



ENERCALC SEL - Executive Summary

The Structural Engineering Library provides you with pre-written structural calculation modules that allow you to quickly & accurately build a set of calculations based on your structure analysis & design. SEL project files may also include a project's Excel spreadsheets, MS Word documents, Scanned images and PDF files.

- Completely rewritten in 2005-2008, with major updates in 2017 and 2019, SEL conforms to and can validate your designs for these standards:

IBC 2006 / 2009 / 2012 / 2015 / 2018, **CBC** 2007 / 2010 / 2013 / 2016 / 2019, **ASCE** 7-05 / 7-10 / 7-16, **ACI** 318-05 / 08 / 11 / 14, **ACI** 530-05 / 08 / 11 / 13, **TMS** 402-16, **AISC** 360-05, 360-10, 360-16, **NDS** 2005, 2012 / 2015 / 2018

- Analyze and design structures in Steel, Concrete, Masonry & Wood
- **Beams:** Design single and multi span beams. Flexible support fixity and almost unlimited loading. Easy graphics beam builder, extensive lateral support options, automatic live load "skip loading", minor axis bending. Rolled steel sections with composite option, multi-span concrete beams with several cross sections, concrete beam on elastic foundation, wood & steel beam "Quick List" for fast selection, highly detailed analysis results with concise summary, flexible diagramming.
- **Columns:** All rolled steel sections plus user-created section database, multi-story capability with flexible brace point specification. Biaxial bending for steel, concrete & wood. Steel, Masonry & Concrete capacities calculated using interaction diagrams. Varying end fixities, slenderness specification for each axis, and flexible vertical & lateral load application. New concrete general shape biaxial cross section solvers.
- **Foundations:** Design of general footing with axial, moment & shear loads, specify capacity increases, rebar band requirements, column pedestals, highly detailed analysis including uplift & sliding. General, combined and wall footings.
- **Walls:** Concrete and masonry slender walls with one or two stories. Flexible vertical and lateral load application and highly detailed deflection calculations by modeling wall with FEM tools, temperature effects, base fixity option, reinforcing at center or each face, concrete wall "reveals".
- **Concrete, masonry & wood shear walls.** Multi-story walls, walls with user defined openings and concrete walls with special boundary elements. Also includes footing design.
- **Cantilever retaining wall design in concrete or masonry.** Variable toe & heel dimensions, multi-stem construction, flexible loadings including surcharges and adjacent loads.
- **Frames:** 2-D Frames with completely flexible modeling options, "Frame Wizard" provides automatic frame geometry creation, steel and wood databases, flexible load combinations, high size limits, etc. This is a simple program to handle most of your 2-D frame needs.
- **Other general functions:** Steel base plate, General section properties, Torsional analysis of rigid diaphragms, ASCE Seismic & Wind forces, Live Load reductions, rebar embedment, point loads on slabs, bolt groups.
- **Project calculation manager** enables the creation of "project files" which include ENERCALC calculations, Excel spreadsheets, Word documents, PDF files, & scanned images. It also provides single-set calculation printing, import of standard calculation templates, & full Division/Module organization.
- **Material databases:** Includes databases of steel sections, wood sections, timber materials, steel grades, and seismic acceleration databases.
- **Project Load Combination manager** integrated with all calculation modules.
- **Extensive 2D and 3D sketches,** stress diagrams and column interaction diagrams.