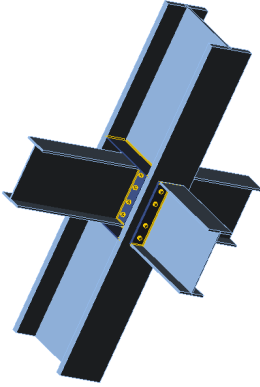


Tutorial - STAAD.Pro link

This tutorial will show how to activate and use the link between STAAD.Pro and IDEA StatiCa Steel Connection



1 How to activate the link

1. STAAD.Pro V8i (version 20.07.11.70 and newer) must be installed on the computer.
2. Download and install the latest version of 32-bit IDEA StatiCa.
Enhanced edition is required.
Note: Only the **32 bit** version is linked to STAAD.Pro
3. After installation of both programs, run IDEA StatiCa, select **BIM** and continue with the item **Activate your BIM link ...**

Activate your BIM link...

- Midas Civil
- Scia Engineer
- Dlubal
- AxisVM

Open existing project
Import from other program

IDEA StatiCa is a part of your workflow
Speed up your analysis and design process by importing data model from the most widespread FEA and CAD programs.

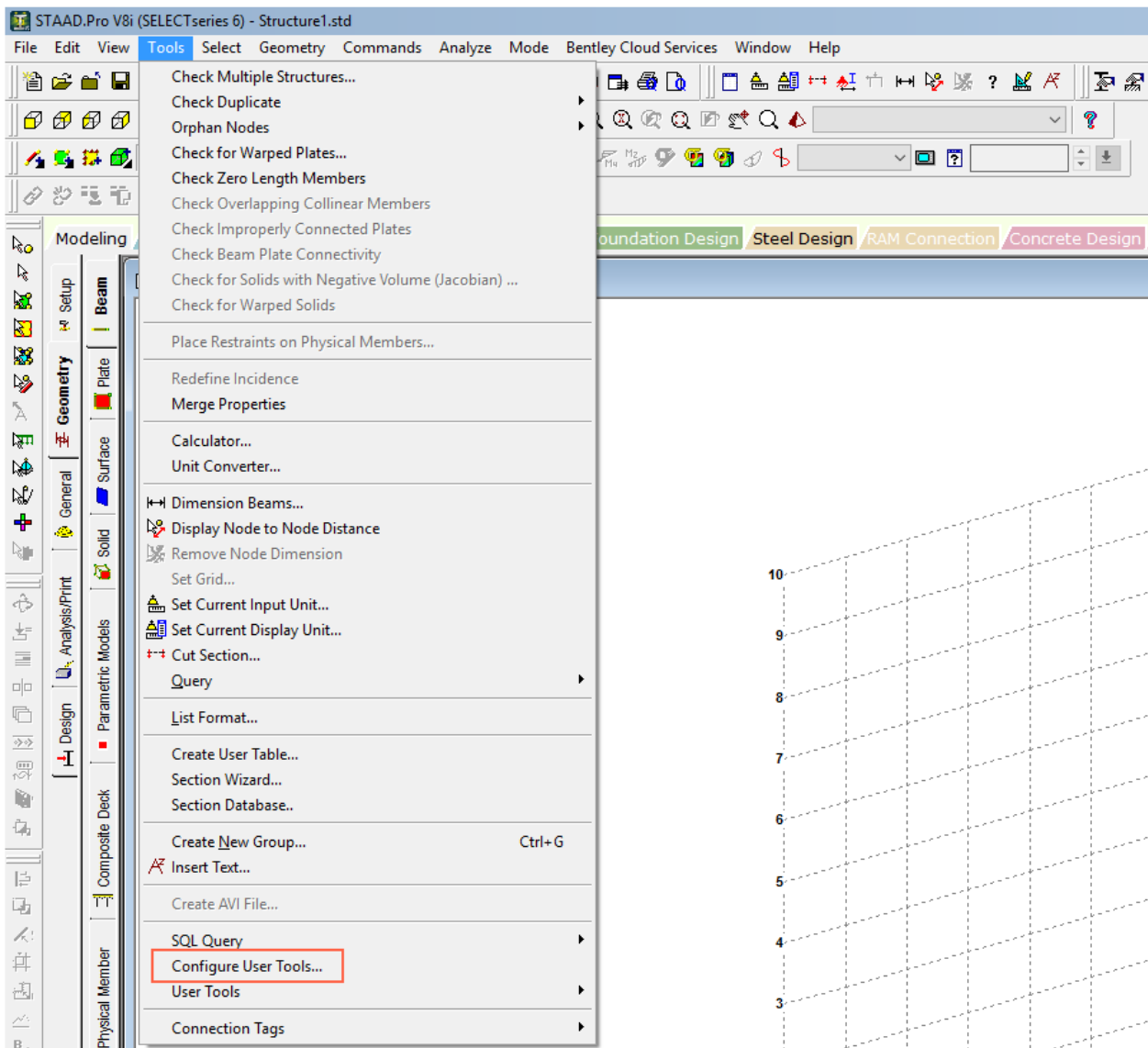
Node Selection **Design of Connection** **Check EC / AISC**

Have a question? Keep in touch at [in](#) [f](#) [You](#)

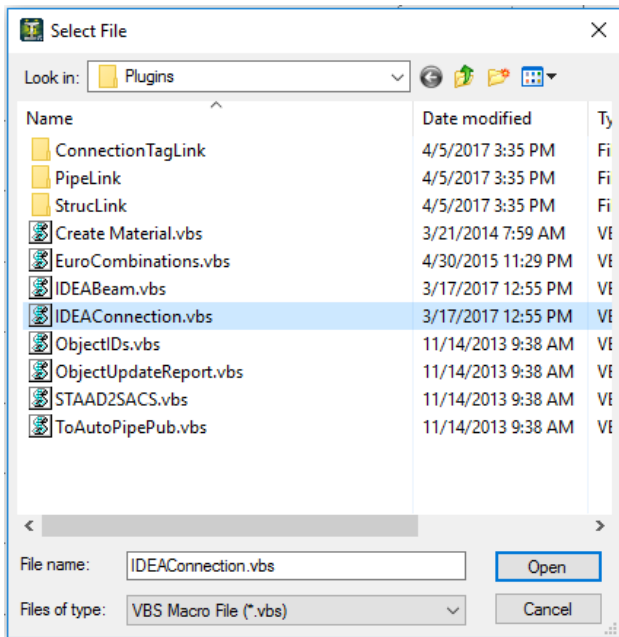
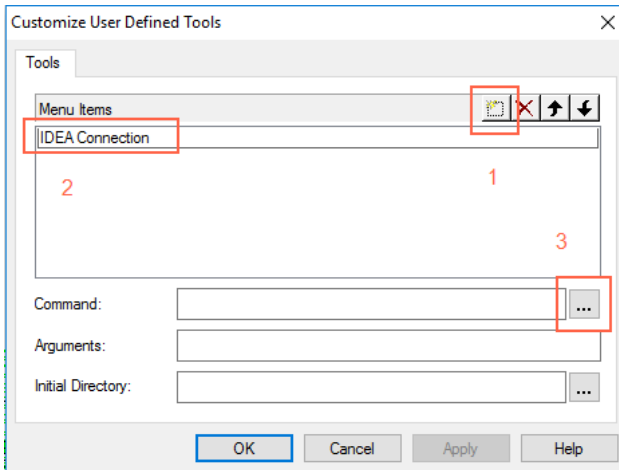
Select STAAD.Pro and click the button Install. The process of integration will start.

Application	Status
SAP 2000 v 18	Target application not found
SAP 2000 v 19	Target application not found
Axis VM 13	Installed
RFEM 5	Target application not found
RSTAB 8	Target application not found
STAAD.Pro	Install

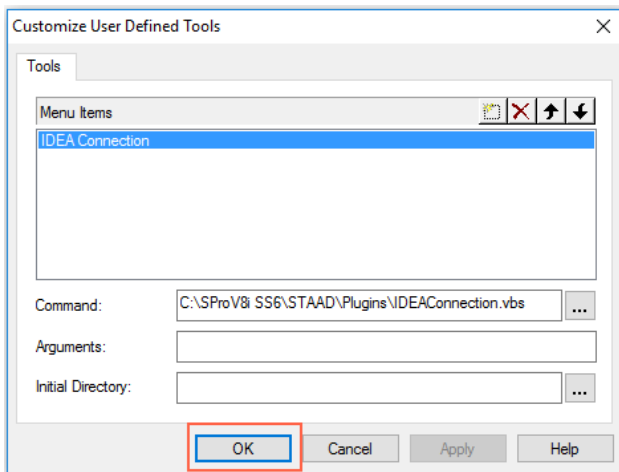
IDEA StatiCa provides structural design and code check of members and details. Novel methods in simple software for daily work of engineers. Get more resources at <http://www.ideastatica.com>

4. Start STAAD.Pro and in the menu **Tools** select the item **Configure User Tools**

5. In the active window, select **New** and enter the name IDEA Connection. You have to add the route to the plugin *IDEAConnection.vbs*, which is placed in the directory *C:\SProV8i SS6\STAAD\Plugins*.

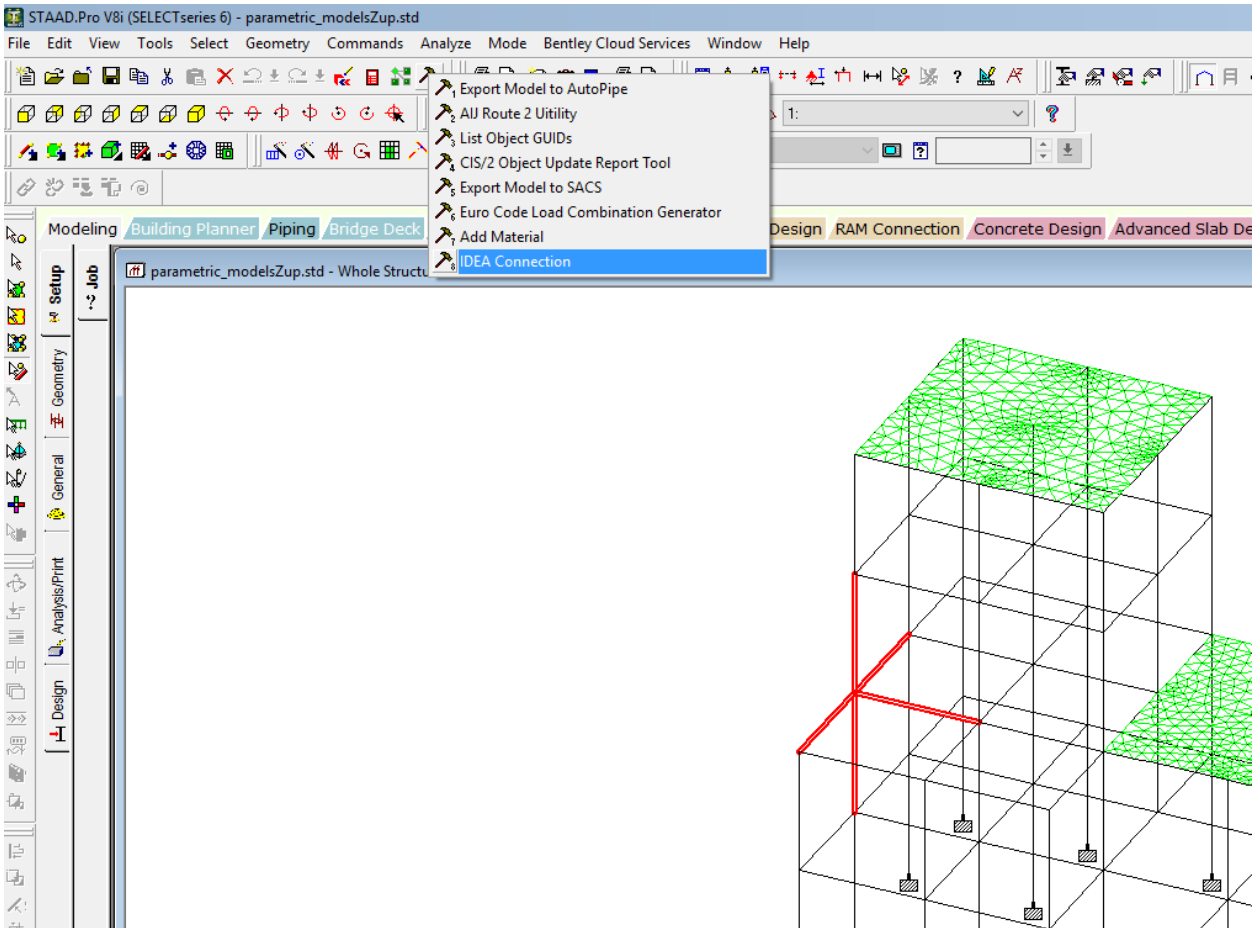


IDEA StatiCa provides structural design and code check of members and details. Novel methods in simple software for daily work of engineers. Get more resources at <http://www.ideastatica.com>



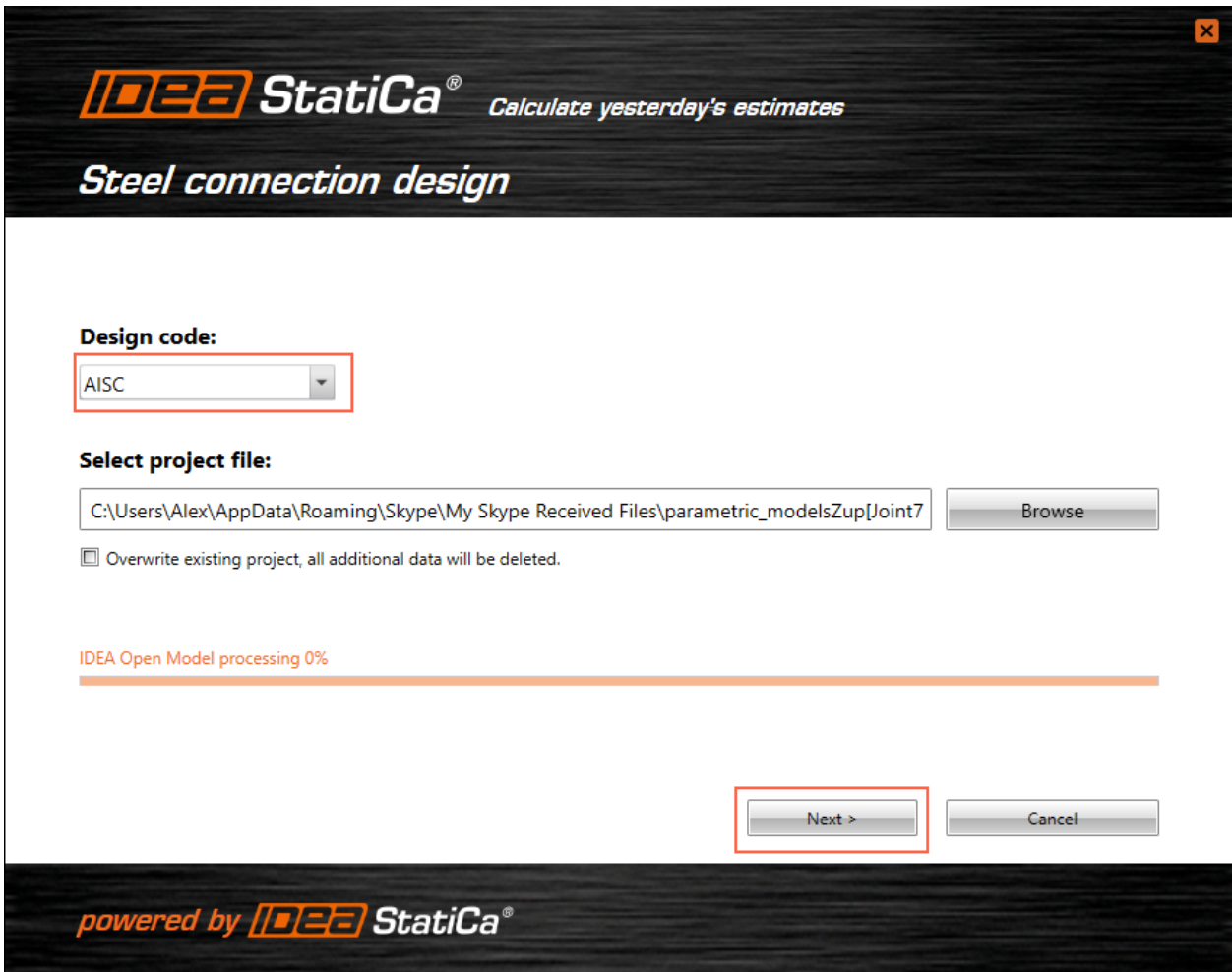
2 How to use the link

1. Open attached project in STAAD.Pro and run analysis.
2. Mark the node "72" and connecting members. In the menu bar select **Tools - User Tools** and click **IDEA Connection**



IDEA StatiCa provides structural design and code check of members and details. Novel methods in simple software for daily work of engineers. Get more resources at <http://www.ideastatica.com>

3. IDEA StatiCa joint import wizard is launched. Set *Design code* to **AISC**, file name and path of IDEA StatiCa Connection project to save and click button "**Next**".



- Select beam member "107" and set it as Bearing. Click **OK** to merge members "107" and "667". Continue with the button "Next".

IDEA StatiCa® Steel connection design

Connection design needs more data to be able to provide a proper design according to national codes. You can use default settings or define them in this wizard.

Design code: AISC

Type of structure: General structure

Default setting:
All load combinations are used for the design.
Load combinations are sorted into classes ULS, SLS etc.

Con 72-Node N72

Connected members:

	Cross-section		Role	Type
	M614 (W(Imp)16X40)			Ended
>	M107 (W(Imp)21X201)		Bearing	Continuous
	M12 (W(Imp)18X50)			Ended
	M613 (W(Imp)16X40)			Ended
	M667 (W(Imp)21X201)		Bearing	Merged

Member M107 (W(Imp)21X201) can be merged with M667 (W(Imp)21X201)

Buttons: Connection design, < Previous, **Next >**, Cancel

5. In the "Load Groups" continue with button "Next".

IDEA StatiCa® Load Groups

Load Groups

- Not grouped cases
- None (i.e., no load assigned in the input file)
 - LC0
 - LC1
 - LC2

Expand all items

New Delete

Load Case Properties

Name: LC0

Assigned Load Group: None (i.e., no load assigned in the input file)

Load Group Properties

Name: None (i.e., no load assigned in the input file)

Type: Standard

Partial load factor for variable load case in ULS combination (γ_Q): 1.50

Partial load factor for variable load case in ULS and SLS characteristic combination (Ψ_0): 0.70

Partial load factor for variable load case in SLS frequent combination (Ψ_1): 0.50

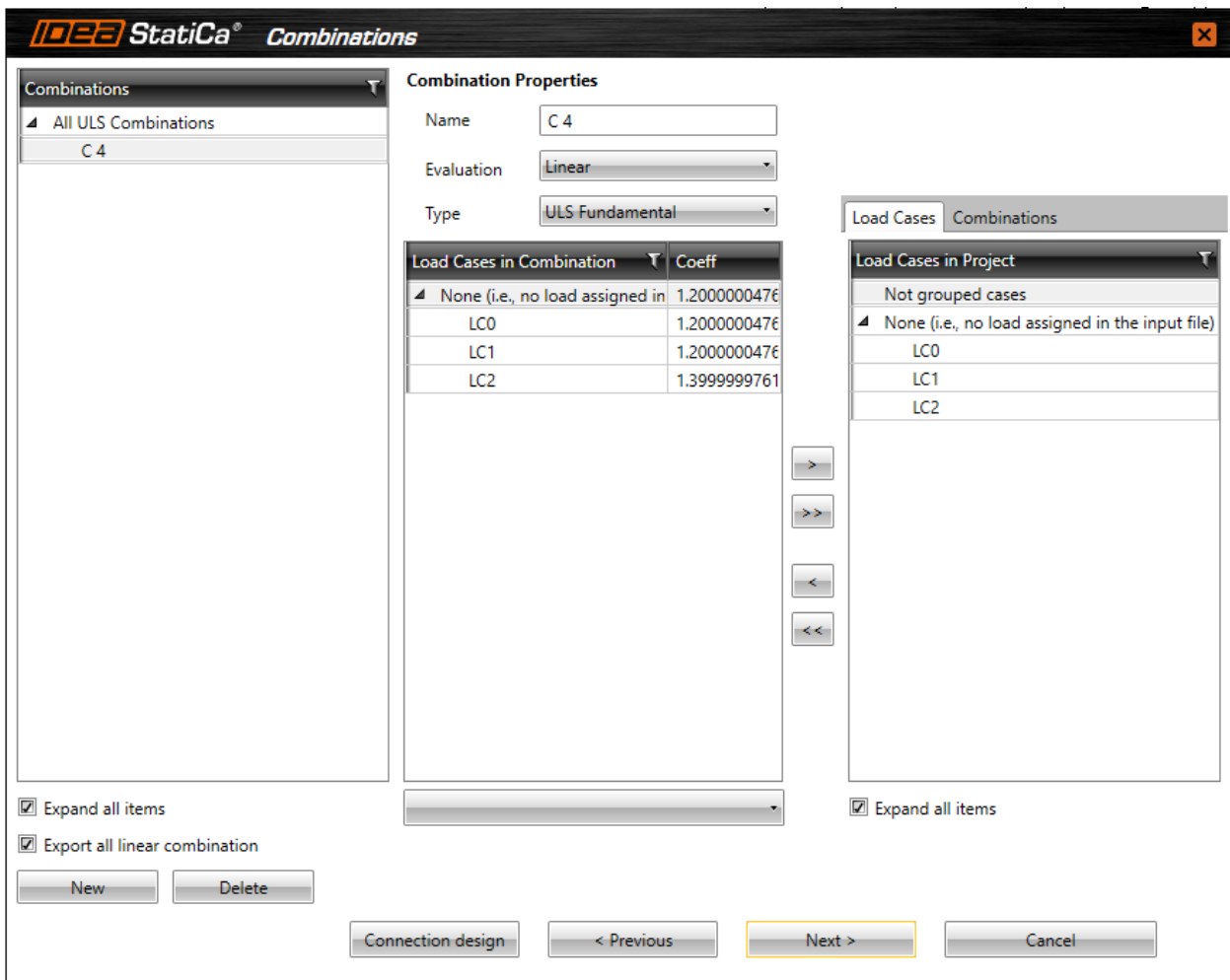
Partial load factor for variable load case in SLS quasi-permanent combination (Ψ_2): 0.30

When extreme values in the combination are searched, the results of the load cases from :

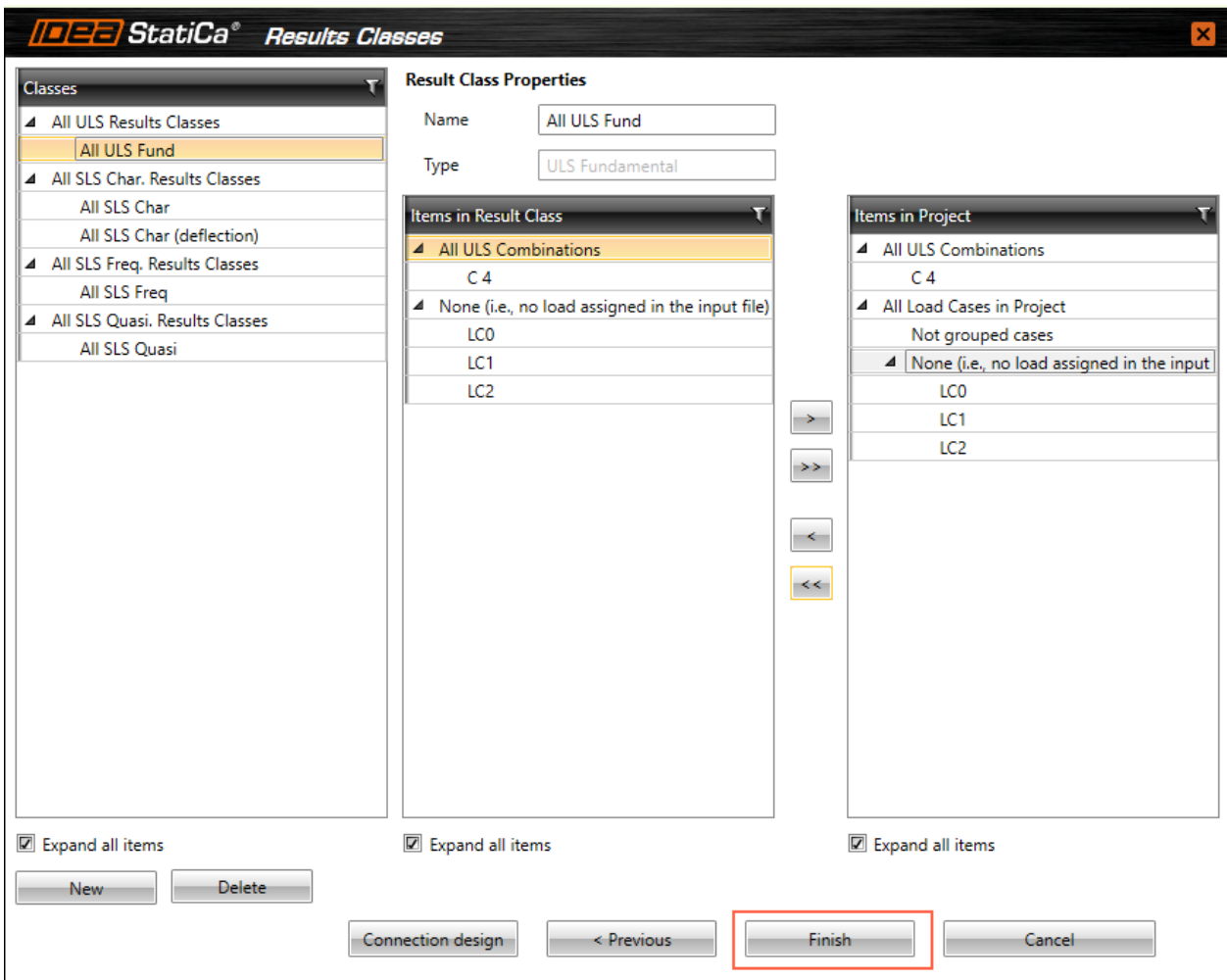
- (a) permanent group are simply added up,
- (b) standard group are added to the positive extreme if they are positive and to the negative extreme if they are negative,
- (c) exclusive group are evaluated in the way that only one most positive is added to the positive extreme and only one most negative to the negative extreme,
- (d) fatigue group are considered as Q_{fat} load in fatigue combinations,
- (e) accidental group are considered as A_d load in accidental combinations.

Connection design < Previous Next > Cancel

6. In the "Combinations" continue with button "Next"

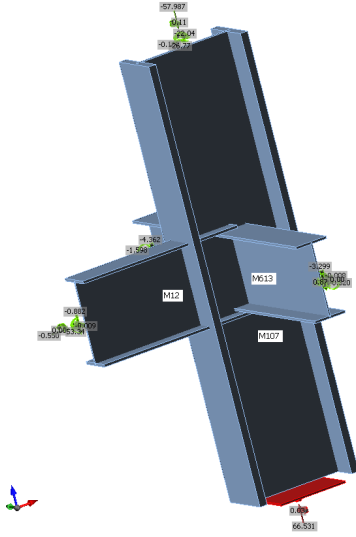


In the "Result Classes" continue with button "Finish".



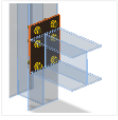
3 IDEA StatiCa Connection

Automatic data transfer is started and IDEA StatiCa Steel Connection with generated project is launched. All members and load effects were added automatically.



4 Design

We will define a set of manufacturing operations to model connections between members. A new operation can be added by button.

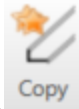


End plate






Manufacturing operations + ✖ Delete all Calculate Editor

Name	
>	EP1

End plate	
Member 1	M613
Member 2	M614
Type of 'Connected to'	Member
Connected to	M107
Material	< default >
Thickness [in]	5/8"
Connection type	Bolted
Dimensions	To profile symmetrical
T - Top [in]	-0.250
L - Left [in]	0.000
Notch	<input type="checkbox"/>
Bolts	
Type	1 A325
TL - Top layers [in]	-2.5 -6
LL - Left layers [in]	-1.5
Shear plane in thread	<input checked="" type="checkbox"/>
Shear force transfer	Bearing - tension/shear interaction
Welds	
Flanges	3/16" E60xx
Webs	1/4" E60xx



Copy operation EP1 by  button from the ribbon and set the *Member 1* to **M12**.

Manufacturing operations     

Name	
<input checked="" type="checkbox"/>	EP1
<input checked="" type="checkbox"/>	EP2

End plate	
Member 1	M12
Member 2	Not specified
Type of 'Connected to'	Member
Connected to	M107
Material	< default >
Thickness [in]	5/8"
Connection type	Bolted
Dimensions	To profile symmetrical
T - Top [in]	-0.250
L - Left [in]	0.000
Notch	<input type="checkbox"/>
Bolts	
Type	1 A325
TL - Top layers [in]	-2.5 -6
LL - Left layers [in]	-1.5
Shear plane in thread	<input checked="" type="checkbox"/>
Shear force transfer	Bearing - tension/shear interaction
Welds	
Flanges	3/16" E60xx
Webs	1/4" E60xx



Stiffener

Manufacturing operations + ✖ Delete all Calculate Editor

Name	
<input checked="" type="checkbox"/>	EP1
<input checked="" type="checkbox"/>	EP2
> <input checked="" type="checkbox"/>	STIFF1

Stiffeners

M – on member M107

R – related to M12

Position Both

Material < default >

Thickness [in] 1/4"

Location Both

X - position [in] 0.000

α - Inclination [°] 0.0

B – width [in] 0.000

Offset top [in] 0.000

Offset bottom [in] 0.000

Repeat count 1

Gap [in] 0.000

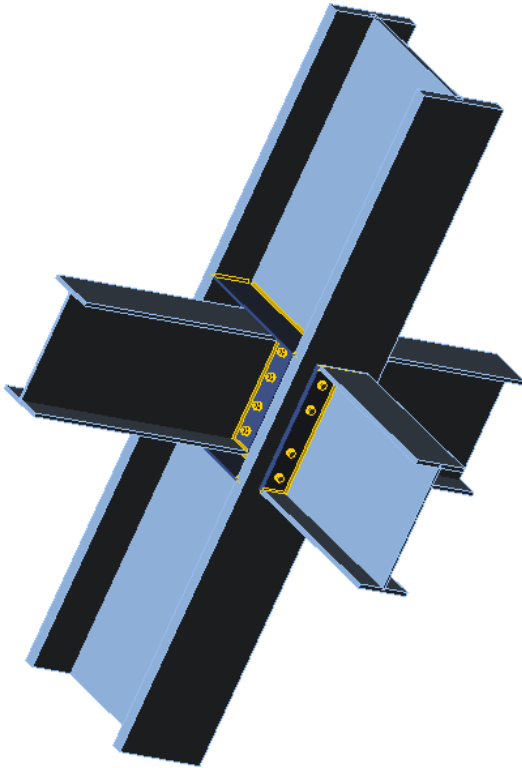
Chamfered corners

Chamfer cut size [in] 0.000

Welds

All welds 5/16" E60xx

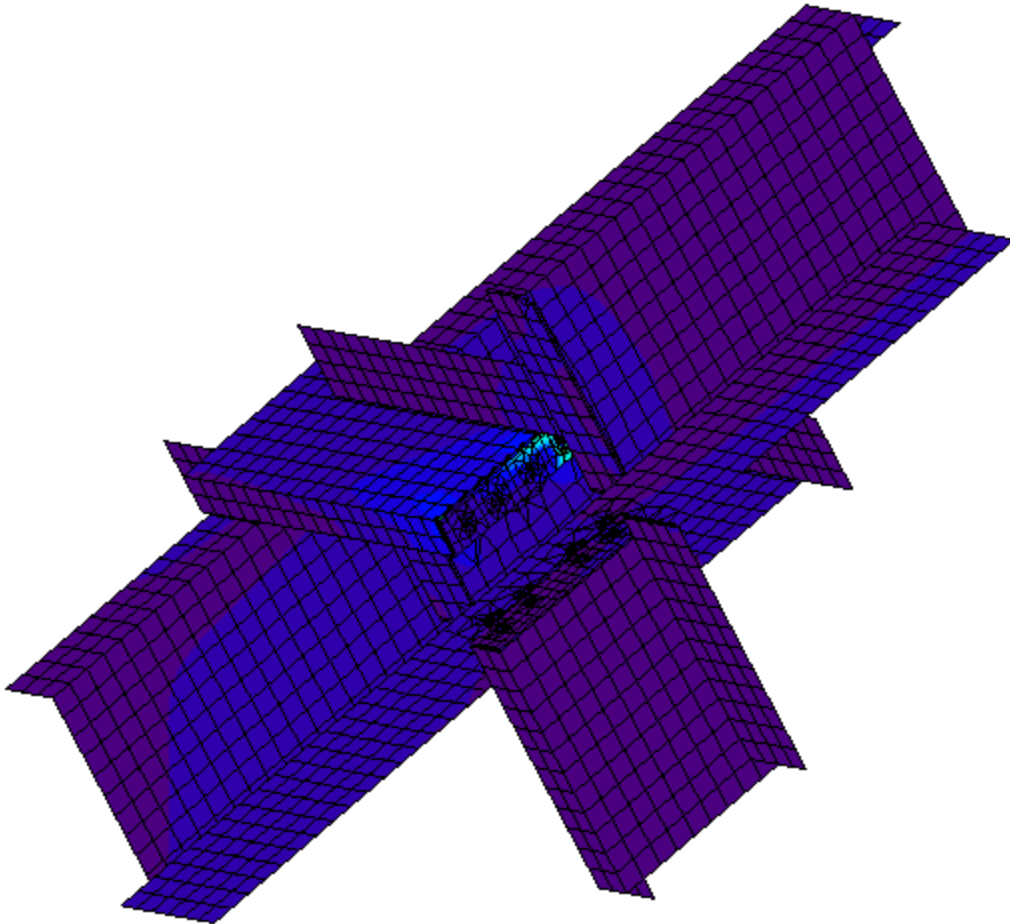
Let's check defined operations of the joint.



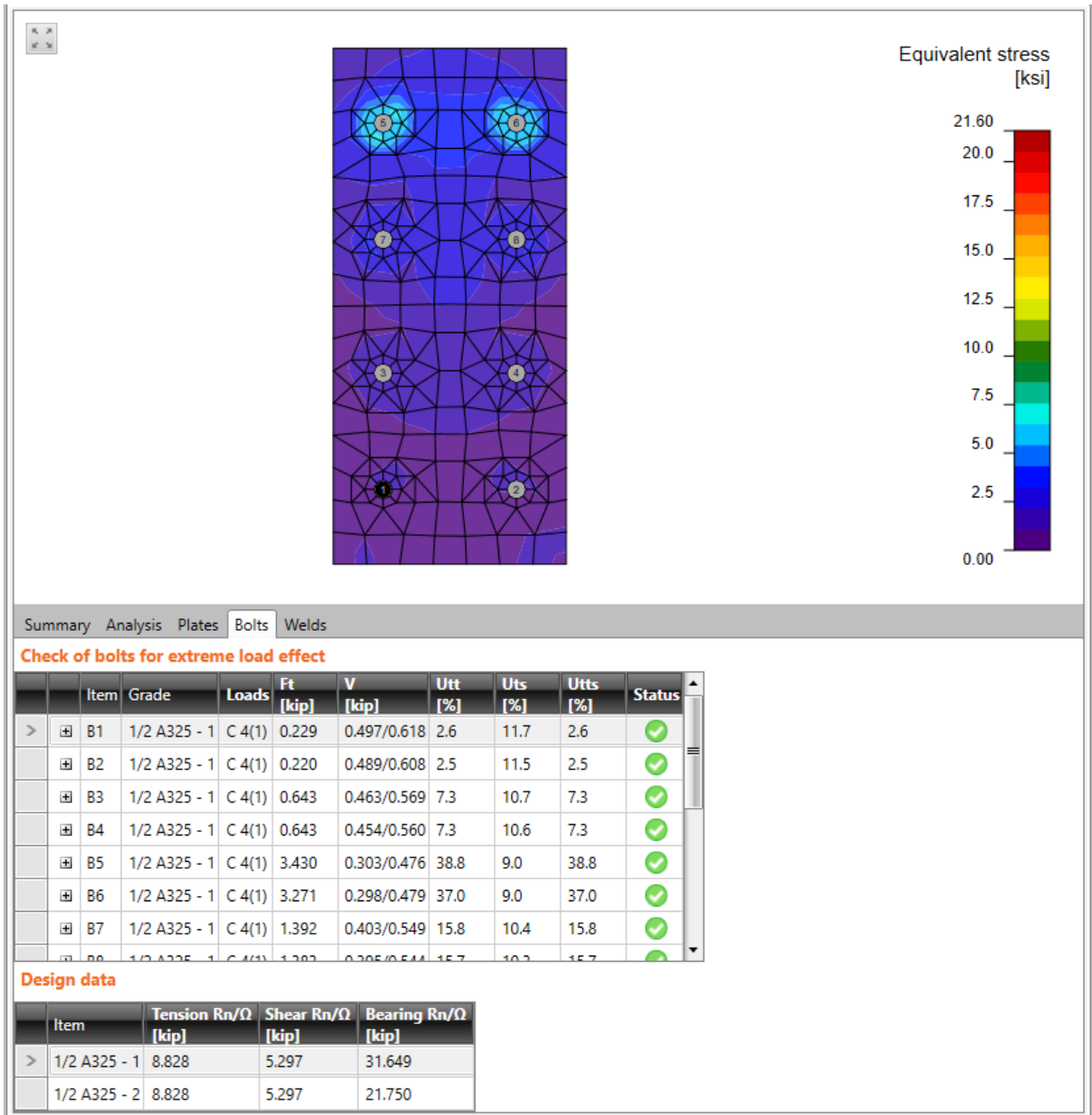
5 Check of a structural steel joint

Analysis model is automatically generated, calculation is performed and we can check results.

Activate Strain check, Mesh and Deformed from the ribbon to get a full picture of what is happening in the joint. Everything is displayed in the 3D window.



All values can be reviewed in detailed in the tables and 2D window. For example to display check of bolts select tab Bolts tab.



6 Report

IDEA StatiCa offers three types of output reports – one line, 1 page and detailed.

The figure displays three screenshots of the IDEA StatiCa software interface, showing the output reports for a structural steel joint analysis.

Left Screenshot: Project Data and Material Properties

Project information includes Project name, Project number, Author, Date (4/8/2017), and Design code (AISC 360-10). The material is identified as STEEL.

Middle Screenshot: Load Effects and Results

Load effects table:

Load	Member	Pos	X	Y	Z	Mx	My	Mz
C-R1	M102	End	0.000	0.000	0.000	0.000	0.000	0.000
	M107	End	0.000	0.000	0.000	0.000	0.000	0.000
	M103	End	0.000	0.000	0.000	0.000	0.000	0.000
M102	End	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	End	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	End	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Results Summary table:

Name	Value	Check status
Analysis	100.0%	OK
Design	100.0%	OK
Welds	100.0%	OK

Plates table:

Name	Material	Thickness [in]	Loads	Ru [ksi]	Av [%]	Check status
M102 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M107 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M103 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M104 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M105 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M106 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M107 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M108 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M109 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M110 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M111 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M112 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M113 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M114 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M115 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M116 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M117 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M118 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M119 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M120 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M121 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M122 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M123 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M124 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M125 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M126 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M127 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M128 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M129 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M130 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M131 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M132 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M133 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M134 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M135 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M136 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M137 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M138 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M139 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M140 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M141 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M142 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M143 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M144 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M145 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M146 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M147 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M148 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M149 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M150 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M151 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M152 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M153 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M154 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M155 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M156 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M157 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M158 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M159 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M160 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M161 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M162 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M163 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M164 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M165 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M166 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M167 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M168 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M169 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M170 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M171 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M172 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M173 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M174 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M175 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M176 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M177 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M178 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M179 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M180 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M181 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M182 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M183 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M184 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M185 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M186 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M187 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M188 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M189 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M190 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M191 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M192 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M193 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M194 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M195 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M196 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M197 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M198 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M199 #1	STEEL	0.500	C-R1	1.0	0.0	OK
M200 #1	STEEL	0.500	C-R1	1.0	0.0	OK

Right Screenshot: Strain Check and Equivalent Stress

Two 3D visualizations of the joint are shown. The top one displays the Strain check [%] with a color scale from 0.00 to 150.00. The bottom one displays the Equivalent stress [ksi] with a color scale from 0.00 to 21.60. Both visualizations show the joint geometry and the distribution of strain and stress across the members.

7 Structural steel joint was modeled, designed and checked

IDEA StatiCa provides structural design and code check of members and details. Novel methods in simple software for daily work of engineers. Get more resources at <http://www.ideastatica.com>