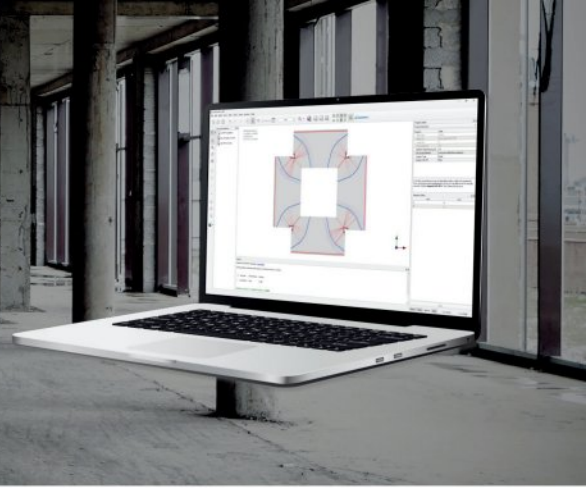# limitstate:SLAB
AUTOMATED YIELD LINE ANALYSIS SOFTWARE

LIMITSTATE:SLAB

LimitState:SLAB harnesses automated yield-line analysis to assess slabs, reveal true collapse mechanisms, and uncover hidden reserves of strength; giving engineers fast, reliable insights to make confident, efficient decisions.

CUTTING EDGE CAPABILITY

LimitState:SLAB's Discontinuity Layout Optimization (DLO) kernel , developed at The University of Sheffield, combines rigorous limit analysis theory with cutting-edge optimisation technology to automatically identify the critical yield-line pattern for any geometry of reinforced concrete slab.
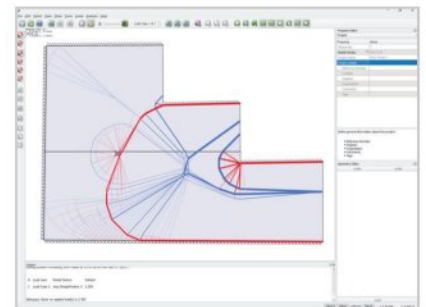
Traditional yield-line methods require the engineer to guess which mechanism will govern, or to apply extra safety margins to compensate for uncertainty. With DLO, that guesswork is removed, the system considers all possible collapse layouts and pinpoints the governing mechanism with high reliability, helping you uncover hidden strength reserves in slabs and deliver more accurate, efficient assessments.

INFORMED DECISIONS

LimitState:SLAB lets you explore slab failure responses under different loading scenarios, revealing the governing collapse mechanism and associated factor on loading with clarity. This actionable insight helps engineers make confident, efficient decisions, optimise reinforcement or strengthening strategies, and better understand the behaviour of existing structures.
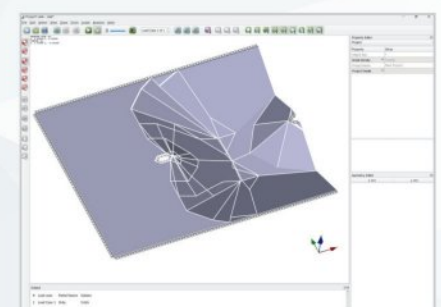
FAST, CLEAR RESULTS

With its intuitive interface and guided setup, LimitState:SLAB makes model creation and analysis straightforward from start to finish. Define geometry, loading, and support conditions in minutes, then run a DLO analysis with a single click and solve in seconds. Clear visual outputs and fully customisable reports make it easy to interpret results and share findings with confidence.

Rapidly identify the governing failure mechanism and safety margin through powerful yield-line and optimization technology

An intuitive interface that lets you set up and analyse complex slab models with ease

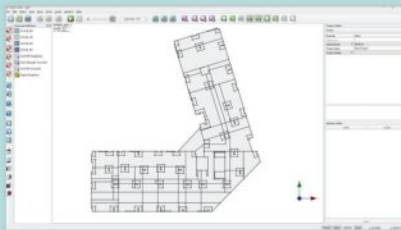Animated output offers a clearer, deeper view of reinforced concrete slab behaviour at failure

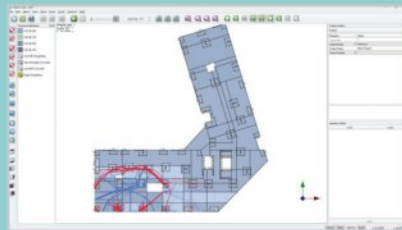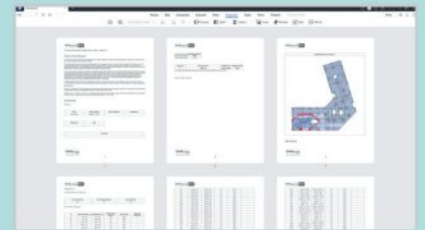# limitstate:SLAB
AUTOMATED YIELD LINE ANALYSIS SOFTWARE

DEFINE

- Fully interactive environment for fast, flexible slab modelling
- Import CAD to quickly define complex slab geometries
- Consider complex patterns of reinforcement with ease
- Quickly assign supports, pressures, point or line loads
- Define multiple load cases for comprehensive assessment
- Verify models instantly using built-in diagnostic tools
- Compatible with Eurocode 2 & other limit state frameworks

ANALYSE

- DLO engine utilises rigorous mathematical optimization
- No reliance on pre-defined yield-line mechanisms
- Eliminate concern over missed failure patterns
- Optimization based technology provides fast, accurate results
- Explore 'what if' scenarios and understand key effects
- More accurate flexural strength assessment than elastic methods
- Analyse multiple load cases with a single click

EVALUATE

- Directly calculate factors of safety for loads or materials
- Generate comprehensive, customisable reports
- Can lead to highly efficient RC slab designs
- Determine key data to deliver robust, efficient solutions
- Animated failure mechanism aids intuitive understanding
- Examine critical analysis outputs via the Property Editor
- Export screenshots & animations of mechanisms

ABOUT LIMITSTATE

- We specialize in the development of powerful, yet easy-to-use software tools for civil and structural engineers.
- Our expert support team are on hand for swift assistance with technical and licensing queries.
- From independent firms to multinational corporations, engineers in over 30 countries around the world rely on our software.

STATE OF THE ART

DLO is a cutting-edge plastic limit analysis method, underpinned by rigorous theory, and applied to multiple engineering problems.

LimitState:SLAB uses DLO to identify the critical yield-line pattern from many alternatives and animate the failure mechanism for easier interpretation. All of this is done automatically, saving engineers time spent guessing failure modes and undertaking manual calculations.

ABOUT SLAB