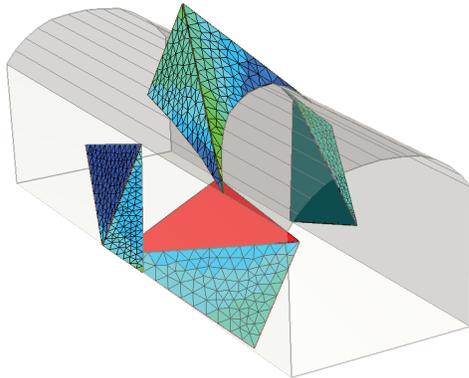


UnWedge

Underground Wedge Stability Analysis



View field stress contours for 3D models

What is UnWedge?

UnWedge is a 3D stability analysis and visualization program for underground excavations in rock containing intersecting structural discontinuities. Safety factors are calculated for potentially unstable wedges and a variety of supports can be modeled. Use UnWedge to quickly create a model, perform a safety factor analysis, place reinforcement, and interpret the results. The graphical data interpreter provides a rich set of tools, including 3D animation, for the convenient display of wedges surrounding the excavation.

What's New in UnWedge

- Users can now add multiple bolt patterns in end wedges
- Added truncation surface that truncates underground wedges while allowing bolts through

Software Highlights

Wedge Analysis

- Using block theory, UnWedge determines all possible wedges that can be formed by the intersection of three joint planes and the excavation.
- Perimeter Wedges: UnWedge always determines the wedges that can form around the perimeter of the excavation. A maximum of six wedges can be formed around the perimeter. Less than six wedges may be formed, depending on the joint orientations and the shape and orientation of the excavation.
- End Wedges: UnWedge also finds the wedges that can be formed at both "ends" of the excavation. If the Opening Section represents the plane view of a horizontal excavation, then the End Wedges will be the roof and floor wedges.

Probabilistic Analysis

- The most prominent feature of UnWedge is its probabilistic analysis capability, which can be used to add statistical distributions to variables such as joint orientation, joint strength, and support properties as well as field stress properties.
- A computation runs a specified number of trials to determine significant data, such as Maximum Wedge Depth, Factor of Safety, and Maximum Support Pressure. The data can be analyzed in the new Probability View allowing the user to plot histograms, cumulative plots, and scatter plots of the data. Specific trials and specific segments of the cross-section can also be plotted with a simple right-click function.

Find more details: rocscience.com/software/unwedge

Plans & Pricing

Personal License: Locked to one computer.

- Lease: **USD \$795/year**
Leased annually. Includes Maintenance+.
- Perpetual: **USD \$1,595**
Purchased outright. Includes 12 months of Maintenance+.

Flexible License: Installed on any number of machines. The license file sits on the server.

- Lease: **USD \$1,195/year**
Leased annually. Includes Maintenance+.
- Perpetual: **USD \$2,295**
Purchased outright. Includes 12 months of Maintenance+.

Maintenance+

Maintenance+ is our enhanced maintenance and support services subscription, purchased annually at 20% of the license cost.

With Maintenance+ Continuous Software you get access to all feature releases, enhancements, and bug fixes throughout the year and as soon as they're available. You also have access to convenient License Services, the support of our experts, and exclusive learning offerings.

Contact us at software@rocscience.com

Excavation

- Define/Edit opening section
- Import/Export .dxf files
- Axis trend/plunge
- Analyze tunnels, caverns, shafts, and intersections

Joints

- Orientation (dip/dip direction)
- Import from Dips
- Stereonet view
- Multiple joint combinations
- Joint combination analyzer
- Shear strength (Mohr-Coulomb, Barton-Bandis, Power Curve)
- Waviness
- Joint structure continuity
- Water pressure

Loading

- Seismic loading
- Field stress
- Pressure
- Bolt force
- Water pressure

Probabilistic Analysis

- Statistical distributions—normal, uniform, triangular, beta, exponential, lognormal, gamma
- Fisher distribution for joint orientations
- Histogram, cumulative, and scatter plots
- Import joint set statistics from Dips
- Monte Carlo or Latin Hypercube simulation
- Random or pseudo-random sampling
- Highlight failed wedges on plots
- View all results from multiple joint combinations of three different joints at once

Stress Analysis

- Constant field stress
- Gravity field stress
- Advanced analysis options
- View stress contours

Support

- 2D design views
- Pattern bolting, shotcrete, pressure, and spot bolting
- Bolt models – Anchored, Grouted Dowel, Cables, Swellex, Split Sets, and user-defined
- Bolt orientation efficiency
- Interactive editing
- Bolt force diagrams

Tunnel Axis Plots

- Optimize axis orientation
- Vary trend and/or plunge
- Contour plots or 3D charts
- 2D charts with secondary data
- User-defined data

Viewing Options

- 3D wedge view (orthogonal and perspective views)
- Multi-perspective view
- End-wedge view
- Probability view
- Wedge visibility
- Move wedges
- Easily rotate, zoom, and pan
- Animation
- Display options

Wedges

- Tetrahedral or prismatic wedges using Goodman/Shi block theory
- Perimeter wedges
- End wedges
- Failure modes—falling, sliding, lifting, stable
- Scale wedge size
- Ground surface wedge truncation
- Failure mode filter
- Minimum wedge size filter
- EC7 design standards