FAB500002

Structural Design to Fabrication with AEC Collection—Part II

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Learning Objectives

- Revisit the Advance Steel, Revit, and Robot Structural Analysis workflows for seamless structural design to fabrication
- Learn how to share structural BIM data and fabrication drawings with the field teams
- Compare different versions of structural BIM data and fabrication drawings
- Learn how to create and manage site issues and notify design teams

Description

This class is the next level up from the “Structural Design to Fabrication: Revit and Advance Steel—Buddies for Life” class at Autodesk University 2020. Once you have designed, simulated, and generated the fabrication drawings, the next step is making them available to the field teams. On top of that, tracking the changes and ensuring the site teams have access to the latest documentation is one of the main challenges. This class will focus on the various office-to-field workflows you can use to share the latest and greatest structural BIM (Building Information Modeling) data and fabrication drawings with the extended teams in the field. You will learn about the Autodesk Docs workflows that come in the Architecture, Engineering & Construction Collection that you can use to share and compare different versions of structural BIM data and fabrication drawings for effective decision-making processes in the field. This class will also cover the process of creating and managing issues related to structural field workflows.

Deepak Maini

Deepak Maini (Sydney, Australia) is a qualified Mechanical Engineer with more than 22 years of experience working in the design industry. He is an Autodesk Certified Instructor and a Certified BIM 360 Consultant and has authored the "**Up and Running with Autodesk Navisworks**", "**Autodesk Navisworks for BIM/VDC Managers**", "**Up and Running with Autodesk Advance Steel**", and "**Up and Running with Bluebeam Revu**" series of books. He is currently working as the National Technical Manager - Named Accounts with Cadgroup Australia, an Autodesk Platinum Partner.

Deepak is a regular speaker at various conferences around the world and was awarded the "**Top Autodesk University Speaker**" two years in a row in **2018** and **2017** in the Instructional Demo category. He was also voted as the "**Top Speaker**" at the **Bluebeam XCON 2019** conference in Washington DC. Additionally, Deepak is also one of the "Top Rated Speakers" at various BILT conferences in ANZ and Asia.

Outside his full-time work, Deepak is a Guest Lecturer at the University of Technology Sydney (UTS) and the University of New South Wales (UNSW), and has also been invited to speak at the University of Salford, UK, and the Virginia Tech University, USA.

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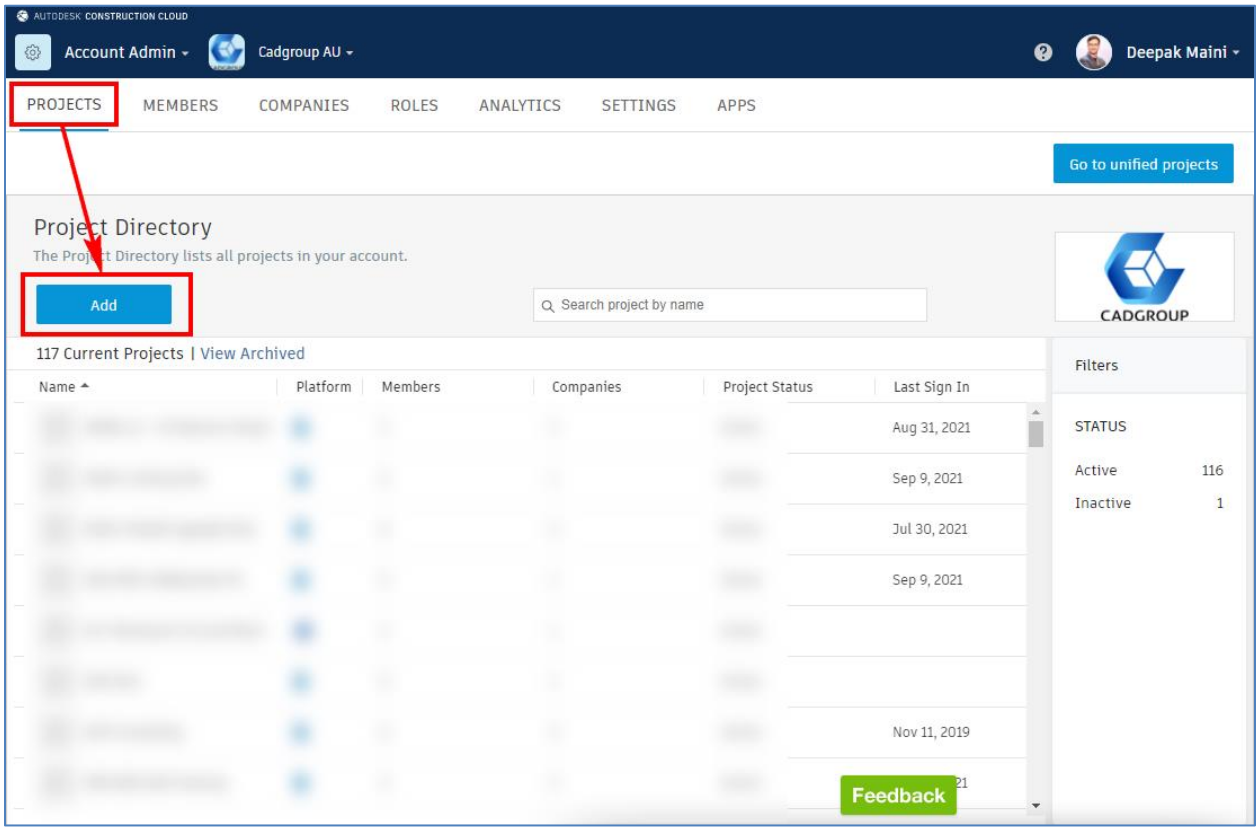
Adding a New Autodesk Docs Project on the BIM 360 Platform

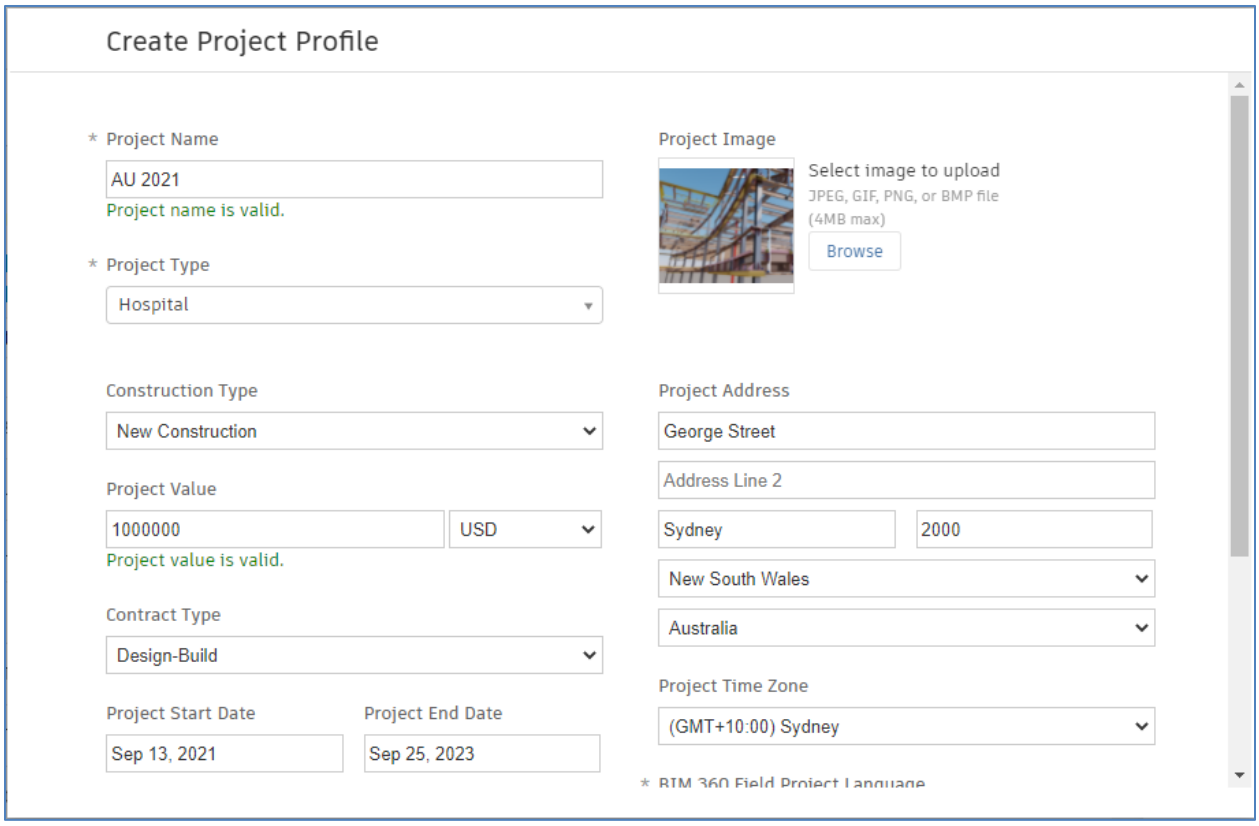
The following is the procedure for adding a new Autodesk Docs project on the BIM 360 Platform:

1. Log on to Autodesk BIM 360 using the Account Admin credentials.

2. From the **Account Admin > PROJECTS** page, click **Add**, as shown below; the **Create Project Profile** window is displayed.



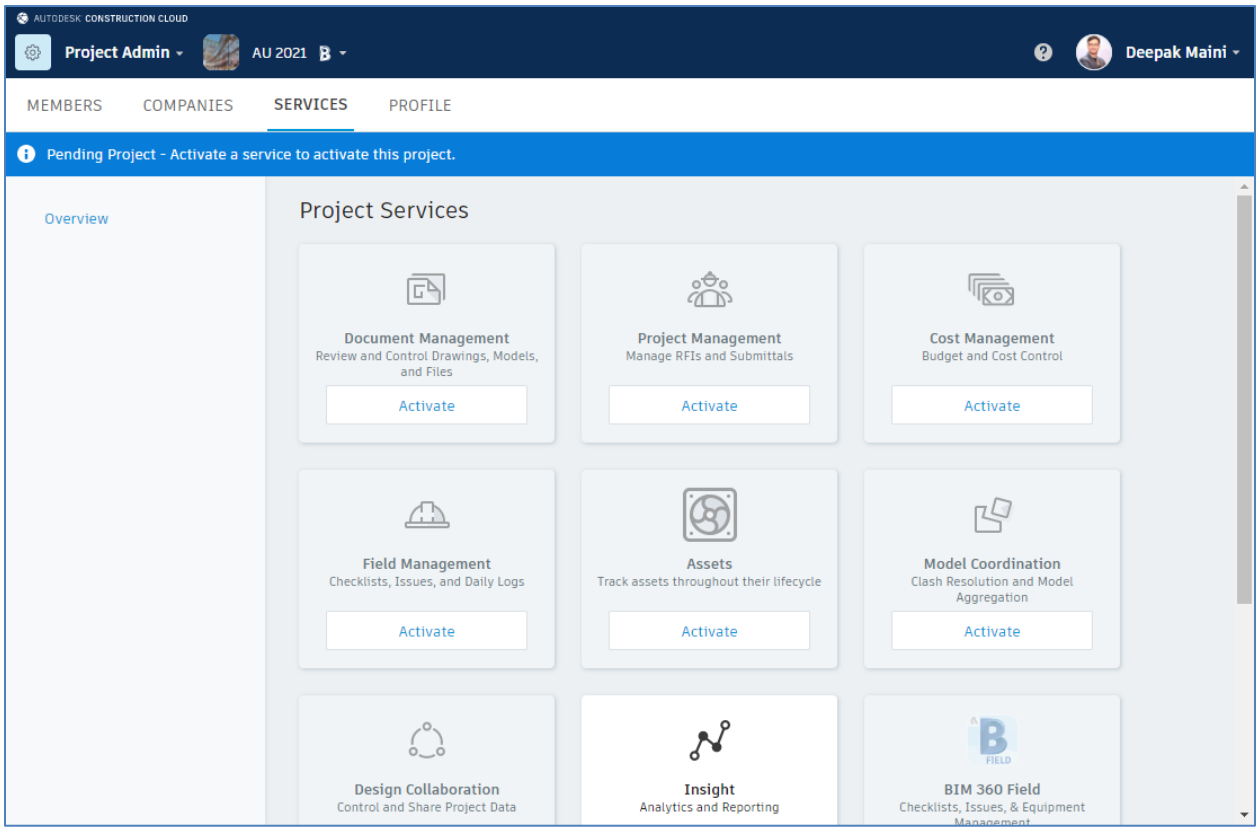
3. Enter all the project-related information in this window, as shown below. Note that the fields with * are mandatory.



__Tip__: If you enter the project address, the __Project Home__ page will show the weather on the day at the project location.

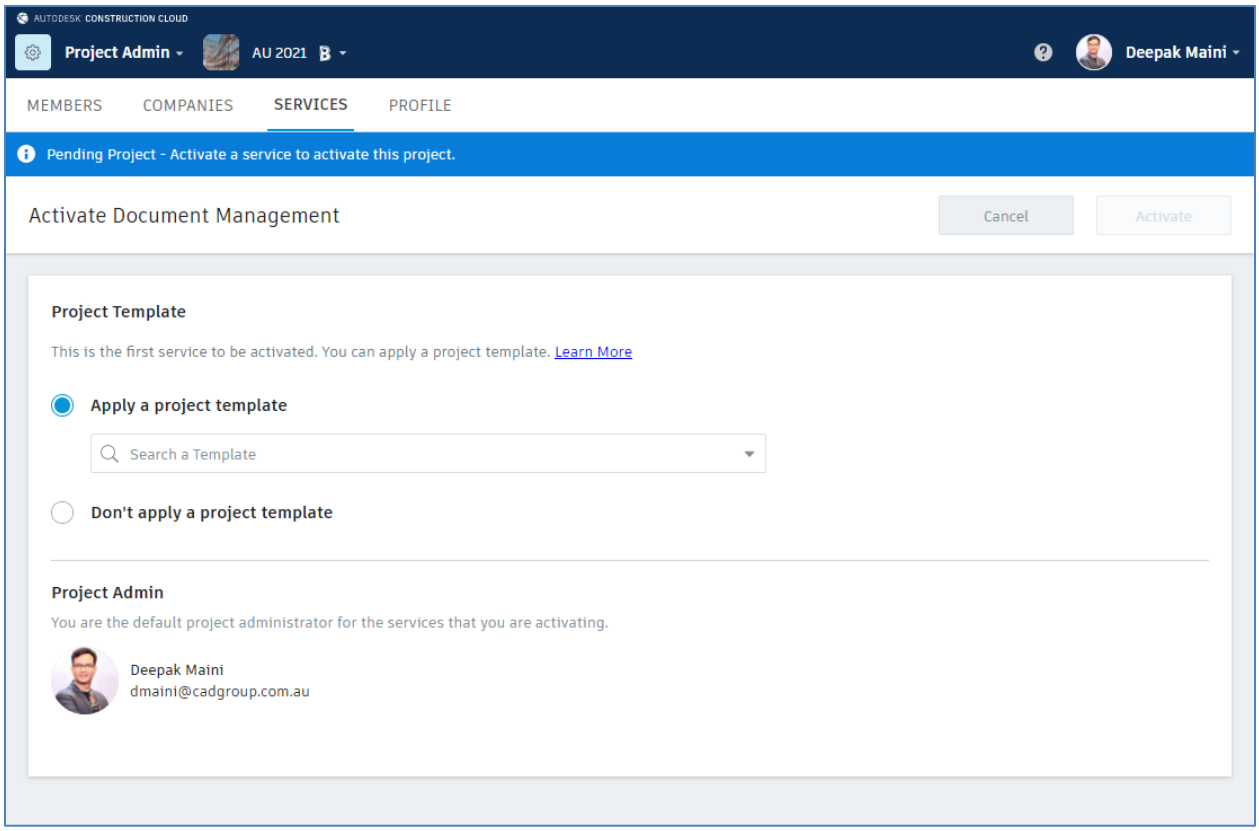
4. Scroll down in the **Create Project Profile** window and click **Save & continue**; the project profile is saved and you are taken to the **SERVICES** page, as shown below, where you can activate the services for this project.

It is extremely important to note that the first service that needs to be activated on any Autodesk Docs project is the __Document Management__ service.



5. Click on **Activate** below the **Document Management** service; the **Activate Document Management** window is displayed.

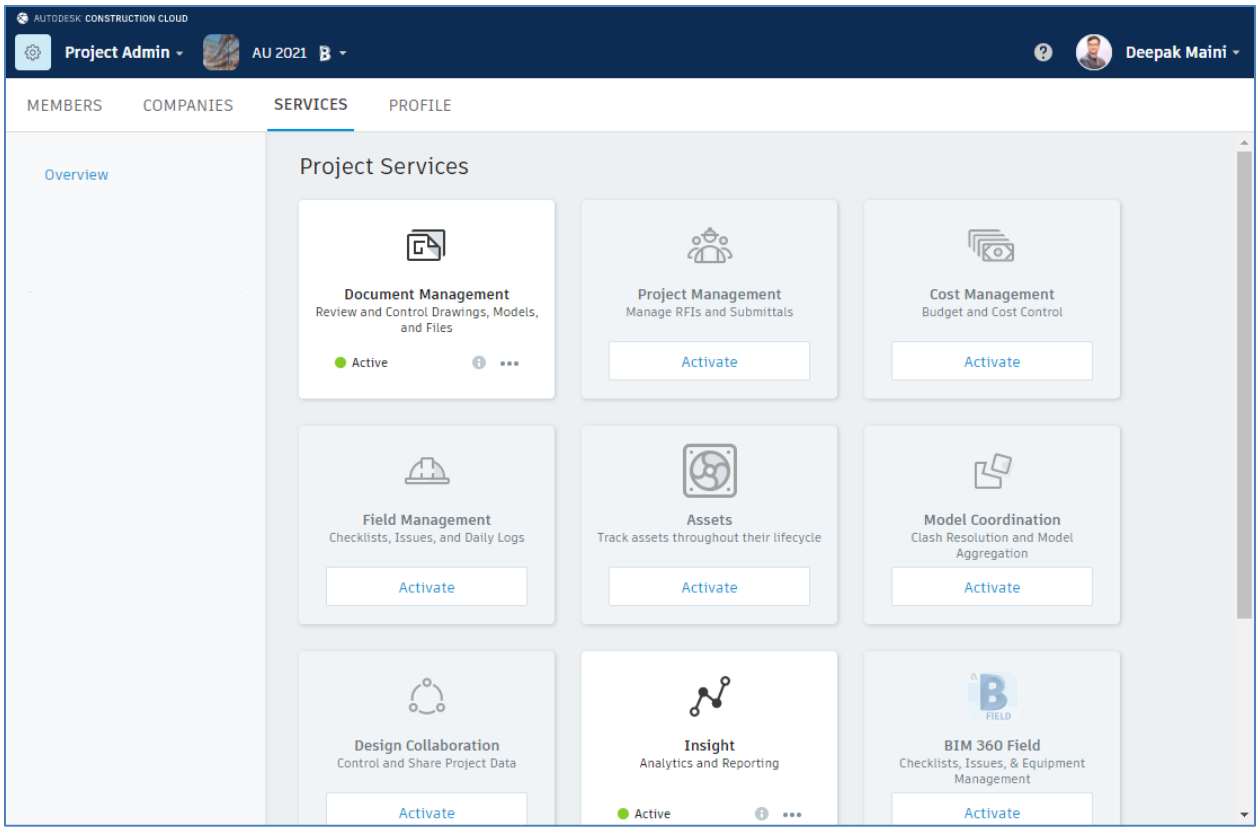
Tip: *By default, the option to select a project template is selected while activating the* ***Document Management*** *service. If you use a project template, all the services from that project are automatically activated. However, if you don't have a project template, you can select the option to activate without a template and then manually activate the services.*



6. Select the **Don’t apply a project template** option.

7. From the top right, click **Activate**; the **Activate without Template?** window is displayed prompting you to confirm that you want to activate the project without a template.

8. Click **Activate without a template** option; the process of activating the **Document Management** service starts. Also, the **Insight** service is automatically activated, as shown in the figure below.



Tip: *The user activating the* ***Document Management*** *service is automatically added as the Project Admin. In the following section, you will learn how to add additional members to the project.*

Adding Members to the Project

As mentioned earlier, the user activating the **Document Management** service is automatically added as the project admin. The following is the procedure for adding additional admins and non-admin members to the project.

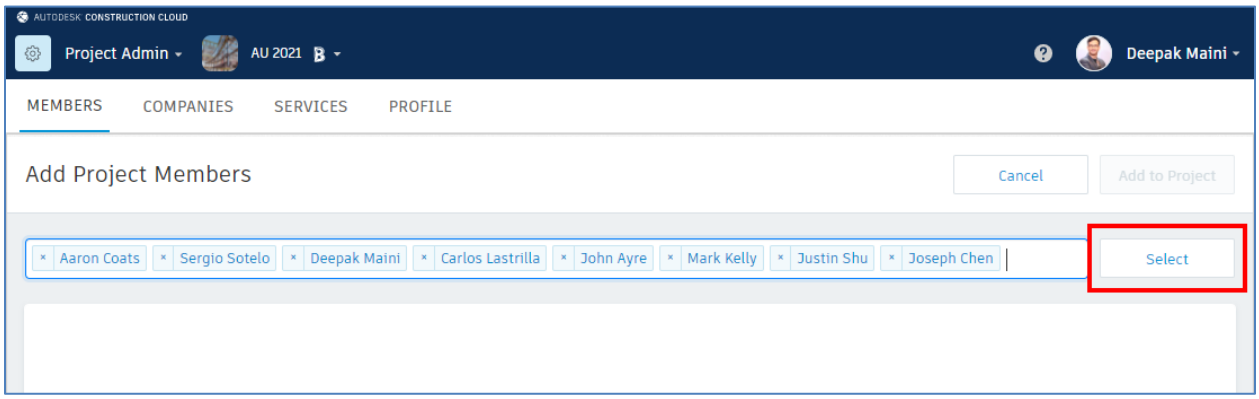
1. From the **Project Admin > MEMBERS** page, click **Add**; the **Add Project Members** page is displayed.

Tip: While adding the email addresses of the members, if they already exist in the account, you can select them from the list. However, if they do not exist in the account, you can type their complete email address and then press ENTER to add them.

2. Add the emails of the member you want to add to the project.

Tip: If you want to add members using the Script I showed in the class, please feel free to write to me at deepak@deepakmaini.com.

3. Once all the members are listed, click **Select**, as shown below:

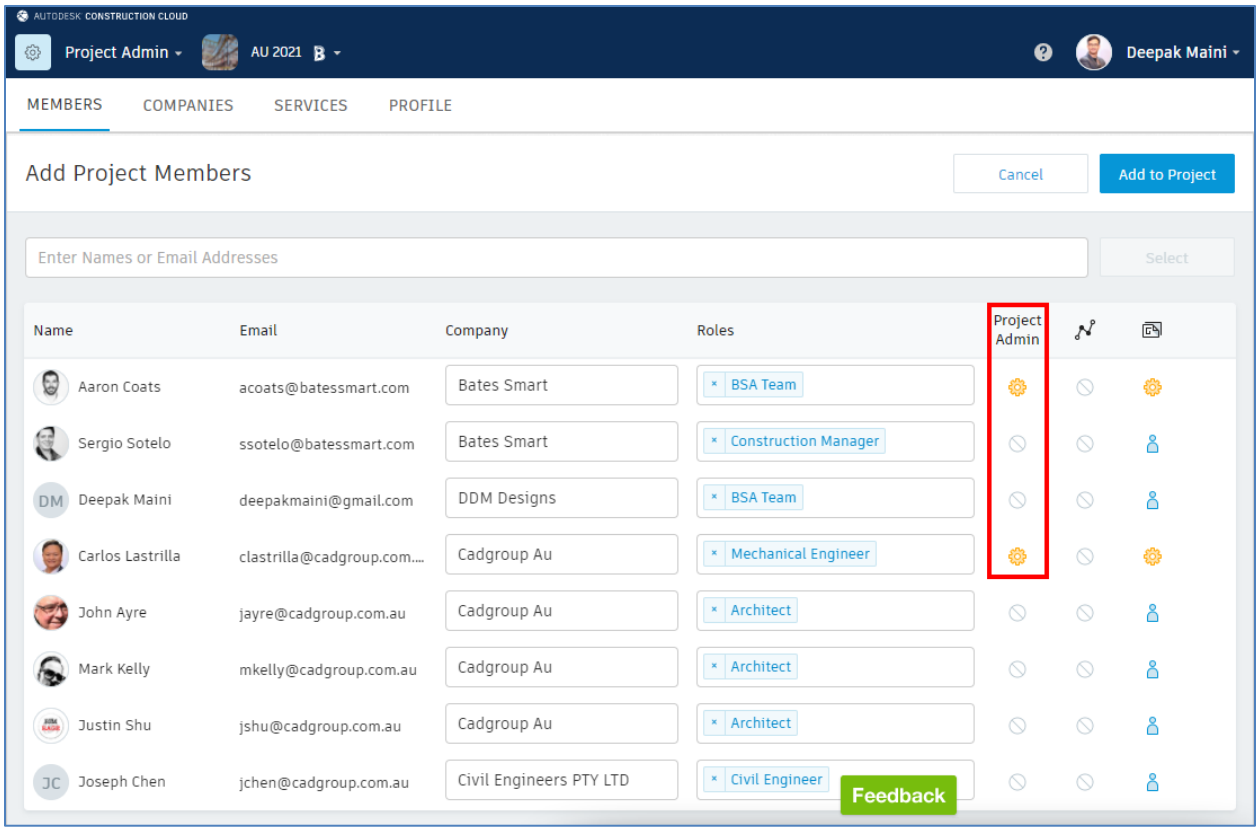


Once the members are added to the project, they will have their default companies assigned.

4. If required, change the companies of the user and then assign their role.

*Note: Most of the roles that have **Manager** in their name will automatically make the user project admin. You need to make sure you click on the Orange color **Project Admin** cogwheel to remove the project admin rights from the user.*

5. Click on the **Document Management** icon to give all the users access to this service, as shown in the figure below. Also, click on the **Project Admin** icon of any user who needs to be given admin rights, as shown in the figure below.



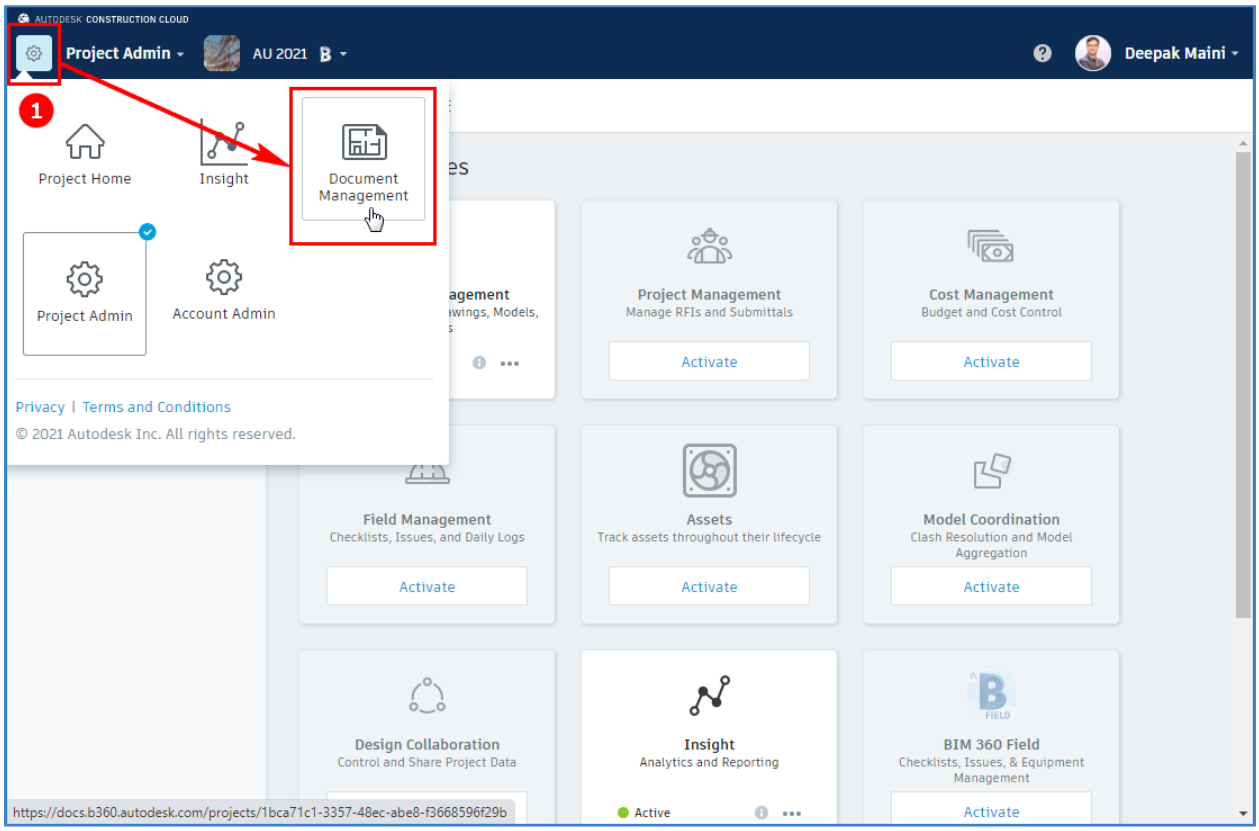
6. On the top right, click **Add to Project**; the selected members are added to the project and an email notification is sent to them.

   On doing so, these members are displayed on the **MEMBERS** page of the project. Also, the **Filters** area on the right side of the page shows the members by service.

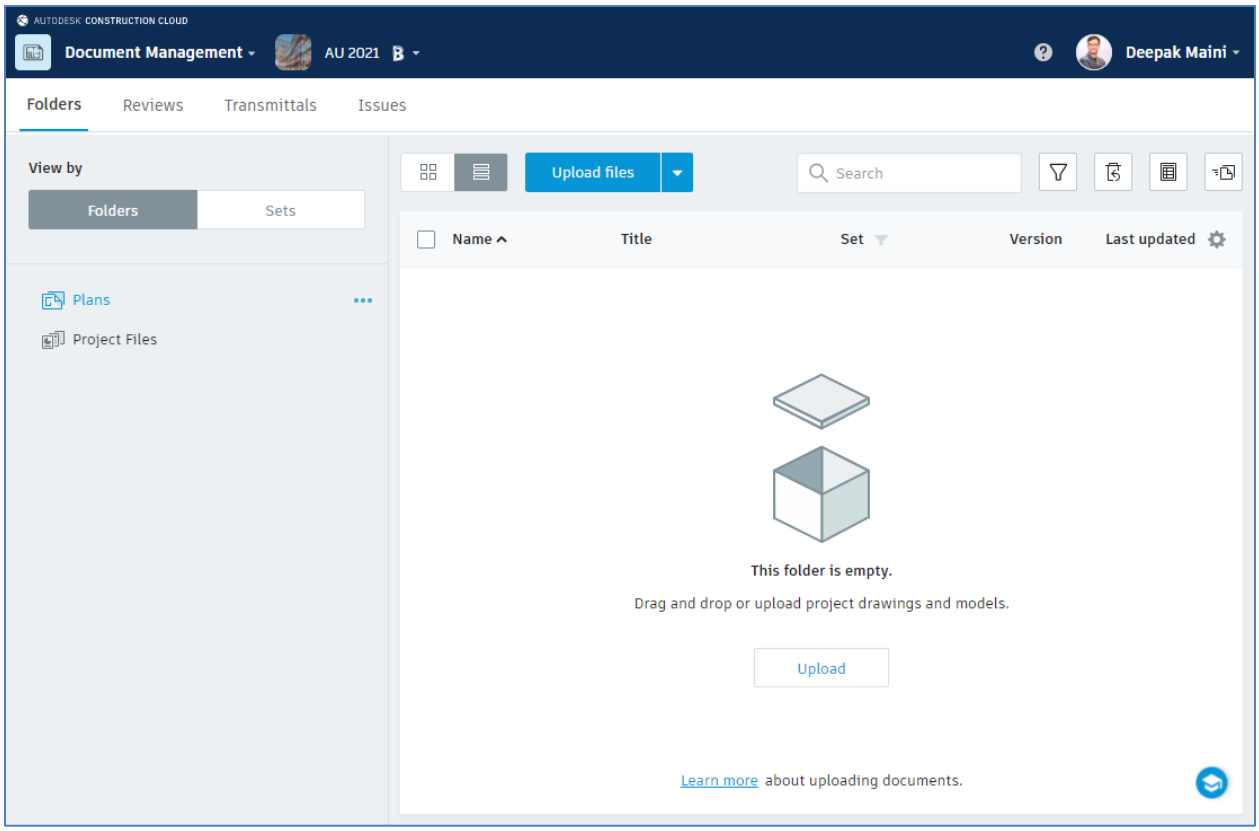
Reviewing the Document Management Interface

Before you start adding folders in Document Management, it is important for you to understand its interface, mainly the **Plans** and **Project Files** areas.

1. Click on the **Module Selector**, labeled as **1** in the figure below, and then click **Document Management**.



On doing so, the Document Management interface is activated with the **Plans** area active, as shown in the figure below.



Before you proceed any further, it is important to understand these two areas and the workflows for these areas.

Plans Area

As the name suggests, this area is used to manage the latest set of construction plans. Because the plans are in 2D format, if you upload a Revit model in this area, all its published 2D views and sheets, along with the 3D views, are automatically extracted and made available for review and markup. During this extraction process, the Titleblock information, such as sheet number, sheet title, and so on from the Revit sheets is also extracted. If you upload multi-sheet PDF files in this area, each sheet of the PDF file is extracted and made available for review and markup. However, the Titleblock information from the PDF sheets is extracted manually by running Optical Character Recognition (OCR) during the upload process. This area supports viewing of Revit, AutoCAD, DWF, PDF, and IFC file formats.

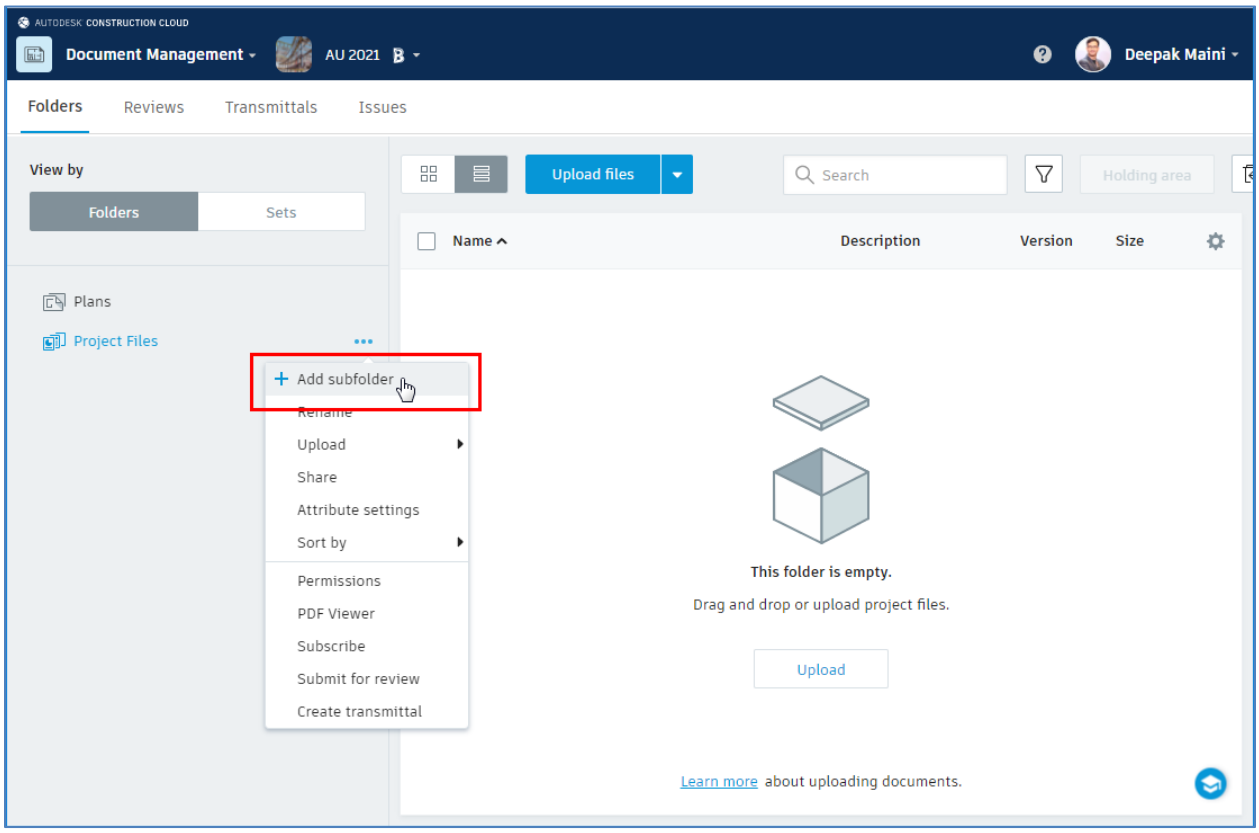
Project Files Area

This area is used to upload federated project models, such as Navisworks NWD files, project specs, spreadsheets, photos, and so on. In addition to the file formats supported by the **Plans** area, this area supports viewing of NWD, NWC, 3DS Max, Sketchup, and so on. It is important to note that if you upload a Revit or PDF file in this area, their sheets are not extracted.

Creating Folders in Document Management

The following is the procedure for creating folders in the Document Management interface.

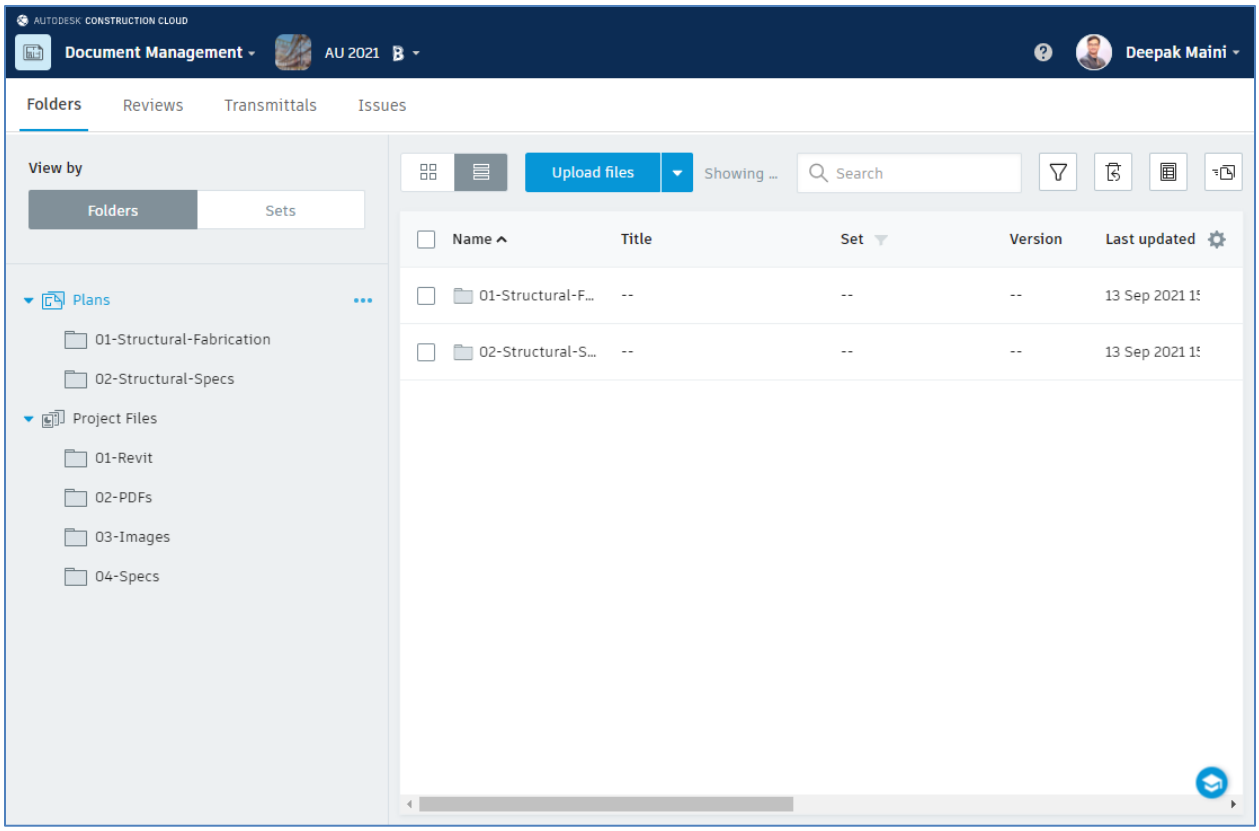
1. Click [**…**] on the right of **Plan** or **Project Files** and select **Add subfolder** from the shortcut menu, as shown below; a new folder is added.



2. Rename the folder to the required name.

3. Repeat these steps to add additional folders in the **Plans** or **Project** Files area. In the figure below, there are folders created for various disciplines to upload their respective Revit files. Additionally, there is a folder created for PDF files.

__Tip__: As mentioned earlier, if you upload a multi-sheet PDF file in the __Plans__ area, each sheet of that PDF file will be extracted and displayed as individual sheets in the folder.


AUTODESK CONSTRUCTION CLOUD
Document Management
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Folders
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Issues
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Folders
Sets
Plans
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Project Files
01-Revit
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03-Images
04-Specs
Upload files
Showing ...
Search
Name
Title
Set
Version
Last updated
01-Structural-F...
02-Structural-S...
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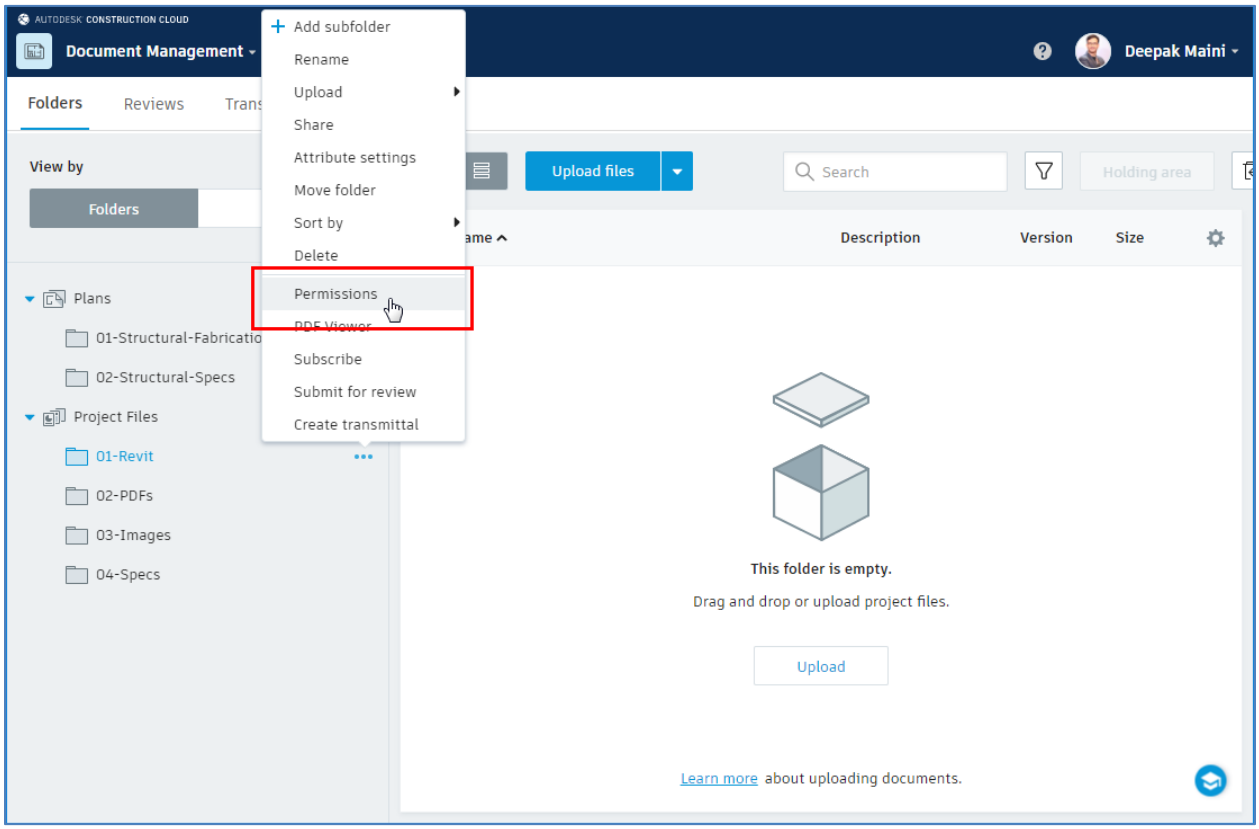
Setting Up Folder Permissions

The folder permissions in the Document Management interface work Top-down. What this means is that if you set the permission of the top-level folder for a user, all the sub-folders will be applied the same level of permissions for that user. Therefore, it is important that you specify the right level of permission for the user to the right folder. It is strongly recommended that you go bottom-up on the folders while setting user permissions to avoid users getting permissions to the wrong folders. The following is the procedure for setting folder permissions.

1. Click [**…**] on the right of the folder that you need to provide the permission for and select **Permissions** from the shortcut menu, as shown below; the **Permissions** window is displayed on the right side.



Before you assign permissions to the members, it is important for you to understand various permission levels. The following are the level of permissions that can be assigned for the folders.

View Only: This permission level allows the user to view the documents in the folder and add markups and issues to them. However, the user cannot upload any data in that folder.

***Tip**: If you upload your WIP Revit model as Cloud Model into one of these folders, then it is recommended to give **View Only** permission to external team members. This will ensure they cannot modify the Revit model.*

View + Download: This permission level allows the user to view and download the documents in the folder and add markups and issues to them. However, the user cannot upload any data in that folder.

Upload Only: This permission allows the member to upload the data in the folder, but not view or access any data from the folder. This type of permission can be handy when you create folders for users to submit their bids to the project or upload their expenses.

View + Download + Upload: This permission level allows the user to view, download, and upload the documents in the folder and add markups and issues to them.

View + Download + Upload + Edit: This permission level allows the users to edit the documents in the folder, along with the **View + Download + Upload** permissions.

Folder Control: This permission level provides all the permissions of the **View + Download + Upload + Edit** level, along with the permission to manage members and their permissions to this folder. Additionally, the user with this permission level can create title blocks for documents in that folder.

2. In the list at the top in the **Permissions** area, enter a company name, a role, the name of the user, or their email address.

***Tip**: If you want to add members using the Script I showed in the class, please feel free to write to me at deepak@deepakmaini.com.*

Note: If you enter the email address of the member who is not already added to the project, they will be invited via an email once you provide them the permission to the folder.

3. Select the permission level for the added user, role, or company.

4. Click **Add**.

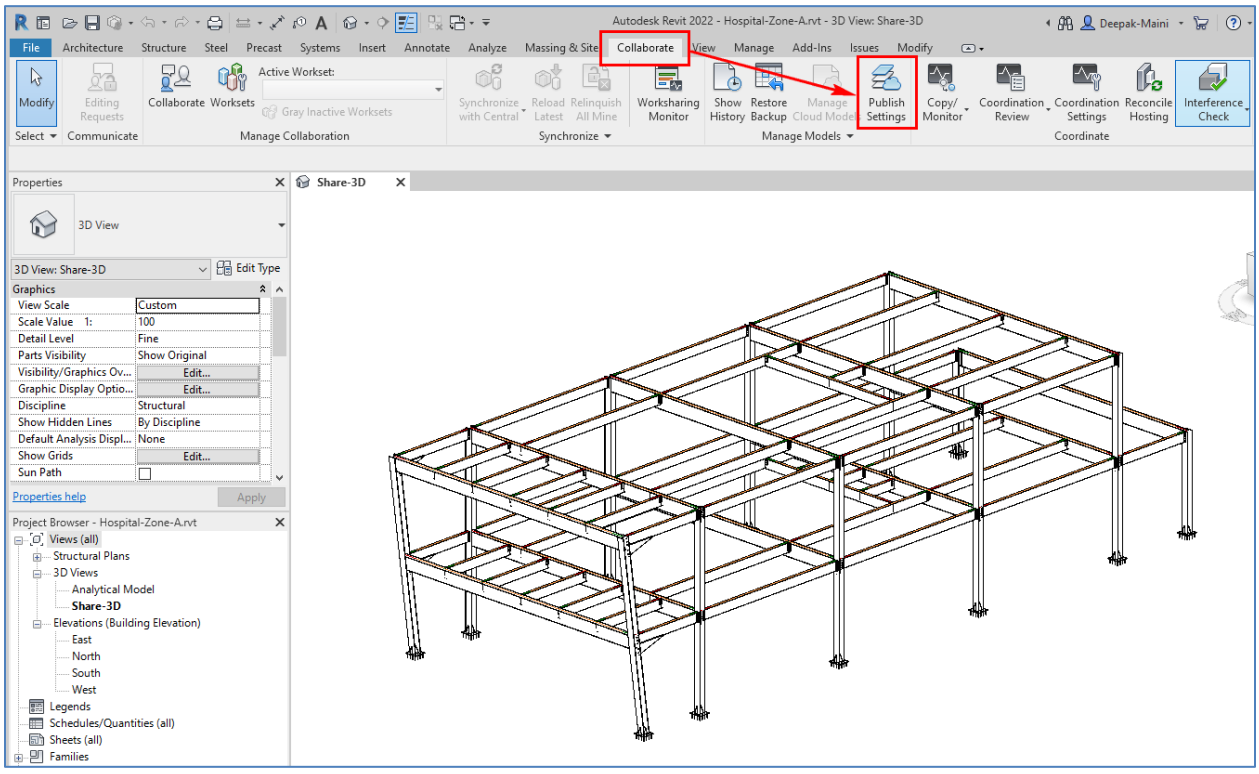
5. Repeat the process for the rest of the folders in the **Plans** and **Project Files** areas.

Creating Publish Sets in Revit Files

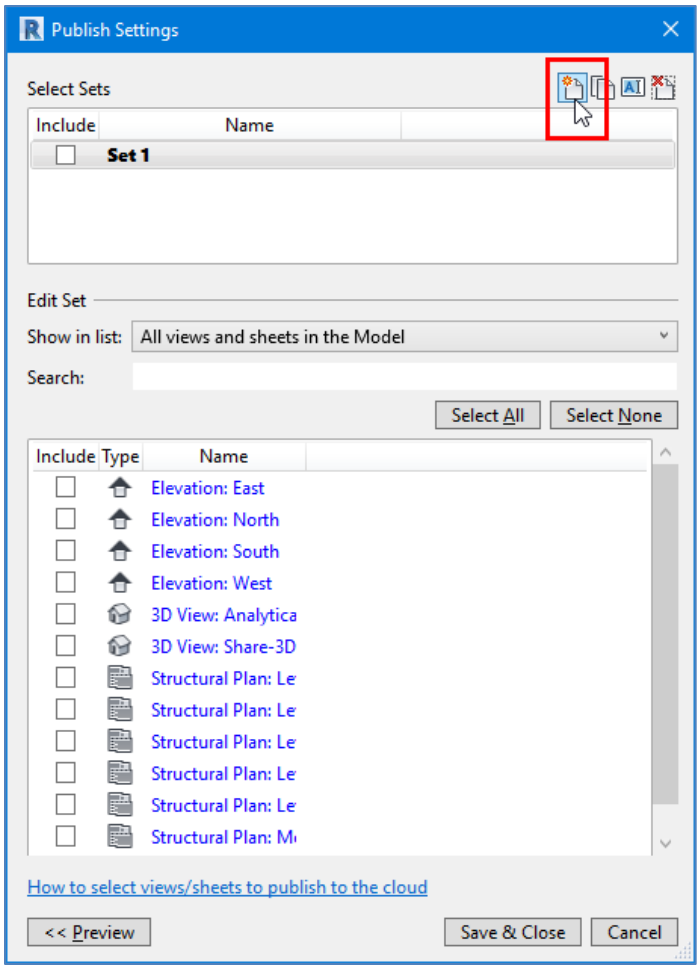
Generally, Revit files contain a large number of views and sheets. However, you may not want to extract all those sheets and views in the Document Management interface for viewing and marking up. Therefore, you can create publish sets with only the required views and sheets before you upload the files. The following is the procedure for doing this.

1. Open the Revit file.

2. From the **Collaborate** tab, click **Publish Settings**, as shown below; the **Publish Settings** dialog box is displayed.



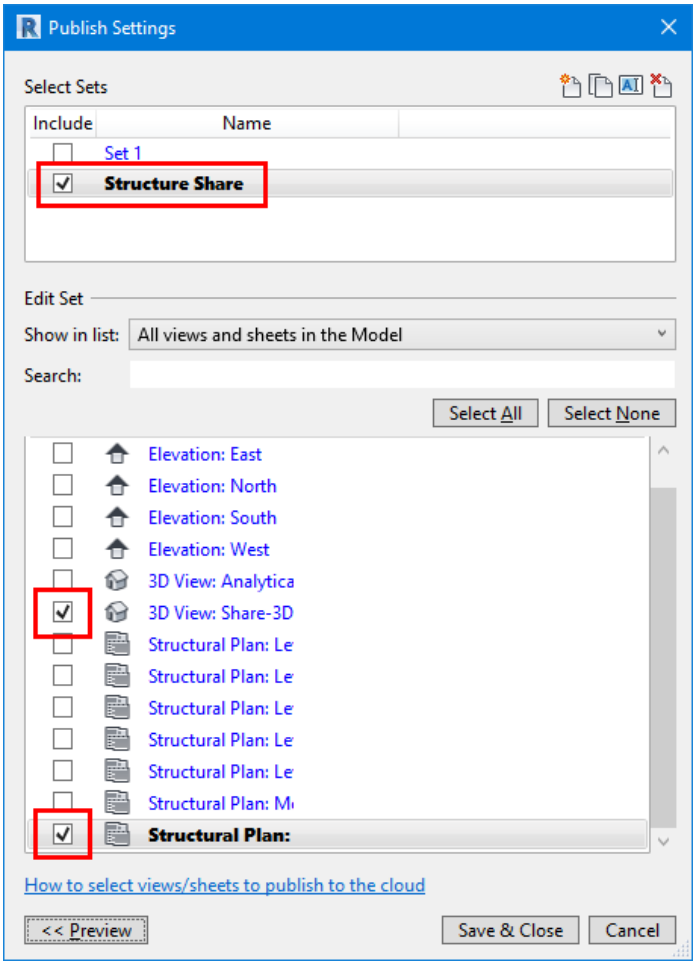
3. In the **Publish Settings** dialog box, click **New Set**, as shown below; the **New Set** dialog box is displayed.



4. Enter the name of the set in the **New Set** dialog box and then click **OK**; you are returned to the **Publish Settings** dialog box and the new set is highlighted.

5. Select the check box on the left of the new set.

6. Select the sheets and views that you want to be made available in Document Management. The following figure shows the 3D view and sheets selected.



7. Click **Save & Close** in the **Publish Settings** dialog box.

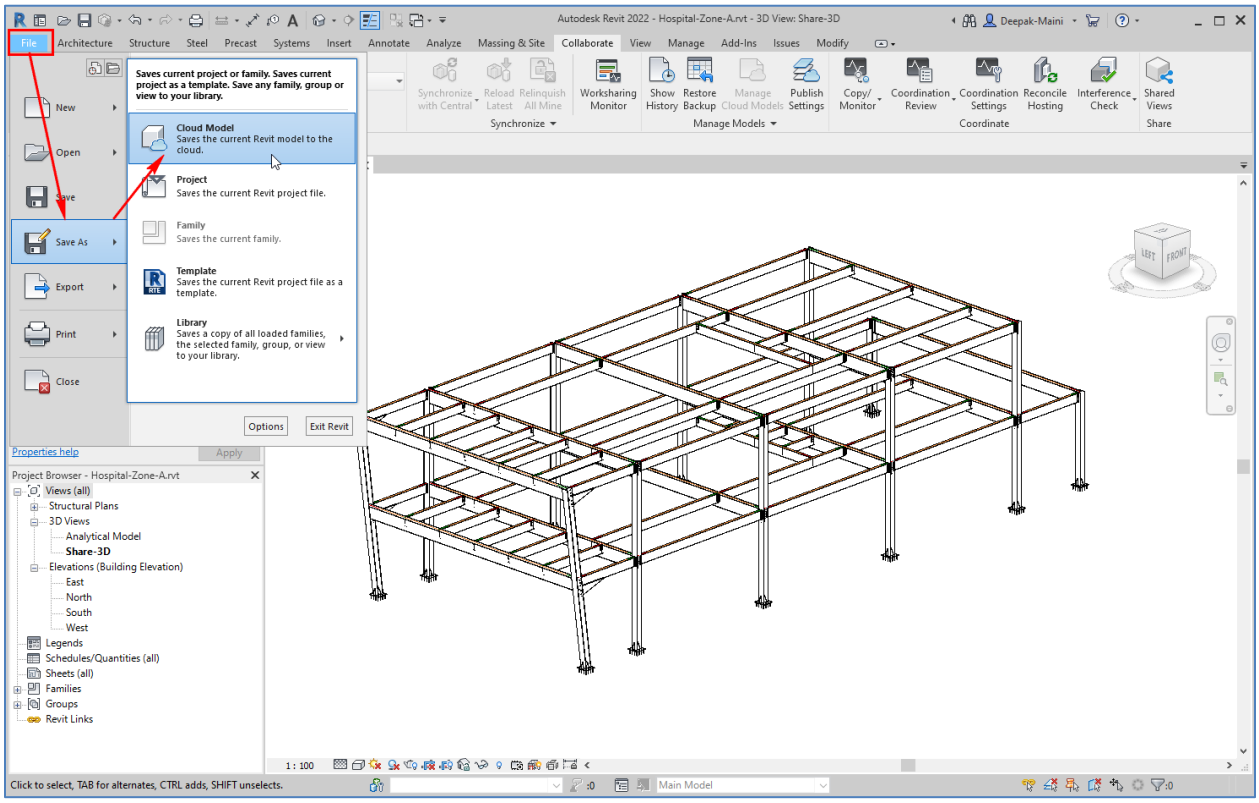
   This file is now ready to be uploaded on the Autodesk Docs project.

8. Save the Revit file.

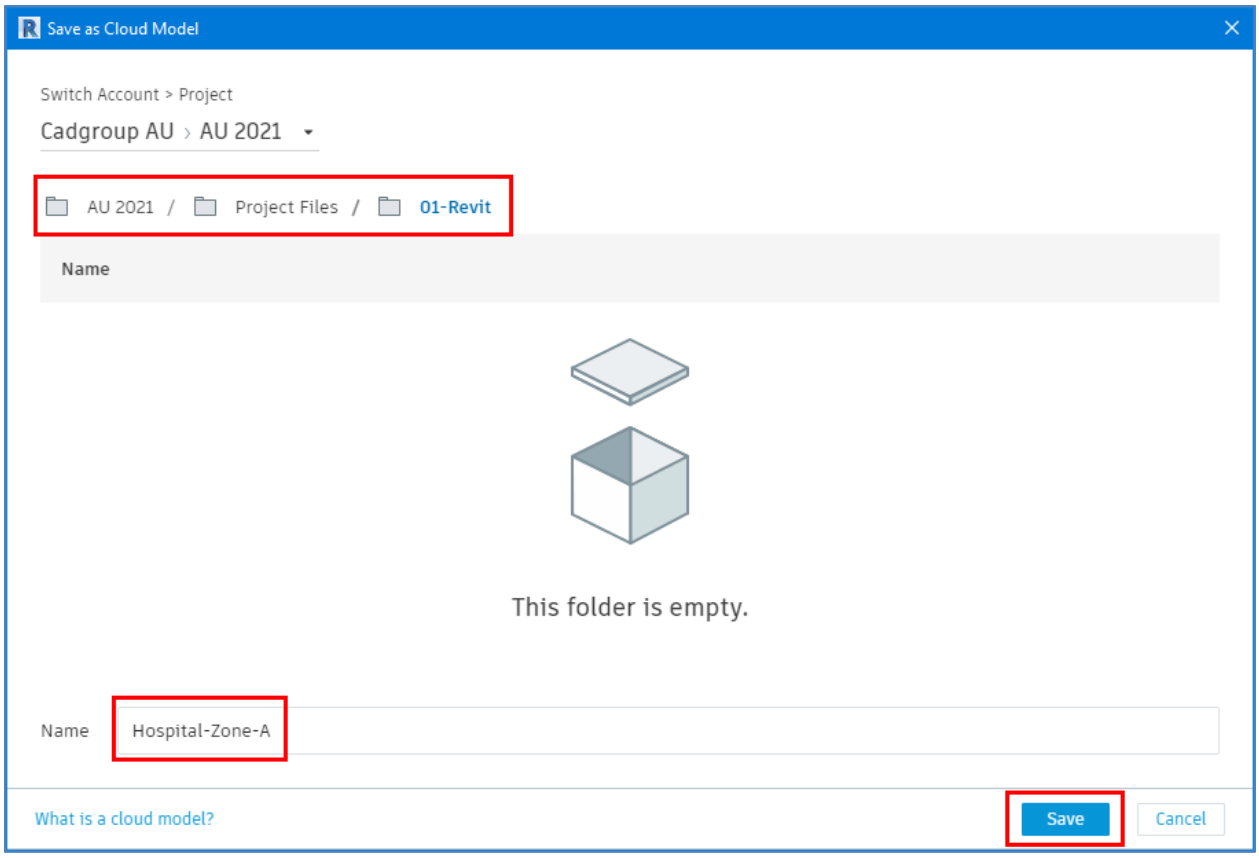
Saving Revit File as a Cloud Model

The “Cloud Model” feature allows you to host the Revit model on the Autodesk Docs project. This allows easy access to the model from anywhere. However, it is important to note that this feature is not the same as the “Cloud Workshared Model” feature. With Cloud Model, only one person can access the model at any given point of time as there is no worksharing enabled with this feature. The following is the procedure for saving the Revit model as a Cloud Model.

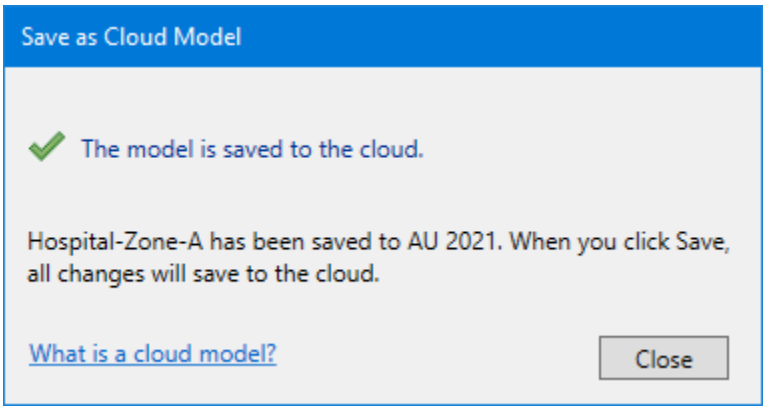
1. In Revit, click **File > Save As > Cloud Model**, as shown in the figure below:



2. In the **Save as Cloud Model** window, browse to your project and the folder in which you want to save the model, and then click **Save**, as shown in the figure below; the process of saving the model as a Cloud Model starts.



Once the model is saved, the confirmation is displayed, as shown below.

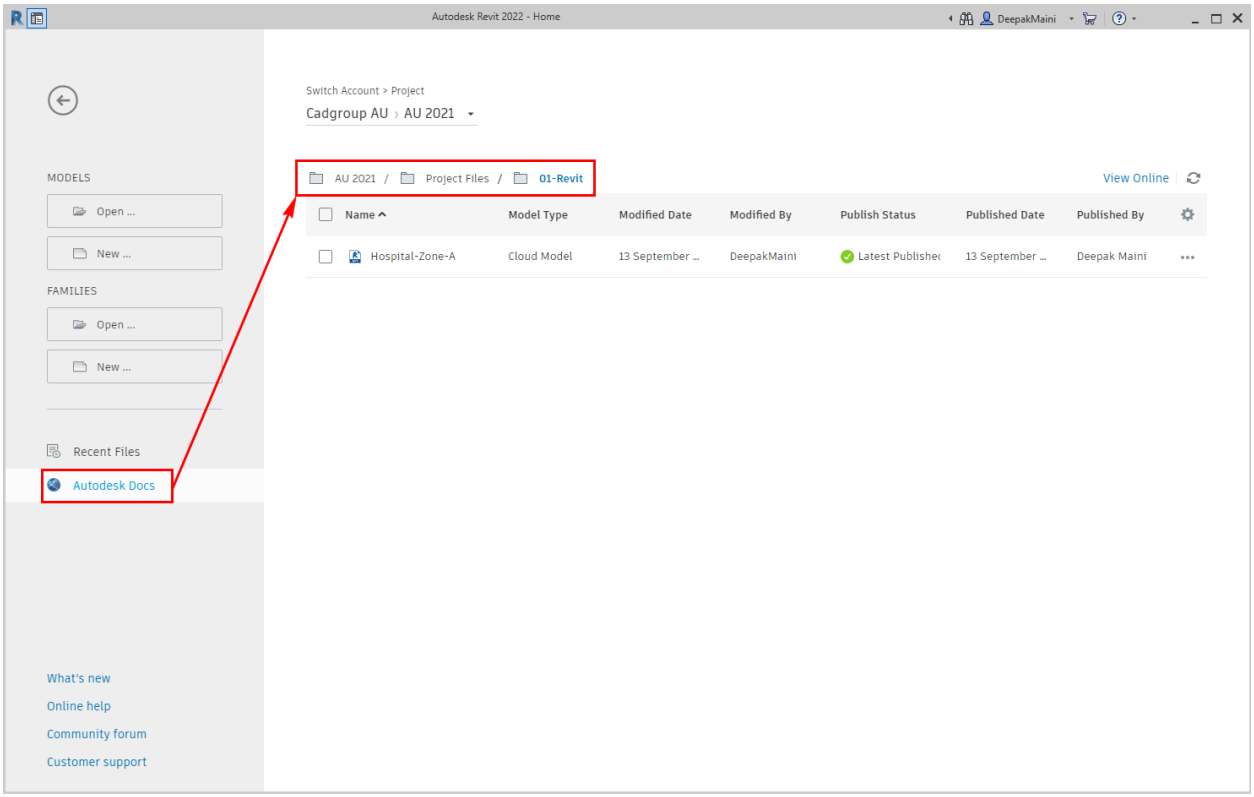


3. Click **Close** in the **Save as Cloud Model** dialog box.

Opening a Revit Cloud Model

The following is the procedure for opening a Revit Cloud model.

1. From the Revit Home screen, click **Autodesk Docs** and then browse to your project > folder where the Revit Cloud Model was saved, as shown below:



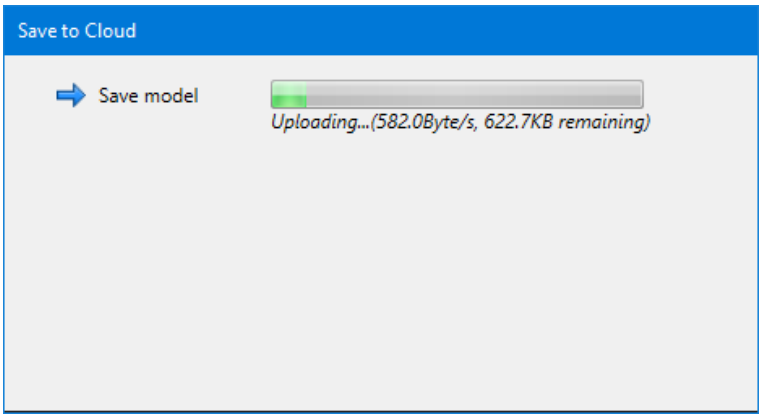
2. Click on the Revit model name to open from the cloud.

Saving Changes to the Revit Cloud Model and Publishing the Latest Version

Once you open a Revit cloud model and make changes to it, you need to save those changes to the cloud model. After saving the changes, you need to publish the latest version to ensure the cloud version in the Document Management interface is also updated. The following is the procedure for opening a Revit Cloud model.

1. Make the required changes in the Revit Cloud model.

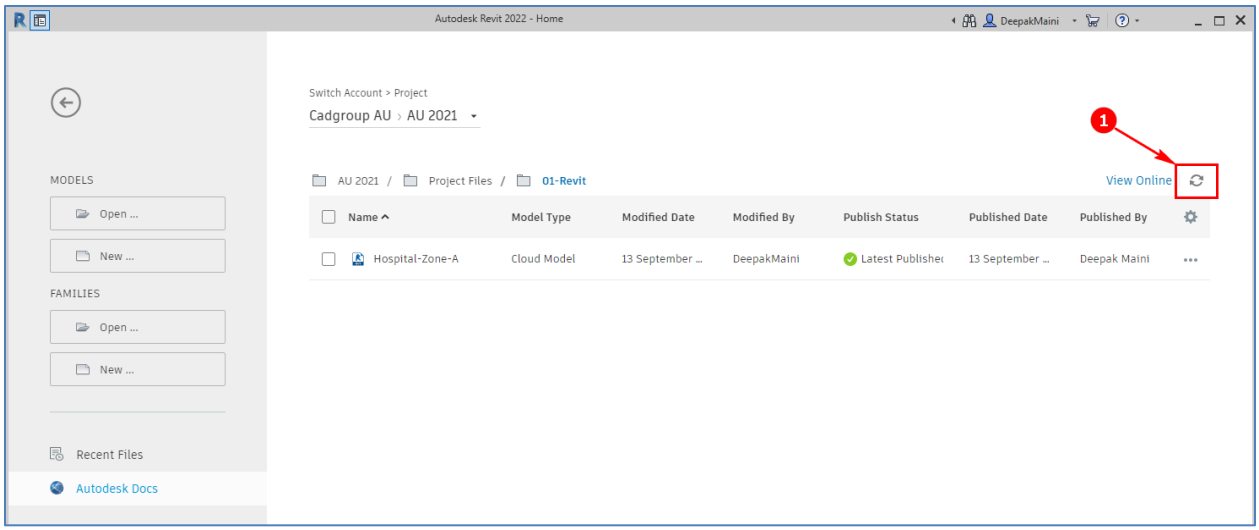
2. Click the **Save** button on the **Quick Access Toolbar**; the **Save to Cloud** window is displayed informing you that the cloud model is being saved, as shown below:



Once the model is saved, this window will automatically close.

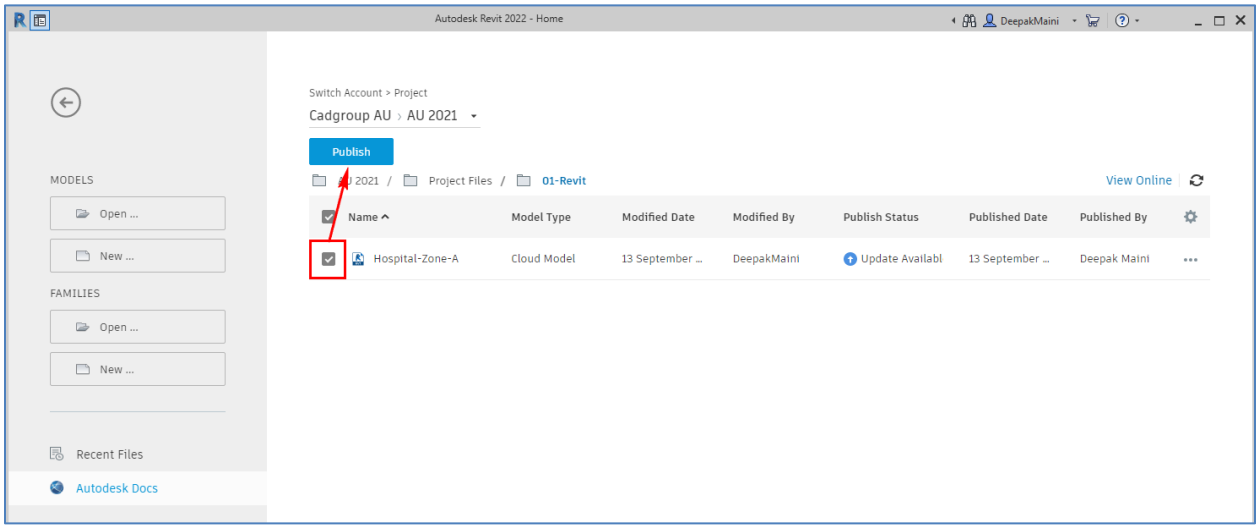
3. Close the Revit model to return to the Revit Home screen.

4. From the top right, click the **Refresh** button labeled as **1** in the figure below to refresh the Home screen.



Once the Home screen is refreshed, the **Publish Status** will change to **Update Available**.

5. Select the checkbox on the left of the model name and then click **Publish**, as shown below.



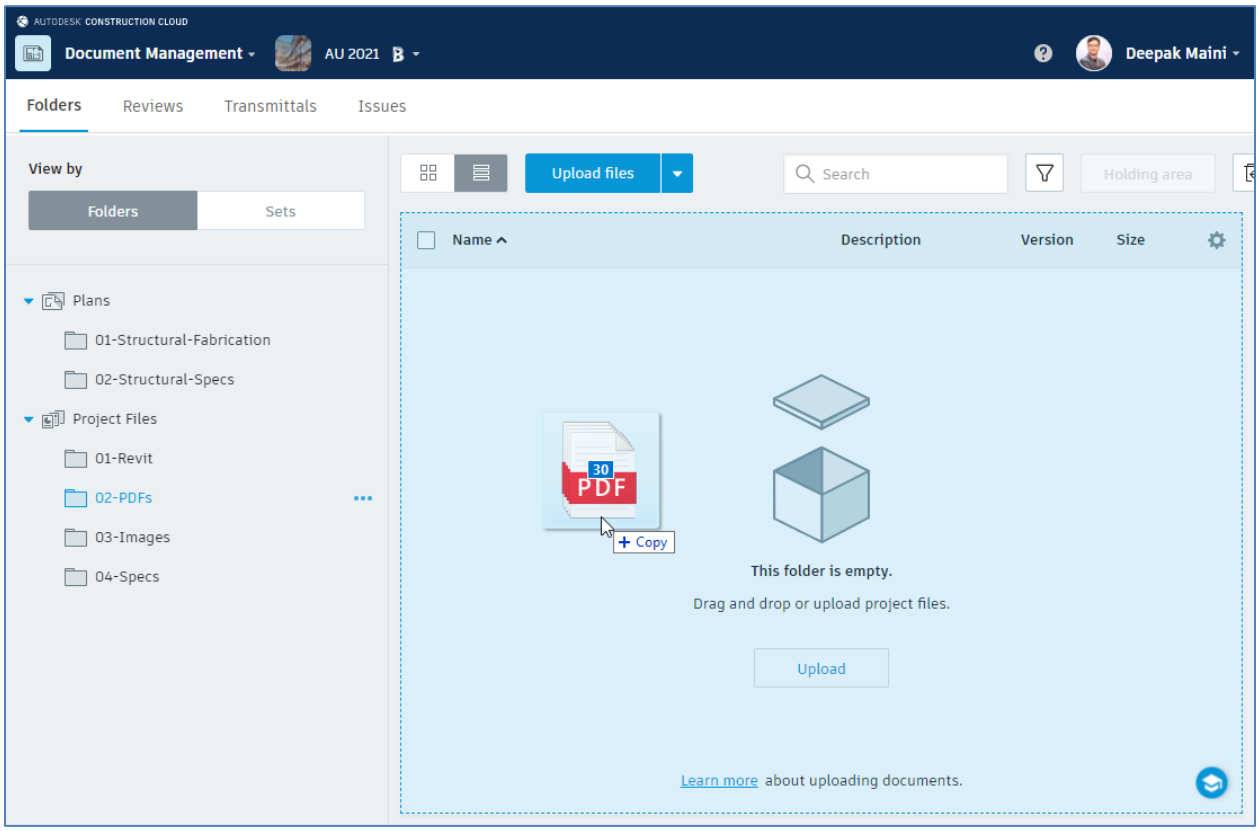
Once the publish process is completed, the latest version can be accessed from Autodesk Docs.

Uploading PDF Files in the Project Files Area

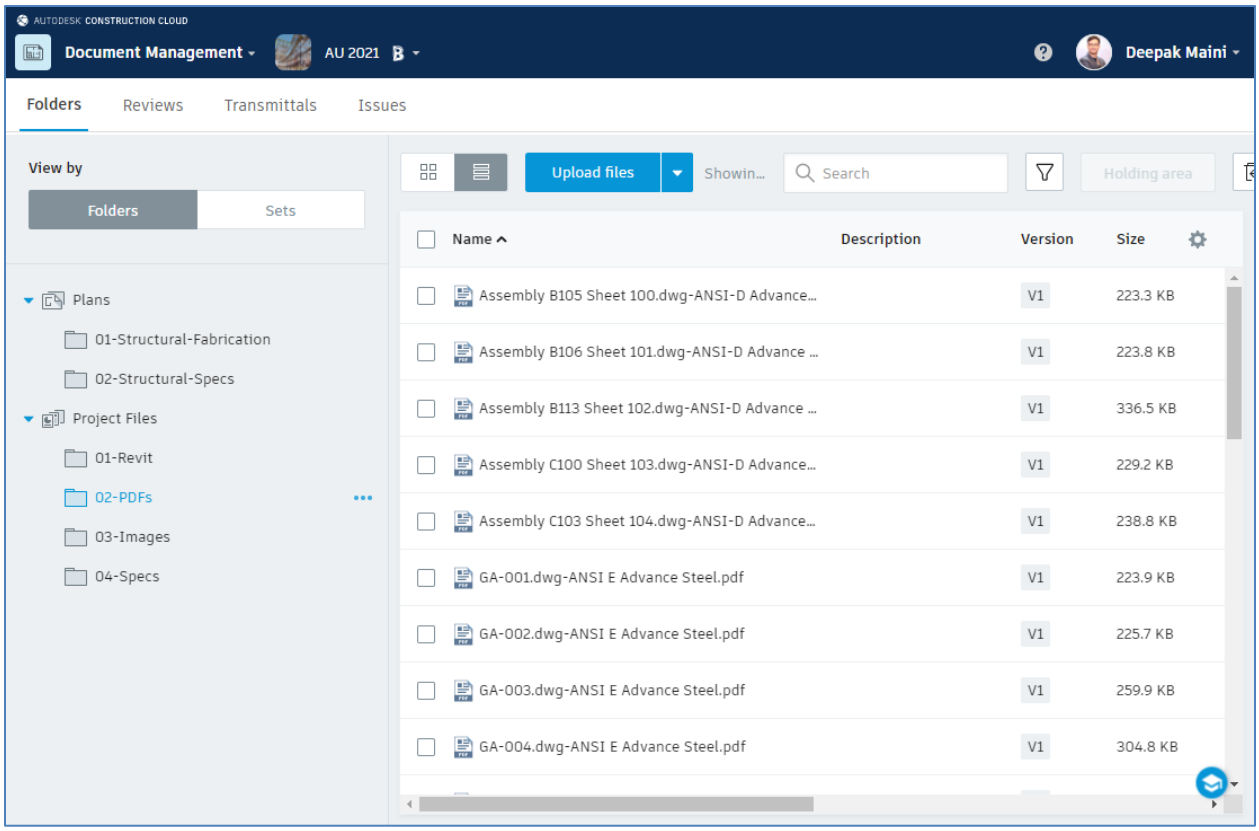
As mentioned earlier, the project files area is used to upload files such as the Navisworks federated models, PDFs of drawings, project specifications, pictures, Microsoft documents, and so on. The following steps show how to upload PDF files in this area. The process of uploading any other file is the same.

1. In the **Project Files** area of the Document Management interface, select the folder in which you want to upload the file.

2. Drag and drop one or multiple files in the selected folder, as shown below.



On doing so, the process of uploading the files starts. The progress of the upload is displayed on the lower right corner of the window. Once the uploading and processing of the files is completed, they will be listed in the, as shown below.


AUTODESK CONSTRUCTION CLOUD
Document Management
AU 2021
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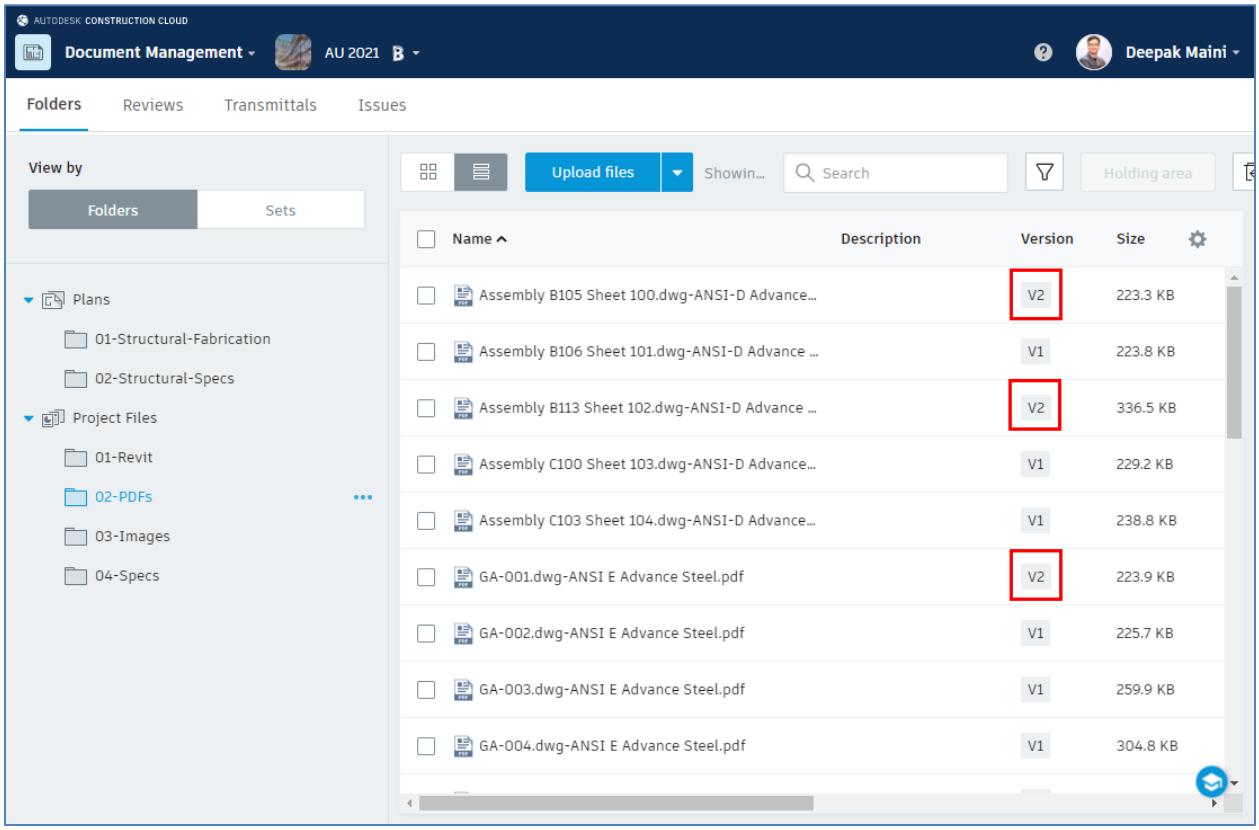
Folders
Reviews
Transmittals
Issues
View by
Folders
Sets
Plans
01-Structural-Fabrication
02-Structural-Specs
Project Files
01-Revit
02-PDFs
03-Images
04-Specs
Upload files
Showin...
Search
Holding area
Name
Description
Version
Size
Assembly B105 Sheet 100.dwg-ANSI-D Advance... V1 223.3 KB
Assembly B106 Sheet 101.dwg-ANSI-D Advance ... V1 223.8 KB
Assembly B113 Sheet 102.dwg-ANSI-D Advance ... V1 336.5 KB
Assembly C100 Sheet 103.dwg-ANSI-D Advance... V1 229.2 KB
Assembly C103 Sheet 104.dwg-ANSI-D Advance... V1 238.8 KB
GA-001.dwg-ANSI E Advance Steel.pdf V1 223.9 KB
GA-002.dwg-ANSI E Advance Steel.pdf V1 225.7 KB
GA-003.dwg-ANSI E Advance Steel.pdf V1 259.9 KB
GA-004.dwg-ANSI E Advance Steel.pdf V1 304.8 KB

Uploading Revised Versions of Files in the Plans or Project Files Area

The process of uploading revised versions of files in the **Plans** or the **Project Files** area is the same as that discussed above. Once you upload a file, if a version of that file already exists in that folder, the version of that file is automatically bumped to V2. Similarly, whenever you upload a revised version of the file, it is automatically bumped to the next version. The following figure shows some of the PDF files bumped to version 2 once the revised files were uploaded.



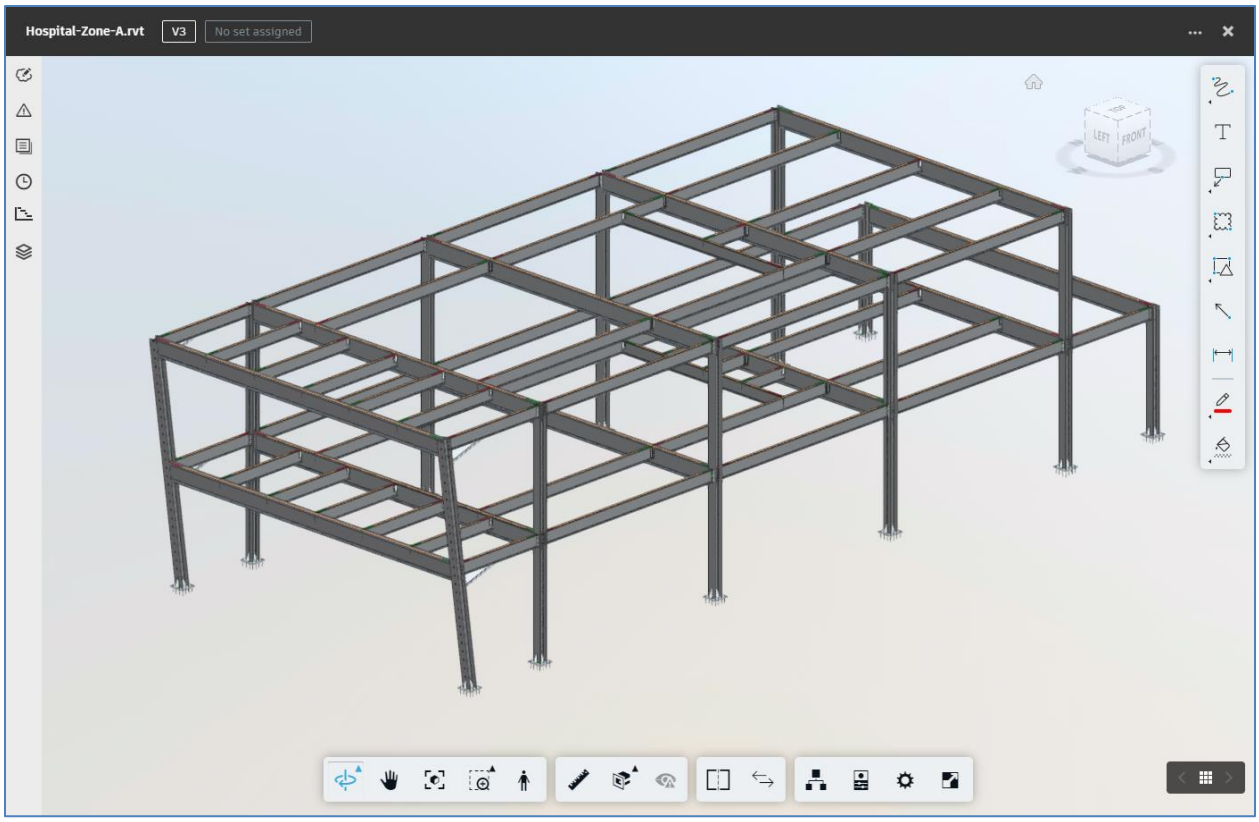
***Tip**: You can click on the version number of the file, highlighted above, to see the history about when were the various versions of files uploaded and by whom.*

Creating Issues using the Web Browser

The following is the procedure for creating an issue on a model using the Web browser window.

1. Log on to your Autodesk Docs project.

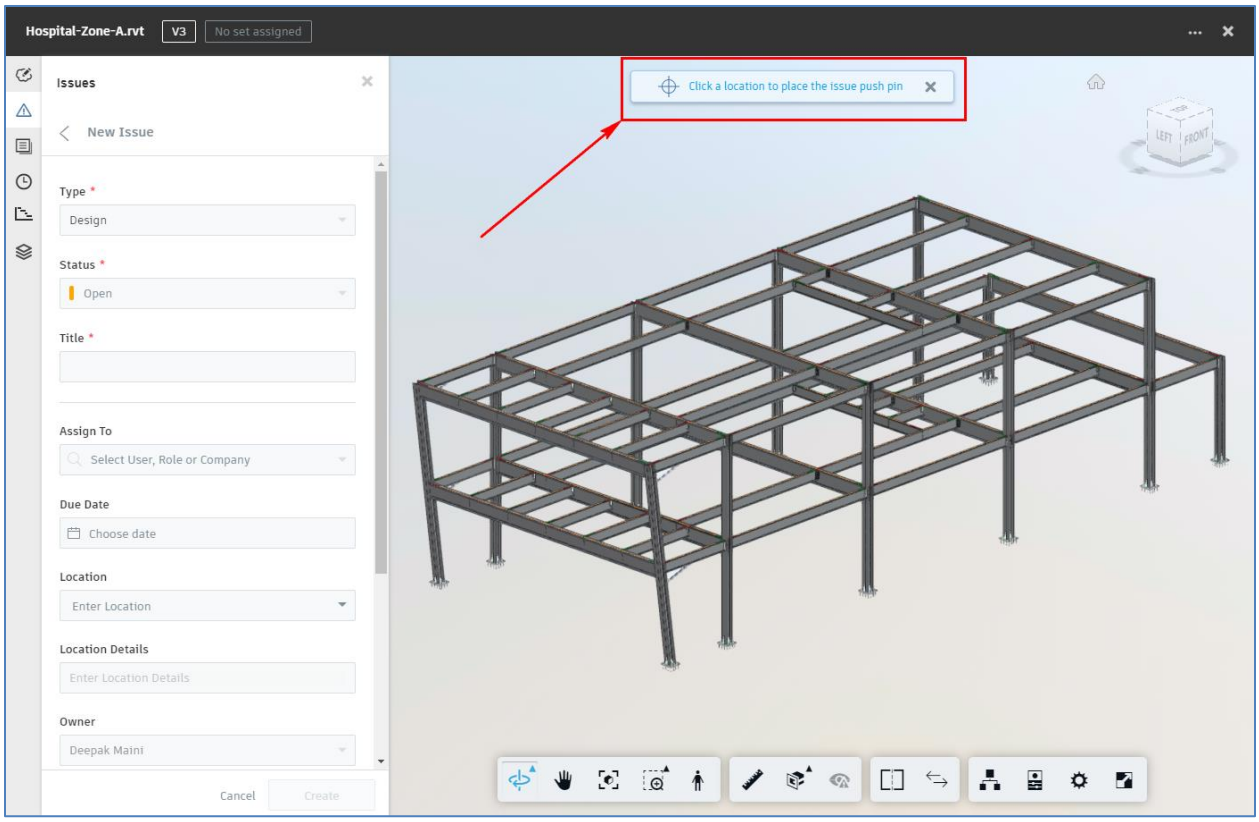
2. Browse to the folder and click on the file to open in the Web browser window. The following figure shows a Revit file opened.



3. From the toolbar on the left, click **Issues** to open the **Issues** window.

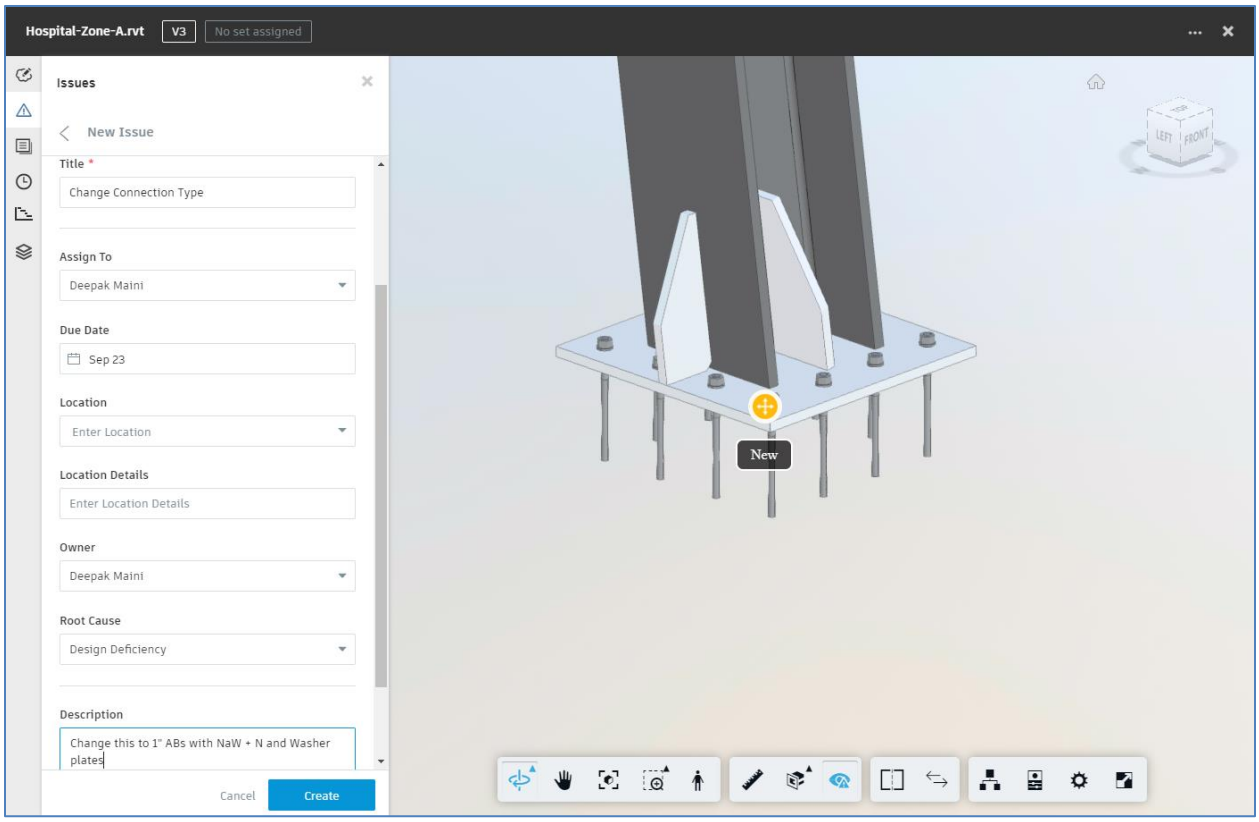
4. From the bottom of the **Issues** window, click **Create Issue**; you are prompted to click a location to place the issue push pin, as shown in the following figure.

***Tip**: It is important to place the issue pin on the element that you want to be selected and highlighted in Document Management as well as Revit.*



5. Navigate to the element on which you want to place the issue pin and then click on it; the issue push pin is placed on that element and the fields in the **Issues** window are activated for you to enter the information.

6. Enter the required information related to the issue, such as the title, assigned to, due date, root cause, and description, as shown in the following figure.

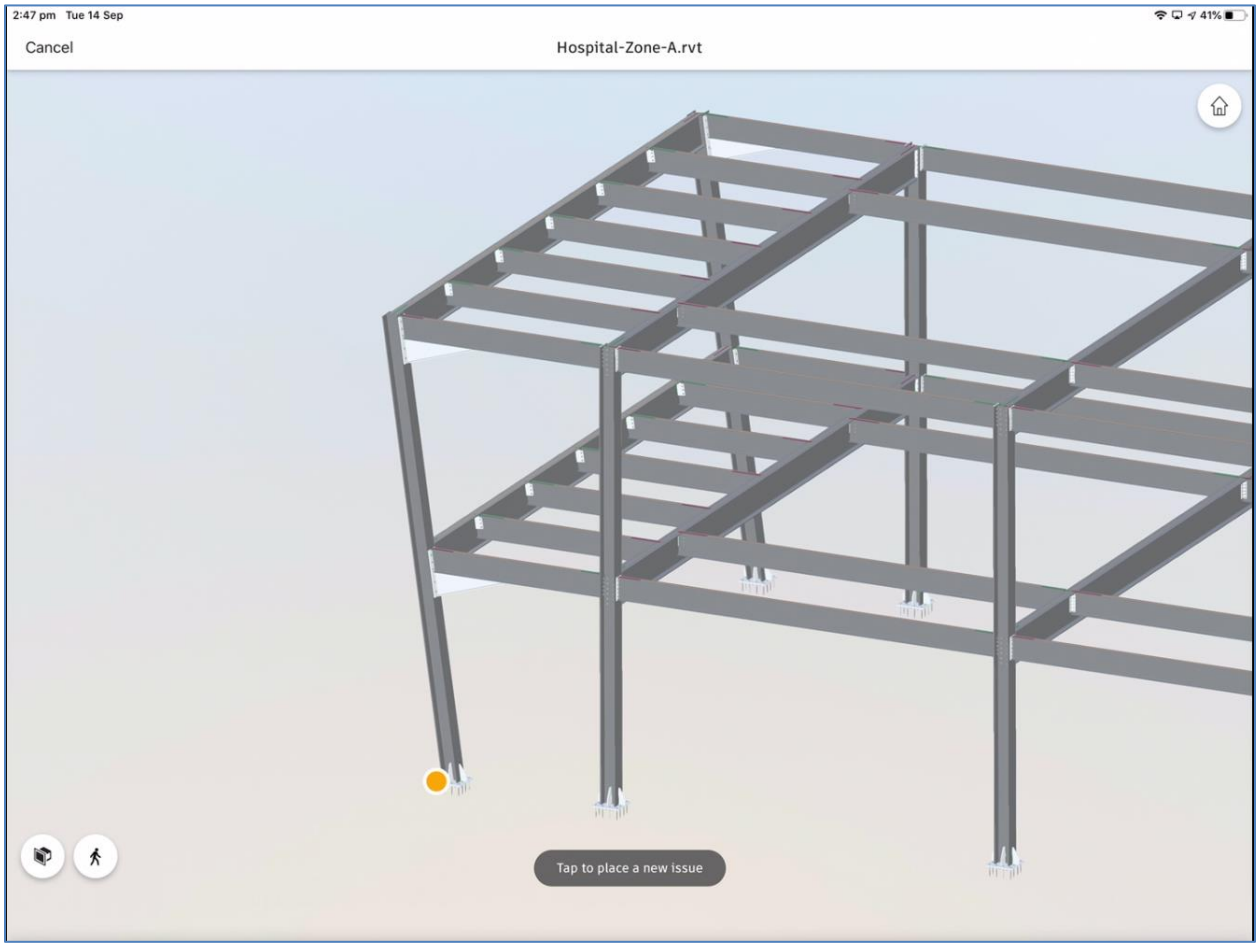


7. Click **Create** to create the issue.
8. Click on the newly created issue to display its details in the **Issues** window.
9. Click the **ATTACHMENTS** tab and attach any image or file to the issue.
10. Repeat the process to add any additional issues.

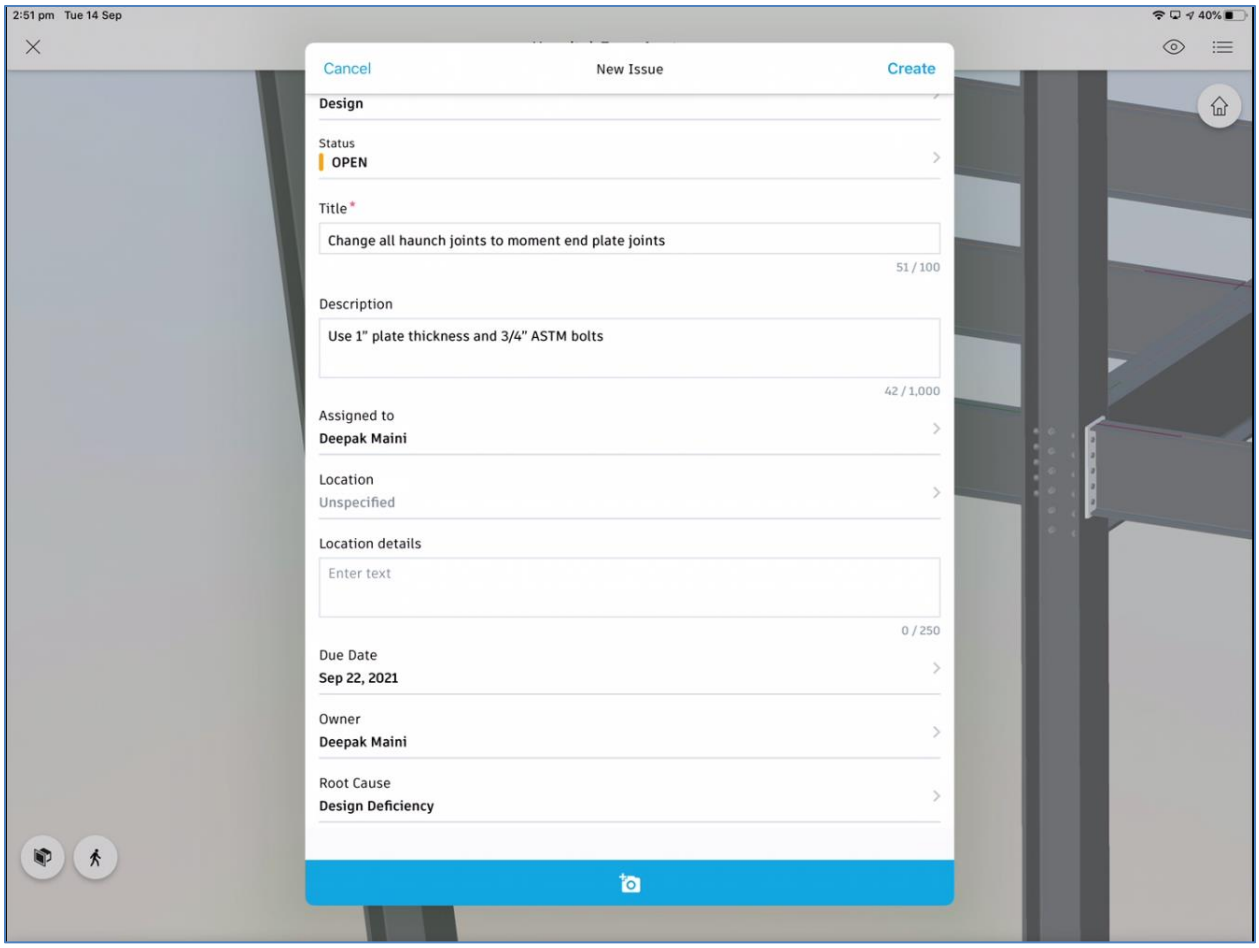
Creating Issues using the Mobile App

The following is the procedure for creating an issue on a model using the BIM 360 mobile app.

1. Log on to the BIM 360 mobile app.
2. Open the model on which you want to create the issue.
3. From the bottom of the app window, click **Issue**; you are prompted to place a new issue, as shown in the following figure.



4. Navigate to the element on which you want to place the issue push pin and then click on it; the **New Issue** window is opened for you to enter all the issue details.
5. Enter the issue details, as shown below.



6. Tap on the Camera button at the bottom of the **New Issue** window to take a photo or attach an existing photo from the photo gallery.

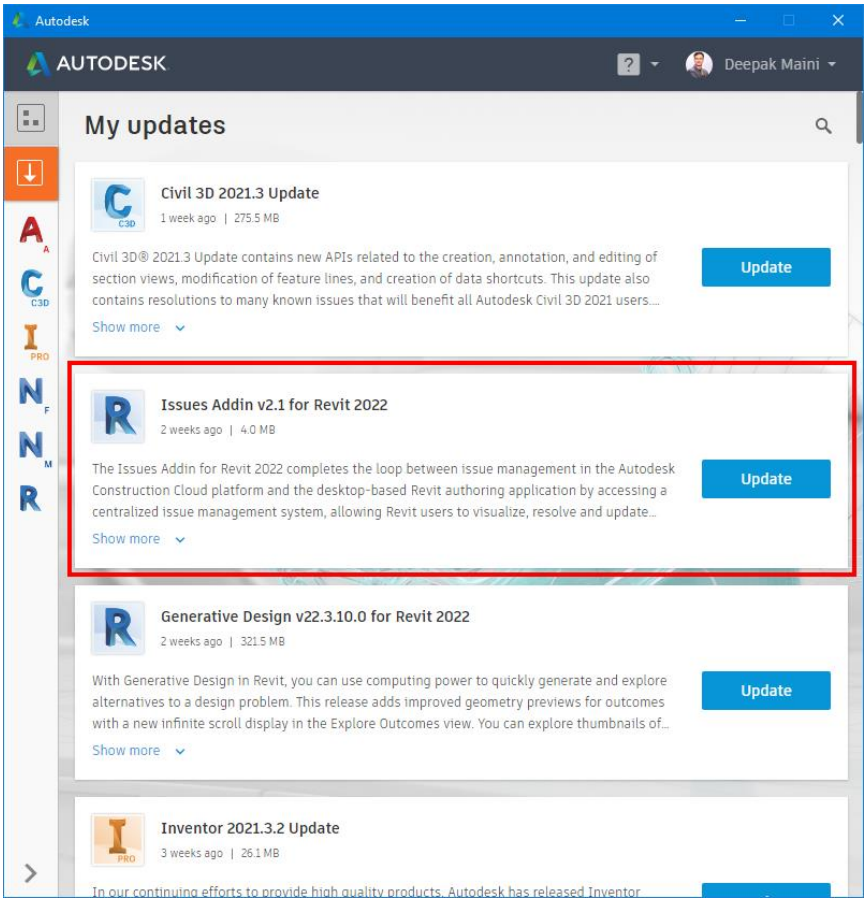
7. From the top right in the **New Issue** window, click **Create** to create the new issue.

8. Repeat the process to add more issues.

Downloading Autodesk Docs Issues in Autodesk Revit

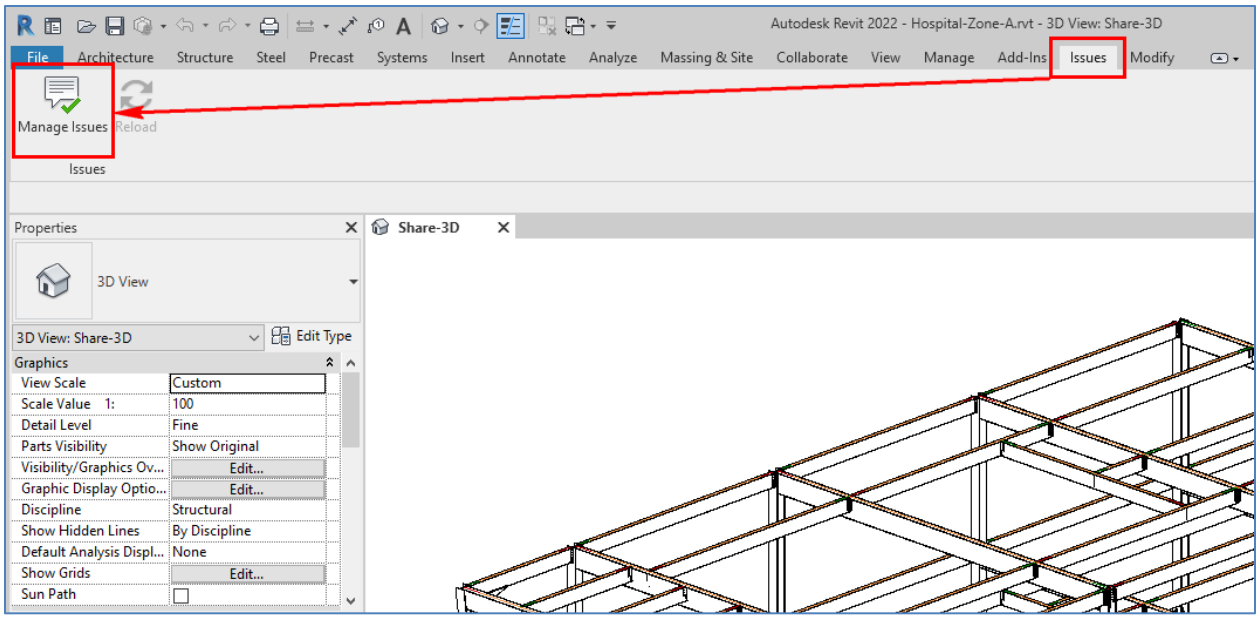
As discussed in the class, Autodesk Docs provides an end-to-end closed-loop issue management system that allows you to download the issues inside Revit and edit the associated elements. Here is the procedure for doing that.

1. From the Autodesk Desktop App or the manage.autodesk.com account, download and install the **Issues AddIn for Revit**. Note that this add-in is available for Revit 2022, 2021, and 2020 versions.

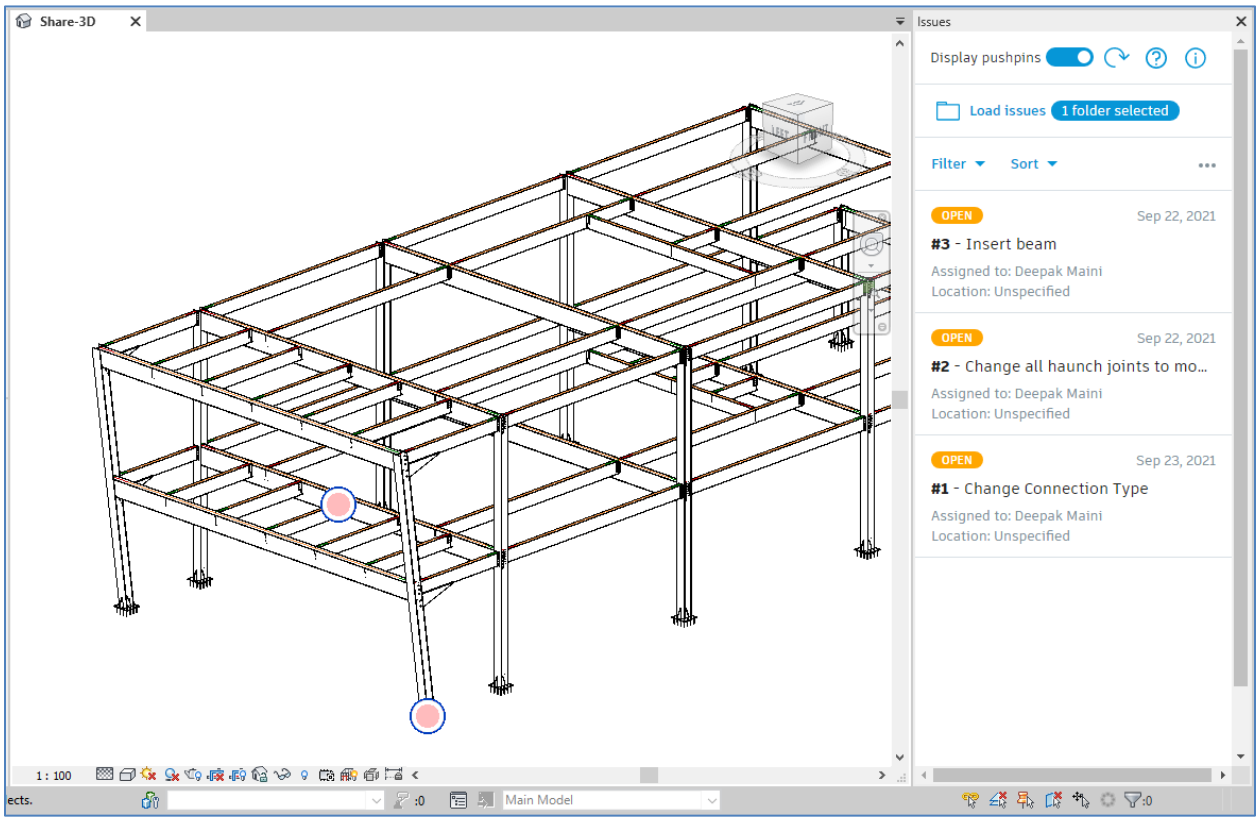


2. Start Revit and using **Autodesk Docs** from the Home screen, open the Revit cloud model.

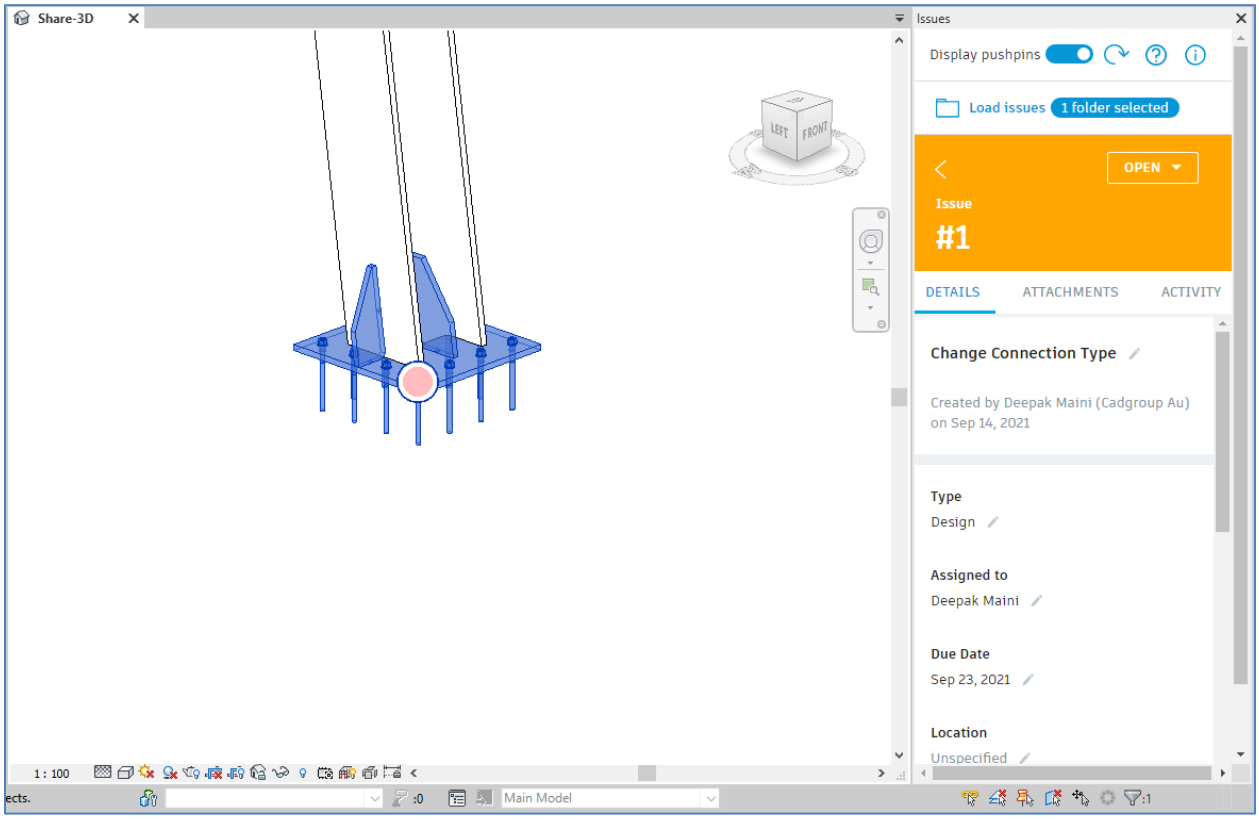
3. From the **Issues** tab, click **Manage Issues**, as shown below;



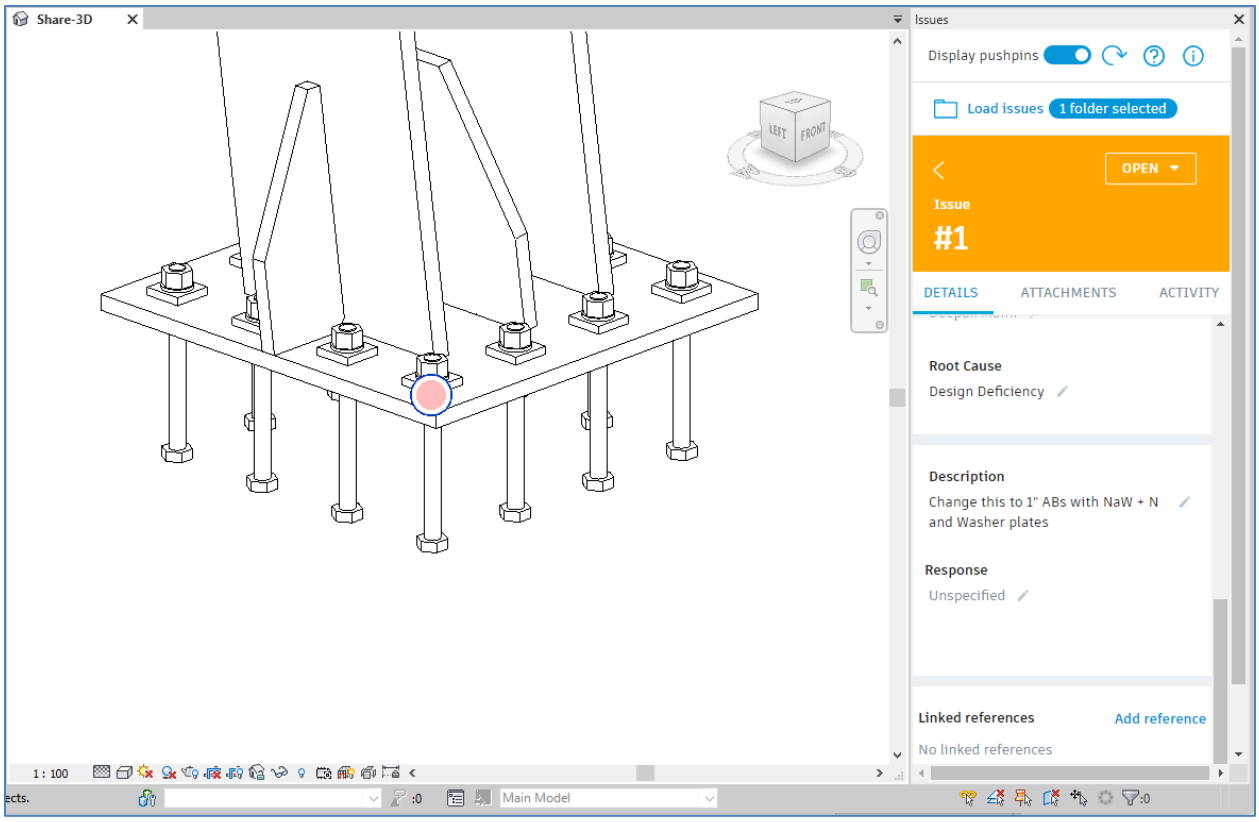
On doing so, the **Issues** window is displayed with all the issues in the current model, as shown in the figure below.



4. Click on any of the issues in the **Issues** window; you are navigated to the element on which the issue push pin was placed and that element is selected, as shown in the figure below.



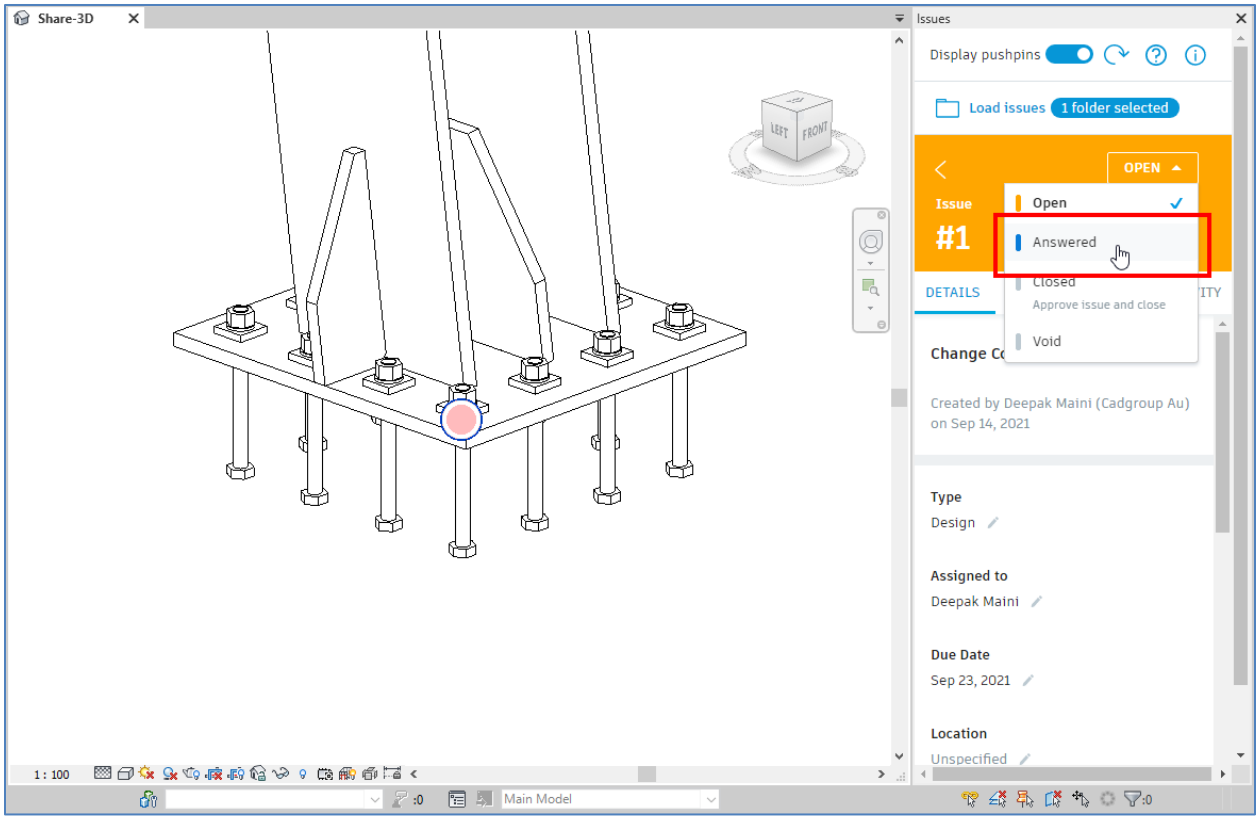
5. Review the information associated with the issue and make the necessary modifications to the model. The following figure shows the base plate connection changed based on the information provided in the issue.


Share-3D
Issues
Display pushpins
Load issues
1 folder selected
OPEN
Issue
#1
DETAILS
ATTACHMENTS
ACTIVITY
Root Cause
Design Deficiency
Description
Change this to 1" ABs with NaW + N
and Washer plates
Response
Unspecified
Linked references
Add reference
No linked references
1 : 100
Main Model
LEFT
FRONT

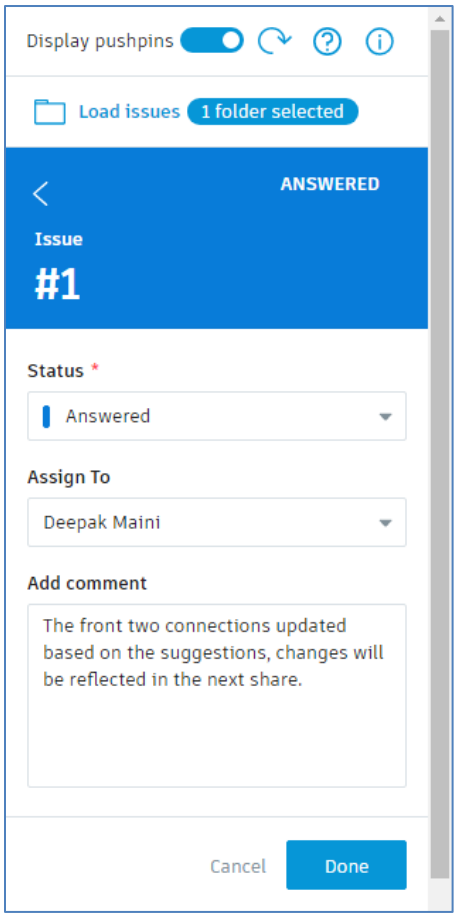
Changing the Issue Status from within Autodesk Revit

Once you have made the requested changes in the model, you can change the issue status from within Revit so the creator of the issue is notified about it. Here is the procedure for doing that.

1. From the **Issues** window, click on the status of the current issue that says **OPEN** and select **Answered** from the list, as shown below.



2. In the **Issue Status** window, add the comment, as shown below.



3. Click **Done**; the issue status is updated and the push pin color changes to Blue in the model.

4. Similarly, edit the elements associated with other issues and change their statuses as well.

5. Finally, save the cloud model and publish the latest version, as discussed in the earlier section of this handout.

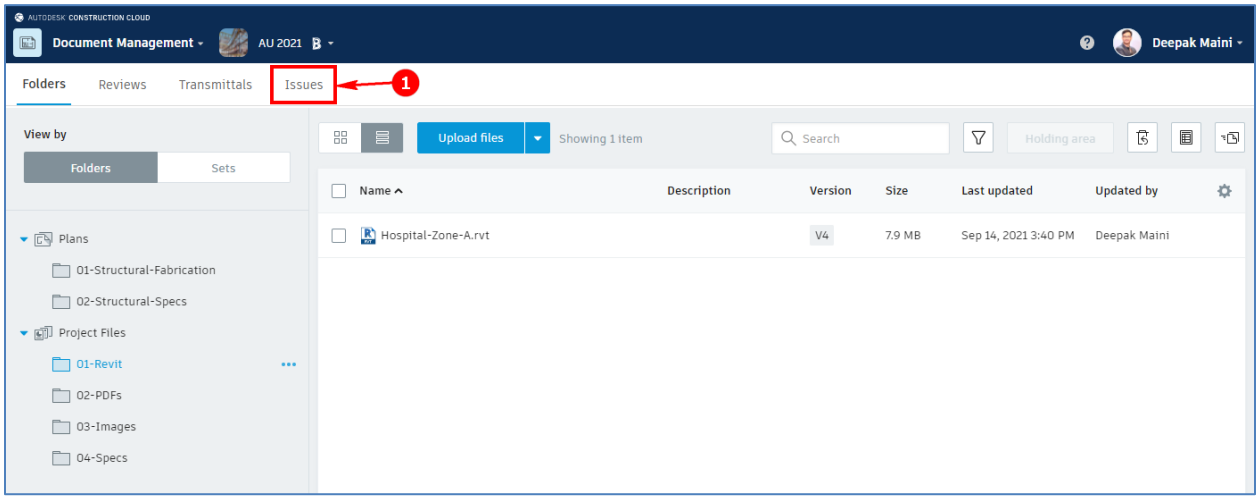
Comparing Different Versions of Models and Closing the Issue

One of the best features of Autodesk Docs is to compare different versions of the model. This allows the initiator of the issue to check whether or not all the requested changes were made. Once the user is satisfied, they can then close the issue. Here is the procedure for doing that.

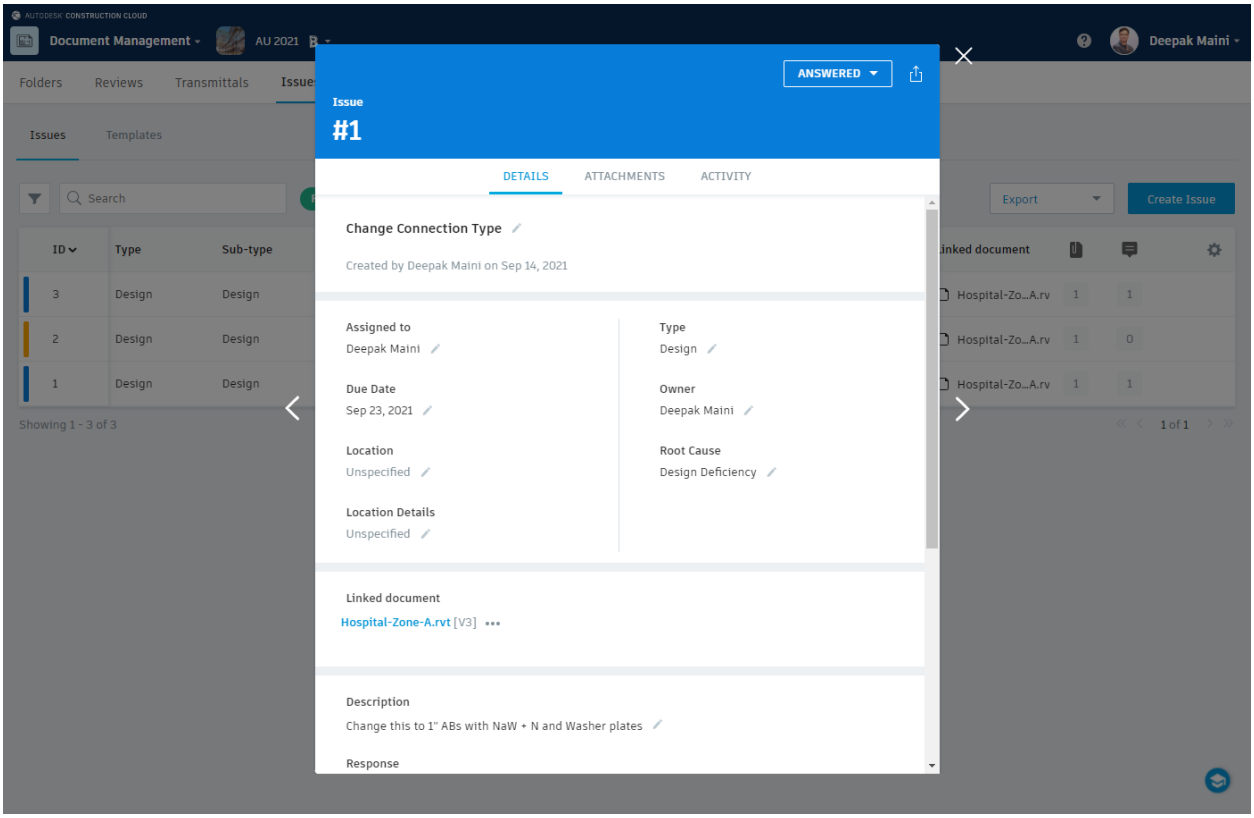
1. Log on to Document Management.

2. Ensure that the latest version of the cloud model is published.

3. From the top of the interface, click **Issues**, labeled as **1** in the figure below.



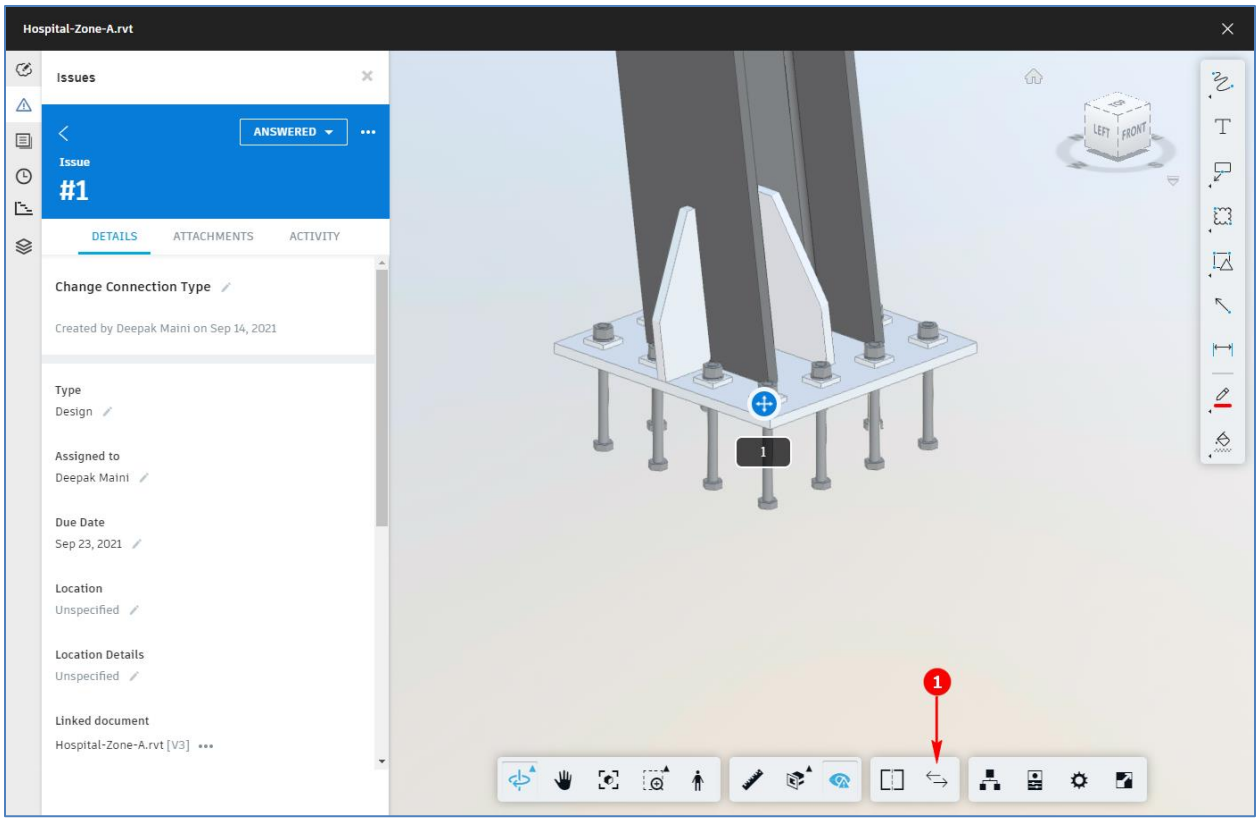
4. Click on one of the answered issues; the information about that issue is displayed, as shown below.



5. Click on the **ACTIVITIES** tab to review the activities of the issue.

6. Return to the **DETAILS** tab of the issue and click on the linked model to open it; you are navigated to the element on which the issue push pin was placed.

7. From the toolbar at the bottom of the screen, click the **Compare** button, labeled as **1** in the figure below.

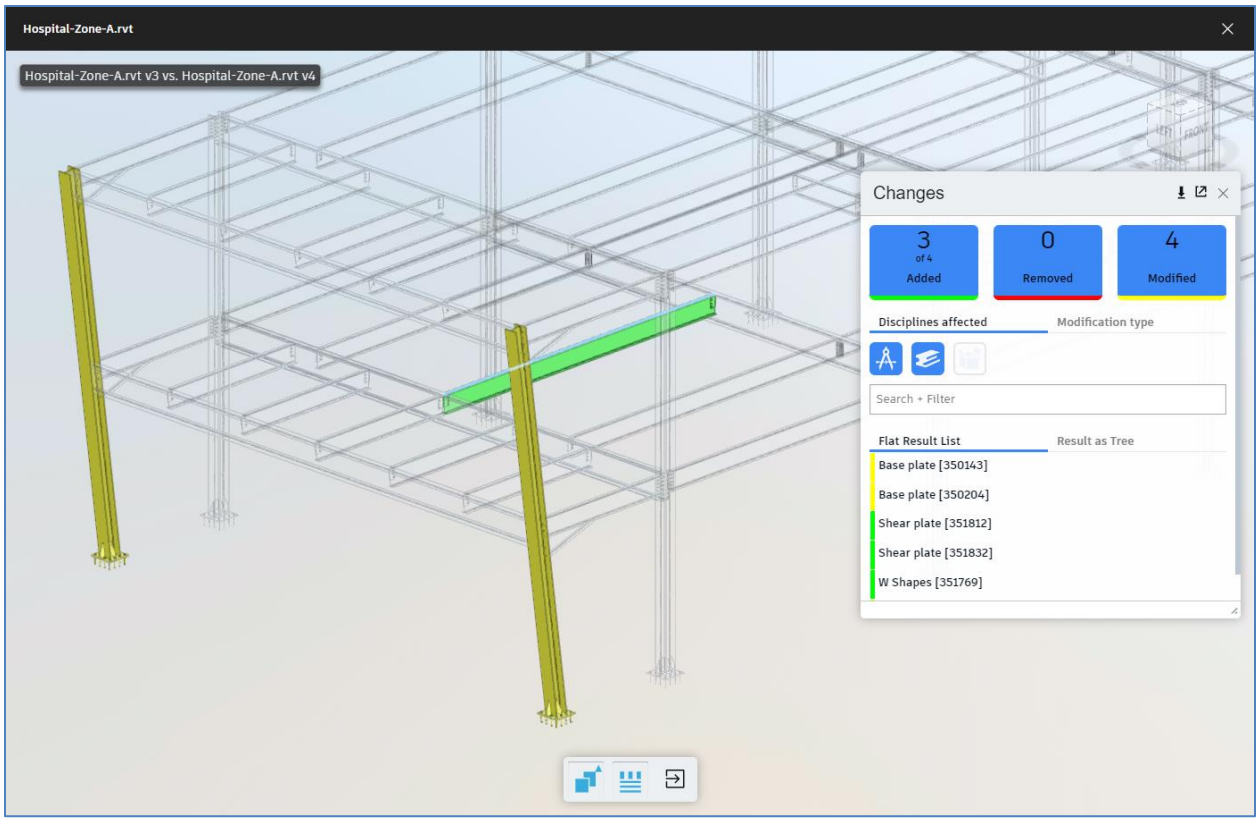


8. In the **Compare documents** window, select the latest version of the model in the **Document A** area.

9. Select the previous version of the model in the **Document B** area.

10. Make sure the **Sheet/View** list shows the same view in both areas.

11. Click **Compare**; the process of comparing the two versions of the model is started. Once the process is finished, the **Changes** window is displayed showing the elements that are added, deleted, or modified between the two versions, as shown below.



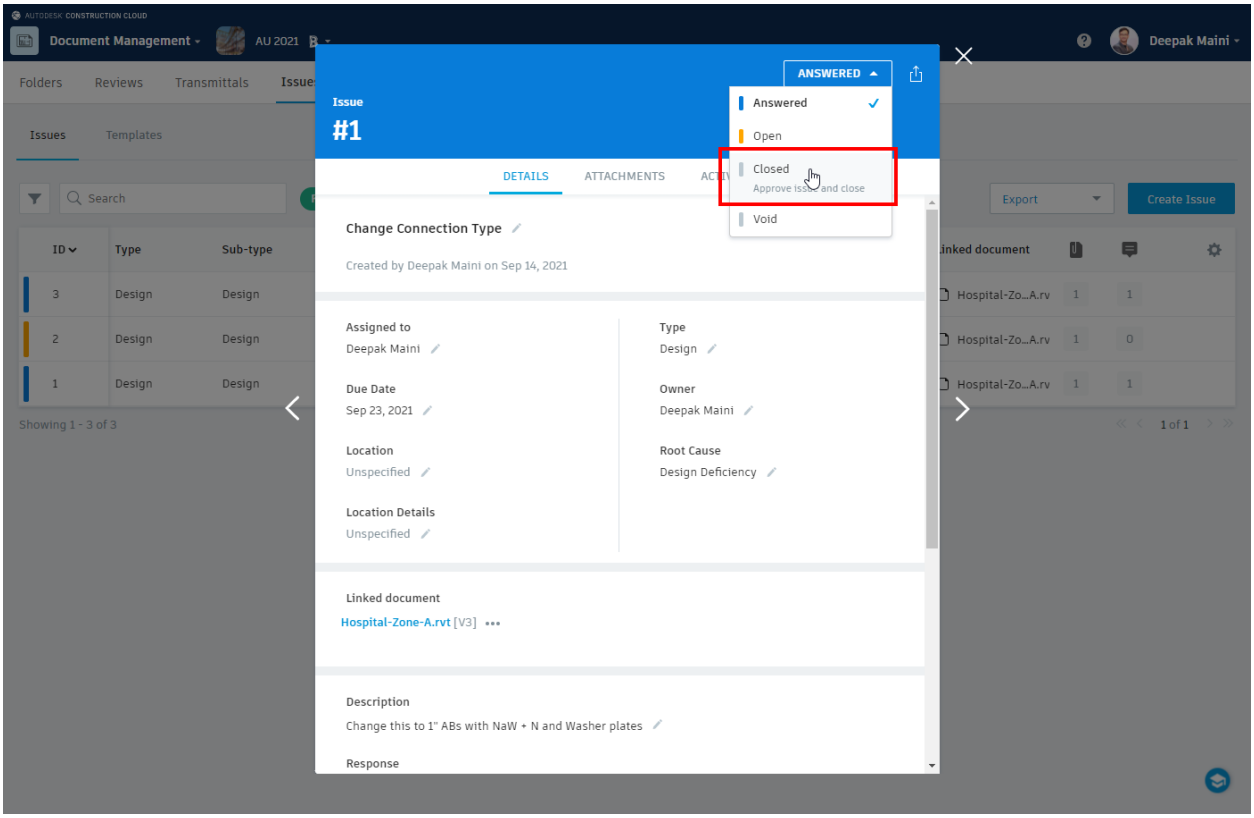
12. Click on any of the modified items to navigate to that item.

13. In the **INFORMATION** window, review the changes by clicking on the previous version and then the current version.

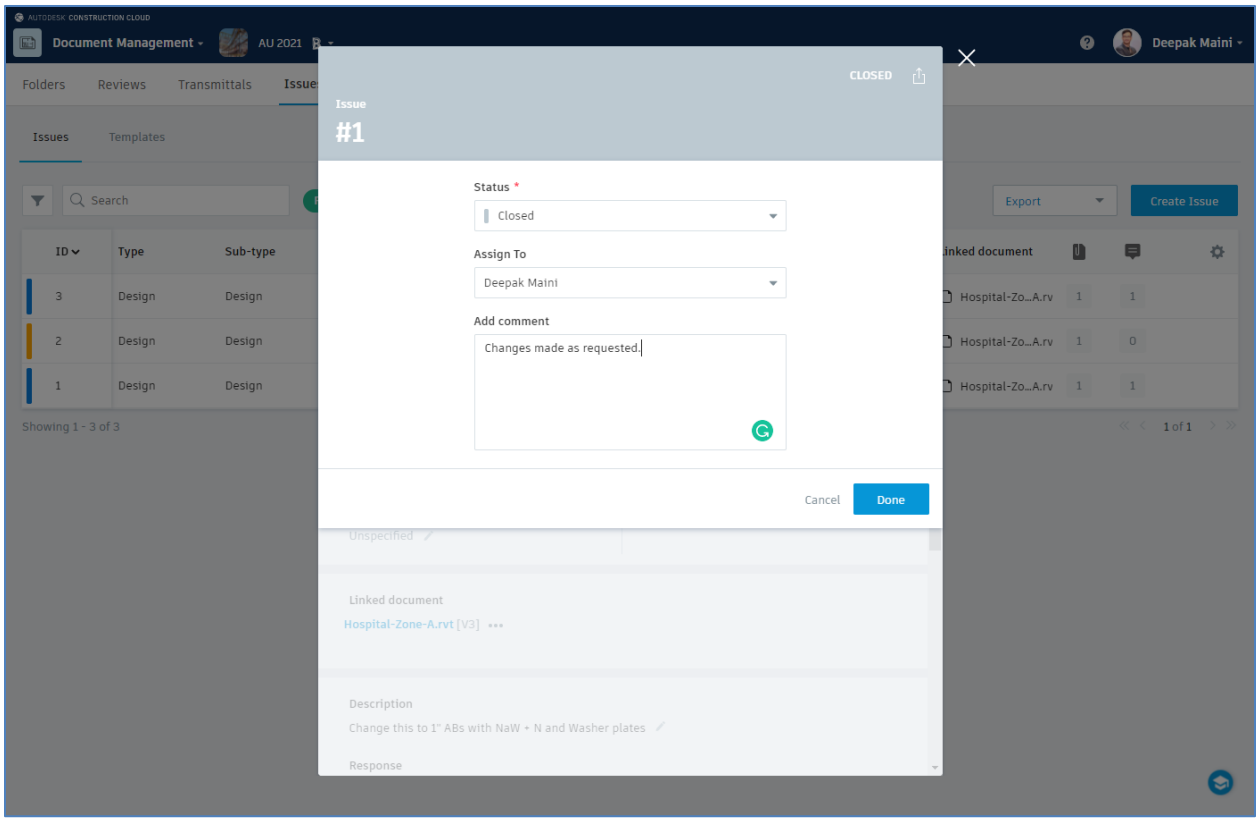
14. Similarly, review the added or deleted elements.

15. Once satisfied, click the **X** on the top right of the window showing the comparison to return to the **Issue** window.

16. From the top right in the **Issue** window, click **ANSWERED** and then select **Closed**, as shown below.



17. Enter the required comment in the **CLOSED** window, as shown below. and then click **Done**; the issue is closed.



18. Repeat this process with other answered issues and close them, if satisfied.

Info on Synchronizing Advance Steel and Revit

For detailed information on how to synchronize Advance Steel and Revit, you can download the Handout of my AU 2020 class from here.