Connected BIM for structural steel with BIM 360

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About the speaker

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Structural Steel Design & Fabrication
10+ years of expertise in Advance Steel
Joined Autodesk in 2013
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This class will show how structural steel design, detailing, and fabricating teams can work together with BIM in the Cloud.

You will learn how BIM 360 Docs combined with Revit and Advance Steel in the AEC Collection can be helpful for coordination on a project.
MORE IS INEVITABLE

OPPORTUNITY OF BETTER

LESS IS A REALITY
Challenges for Structural Steel industry

- Increasing project complexity
- Disconnection between design and detailing
- Great diversity in structural materials and methods
- Material waste and delays on the jobsite
**Benefits of BIM enabled workflows**

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- Designer/Engineer
- Detailer
- Fabricator
- Contractor
Collaboration with BIM 360

• Cloud-based collaboration platform

• Upload & view & share project files
  - 100+ 2D and 3D file formats
  - Native DWG Advance Steel files

• Collaborate with team members
  - Markup & navigation tools
  - Issues

• Access anywhere using a web browser or mobile device
Structural Design
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
Single-User Cloud Models

Cloud Models for Revit is a capability that allows individual customers to store and access Revit models on the BIM 360 platform.

- Save as > Cloud Model
- New feature available since Revit 2020
- Needs access to “Cloud Models for Revit” in Accounts
- Utilize BIM 360 for cloud storage
- Every save (Ctrl+S) is automatically synced to BIM 360
- Use Publish workflow to create BIM 360 viewables
Navigation in BIM 360 Docs

The Tools toolbar enables the member with tools to navigate an open 3D model.

- Orbit / Pan / Fit to view
- Model browser:
  - Search for objects by name or ID and toggle the icon to hide or display the selected objects
- Properties
  - Inspect the properties of the model or selected objects
- Display per levels:
  - You can display only the selected level and hide all other levels in a model.
DEMO
Structural Steel Connections

- Standard steel connections
  - 125+ parametric connections
  - Simple and complex connections
  - Available out-of-the-box in Revit 2019

- Integrated code checking
  - AISC and EC3 standards
  - Verified / Failed
  - Report

- Custom connections
Propagate connections

Work more productively when modelling similar steel connections in your Revit model.

• New feature available since Revit 2020
• Option available in the contextual menu
• Available for any steel connections available out-of-the-box
• Same framing conditions required
• Relevant to visible steel members
Steel connections for Dynamo

Generate multiple steel connections in using fewer steps in the Revit environment.

- Use the power of Dynamo to automate repetitive tasks
- No programming experience is required.
- New Dynamo nodes
- Scripts available out-of-the-box
- Set up your preferences in the Input tab
- Use Dynamo Player to insert multiple connections
Upload a model to BIM 360

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
  - Upload again and again each time there are modifs

OR

- Saving a non-worsharing .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
Adding Project Folders

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
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 tool**

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
Select what to publish

The Revit user can access the Publish settings of Revit to define a Set of sheets to be extracted by BIM 360 Docs.

- Click Collaborate tab > Manage Models panel > Publish Settings

- Use the Publish Settings tool when you want to select and save one or more sets of views and sheets to publish to the cloud.

- When the Revit project is uploaded & published to Docs
  - Only the 3D views and sheets will be extracted
Place Me navigation

You can navigate directly from a 2D drawing generated from Revit to its corresponding 3D model view.

- Quickly jump from a 2D sheet to a corresponding location in 3D model
- Use your cursor to orient your viewing angle

- Important:
  - 2D sheets with floor plan views, structural plan views
  - Sheets with the “Crop View” checkbox enabled in Revit
  - Views without view breaks
  - The “Place Me” feature is available for models created in Revit 2017 or later
Click on a location to ground yourself, then select a camera direction.
From Design to Fabrication through Detailing
From steel design to detailing

- Advance Steel Extension
- Export the design model from Revit
- Save the exported SMLX file to BIM 360
- Import the design model in Advance Steel
- Material list summary in Advance Steel
Propagate steel connections

You can automate steel connection creation by propagating connections already in place.

- New feature available since Advance Steel 2020
- Option available in the contextual menu
- Available for any steel connections available out-of-the-box
- Same framing conditions required
- Relevant to visible steel members
Miscellaneous steel

- Speed up the modeling & fabrication of complex elements

- Automatic macros for creation of:
  - Straight stairs
  - Spiral stairs
  - Straight and curved railings
  - Cage ladders

- Lots of options available
  - End of handrail
  - Elbow between handrails
  - Weld site/shop
Changes management

- Advance Steel Extension
  - SMLX file format
  - Export / Import / Synchronise

- Structural members & automatic steel connections

- Synchronisation dialog-box
  - Colors
  - Filter
  - Apply selected lines or all
Compare Advance Steel models

The Compare tools allows members to compare versions of the same model to visually inspect changes over the history of that design. The Compare tools work exactly the same with 2D documents as it does with 3D models.

- The model opens displaying a color-coded representation of elements that differ between versions
  - Green / Red / Yellow
- Differences can be filtered using the Change List
- Tools available for comparing the model:
  - Side by Side displays both versions side by side
  - Overlay displays one version of the top of the other
Detailed steel structure in Advance Steel dwg v1 vs. Detailed steel structure in Advance Steel dwg v2

Changes

- Added: 69
- Removed: 0
- Modified: 7

Disciplines affected: Modification type

- Flat Result List
- Result as Tree

- ASTBEAM [3208E]
- ASTBEAM [320C0]
- ASTBEAM [3210B]
- ASTBEAM [3210A]
- ASTBEAM [32152]
- ASTBEAM [32154]
- ASTBEAM [3219E]
- ASTBEAM [3219C]
Shop drawings

- Dedicated templates available OOB
  - Drawing styles
  - Drawing processes

- Separate DWG files
  - Single part drawings
  - Assembly drawings

- Drawing styles manager
  - Access to additional styles
  - Customizable styles
  - Import / export customized styles
CNC machines & MIS software

- NC-DSTV files
  - Create NC files in DSTV format
  - DSTV = Deutscher Stahlbau-Verband

- NC-DXF files
  - Create NC files in DXF format

- Link with MIS software
  - MIS = Management Information System
  - Optimizing your steel fabrication process
Compare 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.
Connecting Design to Construction
Site context in Infraworks

You can benefit from Infraworks’ streamlined interface and easy-to-use tools to plan, analyze, and present a proposed building on a site within the context of the existing surroundings.

- 3D site model creation using the Model Builder
- Ability to read 40 different file types including:
  - Revit model (RVT file)
  - Advance Steel model (DWG file)
- Specify the insertion point
- Change the look of your model with Sun & Sky settings
- Create a video presentation with a Storyboard
Mobile access

The BIM 360 mobile app allows users of the Document Management, Field Management, and Project Management modules to access and work with project documents, checklists, and issues on their mobile device.

- Important decisions often made while at site
- BIM 360 mobile app
  - Available for iOS and Android devices
  - Access all BIM 360 projects on a mobile device
- Review 3D model or sheets using a smartphone or tablet
- Allow stakeholders to easily collaborate on projects even when out of the office