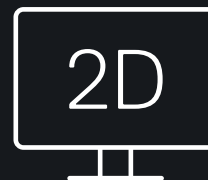GeoStudio

GeoStudio 2D

Confidently conquer 2D geotechnical
challenges with GeoStudio 2D

GeoStudio 2D is an integrated software suite for modelling slope stability, groundwater flow, ground deformation, and more in soil and rock. Get the big picture from all your data sources and run combined analyses to reveal new insights and uncover risks.

2D

GeoStudio 2D

GeoStudio 2D offers simple, but powerful, analytical capabilities to model a wide range of slope stability problems using a 2D limit equilibrium formulation. Within this basic tier, you have the power to simulate a wide range of scenarios:

- Natural soil and rock slopes
- Dams and levees
- Roads, bridges, and embankments
- Slope stabilization designs
- Construction excavations and mine slopes

Basic pore-water pressure features, such as piezometric lines and spatial functions, can be used to include pore-water pressure influence on your stability analysis.

◣ SLOPE/W

Material Models
GeoStudio 2D includes a comprehensive list of material models including Mohr-Coulomb, undrained, high strength, impenetrable, Hoek-Brown, compound strength, bilinear, anisotropic strength, SHANSEP, spatial Mohr-Coulomb, and more.

Limit State Design
Limit state design or load resistance factor design is handled by specifying partial factors on permanent/variable loads, seismic coefficients, material properties, reinforcement inputs.

Rapid Drawdown
Rapid drawdown analysis can be conducted using various pore-water pressure features or the multi-stage rapid drawdown technique.

GeoStudio 2D **Advanced**

In addition to the features of GeoStudio 2D, the Advanced tier brings you the power to analyze the influence of groundwater flow and hydraulic structures on your project's stability using an integrated finite element seepage formulation. Consider complex saturated/unsaturated pore-water pressures or investigate stability changes over time with transient groundwater flow.

Expand your understanding of your project by adding the functionality to analyze:

- Groundwater flow systems, from small-scale systems to complex stratigraphy and topography
- Subsurface dewatering applications for civil infrastructure, construction, and mining projects
- Tailings dams, transient flood events, rapid drawdown, and climate effects

◣ SLOPE/W
⩔ SEEP/W

Integration
The addition of groundwater flow makes it possible to analyze the stability of any natural or man-made system subject to transient changes in pore-water pressure. Seamlessly add finite element groundwater flow in the same project file.

Saturated/Unsaturated
The rigorous saturated/unsaturated formulation means that even the most demanding flow problems, such as infiltration into dry soil or seepage through complex upstream tailings dams, can be analyzed with ease.

Boundary Conditions
GeoStudio 2D Advanced supports a range of boundary condition options. Field data or user-specified functional relationships can be inputted to define hydrographs, reservoir fluctuations, rainfall cycles, vegetation effects, or land-climate interactions.

GeoStudio 2D **Ultimate**

With GeoStudio 2D Ultimate, you unlock the power of finite element deformation, earthquake liquefaction, and dynamic loading analysis to your geotechnical projects. With the addition of comprehensive incremental stress-strain and dynamic stress-strain formulations, you can consider:

- Simultaneous generation and dissipation of excess pore-water pressures, allowing for the design of subsurface drainage systems

- Deformation of natural and cut slopes under various loading conditions resulting from changes in groundwater flow, strength loss due to strain-softening, construction activities, and earthquakes

- Simulate stability and performance of struts, pile and sheet walls, anchorage, tunnel lining, and more reinforcement options for slopes and excavations

- Liquefaction assessment and subsequent large-scale deformations that may result from earthquakes

GeoStudio 2D Ultimate includes everything in GeoStudio 2D and GeoStudio 2D Advanced, while also adding in these new analysis types:

- In Situ Stress
- Coupled Consolidation
- Stress Reduction Stability (SRS)
- Stress Redistribution
- Newmark Deformation Analysis

SLOPE/W

SEEP/W

SIGMA/W

QUAKE/W

Coupled-Consolidation

The coupled stress and pore-water pressure formulation can handle complex analyses with saturated or unsaturated soils. This is useful for construction sequences involving fill placement, excavation, and soil-structure interaction.

Load-Deformation

Unloading and loading activities can be simply and accurately modelled, including submerged fill placement, dam and tailings embankment construction, deep excavations, and open pit mine construction. Pore-water pressure changes can be incorporated by defining the initial and final water conditions.

Dynamic Stress and Earthquakes

Model dynamic stresses arising from earthquake shaking or dynamic point forces from a blast or sudden impact. Excess pore-water pressures can also be computed and used in your slope stability analysis to examine the effect of the elevated pore-water pressures on stability.
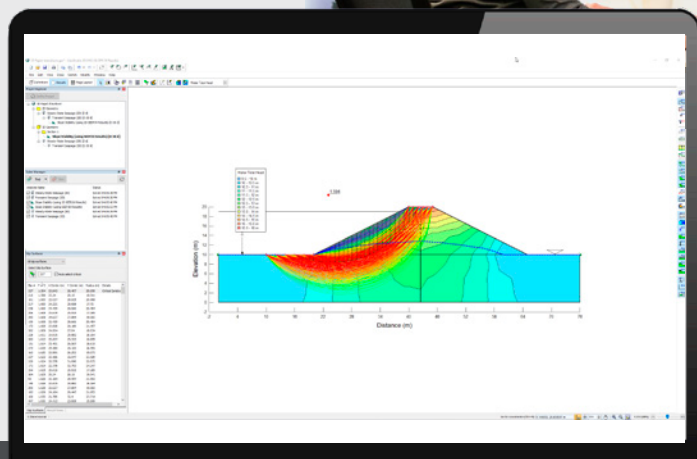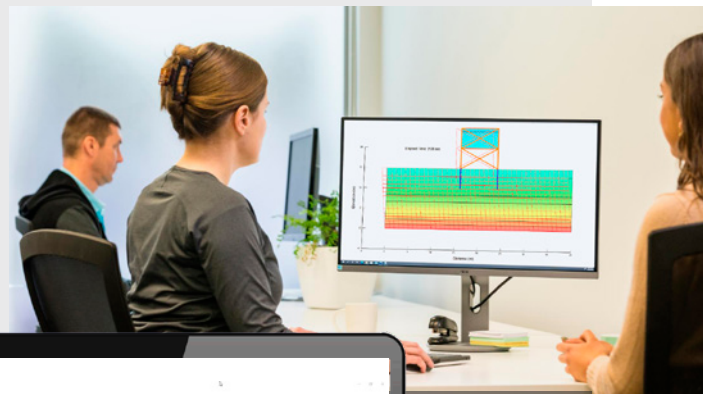
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