Break Down the Barriers between Design and Construction with BIM 360

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About the speaker

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

Checking 2D Drawings

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

Checking 2D Drawings

Updating 2D Drawings

Provide feedback

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

Checking 2D Drawings

Updating 2D Drawings

Checking 3D Model and 2D Drawings

Checking 3D Model and 2D Drawings

Provide feedback

Provide feedback

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

Update to Cloud

Checking 2D Drawings

Updating 2D Drawings

Provide feedback

Checking 3D Model and 2D Drawings

Provide feedback

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

Checking 2D Drawings

Updating 2D Drawings

Using 3D Model, 2D Drawings and BOM

Using 3D Model, 2D Drawings, BOM and NG
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
  o 2D and 3D views
  o Dimensions
  o Tags

• Schedules
  o Structural framing
  o Structural columns
  o Plate schedule
  o 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
Accurate shop drawings

• Detailed drawings for fabrication
  o Extracted automatically from the 3D model
  o High level of accuracy

• Separate DWG files
  o Single part drawings
  o Assembly drawings

• Drawing styles manager
  o Access to additional styles
  o Customizable styles
  o 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 programming, 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 dimensionning & labelling

- Bills-of-materials
  - Material summary list
  - Saw cut list
  - Shipping list
DEM0
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**
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-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
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
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
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.
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
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