

Going Digital on Large Projects: BIM 360 Markups, Issues, and Reviews BES320308

Matthew Anderle

AECOM BIM Director, Buildings+Places, Americas

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AECOM BIM Manager, Buildings+Places, Americas



Introducing the Speakers





About the speaker

Matthew Anderle, AECOM

Matthew Anderle is the Building Information Modeling (BIM) Director for the Buildings+Places Americas business line of AECOM. He is a BIM and technology evangelist with over 19 years of experience establishing global BIM workflows and standards around content, computational BIM, interoperability, and BIM consultation as a service. His experience spans over multiple market sectors with emphasis on large healthcare facilities, data centers, aviation, government projects, and science facilities. Mr. Anderle serves AECOM as a leader in the advancement and efficient implementation of BIM processes for a variety of project types. He manages and directs large distributed project teams to successfully implement BIM collaboration workflows, enabling global offices to work as one entity.

About the speaker

Dennis McNeal, AECOM

Dennis McNeal is a Licensed architect and BIM Manager for AECOM in Roanoke, Virginia and is a veteran speaker at Autodesk University. At AECOM, Dennis guides BIM planning, standards, project setup, and he assists project teams with their design efforts. He is also responsible for training BIM staff, investigating new technology, and promoting and refining project workflow improvements.



Learning Objectives



Learning Objectives

DISCOVERING THE MODULES

Discover each module, its functionality, and its application within the review workflow.

DEFINING DIVERSIFIED TEAM REVIEW WORKFLOWS

Learn how to define review workflows for diversified teams and project phases.

BIM 360 FOLDERS AND METADATA

Learn how to set up BIM 360 folders, title blocks, and attributes to maximize review efficiency.

OVERCOMING CHALLENGES

Discover some of the challenges encountered when migrating to a 100% digital, cloud-based review environment.

Discovering the Modules

- BIM 360 Platform
- BIM 360 Design Features
- Project Admin: Modules Management
- BIM 360 Permissions

Discovering the Modules

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BIM 360 Platform

- **Design**

Authoring | Collaboration | Detailing

- BIM 360 Design
- BIM 360 Plan

- **Pre-Construction**

Clash Detection | Constructability | Coordination

- BIM 360 Glue
- BIM 360 Plan

- **Field Execution**

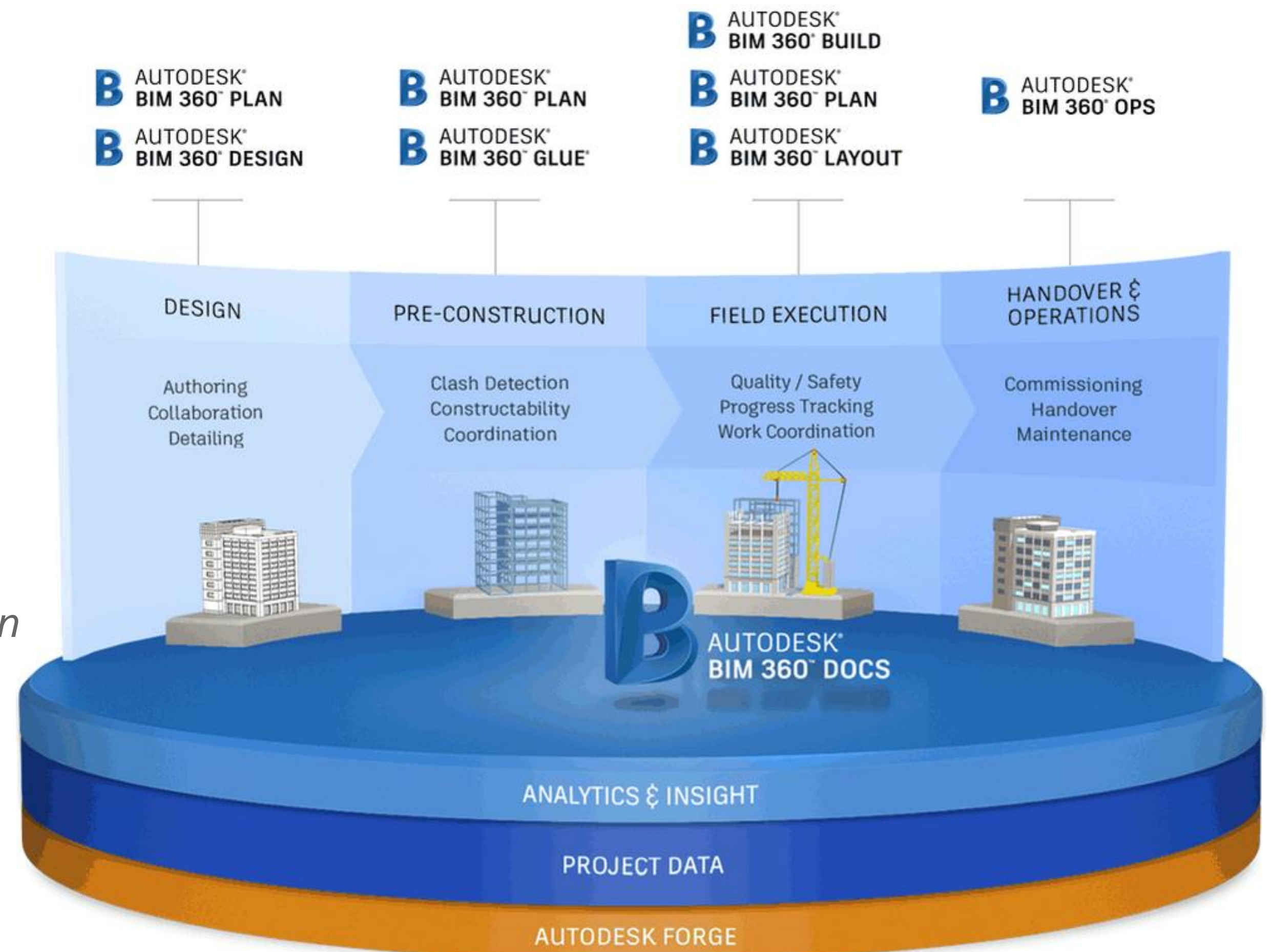
Quality & Safety | Progress Tracking | Work Coordination

- BIM 360 Layout
- BIM 360 Plan
- BIM 360 Build

- **Handover & Operations**

Commissioning | Handover | Maintenance

- BIM 360 Ops



Discovering the Modules

- BIM 360 Platform
- BIM 360 Design Features
- Project Admin: Modules Management
- BIM 360 Permissions

BIM 360 Design Features



SINGLE PROJECT REPOSITORY

- Unlimited storage
- Supports all files types
- Project activity log



NAVIGATION

- Lists all thumbnail views
- Version control and rollback
- Single viewer for 2D and 3D files



DELIVERABLE COORDINATION

- Reduces rework with trackable project activity
- Facilitates model exchange and deliverable coordination
- Curates sets to separate work-in-progress from shared files



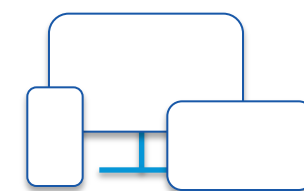
ACCESS CONTROLS

- Project- and folder-level access rights
- Defines access by role, company, and/or user
- Assigns five permission levels



CHANGE VISUALIZATION

- View added, removed, or modified elements
- Understand changes in context between aggregated models in a single space
- Navigate change visualization by team, phase, building level, and more



VIEWING

- Online and offline access on the web, phones, and tablets
- PDF and model viewer, optimized for Apple iOS
- Navigate between documents without closing viewer

Discovering the Modules

- BIM 360 Platform
- BIM 360 Design Features
- Project Admin: Modules Management
- BIM 360 Permissions

Project Admin: BIM 360 Modules Management

- Project Home
- Project Admin
- Document Management
- Design Collaboration
- Insight
- Glue: Model Coordination
- Field: Field Management
- Cost Management
- Project Management

The screenshot displays the Project Admin interface. The top navigation bar includes 'Project Admin', 'MEMBERS', 'COMPANIES', 'SERVICES' (highlighted with an orange box), and 'PROFILE'. The left sidebar shows a list of modules: 'Project Home', 'Insight', 'Document Management', 'Project Management', 'Design Collaboration', 'Model Coordination', and 'Project Admin' (highlighted with an orange box). The main content area is titled 'Project Services and Admins' and contains a table of modules and their status.

Status	Module Name
Active	Document Management
Active	Project Management
Inactive	Cost Management
Active	Design Collaboration
Active	Model Coordination
Inactive	BIM 360 Field
Inactive	BIM 360 Plan

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Project Admin: BIM 360 Modules Management

- Project Home
- Project Admin
- Document Management
- Design Collaboration
- Insight
- Glue: Model Coordination
- Field: Field Management
- Cost Management
- Project Management

The screenshot displays the Project Admin interface. The top navigation bar includes 'Project Admin', 'MEMBERS', 'COMPANIES', 'SERVICES' (highlighted with an orange box), and 'PROFILE'. The left sidebar shows a list of modules: Project Home, Insight, Document Management, Project Management, Design Collaboration, Model Coordination, and Project Admin (highlighted with an orange box). The main content area is titled 'Project Services and Admins' and contains a table of modules with their status.

Status	Module Name
Active	Document Management
Active	Project Management
Inactive	Cost Management
Active	Design Collaboration
Active	Model Coordination
Inactive	BIM 360 Field
Inactive	BIM 360 Plan

Project Services and Admins
Project Services & Admins is where you can activate and manage project service modules, add and remove service admins, and manage the settings of active services.

Project Admin

MEMBERS

Project Home

Insight

Document Management

Project Management

Design Collaboration

Model Coordination

Project Admin

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Discovering the Modules

- BIM 360 Platform
- BIM 360 Design Features
- Project Admin: Modules Management
- BIM 360 Permissions

BIM 360 Permissions

Project Admin

MEMBERS

COMPANIES

SERVICES

PROFILE

Project Members

Project Members lists all members of your project. This list includes pending members who have been invited to services but not yet activated their accounts as well as inactive members who were disabled by an account admin.

Add

Name	Status	Email	Company	Role	Project Admin						Plan
<input type="checkbox"/> Dan McLean	Active	dan.mclean@autodesk.com	Autodesk	IT							
<input type="checkbox"/> Katherine Crowley	Active	katherine.crowley@aecom.com	AECOM	Document Manager, Interior D...							
<input type="checkbox"/> Matt Anderle	Active	matthew.anderle@aecom.com	AECOM	Architect, BIM Manager							
<input type="checkbox"/> Matt Turner	Active	matt.turner@smithgroup.com	SmithGroup, Inc	BIM Manager, Mechanical Engi...							

Filters

SERVICE

Insight

Document Management

Project Management

Design Collaboration

BIM 360 Plan

- Members are assigned a Company and Role when invited to join a project
- Members can be granted access to each BIM 360 module individually
- Members inherit both a Company's and each Role's permissions, whichever is greater as applied to folders

BIM 360 Permissions

The screenshot displays the Autodesk BIM 360 Document Management interface. The top navigation bar includes the Autodesk BIM 360 logo, the project name 'AECOM > 00000000-AU2019', and tabs for 'Document Management', 'FOLDERS', 'REVIEWS', 'TRANSMITTALS', and 'ISSUES'. The 'FOLDERS' tab is active, showing a list of folders and files. A fly-out menu is open for the '420 TQR' folder, with the 'Permissions' option highlighted. On the right, the 'Permissions - Plans' fly-out window is visible, showing a table of users and their permission levels. The 'Folder Control' permission level is highlighted for Matt Anderle, Dennis McNeal, and Katherine Crowley.

Document Management | FOLDERS | REVIEWS | TRANSMITTALS | ISSUES

View by: Folders | Sets

Upload Files | Showing 4 items

Name	Title	Set	Version	Last updated	Update
420 TQR	--	--	--	Sep 3, 2019 11:49 AM	
470 Progress PDF Set	--	--	--	Sep 3, 2019 11:49 AM	
500 Deliverable PDF Sets	--	--	--	Sep 3, 2019 11:49 AM	
930-40 Clash Coordination	--	--	--	Sep 3, 2019 11:49 AM	

Permissions - Plans
Users: 3 | Companies: 0 | Roles: 0

Add | Search for name or email

Name	Permission Level	Type	Project Ad...
Matt Anderle	Folder Control	User	Project Ad...
Dennis McNeal	Folder Control	User	Project Ad...
Katherine Crowley	Folder Control	User	Project Ad...

- Click the ellipsis [...] symbol and select [Permissions] from the left-hand menu
- A fly-out window appears at the right of the screen indicating Permission Levels
- Project Administrators have Folder Control permissions by default; Companies, Roles, or Users can be added

BIM 360 Permissions

- **View Only:** User/role/company may view, add private markups, and create issues
 - Cannot view image files
 - Cannot use Desktop Connector
 - If view settings are not set to BIM Viewer PDFs cannot be viewed on mobile devices
- **View / Download:** User/role/company may view documents, add private markups, create issues
- **Upload Only:** User/role/company may upload documents but not see the folder contents
- **View / Download + Upload:** User/role/company may share their own documents with team members and view any other documents in that folder
- **View / Download + Upload + Edit:** User/role/company may share their own documents with team members, view and edit any other documents in that folder, and publish markups
- **Folder Control:** User/role/company may share their own documents with team members and view and edit any other documents in that folder. With folder control permission they can also carry out tasks within that folder that are usually restricted to the project administrator. This includes creating title blocks, adding project members, managing permissions, and editing set assignment. This permission level offers the greatest access to folders.

BIM 360 Folders and Metadata

- Getting Started
- Plans vs Project Files
- PDF Uploads
- Harvesting Metadata

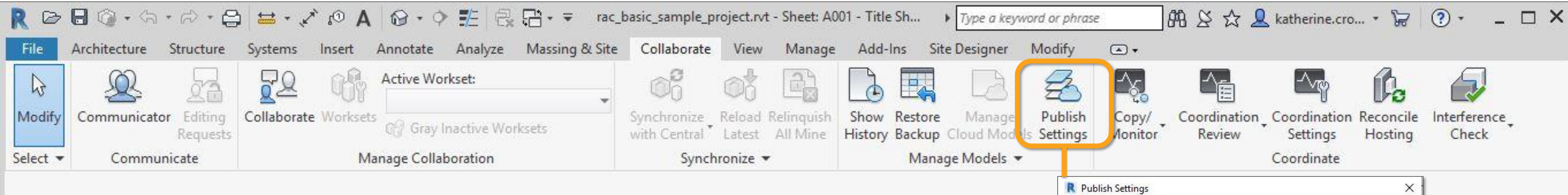


BIM 360 Folders and Metadata

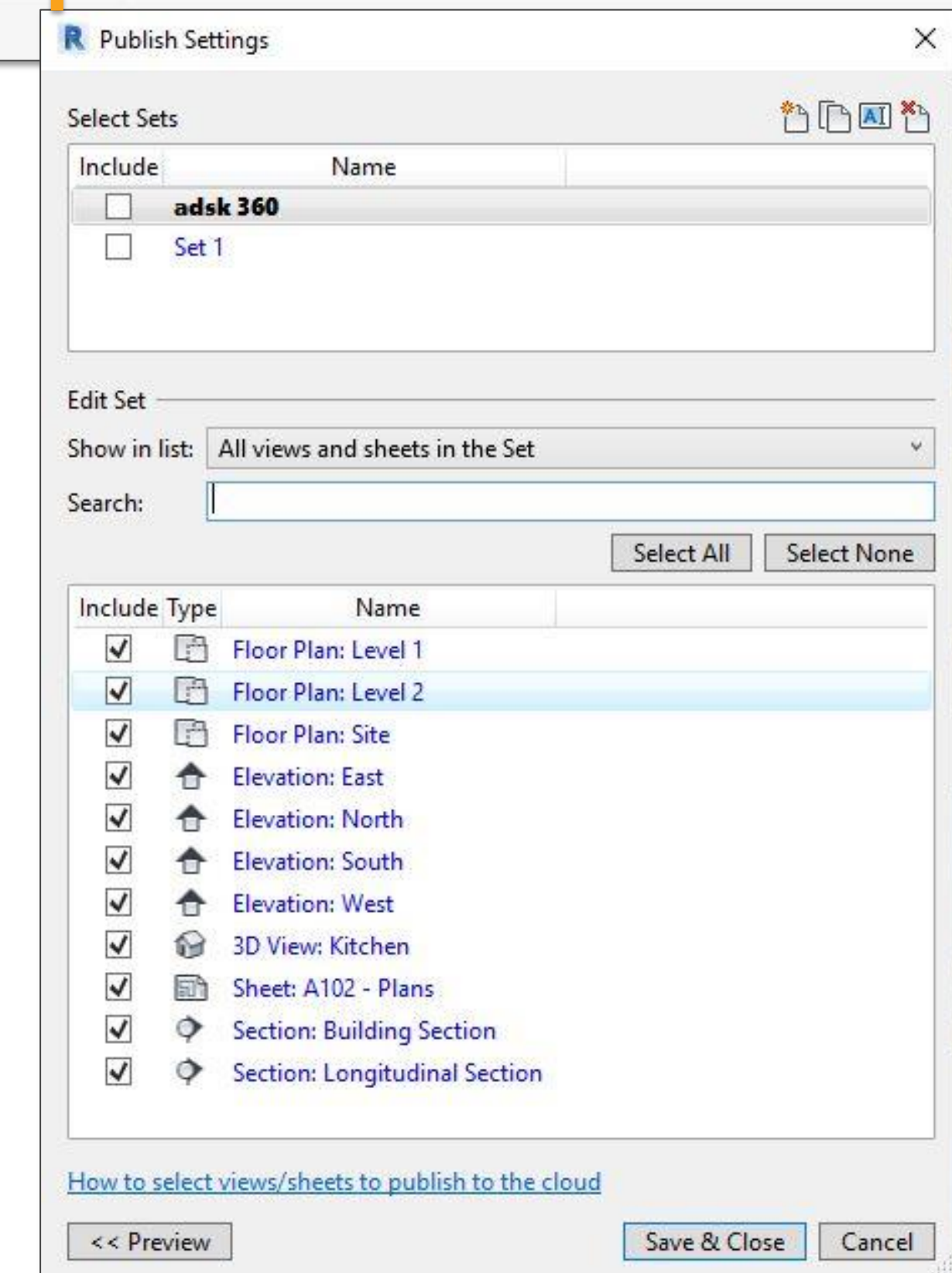
- Getting Started
- Plans vs Project Files
- PDF Uploads
- Harvesting Metadata



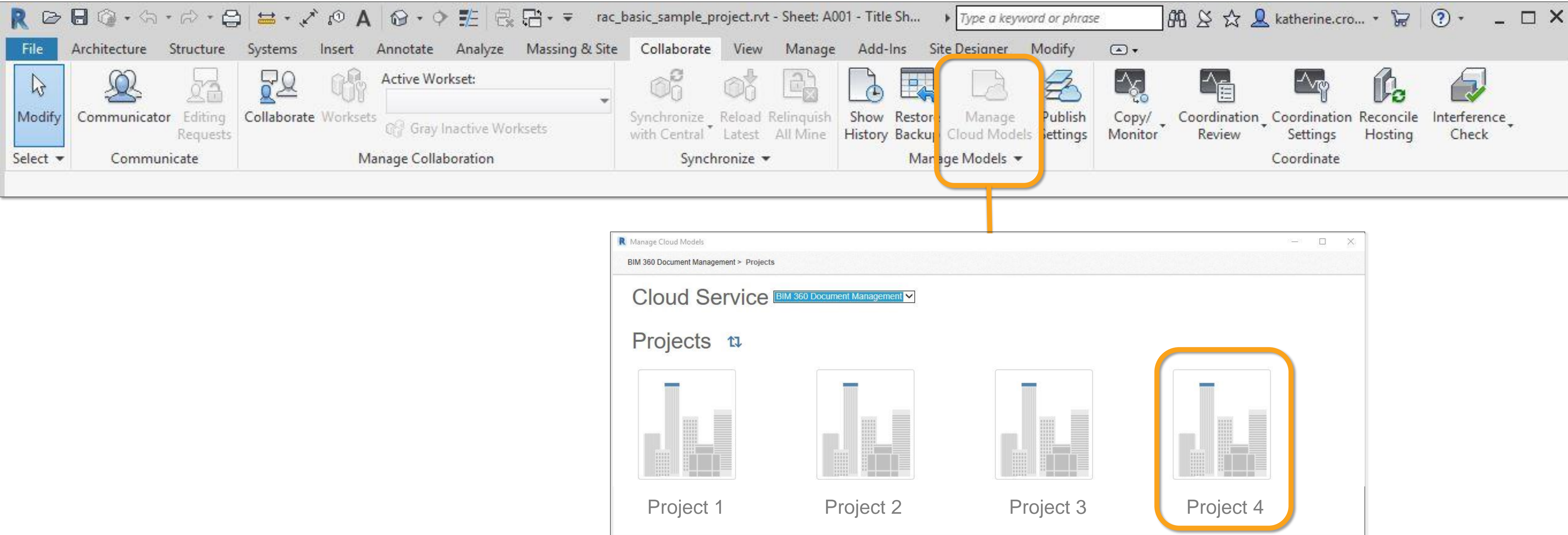
Getting Started: Revit Model Publish Settings



- Click [Publish Settings] in the Collaborate Ribbon
- Make appropriate selections in the dialog box for any number of Sets to be published
- The Views and Sheets selected to publish become visible within the web environment



Getting Started: Publish the Revit Model



To publish the latest model:

- Click [Manage Cloud Models] to browse to a project and select models to publish

Getting Started: Publish the Revit Model

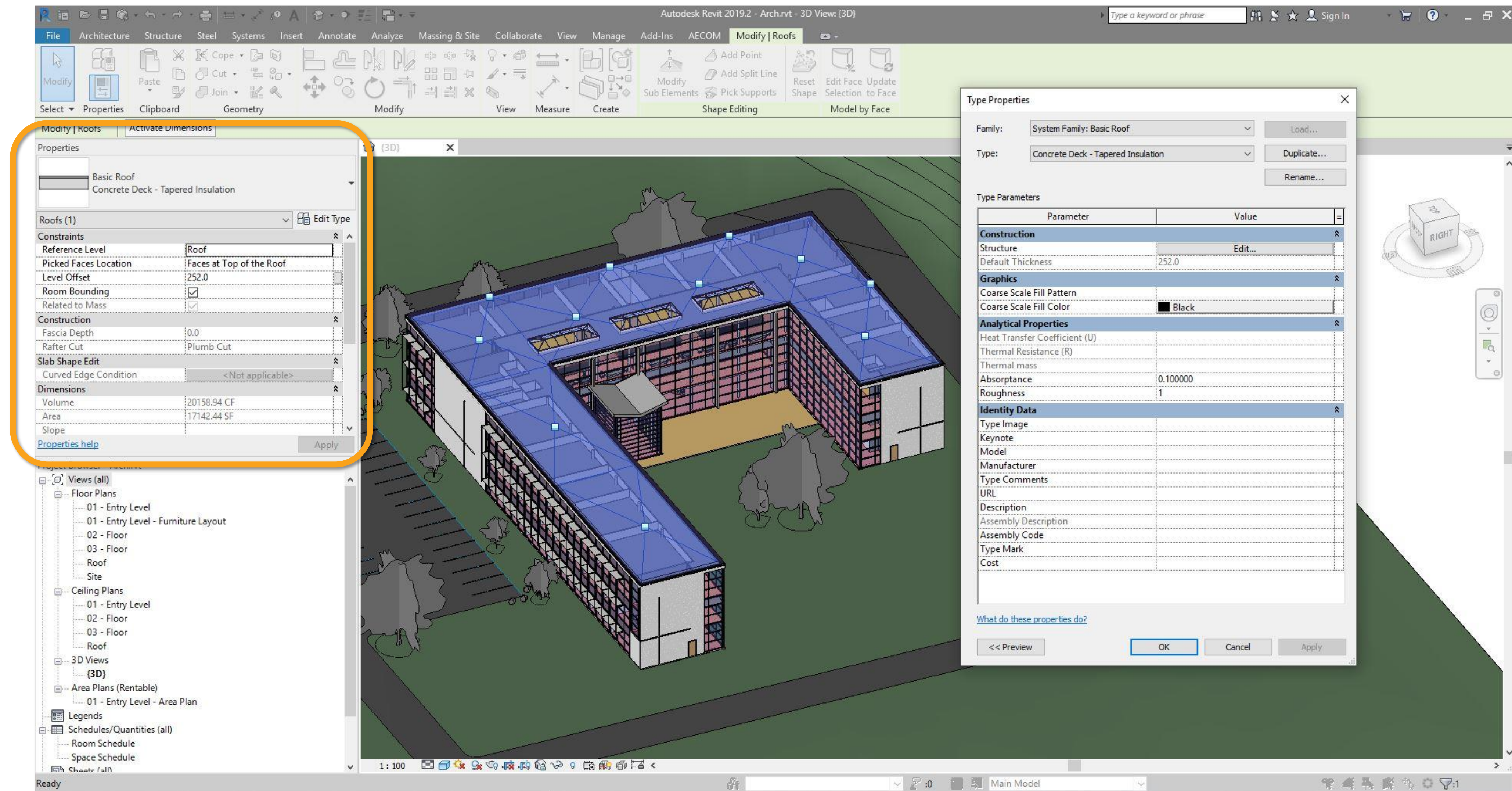
The screenshot shows the Autodesk BIM 360 web interface. On the left, there are navigation panels for 'MODELS' and 'FAMILIES', each with 'Open ...' and 'New ...' buttons. Below these is a 'Recent Files' section with a list of project folders. The main area displays a table of models under the path '00000000-AU2019 / Project Files / 930 Design Collaboration / Medical Research Building / Arch'. A 'Publish' button is located at the top left of the table. The table has columns: Name, Model Type, Modified Date, Modified By, Publish Status, Published Date, and Published By. Two models are listed: 'Med Research - Arch Int' and 'Med Research - Arch Shell'. The 'Med Research - Arch Int' model has a 'Latest Published' status, while 'Med Research - Arch Shell' has an 'Update Available' status. A context menu is open for the 'Med Research - Arch Shell' model, showing options: 'Open with worksets', 'All', 'Editable', 'Specify..', 'Open and Audit', and 'Publish Latest'.

Name	Model Type	Modified Date	Modified By	Publish Status	Published Date	Published By
Consumed	--	--	--	--	--	--
Med Research - Arch Int	Workshared Cloud Model	October 20, 2019 10:32 A...	dennis.mcneal	Latest Published	October 20, 2019 11:30 A...	Dennis McNeal
Med Research - Arch Shell	Workshared Cloud Model	November 10, 2019 10:57...	matthew.anderle@aeco...	Update Available	November 9, 2019 11:23 A...	Dennis McNeal

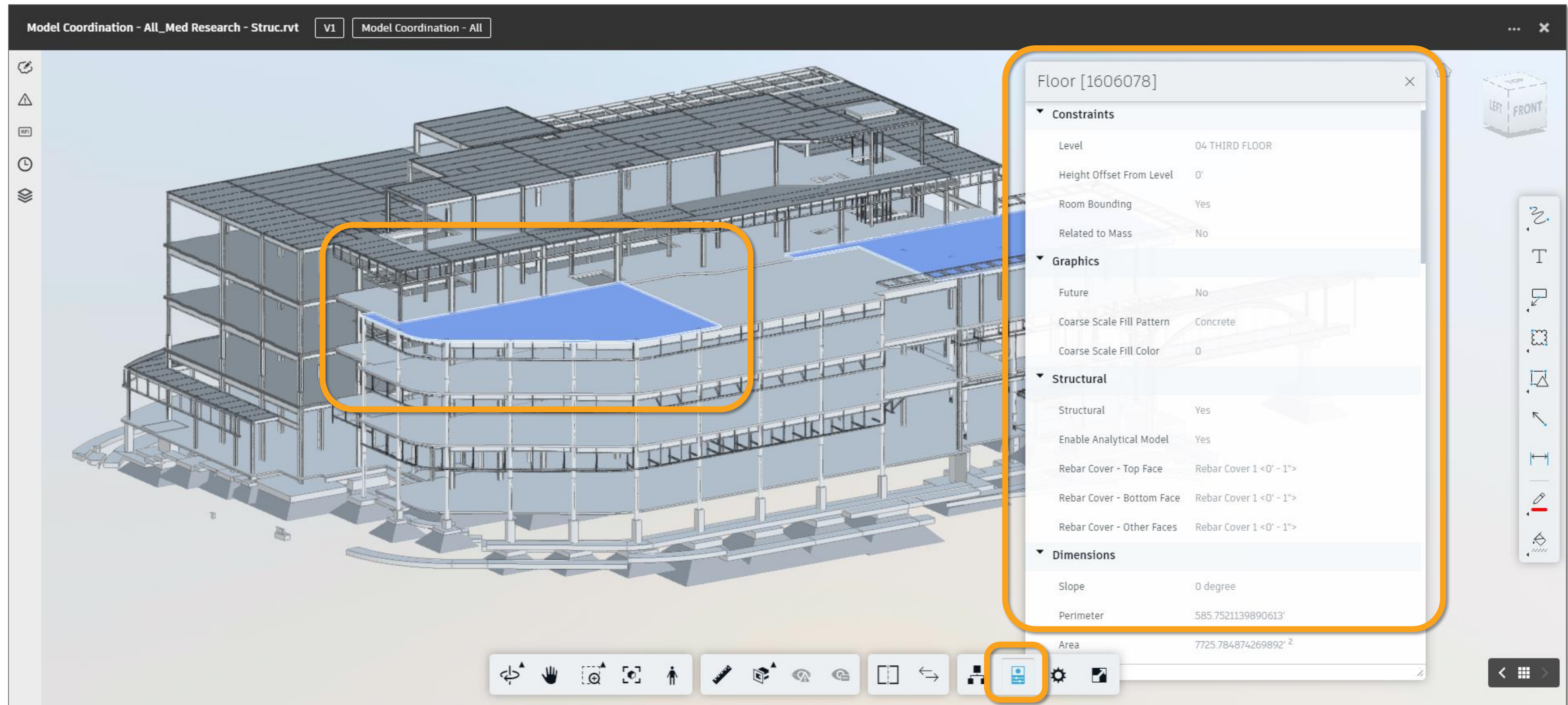
To publish the latest model (Revit 2019 and later):

- Single model: click [...] and click [Publish Latest]
- Multiple models: Select each model's checkbox and click [Publish]

Getting Started: Revit Properties



Getting Started: Revit Model Data in BIM 360

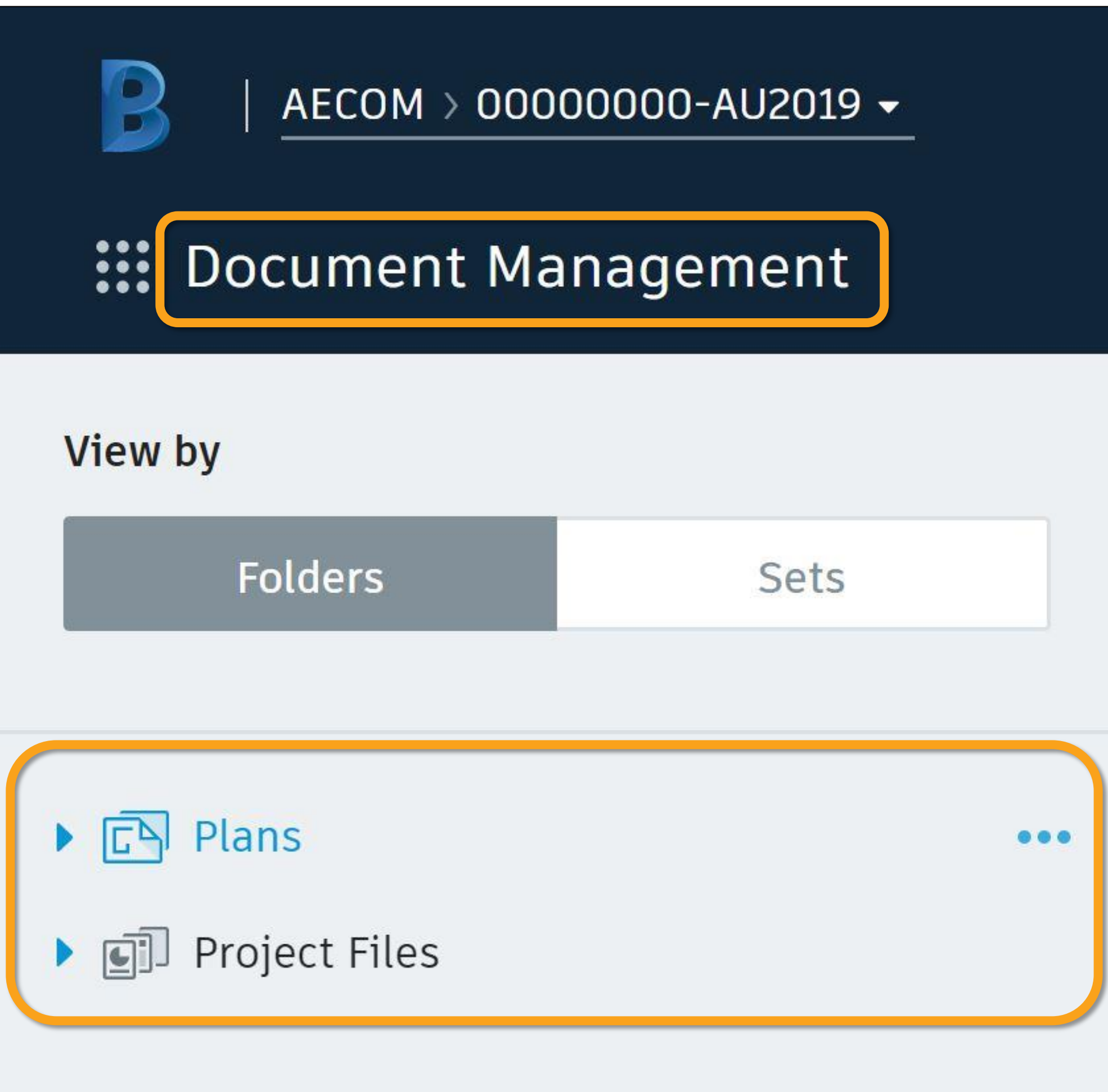


BIM 360 Folders and Metadata

- Getting Started
- Plans vs Project Files
- PDF Uploads
- Harvesting Metadata



Plans vs Project Files



- Document Management (Docs) is the main module where most Markups, Issues, and Review Workflows take place
- Docs is used to manage all project folders, files, and team permissions
- There are two primary directory trees:
 - Plans
 - Project Files

Document Management

View by

Folders

Sets

Plans

- ▶ 420 TQR
- ▶ 470 Progress PDF Set
- ▶ 500 Deliverable PDF Sets
- ▶ 930-40 Clash Coordination

Project Files

- ▶ 000 Design Teams
- ▶ 300 Communications
- ▶ 400 Technical
- ▶ 500 Deliverables
- ▶ 600 Construction Support
- ▶ 800 Safety
- ▶ 930 Design Collaboration
- ▶ Shared

Plans vs Project Files

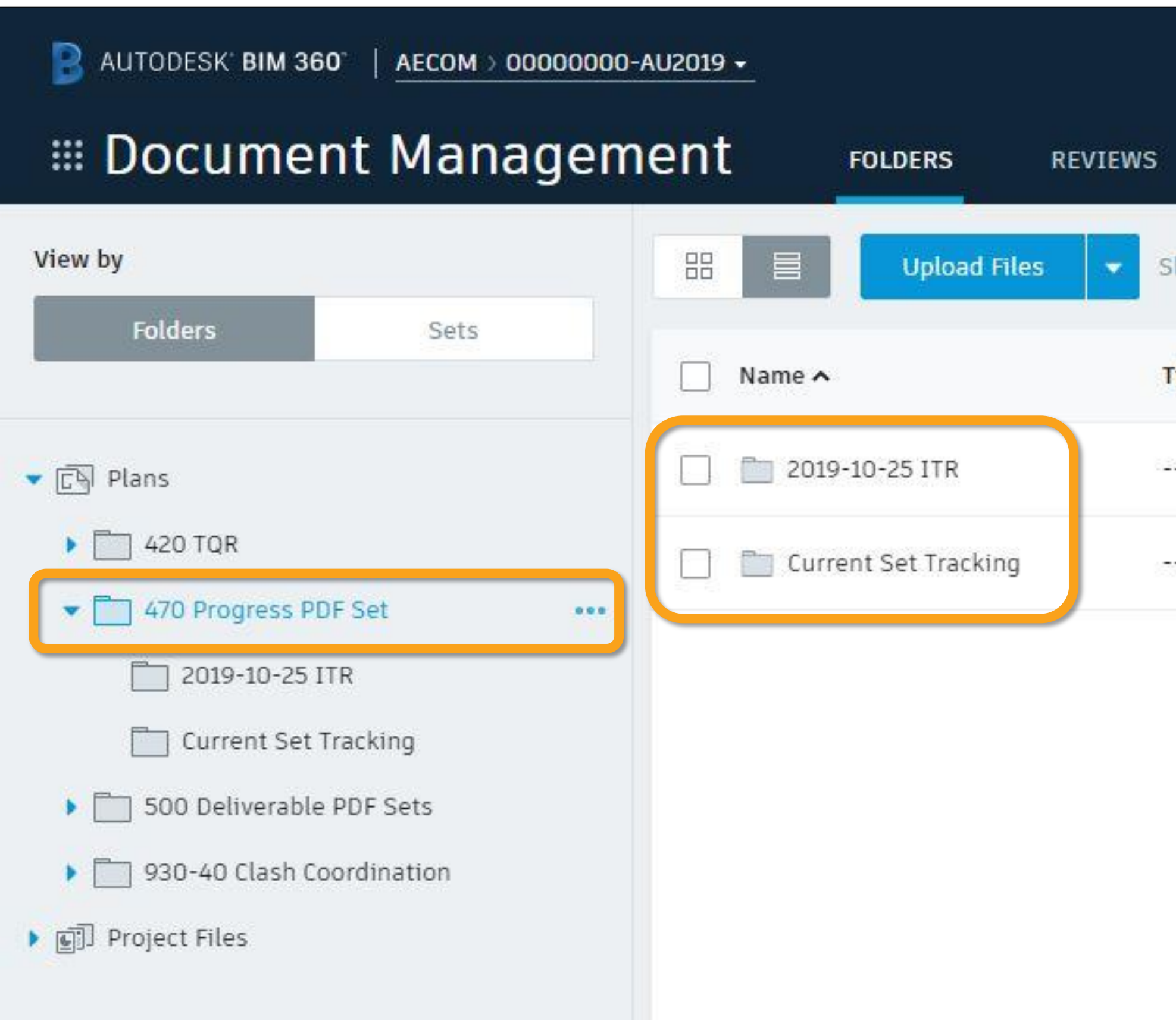
Plans Folder

- Has advanced functionality which reads files and extracts their contents into individual views and/or sheets.
- Examples include:
 - **Revit Models:** extract into Views and Sheets within the Publish Sets
 - **DWG Files:** extract into model space and paper space views
 - **PDF Files:** extract into individual pages

Project Files

- A cloud-based shared drive used for work-in-progress files
- Documents may be uploaded, viewed, downloaded, and edited
- Revit models and Microsoft Office 365 documents are typically stored in this directory tree. The integration of both of these software packages allow for live editing in BIM 360 Docs.

Plans vs Project Files



- Create folders for specific milestone review packages
- Consider the use of an ongoing progress set folder.
For example a “Current Set Tracking” folder can be used for weekly plots and reviews.

BIM 360 Folders and Metadata

- Getting Started
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PDF Uploads: Step 1 Upload

Document Management

FOLDERSREVIEWSTRANSMITTALSISSUES

View by

FoldersSets

Plans

420 TQR

470 Progress PDF Set

2019-10-25 ITR

Current Set Tracking

500 Deliverable PDF Sets

930-40 Clash Coordination

Project Files

000 Design Teams

300 Communications

400 Technical

500 Deliverables

600 Construction Support

800 Safety


930 Design Collaboration


Shared


Upload Files


Name	Title	Set	Version	Last updated	Updated by	Markup
------	-------	-----	---------	--------------	------------	--------

We will process your plans for web and mobile viewing. Here's what's going to happen after you select your files:

Upload files

Scan for sheet numbers

Review results and define

Extract sheets and

1Upload

2Extract

3Publish

Continue

Upload your files

Set not assigned

Current Set Tracking

Total: 1 file

Add files

File name	File format	Layout template
AU2019-Arch.pdf	PDF	No template

- Click [Upload Files] / drag & drop file(s)
- Apply Template
- Apply Set and Date

Upload your files

Current Set Tracking

Total: 1 file

Add files

File name	File format	Layout template
AU2019-Arch.pdf	PDF	No template

PDF Uploads: Step 2 Extract

AUTODESK BIM 360 | AECOM > 00000000-AU2019

Upload Extract Publish

Cancel Publish All

Review your documents AU2019 Presentation PDF Nov 19, 2019

2019-10-25 ITR Save

A101_V1_2019-11-10_06-15-11pm.pdf 1 sheet Layout info: Second Template

Sheet 1 of 1	
Number *	
A101	
Title	
First Floor Plan	
Printed Date	
4/8/2019 1:54:06 PM	

- Title Blocks have two default attributes: Title and Number. Additional attributes can be added.
- Title Block attributes are automatically read from the PDF using OCR and extracted
- Review the metadata and click [Publish All]; a user will be prompted to make corrections if an error occurs or duplicate conflicting data is found

PDF Uploads: Step 3 Publish

- BIM 360 divides the drawing set into individual sheets
- This allows the team to evaluate individual sheets and track Markups and Issues by sheet
- Use the [Publish Log] to review progress of publishing jobs and results or warnings

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AECOM > 00000000-AU2019

Document Management

FOLDERS
REVIEWS
TRANSMITTALS
ISSUES

Publish Log

Don't see old records?

Exit

File Name	Set	Uploaded by	Uploaded to	Uploaded Date	Details	Status	
Med Research - Arch Shell.rvt		Dennis McNeal	Project Files/930 Design Col...	Nov 11, 2019 12:07 AM	Details	Published	Show In Folder
A101_V1_2019-11-10_06-15-11pm.pdf	AU2019 Presentation PDF	Matt Anderle	Plans/470 Progress PDF Set/...	Nov 10, 2019 8:25 PM	Details	Published	View Show In Folder
A101_V1_2019-11-10_06-15-11pm.pdf	AU2019 Presentation PDF	Matt Anderle	Plans/470 Progress PDF Set/...	Nov 10, 2019 6:16 PM	Details	Published	View Show In Folder
Sample.rvt		Dennis McNeal	Plans/930-40 Clash Coordin...	Nov 9, 2019 12:22 PM	Details	Published	View Show In Folder
Med Research - Arch Shell.rvt		Dennis McNeal	Project Files/930 Design Col...	Nov 9, 2019 11:23 AM	Details	Published	Show In Folder
B360-Quickguide Folder.zip		Matt Anderle	Project Files/000 Design Tea...	Oct 27, 2019 6:42 PM	Details	Published	Show In Folder
Med Research - Elec.rvt		Dennis McNeal	Project Files/930 Design Col...	Oct 27, 2019 11:03 AM	Details	Published	Show In Folder
Sample Model - Sheet A101 v2.pdf	SD-ITR	Matt Anderle	Plans/470 Progress PDF Set/...	Oct 26, 2019 10:11 PM	Details	Published	View Show In Folder
Med Research - Elec.rvt		Dennis McNeal	Project Files/930 Design Col...	Oct 26, 2019 9:47 AM	Details	Published	Show In Folder
Med Research - Mech.rvt		Dennis McNeal	Project Files/930 Design Col...	Oct 20, 2019 1:53 PM	Details	Published	Show In Folder
Med Research - Federated.rvt		Dennis McNeal	Project Files/930 Design Col...	Oct 20, 2019 1:43 PM	Details	Published	Show In Folder

BIM 360 Folders and Metadata

- Getting Started
- Plans vs Project Files
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“Metadata is the
Rosetta Stone of
the 21st century.”

Matthew D. Anderle

Harvesting Metadata: Custom Attributes

The screenshot shows the Autodesk BIM 360 Document Management web interface. The main content area displays a table of documents with columns: Name, Title, Set, Version, Last updated, Updated by, Markup, and Issue. A dropdown menu is open next to the 'Issue' column header, showing a list of attributes: Set, Version, Last updated, Updated by, Markup, Issue, RFI, Status, File Name, and Number. The 'Add Attribute' button is highlighted in the dropdown menu. An 'Add Attribute' dialog box is also open, showing fields for 'Name' (Printed Date) and 'Type' (Text Field). The 'Save' button is highlighted in the dialog box. The 'Settings' icon (gear) is highlighted in the top right corner of the interface.

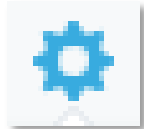
Name	Title	Set	Version	Last updated	Updated by	Markup	Issue
2019-10-25 ITR	--	--	--	Nov 10, 2019 6:17 PM	Matt Anderle		
Current Set Tracking	--	--	--	Sep 3, 2019 11:49 AM			

Add Attribute

Name *
Printed Date

Type *
Text Field

Cancel Save

- To add a custom attribute, click the [Settings] icon 
- Click [Add Attribute] at the bottom of the drop-down menu
- Enter the custom attribute information in the [Add Attribute] dialog box

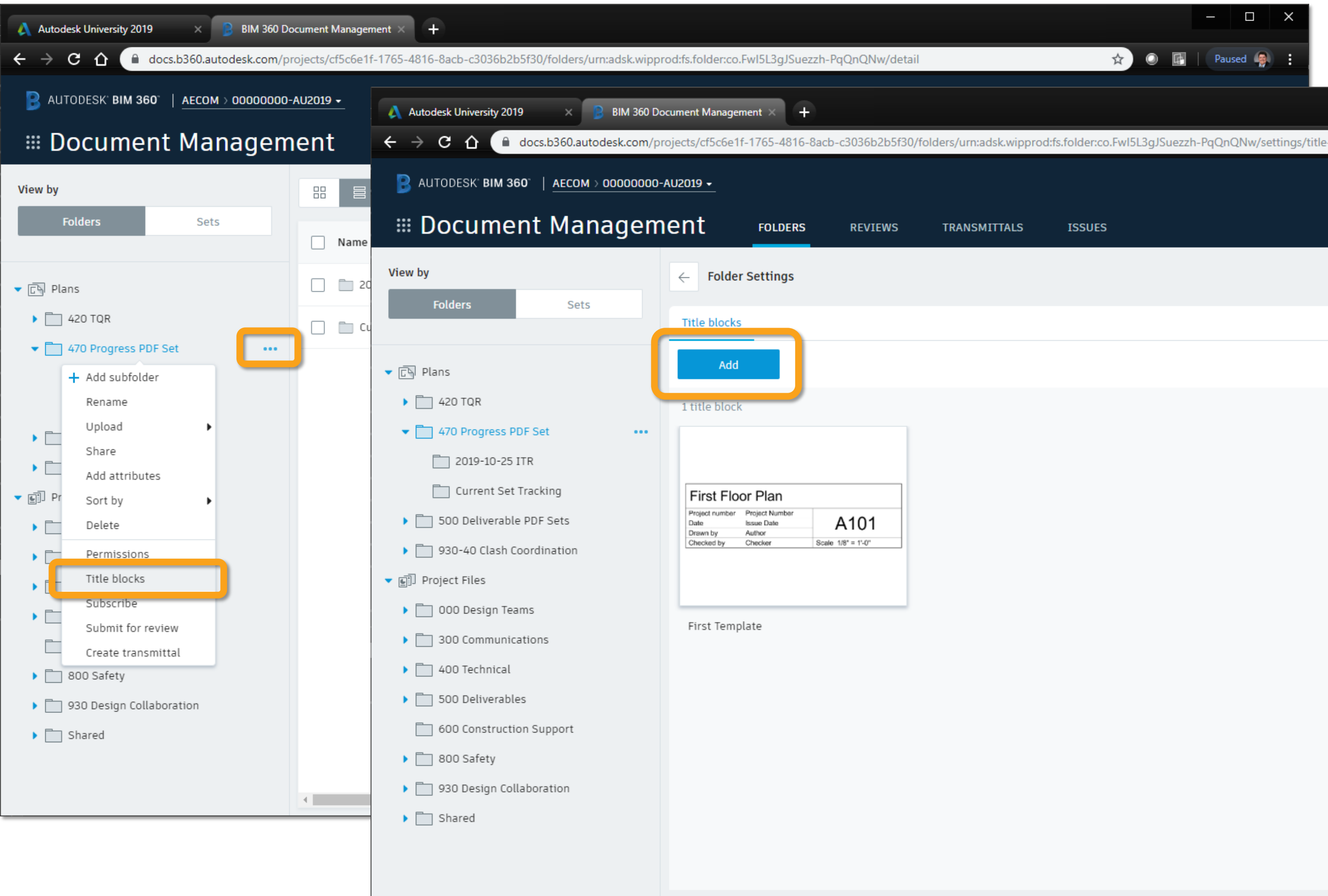
Harvesting Metadata: Custom Attributes

The screenshot shows the Autodesk BIM 360 Document Management web interface. The left sidebar displays a project hierarchy under 'Plans' and 'Project Files'. The main area shows a document list with columns: Name, Title, Set, Version, Printed Date, Last updated, Updated by, and Mai. A document titled 'First Floor Plan' is listed under the 'A101' set. The 'Printed Date' column is highlighted with an orange box. A dropdown menu is open for the 'Printed Date' column, showing a list of attributes: Title, Set, Version, Printed Date, Last updated, Updated by, Markup, Issue, RFI, and Status. The 'Printed Date' attribute is selected and highlighted with an orange box. Arrows indicate the ability to reorder attributes by sliding them up or down the list. The interface also includes a search bar, a 'View by' toggle (Folders/Sets), and an 'Upload Files' button.

Name	Title	Set	Version	Printed Date	Last updated	Updated by	Mai
A101	First Floor Plan	AU2019 Presentati...	V2		Nov 10, 2019 6:20 P		

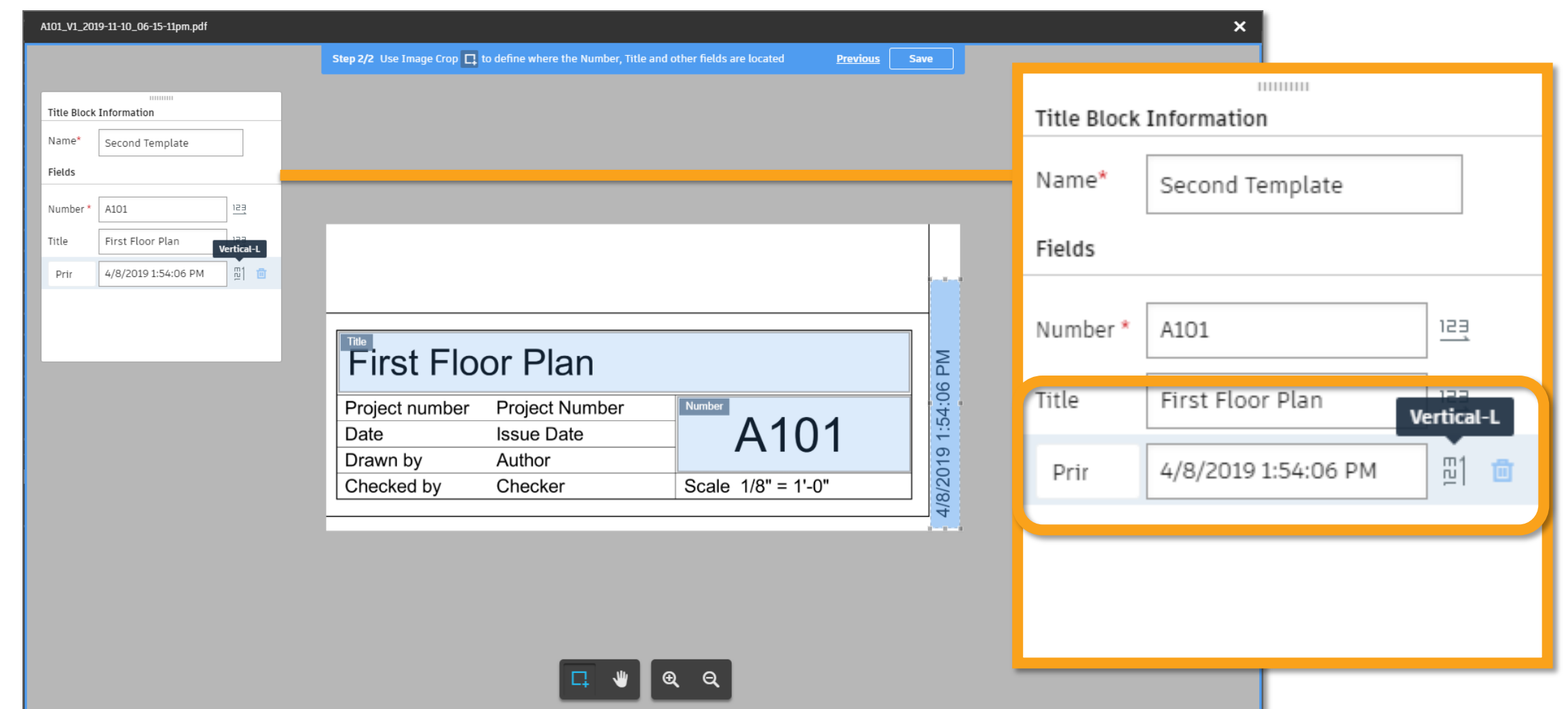
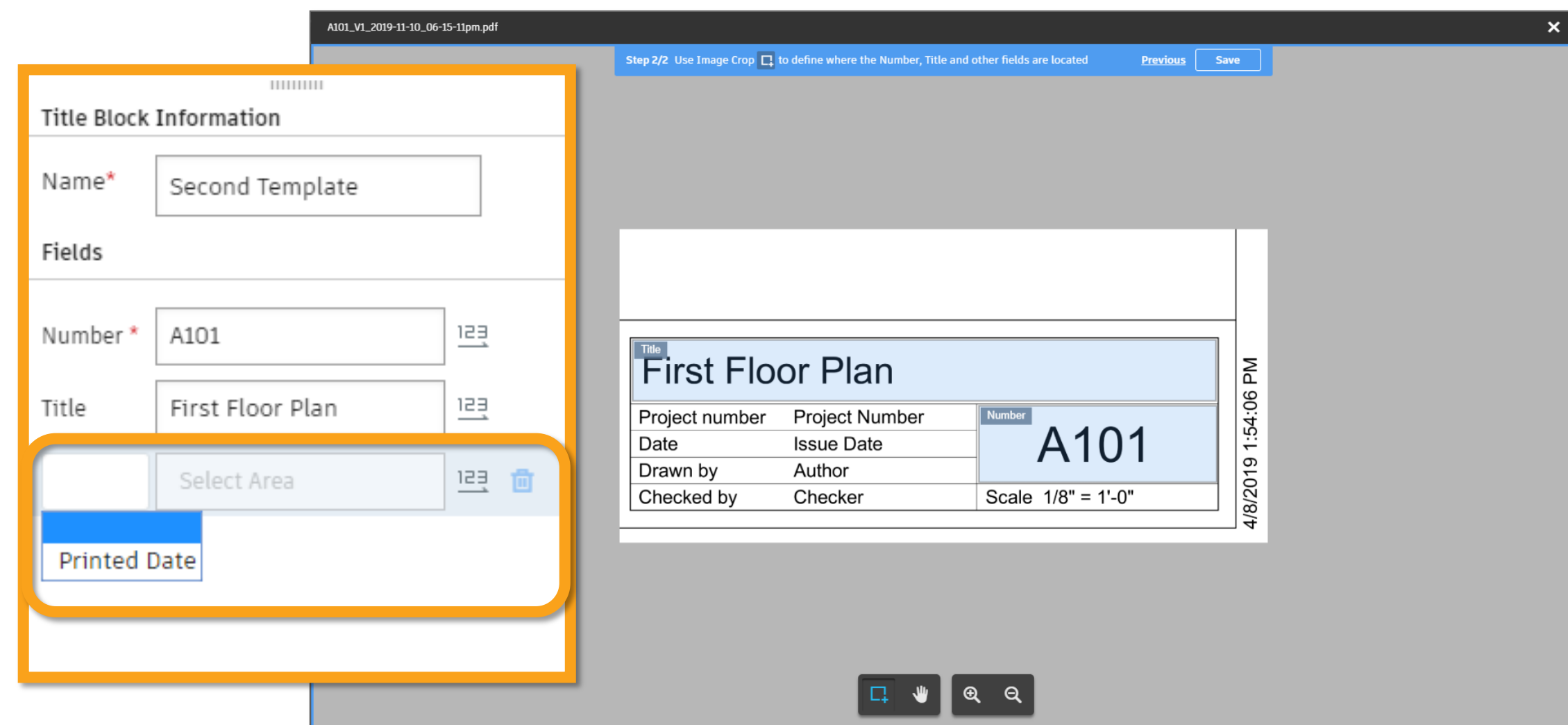
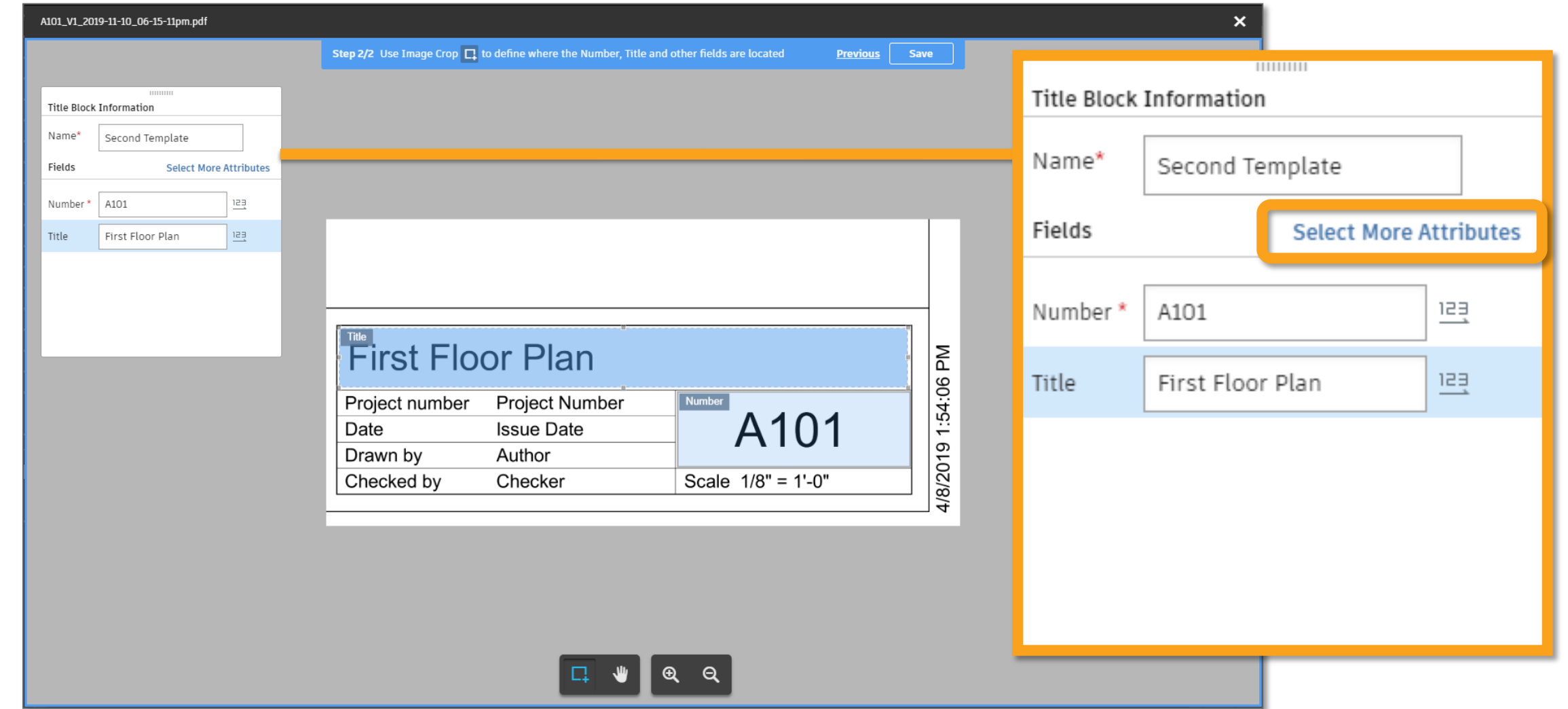
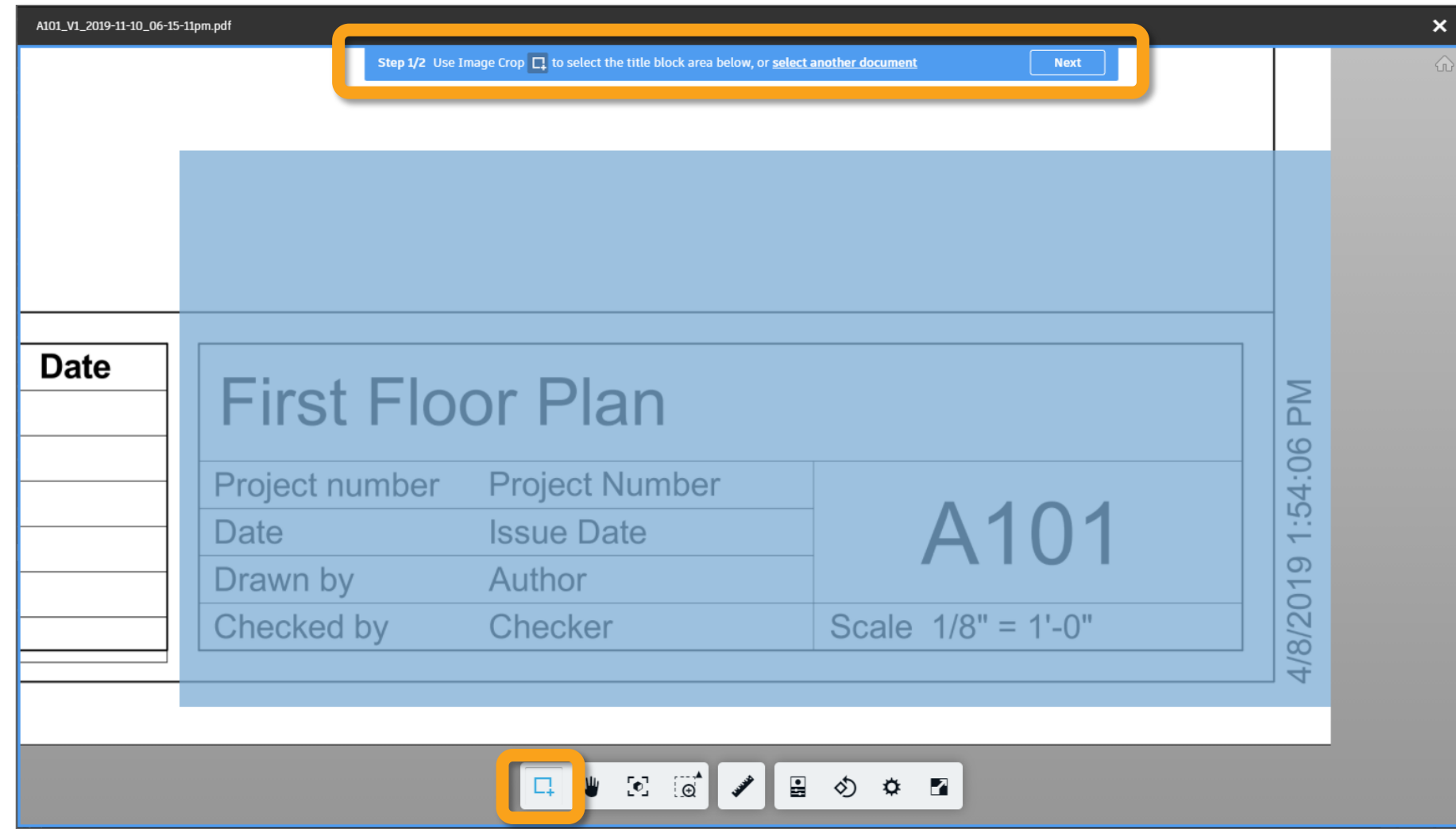
- The custom attribute appears as a new column
- Attributes can be ordered by sliding them up or down the list in the drop-down menu

Harvesting Metadata: Defining Title Blocks

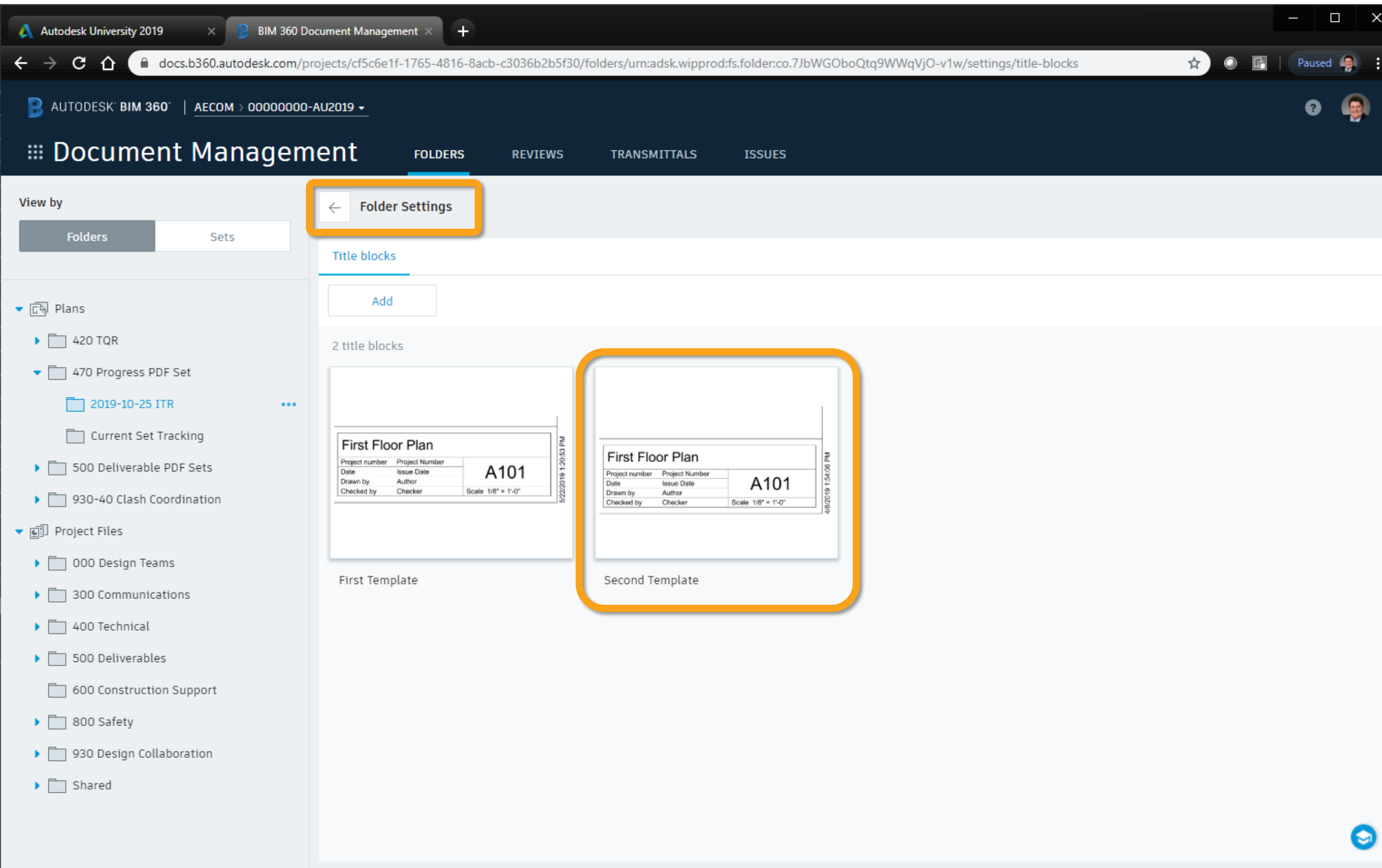


- Click the ellipsis [...] symbol and select [Title Blocks]
- A Title Block management page appears
- Click [Add] or edit a Title Block to define the attribute areas within the sheet.

Harvesting Metadata: Defining Title Blocks



Harvesting Metadata: Defining Title Blocks



- When a PDF Set is uploaded, a Title Block Template must be selected
- BIM 360 uses the Template to organize the drawing set and divide it into individual sheets

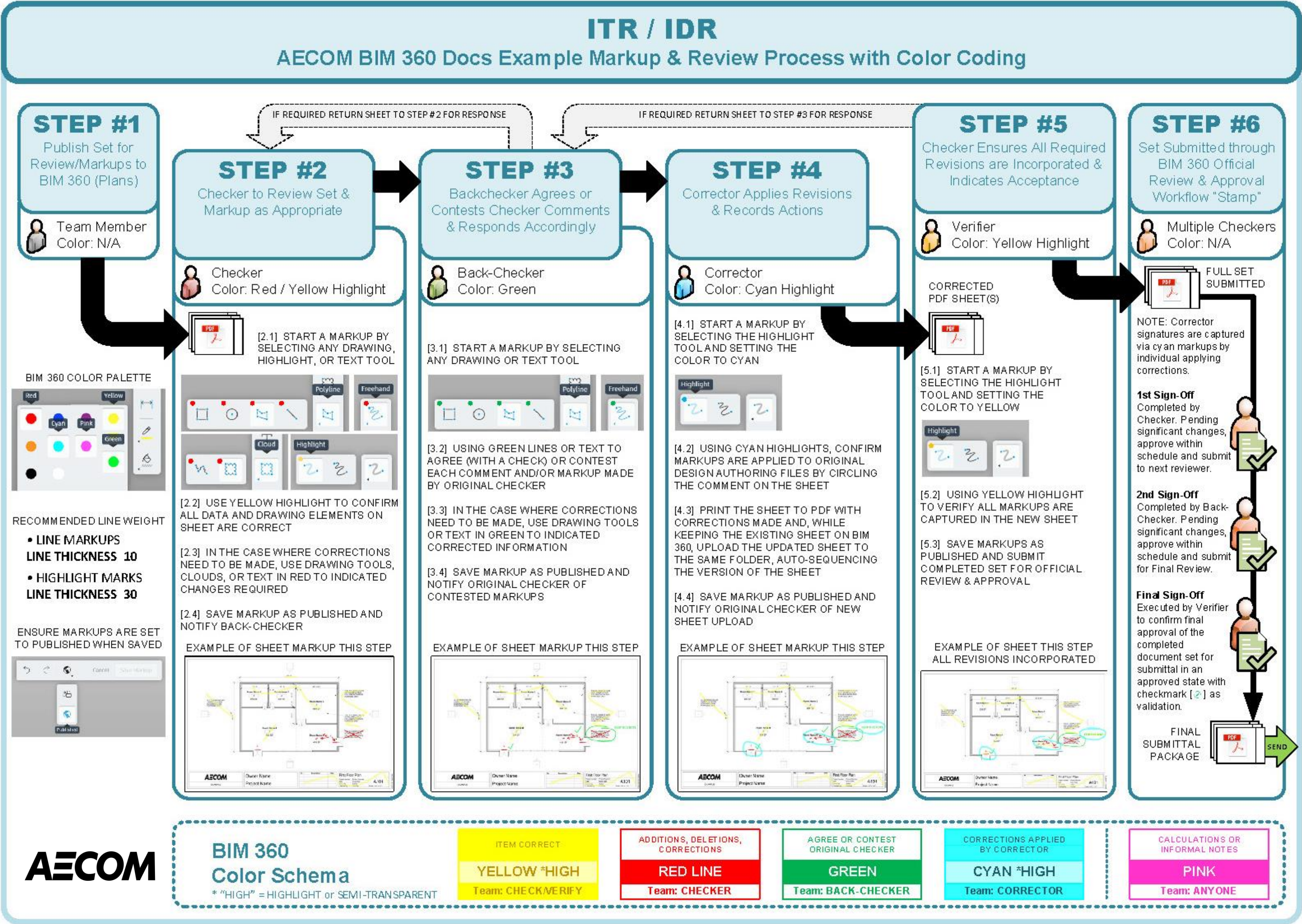
Defining Diversified Team Review Workflows

- Review Workflows
- Versions and Compare Tool
- Markup Tools
- Issues

Defining Diversified Team Review Workflows

- Review Workflows
- Versions and Compare Tool
- Markup Tools
- Issues

Review Workflow Diagram



Sets

Document Management FOLDERS REVIEWS TRANSMITTALS ISSUES

View by
Folders **Sets**

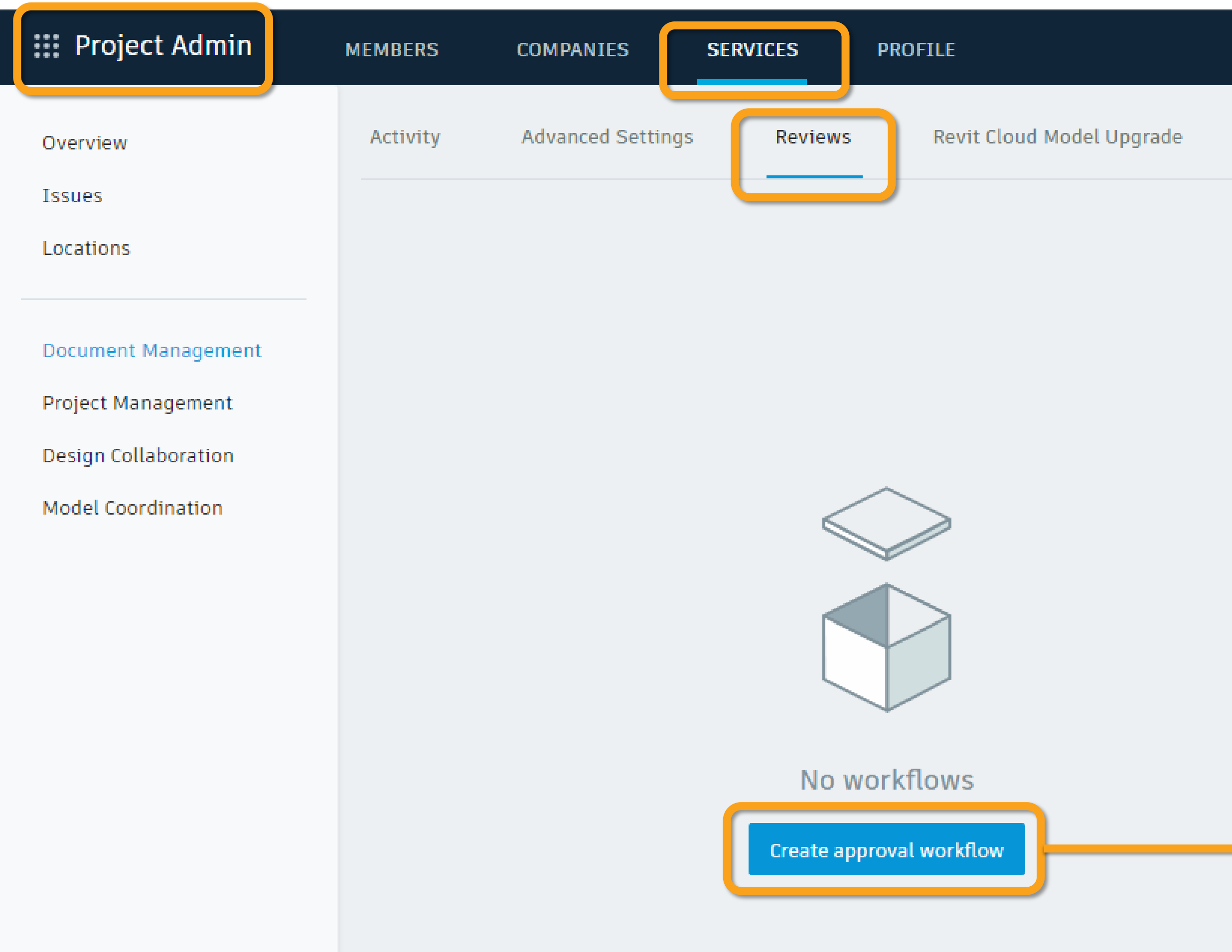
Set
★ Current set
[Manage sets](#)

Don't see your documents?

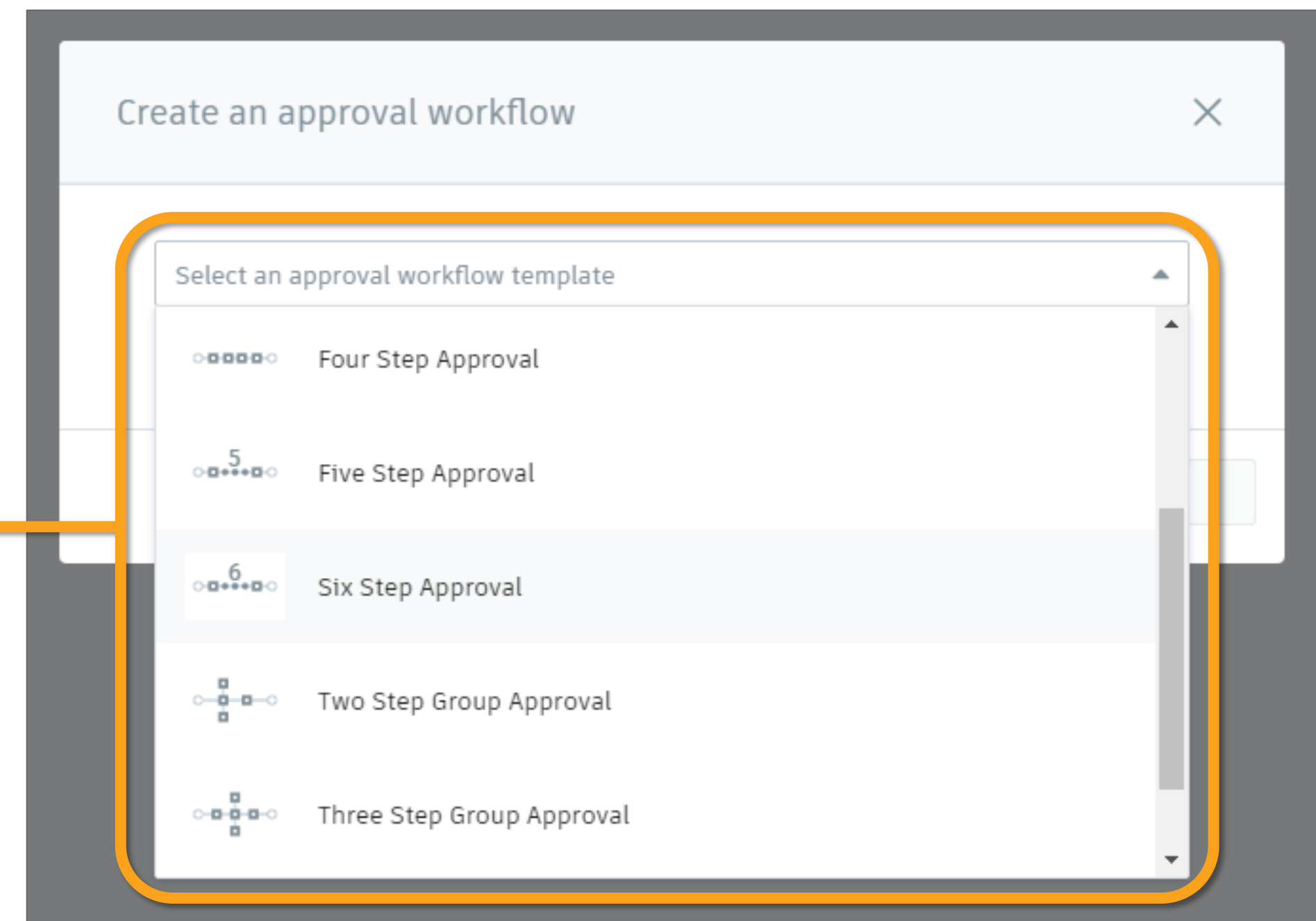
<input type="checkbox"/> Name ^	Title	Set	Version	Last updated	Updated by	Path	Description
<input type="checkbox"/> A001	Title Sheet	Final Updates	V5	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> A101	Site Plan	Final Updates	V4	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> A102	Plans	Final Updates	V4	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> A103	Elevations/Sections	Final Updates	V4	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> A104	Elev./Sec./Det.	Final Updates	V4	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> A105	Elev./ Stair Sections	Final Updates	V4	Nov 14, 2018 2:19 AM	Matt Turner	Plans/470 Progress ...	AU2018-Arch.pdf
<input type="checkbox"/> AU2018-Arch.rvt		Final Updates	V3	Nov 14, 2018 2:19 AM	Matt Turner	Project Files/000 D...	

- Click the [Sets] button to access the Set Selector
- Switch between Sets using the drop-down menu

Creating a Review Workflow



- In the Project Admin module under the [Services] tab, under the [Reviews] tab, click on the [Create Approval Workflow] button
- BIM 360 Design provides a variety of workflows – including linear or group – to meet team needs



Creating a Review Workflow

General info

Name *

Approval Workflow|

Description

Steps

```
graph LR; Start(( )) --> IR[Initial Review]; IR --> FR[Final Review]; FR --> End(( ))
```

Initiator *

Select a user, role, or company

Step name	Reviewer Type *	Time allowed *
Initial Review	<div> Single Reviewer </div> <div><div>Reviewer *</div><div>Select a user, role, or company</div></div>	3 Calendar Day(s)
Final Review	<div><div>Approver *</div><div>Select a user, role, or company</div></div>	3 Calendar Day(s)

After selecting a review workflow, assign Initiators and Roles

Creating a Review Workflow

The screenshot displays the 'Document Management' application interface. On the left, a sidebar shows a tree view of folders and sets, including 'Plans', '420 TQR', '470 Progress PDF Set', '2019-10-25 ITR', 'Current Set Tracking', '500 Deliverable PDF Sets', '930-40 Clash Coordination', 'Discipline Clash Models', 'Federated Model', 'Sample', 'Sample Review', 'Project Files', and '000 Design Teams'. The main area shows a table of documents with columns for Name, Title, Set, Version, and Last updated. A selection of documents is highlighted with a blue box, and a 'Submit for review' button is visible. An orange box highlights the 'Submit for review' button in the top toolbar. A modal window titled 'Submit for review' is open on the right, showing the 'Approval workflow' dropdown, a workflow diagram, 'Action upon completion' (Update document approval status), 'Review name' (Approval Workflow - SD), 'Documents for review' (Total: 9 documents), and a list of documents for review. The 'Submit' button at the bottom right of the modal is also highlighted with an orange box.

Document Management

FOLDERS **REVIEWS** **TRANSMITTALS** **ISSUES**

View by: **Folders** **Sets**

Submit for review

Name	Title	Set	Version	Last updated
01 - Entry Level			V2	Nov 11, 2019 9:4
01 - Entry Level - Area Plan			V1	Nov 11, 2019 9:4
01 - Entry Level - Furniture L...			V1	Nov 11, 2019 9:4
02 - Floor			V2	Nov 11, 2019 9:4
03 - Floor			V2	Nov 11, 2019 9:4
New Construction_Arch.rvt			V1	Nov 11, 2019 9:4
Roof			V2	Nov 11, 2019 9:4
Site			V1	Nov 11, 2019 9:4
{3D}_Arch.rvt			V1	Nov 11, 2019 9:4

Submit for review

Approval workflow *

Approval Workflow

Overview

Action upon completion

Update document approval status

Review name *

Approval Workflow - SD

Documents for review * [Add documents](#)

Total: 9 documents

Plans/930-40 Clash Coordin... 9 documents

01 - Entry Level V2

01 - Entry Level - Area Plan V1

01 - Entry Level - Furniture Layout V1

02 - Floor

Notes

Submit

- Select documents to be submitted for review
- Click the [Submit for Review] button
- Select a Review Workflow

Creating a Review Workflow

OPEN #1 - Initial Review ⌚ Time left: 3 days

Approval Workflow - SD

Start review

Void entire review

Export Report



Name ^	Title	Description	Version	Markup	Comments	
01 - Entry Level		--	V2	0	No comments yet.	
01 - Entry Level - Area Plan		--	V1	0	No comments yet.	
01 - Entry Level - Furniture ...		--	V1	0	No comments yet.	
02 - Floor		--	V2	0	No comments yet.	
03 - Floor		--	V2	0	No comments yet.	
New Construction_Arch.rvt		--	V1	0	No comments yet.	
Roof		--	V2	0	No comments yet.	
Site		--	V1	0	No comments yet.	
{3D}_Arch.rvt		--	V1	0	No comments yet.	

PROGRESS

Initiator Initial Review ^



Matt Anderle

Nov 12, 12:19 AM

<matthew.anderle@aecom.com>

Submitted to Reviewer

● Reviewer Initial Review ^

Katherine Crowley, Matt Anderle

[Send email notification](#)

Creating a Review Workflow

OPEN #1 - Final Review ⌚ Time left: 3 days

















Approval Workflow - SD

Submit review

Release task

Void entire review


Export Report ▾

<input type="checkbox"/> Name ^	Title	Description	Version	Markup	Comments	Approval status	⚙
<input type="checkbox"/>  01 - Entry Level		--	V2	0	No comments yet. Add	 Approved ▾	
<input type="checkbox"/>  01 - Entry Level - Area ...		--	V1	0	No comments yet. Add	 Approved ▾	
<input type="checkbox"/>  01 - Entry Level - Furnit...		--	V1	0	No comments yet. Add	 Approved ▾	
<input type="checkbox"/>  02 - Floor		--	V2	0	No comments yet. Add	 Approved ▾	
<input type="checkbox"/>  03 - Floor		--	V2	0	No comments yet. Add	<div><div>Select...</div><div><div> Approved</div><div> Rejected</div><div> Approved w/ comme...</div></div></div>	
<input type="checkbox"/>  New Construction_Arc...		--	V1	0	No comments yet. Add	Select...	
<input type="checkbox"/>  Roof		--	V2	0	No comments yet. Add	Select...	
<input type="checkbox"/>  Site		--	V1	0	No comments yet. Add	Select...	
<input type="checkbox"/>  {3D}_Arch.rvt		--	V1	0	No comments yet. Add	Select...	

PROGRESS

Initiator

Initial Review



Matt Anderle


Nov 12, 12:19 AM

<matthew.anderle@aecom.com>

Submitted to Reviewer

Reviewer

Initial Review



Matt Anderle

Send email notification

<matthew.anderle@aecom.com>

Approver

Final Review

Defining Diversified Team Review Workflows

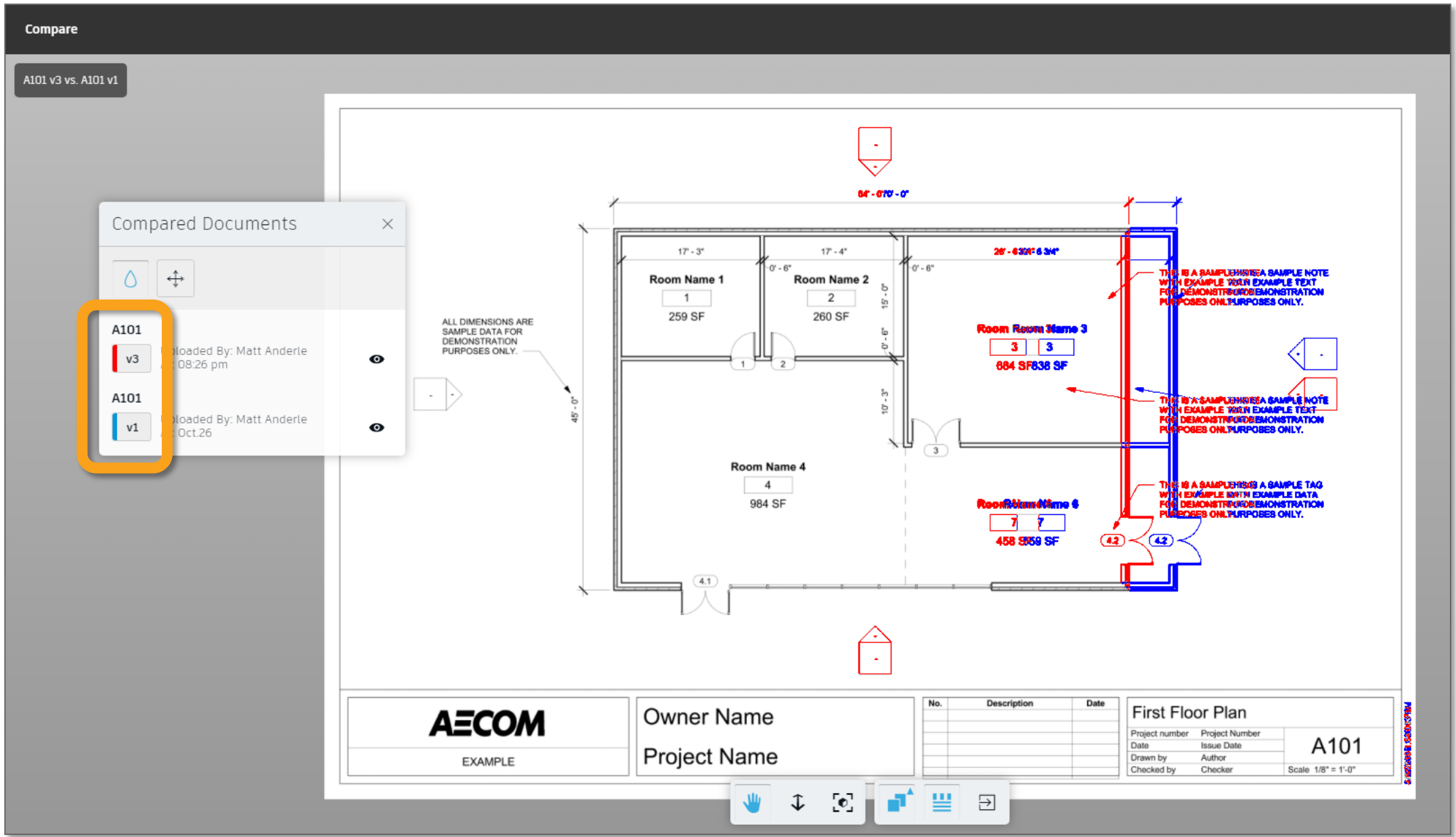
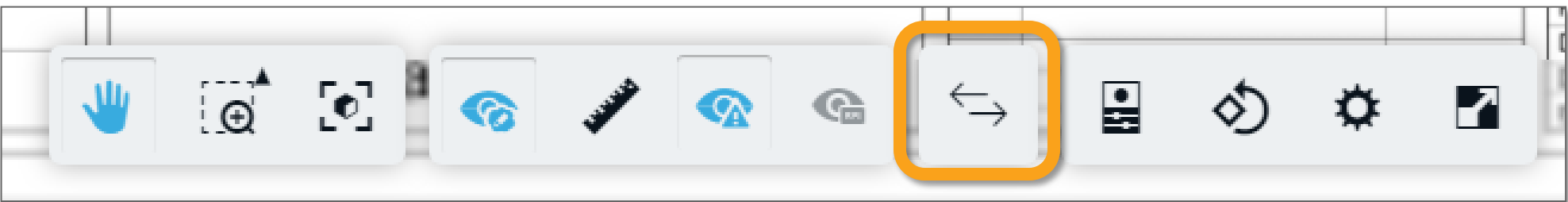
- Review Workflows
- Versions and Compare Tool
- Markup Tools
- Issues

Review Workflows: Versions and Compare Tool

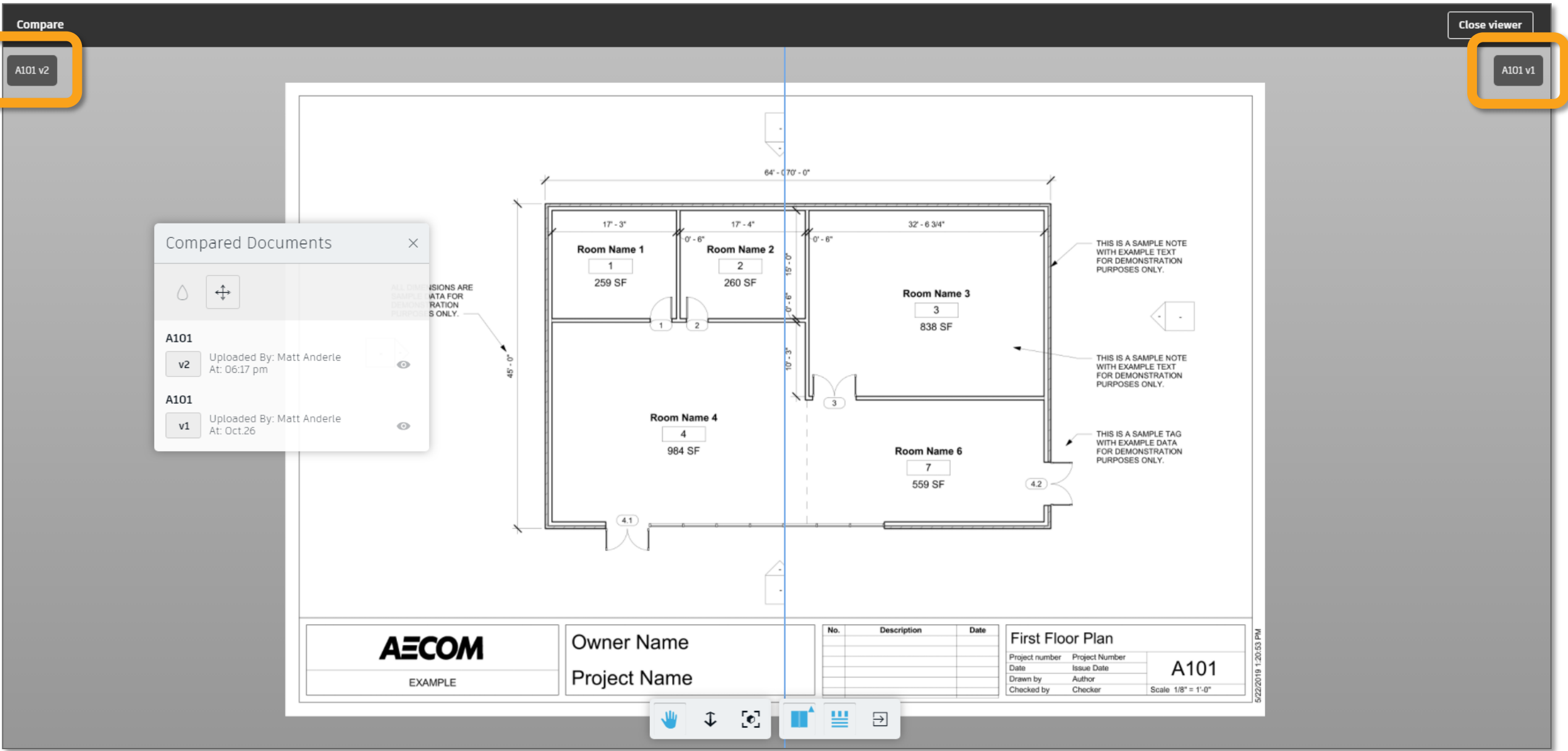
Select a file with multiple versions

<input type="checkbox"/> Name ^	Title	Set	Version	Last updated
<input type="checkbox"/> A101	First Floor Plan	AU2019 Presentati...	V2	Nov 10, 2019 6:20 PM

Select the [Compare] tool from the Control Tools menu



Overlay



Side by Side

Review Workflows: Versions and Compare Tool

Compare

A101 v3 vs. A101 v1

Compared Documents

A101 v3 Uploaded By: Matt Anderle At: 08:26 pm

A101 v1 Uploaded By: Matt Anderle At: Oct.26

ALL DIMENSIONS ARE SAMPLE DATA FOR DEMONSTRATION PURPOSES ONLY.

Room Name 1
1
259 SF

Room Name 2
2
260 SF

Room Name 3
3
884 SF

Room Name 4
4
984 SF

Room Name 5
5
458 SF

Room Name 6
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559 SF

Room Name 7
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Room Name 8
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Review Workflows: Versions and Compare Tool

Compare

Close viewer

A101 v2

V2

A101 v1

V1

Compared Documents

A101 v2

Uploaded By: Matt Anderle

At: 06:17 pm

A101 v1

Uploaded By: Matt Anderle

At: Oct.26

Room Name 1

1

259 SF

Room Name 2

2

260 SF

Room Name 3

3

838 SF

Room Name 4

4

984 SF

Room Name 6

7

559 SF

THIS IS A SAMPLE NOTE WITH EXAMPLE TEXT FOR DEMONSTRATION PURPOSES ONLY.

THIS IS A SAMPLE NOTE WITH EXAMPLE TEXT FOR DEMONSTRATION PURPOSES ONLY.

THIS IS A SAMPLE TAG WITH EXAMPLE DATA FOR DEMONSTRATION PURPOSES ONLY.

AECOM

EXAMPLE

Owner Name

Project Name

No.	Description	Date

First Floor Plan

Project number

Project Number

Date

Issue Date

Drawn by

Author

Checked by

Checker

A101

Scale 1/8" = 1'-0"

5/22/2019 1:20:53 PM

Hand

Zoom

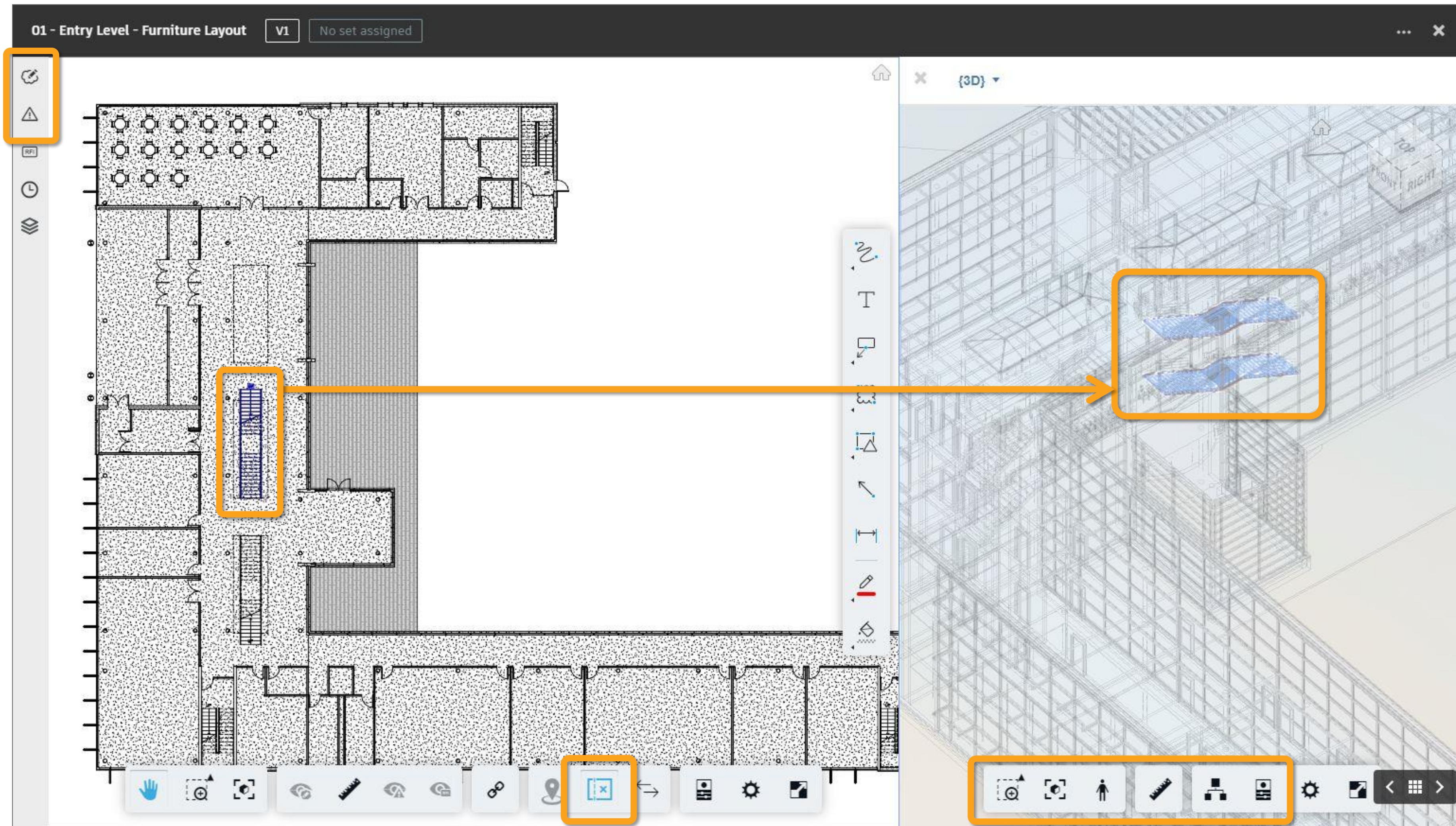
Rotate

Compare


Layers

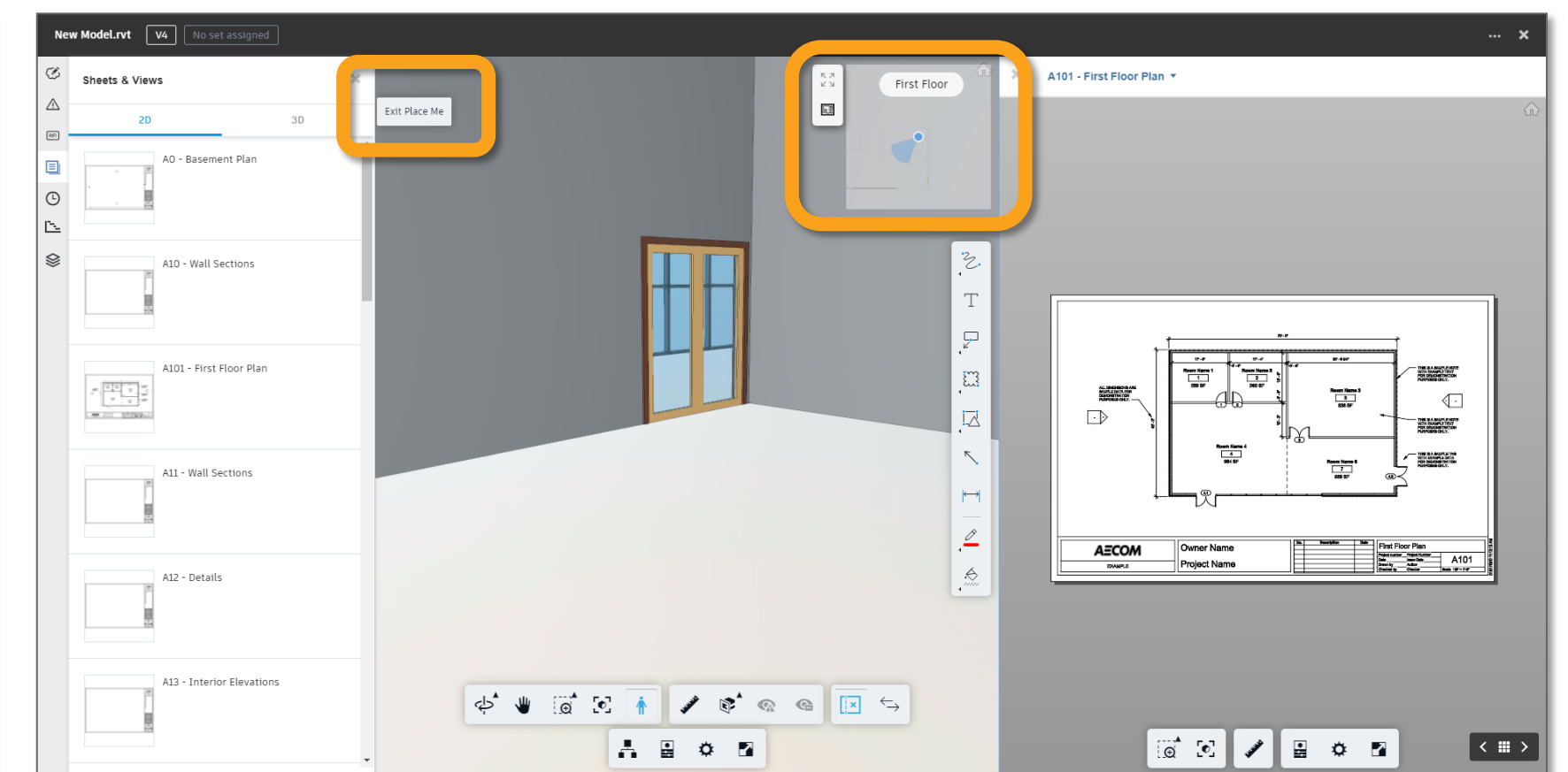
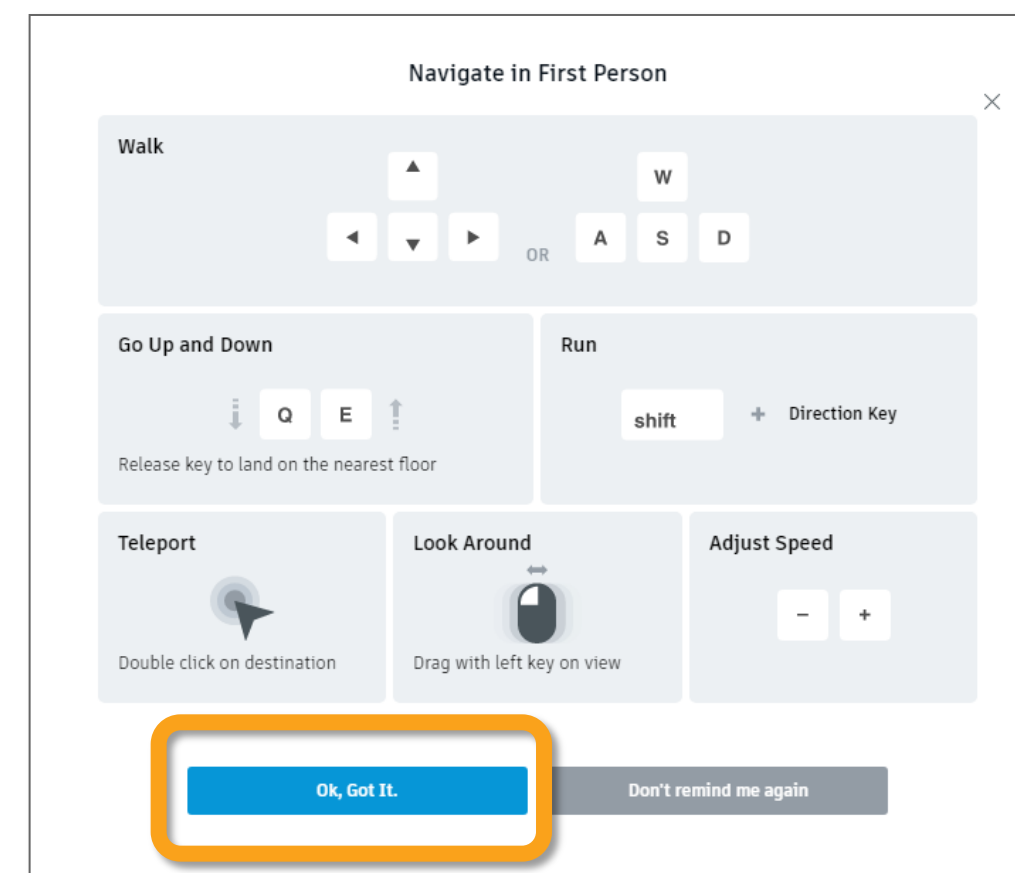
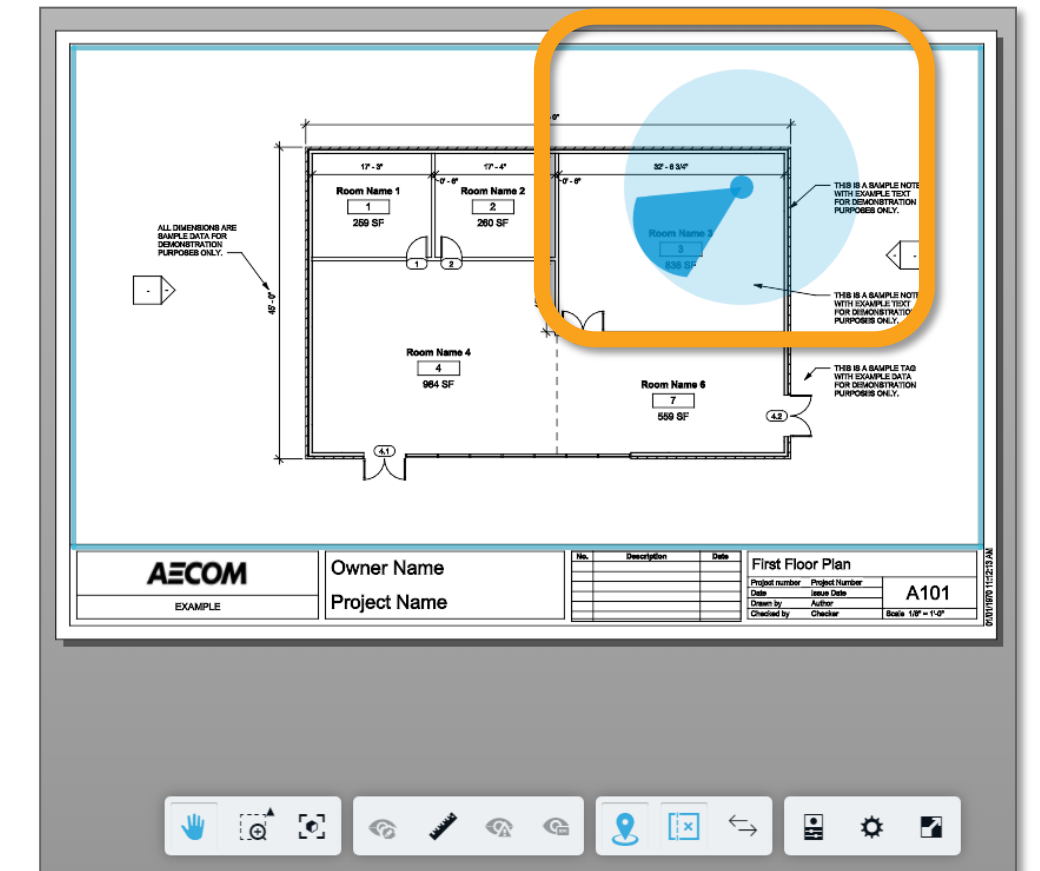
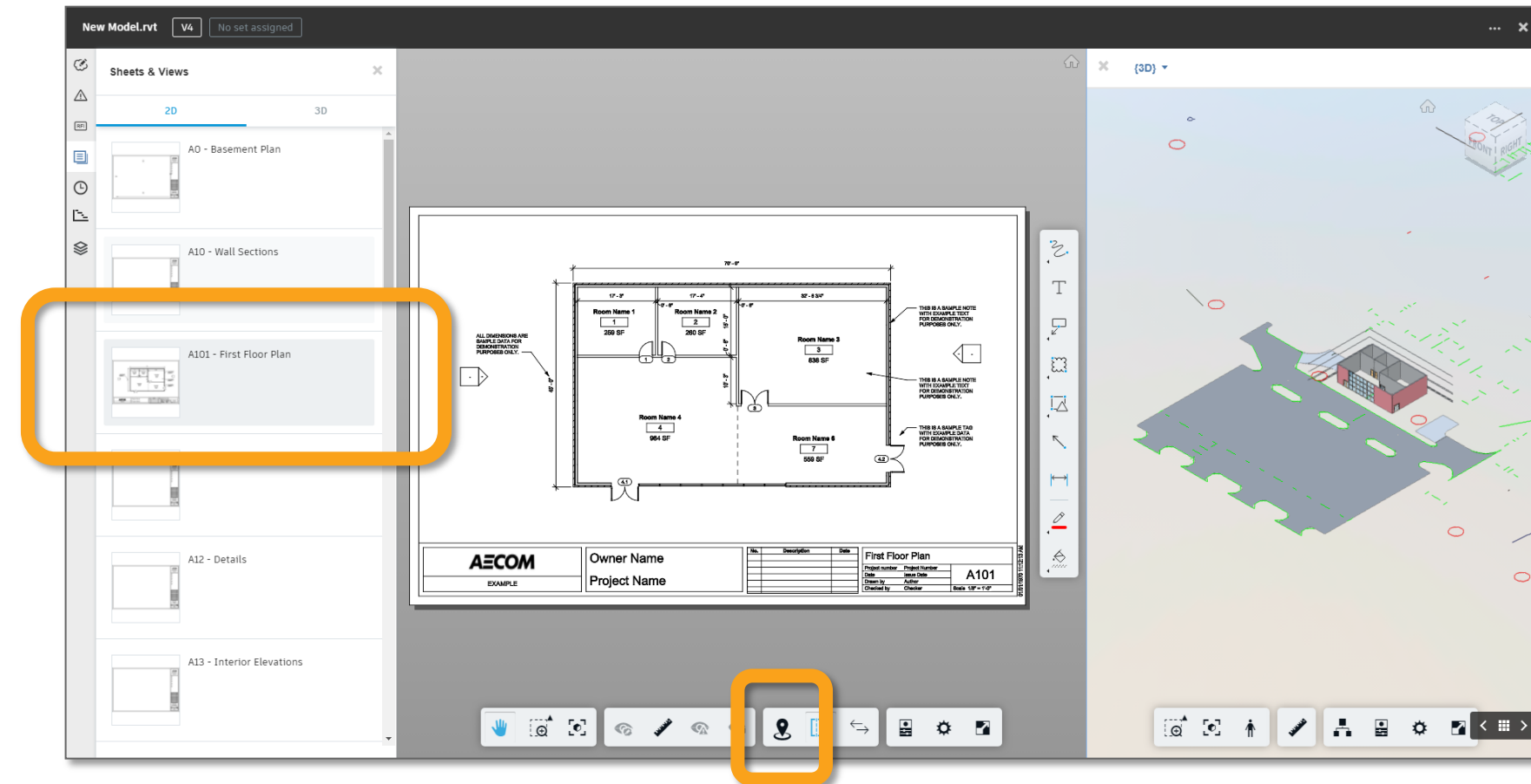
Help

Review Workflows: Model Compare Tools



Review Workflows: Place Me

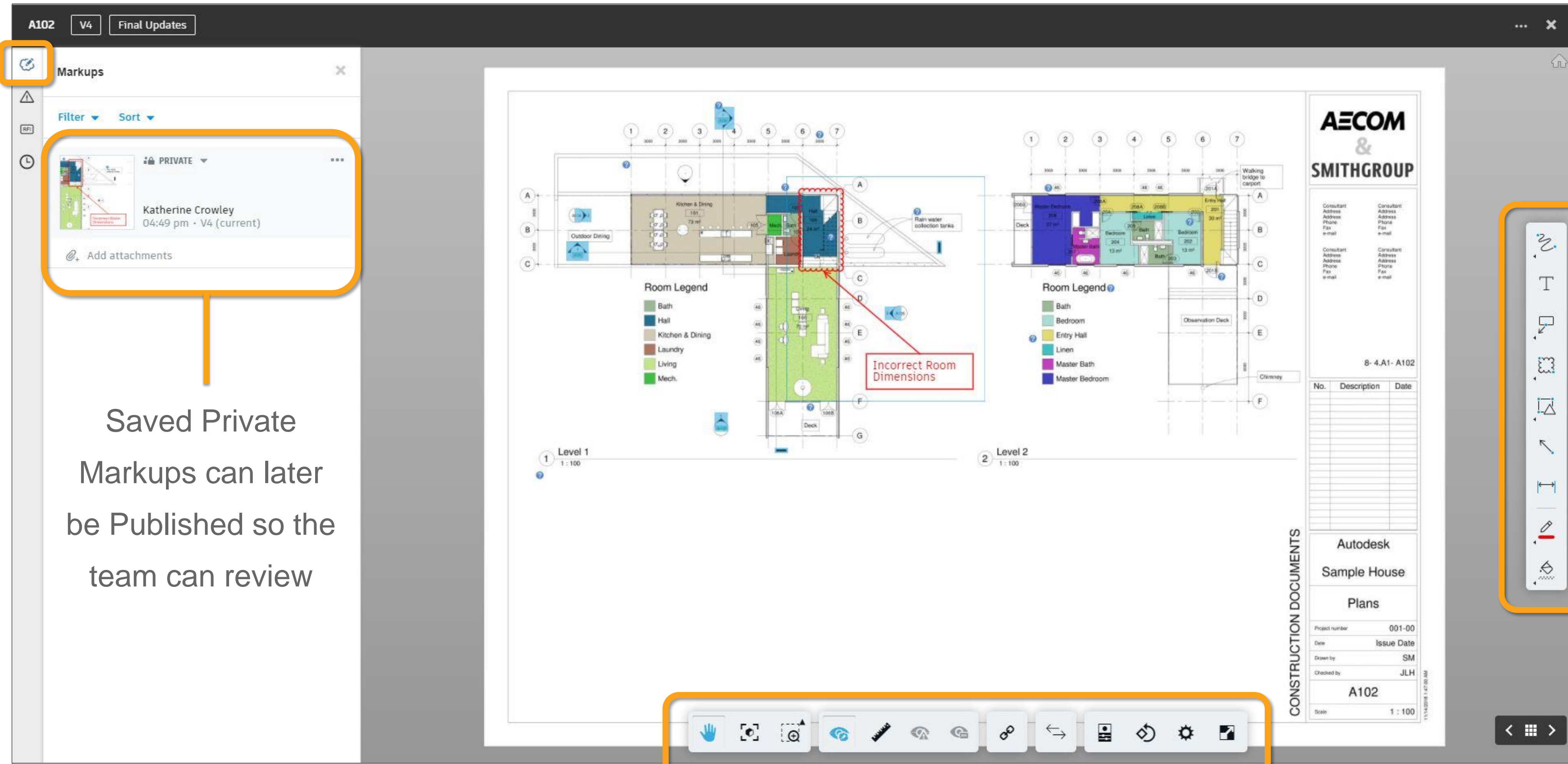
- Open a 2D sheet from the Published Revit file
- In the Control Tools select the [Place Me] icon 
- Select the location on the 2D sheet
- Use the cursor to orient the view angle
- Review the First Person Navigation Controls
- The user is placed into the 3D model in First Person Mode



Defining Diversified Team Review Workflows

- Review Workflows
- Versions and Compare Tool
- Markup Tools
- Issues

Markup Tools: User Interface



Saved Private
Markups can later
be Published so the
team can review

Markup
Tools

Control Tools

Markup Tools: Key Features

The image displays a software interface for architectural markups, featuring a sidebar, a main workspace, and a bottom toolbar.

Left Sidebar (Markups):

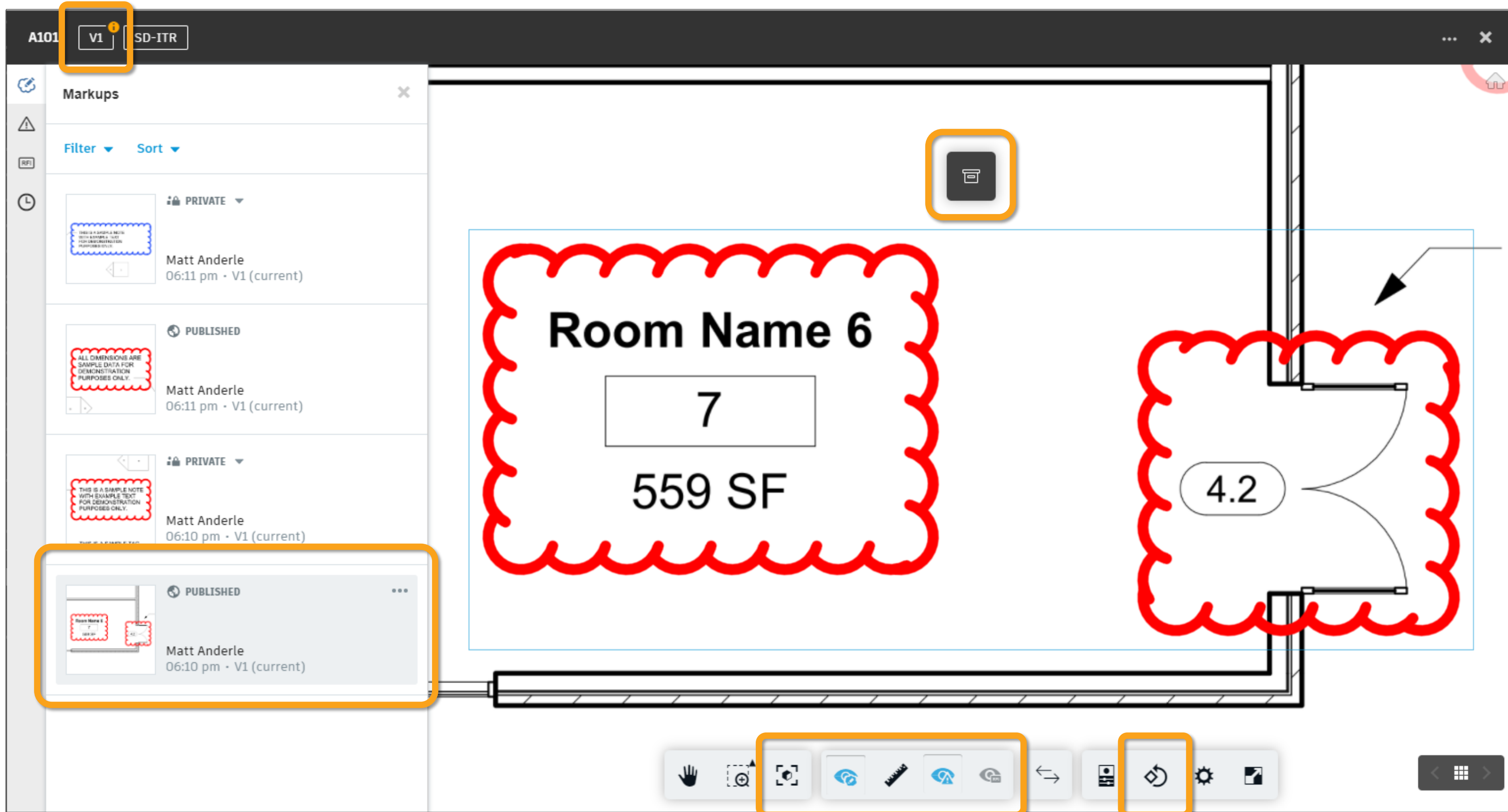
- Filter** (up arrow) **Sort** (down arrow)
- Created by:** Matt Anderle
- Created on:** Choose Date
- ☒ Show archived
- Reset** **Apply**

Main Workspace:

- Markups List:**
 - PRIVATE** (lock icon) **Filter** (down arrow) **Sort** (down arrow)
 - Item 1: Matt Anderle, 06:11 pm • V1 (current)
 - Item 2: **PUBLISHED** (lock icon), Matt Anderle, 06:11 pm • V1 (current)
 - Item 3: **PRIVATE** (lock icon), Matt Anderle, 06:10 pm • V1 (current)
 - Item 4: **PUBLISHED** (lock icon), Matt Anderle, 06:10 pm • V1 (current)
- Minimap:** A small overview map showing the current view's location within the larger project.
- Room Annotations:**
 - Room Name 3:** 3, 838 SF
 - Room Name 6:** 7, 559 SF
 - Tag 4.2:** 4.2
- Annotations:** Several text boxes with sample text: "THIS IS A SAMPLE NOTE WITH EXAMPLE TEXT FOR DEMONSTRATION PURPOSES ONLY."

Bottom Toolbar: Contains icons for various tools, including a hand, a selection tool, a dimension tool, a text tool, a line tool, a rectangle tool, a circle tool, a delete tool, a redo tool, a zoom in tool, a zoom out tool, a pan tool, and a reset tool.

Markup Tools: Reviewing

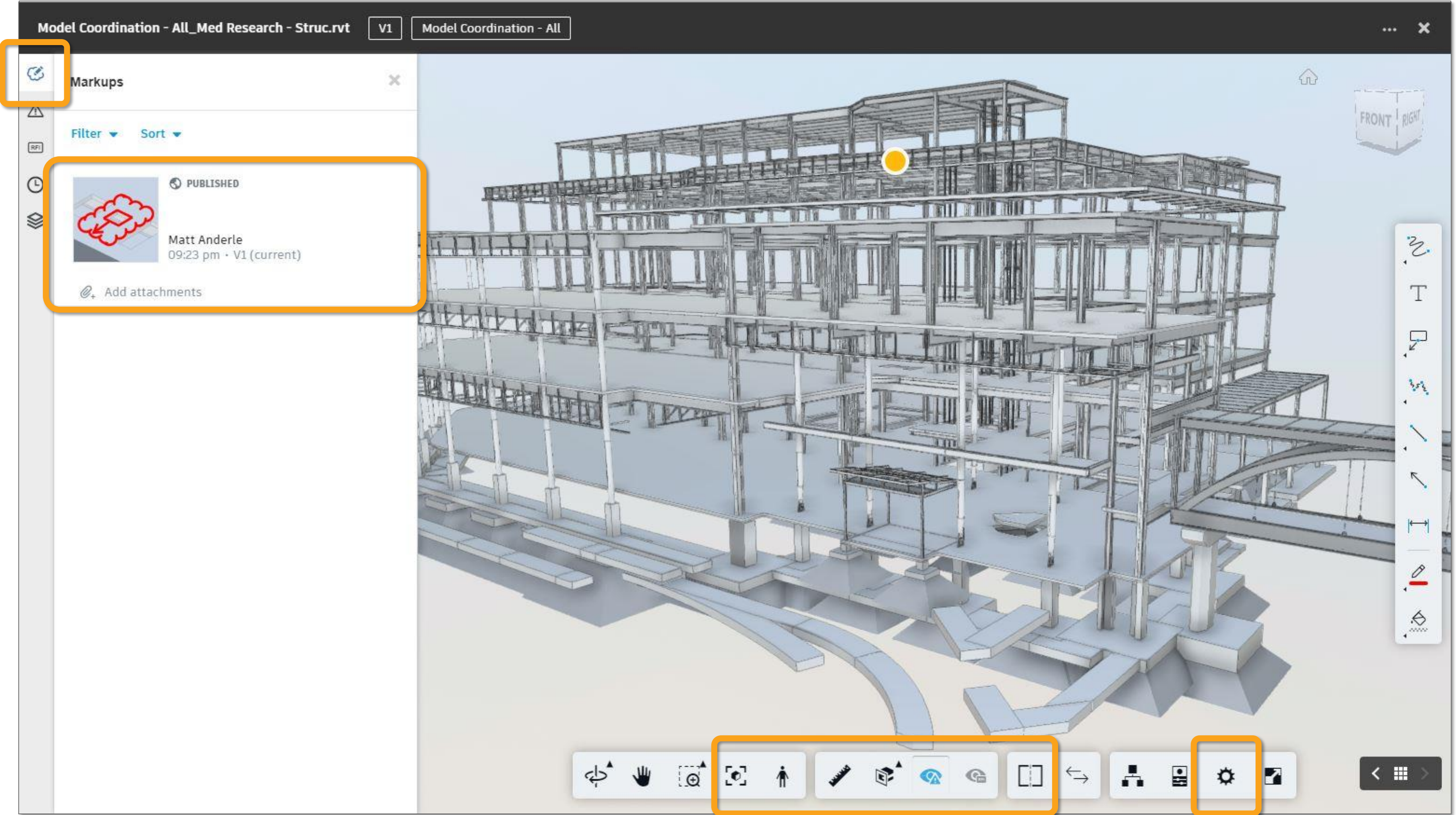


Markup Tools: File List Sort and Search

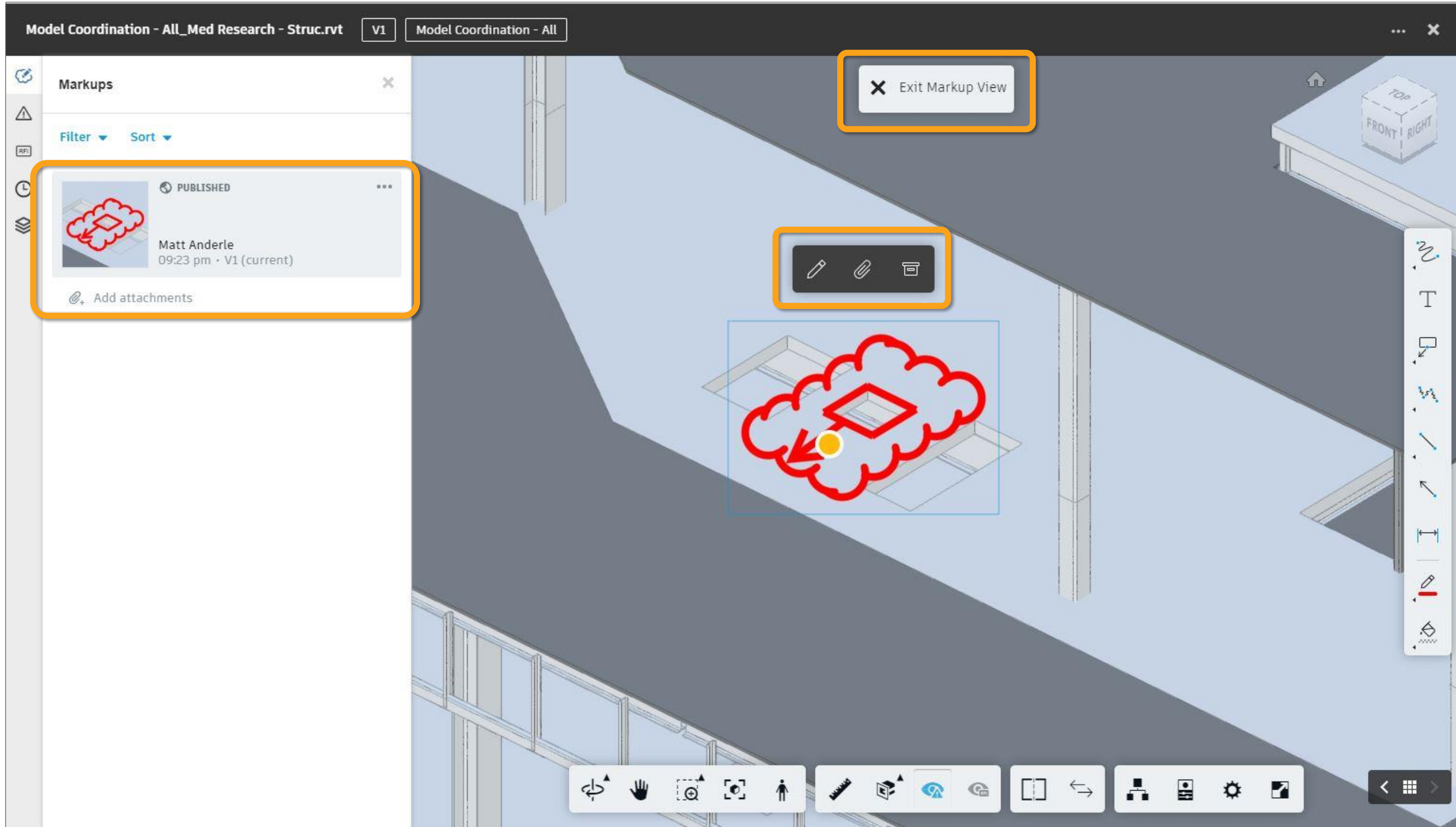
The image displays three screenshots of the AECO Hub interface, highlighting various document management features:

- Top Left Screenshot:** Shows a list of documents with columns: Name, Title, Set, Version, Markup, Issue, and RFI. The 'Name' column is highlighted with an orange box.
- Top Right Screenshot:** Shows a similar list of documents but with additional columns: Markup, Issue, RFI, Sorting Parameter, and Disclaimer. The 'Markup' and 'Issue' columns are highlighted with an orange box.
- Bottom Screenshot:** Shows a search results view with a search bar containing 'A10'. The search bar and the 'Showing 5 results' text are highlighted with orange boxes. Below the table, a thumbnail view of the documents is visible, with the '5 Documents' label highlighted by an orange box.

Markup Tools: Models



Markup Tools: Models



Defining Diversified Team Review Workflows

- Review Workflows
- Versions and Compare Tool
- Markup Tools
- Issues

Issues: List

AUTODESK BIM 360

AECOM 00000000-AU2019

Document Management

FOLDERS

REVIEWS

TRANSMITTALS

ISSUES

Search

Export

Create Issue

ID	Type	Sub-type	Title	Location	Assigned to	Company	Due date	Linked document			
24	Design	Design	Column Size	-	Katherine Crowley	AECOM	Nov 22, 2019	Model Coord...c.rvt	0	0	
23	Design	Design	Floor Opening Sizes	-	Katherine Crowley	AECOM	Nov 22, 2019	Model Coord...c.rvt	1	0	
22	Design	Design	Check bridge ceiling ali...	-	Dennis McNeal	AECOM	Nov 22, 2019	Med Resear...t.rvt	0	0	
21	Coordination	Clash	Clock [3158576] and Rn...	-	Matt Anderle	AECOM	-	Model Coord...E.rvt	0	0	
20	Coordination	Clash	Clock [3051204] and Fle...	-	Matt Anderle	AECOM	-	Model Coord...E.rvt	0	0	
19	Coordination	Clash	893-OB40 [3395147] an...	-	Matt Anderle	AECOM	-	Model Coord...E.rvt	0	0	
18	Coordination	Clash	23 36 16_rnk - Terminal...	-	Matt Anderle	AECOM	-	Model Coord...h.rvt	0	0	
17	Coordination	Clash	23 33 13_rnk - Damper ...	-	Matt Anderle	AECOM	-	Model Coord...h.rvt	0	0	
16	Coordination	Clash	23 33 13_rnk - Damper ...	-	Matt Anderle	AECOM	-	Model Coord...h.rvt	0	0	
15	Coordination	Clash	Pipe Clashes with duct	-	Matt Anderle	AECOM	-	Model Coord...e.rvt	0	0	
14	Coordination	Clash	Elbow Reducing - Threa...	-	Matt Anderle	AECOM	-	Model Coord...e.rvt	0	0	
13	Coordination	Clash	Pipe Types [2118423] a...	-	Matt Anderle	AECOM	-	Model Coord...e.rvt	0	0	
12	Coordination	Clash	Pipe Types [2117917] an...	-	Matt Anderle	AECOM	-	Model Coord...e.rvt	0	0	
11	Coordination	Clash	Shelvino [3829620] and...	-	Matt Anderle	AECOM	-	Model Coord...E.rvt	0	0	

1 of 1

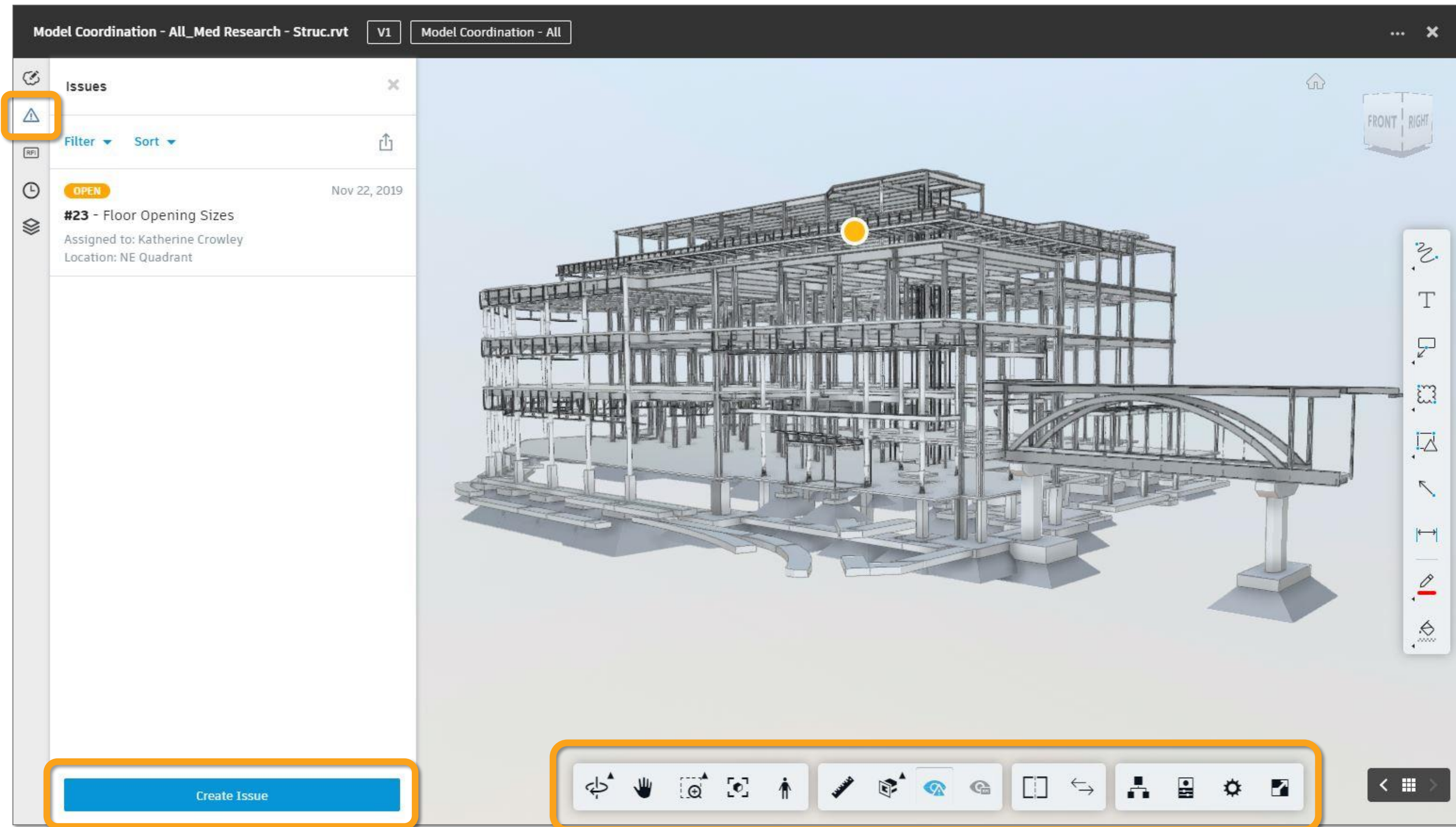
Issues: 2D Views

The screenshot displays a software interface for managing issues in a 2D architectural view. The main window shows a floor plan with four rooms: Room Name 1 (259 SF), Room Name 2 (260 SF), Room Name 4 (984 SF), and Room Name 3. A yellow circle with the number 10 is placed in the hallway between Room 1 and Room 2. The Issues Pane on the left shows details for Issue #10, including location, owner, root cause, and description. The Control Tools bar at the bottom contains various icons for navigation and editing.

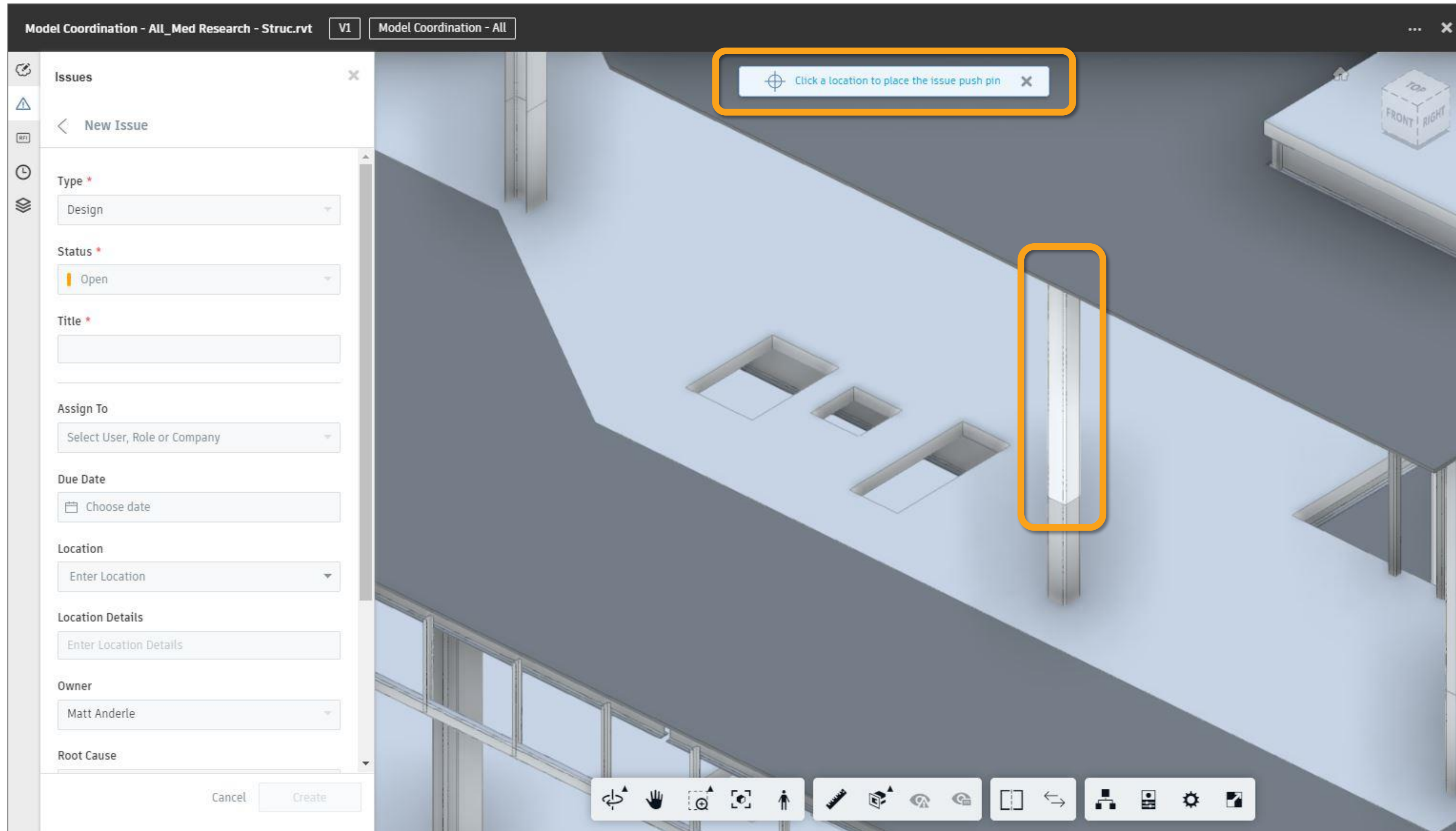
Issues Pane

Control Tools

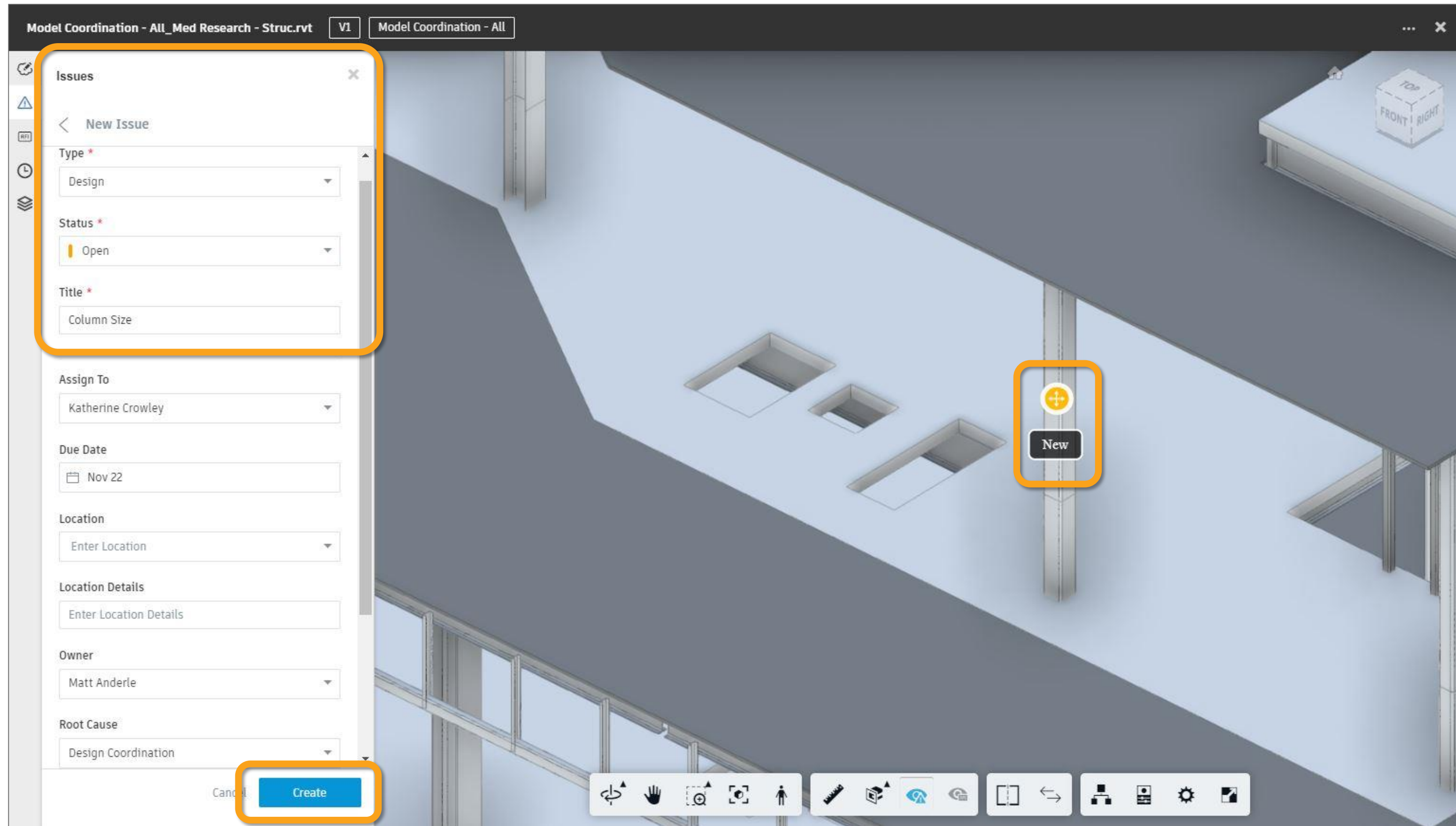
Issues: 3D Views



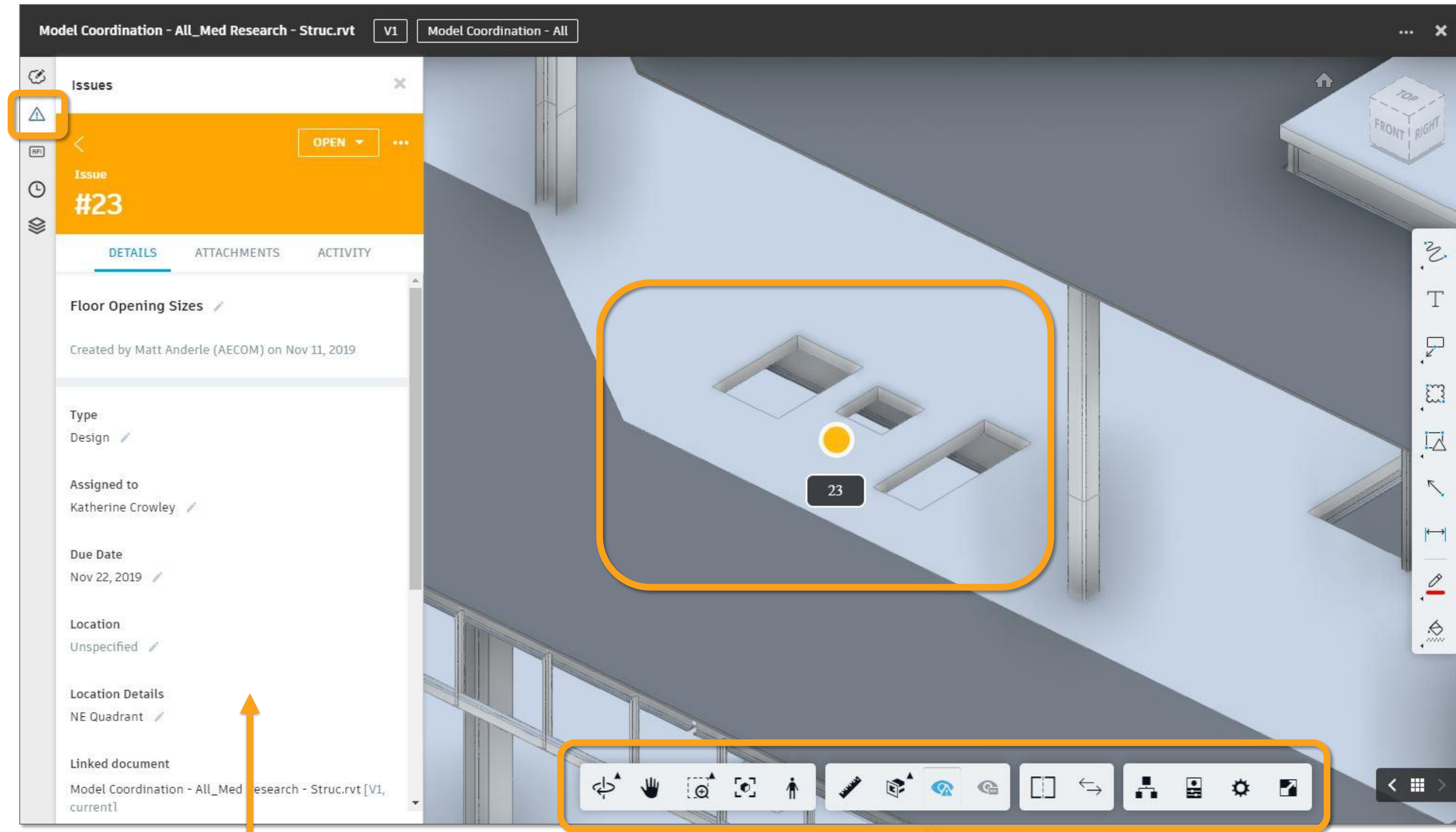
Issues: Create New



Issues: Create New



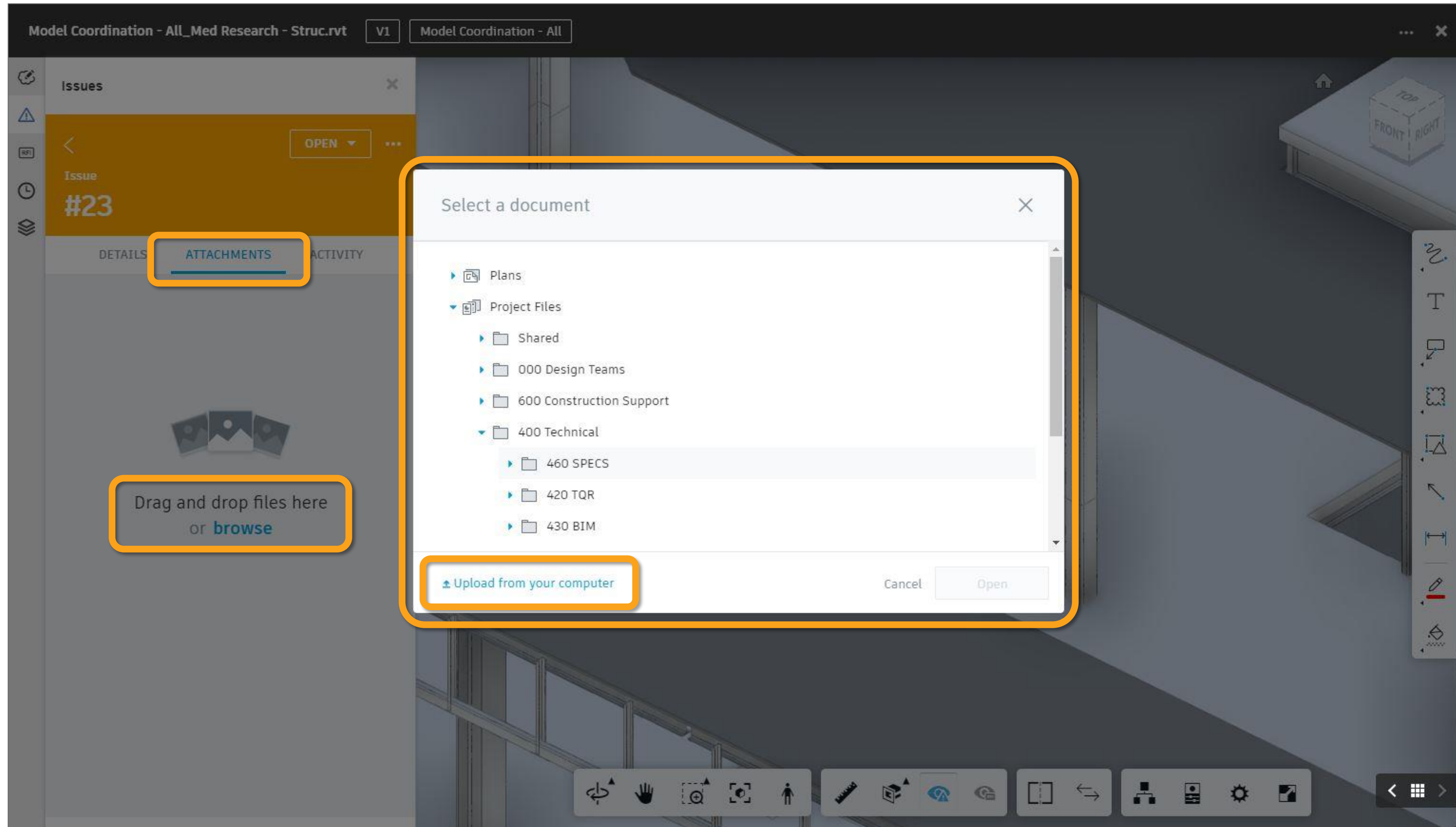
Issues: Viewing and Editing



Selected Issue Details

Control Tools

Issues: Add Attachments



Issues: Activity

The screenshot displays a software interface for managing issues in a 3D architectural model. The main window shows a 3D view of a building interior with a yellow circle and the number '23' indicating a specific issue location. The left sidebar is titled 'Issues' and contains a list of issues. The top issue, #23, is highlighted with an orange border and shows its activity log. The bottom toolbar contains various icons for navigation and editing.

Model Coordination - All_Med Research - Struc.rvt V1 Model Coordination - All

Issues

Issue #23 OPEN

DETAILS ATTACHMENTS ACTIVITY

Matt Anderle Nov 11, 9:18 PM

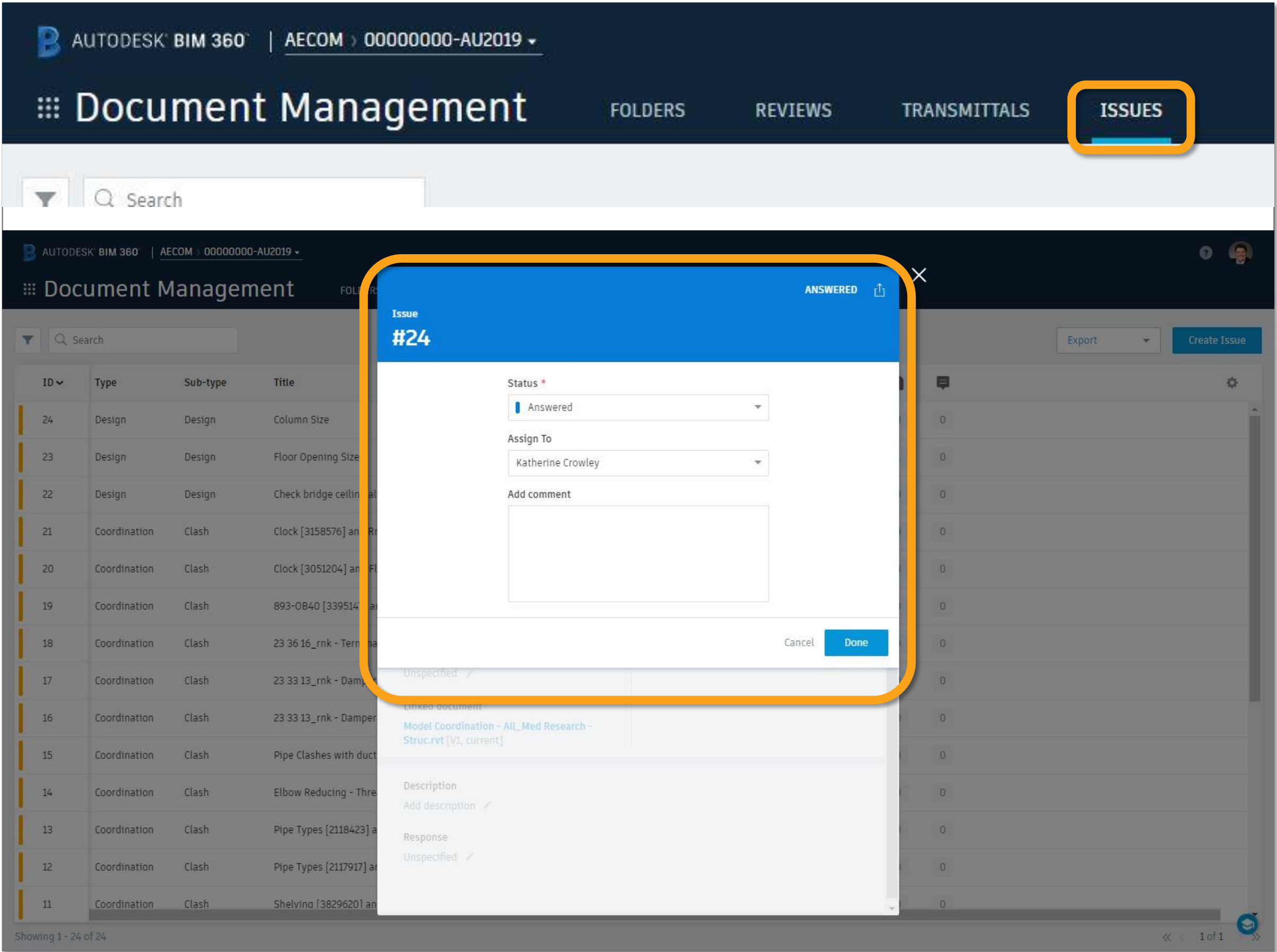
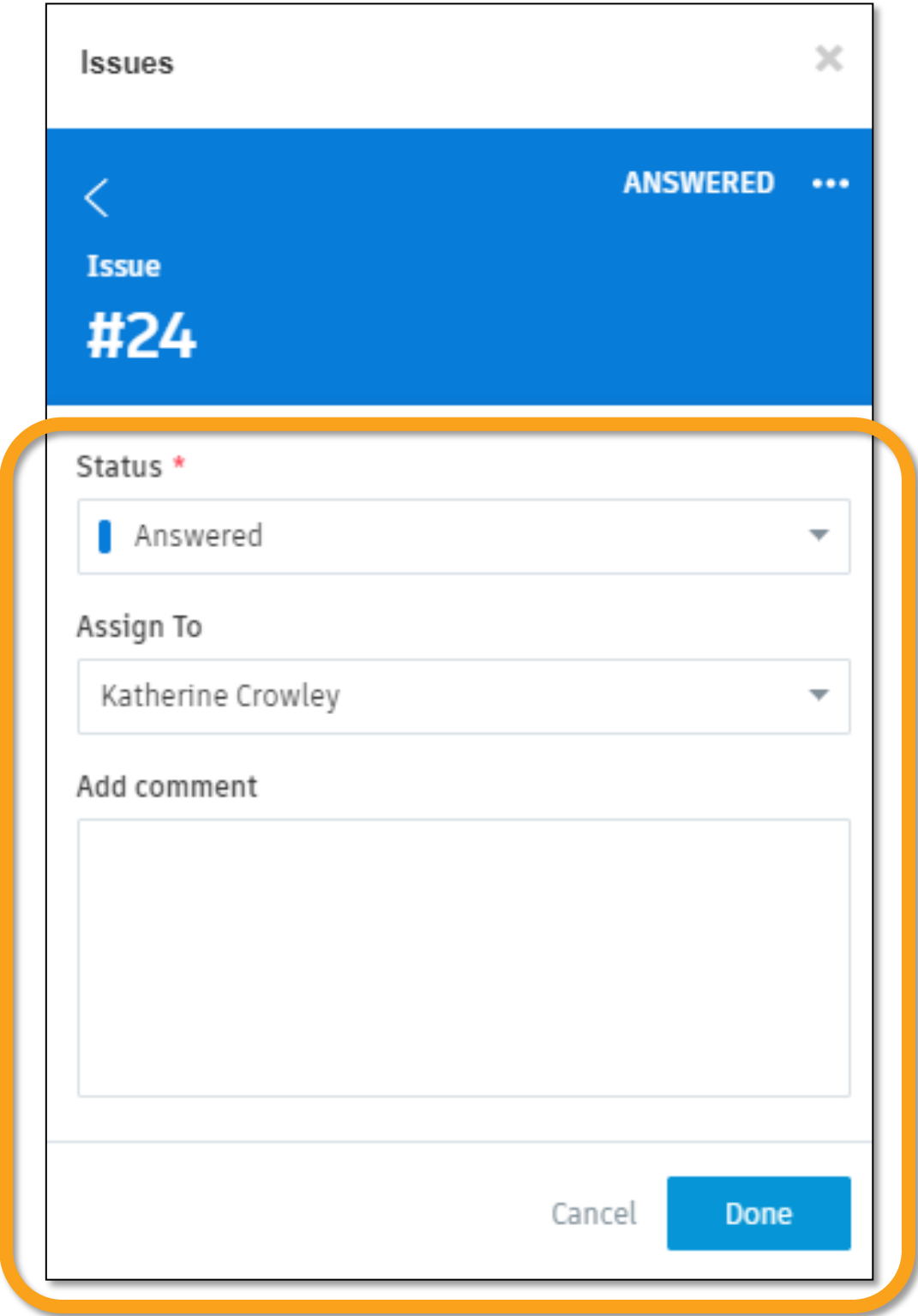
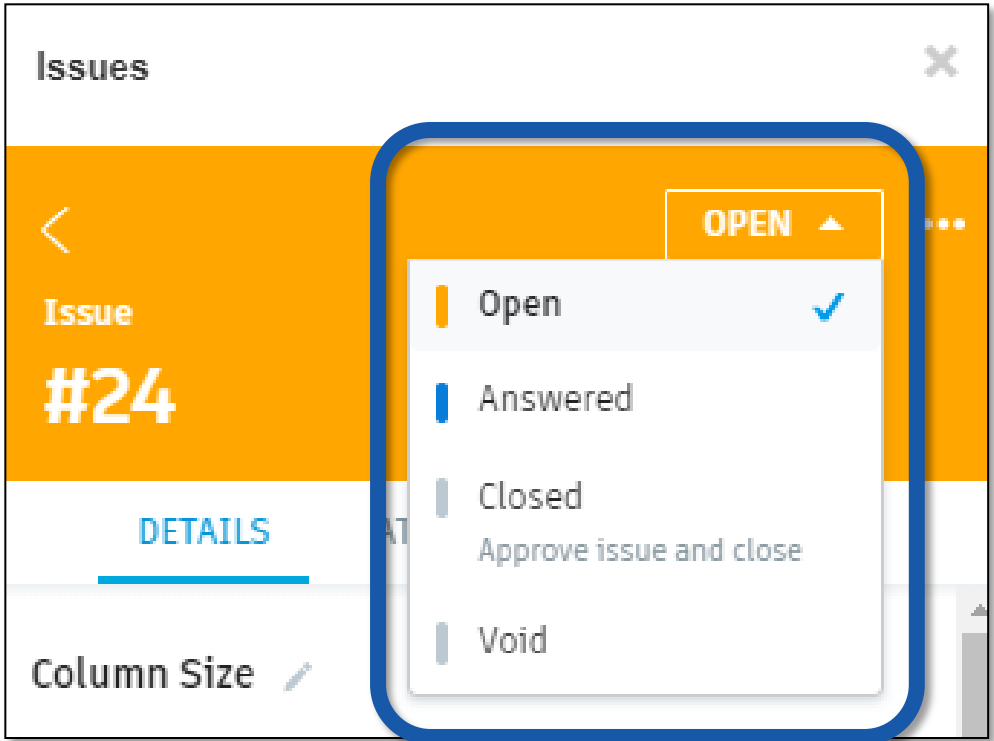
- Created an Issue
 - Status: OPEN
 - Type: Design
 - Sub-Type: Design
 - Title: Show
 - Assigned to: Katherine Crowley
 - Location Details: Show
 - Due Date: Nov 22, 2019
 - Issue Owner: Matt Anderle
 - Root Cause: Design Coordination

Matt Anderle Nov 11, 10:55 PM

- Uploaded a file
 - AU2019-Arch.pdf

Add a comment, use '@' to mention...

Issues: Responses



Issues: Custom Attributes

The screenshot displays the Autodesk BIM 360 Project Admin interface. The top navigation bar includes the Autodesk BIM 360 logo, the project name 'AECOM > 00000000-AU2019', and a user profile icon. The main navigation menu on the left lists 'Overview', 'Issues' (highlighted with an orange box), 'Locations', 'Document Management', 'Project Management', 'Design Collaboration', and 'Model Coordination'. The top right navigation bar contains 'MEMBERS', 'COMPANIES', 'SERVICES' (highlighted with an orange box), and 'PROFILE'. Below the 'SERVICES' tab, the 'Custom Attributes' sub-tab is selected and highlighted with an orange box. A search bar labeled 'Find an attribute' is present. A blue button labeled 'Create new attribute' is located on the right side of the interface. A table lists existing custom attributes:

Attribute Title	Type	Values	Description
Action Response	Dropdown	Concur, Non-Concur, F...	...

Issues: Custom Attributes

Create new attribute

Title *

Action Response

Type

Dropdown

Options *

Concur

Non-Concur

For Information Only

Check and Resolve

Add new option

☐ Create Another

Cancel Create

in MEMBERS COMPANIES SERVICES PROFILE

Permissions Types

Edit Design ▶ Design

Active/Inactive (Inherited)

Active

Status set

Basic status set

Custom issue attributes

No custom attributes

Add attribute

Cancel Save

Edit Design ▶ Design

Active/Inactive (Inherited)

Active

Status set

Basic status set

Custom issue attributes

Attr. title	Type	Values	Is required?	
Action Response	Dropdown	Concur, Non...	<input type="checkbox"/>	...

Add attribute

Cancel Save

Issues: Custom Attributes

Issue #23

OPEN

DETAILS

ATTACHMENTS

ACTIVITY

Linked document

Model Coordination - All_Med Research - Struc.rvt [V1, current]

Description

Add description

Response

Unspecified

Photos

Action Response

Select...

Concur

Non-Concur

For Information Only

Check and Resolve

Clear

AUTODESK BIM 360 | AECOM > 00000000-AU2019

Document Management

FOLDERSREVIEWSTRANSMITTALSISSUES

Search

Export

Create Issue

ID	Action Response	Type	Sub-type	Title	Location	Assigned to	Company	Due date	Linked document			
24	-	Design	Design	Column Size	-	Katherine Crowley	AECOM	Nov 22, 2019	Model Co...			
23	Check and Resolve	Design	Design	Floor Opening Sizes	-	Katherine Crowley	AECOM	Nov 22, 2019	Model Co...			
22	-	Design	Design	Check bridge ceiling ali...	-	Dennis McNeal	AECOM	Nov 22, 2019	Med Resi...			
21	-	Coordination	Clash	Clock [3158576] and Rn...	-	Matt Anderle	AECOM	-	Model Co...			
20	-	Coordination	Clash	Clock [3051204] and Fle...	-	Matt Anderle	AECOM	-	Model Co...			
19	-	Coordination	Clash	893-OB40 [3395147] an...	-	Matt Anderle	AECOM	-	Model Co...			
18	-	Coordination	Clash	23 36 16_rnk - Terminal...	-	Matt Anderle	AECOM	-	Model Co...			
17	-	Coordination	Clash	23 33 13_rnk - Damper ...	-	Matt Anderle	AECOM	-	Model Coor...h.rvt	0	0	
16	-	Coordination	Clash	23 33 13_rnk - Damper ...	-	Matt Anderle	AECOM	-	Model Coor...h.rvt	0	0	
15	-	Coordination	Clash	Pipe Clashes with duct	-	Matt Anderle	AECOM	-	Model Coor...e.rvt	0	0	
14	-	Coordination	Clash	Elbow Reducing - Threa...	-	Matt Anderle	AECOM	-	Model Coor...e.rvt	0	0	
13	-	Coordination	Clash	Pipe Types [2118423] a...	-	Matt Anderle	AECOM	-	Model Coor...e.rvt	0	0	

Showing 1 - 24 of 63 items

1 of 1

Search columns

Standard attributes

☐ Root cause

☐ Created by

☐ Created on

☐ Updated by

☐ Updated on

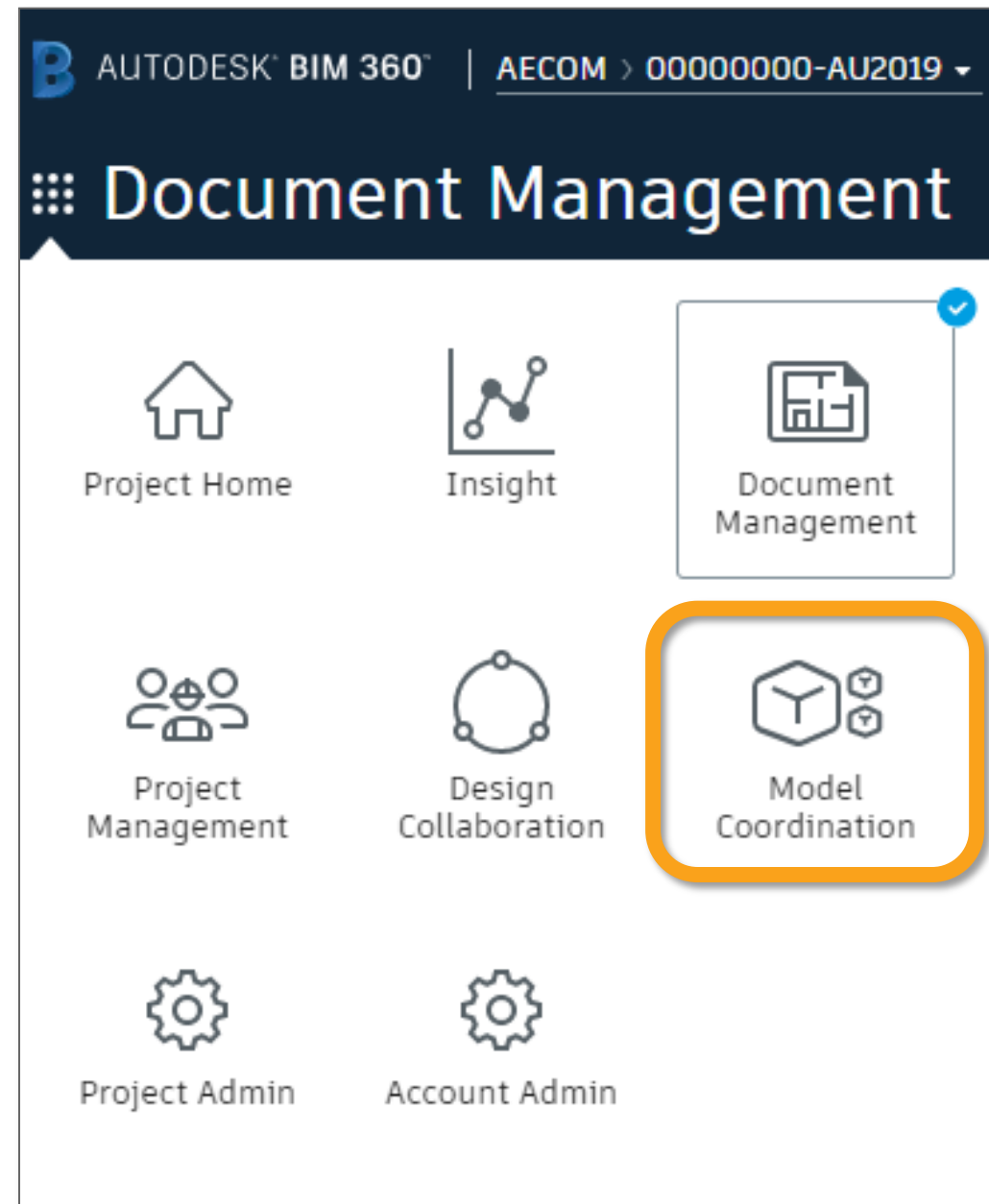
☒ Attachments

☒ Comments

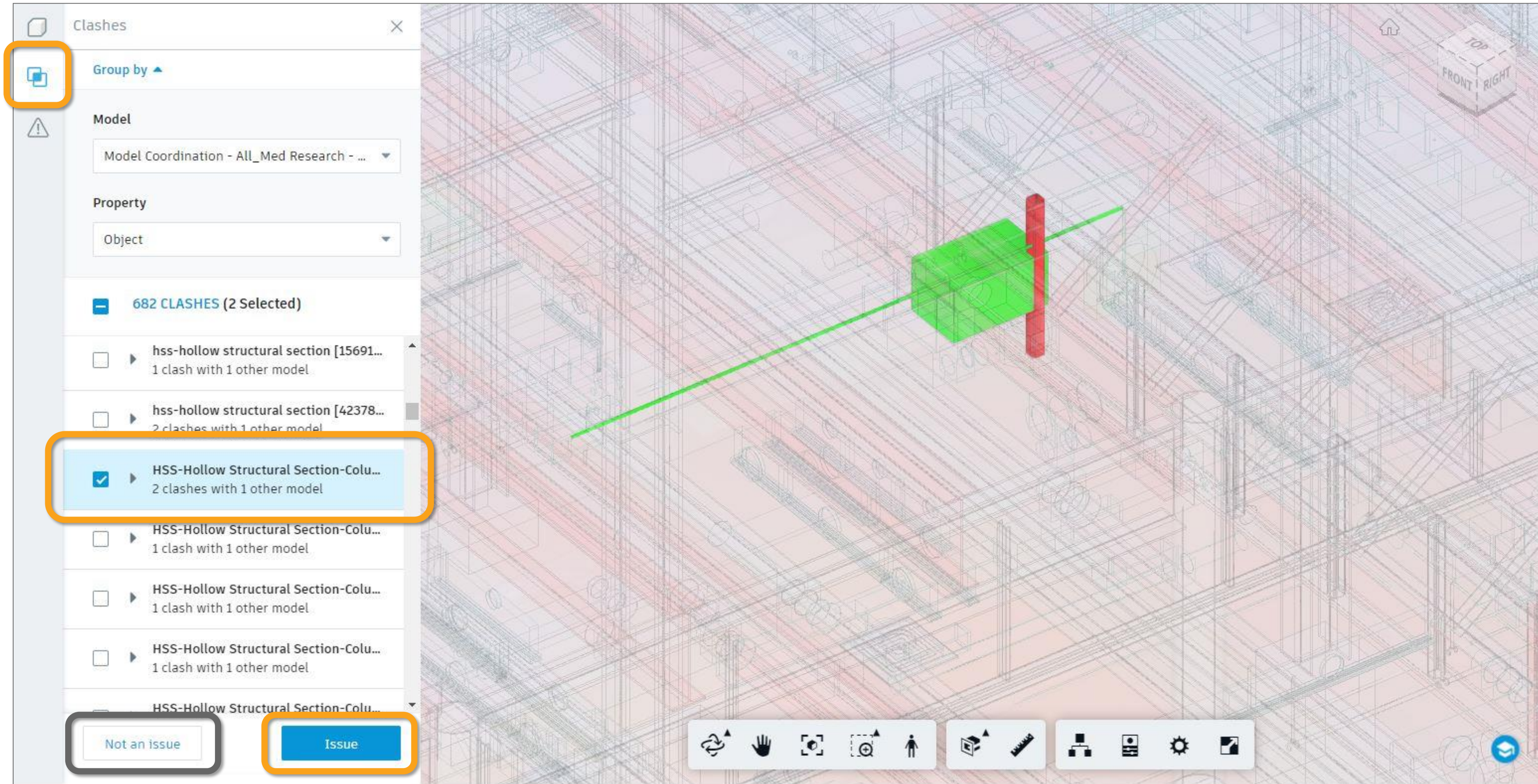
Custom attributes

☒ Action Response

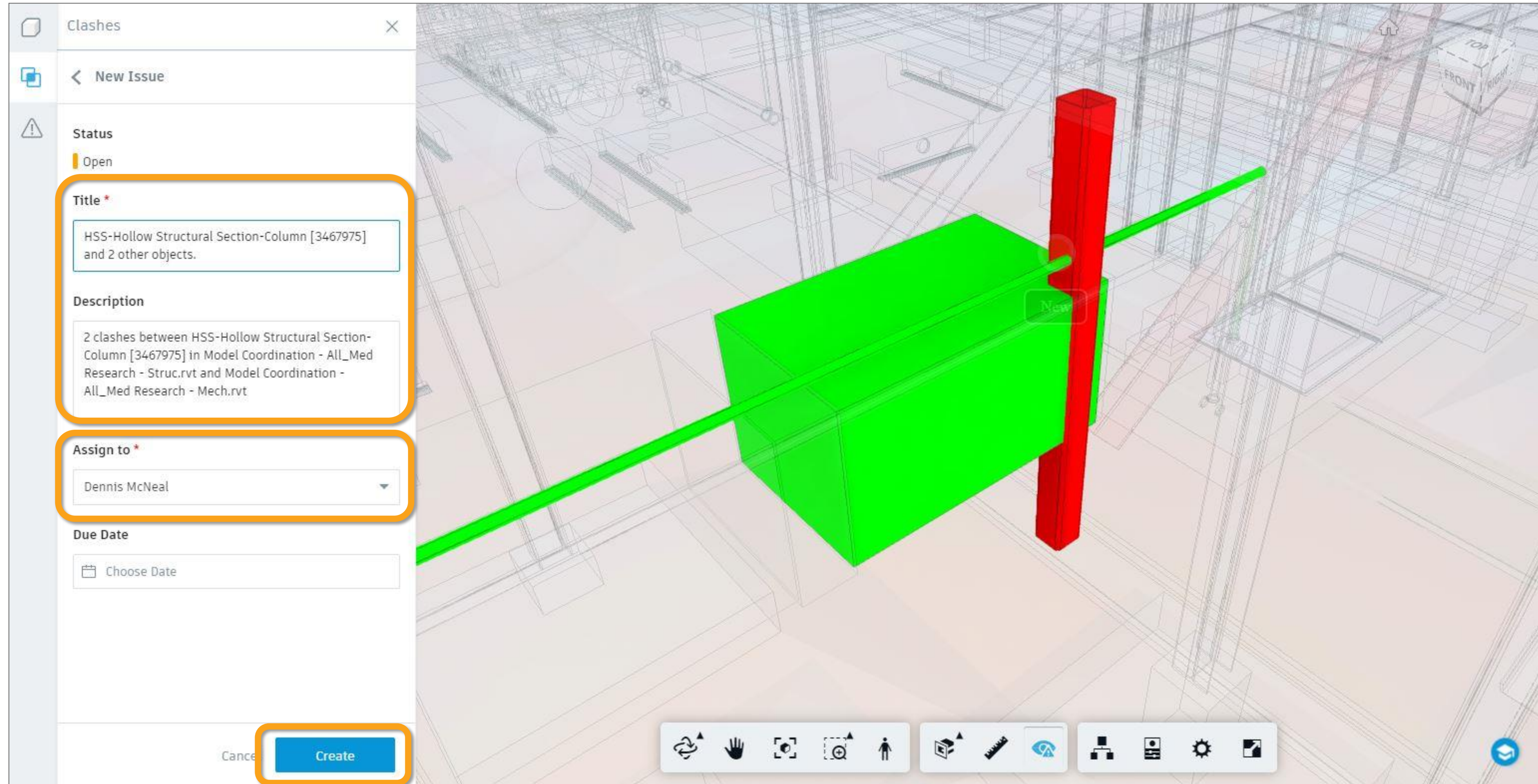
Issues: Clashes



Issues: Clashes



Issues: Clashes



Overcoming Challenges

- Key Identifiers for Change
- Championing Transformation



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Overcoming Challenges

Key Identifiers for Change

- Distributed project teams
- Project scope and complexity
- Immediacy of information exchange
- Client requirements

Pilot Projects

Often a pilot project or proof of concept to provide ROI metrics for your company will serve as a good indicator of future potential in cloud collaboration workflows.

Overcoming Challenges

- Key Identifiers for Change
- Championing Transformation



Overcoming Challenges

Championing Transformation

Teams are often reluctant to change well-established workflows that accomplish necessary tasks throughout the life cycle of a project. Champions of a 100% digital-review workflow should evaluate the following for success in implementing new tools and workflow:

- Team Members
- Availability for Training
- Project Schedule



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