AUTODESK UNIVERSITY 2014

Constructive Change: Assembling Revit Models for Data Management Success

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CO5799 One of the biggest challenges faced by firms today is accessing and managing the multitude of model data generated on a project. Each week the team makes adjustments to the model and its information and you hope to capture those changes and understand how they affect various downstream activities. But even in the age of technology, most model changes are performed by old-fashioned page turns, which is too late and already out of date. Can you quickly and easily find changes between versions of a Revit software model? Can you easily coordinate and identify those changes in your Navisworks coordination model? What is the cost of the change you didn't catch? This in-depth session introduces effective practices for managing Revit model changes in coordination with the various software packages you may be be integrating with your Revit model for creating cost estimates, schedules, work breakdown structures, bid packages, and so on. Join us to understand how you can constructively manage for model change.

Learning Objectives

At the end of this class, you will be able to:

- Learn how to use your model to track model and information changes throughout the project lifecycle
- Understand effective practices for model use in downstream activities, particularly as progress effects the model and its data
- Understand how to easily move information between Revit software model iterations in all phases to include design development
- Learn how to identify solutions for managing external data sets with your Revit software model for greater efficiency in your modeling activities

About the Speakers

John Grady

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With over 20 years' experience in construction, John's career started with the US Navy Seabees, as a tradesman, on to W.G. Yates and Sons, as an estimator, then with McCarthy Building Companies, as a BIM Manager, now as the Virtual Construction Director for CRB Builders. John's primary goal is to implement new technology into CRB's daily practice providing our clients with the best value for their budget. John co-founded Epic BIM with Connor Christian, a place where people can see BIM for what it is and not through rose colored glasses.

Nancy Clark Brown AIA

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Nancy is passionate about technology and is genuinely invested in helping the AEC industry become more efficient and productive in design and construction delivery. As an Account Manager at Assemble Systems she works closely with customers to realize their BIM investment. Nancy has a Master of Science in Advanced Architectural Design from Columbia University and a BArch from Washington State University. She is a licensed architect in Washington State, a member of the American Institute of Architects, and has received many awards for her work including a national award from the American Institute of Architects Small Practitioners Knowledge Forum for the Murphy Residence.

Matt Edwards

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Matt is the CRB Southeastern BIM Coordinator with more than fourteen years of experience in design and engineering for the biotech, pharmaceutical, and advanced technology industries including data centers, research and development labs, and animal research facilities. Matt has been heavily involved in developing BIM Standards and practices within CRB. He specializes in researching and implementing the latest BIM software. He is a graduate of Penn State where he majored in Product and Systems Design and currently resides in North Carolina.

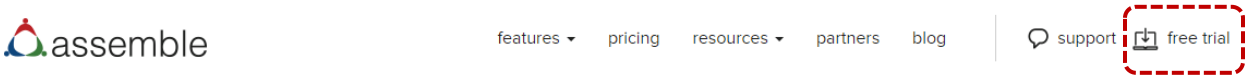
Something for Free

Everyone in the class will receive a free trial to Assemble

Most handouts are just a regurgitation of what you heard in class and we know that some may not even be able to attend. We wanted to give you something more so that what we discussed in our presentation will open windows into possible uses you may want to try. In order to not leave you hanging we have created a guide on how to use Assemble to capture the information discussed in this presentation. We also want you to generate reports and Navisworks® search sets to experiment on your own with. We hope you enjoy and thank you for attending our presentation. (Yes, if you received a handout you get a free trial of Assemble even if you were not able to attend our session.)

Getting Started in Assemble

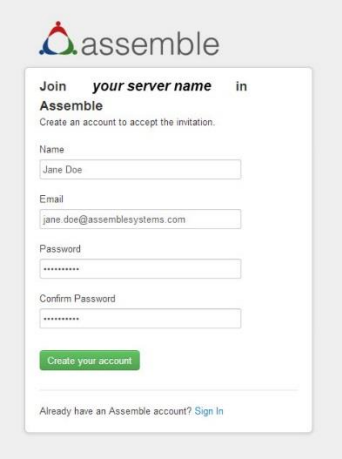
Here is what you need to get started:
Navigate to www.assemblesystems.com and select Free Trial in the upper right hand corner of the screen.



Setting Up Your Account

To begin using Assemble, check your email. You need to validate your email for your Assemble account to launch.

Once your Assemble site has been created, join the account by entering a private password and creating an account.



Your Assemble user account is categorized as either an Assemble Administrator, Project Administrator, or Team Member. Feel free to add other users to your trial. Click on Administation, and then +Add User.

The following matrix demonstrates the functions that are available to each role:

Task	Assemble Admin	Project Admin	Team Member
Create Project	X		
Edit Project Properties	X	X	
Edit Model/Version Details	X	X	X
Archive Project	X	X	
Delete Project	X		
Delete Project Models	X	X	X
Delete Project Model Versions	X	X	X
Add/Remove Project Members	X	X	
Change Project Member Status	X	X	

1. Publishing Models to Assemble

The Assemble Add-in is required to publish models from Autodesk products. Close all Autodesk applications, download and install the add-in from the following location:

http://www.assemblesystems.com/downloads

To publish data for a new project, use the following steps:

To publish data for a new project:

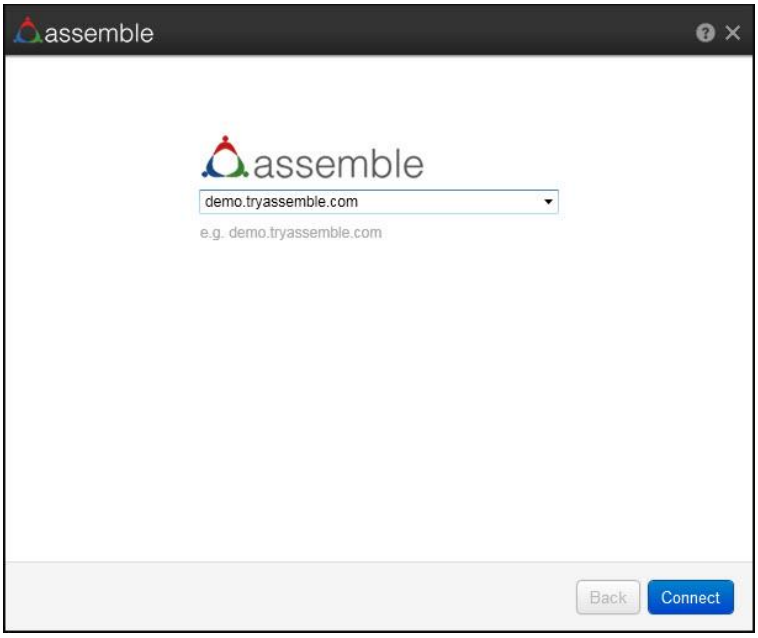
1. Open the model in your Autodesk application (Revit, AutoCAD MEP, or AutoCAD Architecture).

2. On the application menu bar, click Assemble.

3. On the Assemble toolbar, click Publish Model to Assemble.

Note: If the Publish Model to Assemble button is not active, select the default 3D view of the project to activate the button.

4. Enter the Assemble Server configuration provided to you by Assemble Systems (the name of your Assemble site, such as *demo.tryassemble.com*), and then click Continue.



5. A new window will appear, prompting you to enter the email address and password used to log into Assemble. Enter your credentials, and then click Sign In.

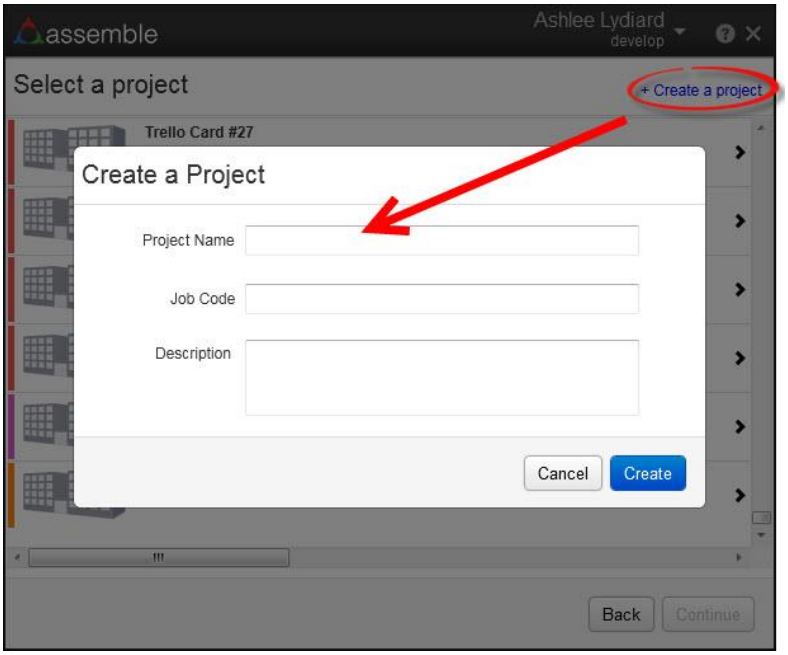
6-1. In the Select a project window, either select an existing project or click the + create a project link.

a) Enter the Project Name.

b) Enter a Job Code (optional).

c) Enter a Description (optional).

d) Click Create.



OR,

6-2. Open an existing project by clicking on the project from the list of available projects.

7. In the Select models to Publish window, you have the option to associate the host and linked models with an existing Assemble model or create a new model for each file. Multiple models can be published to a single Assemble model.

Note: Linked models that are not loaded will not be recognized by the Assemble Publisher. Only loaded models will appear in the Publisher wizard.

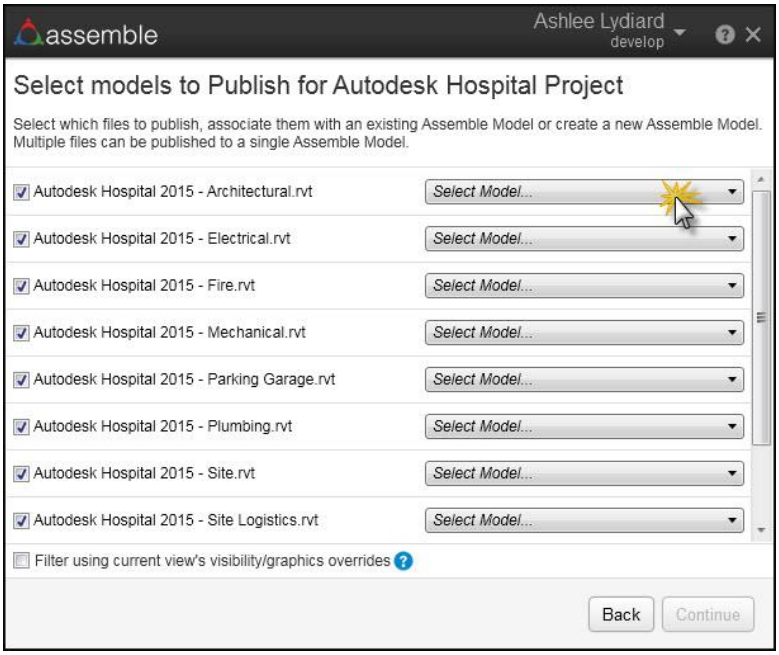
a) Choose which models to publish by clicking the check box next to the models you want to publish.

b) Under the Select Model drop-down, either select an existing model to publish, or create a new model. We recommend publishing each model separately as the ability to link models in Assemble will be available soon. However, you do have the option to merge all Revit models into one Assemble model.

c.) If you would like to merge all linked models into one model choose Create Model option. Name the model and then choose this model for all models you would to publish to the same location.

d.) If you are publishing your model(s) to existing Assemble models, choose the correct model name.

e.) Choose whether the models should be filtered based on the current Revit view's visibility/graphics settings. To use the Visibility/Graphics option, select the check box next to Filter using current view's visibility/graphics overrides. To learn more about the Visibility/Graphics settings, click here.

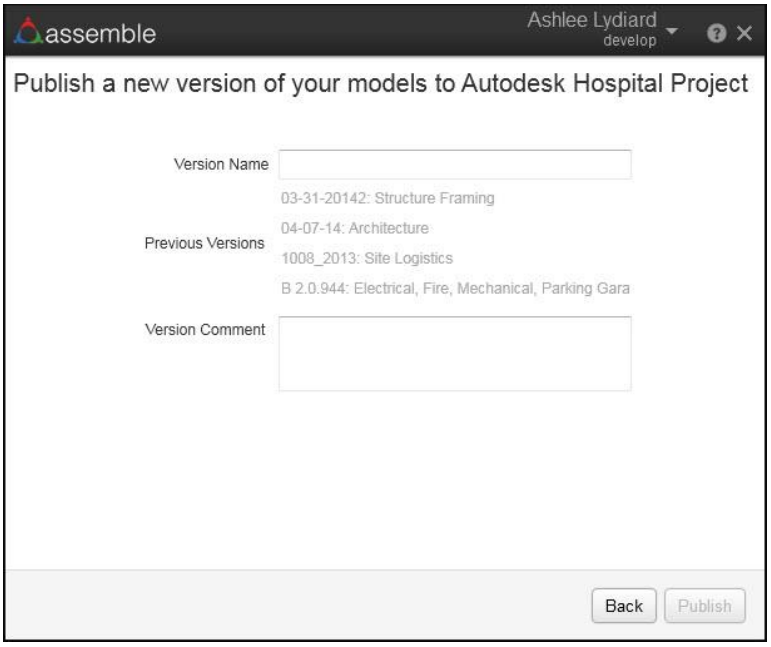


8. In the Publish a new version of your models window, type the information for your model version.

a) Enter the Version Name.

b) Enter a Version Comment (optional).

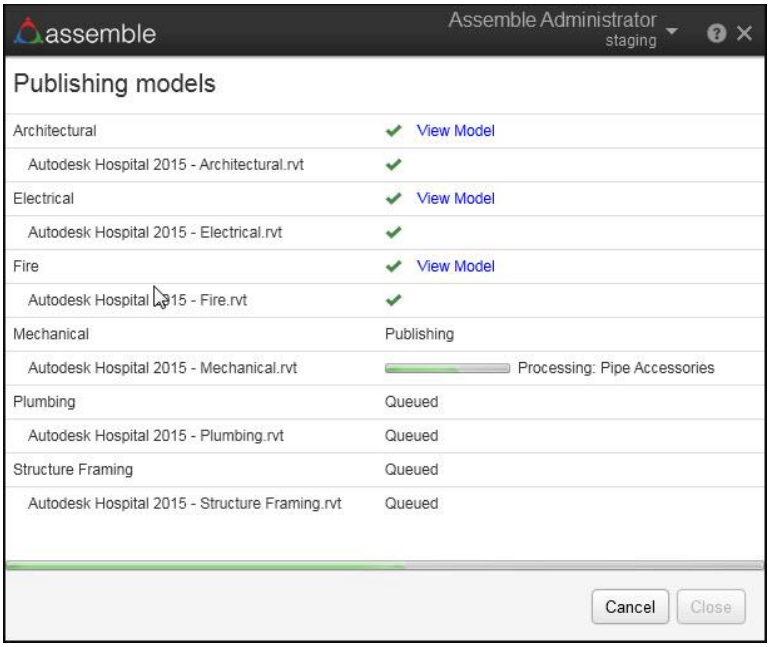
c) Click Publish.



9. The publishing operation will analyze each model to be published. After analyzing the models, Assemble will begin publishing the data.

a) If publishing to individual models in Assemble, you will have the option to View each model individually after it has been published. Click the View Model button to work with your model in Assemble.

b) If merging the models, you will need to wait until the data from all models have been published before viewing the model.

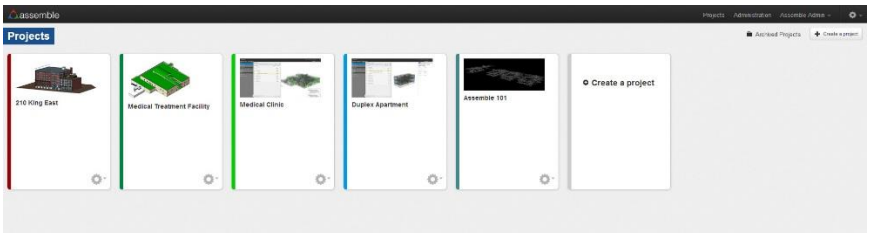


Using the Assemble Workspace

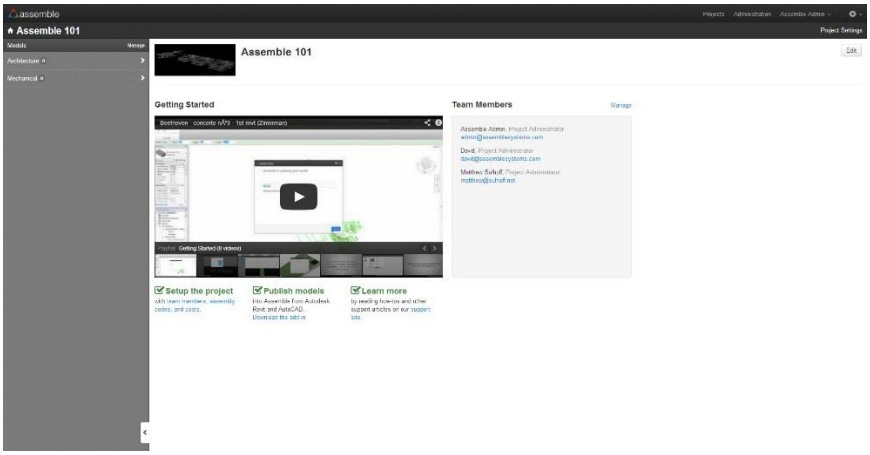
Assemble is a web-based application, which means you can use your internet browser such as Google Chrome or Internet Explorer to access it anywhere you have an Internet connection. Login to Assemble using the URL provided upon creating your account.

Once logged in you can view your project dashboard.

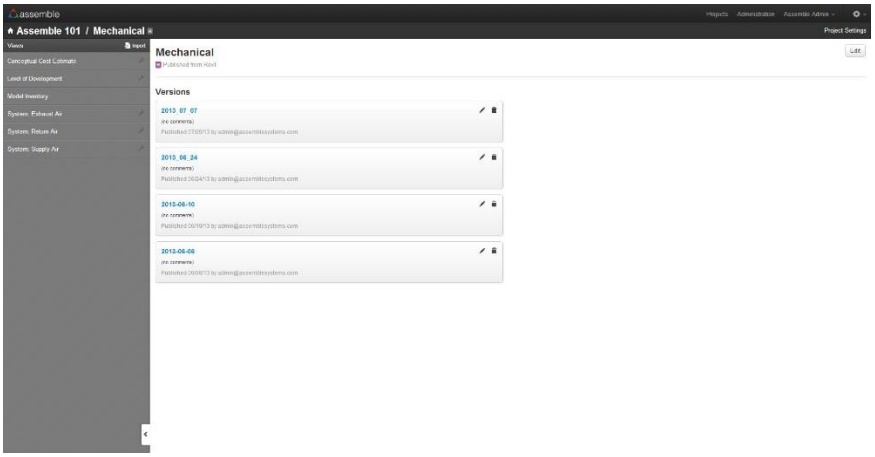
Each project has a workspace, where you work with models and views. The following is an example of the Assemble dashboard for projects:



Locate your project, and click on the project card to open the project window. The project window displays a list of models that have been published to the project on the left side navigation bar, as well as quick links to how-to videos on the product.



Select a model from the list. Assemble displays the available views (default and custom), as well as the versions that have been published for that model.



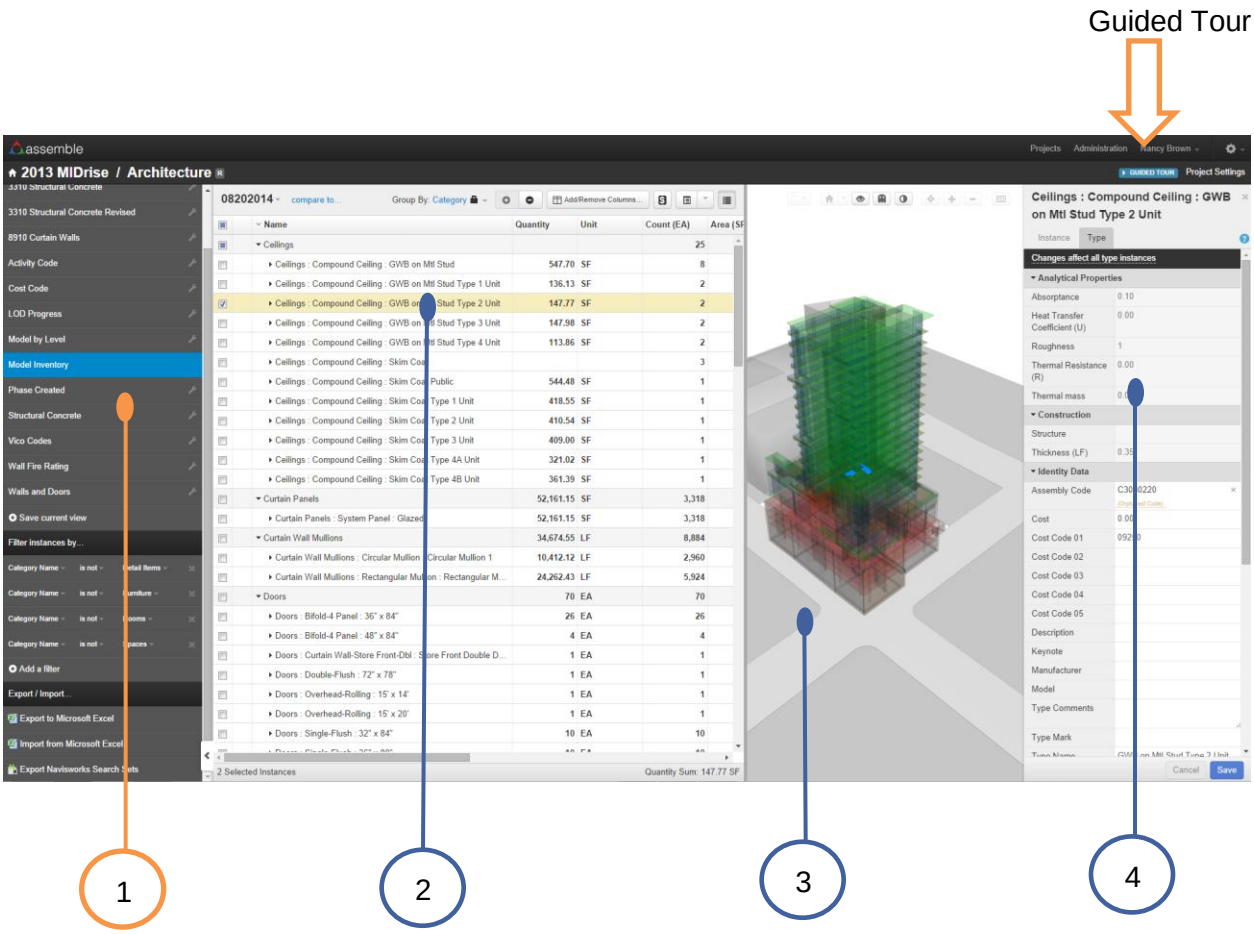
When you select a version to review, Assemble displays the latest version of the model using the default Model Inventory view. Assemble uses an intelligent algorithm to determine which unit of measure will be useful as an instance type, but all model data will be available to you.

Intro to the Assemble User Interface

Assemble offers a Guided Tour for users who need to familiarize themselves with or become reacquainted with the tools available in Assemble. To access the Guided Tour:

1. Open a model version.
2. Click on the blue **Guided Tour** button in the top-right corner of your screen.

3. You can walk through the entire tour by clicking on the **Next** button or you can skip to the tool tip you need by clicking on the number identifying the tool you want to use.
4. To end the Guided Tour at any time, you can hit the **[Esc]** key on your keyboard or click the gray **X** in the top-right corner of the tool tip. On tool tip **#10**, you can click the **Done** button to complete the full tour.



1. **Navigation Panel** – Includes Links to Saved Views, Filter Panel and Export/Import Panel.
2. **Grid View** – Inventory of model objects saved in the selected View. Each line item is linked to the geometry in the Model View (3) and the Properties Manager Panel (4).
3. **Model View** - Navigation window for viewing model geometry.
4. **Properties Manager** – Access to Type and Instance parameters in the model.

2. Organizing Model Information in Assemble

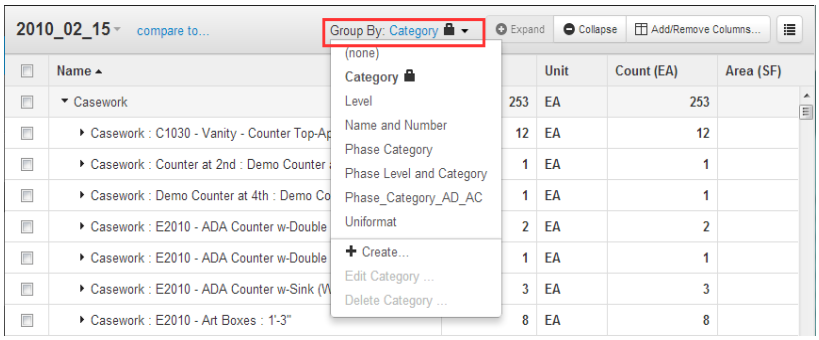
Applying a Grouping Order

Groups organize and display data in a view, and multiple properties within a group are nested. You can use any of the available properties to group the data in the grid.

To apply a Group By to your data:

1. Click Group By or hit keyboard shortcut [B].

2. Select a group name or Create a new grouping order.



Creating a Group

When you create a group, that group becomes available for use with other views and other projects as long as the other views and projects have the same properties. If you apply a group to a project that does not use those properties, Assemble displays:

'groupname' grouping is not compatible with this model version
where 'groupname' is the name of the group.

To create a group:

1. Click Group By.

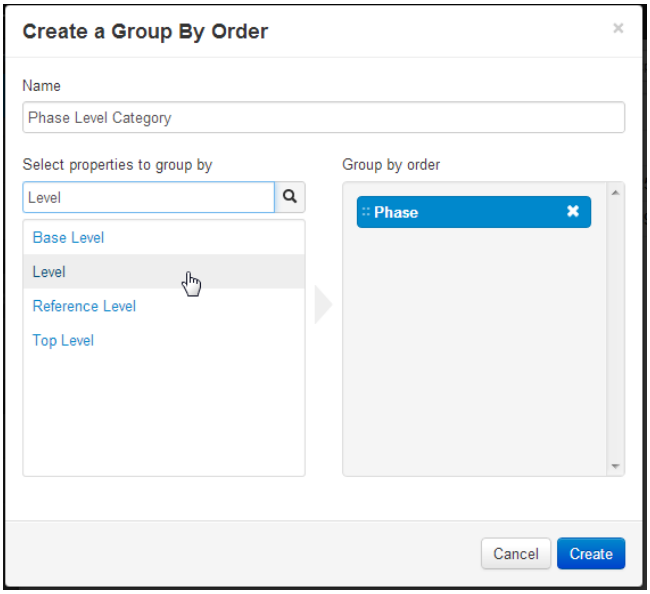
2. Select Create.

3. Complete the name field.

4. Select the properties to use for grouping. To remove an item from the Group by order list, click x next to the item's name.

5. Click Create.

Note: Groups present information in a hierarchy, therefore, the order in which you select the properties is important.



Modifying Columns

To Add Columns to the Grid View:

1. Click Add/Remove Columns.
2. To add a column, click a column name in the Available columns list.
3. Define the order of the columns by dragging and dropping the blue items to your desired order location.
4. Click Apply.

To Remove Columns from the Grid View:

1. Click Add/Remove Columns.
2. To remove a column, click x next to the column name in the Selected columns list.
3. Click Apply.

To Sort Data by Column:

1. Click a column heading to sort the data by that column. The arrow next to the column heading indicates whether the data is sorted in ascending or descending order.

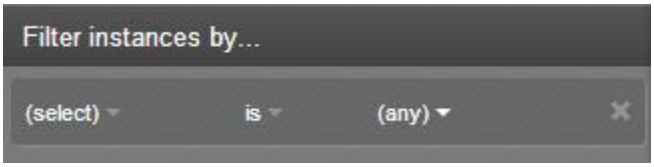
Name	Quantity	Unit	Count (EA)
Detail Items			2,519
Detail Items : Filled region : Aluminum	0.00	SF	2
Detail Items : Filled region : MA - Solid Black	0.01	SF	3
Detail Items : Filled region : Mounting Heights.dwg-1	0.02	SF	2
Detail Items : Filled region : Plaster - Fine	0.02	SF	1
Detail Items : Filled region : Vertical Lines	0.03	SF	1
Detail Items : Filled region : MA - Precast Concrete	0.11	SF	1
Detail Items : Filled region : OBS BOARD	0.13	SF	2

Working with Filters

***Note**: By default, Rooms, Spaces, Detail Items, and Furniture are automatically filtered from the Grid. By default, furniture is also filtered out of the Model Viewer. Detail Items are visible in the Model Viewer, in Ghost Mode only.*

Use filters to display information according to specific criteria.

In the **Filter instances by…** Section of the Navigation Panel there are three fields you will need to complete to filter your data.



(select) = the element's Type or Instance parameter *name*

Formula operator (is, is not, like, not like, =, !=, <, <=, >, >=, is blank, is not blank) *see definitions below*

(any) = the element's Type or Instance parameter *value*

***Note:** If you create multiple filters with identical parameter names, Assemble processes the filter statements as though they are joined by or. If you create multiple filters with different parameter names, Assemble processes the filter statements as though they are joined by* and*.*

To add a filter:

1. In the **Filter instances by** Section of the Navigation Panel, select a parameter name.
2. Select an operator.

    Formula Operators:

    String Operators (used when the value will equal text)

Is (equal an exact value)

Is not (does not equal an exact value)

Like (filtered results will contain all the letters entered in the value or *(any)* field; a *Category Name* **like** *struct* could be used to show Structural Columns, Structural Framing, and Structural Foundations)

Not like (filtered results will not contain any letters matching the value you enter; a *Category Name* **not like** *struct* could be used to show all categories from the model *except* categories that contain the consecutive string of letters S-T-R-U-C-T)

Numerical Operators (used when the value will equal a number):

= (the value will equal a number)
!= (the value will not equal a number)
< (the value will be less than a number)
<= (the value will be less than or equal to a number)
> (the value will be greater than a number)
>= (the value will be greater than or equal to a number)

is blank (the value is null)

is not blank (the value contains a numerical value)

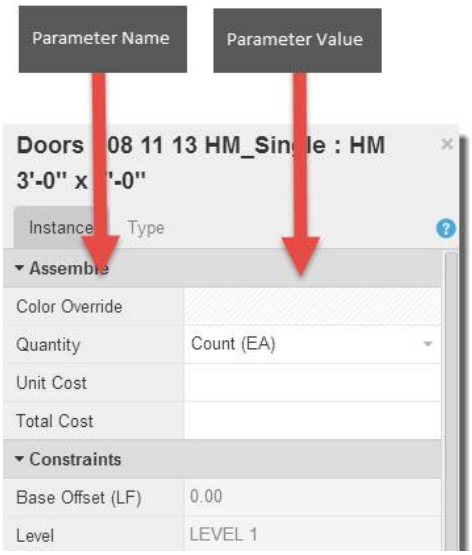
3. Complete the parameter value. If you are typing in the value, you will need to hit **Enter** on your keyboard after the value has been entered.

4. To add another filter statement, click **Add a filter** and complete the steps again.

Note: *Assemble rounds numeric values displayed in the grid but stores true values in the system. For example, Assemble stores 8.125 in the system but displays 8.13 on the grid. When you build a filter to search for a numeric value, use the value that is stored in Assemble.*

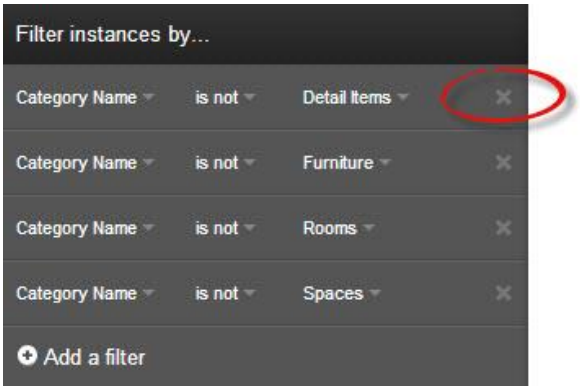
Note: *For help in deciding what the parameter names and values could be used, open the Property Manager. The parameter name is on the left side of the property manager, while the property value is on*

the right.



To delete a filter

1. Click **X** in the filter statement.



Creating Saved Views

Assemble allows the user to save views in Assemble after adding applicable columns and filters. Saved views in Assemble should be crucial to your workflow.

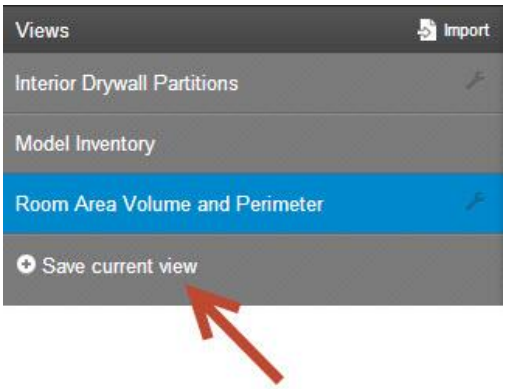
A saved view can explicitly mandate what is synced back to Revit. An example of using views for this purpose is illustrated at the end of this document.

Also, a saved view can act as a project template for takeoffs and schedules, which in turn can be incorporated into other projects, without having to reinvent the wheel.

After the view is saved, it can be renamed or updated after making changes in the view. And if the view is no longer needed for any reason, simply delete it.

To Save a View:

1. Navigate to the Views section of the Navigation Panel.
2. Click the Save current view button.
3. Name the view to describe the inventory shown in the Assemble Grid.
4. Click the Add button.



3. Running Variance Reports

Assemble provides the ability to compare two versions of a model and review the differences between the two. You can filter, group, and sort data in model comparisons. You can also add quantity columns while in compare mode to see the variance for multiple quantities in the Grid. However, only the source quantity variances are visible in the Model Viewer. To learn more about Adding Additional Columns in Compare Mode, click here.

Our default precision is 0.01. Objects with a quantity variance beyond 0.01 will be ignored as a variance. For example, if the area of a floor slab increases from 400.00 SF to 400.01 SF, a variance will be reported and the object will be color-coded according to the proper variance filter. A floor slab with a quantity of 400.0001 SF changing to 400.005 SF will not be reported as a variance.

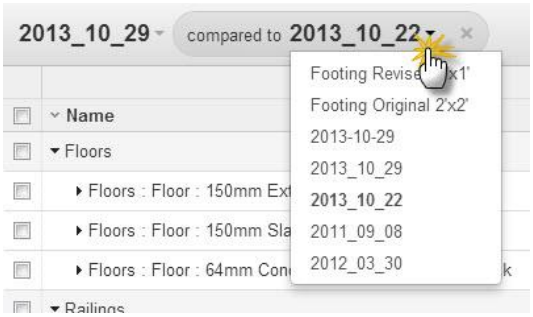
Note: *By default, Visual Variance will filter out Unchanged (or recurrent) objects and will apply Ghost mode to the Model and Grid. To view the Unchanged items in the Grid or Viewer, you will need to turn on the Unchanged variance filter as explained in this document.*

Running a Variance Report

To run a variance report, at least two model versions must be published to Assemble. To run the variance:

1. Click the blue **compare to** link next to the model version name, or primary model, at the top of the Grid. By default, Assemble selects the second to last version published as the secondary model.

2. To change the model versions being compared, select the primary and secondary versions from their corresponding drop-down lists.

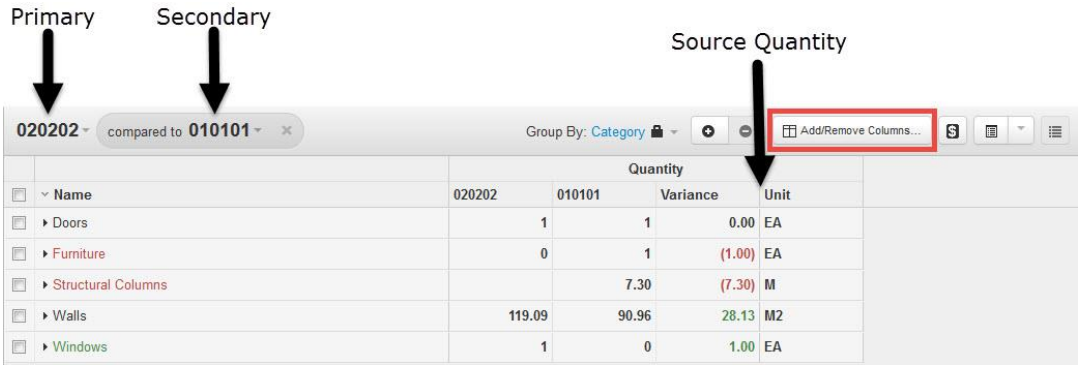


Variance in the Grid

When model versions are compared, the Grid displays the source quantity for each model and the variance between the versions. Additional columns can be added using the **Add/Remove Columns** button, with an option to **Show variance column only**.

A quantity variance in green signifies quantities added, whereas a quantity variance in (red) signifies quantities deducted.

Text for Source IDs, Type Names, and Category Names are identified in black, green, or red. Black text signifies that the object exist in both versions of the model. Green text signifies that the object exists only in the primary version of the model, and red text signifies that the object exists only in the secondary version of the model.



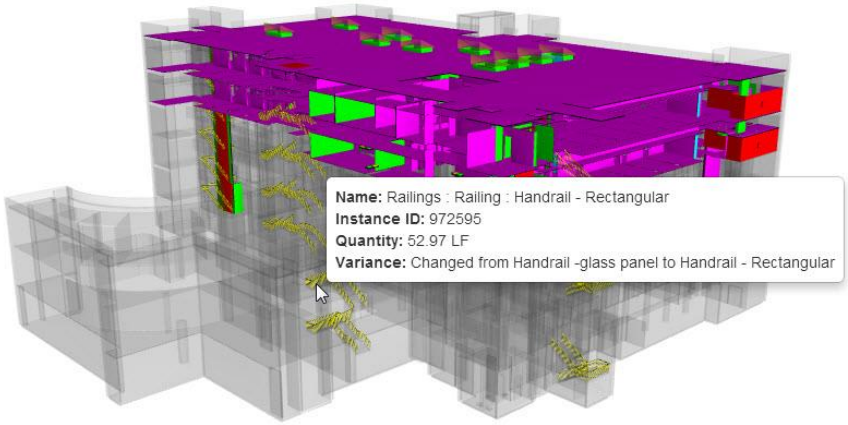
	Name	Quantity 020202	010101	Variance	Unit
	Doors	1	1	0.00	EA
	Furniture	0	1	(1.00)	EA
	Structural Columns		7.30	(7.30)	M
	Walls	119.09	90.96	28.13	M2
	Windows	1	0	1.00	EA

Variance in the Model Viewer

When model versions are compared, the Viewer displays the model geometry for the primary model, and geometry from the secondary model when objects are not visible (or were deleted) from the primary model. Objects with variance are color-coded according to the variance filter they are assigned to, and the legend for the variance filters is displayed in the **Show variances for...** section.

Tooltips within the Viewer will allow a quick overview of the object and its variance.

Note: *There are some objects that exist in the Grid but do not have geometry in the Model Viewer. Often in Revit, multiple object types make up a system family. The geometry of the types are available in the Model Viewer. Examples include curtain walls and stacked walls, which do not have representing geometry for the whole (or system family) but do have geometry for the parts (or object types). Other objects, such as 2D wires or lines, are not represented with geometry in the Viewer.*

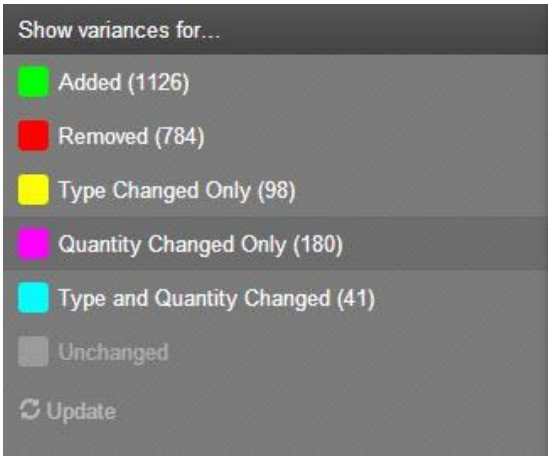


Variance Filters

Visual Variance introduces a filter sub-set; the variance filters. The variance filters offer a color legend for each variance filter and a count of objects assigned to the filter.

It is important to note that any given element within your model will be classified within only one variance category.

Note: *Variance results are displayed and classified in coordination with the grouping of your dataset, filters applied to the model, and the source quantity assigned to objects in your dataset.*



Added: Objects that are added to the primary model version and not existing in the secondary model version.

- Example: A 1-HR Fire Rated wall was removed completely and replaced by a new Non-rated Smoke Barrier wall. The primary model version will report an addition of one Non-rated Smoke Barrier wall.

Removed: Objects that exist in the secondary model version and are removed from the primary model version.

- Example: A 1-HR Fire Rated wall was removed completely and replaced by a new Non-rated Smoke Barrier wall. The primary model version will report a deduct of one 1-HR Fire Rated wall.

Type Changed Only: Objects with either a type name change between model versions or a change in a parameter that is selected with the Group By tool.

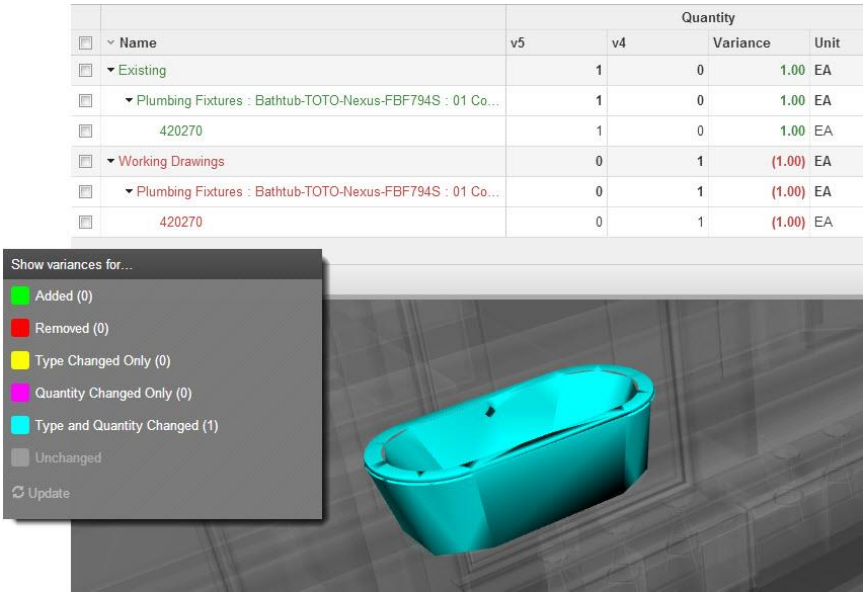
- Example: Changing the type name of a floor slab without affecting its quantity would result in a Type Changed Only object.
- **NOTE:** The variance filters for Type Change are keyed off of the Type ID. So, if the Type Name is changed in Assemble, or the Type is renamed in Revit, the Type ID would not change. If the Type is changed in Revit, and not just renamed, then the Type ID would also change, and thereby showing as a type change in Assemble.

Quantity Changed Only: Objects that have increased or decreased in their source quantity, depending on the source quantity assigned to the objects.

- Example: A floor slab in a garage has been increased by 100 square feet. By assigning the source quantity of SF to the floor slab, a quantity variance of area will be reported. By assigning the source quantity of CY to the floor slab, a quantity variance for volume will be reported. However, by assigning the Thickness property in LF to the floor slab, a variance will not be reported because the thickness of the floor slab did not change.

Type and Quantity Changed:

- Example: In the first version of a model, a bathtub has been assigned to the Working Drawings phase. In the second iteration of the model, the bathtub is assigned to the Existing phase. When grouping by Category, a variance is not reported. The source ID of the bathtub was not added or removed between the model iterations, nor did the Type Name change. When grouping by Phase, however, variances are reported. Within the grid, the Existing phase shows one bathtub added, and the Working Drawings phase shows one bathtub removed. Within the viewer, the bathtub is classified as a Type and Quantity Changed variance. The **Group By** parameter of the bathtub changed, resulting in a type change, and a bathtub was either added or removed from the **Group By** parameter, resulting in a quantity change.



Unchanged: Objects that did not incur any change between model iterations. By default, the Unchanged filter is de-selected. Unchanged objects are filtered from the Grid but are visible in the Viewer with Ghost mode applied.

To apply variance filters:

1. Select (turn on) or de-select (turn off) the variance filters based on the results you expect to see in the Grid and Viewer.

2. Selected variance filters containing objects you want to see in the Grid and Viewer will have color applied in the legend.

3. De-selected variance filters containing objects you do not want to see in the Grid and Viewer will be grayed out without a count of objects affected by the filter.

4. After selecting and/or de-selecting variance filters, click the **Update** button to apply your changes

Exporting to Excel

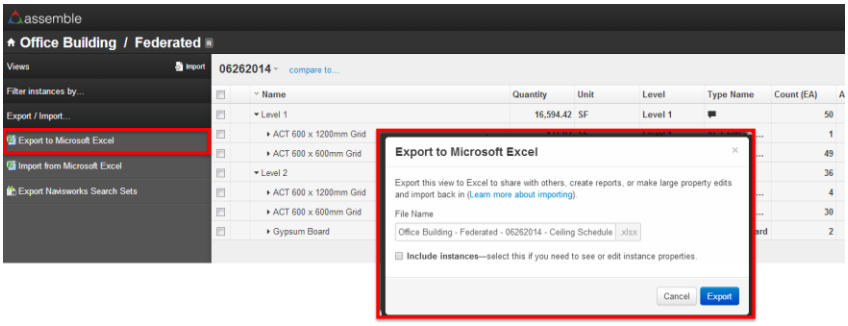
Assemble gives you the ability to export the view to a Microsoft Excel file so you can share the model data with a colleague or for conditioning the information in Excel, with the opportunity to upload the date back to Assemble.

You can choose to export the data to include instances or to exclude instances. By including instances, you will see a row for each instance of the model element in your Excel file. By excluding instances, you will see your grouping order tiered from the highest tier of your grouping order down to the Type level.

Note: *Excluding instances will reduce the size of the exported file.*

To export to Microsoft Excel including instances:

1. In the Export / Import section of the Navigation Panel, click Export to Microsoft Excel.
2. Assemble generates a default file name using the Project Name - Model Name - Version - View - DateTime. Change the file name if desired.
3. Check the Include instances check box to export the instances (required for editing the data in Excel and importing into Assemble).
4. Click Export.



Notes regarding the exported Excel file:

- Pick-list options (enumerations) for properties that have pick-list values in Assemble will be available in Excel. Look-up values, such as Assembly Codes, will not be look-up values in the Excel file.
- The Excel worksheet will not be Protected by default. However, by protecting the sheet, cells that can be imported into Assemble will be unlocked, whereas all other cells will be locked.
- Quantity column values will be rounded to 2 decimal places (hundredths).
- Quantity column values will have bold text.
- Rows 1 through 4 will be "frozen" so headers do not scroll.
- Borders are set to All, Black, and Thin.

Exporting to Navisworks

Search sets are based on the current view and are used to export Assemble data for use in Autodesk Navisworks, a powerful tool for graphical analysis and model visualization.

You can choose to export the data to include instances or to exclude instances. By including instances, you will see a line item for each instance of the model element in your search set folder. By excluding instances, you will see your search set folders tiered from the highest level of your grouping order down to the Type level.

Note: *Excluding instances will reduce the size of the exported file.*

To create a Navisworks Search Set:

1. In the *Export to* area, click **Navisworks Search Set**.

2. Assemble generates a default file name named using the Project Name - Model Name - Version - View - DateTime. Change the file name if desired.

   Note: *If using Google Chrome or Internet Explorer, with %DD in the file name, you will need to either place a space or underscore between the percentage sign (%) and the letters 'DD' . Failure to do so will cause an import error in Navisworks.*

3. Check the Include instances check box to export the instances or leave the check box unchecked to exclude the instances.

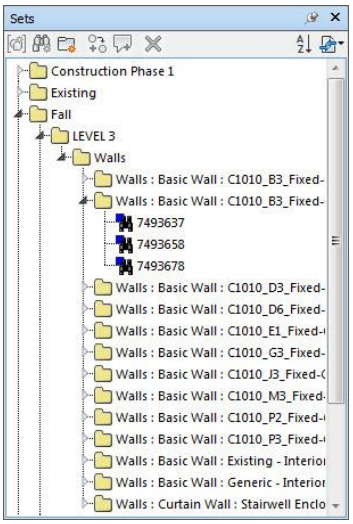
4. Click Export.

Organization of Navisworks Search Sets

The organization for standard search sets (not variance search sets) is replicated from your current view within Assemble.

Example 1. If your model data is grouped by phase created, level, and category name, the search sets will also be grouped by phase created, level, and category name.

Example 2. If a filter is applied to your model inventory so that only walls are visible, the search set export will contain only walls.



5. Managing Data in Assemble

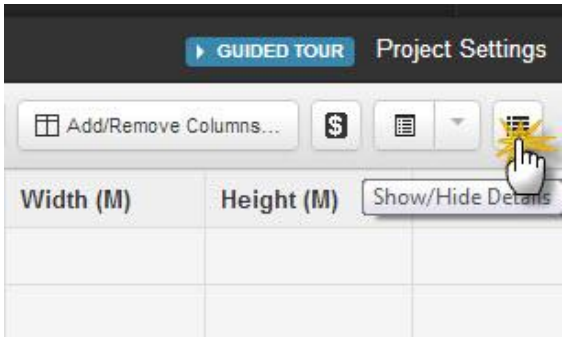
Modifying and Conditioning Type and Instance Parameters in Assemble

None geometrical parameters in Revit can be modified and conditioned in Assemble at both the instance and type level. Multiple objects can be selected across multiple parameters making it easy and transparent to add information and QA/QC information with accuracy.

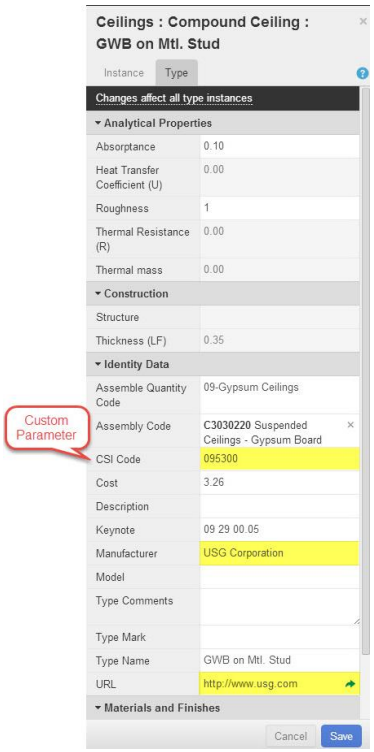
To modify type or instance properties:

1. Select the components that you would like to modify from the Grid View or Model View.

2. Open the Properties Manager panel by clicking the Show/Hide Details button at the top-right corner of the Assemble Grid.



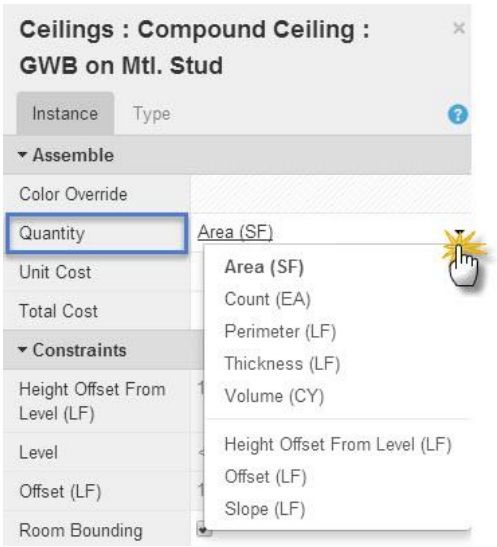
3. In the Properties Manager panel, use the instance tab or type tab to navigate to the parameters you would like to modify. Edit the parameter and then click Save.



Properties Manager Constraints

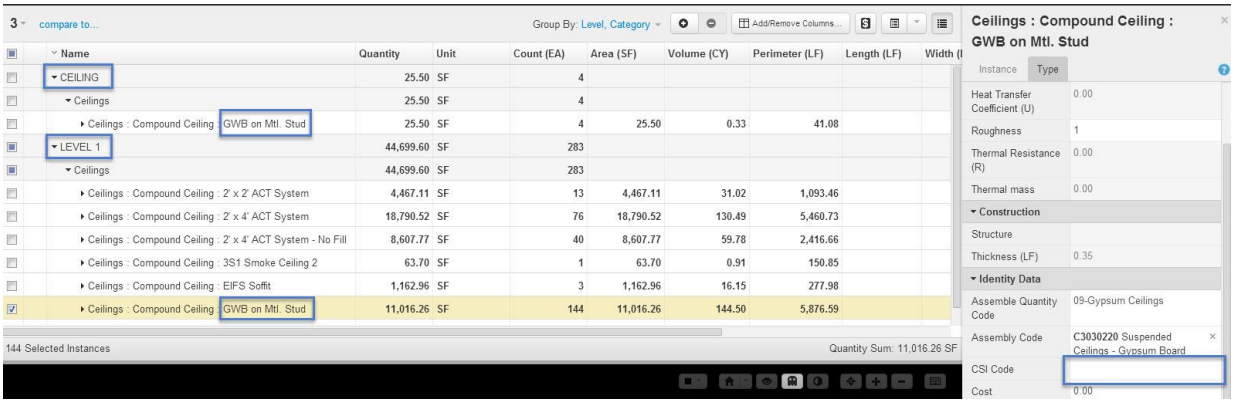
- Fields that are grayed-out cannot be edited within Assemble.
- Unit Cost, Total Cost, Quantity (source), and Color Override fields are Assemble proprietary fields that can be edited for all instances and cannot be synced back to Revit.
- Unit Cost and Total Cost are available for editing when multiple instances are selected when the source quantity specified is the same for all instances, and not when Quantity is <Multiple Values>.

  Note: *The Source Quantity can be changed by selecting an option under the Quantity field on the Instance tab.*



- There are other properties which Assemble calculates or renames for ease of use and consumption by our users. These are based on one or more parameters as they exist in Revit. These properties will not be synced to the Revit model.
- Changes to type properties will affect all instances of the Type, including instances which may not be visible in your current view. If multiple types are selected, changes will affect all instances of the selected types.

Type Property example: If you edit the *CSI Code* field, which is a type property, for ceiling type *GWB on Mtl. Stud* found on Level *CEILING* of your model, the *CSI Code* will also be changed for the same type of ceiling found on Level *1* of your model. All 148 instances of ceiling type GWB on Mtl. Stud will be updated with the CSI Code entered in the Properties panel.



Modifying and Conditioning Information in Excel

Data conditioning is a core value of Assemble. While Assemble has made huge advances in conditioning model information directly through the Assemble web application, there are still a number of scenarios that are quite painful, if not impossible to achieve. While these scenarios are difficult to handle through the Assemble web application, they are quite easy to address using standard Excel features. Rather than recreate the wheel, Assemble leverages the power of Excel and the ability to update Assemble parameters via an Excel import.

Examples:

- Apply a formula to a parameter to arrive at a value.
- Apply a consecutive number to a list of rooms.
- Quickly copy and paste repetitive data, such as floor finish for rooms.

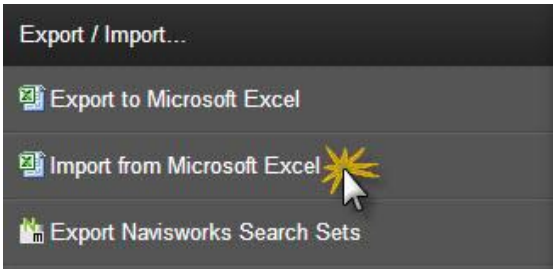
To begin modifying or conditioning data in Excel, you must first export a view from Assemble**.** Review the following consideration before getting started:

- An Excel file exported from Assemble can be imported into Assemble. We strongly recommend keeping an unaltered version of the Excel export, should you need to reset data back to its original state. The import process cannot be undone.
- The Excel export from Assemble is an unprotected worksheet, by default. The worksheet can be protected by clicking on the Review tab, and then by selecting Protect Sheet from the Changes panel. Unprotected cells are editable cells that will be imported back into Assemble, should you choose to do so. Protected cells are read-only, as they are read-only in Assemble. Any edits made to read-only fields in the Excel file will not be imported into Assemble. Should you decide to protect the worksheet, default unlocked cells include:
    - Editable instance properties on the instance row only.
    - Editable type properties on the type row only.

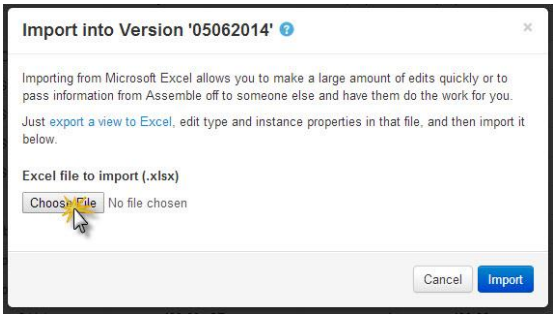
Begin the data modifications by exporting data to Excel. Review page 18, for export directions.

After modifying and conditioning the data in Excel, Save the file and open the Saved View in Assemble that the file was exported from. Then to import data into Assemble:

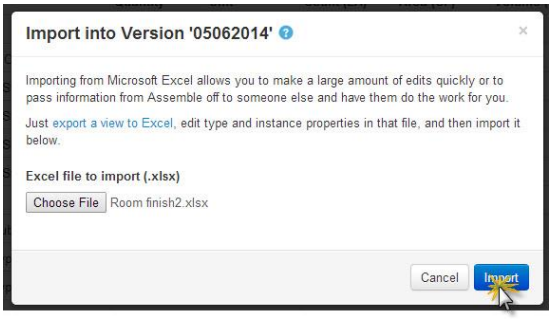
1. From the left Navigation panel, under Export / Import Section, select Import from Microsoft Excel.



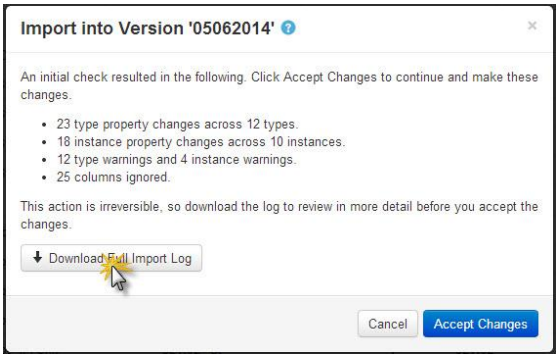
2. Click Choose File to locate and upload the Excel file you wish to import. Please note that your file must adhere to the import acceptances and constraints listed below.



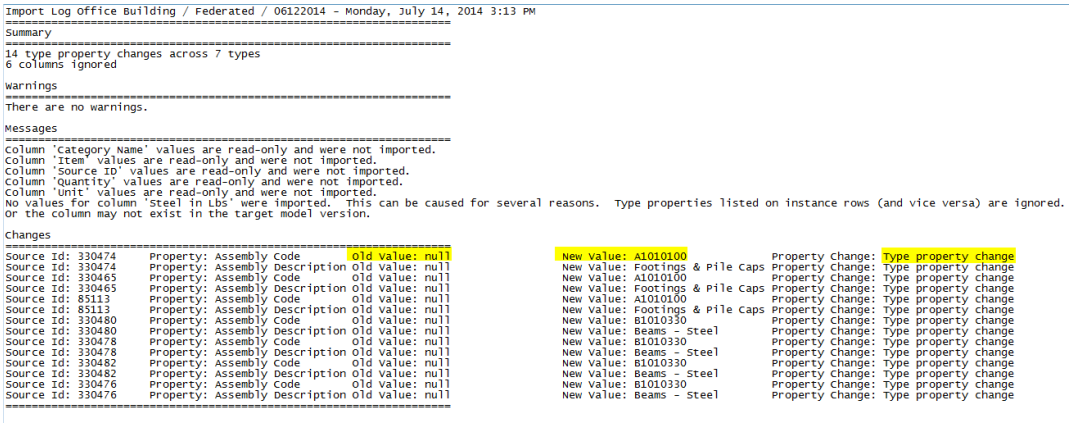
3. After uploading your Excel file, click Import. You will have a chance to review what will be imported prior to accepting the changes.



4. The Initial Check dialogue window will provide you with a summary of changes, or will notify you that there is nothing to change. To see the individual call-out of changes, click the Download Full Import Log button prior to accepting the changes. Please note that once changes are accepted, this cannot be undone.

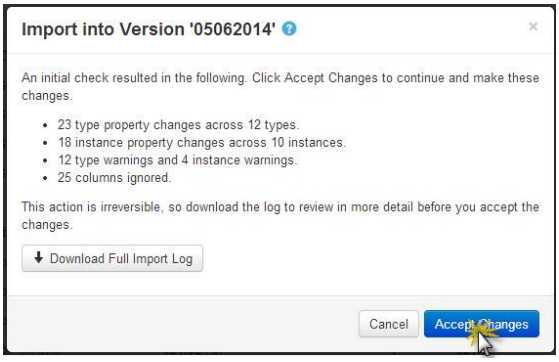


5. The Import Log will list the instance and/or type changes, any warnings regarding making the acceptance, and/or messages regarding ignored columns.

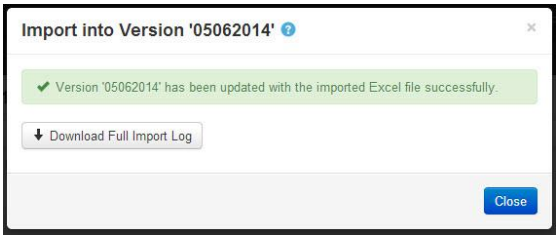


```
Import Log Office Building / Federated / 06122014 - Monday, July 14, 2014 3:13 PM
=================================================================
Summary
=================================================================
14 type property changes across 7 types
6 columns ignored

Warnings
=================================================================
There are no warnings.

Messages
=================================================================
Column 'Category Name' values are read-only and were not imported.
Column 'Item' values are read-only and were not imported.
Column 'Source ID' values are read-only and were not imported.
Column 'Quantity' values are read-only and were not imported.
Column 'Unit' values are read-only and were not imported.
No values for column 'Steel in Lbs' were imported.  This can be caused for several reasons.  Type properties listed on instance rows (and vice versa) are ignored.
Or the column may not exist in the target model version.

Changes
=================================================================
Source Id: 330474     Property: Assembly Code        Old Value: null          New Value: A1010100             Property Change: Type property change
Source Id: 330474     Property: Assembly Description Old Value: null          New Value: Footings & Pile Caps Property Change: Type property change
Source Id: 330465     Property: Assembly Code        Old Value: null          New Value: A1010100             Property Change: Type property change
Source Id: 330465     Property: Assembly Description Old Value: null          New Value: Footings & Pile Caps Property Change: Type property change
Source Id: 85113      Property: Assembly Code        Old Value: null          New Value: A1010100             Property Change: Type property change
Source Id: 85113      Property: Assembly Description Old Value: null          New Value: Footings & Pile Caps Property Change: Type property change
Source Id: 330480     Property: Assembly Code        Old Value: null          New Value: B1010330             Property Change: Type property change
Source Id: 330480     Property: Assembly Description Old Value: null          New Value: Beams - Steel        Property Change: Type property change
Source Id: 330478     Property: Assembly Code        Old Value: null          New Value: B1010330             Property Change: Type property change
Source Id: 330478     Property: Assembly Description Old Value: null          New Value: Beams - Steel        Property Change: Type property change
Source Id: 330482     Property: Assembly Code        Old Value: null          New Value: B1010330             Property Change: Type property change
Source Id: 330482     Property: Assembly Description Old Value: null          New Value: Beams - Steel        Property Change: Type property change
Source Id: 330476     Property: Assembly Code        Old Value: null          New Value: B1010330             Property Change: Type property change
Source Id: 330476     Property: Assembly Description Old Value: null          New Value: Beams - Steel        Property Change: Type property change
=================================================================
```

6. When you are ready to commit to the changes, click the Accept button. Otherwise, discard the import by clicking the Cancel button.



7. After accepting the changes, you will be notified when the import is successful. Again, you have an opportunity to view the committed changes by clicking the Download Full Import Log button. Click Close to return to your work in Assemble.



8. The Assemble Grid will be refreshed to show your imported data.

Name	Quantity	Unit	Number	Ceiling Finish	Floor Finish	Wall Finish
Rooms	3,268.77	SF				
Rooms	3,268.77	SF		Acoustic		
421664	455.44	SF	1	Acoustic	Carpet	Paint
421670	51.59	SF	2	Acoustic	Carpet	Paint
421672	6.47	SF	3	Acoustic	Carpet	Paint
421674	6.45	SF	4	Acoustic	Carpet	Paint
421676	9.39	SF	5	Acoustic	Carpet	Paint
421678	3.24	SF	6	Acoustic	Carpet	Paint
421680	11.21	SF	7	Acoustic	Carpet	Paint
421696	436.68	SF	8	Acoustic	Carpet	Paint
421698	60.80	SF	9	Acoustic	Carpet	Paint
421700	6.34	SF	10	Acoustic	Carpet	Paint

When Importing Data to Assemble from Excel consider:

- The imported Excel file will affect only the model version you are currently working with.
- To import instance properties, instance IDs must be present.
- Type properties can be imported without the need for instance IDs.
- Imported properties will adhere to the Properties Manager rules.
- Read-only properties will not be imported.
- Geometrical data cannot be altered.
- Excel file cannot have duplicate column headers.
- Column headers in Excel file can exist in either Row 1 or Row 4.
- The following columns (properties) will always be ignored:
    - Color
    - Category Name
    - Item column
    - Source ID
    - Quantity
    - Unit
    - Geometrical columns, such as Length, Area, Volume, etc.
- Import from Excel supports properties for Revit models; AutoCAD properties are not currently supported.
- Models published prior to February 28th, 2014, will have limited editable properties. To view, manage, and import all properties, models would need to be republished.
- The parameter must exist in Assemble in order to import.
- Visual Variance mode does not support the Excel Import feature.

Sync Data to the Revit Model

Sync data from Assemble back into your model by using Assemble's Sync feature. Model information from Assemble can be synced back to Revit using one of three options.

Note: When syncing back custom parameters that were published from a previous version of your model, be sure those custom parameters also exist in the model you are currently syncing to. Assemble does not create custom parameters; the parameter MUST exist in your model for the data to be transferred.

Sync from view: Sync only properties chosen as columns in the view (Recommended)

- This option allows you to utilize a saved view in Assemble, where a limited amount of properties for a limited data set of types and instances are included. This option will not sync back properties that are not chosen as columns in the Grid, nor will sync back your selected properties of elements that are filtered out of the Grid.
- To learn more about *Working with Views*, click here.

Sync from view: Sync all properties for all instances and types in the view

- This option allows you to utilize a saved view in Assemble, where all properties of a limited data set of types and instances are included. This option will not sync back properties of elements that are filtered out of the Grid.
- To learn more about *Working with Views*, click here.

Sync everything: Sync all properties for all instances and types in Assemble, regardless of any saved views (Use with caution)

- This option will overwrite all existing values in the Revit model for every element's properties.

Note: Considerations have been taken in regards to the fields that can be edited in Assemble and synced to the Revit model.

- Assemble Systems commits to preserving the integrity of the model. Therefore, properties that alter the geometry, appearance, or location of the model element cannot be altered.
- Fields that are write-restricted in Revit, such as Assembly Description or OmniClass Number, are not available for edit within Assemble as they are restricted for edit in Revit.

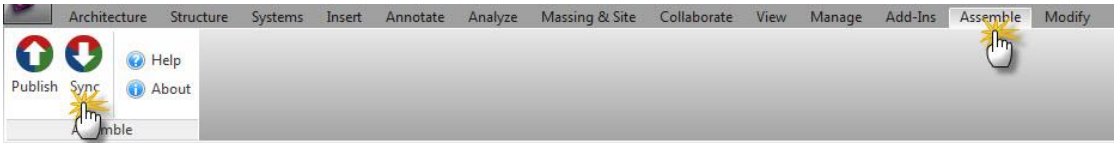
Assembly Descriptions can be edited in the UniformatClassifications.txt file opened by the Revit application. The file can be found in your *C:\Users\[your computer name]\AppData\Roaming\Autodesk\Revit\Autodesk Revit [version]* folder location.

OmniClass Numbers and OmniClass Titles can be edited in the OmniClassTaxonomy.txt file opened by the Revit application. The file can be found in your *C:\Users\[your computer name]\AppData\Roaming\Autodesk\Revit\Autodesk Revit [version]* folder location.

To Sync from a particular Saved View in Assemble (Sync only properties chosen as columns in the view):

1. Open your model in Revit that corresponds with the model data in Assemble to be synced.

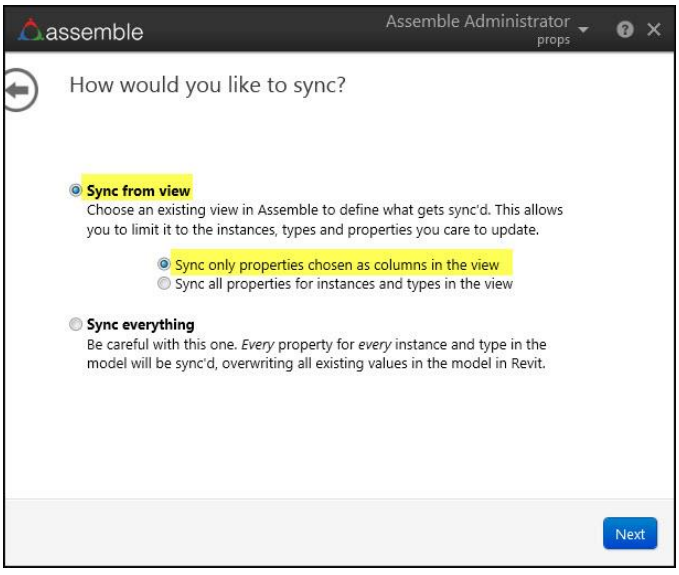
2. Select the **Assemble tab**, and then select the option to **Sync**.



3. Select your project.

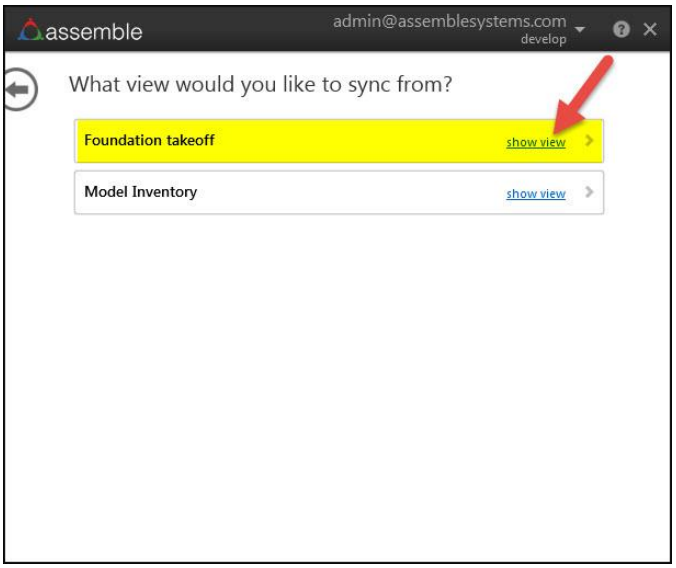
4. Select your model.

5. From the **How would you like to sync?** window, select the radio button next to **Sync from View**, followed by the radio button next to **Sync only properties chosen as columns in the view**.

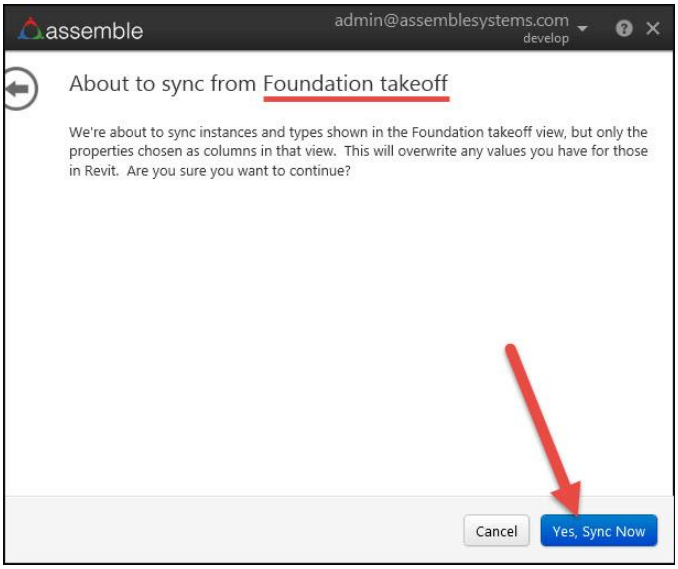


6. From the What view would you like to sync from? window, you will select the view you want to use. If you need to preview that view, just to make absolutely sure that it contains the

columns and elements you want to sync, select the link to show view. This will open a browser window to your saved view within your project.

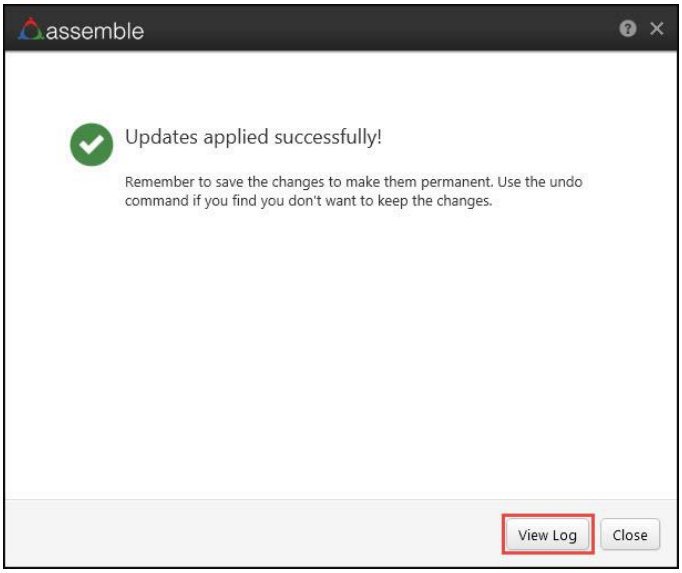


7. Verify your selection from the About to sync from... window, and then click the Yes, Sync Now button, or hit Cancel to end the command.



8. Once the updates have been successfully applied, click the Close button to close the Sync dialogue window or click View Log to see an audit of the properties and elements that were modified using the Sync feature.

Note: *Be sure to save your model to keep the applied edits. If you decide to remove the applied edits, use the Undo command in Revit.*



9. The Log file will indicate what version in Assemble the information was synced from, each element or type identified by its ID, the parameter that was modified, and the previous and updated values.