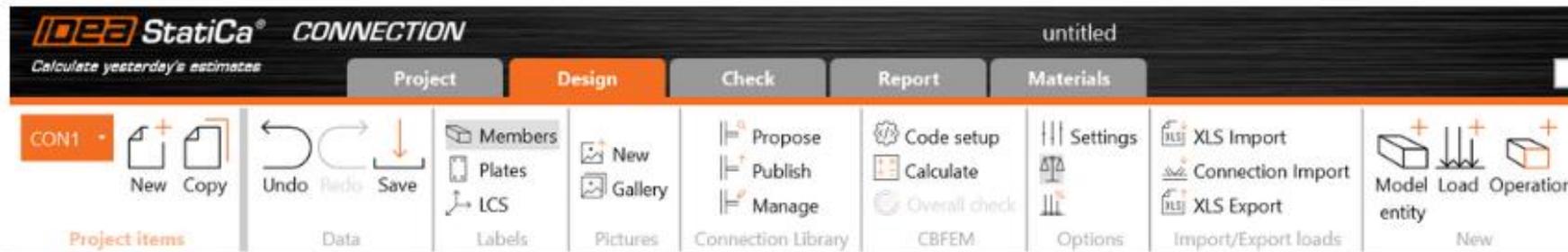
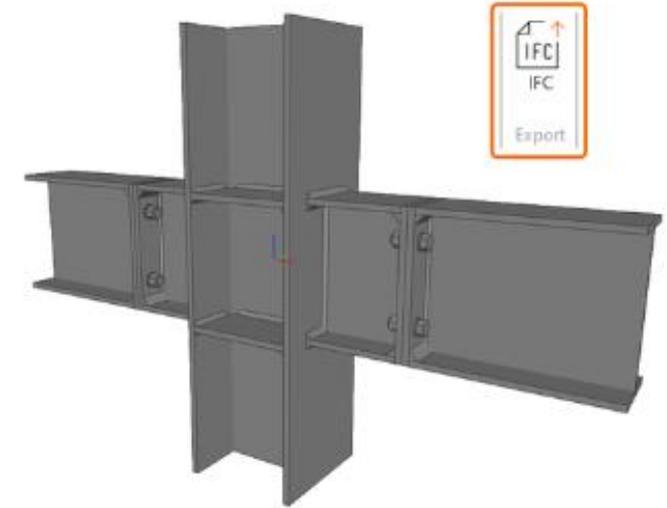
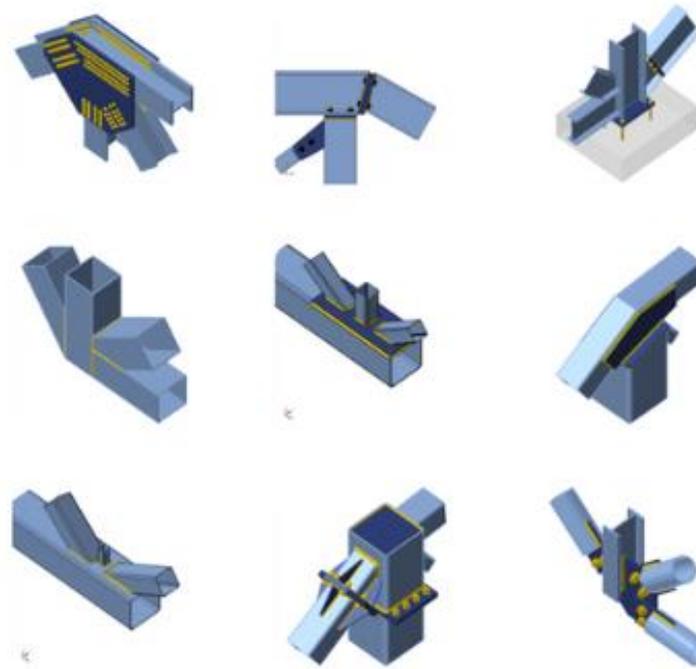




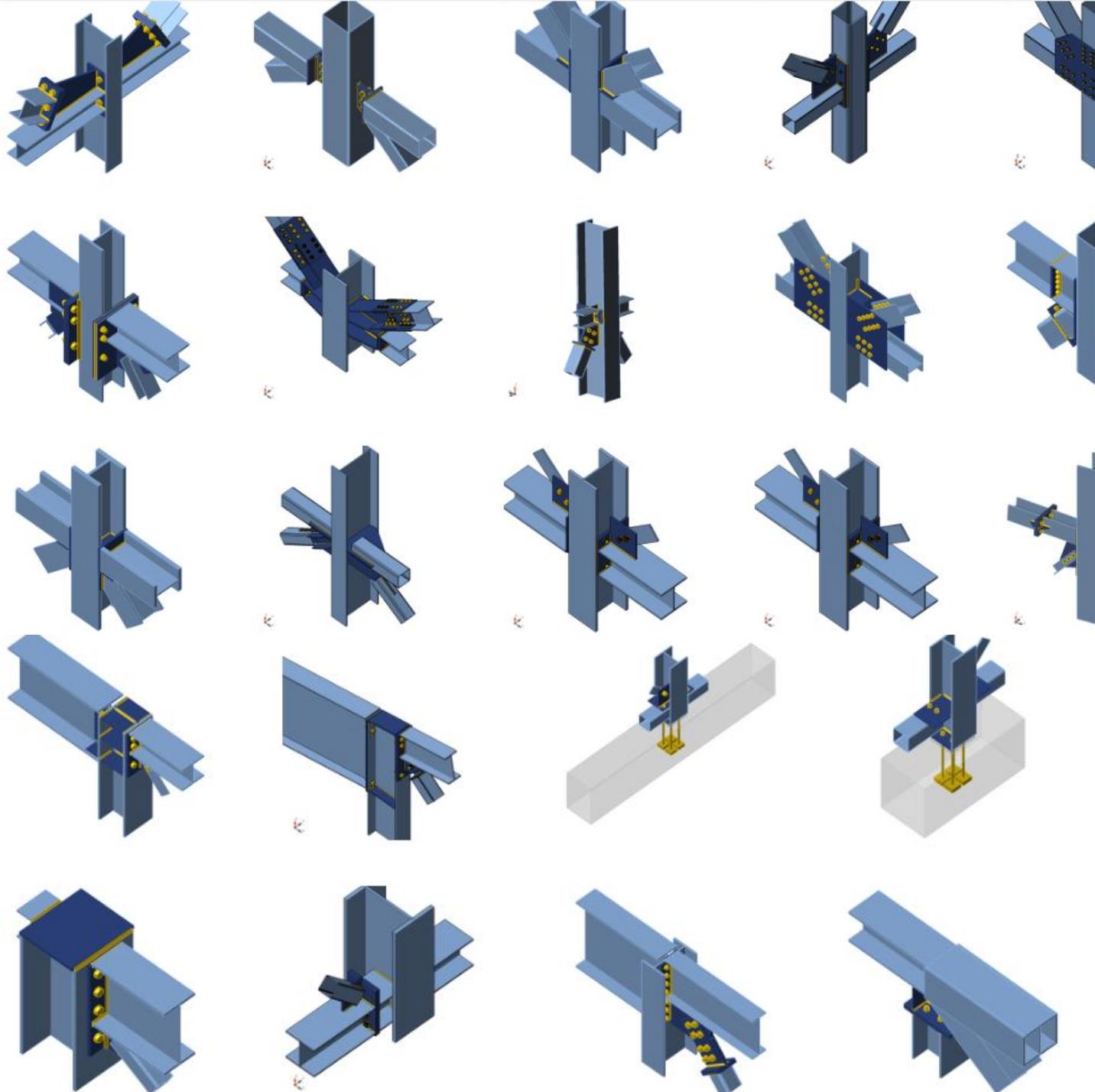
Round-Trip With IDEA StatiCa 23.1

December 6, 2023

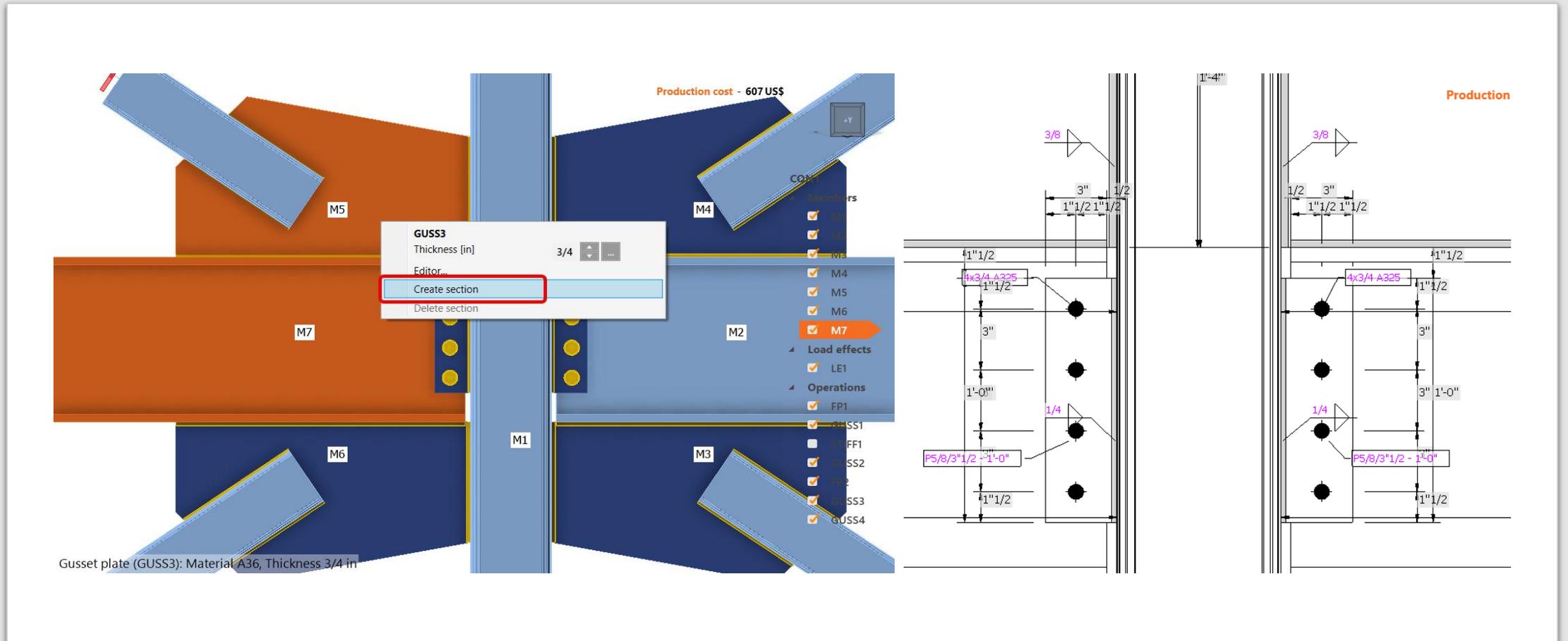


Agenda

- Connection app
 - New interface
 - Minor improvements
 - SDS2 Link
 - IFC export
 - Connection library download option
- Member app
 - Rigid support
- Detail app
 - New interface



Section view and graphics



Shear force position

- Moment diagram shown when selecting the position of force using a unitary shear force
- New input: Connected member face

The screenshot displays a structural analysis software interface. On the left, a vertical blue member labeled 'C' is shown with a green moment diagram. A horizontal member labeled 'B' is connected to member 'C' at a joint. A green triangular moment diagram is shown on member 'B', with a peak value of 0.25 and a value of -0.07 at the end. A label 'CLEAT1' is positioned at the joint. A red horizontal bar is at the bottom of member 'C'. The top right of the interface shows a toolbar with icons for view and selection, and a text label 'Production cost - 11 US\$'. Below the toolbar is a 'CON2' section with a tree view containing 'Members' (C, B), 'Load effects' (LE1), and 'Operations' (FP1, STIFF1, CLEAT1). On the right, a properties panel for member 'B' is open, showing various settings. The 'Model' section is highlighted with a red box, showing 'Forces in' set to 'Connected member face' and 'Connected member' set to 'C'. The status bar at the bottom indicates 'Load effects: In equilibrium Units: in' and the website 'www.ideastatica.com'.

Production cost - 11 US\$

CON2

- Members
 - C
 - B
- Load effects
 - LE1
- Operations
 - FP1
 - STIFF1
 - CLEAT1

Properties

Cross-section: 8 - C(Imp)10X20

Mirror Y:

Mirror Z:

Geometrical type: Ended

Position

Defined by: Rotations

β - Direction [°]: 0.0

γ - Pitch [°]: 0.0

α - Rotation [°]: 0.0

Offset ex [in]: 0"

Offset ey [in]: 0"

Offset ez [in]: 0"

Align: To member plate

Aligned plate: B | Web 1

Related plate: C | Web 4

Model

Model type: N-Vy-Vz-Mx-My-Mz

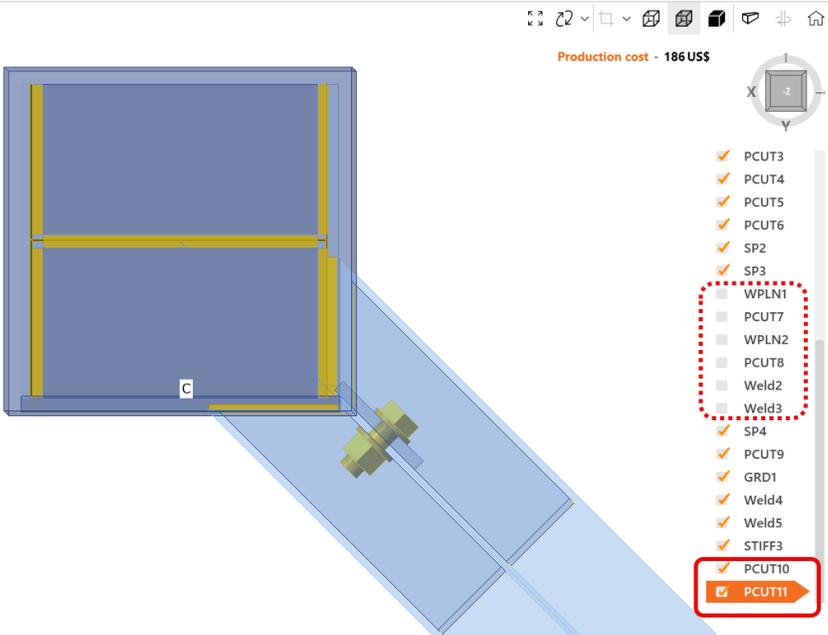
Forces in: Connected member face

Connected member: C

Load effects: In equilibrium Units: in

www.ideastatica.com

Cut of plate: Parallel plates



The screenshot displays the IDEA StatiCa software interface. On the left, a 3D model of a blue plate with a yellow cut is shown. The cut is labeled 'C'. The software's production cost is listed as 186 US\$. A list of components is shown on the right, including PCUT3 through PCUT11, SP2, SP3, WPLN1, WPLN2, Weld2, Weld3, SP4, PCUT9, GRD1, Weld4, Weld5, STIFF3, PCUT10, and PCUT11. The PCUT11 component is highlighted with a red box. The software's status bar at the bottom indicates 'FD (2016) Analysis: Stress, strain Load effects: Equilibrium not required Units: in' and the website 'www.ideastatica.com'.

Production cost - 186 US\$

- ✓ PCUT3
- ✓ PCUT4
- ✓ PCUT5
- ✓ PCUT6
- ✓ SP2
- ✓ SP3
- WPLN1
- PCUT7
- WPLN2
- PCUT8
- Weld2
- Weld3
- ✓ SP4
- ✓ PCUT9
- ✓ GRD1
- ✓ Weld4
- ✓ Weld5
- ✓ STIFF3
- ✓ PCUT10
- ✓ PCUT11

PCUT11 [Cut of plate] Copy Delete

▼ Cut of plate

Modified item SP2

Cut by STIFF2a

Cutting method Surface

Remaining part +

Offset [in] 0"

▼ Welds

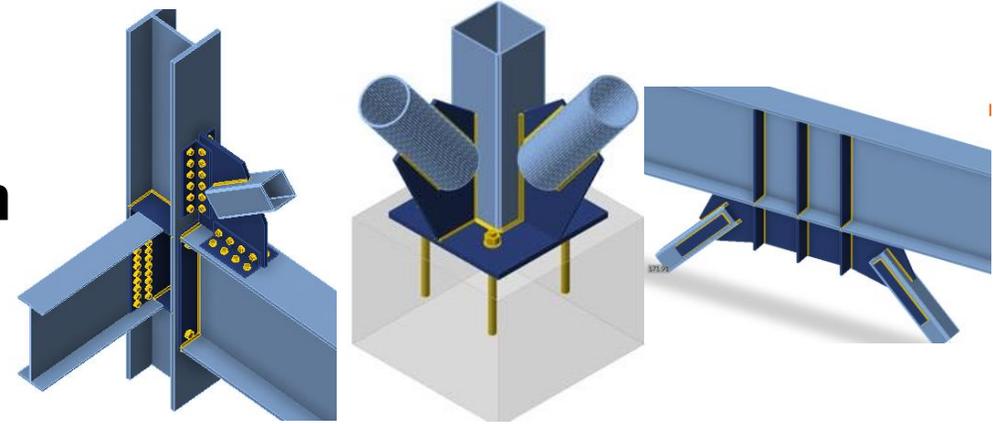
All welds [in] 0" E70xx

FD (2016) Analysis: Stress, strain Load effects: Equilibrium not required Units: in www.ideastatica.com

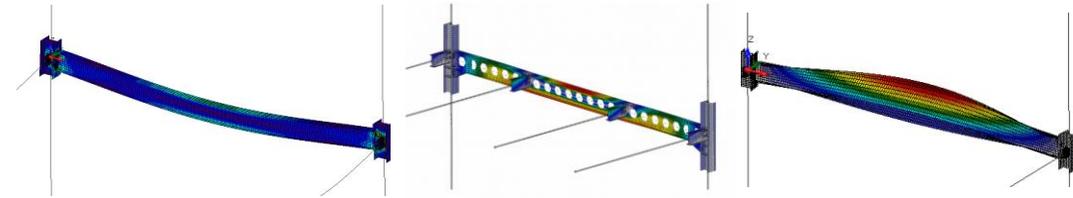
IDEA StatiCa[®]
Calculate yesterday's estimates



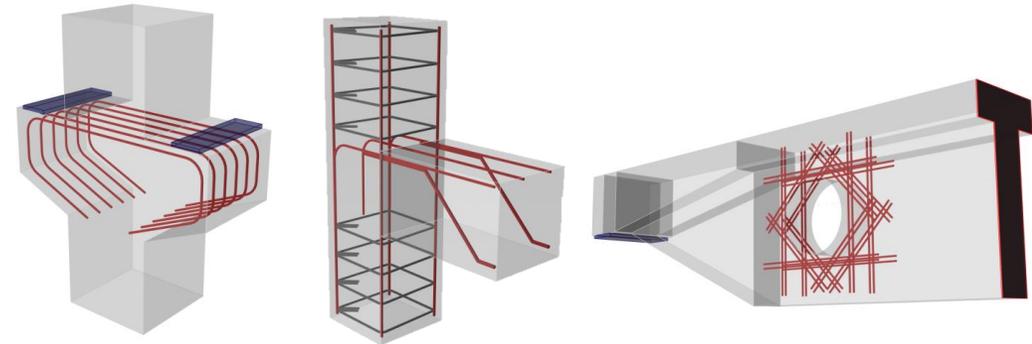
Connection
Steel



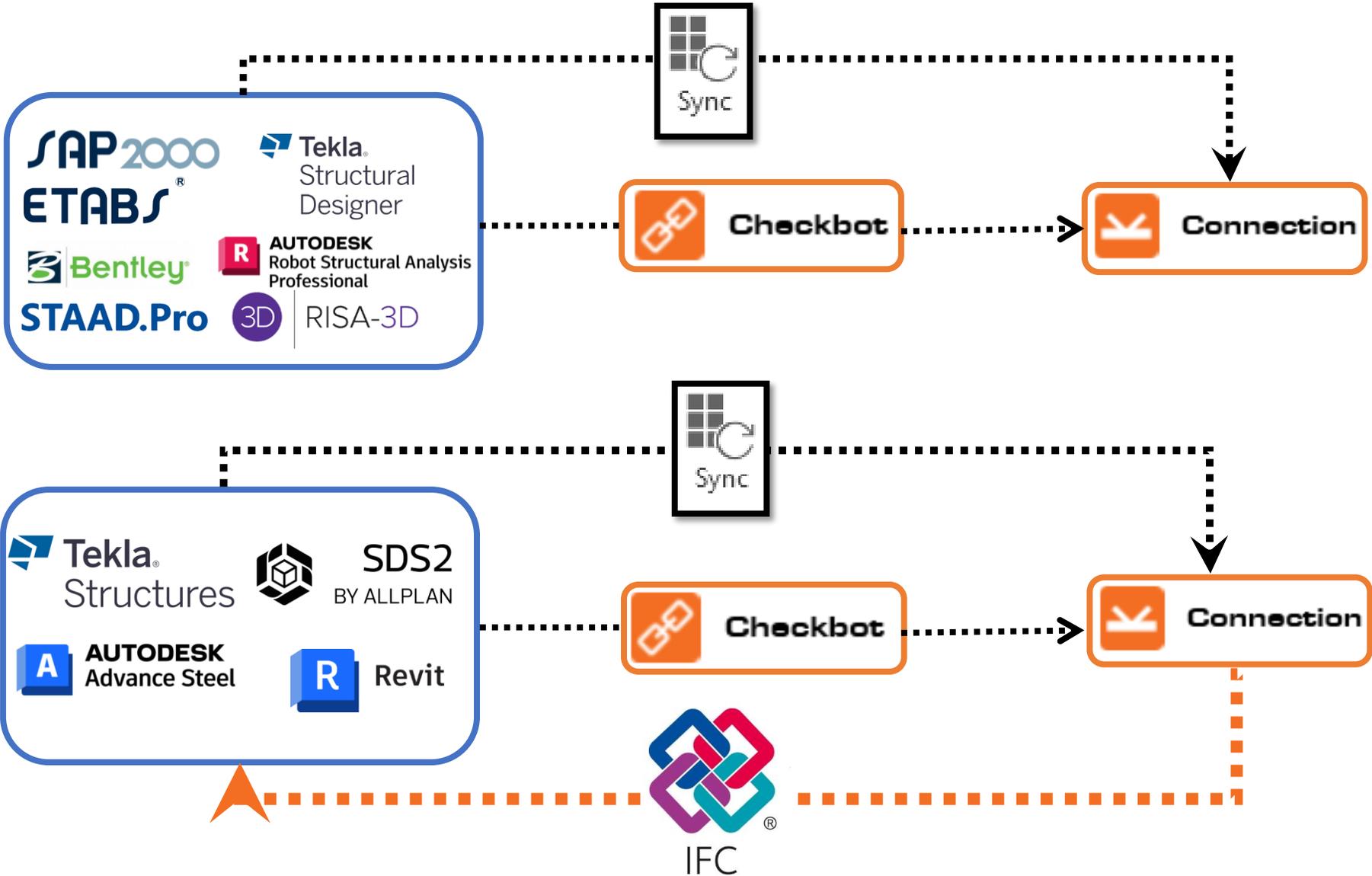
Member
Steel



Detail
Concrete



Connection design process in IDEA StatiCa



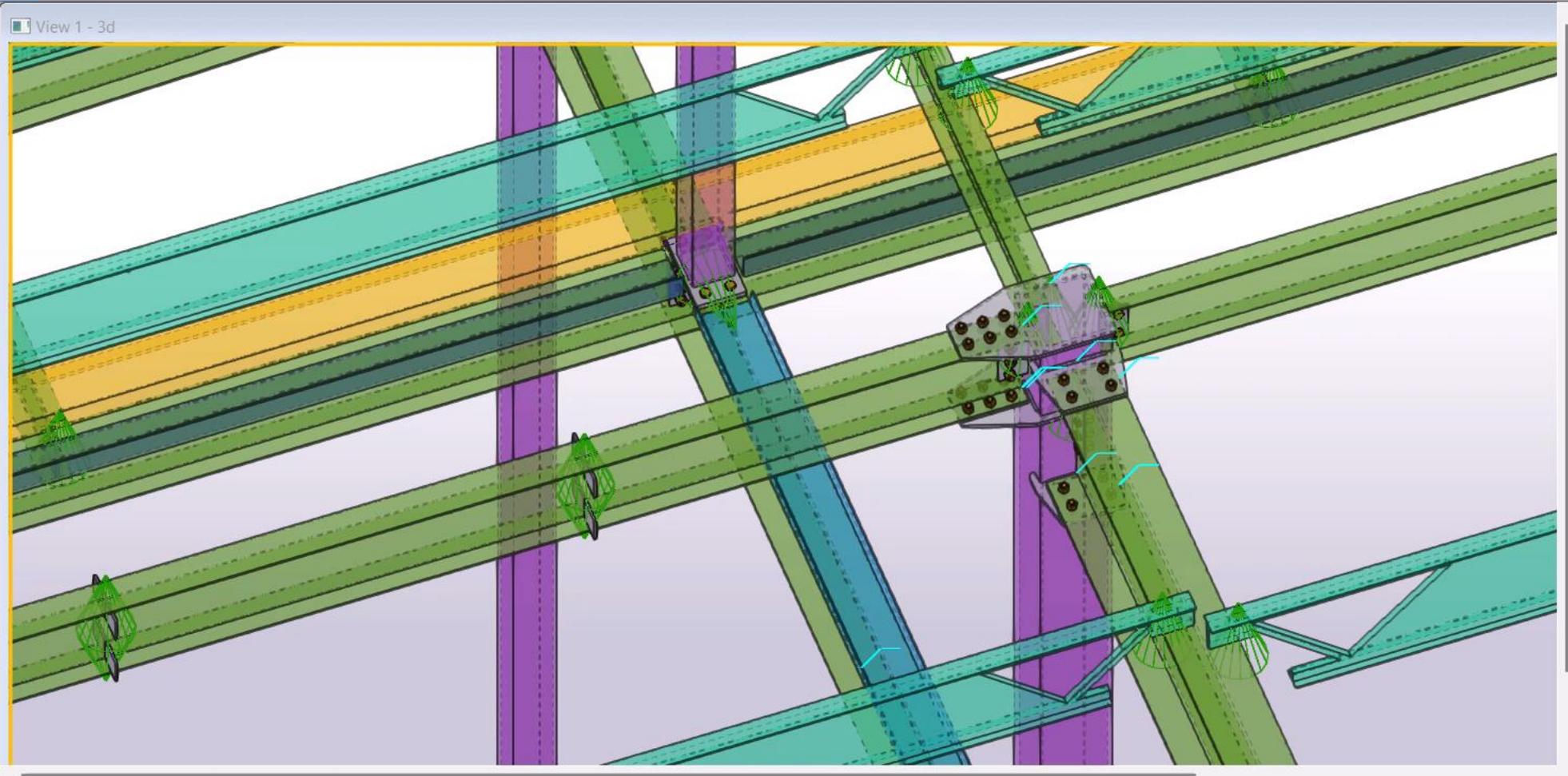
STEEL CONCRETE EDIT VIEW DRAWINGS & REPORTS MANAGE ANALYSIS & DESIGN TRIMBLE CONNECT IDEA STATICA HELP

24/7 access to self support documentation: product guides & support articles created by local support

Maximize your potential with Tekla training

If after using the 24/7 self-support additional assistance is required, create a support case with support

Viewer plugin Checkbot Self-support Tekla Training Contact support



Reference Models

+ Add model New group

Search models...

All

Default

Model origin Search in model standard Outline planes

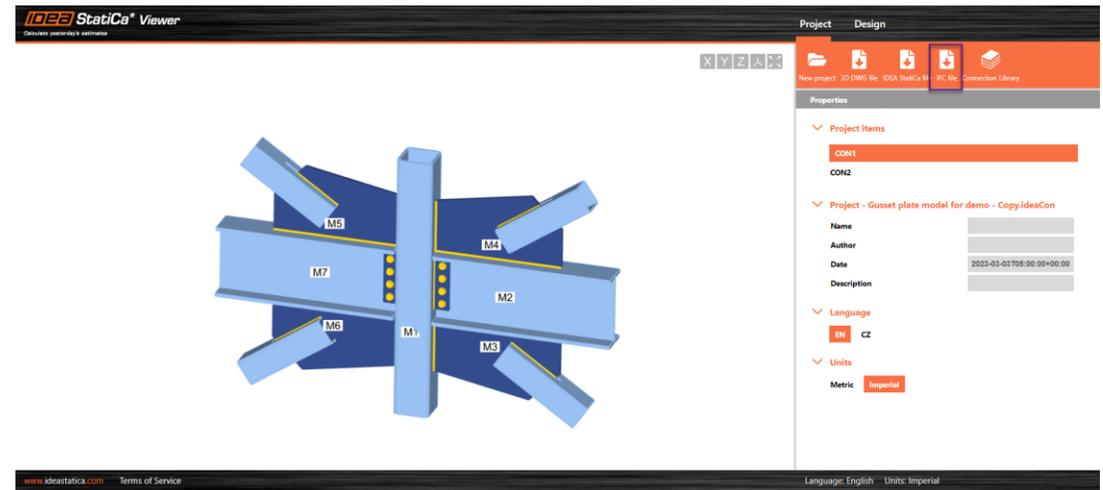
Auto View plane

IFC-Export

IDEA StatiCa Connection app

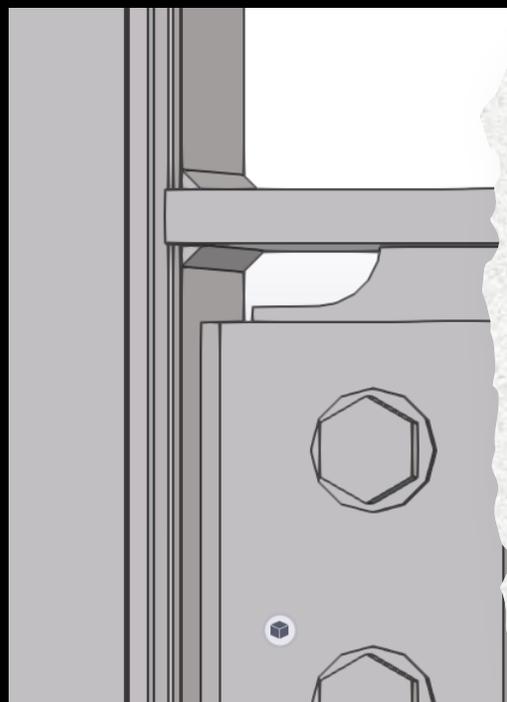
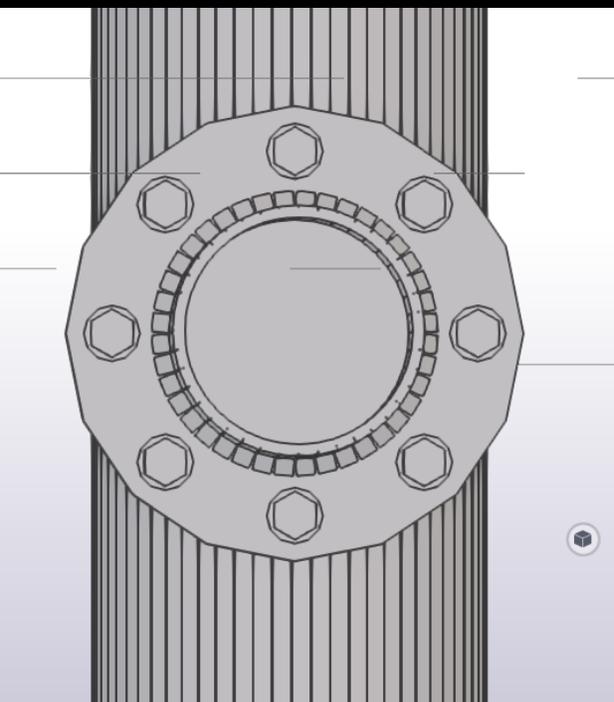
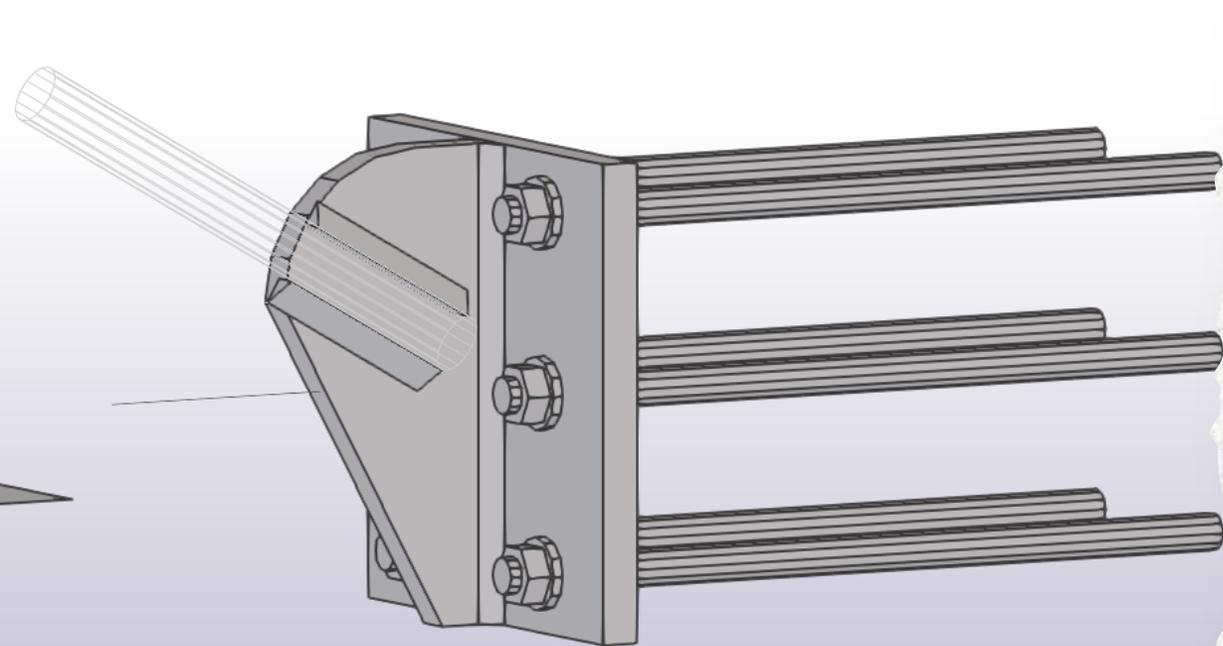


IDEA StatiCa online Viewer



IFC Continuous improvement...

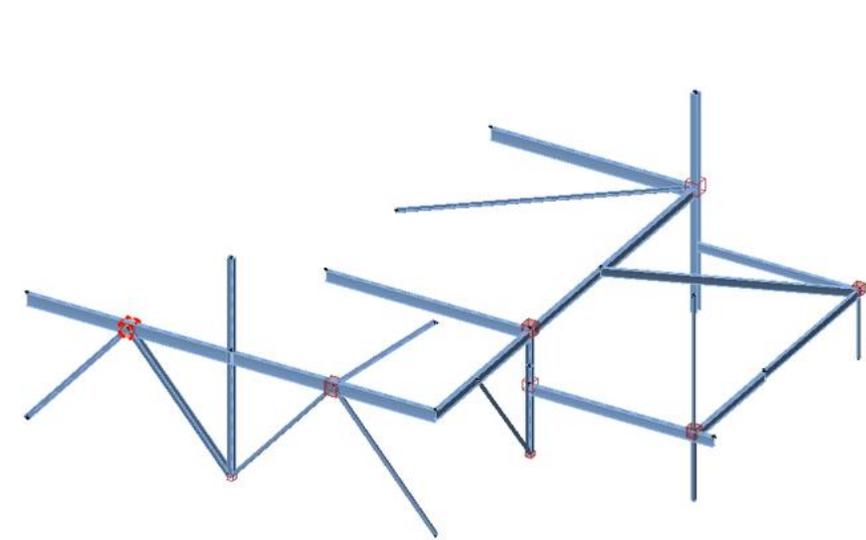
- Openings and notches
- Negative volume operations export to IFC
- Circular plates are exported correctly to IFC
- Improved positioning of welds
- Rods can be exported to IFC from IDEA StatiCa



IDEA StatiCa®

&

SDS2
BY ALLPLAN

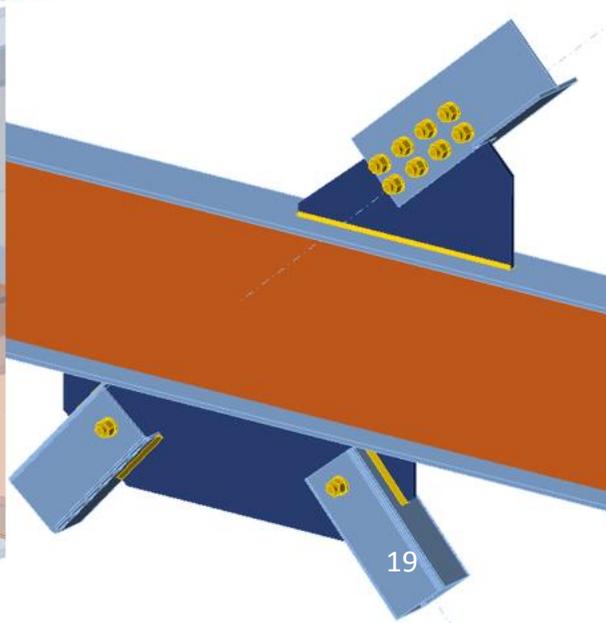
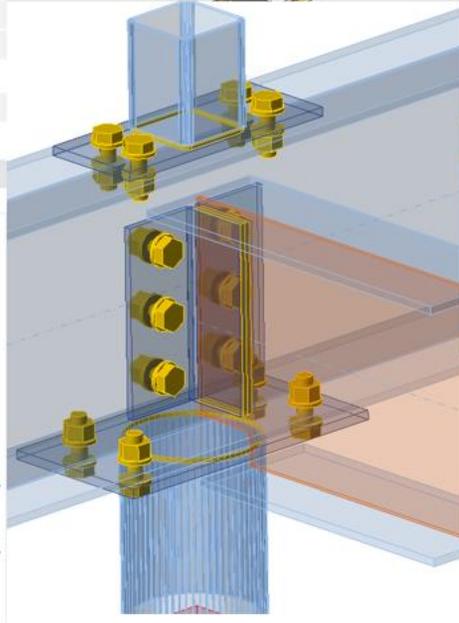
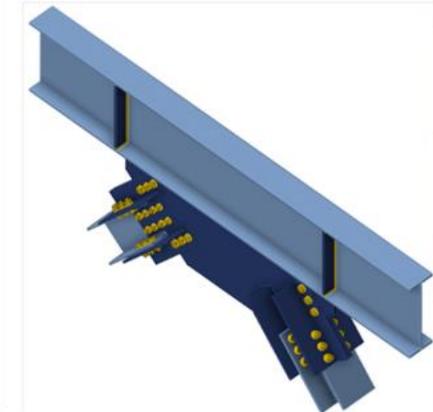


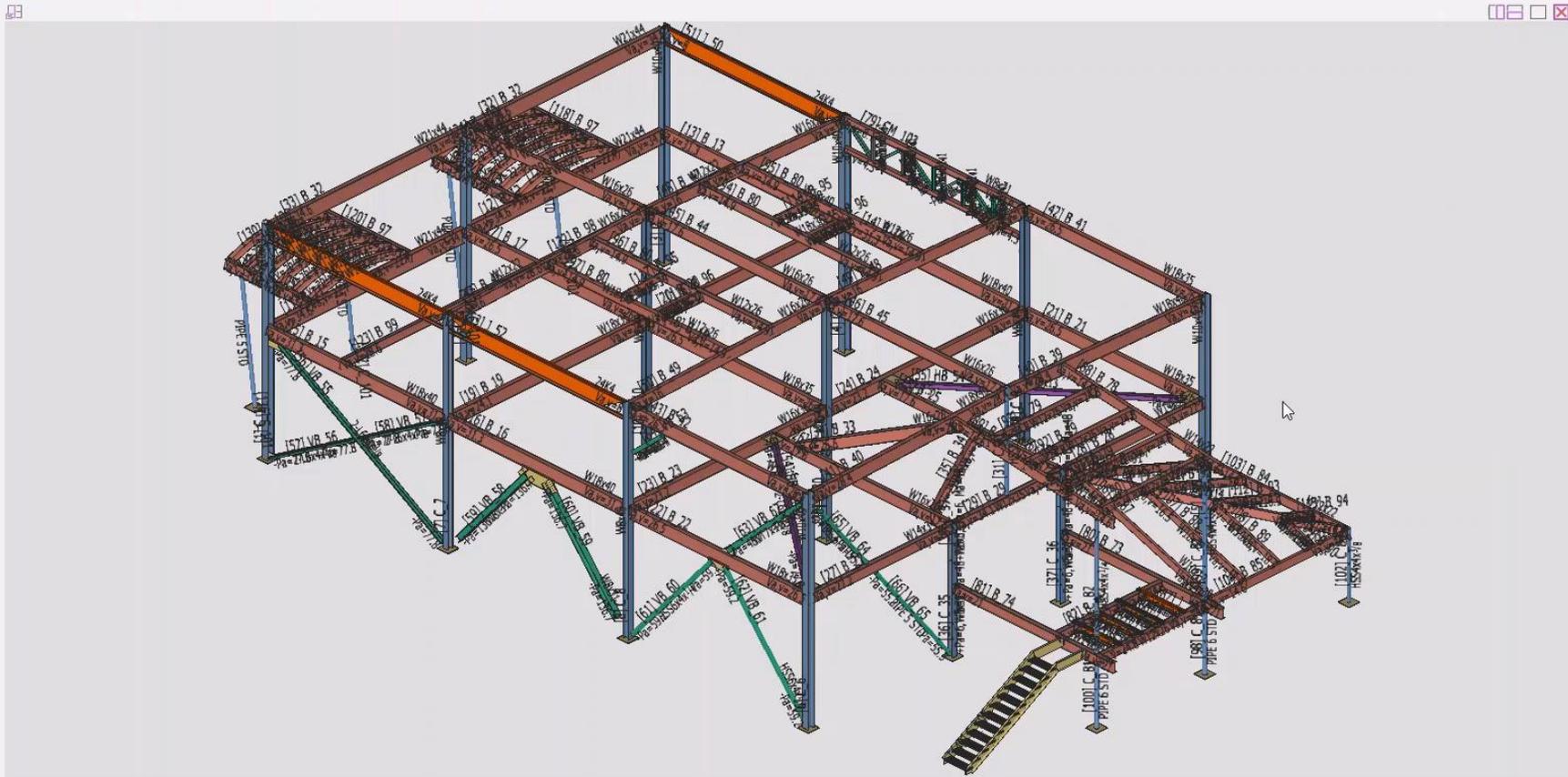
- Connections
- ✓ C 61
- ✓ C 180
- ⚙ C 198
- ⚙ Conn-199
- ✓ C 257
- ✓ C 295
- ✓ C 331
- ⚙ C 433
- ✗ C 452

Name	C 180
Node	450;0;1365
Connected members	M16, M59, M60
Connection point	[37.50; 0.00; 113.75]

Loads

Result class All ULS Fund





Installation process

The screenshot displays the IDEA StatiCa software interface. The main window has a dark header with the logo and navigation tabs for STEEL, CONCRETE, and BIM. A red box highlights the BIM tab, and a red dashed arrow points from the 'Activate your BIM link...' button to the application list window.

The application list window, titled 'IDEA StatiCa® Calculate yesterday's estimates', shows a list of applications and their installation status:

Application	Status
Advance Steel 2024	Target application not found
Advance Steel 2023	Installed
Revit 2024	Installed
Revit 2023	Installed
Tekla 2023	Installed
Tekla 2022	Installed
SDS2 2023i [BETA]	Installed
Advance Design	Target application not found
Axis VM X7	Target application not found
ETABS	Please install our add-in for your ETABS
RFEM 5	Target application not found

Consider...

- If the plugin is not installed, you can manually install the plugin. The file is in the IDEA StatiCa program files
- If SDS2 is installed in the server, make sure you install the plugin in the same location
- NET 6.0 is needed to make the plugin work
- Once Checkbot is open to the import screen, SDS2 will become unresponsive until you click one the import options or close Checkbot.
- The plugin is in beta version. Feedback is always welcome!



M1	M2	M3
I-shape	I-shape	I-shape
Continuous	Ended	Ended
0	0	180
90	0	0

Edit search parameters

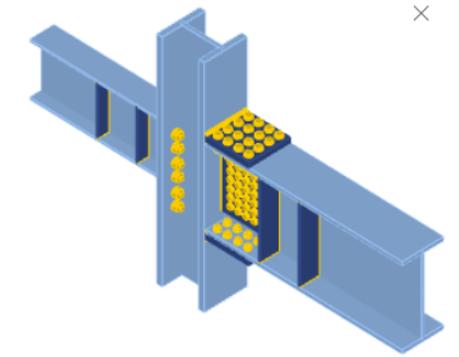
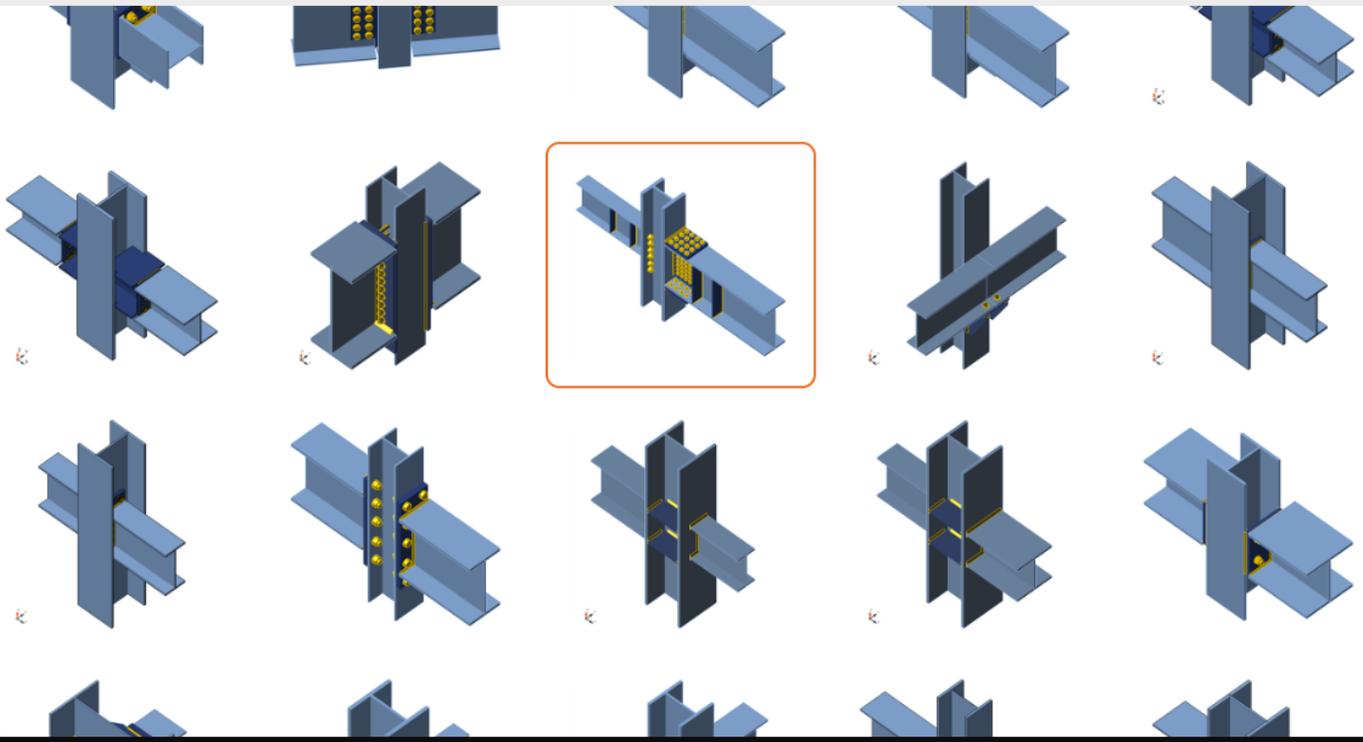
Connectors

- Bolt
- Weld

Features

- Anchor
- End plate
- Fin plate
- Cleat
- Splice

Clear all filters



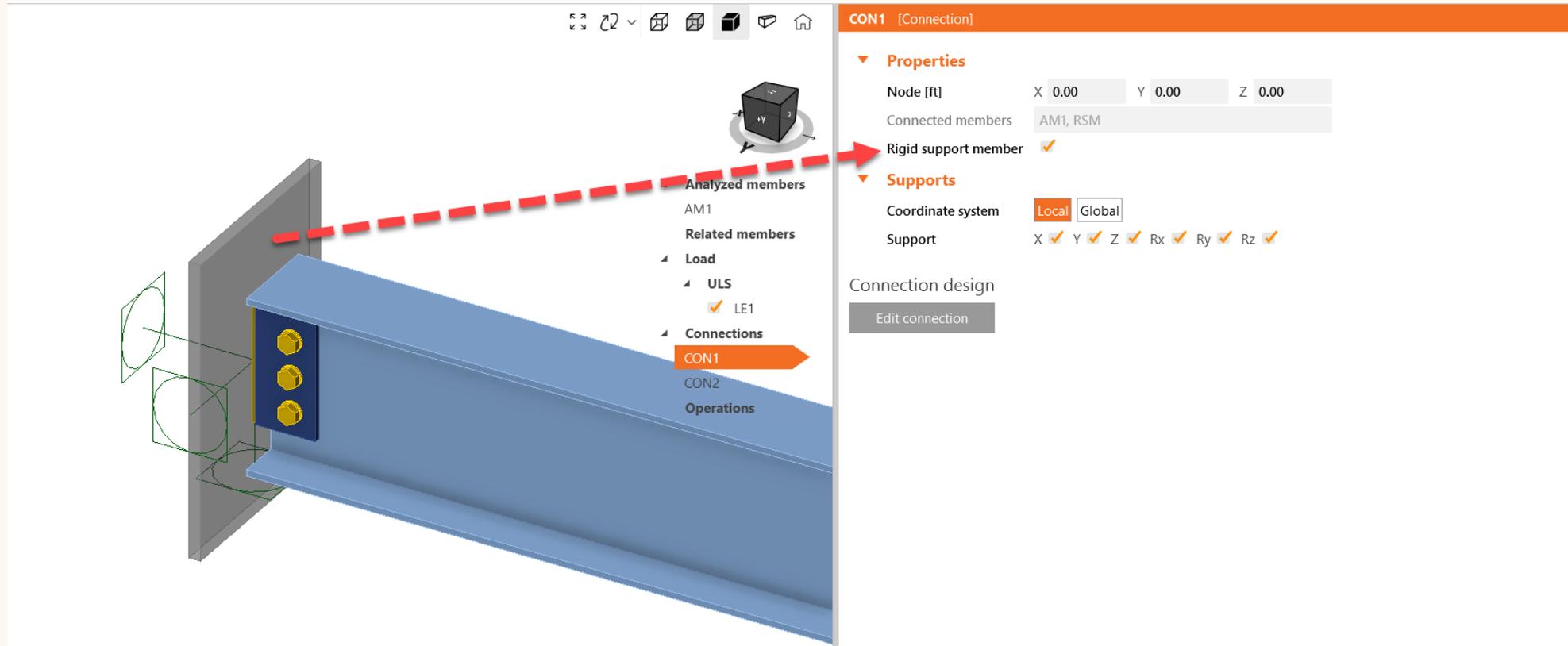
Properties
 Design code AISC
 Connectors Welded & Bolted & Modification

Open in Desktop

Don't have the desktop application installed yet?
[Download now!](#)

Connection library download

IDEA Member application



The screenshot displays the IDEA Member software interface. On the left, a 3D model shows a blue beam connected to a wall. A red dashed arrow points from the connection point in the model to the 'CON1' entry in the 'Connections' list. The 'CON1' entry is highlighted with an orange arrow. The right panel shows the properties for 'CON1 [Connection]'. The 'Properties' section includes 'Node [ft]' with X, Y, and Z coordinates all set to 0.00, and 'Connected members' listed as AM1, RSM. The 'Rigid support member' checkbox is checked. The 'Supports' section shows the 'Coordinate system' set to 'Local' and 'Support' with checkboxes for X, Y, Z, Rx, Ry, and Rz, all of which are checked. Below the properties is the 'Connection design' section with an 'Edit connection' button.

CON1 [Connection]

Properties

Node [ft] X 0.00 Y 0.00 Z 0.00

Connected members AM1, RSM

Rigid support member

Supports

Coordinate system Local Global

Support X Y Z Rx Ry Rz

Connection design

Edit connection

Steel beam with an opening

Example 4.2, AISC Design Guide 2

4.2 EXAMPLE 1: STEEL BEAM WITH UNREINFORCED OPENING

A W24X55 section supports uniform loads $w_d = 0.607$ kips/ft and $w_l = 0.8$ kips/ft on a 36-foot simple span. The beam is laterally braced throughout its length. ASTM A36 steel is used.

Determine where an unreinforced 10x20 in. rectangular opening with a downward eccentricity of 2 in. (Fig. 4.1) can be placed in the span.

Loading:

$w_u = 1.2 \times 0.607 + 1.6 \times 0.8 = 2.008$ kips/ft
Shear and moment diagrams are shown in Fig. 4.2.

Section properties:

$A_x = 16.2$ in. $b_f = 7.005$ in.
 $d = 23.57$ in. $t_f = 0.505$ in.
 $t_w = 0.395$ in. $Z = 134$ in.

Opening and tee properties:

$h_o = 10$ in. $s_b = 4.785$ in.
 $a_o = 20$ in. $s_t = 8.785$ in.
 $e = 2$ in. (always positive for steel sections)
 $\Delta A_x = h_o t_w = 10 \times 0.395 = 3.95$ in.²
 $A_{m1} = A_x - \Delta A_x = 16.2 - 3.95 = 12.25$ in.²
 $v_b = a_o / s_b = 20 / 4.785 = 4.18$
 $v_t = a_o / s_t = 20 / 8.785 = 2.28$

Check proportioning guidelines (sections 3.7a1–3.7b1 or Table 4.5 a1–b1): Compression flange (section 3.7a1):

$$\frac{b_f}{2t_f} \leq \frac{65}{\sqrt{F_y}} \text{ OK—W24} \times 55 \text{ is a compact section}$$

Web and limit on V_m (section 3.7a2):

$$\frac{d - 2t_f}{t_w} < \frac{420}{\sqrt{F_y}}$$

OK, since all W shapes meet this requirement

$$\frac{a_o}{h_o} = 2.0 < 3 \text{ OK}$$

$$V_m \leq \frac{3}{8} \bar{V}_p = \frac{3}{8} \times \frac{36 \times 23.57 \times 0.395}{\sqrt{3}} = 129.0 \text{ kips}$$

Opening dimensions (section 3.7b1):

$$\frac{h_o}{d} = \frac{10}{23.57} = 0.42 < 0.7 \text{ OK}$$

$$p_o = \frac{a_o}{h_o} + \frac{6h_o}{d} = 2 + 6 \times 0.42 = 4.52 < 5.6 \text{ OK}$$

Tee dimensions (section 3.7b1):

$$\frac{s_t}{d} > \frac{s_b}{d}, \frac{s_b}{d} = \frac{4.785}{23.57} = 0.20 > 0.15 \text{ OK}$$

$$v_t < v_b, v_b = 4.18 < 12 \text{ OK}$$

Buckling of tee-shaped compression zone (section 3.7a3):

$$v_t = 2.28 < 4$$

Check not required

Lateral buckling (section 3.7a4): No requirement, since compression flange is braced throughout its length

Maximum moment capacity:

For the unperforated section: $M_p = F_y Z = 36 \times 134 = 4824$ in.-kips

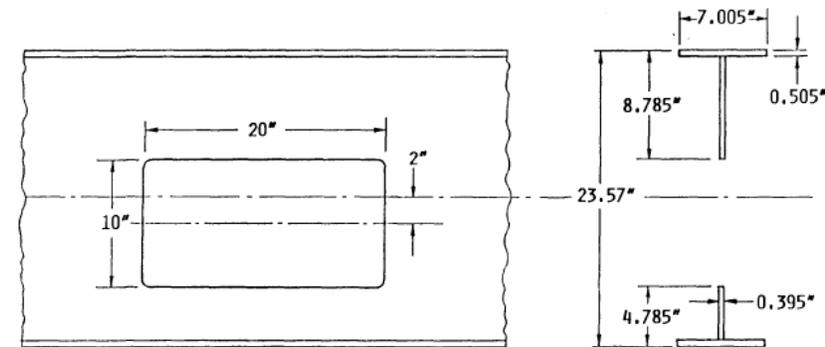
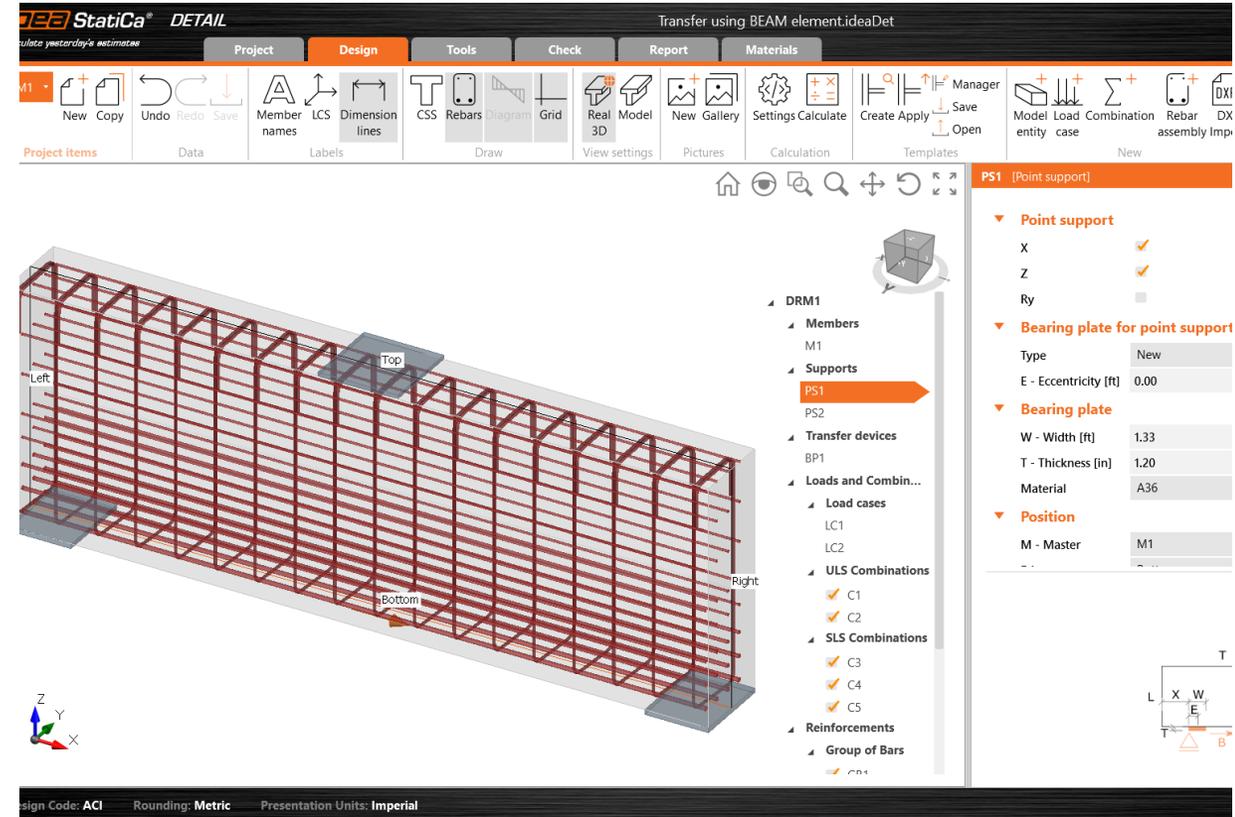
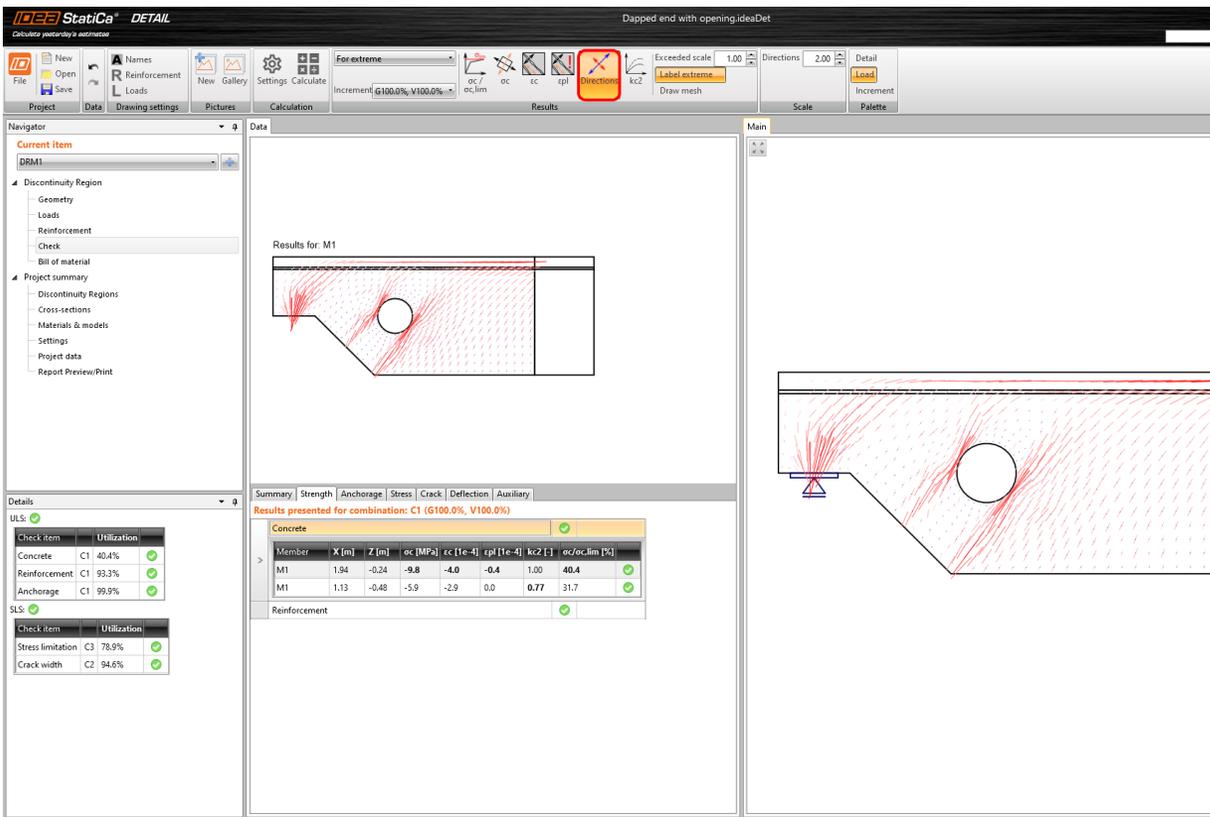


Fig. 4.1. Details for Example 1.



Re-design of IDEAS StatiCa Detail App

Q&A

