

Break Down the Barriers between Design and Construction with BIM 360

Philippe Bonneau

Technical Marketing Manager | Autodesk

Gernot Jeromin

Product Manager | Autodesk



About the speaker

Philippe Bonneau

Technical Marketing Manager

Structural Steel Design & Fabrication

10+ years of expertise in Advance Steel

Joined Autodesk in 2013

Speaker at AU in Las Vegas

Based out of Paris, France



[@Ph_Bonneau](https://twitter.com/Ph_Bonneau)



<https://www.linkedin.com/in/phbonneau/>



youtube.com/autodeskaecolutions



About the co-speaker

Gernot Jeromin

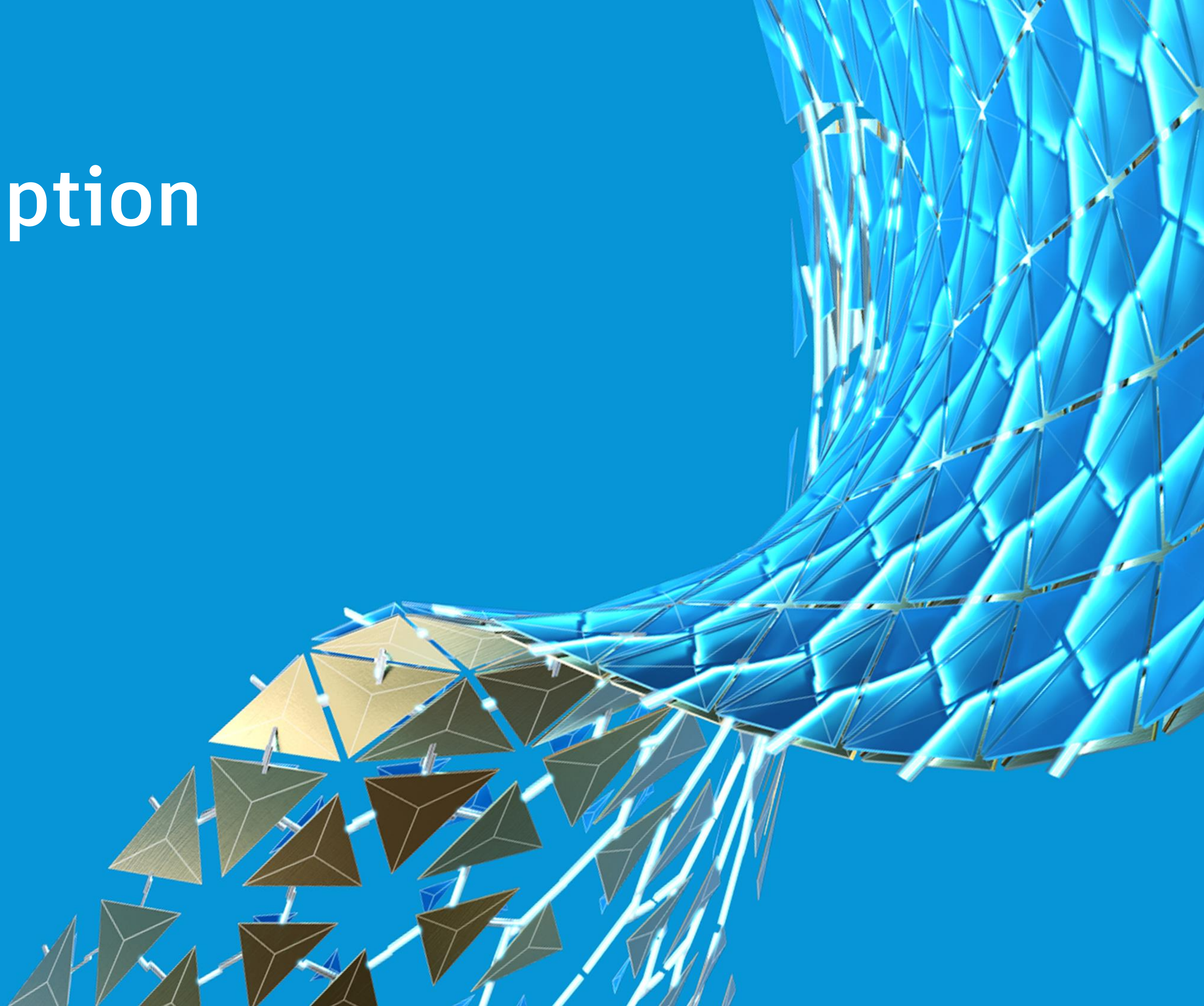
Product Manager Structural Steel

10+ years of expertise in Structural Steel Product Management

Joined Autodesk in 2018

Based out of Sankt Andreasberg, Germany

Class Description



This class will demonstrate a complete **project collaboration** workflow for **structural steel**.

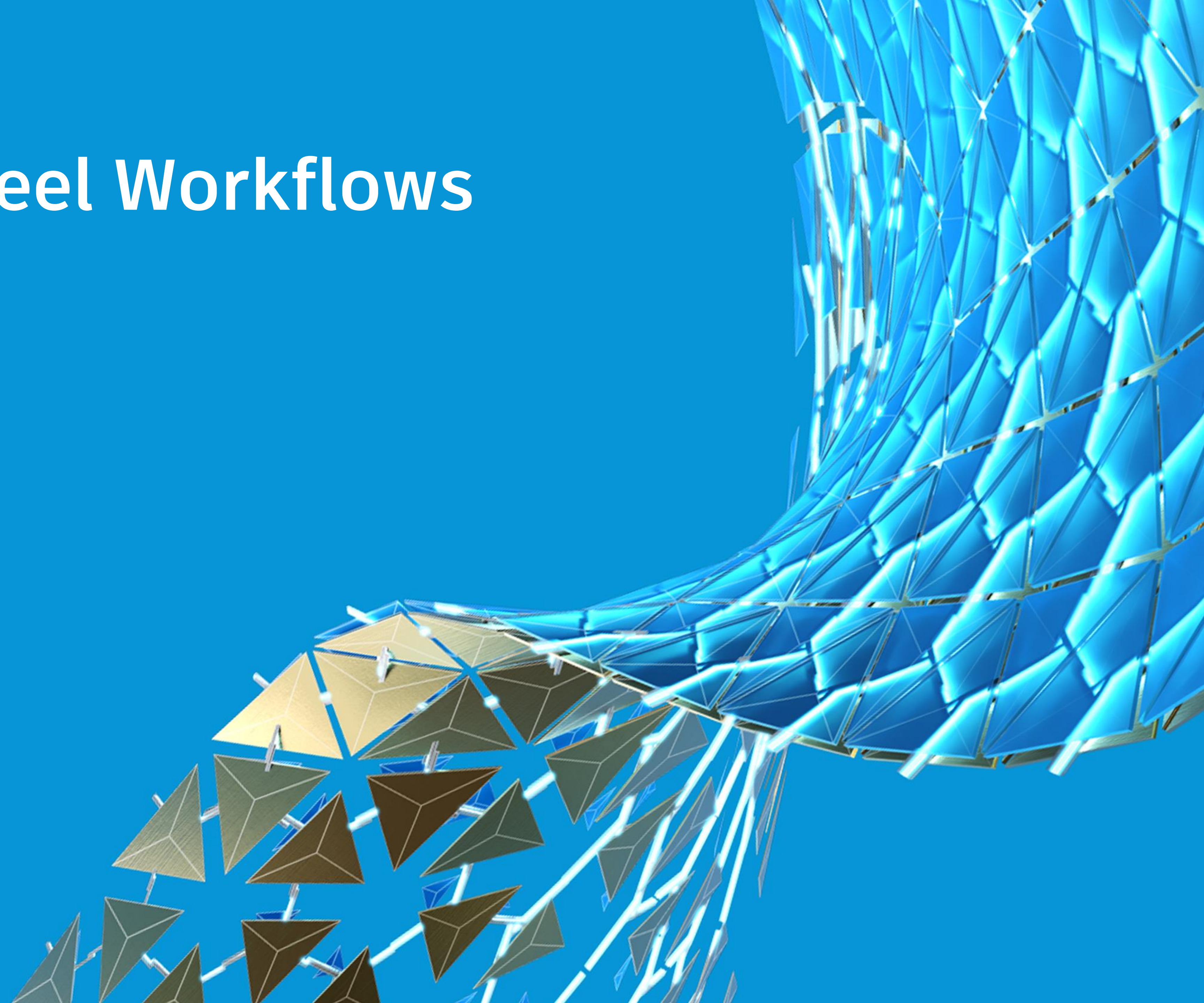
We'll start by creating a **detailed** model with **Revit**, import it into **Advance Steel**, and use dedicated tools in Advance Steel to create all deliverables for **fabrication** and erection on-site.

We'll then publish, share, and review the detailed **models** and associated **documentation** via **BIM 360**.

Learning Objectives

- Create a detailed model with steel connections in Revit
- Create fabrication and construction documents with Advance Steel
- Publish 3D models and 2D documentation to BIM 360
- Use BIM 360 to communicate and track changes in models and drawings

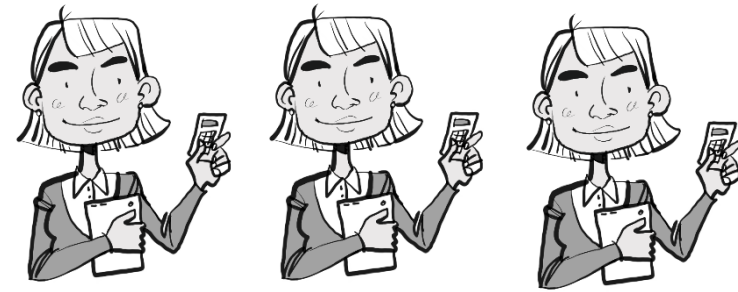
Structural Steel Workflows (example)



Persona



**Structural
Detailer /
Designer**
Creating/updating
Models and
Documents
of a Project



Checker(s)
Checking and
updating 2D
drawings



**Structural
Detailer(s) /
Designer(s)**
Updating drawings



Engineer
Checking
documents
Creating RFIs



Fabricator
Using 3D model, 2D
drawings, BOM and NC
files
Creating RFIs

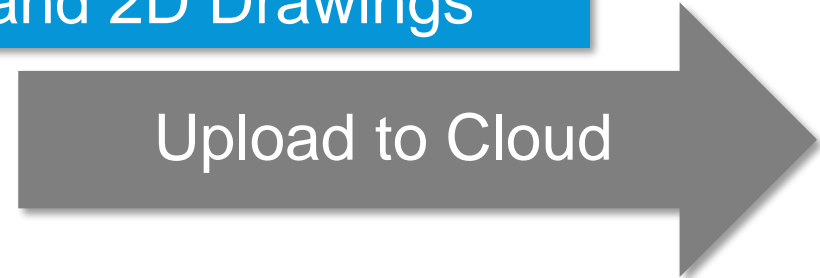


Creation:
3D model, BOM, NC
and 2D Drawings

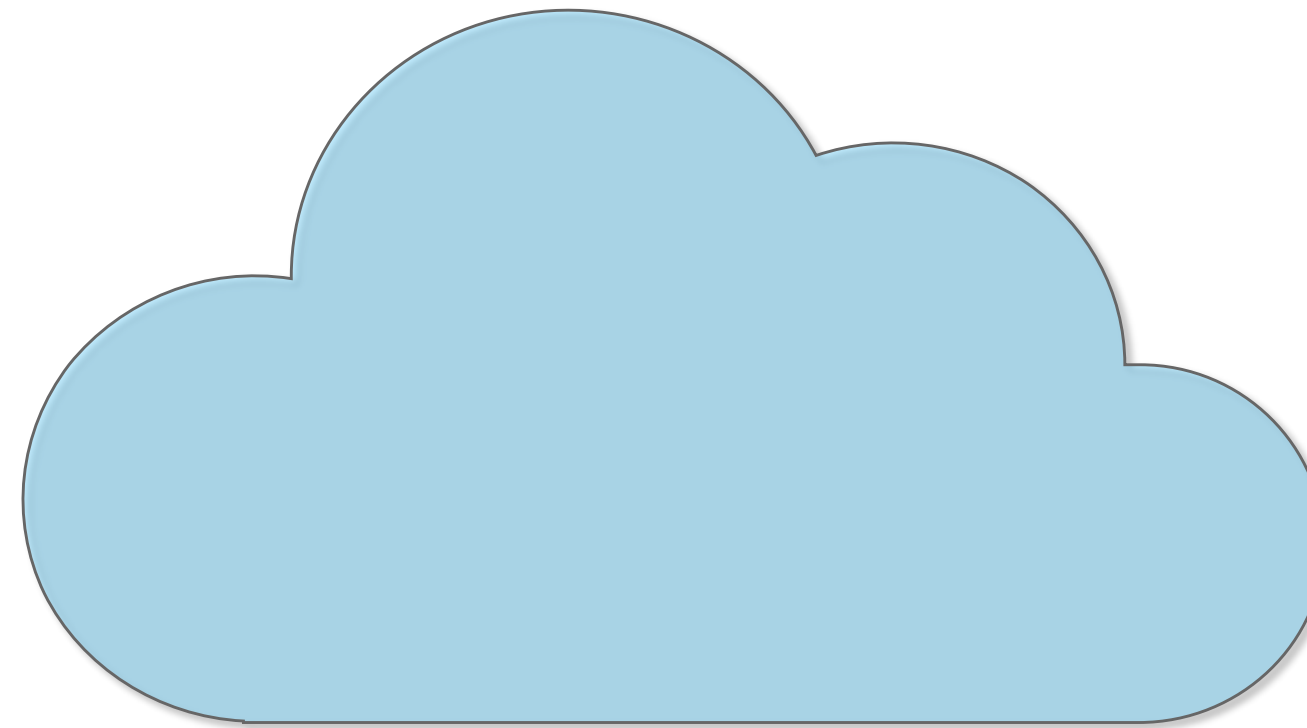
Upload to Cloud



Creation:
3D model, BOM, NC
and 2D Drawings

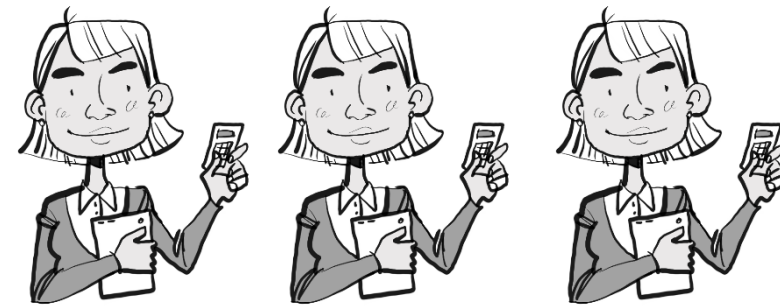


Upload to Cloud





Creation:
3D model, BOM, NC
and 2D Drawings



**Checking 2D
Drawings**



**Updating 2D
Drawings**





Checking 2D
Drawings

Updating 2D
Drawings

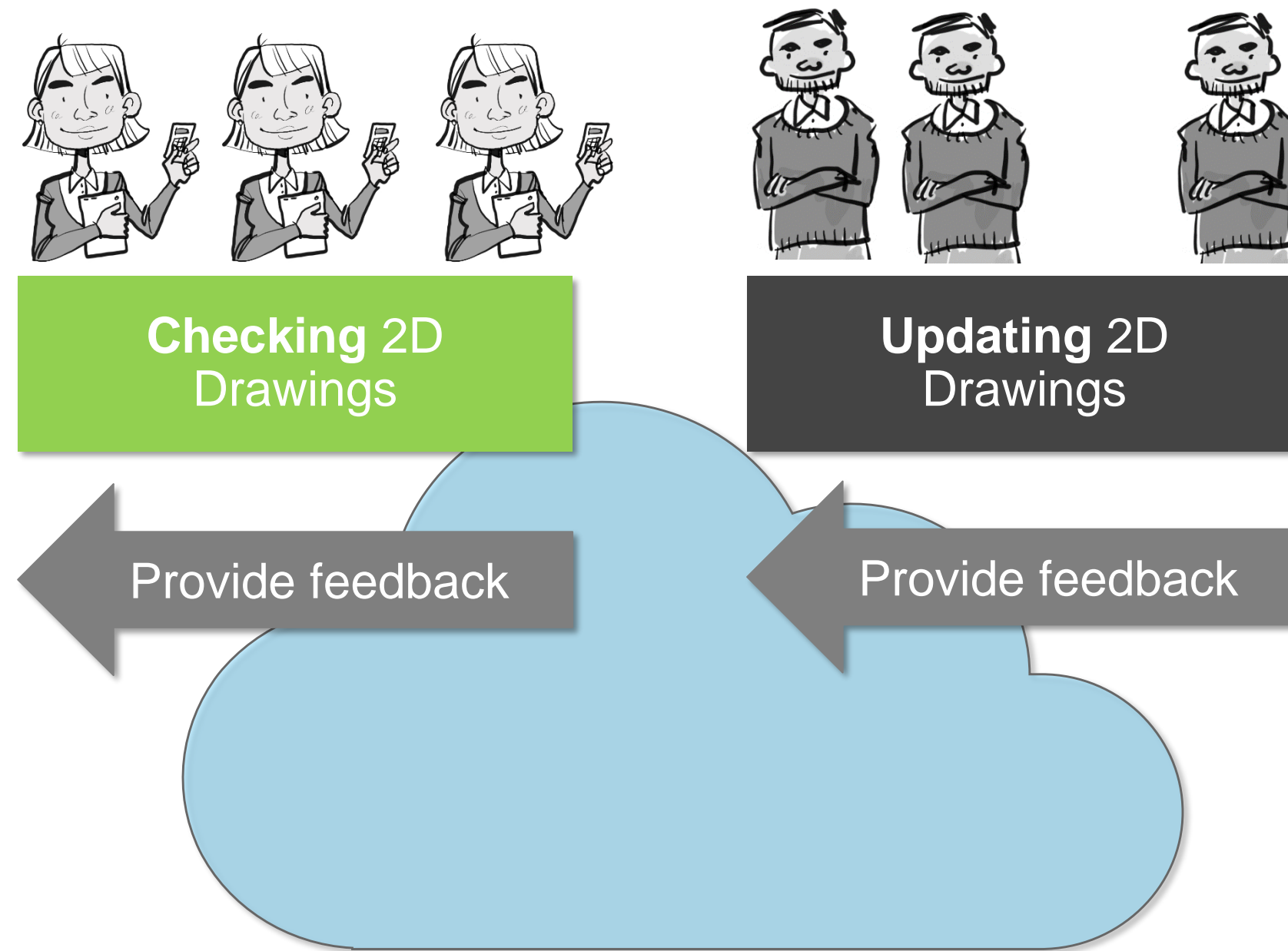


Creation:
3D model, BOM, NC
and 2D Drawings



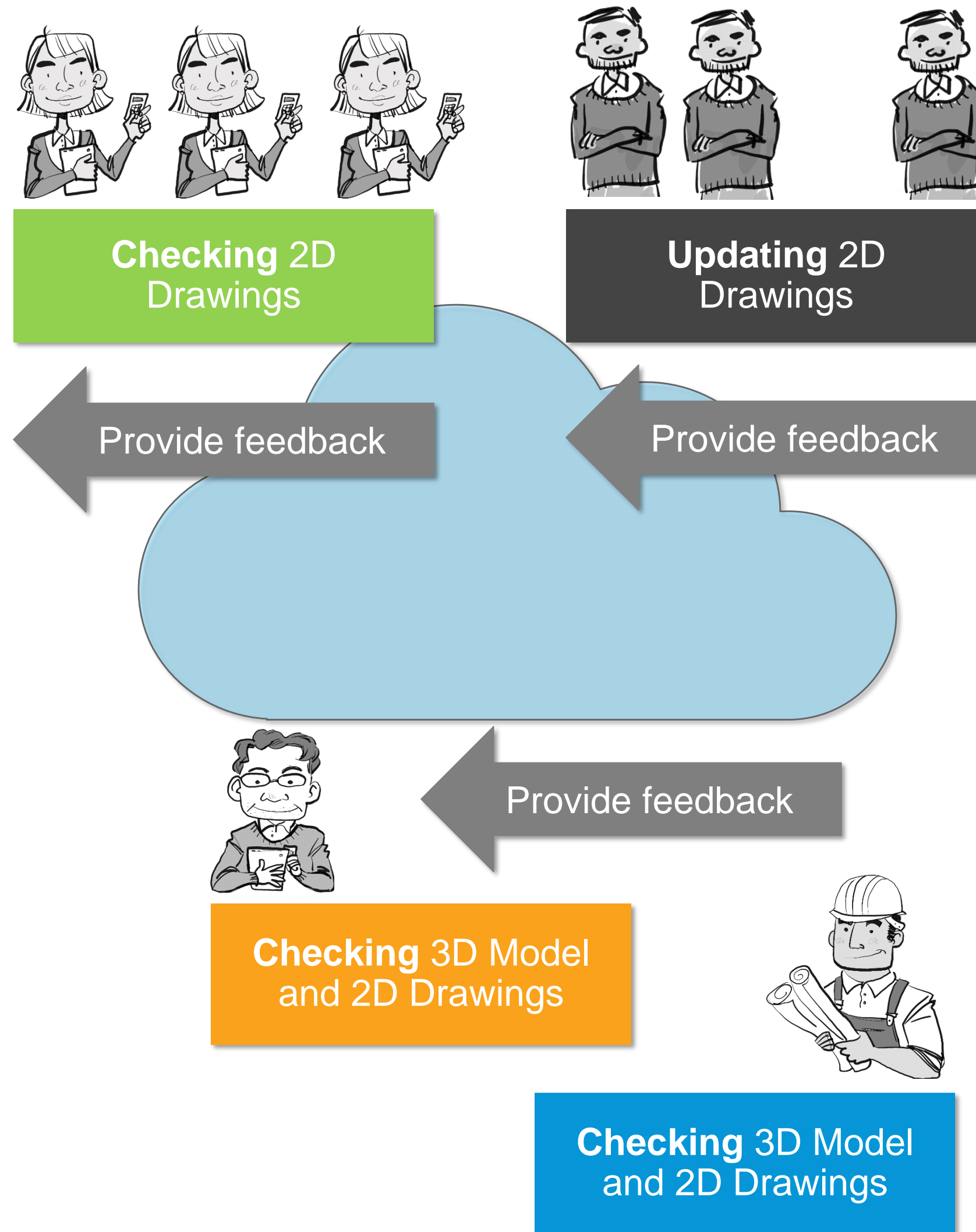


Creation:
3D model, BOM, NC
and 2D Drawings





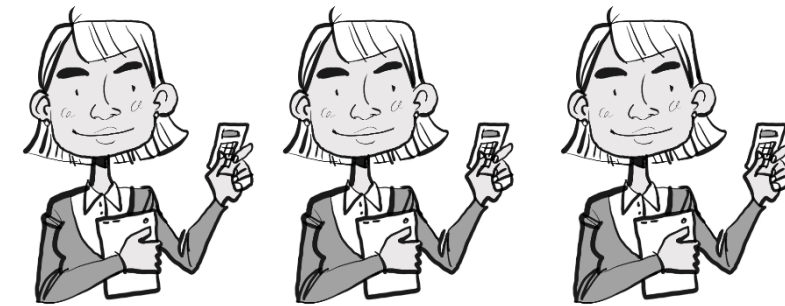
Creation:
3D model, BOM, NC
and 2D Drawings





Creation:
3D model, BOM, NC
and 2D Drawings

Update to Cloud



**Checking 2D
Drawings**



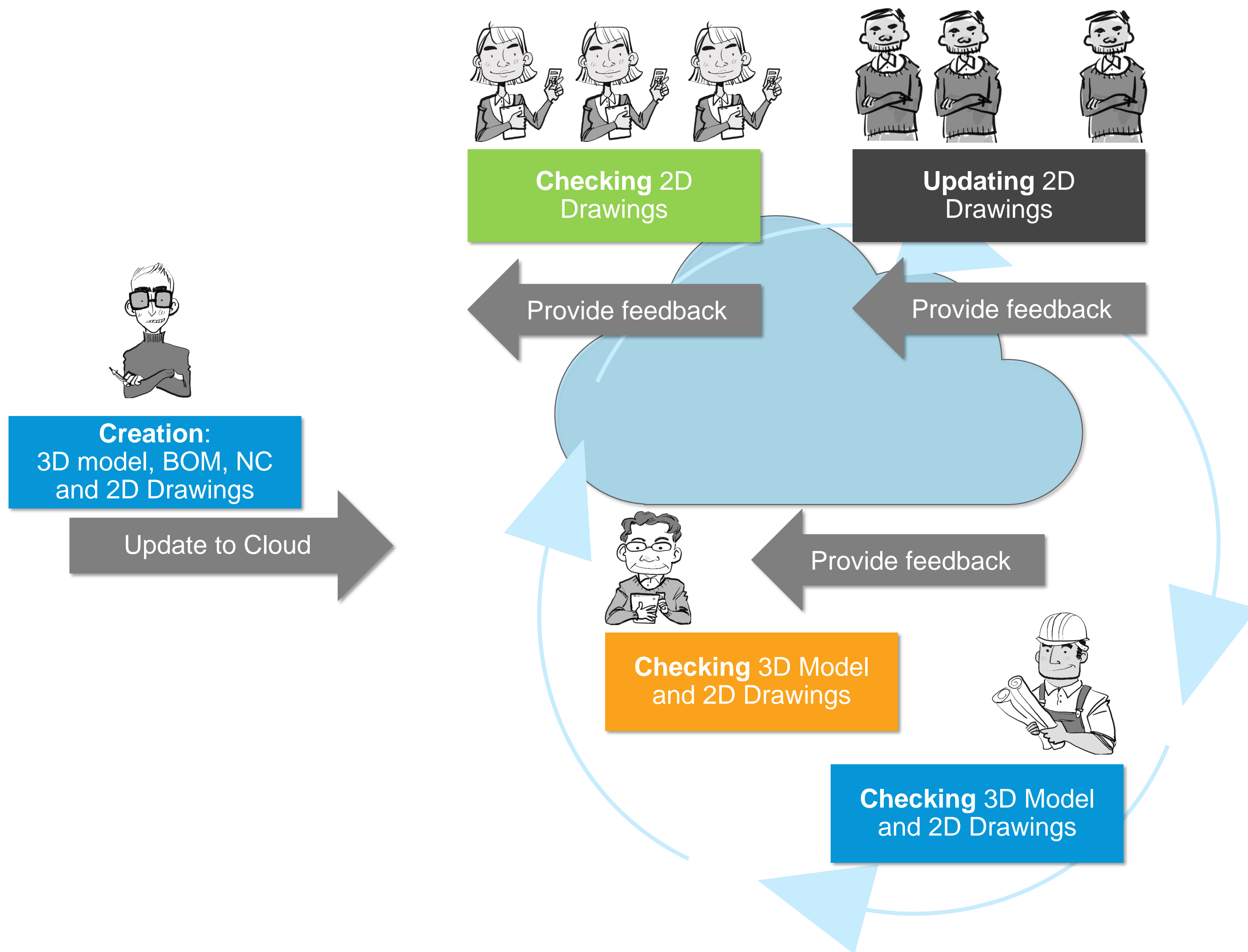
**Updating 2D
Drawings**



**Checking 3D Model
and 2D Drawings**

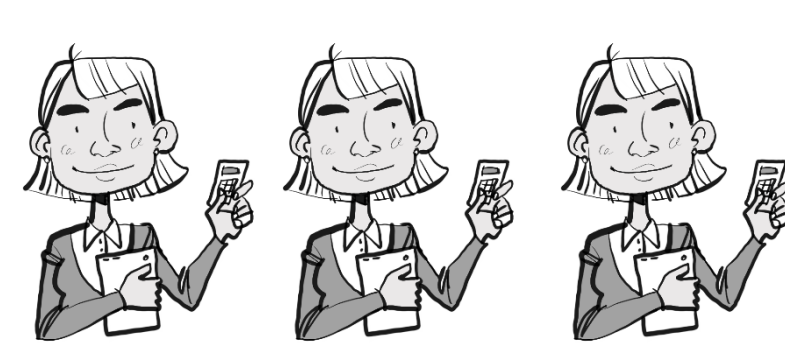


**Checking 3D Model
and 2D Drawings**





Creation:
3D model, BOM, NC
and 2D Drawings



**Checking 2D
Drawings**



**Updating 2D
Drawings**



Using

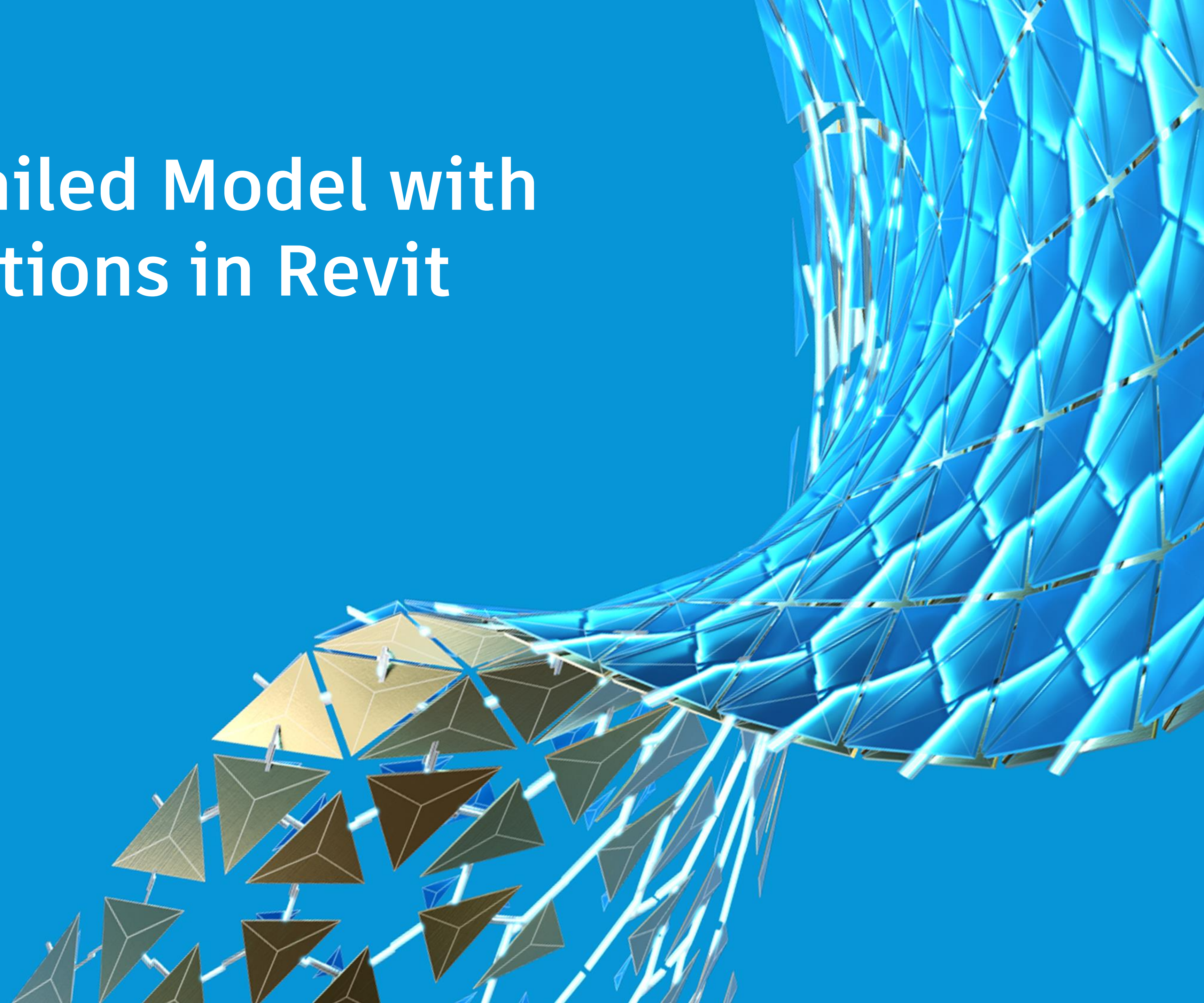


**Using 3D Model, 2D
Drawings and BOM**



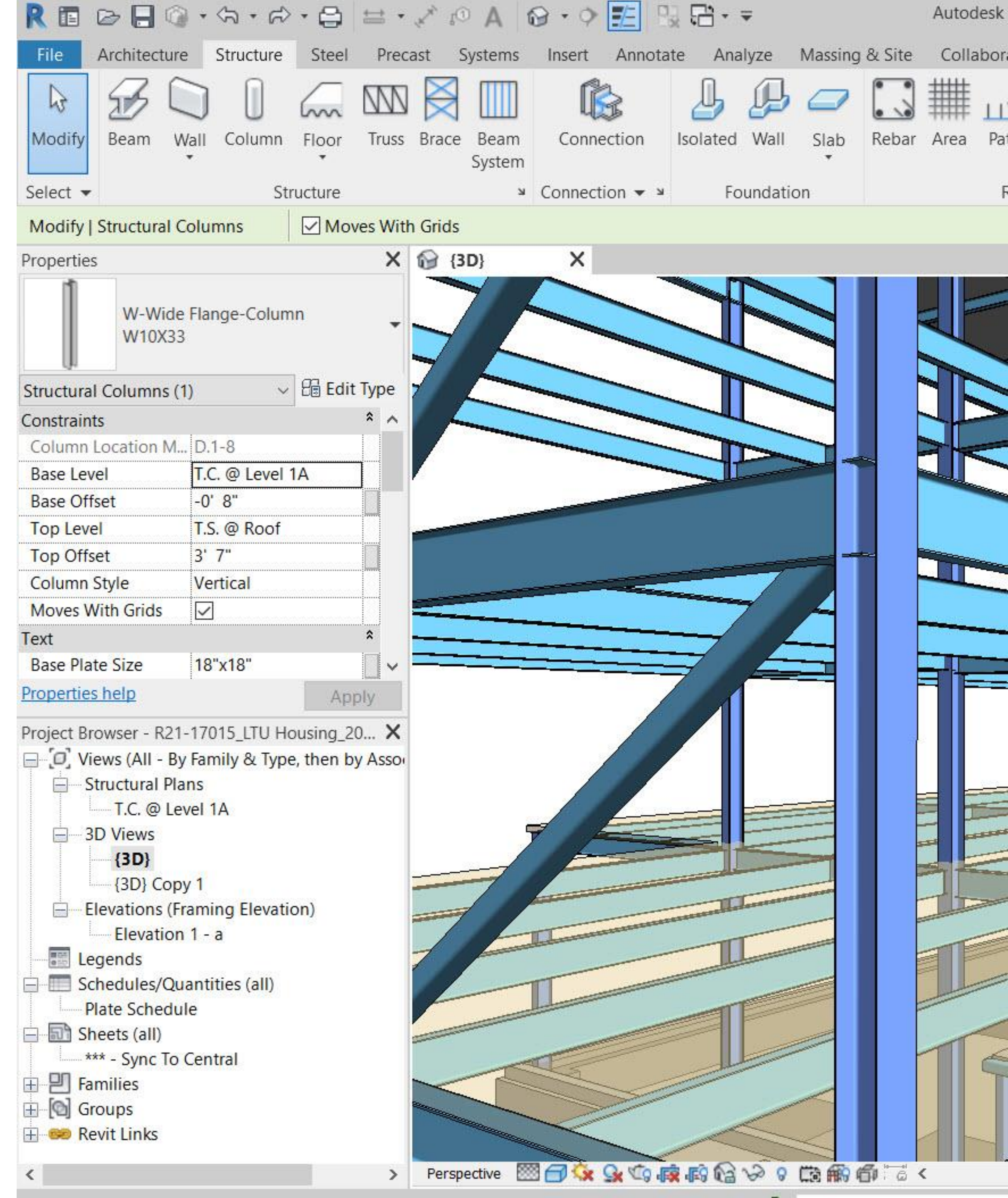
**Using 3D Model, 2D
Drawings, BOM and
NC**

Create a Detailed Model with Steel Connections in Revit



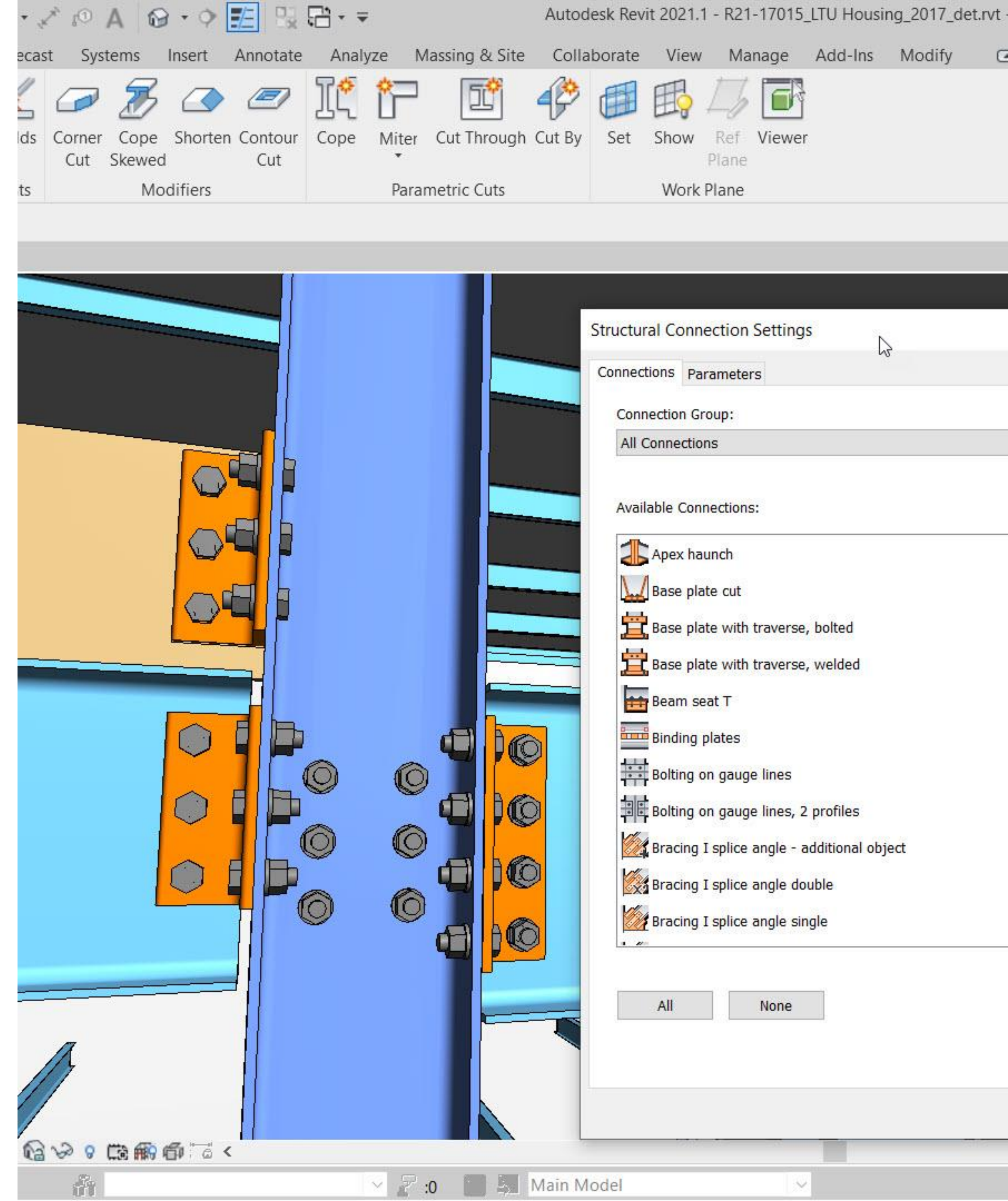
Structural Steel Design

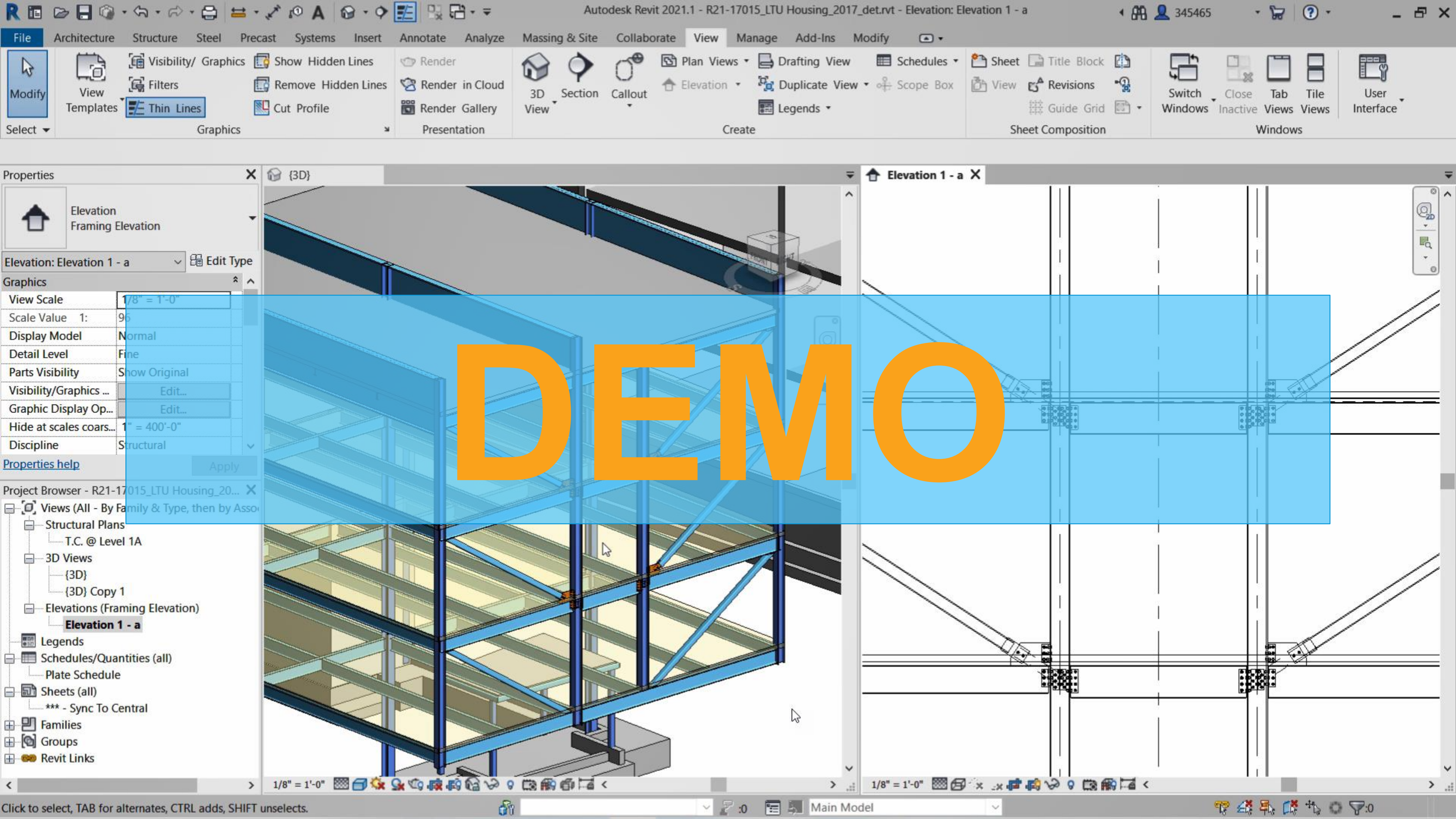
- **Structural framing**
 - Individual beams
 - Chain of beams
 - Beams along grid lines
 - PDF file as overlay
- **Structural columns**
 - Vertical
 - Slanted
- **Structural steel families**
 - Available out-of-the-box
 - Additional libraries can be installed afterwards



Structural Steel Connections

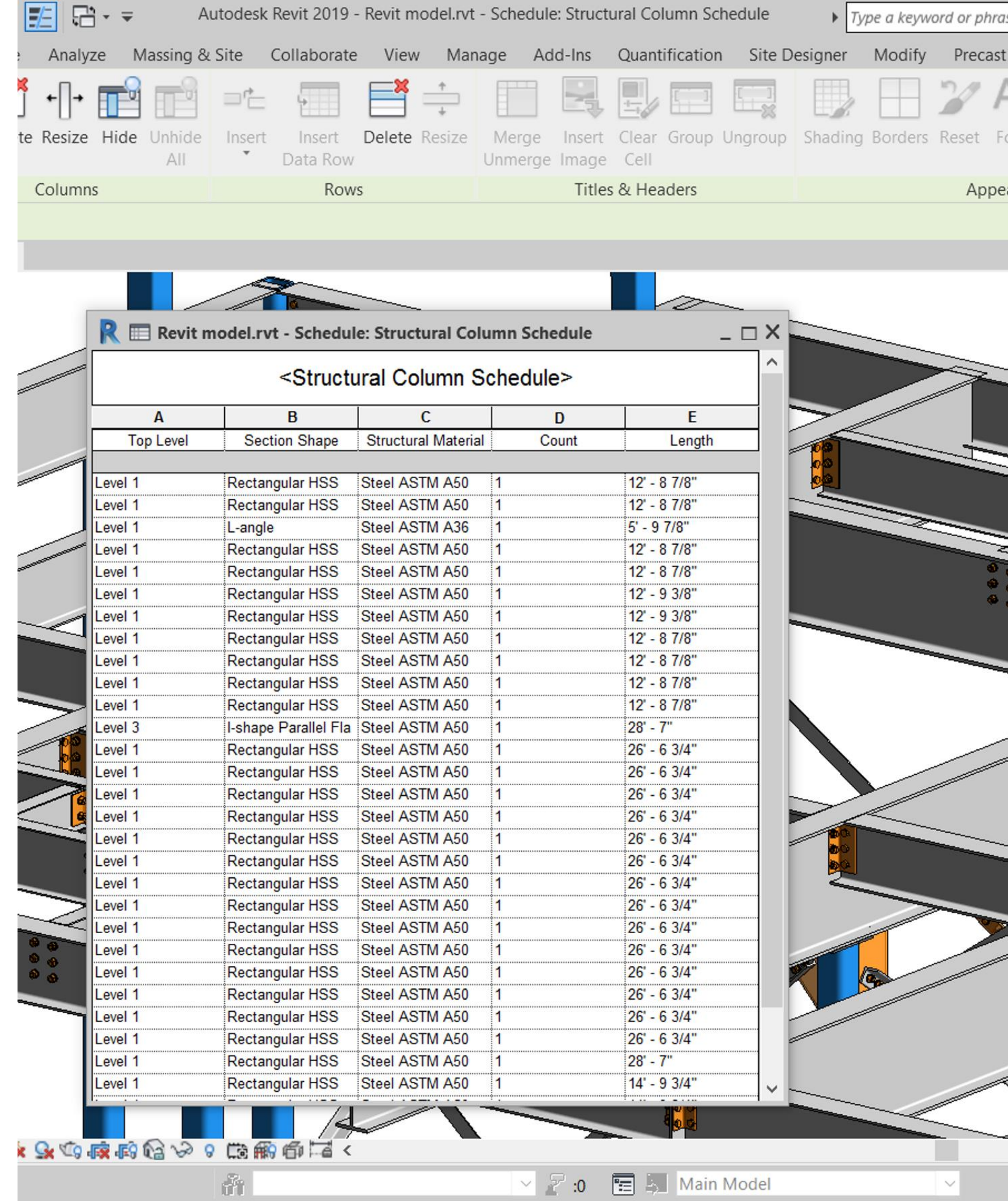
- **Standard steel connections**
 - 125+ parametric connections
 - Simple and complex connections
 - Available out-of-the-box in Revit
- **Integrated code checking**
 - AISC and EC3 standards
 - Verified / Failed
 - Report
- **Custom connections**



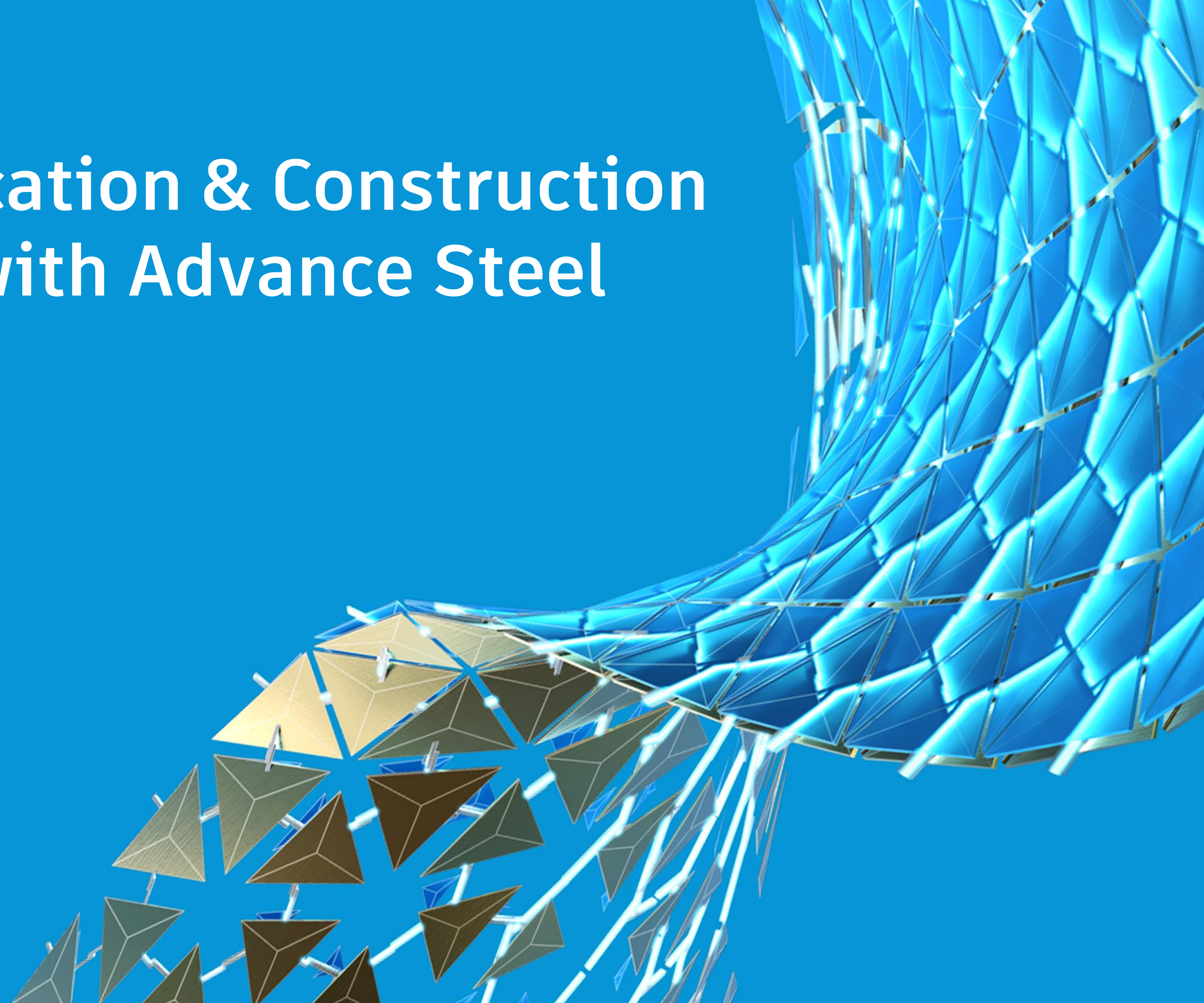


Engineering documentation

- **Sheets**
 - 2D and 3D views
 - Dimensions
 - Tags
- **Schedules**
 - Structural framing
 - Structural columns
 - Plate schedule
 - Bolt schedule

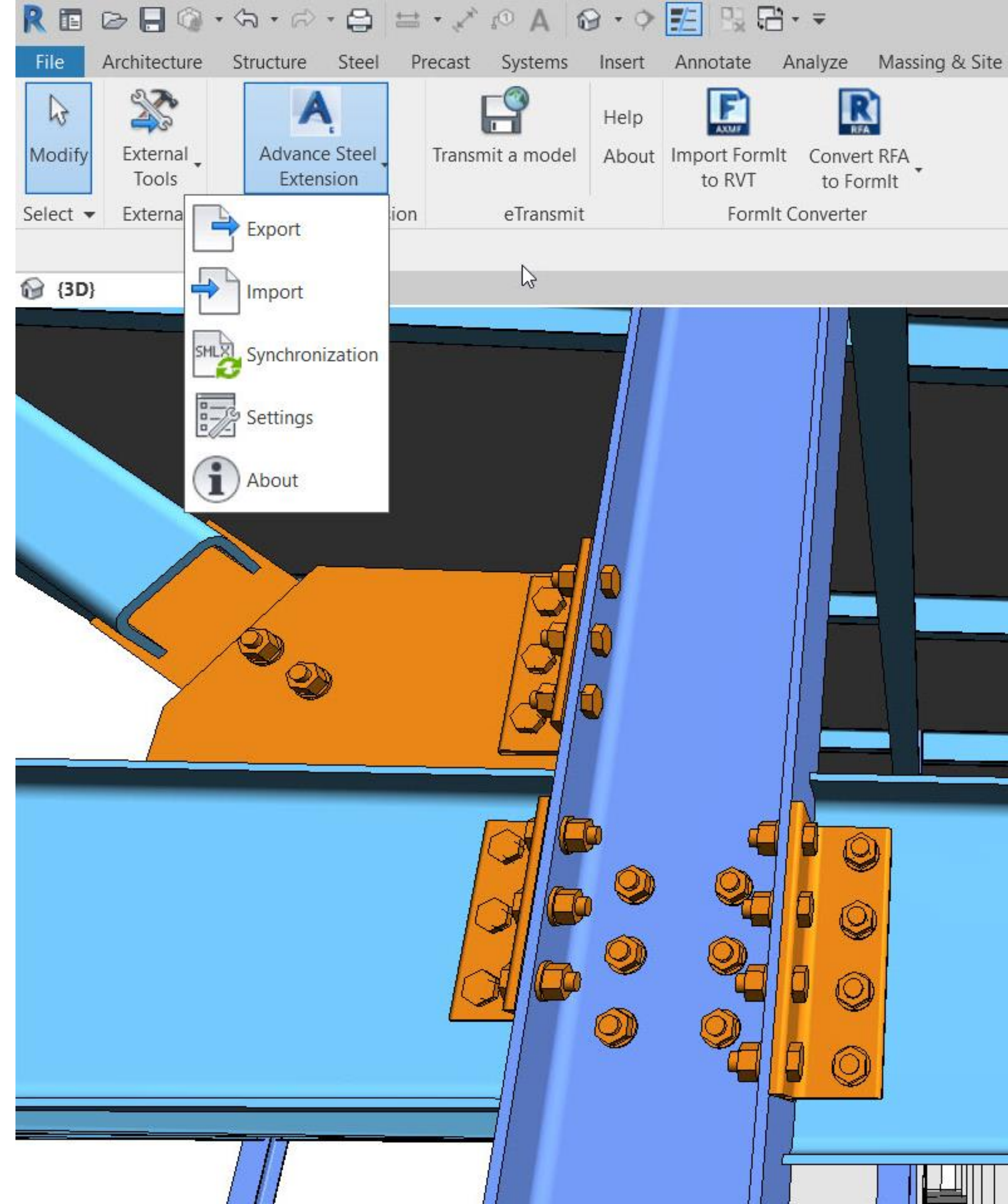


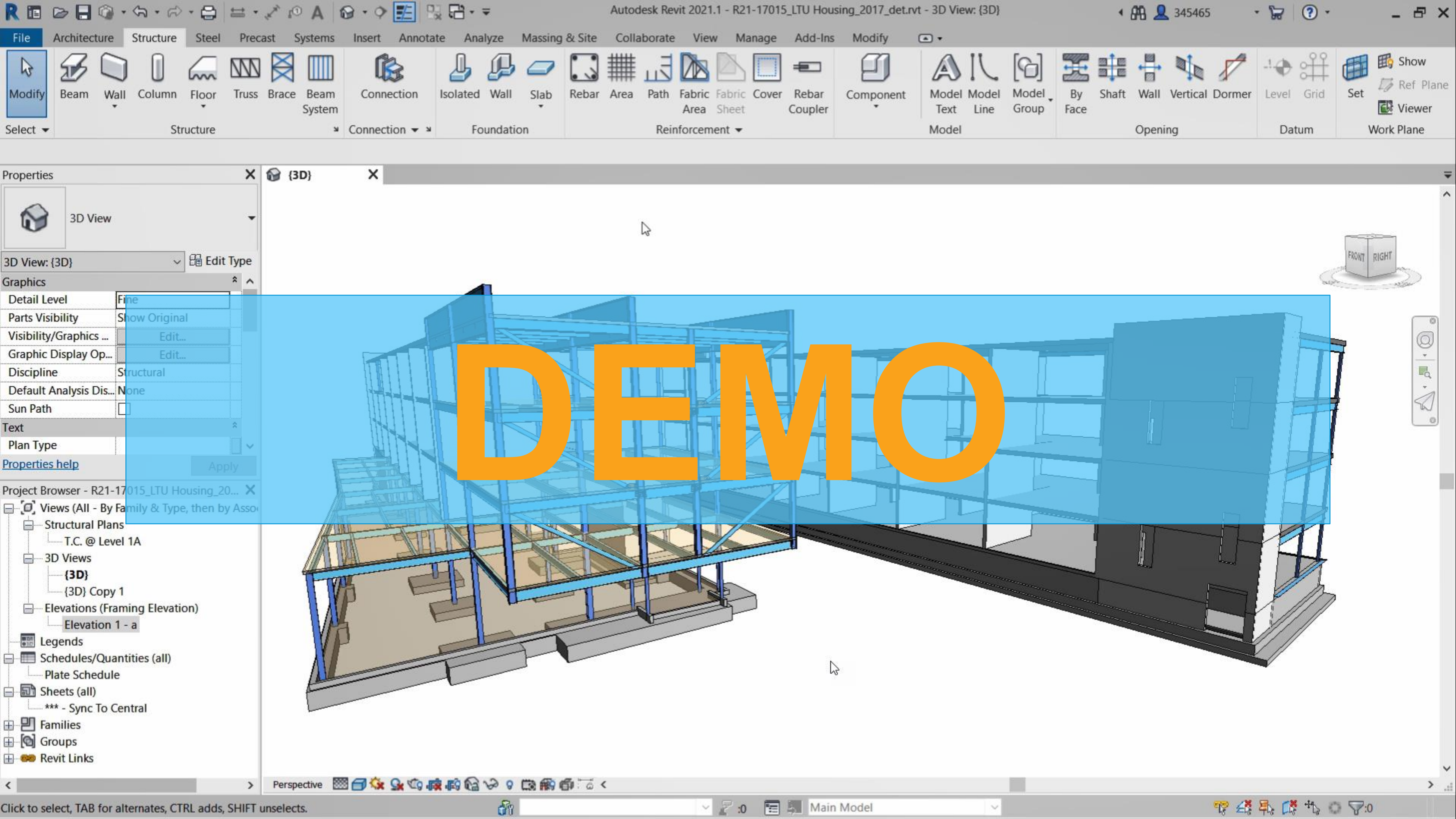
Create Fabrication & Construction Documents with Advance Steel

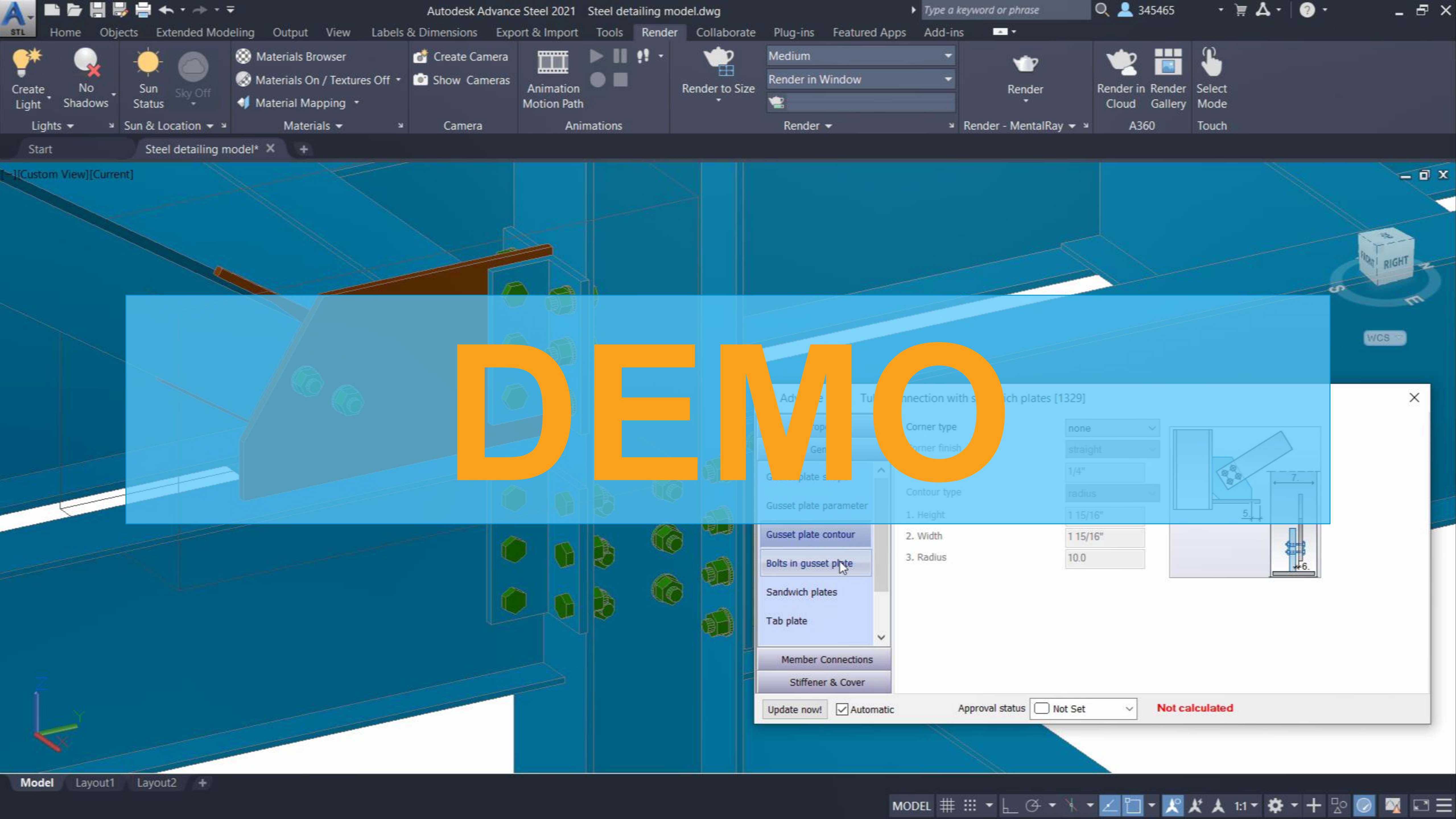


From steel design to detailing

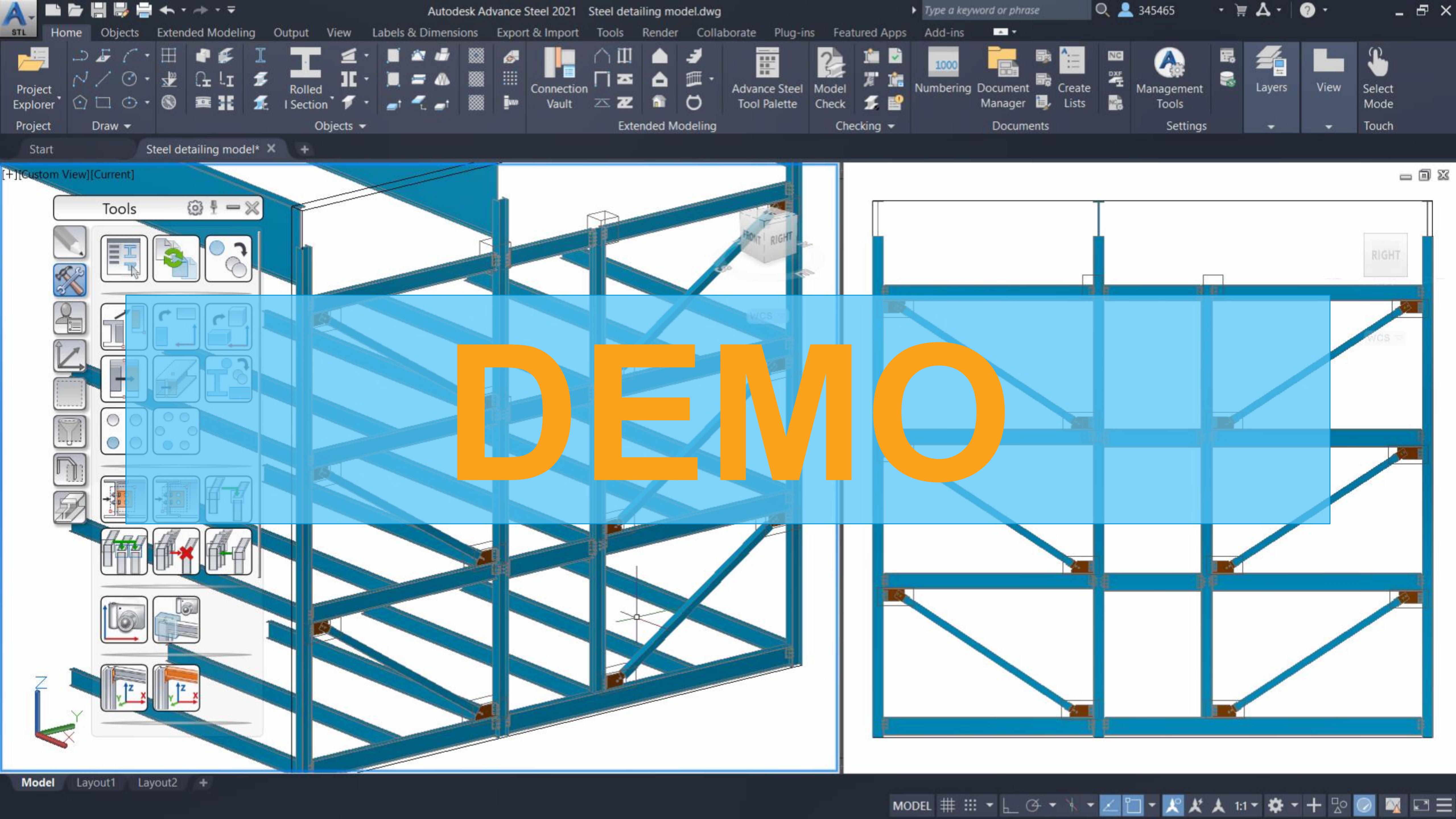
- Advance Steel Extension for Revit
- Export the design model from Revit
- Save the exported SMLX file
- Import the design model in Advance Steel





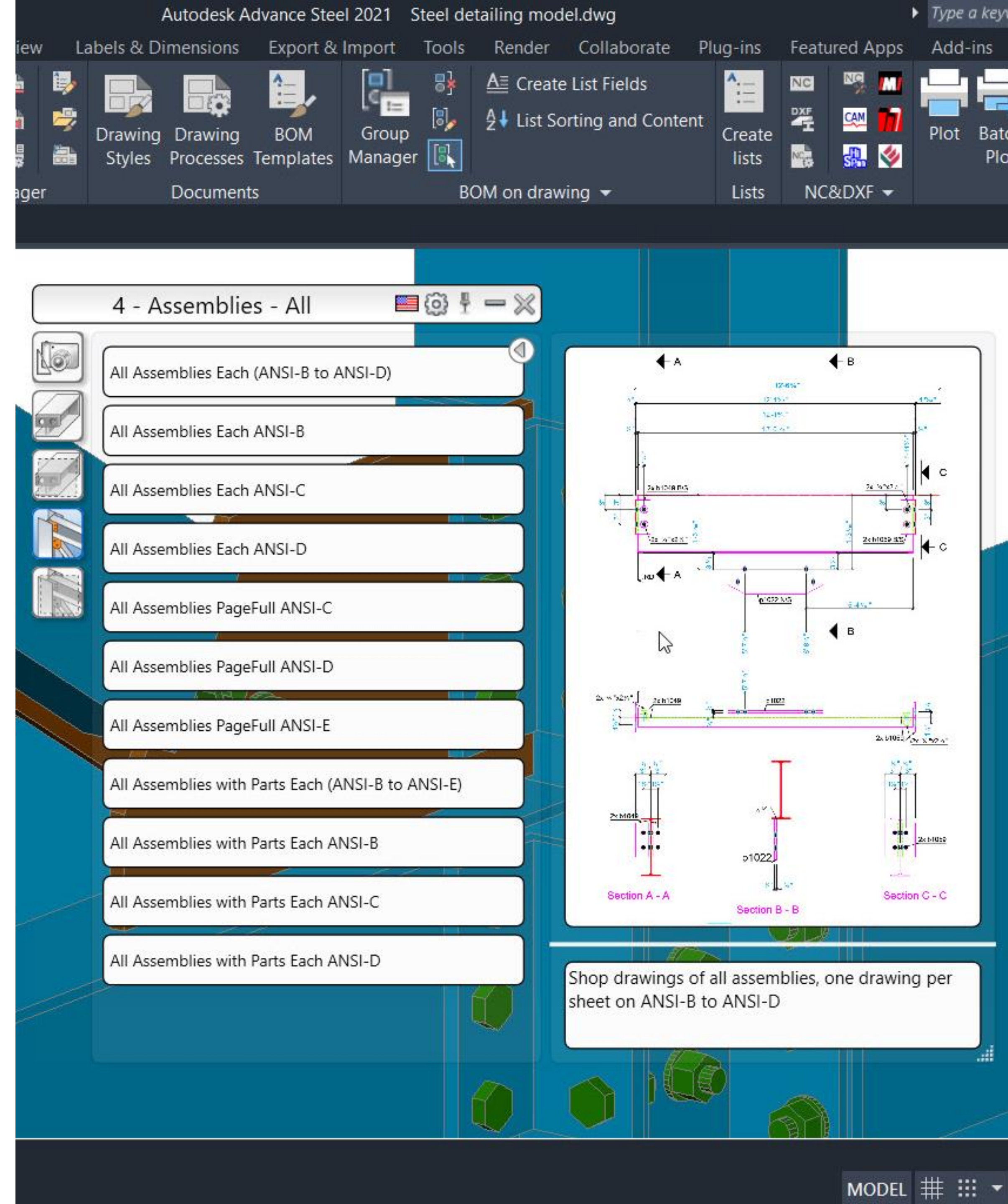


DEMO



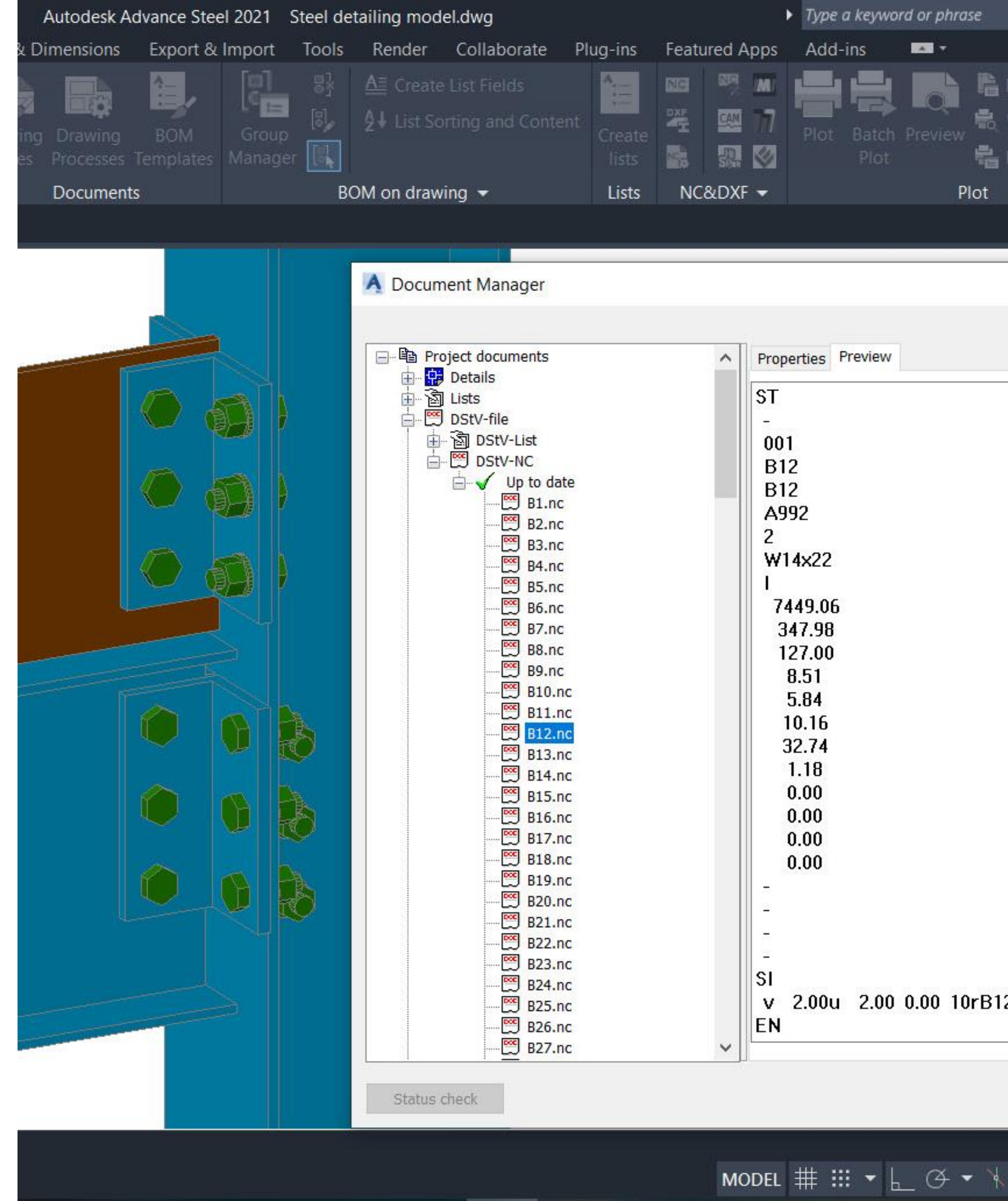
Accurate shop drawings

- **Detailed drawings for fabrication**
 - Extracted automatically from the 3D model
 - High level of accuracy
- **Separate DWG files**
 - Single part drawings
 - Assembly drawings
- **Drawing styles manager**
 - Access to additional styles
 - Customizable styles
 - Import / export customized styles



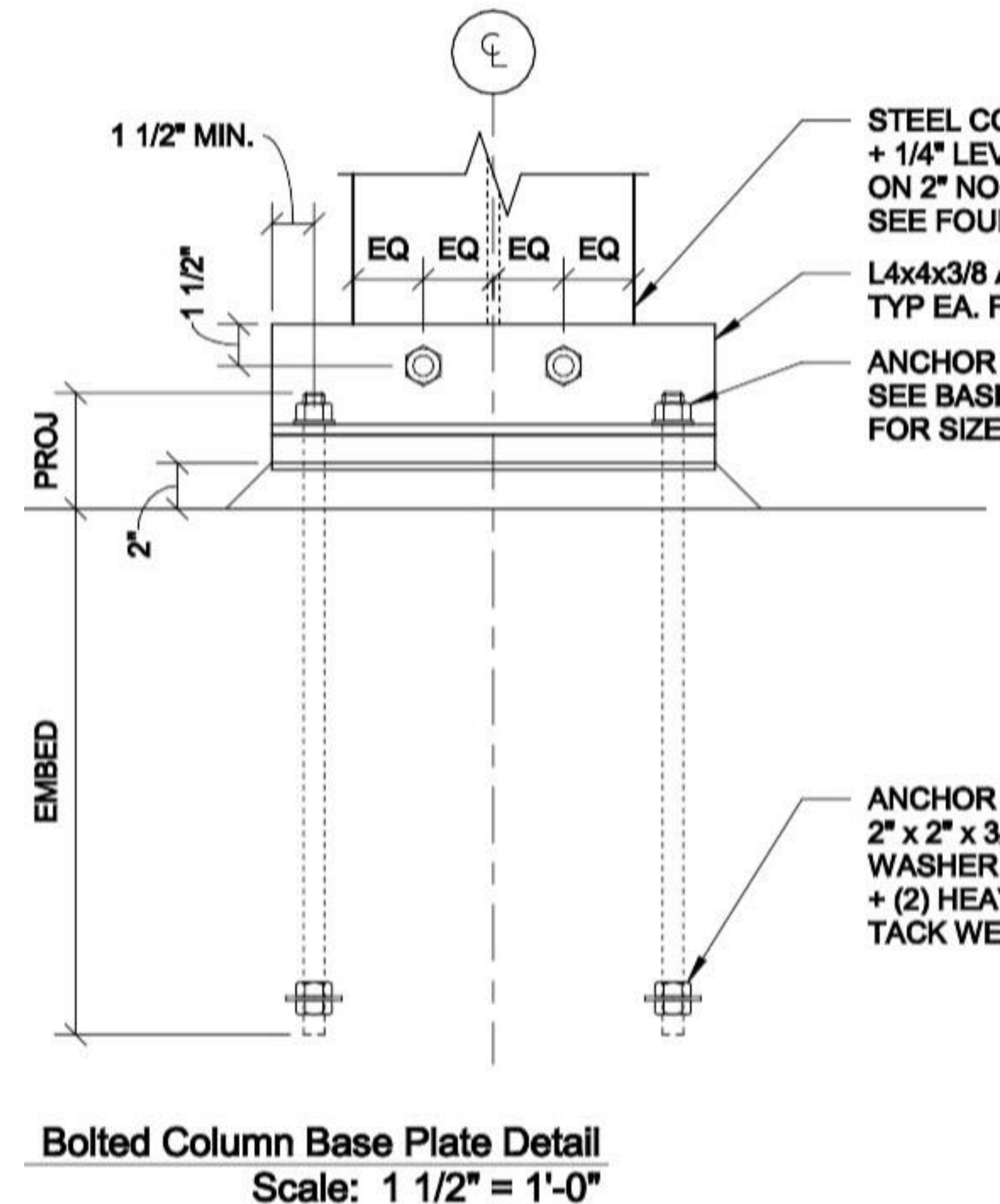
NC data for CNC machinery

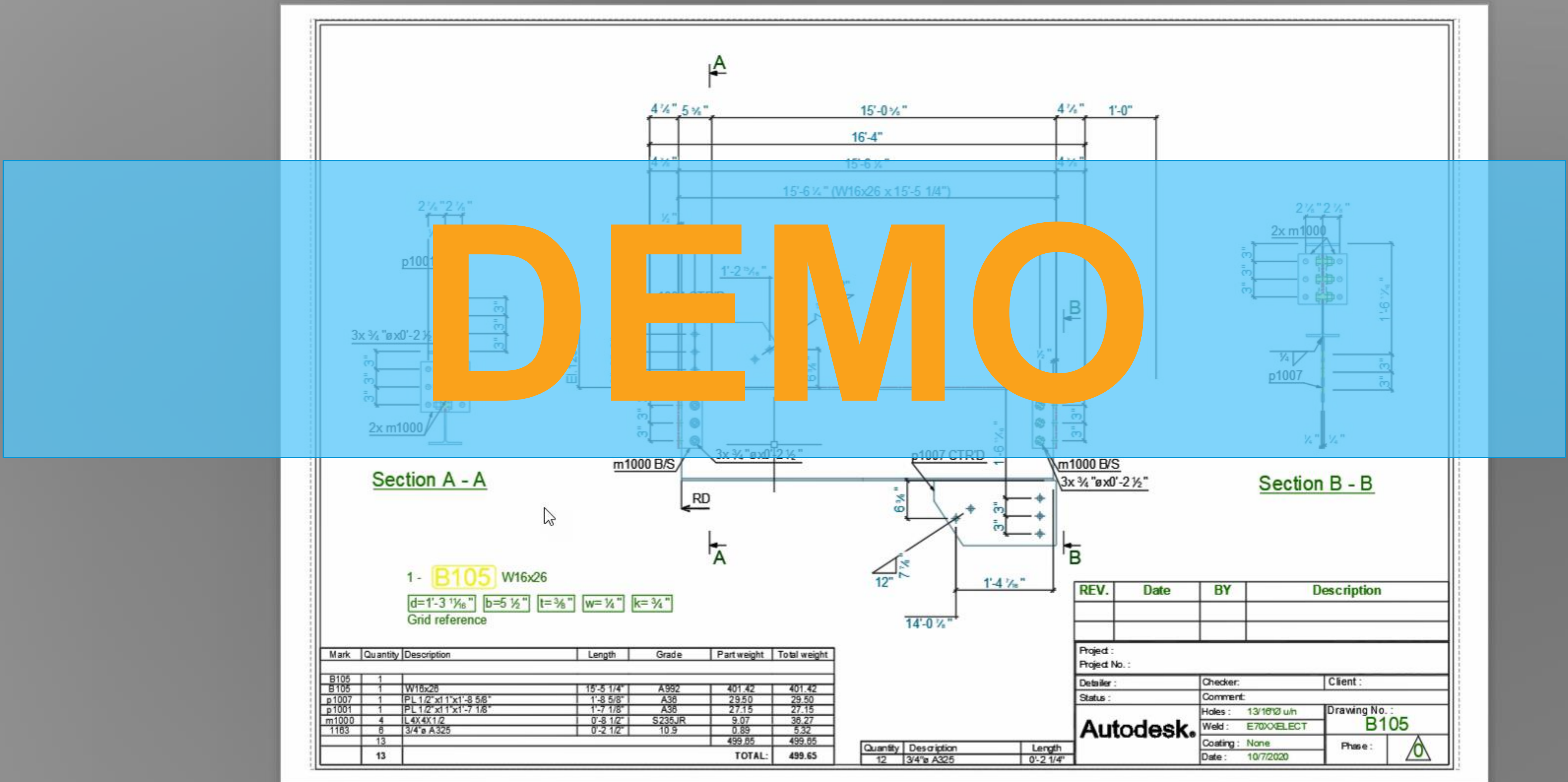
- **DSTV and DXF files**
 - Create NC (or NC1) files in DSTV format
 - DSTV (Deutscher Stahlbau-Verband), a standard interface for geometry description of steel parts
 - Create NC files in DXF format
 - Part positional scribing
- **XML files for welding robots**
 - No programing, no robot teaching
- **Link to MIS and ERP software**
 - MIS = Management Information System
 - Optimizing your steel fabrication process



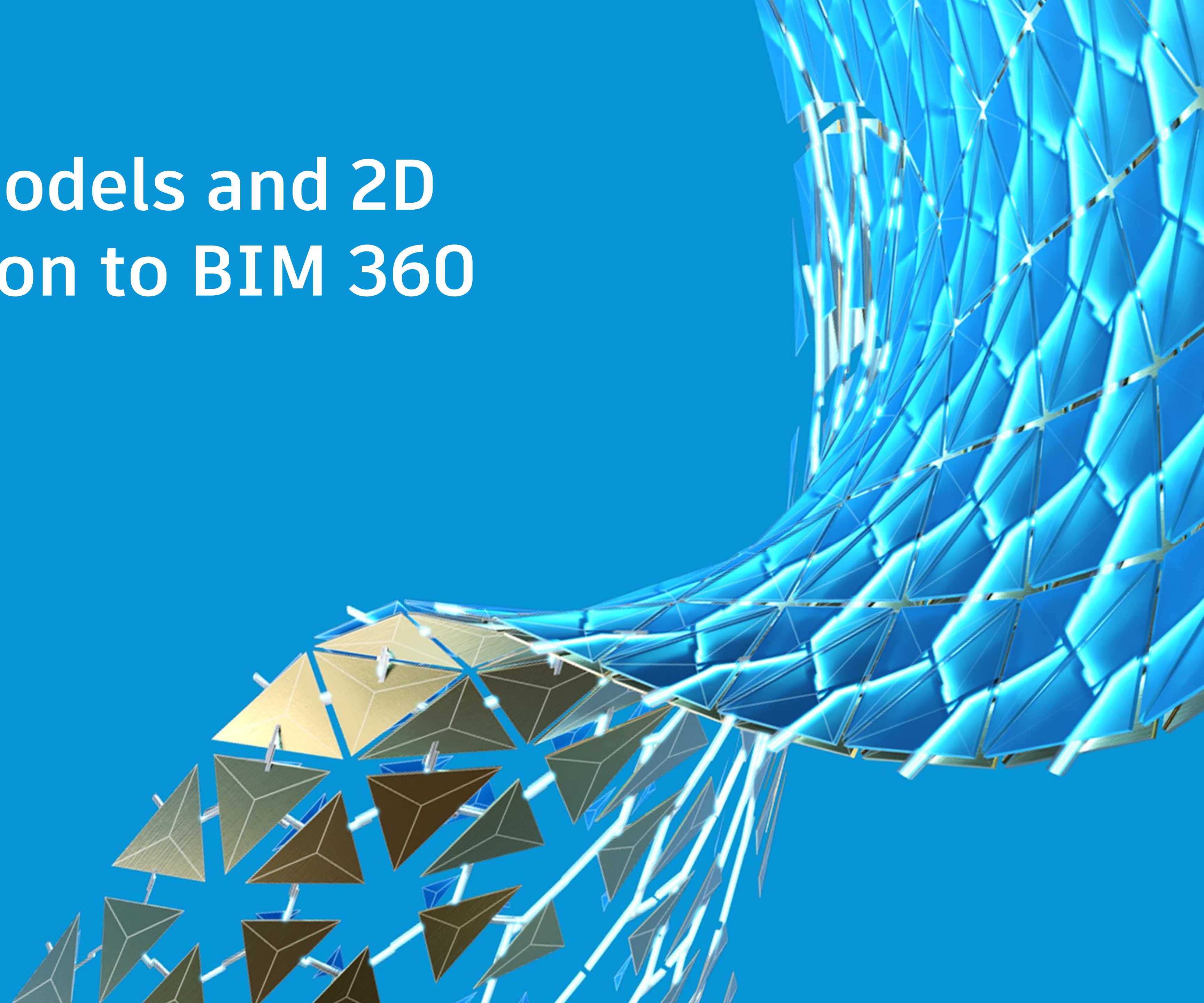
Detailed construction drawings

- **Drawings for effective constructability**
 - Precise representation of building components
 - Elevations and floor plans
 - Steel structural frame drawings
 - Anchor bolt plan drawings
 - Automatic dimensioning & labelling
- **Bills-of-materials**
 - Material summary list
 - Saw cut list
 - Shipping list





Publish 3D Models and 2D Documentation to BIM 360



BIM 360 Docs platform

- **Used to store, view and manage**
 - 3D Models (RVT, DWG, IFC, NWD, ...)
 - 2D Drawings (DWG, PDF, ...)
- **Accessible from:**
 - Internet Web browser
 - iOS & Android Apps
 - Desktop connector
- **Manage access by user, role and company**

2Td6R2bzYR6RDlw/detail/settings/permissions

Permissions - Structural Team

Users: 5 Companies: 0 Roles: 0

Add

Search for name or email

Name	Permission Level ▼	Type ▼	
Scott D. Davis	Folder Control ■■■■■	User	Project Ad...
Paul Munford	View+Download+Upload ■■■■■	User	Remove
Aaron Vorwerk	Folder Control ■■■■■	User	Project Ad...
Philippe Bonneau	Folder Control ■■■■■	User	Project Ad...
George Hatch	Folder Control ■■■■■	User	Project Ad...

2

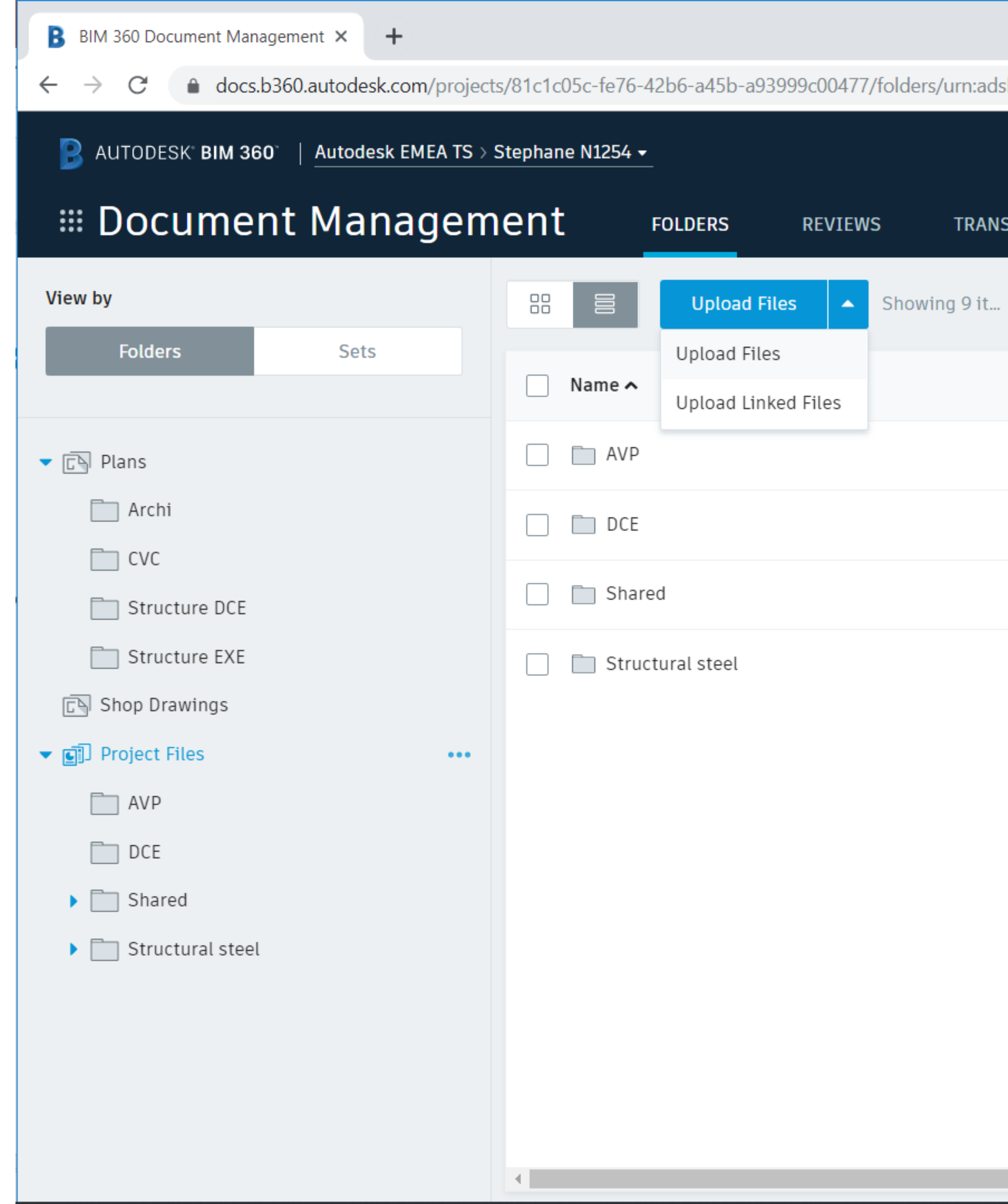
Publish 3D models

If you have a .dwg, .ifc, .nwc, or even an .rvt that doesn't need to be collaborated through Revit you can manually upload the model so others can link it into their model if needed.

- Manually upload through the BIM 360 Docs website

OR

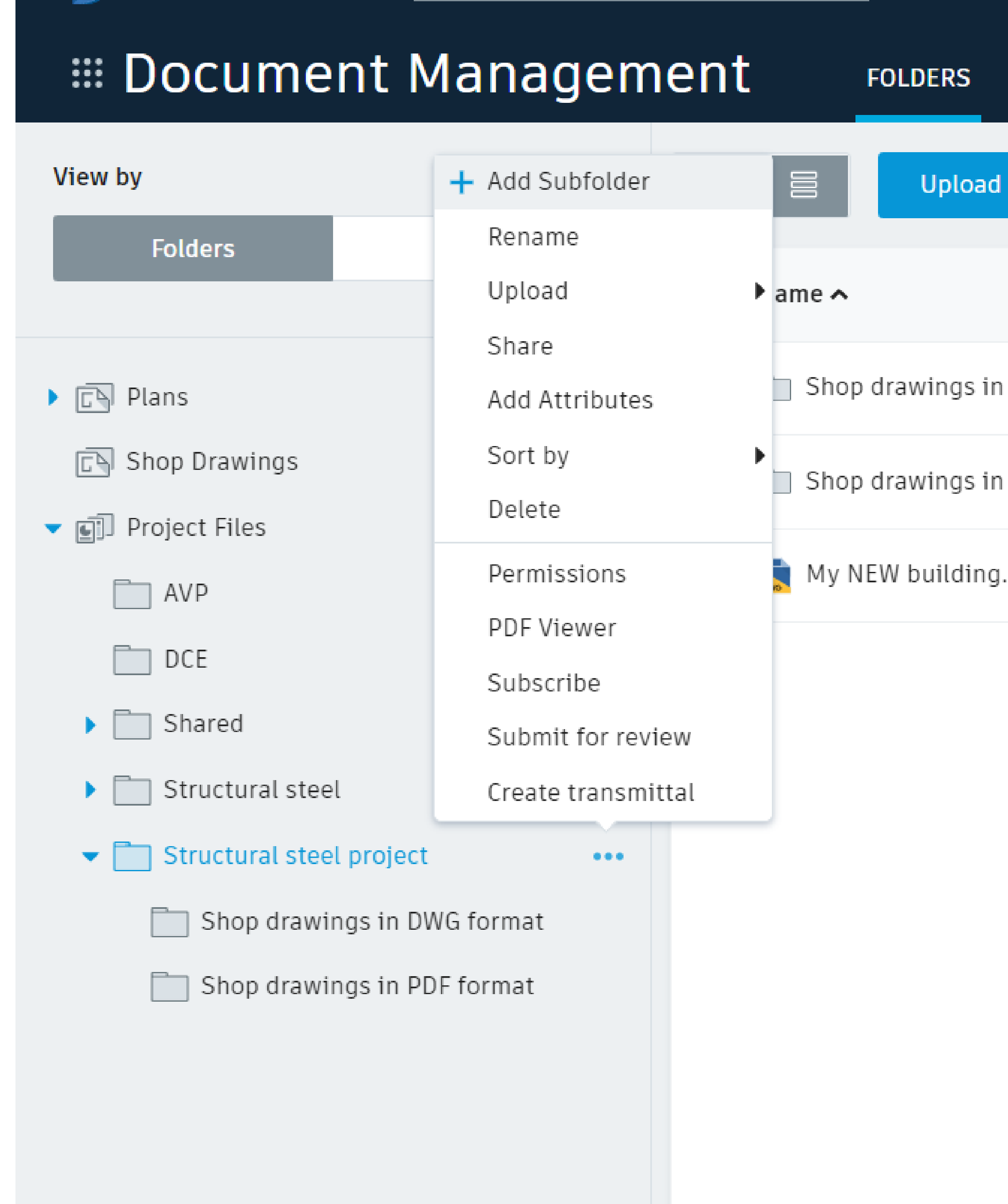
- Saving a non-worksharing .rvt through Revit with **Save As > Cloud model**
 - Use Save to save it on the Cloud
 - Use Manage Cloud models to publish a newer version



Publish 2D Documentation

To organize the documentation, you can add additional folders in BIM 360 Docs.

- **Project Files can house any type of document related to the project**
 - Includes Autodesk files, PDFs, Microsoft Office files
- **Can be used to separate documents**
 - By milestone
 - By file format
- **To create a folder, select the button with three small dots and select the Add Subfolder option**
- **Set the Permission Level for each folder**



Document Management

FOLDERSREVIEWSTRANSMITTALSISSUES

View by

Folders

+ Add subfolder

Rename

Upload

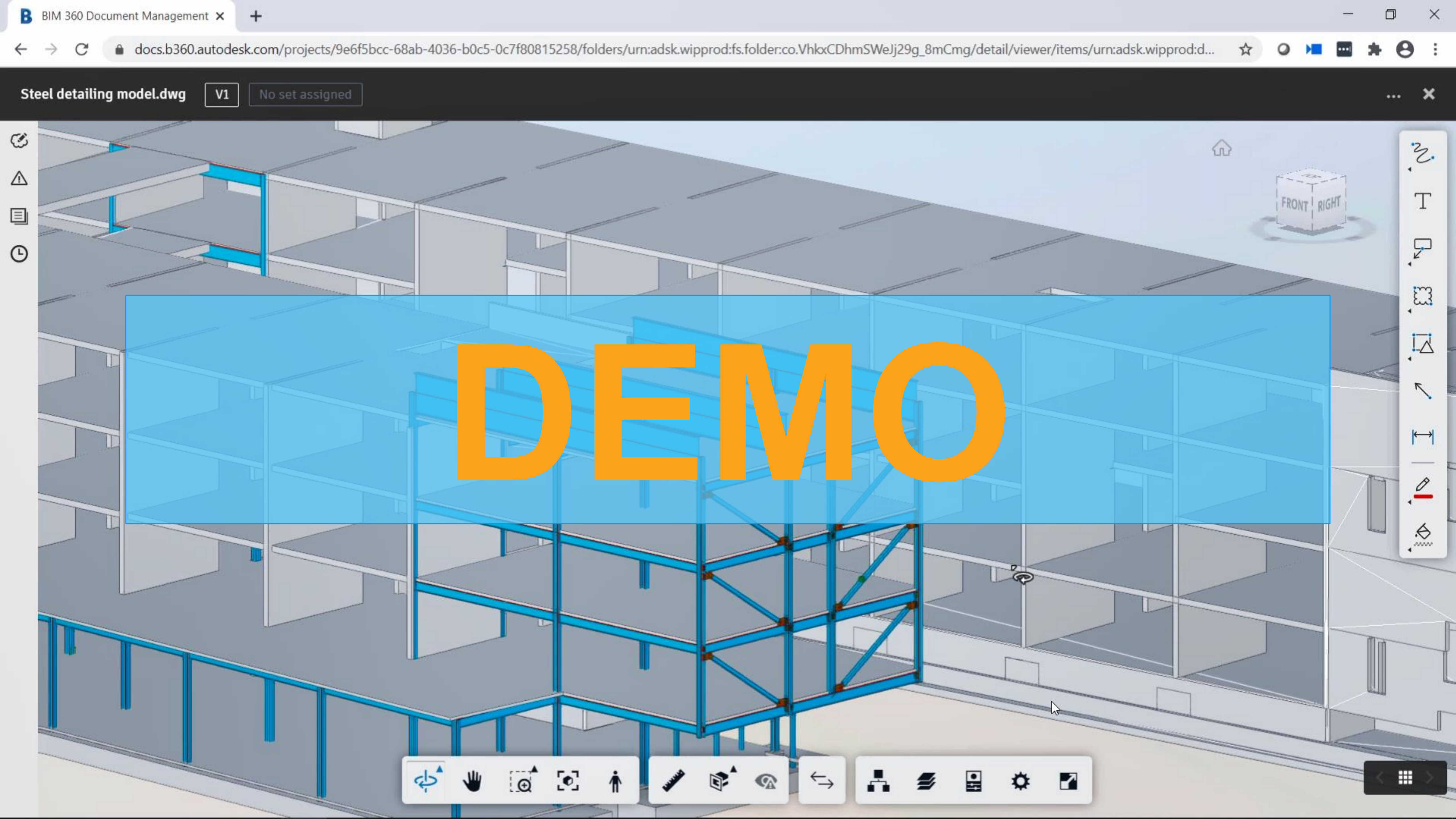
Share

Upload files

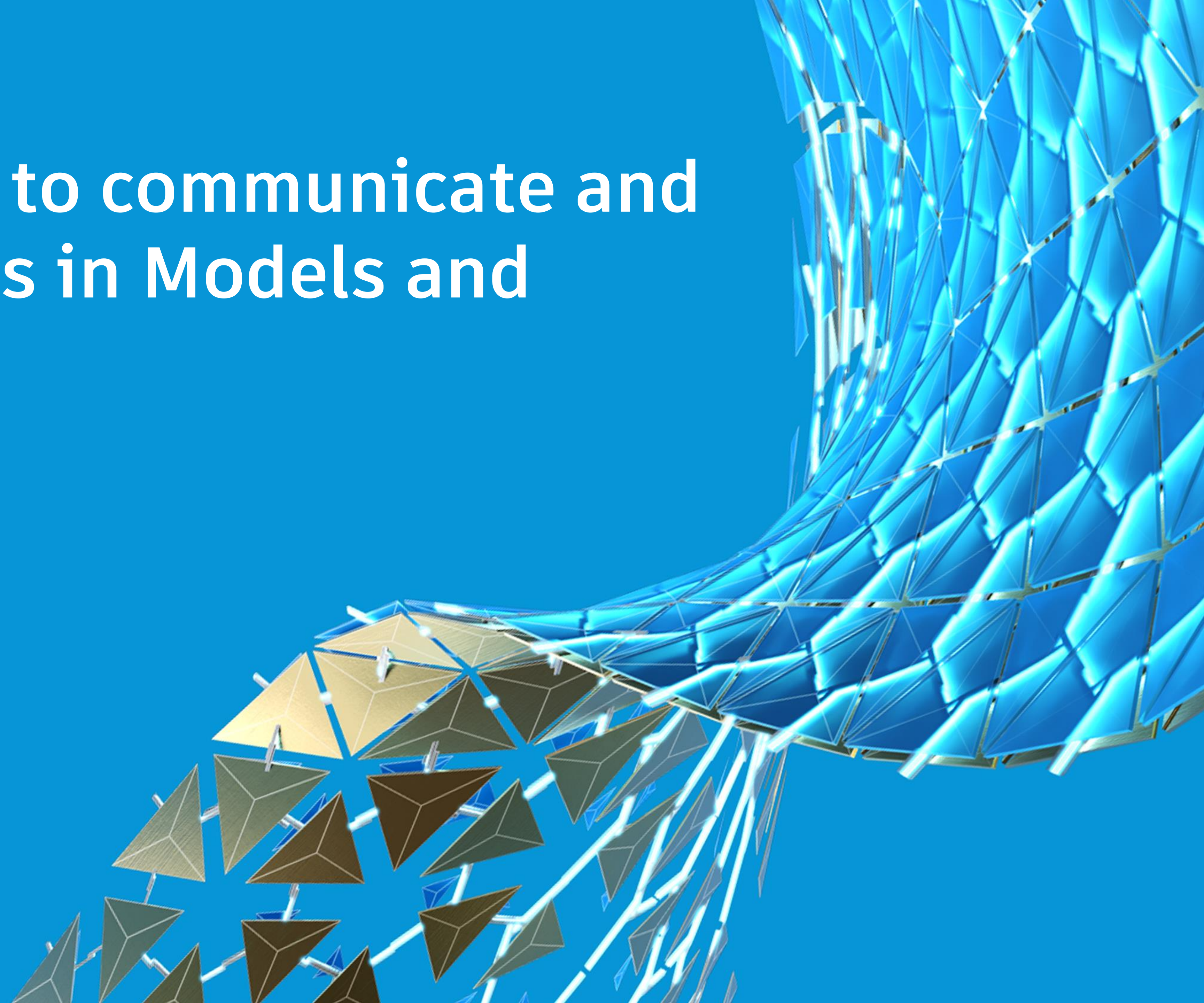
Showing 4 items

Search for documents

	Name ^	Description	Version	Size	Last updated	Updated by	Markup	Issue
Models	Detailed model		--	--	Oct 7, 2020 12:30 PM	Philippe Bonneau	--	--
Architecture	Shop drawings		--	--	Oct 7, 2020 12:30 PM	Philippe Bonneau	--	--
Civil	17015 LTU DENT HOUSE G.ifc		V1	3.6 MB	Sep 13, 2020 1:19 AM	Aaron Vorwerk		
Coordination	17015 LTU DENT HOUSE G.stp		V1	7.5 MB	Sep 13, 2020 1:19 AM	Aaron Vorwerk		
MEP								
Shared								
Structure								
Consumed								
Structural Detailing								
Detailed model								
Shop drawings								
DWG files								
PDF files								
Photographs								
Presentations								
Renderings								



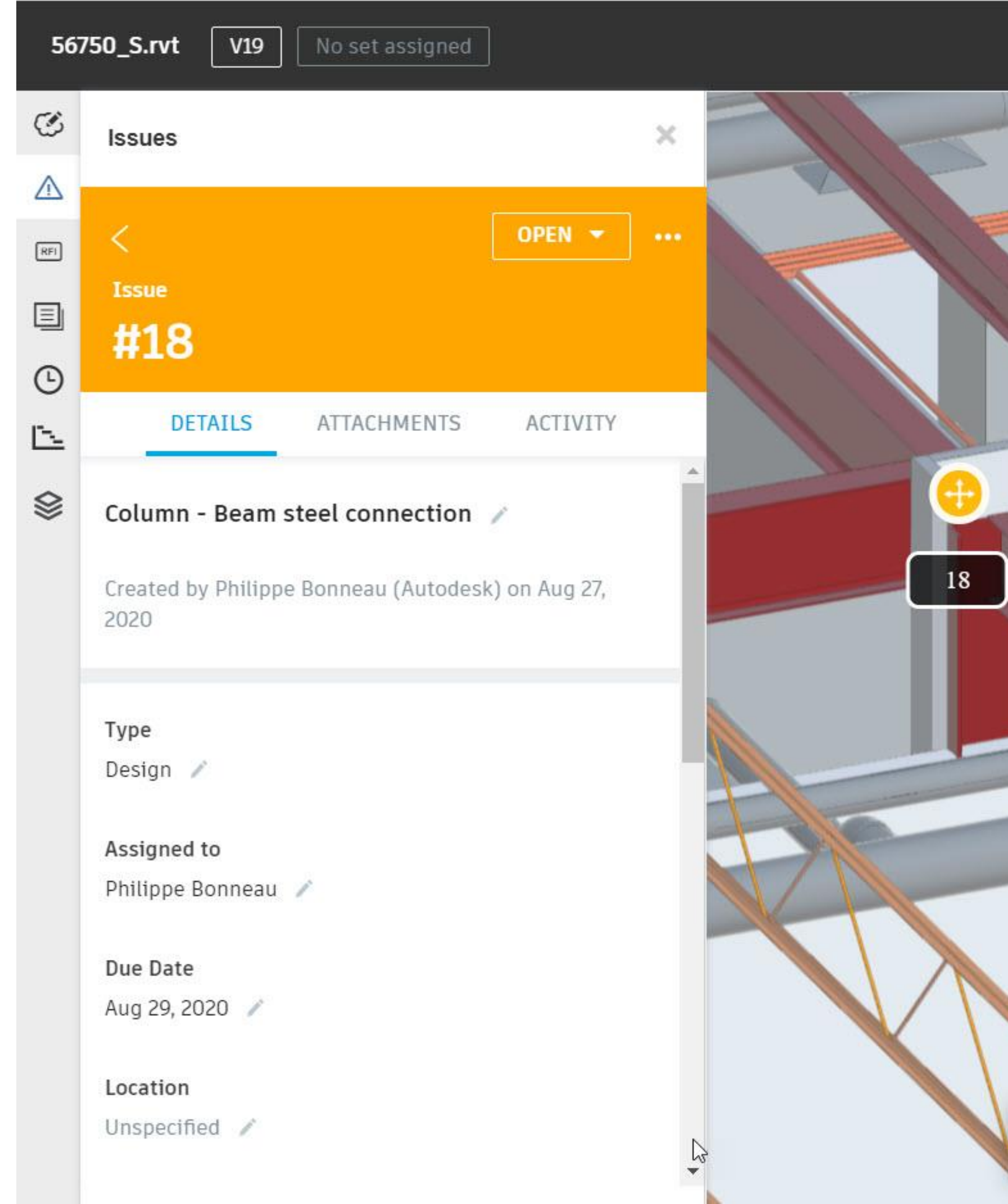
Use BIM 360 to communicate and
track Changes in Models and
Drawings

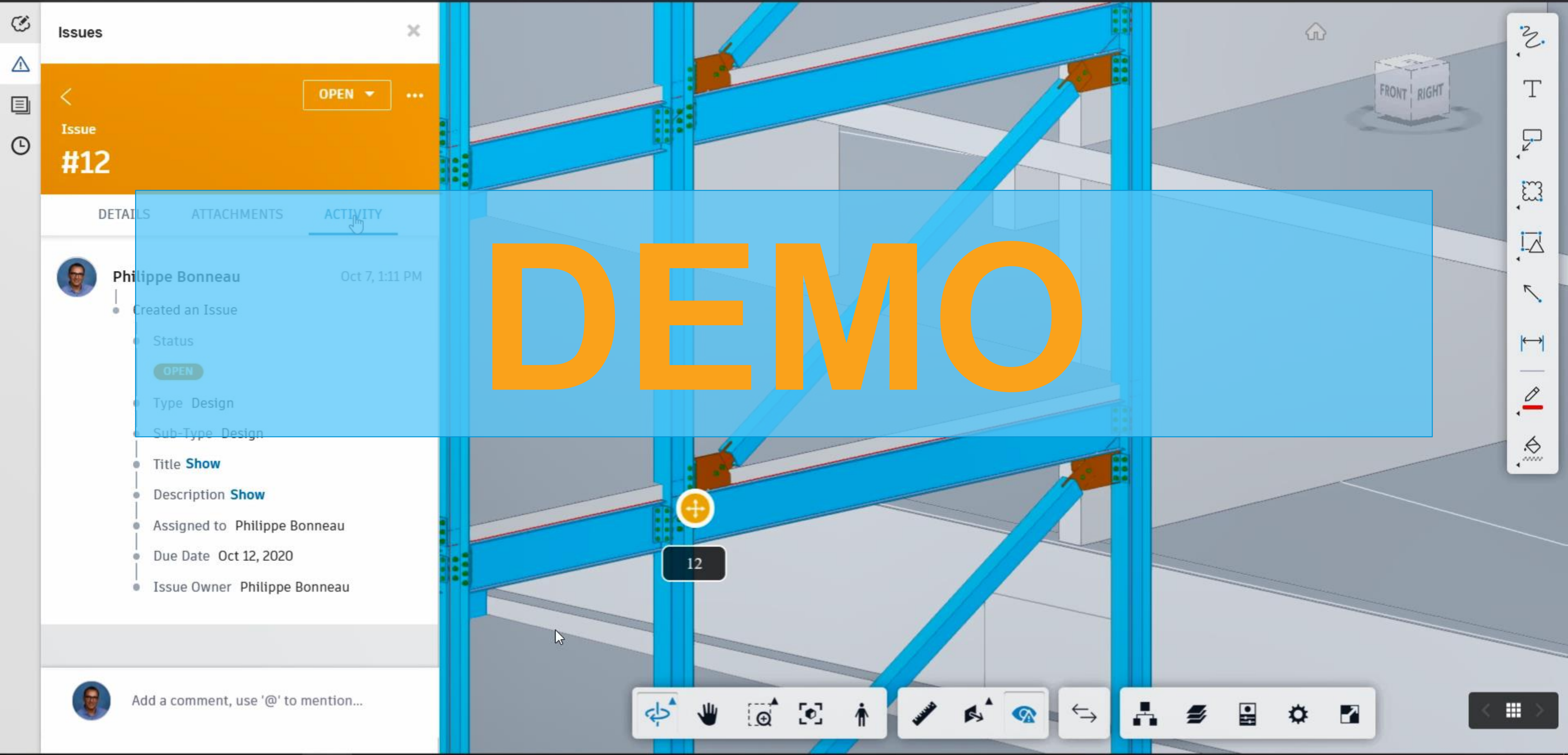


Design Issues in BIM 360

Use markups and/or issues to review and distribute project documents within BIM 360 Docs, which helps resolve design problems or clarify information.

- **Create issues**
 - Place an issue pin at the correct location
 - Specify the parameters in the Issues panel
 - Assign to a team member with a due date
- **Manage issues**
 - View, edit, and respond to an issue
 - After an issue has been addressed and is complete, you can set it to Closed

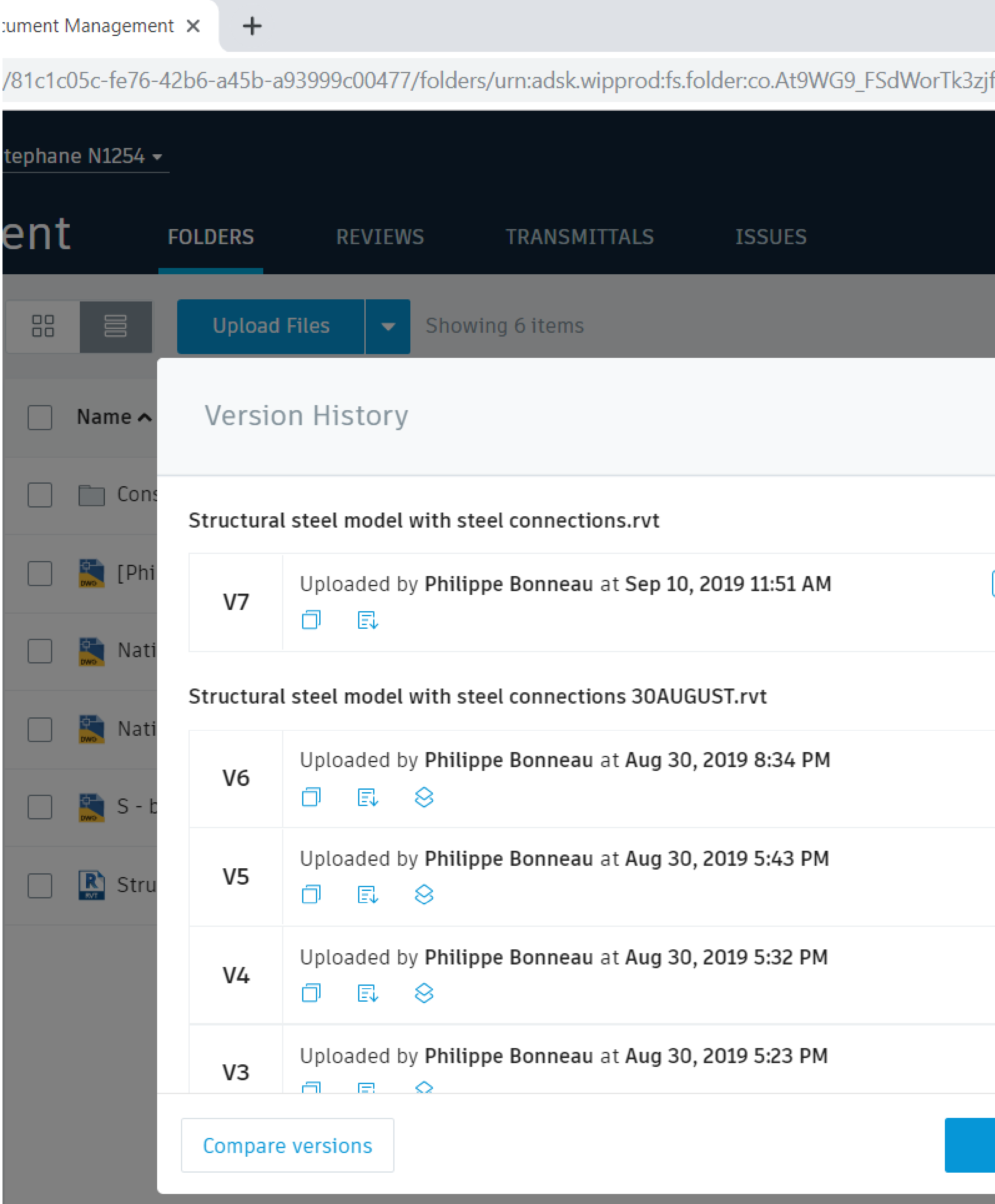




File versioning

BIM 360 Docs keeps track of file versions.

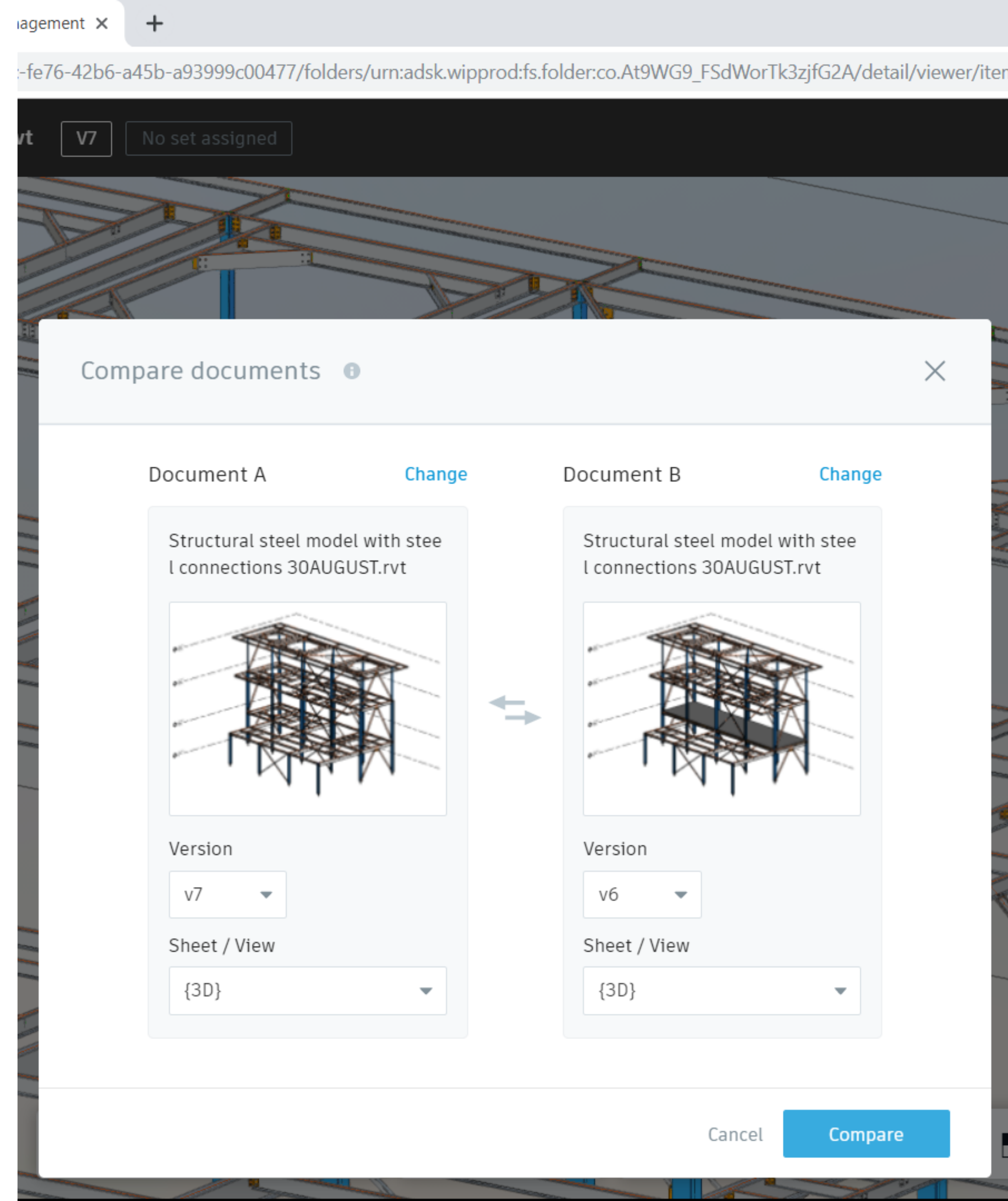
- When a newer version of a file is uploaded, BIM 360 Docs simply adds the file to the project and updates its version “tag” (V2, V3, V4 etc).
- Click the version number in the Version column to open the Version History:
 - Retain a complete history of every file version
 - Easily revert back to prior versions if necessary



Compare changes in 3D model and 2D sheets

When multiple versions of a file are present, they can be compared as an overlay or by using a side-by-side view. The Compare tools allows members to compare versions of the same model to visually inspect changes over the history of that design.

- Upload revised model and/or plan sheets
- Color-coded representation of elements that differ between versions
 - Green represents new elements
 - Red represents deleted elements
 - Yellow represents modified elements
- Differences can be filtered using the Change List



Steel detailing model.dwg v1 vs. Steel detailing model.dwg v2

Changes

88489

AddedRemovedModified

Disciplines affected

Modification type

Search + Filter

Flat Result ListResult as Tree

ASTBEAM [1F70]

ASTBEAM [2198]

ASTBEAM [21AB]

ASTBEAM [21B1]

ASTBEAM [21B7]

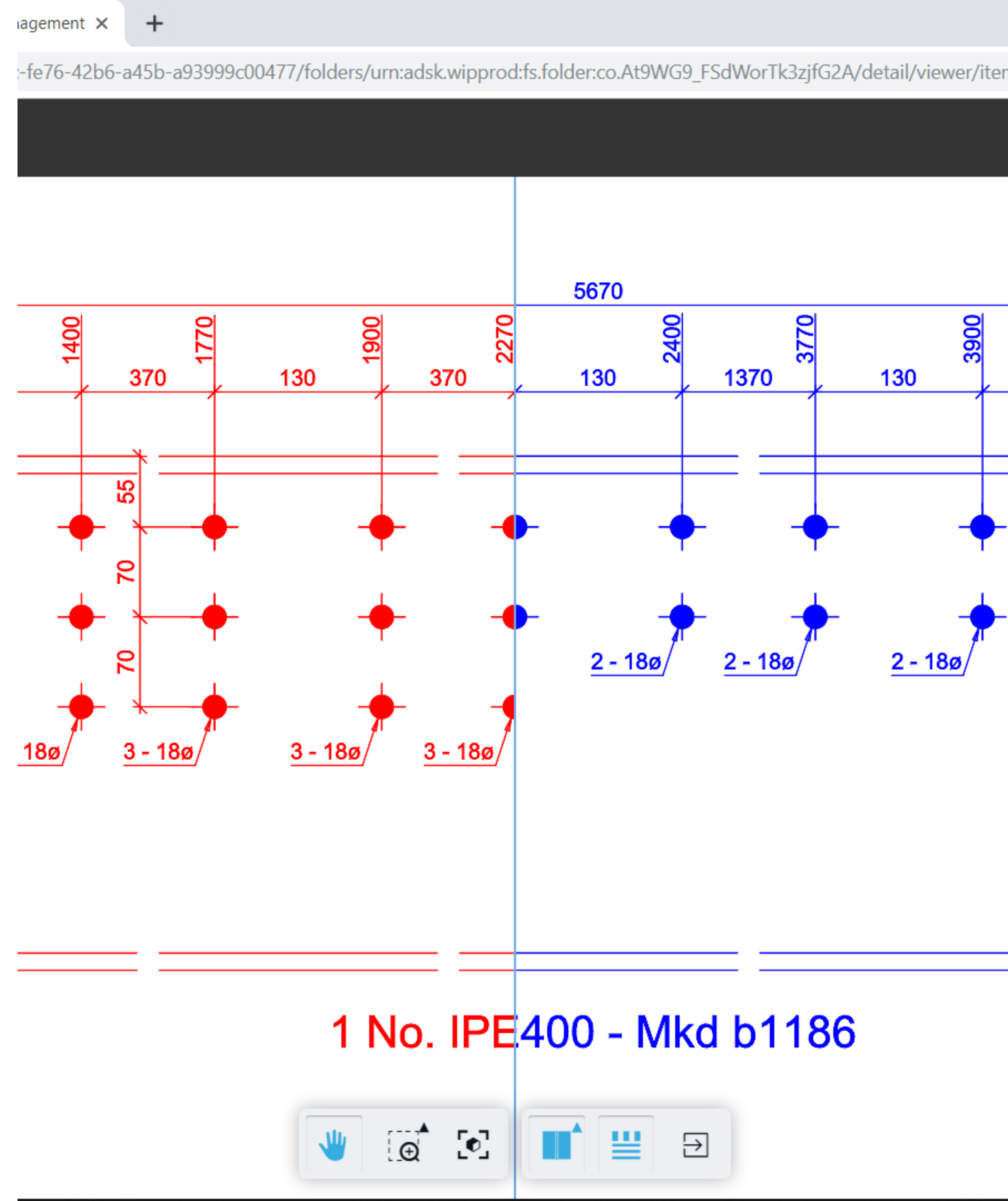
DEMO

Compare changes in Advance Steel 2D shop drawings

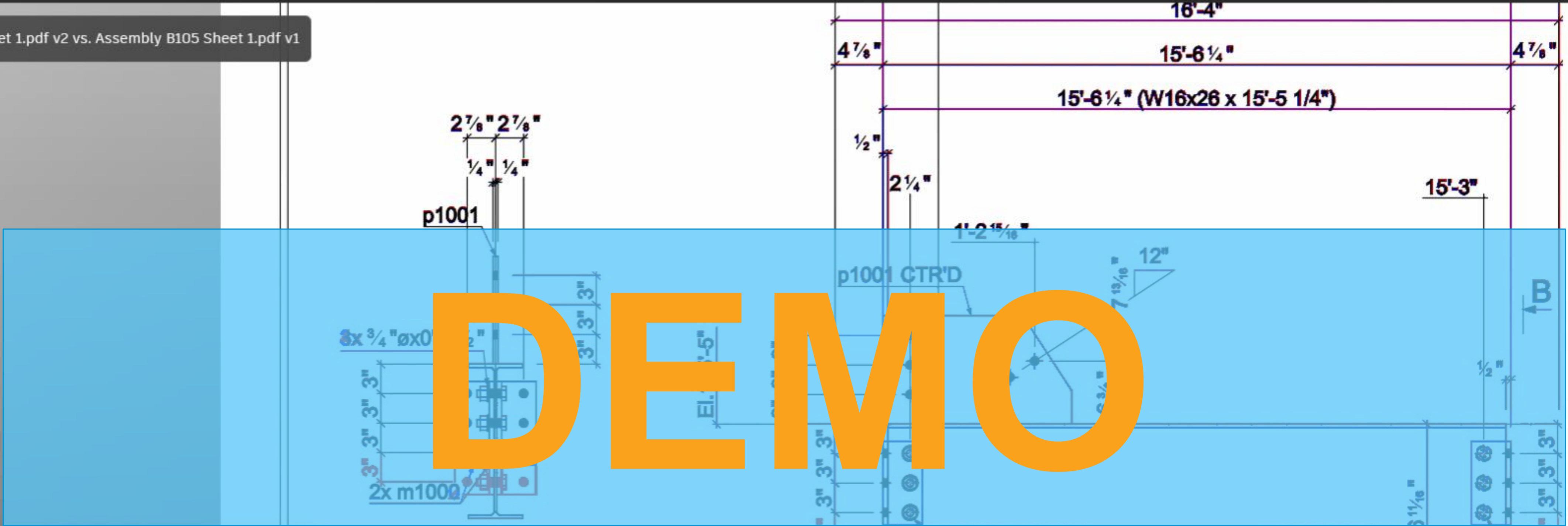
With 2D compare, you can compare two versions of the same Advance Steel drawing (or two entirely different drawings).

- View modes for comparisons:
 - Overlay (by default)
 - Side-by-side
- The 2D compare tool is available for these file types:
 - PDF
 - RVT
 - DWG
 - DWF



It is important that the documents retain the same file name.



Assembly B105 Sheet 1.pdf v2 vs. Assembly B105 Sheet 1.pdf v1



Compared Documents



Assembly B105 Sheet 1.pdf v2

Uploaded By: Philippe Bonneau
At: 09:49 am

Assembly B105 Sheet 1.pdf v1

Uploaded By: Philippe Bonneau
At: Wednesday

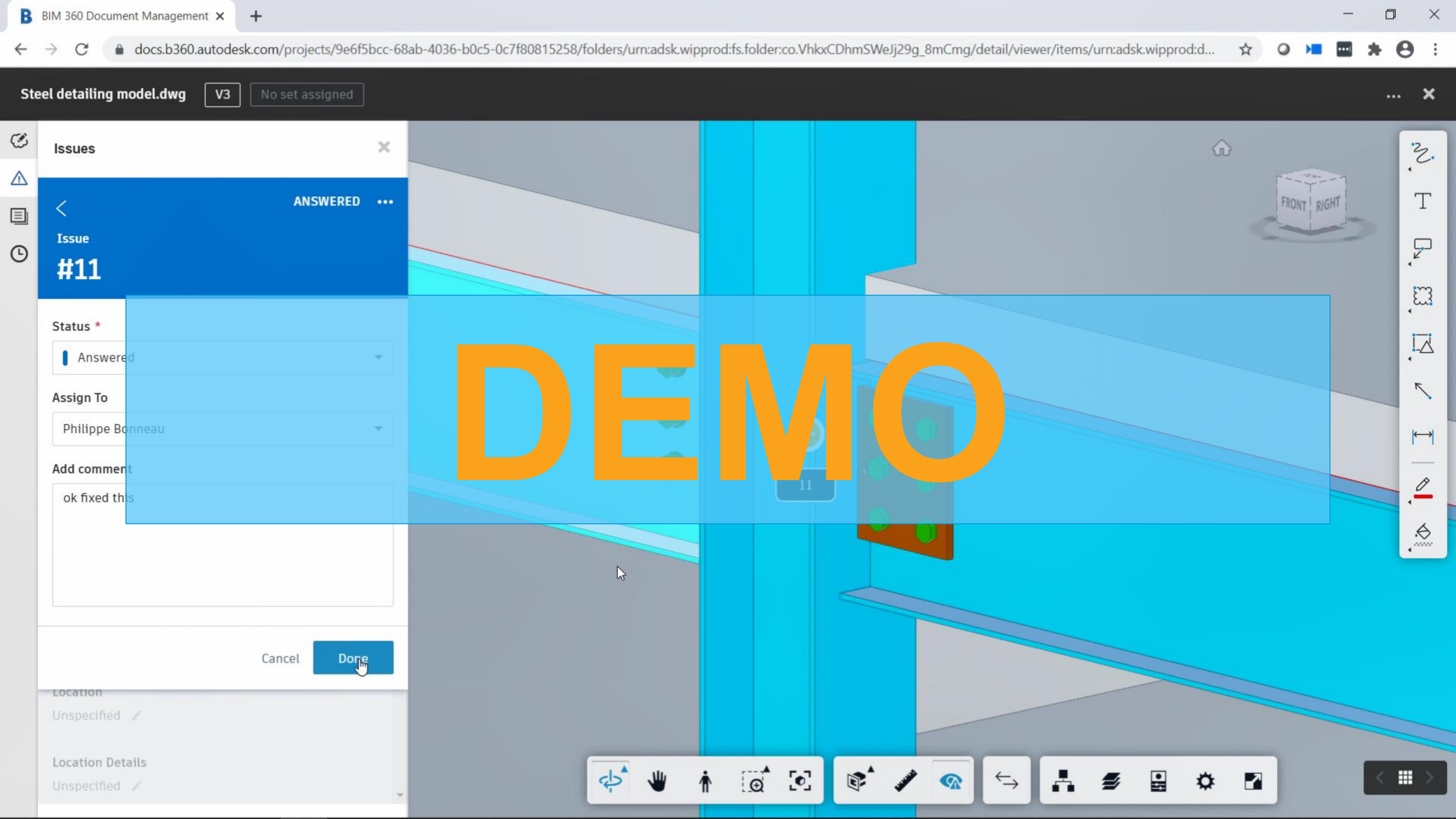
Section A - A
Section A - A

1 - **B105** W16x26
d=1'-3 1/16" b=5 1/2" t=3/8" w=1/4" k=3/4"
Grid reference

Mark	Quantity	Description	weight	Total weight
B105	1			

REV.	Date

Project :
Project No. :



Conclusion



Utilizing BIM 360 for structural steel design to construction workflows can help you to:

- Connect structural teams, no matter their location
- Improve communication with model-based collaboration tools
- Access and view all 3D designs and 2D documentation in a single cloud-based platform
- Get the most up-to-date information at your fingertips
- Resolve design issues during preconstruction



Contacts





Philippe Bonneau

philippe.bonneau@autodesk.com



Gernot Jeromin

gernot.jeromin@autodesk.com



Autodesk and the Autodesk logo are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2020 Autodesk. All rights reserved.