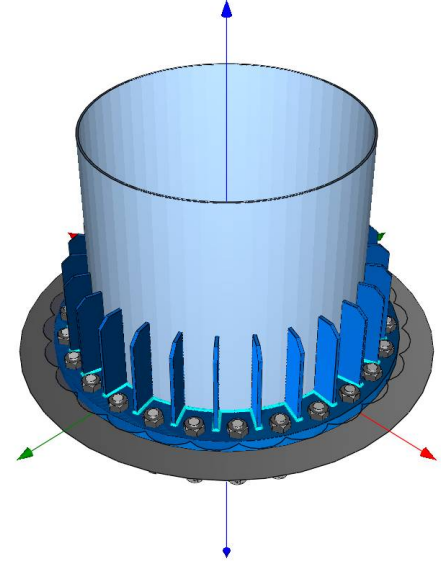
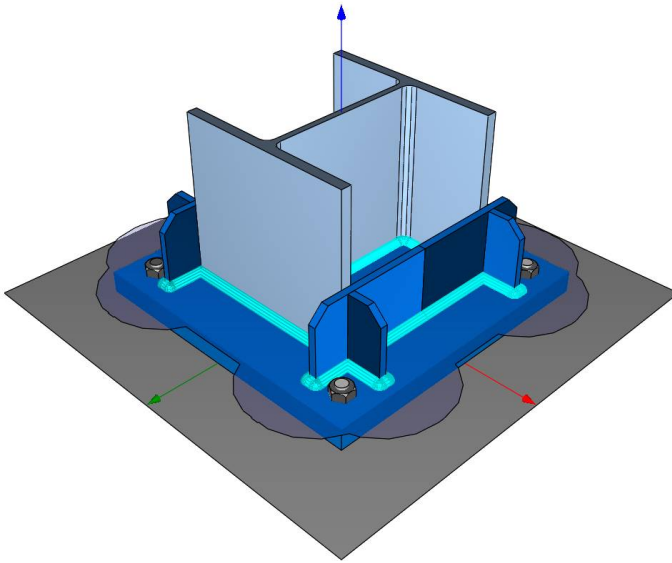


BASE PLATE

STEEL COLUMN BASE PLATES
DESIGN | DETAILING | S11

Summary

Design column baseplates subjected to axial force and bi-axial moments, as well as shear and torsion. **Base Plate** can design plates of any general shape that supports steel columns of any shape.



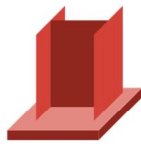
What makes this module special?

- Shear and torsion calculations
- Baseplates and columns of any shape can be designed
- 3D stress and strain representation

Detailed Description

Base Plate assists in the design of column baseplates subjected to axial force and bi-axial moments, as well as shear and torsion. Stiffeners can optionally be added to the baseplate.

The design isn't limited to only rectangular or circular baseplates. Custom baseplate shapes supporting custom steel column profiles can also be designed. Baseplates can bear directly on concrete or grout, or the plate can be elevated, and compression forces can be transferred through the anchors.

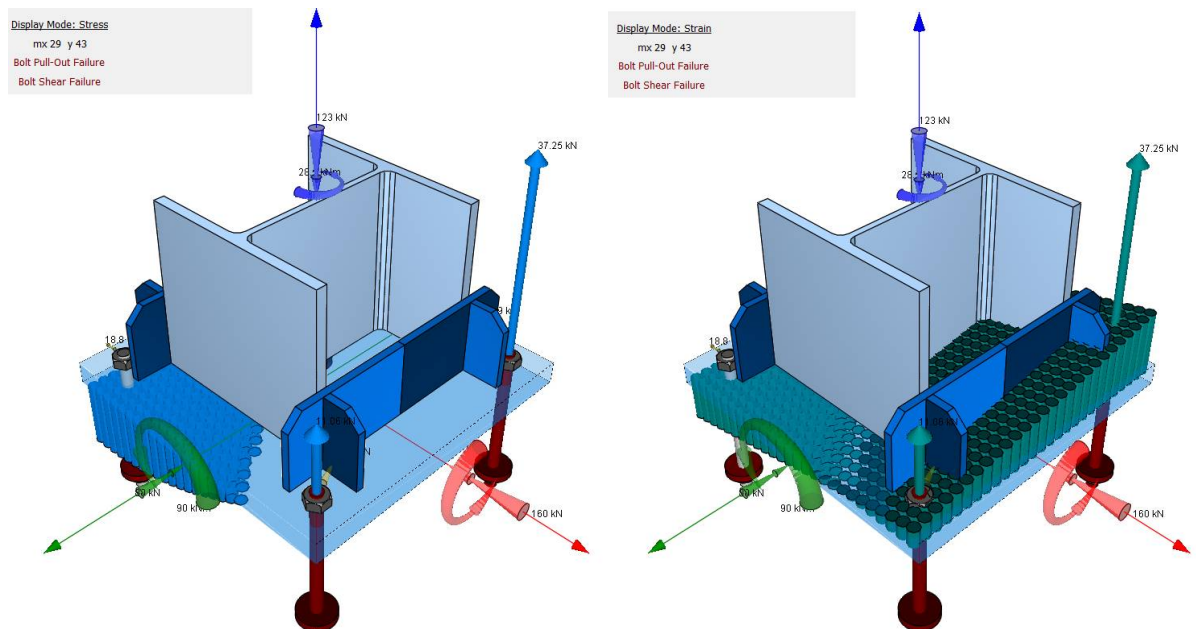


BASE PLATE

STEEL COLUMN BASE PLATES
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The following assumptions are made during analysis and design:

- Column forces are transferred to the baseplate and concrete through an effective area, determined by the column geometry and the plate stiffeners (if any).
- A plane is used to represent the strain across the effective area. The equilibrium point is determined iteratively to balance the internal forces with the applied axial load and biaxial bending.
- For each individual bolt, the module uses the plane of strain to determine its state of tension or compression.
- Torsion transfers to the bolts as shear.

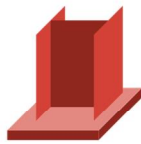


On completing the analysis, the module displays the resulting design forces and factors of safety for each of the load cases.

Design checks include:

- Concrete bearing stress
- Bolt tension or compression force
- Bolt shear force
- Plate bending stress
- Welds

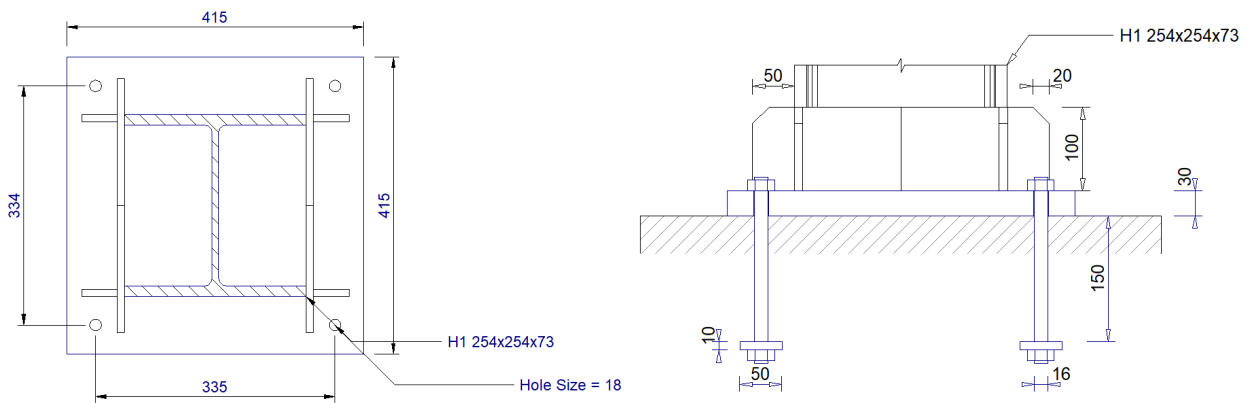
For a better understanding of the analysis of the module, the strain diagram shows the effective bearing area used as well as the plane of strain used to find equilibrium.



BASE PLATE

STEEL COLUMN BASE PLATES
DESIGN | DETAILING | S11

The module includes functionality to generate detailed drawings of the connection for editing and printing using **Padds** or other CAD modules.



Workflow

Each connection module can be used in stand-alone mode, but the strength lies with the ability to use the design links from **Sumo** to transfer the necessary forces and geometry to the design module. A drawing of the final design can be saved in either a **Padds** file or DXF format for final fabrication drawings.

Supported Design Codes

Design Codes

- Eurocode 3 - 2005
- SANS 0162 - 2005