

- User-friendly graphics input of all geometrically-defined data for the geotechnical model and loading using the object-oriented Graphics Editor with the usual CAD construction possibilities
- Multi-step Undo-/Redo function
- Very simple modification possibilities for all input data, both for individual objects and for object groups
- Search for objects with specific properties
- Management of all input objects according to type in individual management layers, whose visibility can be activated or deactivated as required
- Import of any type of input object from one analysis to another using copy/paste

- CAD drawing functions to complete figures (dimensions, labelling, line and area objects)
- Possibility of configuring working environment (colours of individual objects, symbol sizes, font sizes, dimension units and number of decimal places for all quantities, default values for dialogues)
- Detailed, context-sensitive help system and hints directly on the cursor itself; the manual can also be consulted on-line and with search for technical terms
- Operating systems Windows NT, 2000, XP

## Interfaces

- Import and export in DXF format
- Export of graphics and texts to other applications (Word, Excel, etc.) via the clipboard
- Input data from LARIX-2, LARIX-3 and LARIX-4

## Printing (CubusViewer)

- Page preview of the documents queued for printing with the possibility of changing dimensions, moving documents, pasting and deleting via the clipboard
- User-defined document template (free design of page header and footer) with firm's logo, etc.

## Project management (CubusExplorer)

- Clear overview of project management in the style of the Windows Explorer
- Functions like archiving, file compression, moving, deleting, etc., for individual analyses or whole folders
- Graphical preview for user-friendly searching of an analysis

## More LARIX-5 programs

- Overall stability
- Excavation walls

