



Practice Workbook

This workbook is designed for use in Live instructor-led training and for OnDemand selfstudy. The explanations and demonstrations are provided by the instructor in the classroom, or in the OnDemand eLectures of this course available on the Bentley LEARN Server (learn.bentley.com).

This practice workbook is formatted for on-screen viewing using a PDF reader. It is also available as a PDF document in the dataset for this course.

Getting Started with Item Sets within a Building Workflow

This workbook contains exercises to guide you through mastering the tools and techniques to create and display Items and Item Sets within the context of a Building Workflow.

Note: The exercises are meant to be worked on either in order of exercises in each Practice Workbook or as individual standalone exercises. You can start at any exercise. Within a subdirectory of the dataset called Milestones there are files named for each individual exercise; begin by using that particular file.

TRNC01636-1/0001

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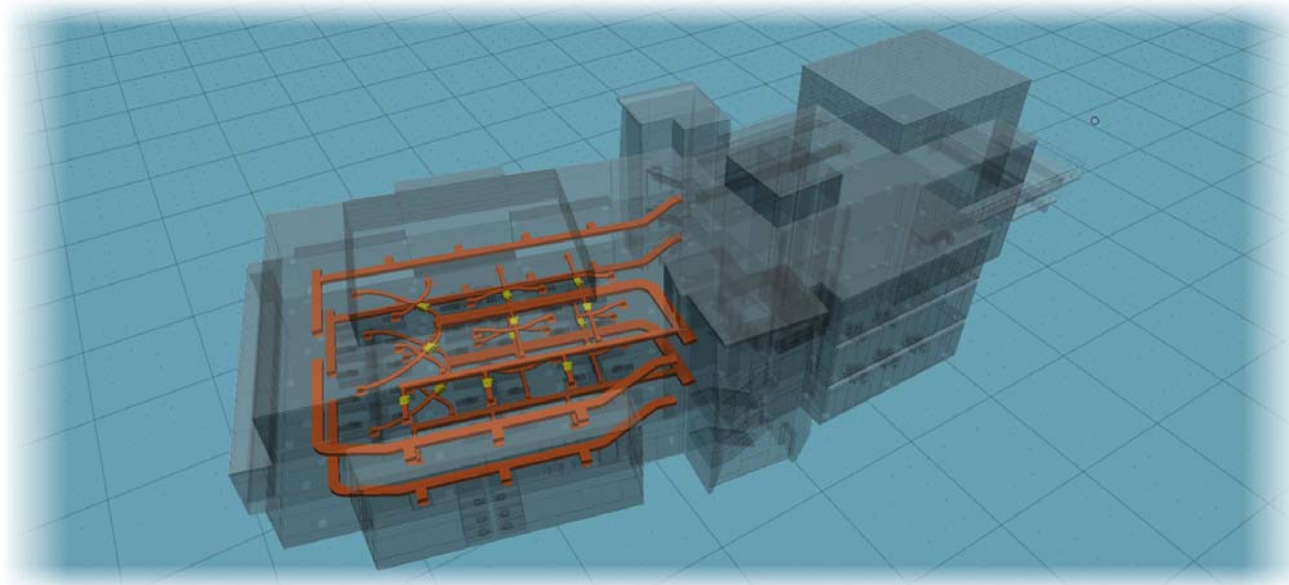
Description and Objectives

Course Description

This workbook contains exercises to create and manage Item Sets. Item sets allow you to group and classify design items based on their attributes and business properties and attach links to common documents. It can be used to quickly group items by construction status to speed design review, or to attach user manuals, details or specifications documents to a group of common items. Once you create the group (or item set), you can manipulate the entire set of items, for example, changing the color and transparency of the elements in the group, by activating the item set.

Skills Taught

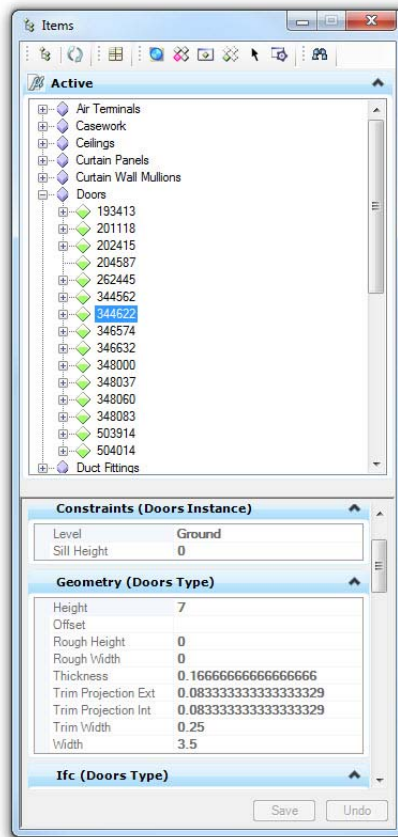
- Utilizing the Item Browser to view Business Data located in the model
- Visually manipulate selected sets of items through color and transparency
- Locate Items based upon a Selection Expression within the design utilizing the Search
- Attach links to common documents



Item Browser: Reviewing the Business Data

A DGN file contains both graphics and business data. You see the graphics displayed in the drawing and the business data appears in the Items dialog. Business data is the real world information associated with the items represented by the graphics in the drawing. In this section we will explore and examine the business data in the Item Browser and Details dialog.

- Review Business Data in Item Browser and Details dialog



The Details dialog displays a table of business data for the selected door item. The table has columns for Item, Assembly Code, Assembly Description, Category, Comments, Construction Type, Cost, Design Option, and Door Material. The table shows 15 rows of data, with the first row highlighted.

Item	Assembly Code	Assembly Description	Category	Comments	Construction Type	Cost	Design Option	Door Material
346574	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
346632	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
348000	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
348037	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
348060	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
348083	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
503914	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel
504014	C1020	Interior Doors	Doors			0	Main Model	Metal - Panel

-
1. Start MicroStation. In the *File Open* dialog, select the **Office Building.dgn**, set the workspace as shown below and open new file:

User: untitled

Project: untitled

Interface: default

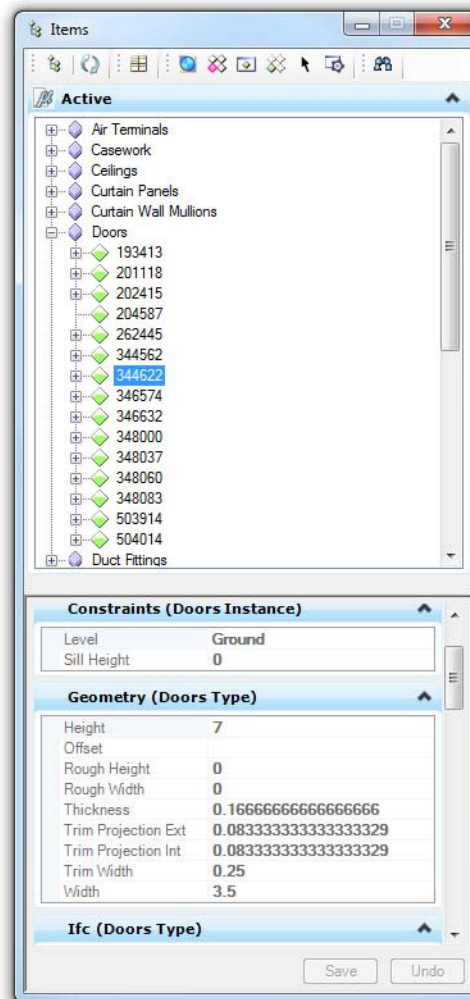
2. From the Main Menu, select **File > Item Browser**.

The Items Browser dialog can be docked to the left-hand or right-hand side of the application window.

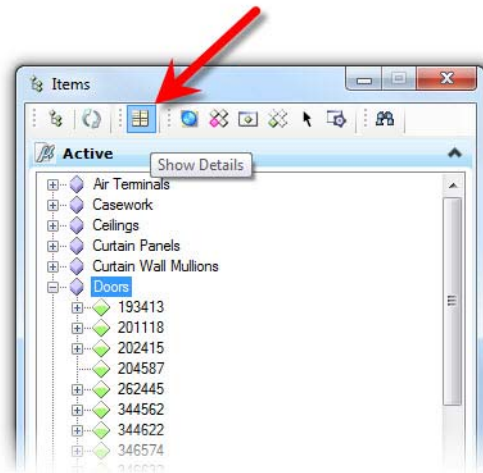
3. Expand the *Active* panel if it's not already expanded.

The Items dialog shows a list of folder-like nodes representing the “item types” of the business items present in the DGN file. These Class Type nodes group the items by type, and when you expand them, you can see the individual “items” (component instances) contained in the DGN file.

4. Expand the item type, *Door*. Click on any one of the resulting 15 items to review details in the lower-portion of the *Items* dialog.



5. Select the item type *Door* again. Along the top of the *Items* dialog, in the icon bank select, **Show Details**.



	Item	Assembly Code	Assembly Descri...	Category	Comments	Construction Type	Cost	Description	Design Option	Door Material	Edited by	Family
▶	193413			Doors			0		Main Model			Curtain Wall Dbl Glass
	201118			Doors			0		Main Model			Curtain Wall Dbl Glass
	202415			Doors			0		Main Model			Curtain Wall Dbl Glass
	204587			Doors			0		Main Model			Curtain Wall Dbl Glass
	262445			Doors			0		Main Model			Curtain Wall Dbl Glass
	344562	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	344622	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	346574	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	346632	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	348000	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	348037	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush
	348060	C1020	Interior Doors	Doors			0		Main Model	Metal - Panel		Single-Flush

Row: 1 of 15

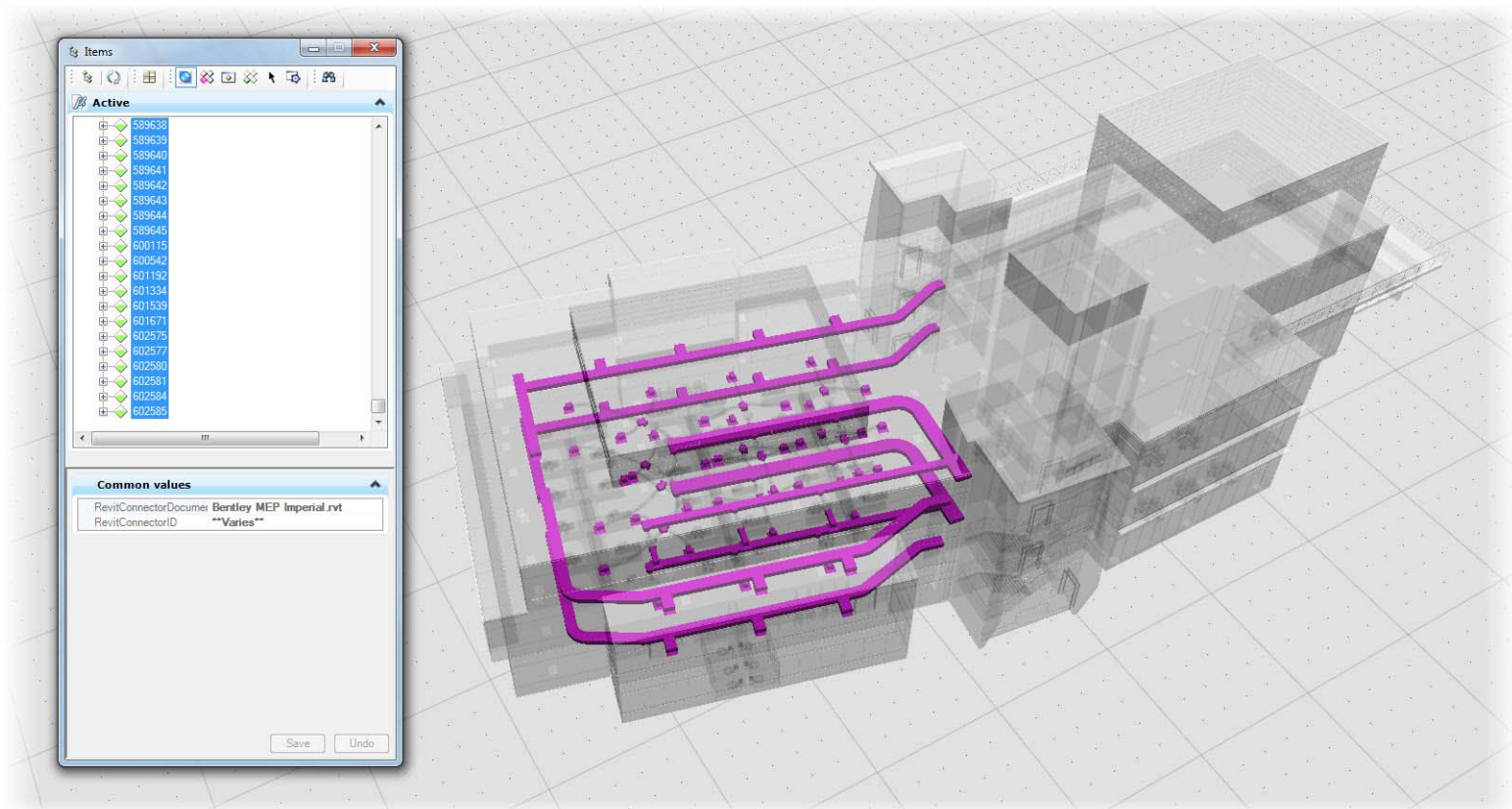
The *Details* dialog displays information related to what is selected in the *Items* dialog. For example, if an item is selected in the *Items* dialog, then the properties or details for that item display in the *Details* dialog.

6. Review the property values of the *Doors* item type group in the *Details* dialog. Close the dialog when finished.

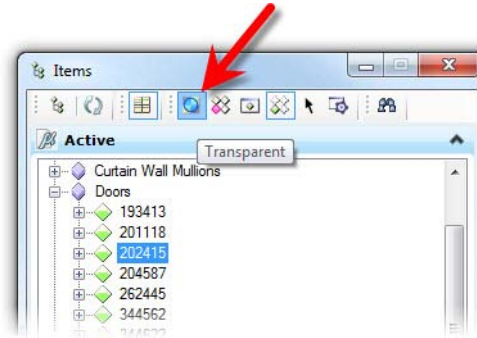
Item Browser: Displaying Items in the Model

In this section, we'll explore the different viewing tools found within the Item Browser. You can view items in your model by setting highlighting, zooming, isolation or transparency tools. And When you turn on the Transparent, Highlight, Zoom, or Isolate tool, they remain on until you turn them off. These tools can work in conjunction with one another to customize the display of the selected item.

- Visually manipulate Items Sets by setting highlighting, zooming, isolation and transparency for items



1. From the *Items* dialog, expand the item type, *Door* and then select the third component instance (**202415**)
2. Along the top of the *Items* dialog, in the icon bank select, **Transparent**.

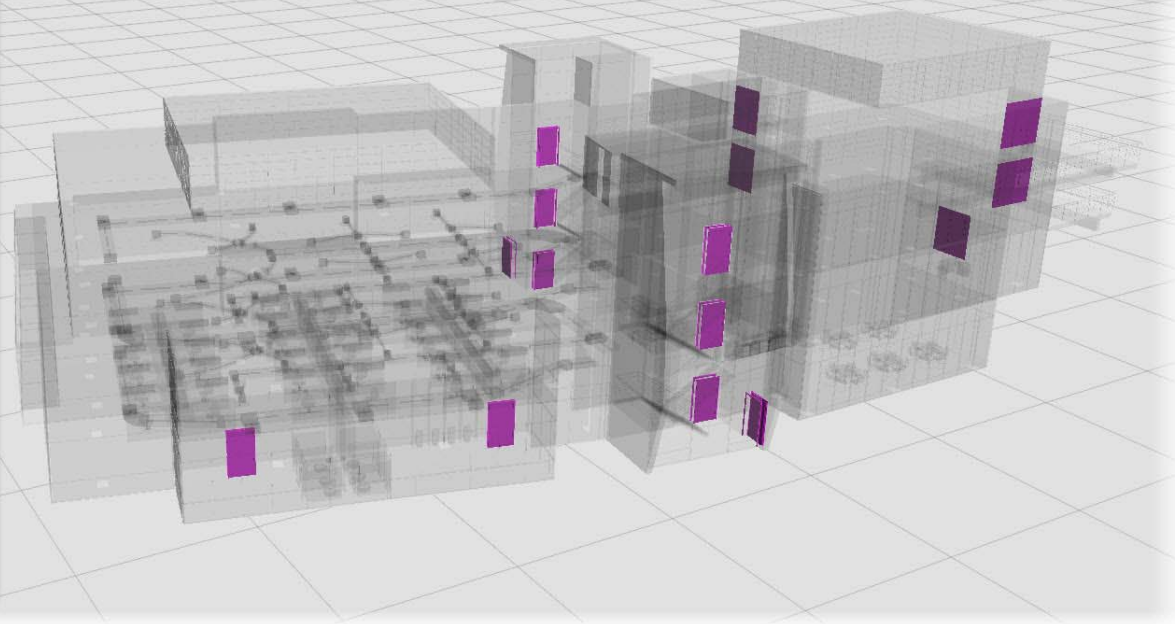
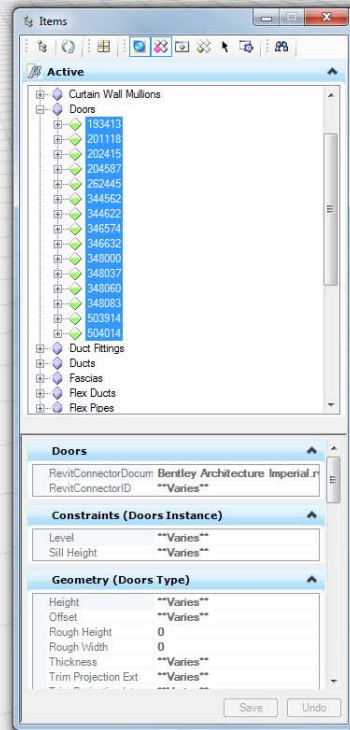


When you turn on Transparency, the entire model is rendered in transparent white with the selected item rendered in its original color. If the original color is white or gray, select Highlight to contrast the item.

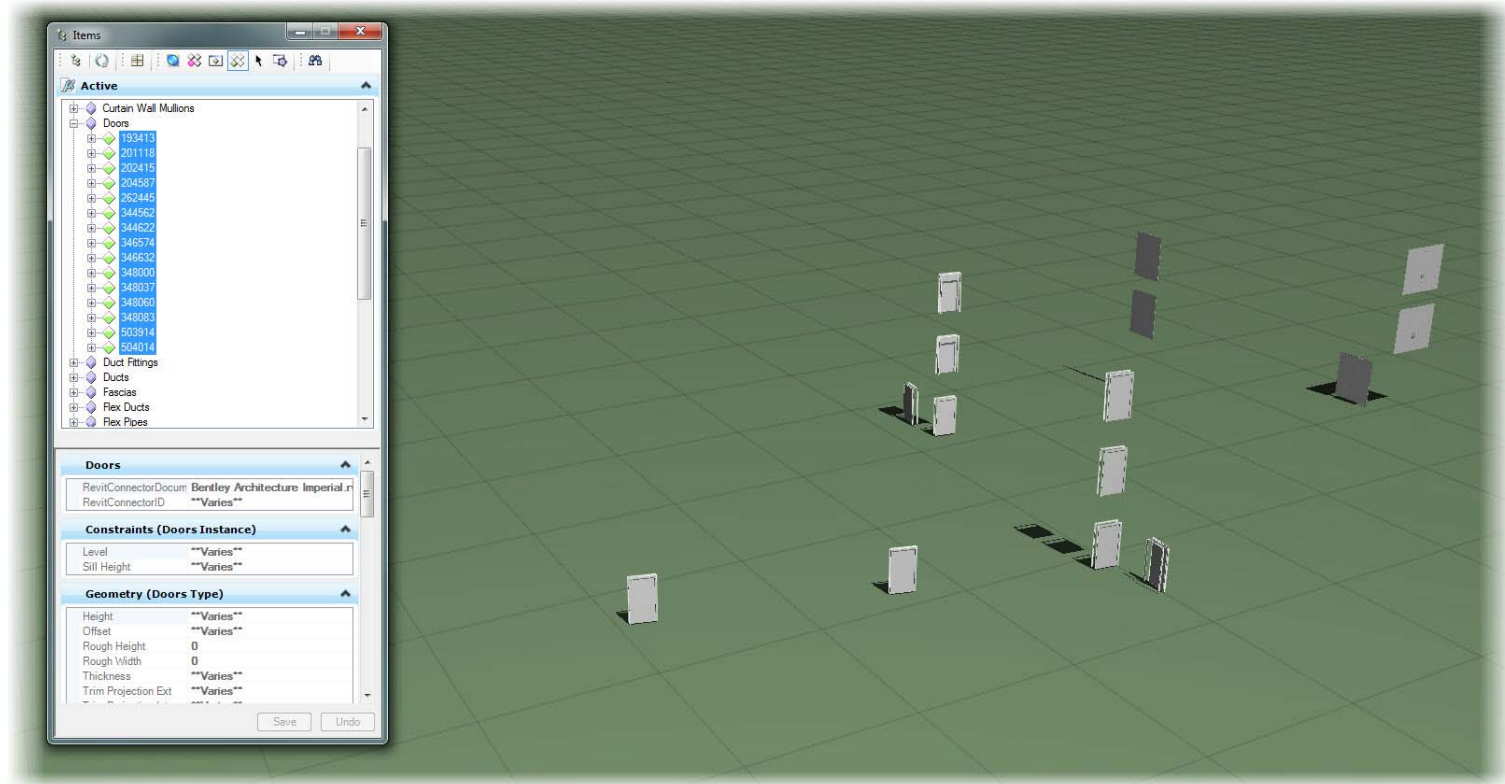
3. In the icon bank, select **Highlight**. Making sure that **Transparent** is still enabled.

The item is highlighted in the drawing.

4. Explore more by select other items. Try selecting more than one component instance or even all the door items.

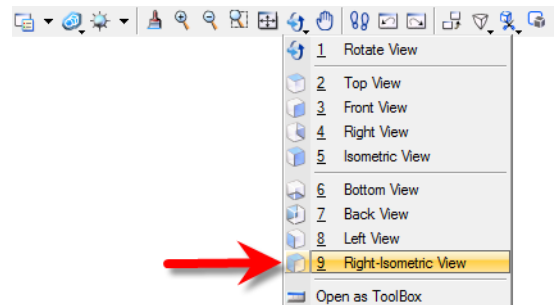


5. Disable **Transparent** and **Highlight** and enable **Isolate**.

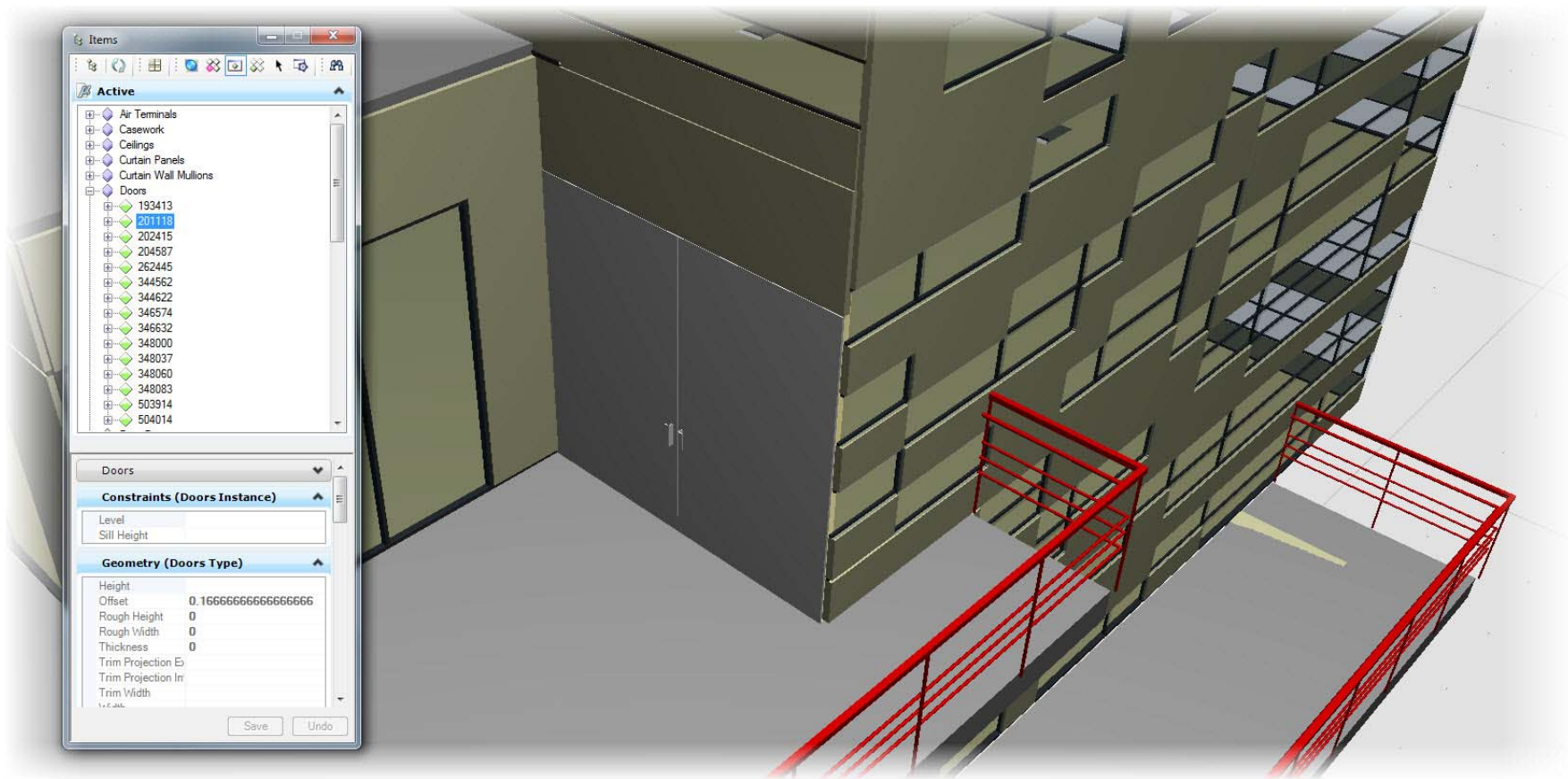


Isolation mode displays the selected item apart from the rest of the items in the model.

6. From the **View Control Tools**, select the **Right-Isometric**.



7. From the *Items Browser*, disable **Isolate** and enable **Zoom**. Select the second door item (**201118**)



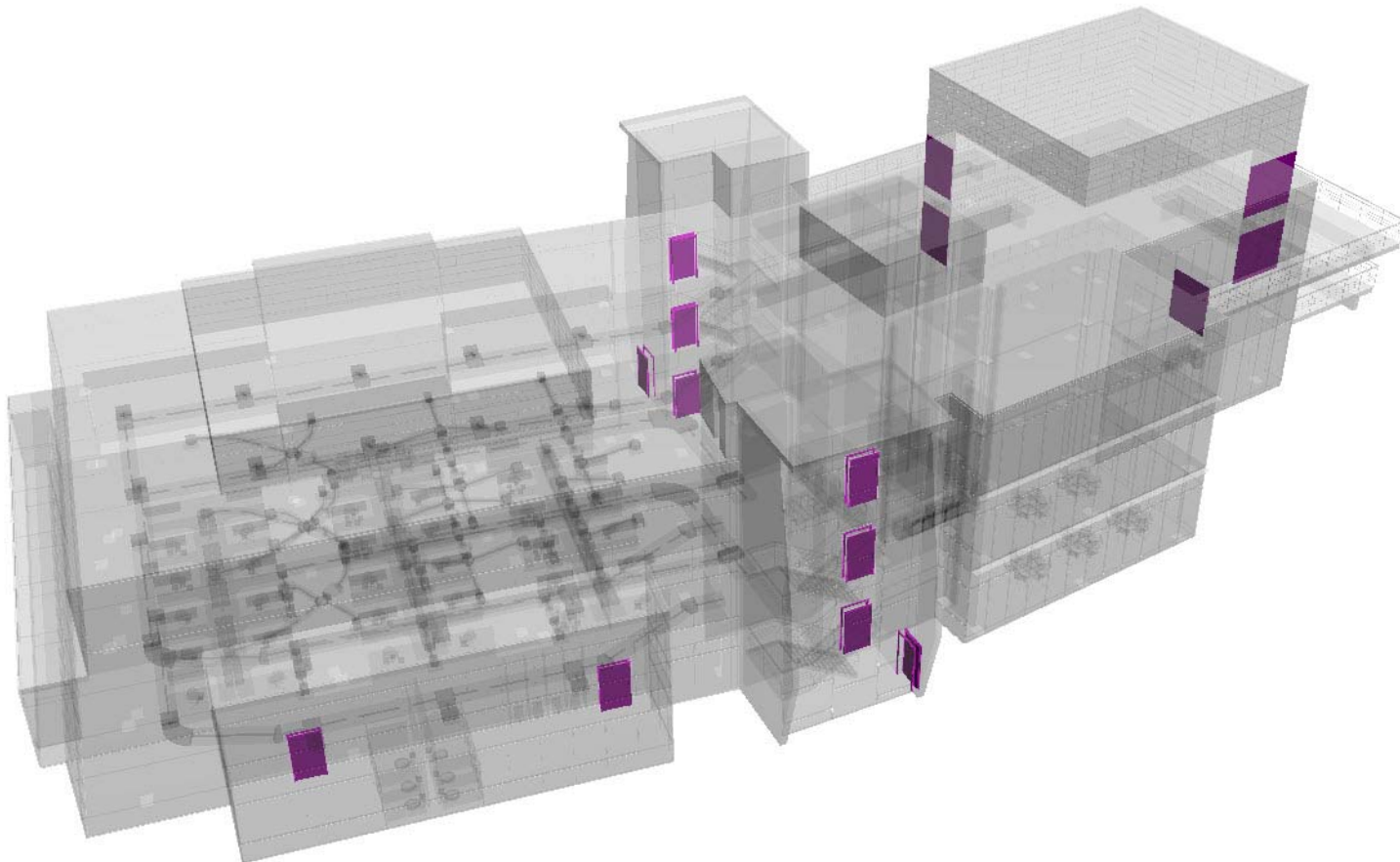
The application zooms in to the item in the drawing. The magnification of the item is controlled by the Zoom Factor setting in the Items Display Settings dialog.

8. Continue exploring by selecting other items, using different combinations of viewing tools found within the *Item Browser*.

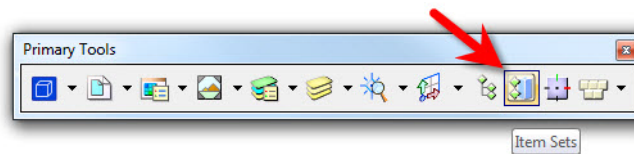
Creating Items Sets using a Basic Selection Expression

Item sets allow you to group and classify design items based on their attributes and business properties. Once you create the group (or item set), you can manipulate the entire set of items, for example, changing the color and transparency of the elements in the group, by activating the item set.

- Locate Items based upon a Selection Expression within the design utilizing the Search
- Creating an Item Set for all doors
- Visually manipulate Items Sets

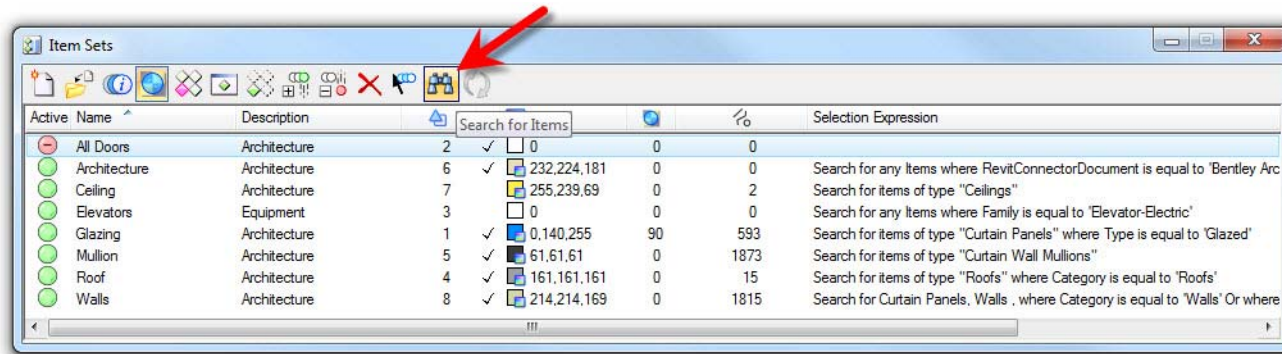


1. Continuing in the **Office Building.dgn**, from the *Primary Tools* select the **Item Sets** icon.

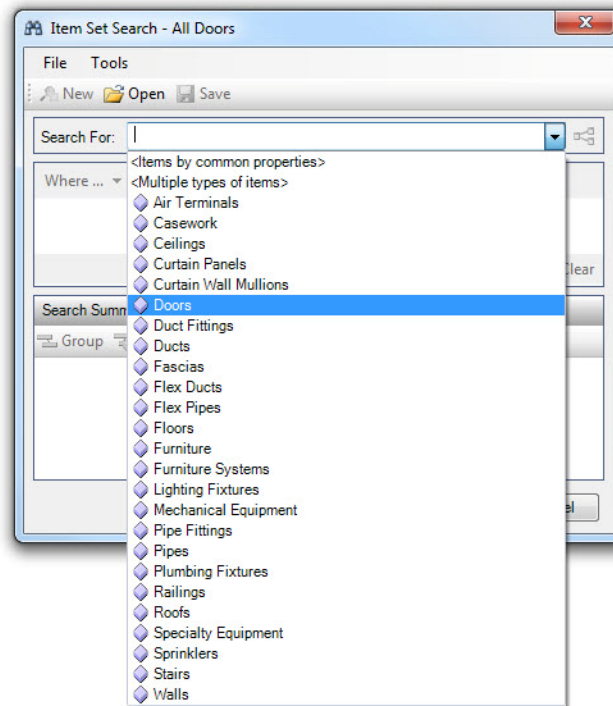


Note: The display of the Item Sets icon with the Primary Tools may be hidden. right-click on toolbar and show it.

2. From the *Item Sets* dialog, click the first icon to create a **New Item Set**. Type **All Doors** for the *Name* and hit Enter or Tab to accept. Click into the *Description* field and type **Architecture**.
3. Click the number in the *Priority* column for the item set, **All Doors**. Set the priority to **2**.
4. With the All Doors item set still selected, choose the icon, **Search for Items**.



5. In the **Search For** drop-down menu of the **Item Set Search** dialog, select the **Doors** Item Group. For this item set we will not set any further search criteria. That said, click **OK**.

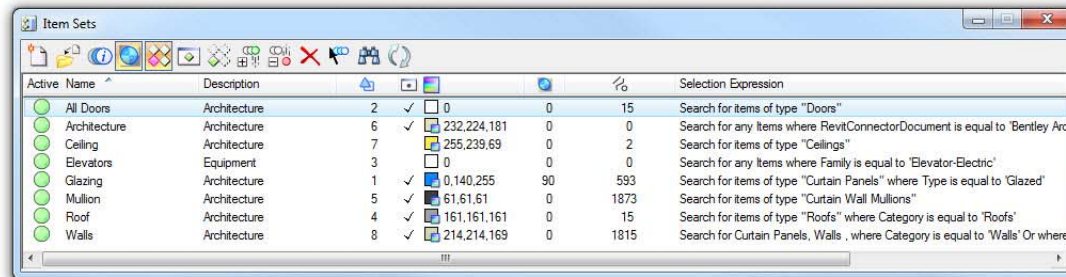
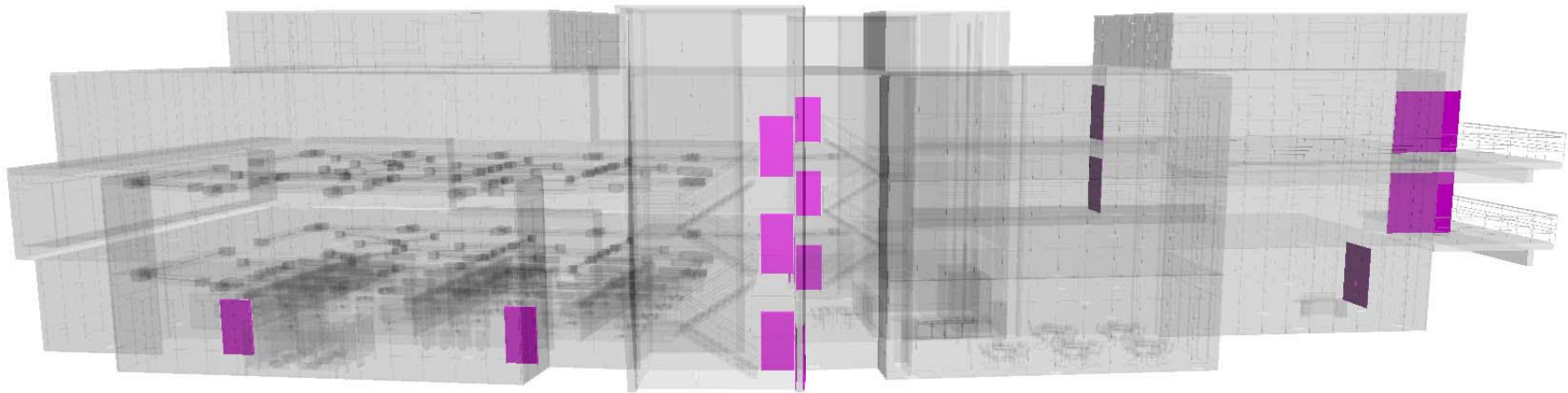


6. The **All Doors** item set is complete. Only thing left to do is to **Activate** it by clicking the red circle, changing it to green in the **Active** column.



Note: When on, all the elements in the item sets are redrawn using the chosen settings for priority, display and color. Click the icon to turn on or off the status of the item set.

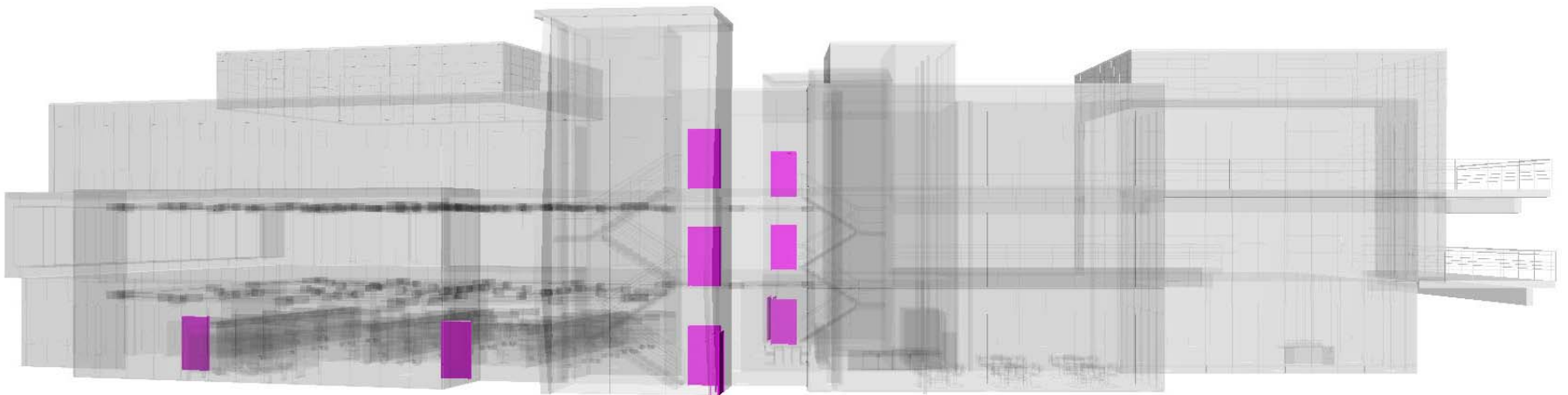
7. The view controls tools (**Transparent**, **Highlight**, **Zoom**, and **Isolate**) found within the *Item Sets* dialog are identical to those found in the *Item Browser*. Try any combination to view the new item set, **All Doors**.



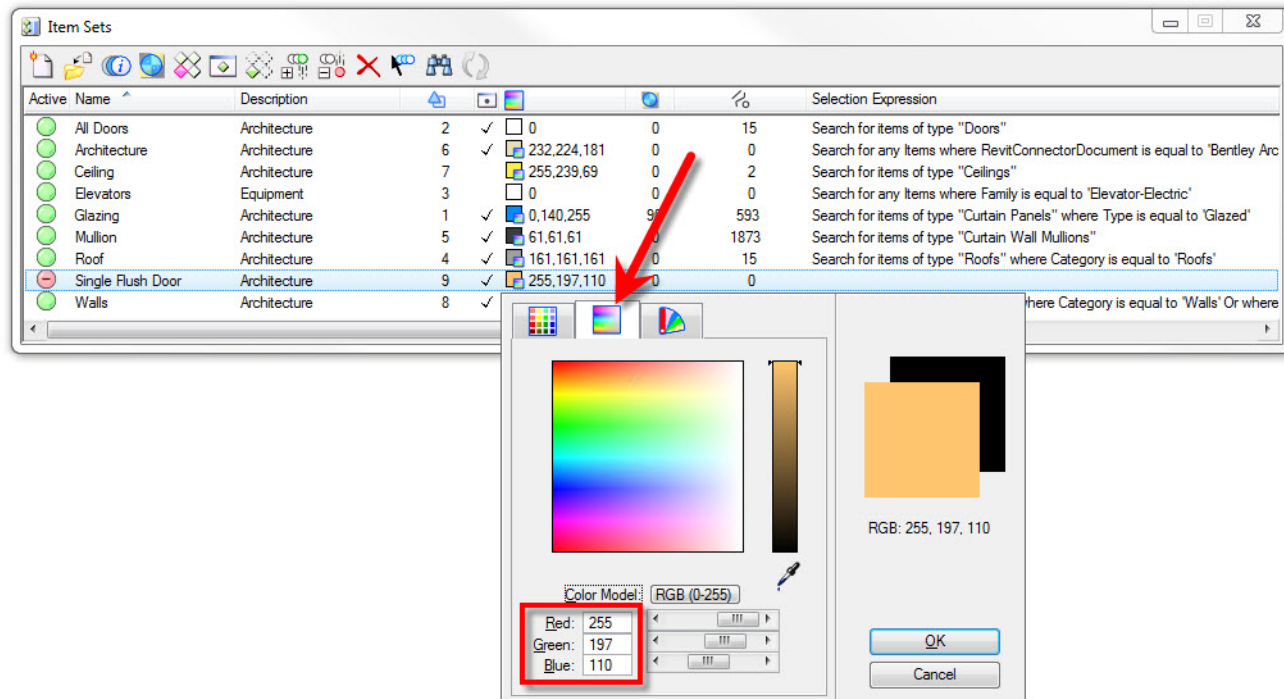
Creating Items Sets using an Advanced Selection Expression

Now that we created an Item Set using a basic selection expression for all the doors in our building, in this section we take the criteria further by breaking out the doors into two groups. This time searching for specific properties for the doors.

- Locate Items based upon a Selection Expression within the design utilizing the Search
- Create two Items Sets based on properties of the doors
- Visually manipulate Items Sets



1. Continuing in the **Office Building.dgn**, from the **Item Sets** dialog, click the **New Item Set** icon.
2. Type **Single Flush Doors** for the **Name** and hit Enter or Tab to accept. Click into the **Description** field and type **Architecture**.
3. Click into the **Color** field. From the **Color Selector**, click the second tab for True Color. Enter into the Red-Green-Blue fields: 255, 197, 110 as shown below.

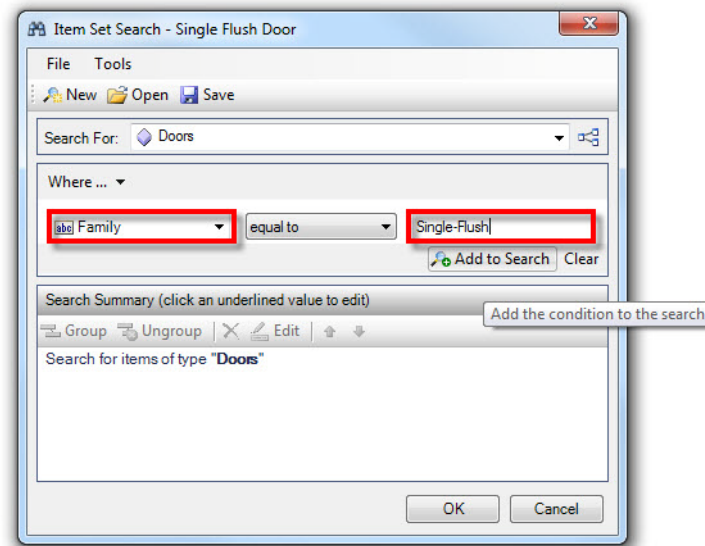


4. Click the number in the **Priority** column for the item set and set the priority to **2**.



5. With the **Single Flush Doors** item set still selected, choose the icon, **Search for Items**. In the **Search For** drop-down menu select the **Doors** Item Group.

- In the *Name* drop-down menu select **Family**. In the *Value* field type: **Single-Flush** as shown.



- Click the **Add to Search** button. We could always fine tune the search criteria further by adding to this search string. For example, adding another search based on material or manufacturer. However, we finished for now so click **OK**.
- As before, click the red circle of the **Single Flush Door** item set to **Activate** it.
- Create another **New Item Set** based on the values as shown:

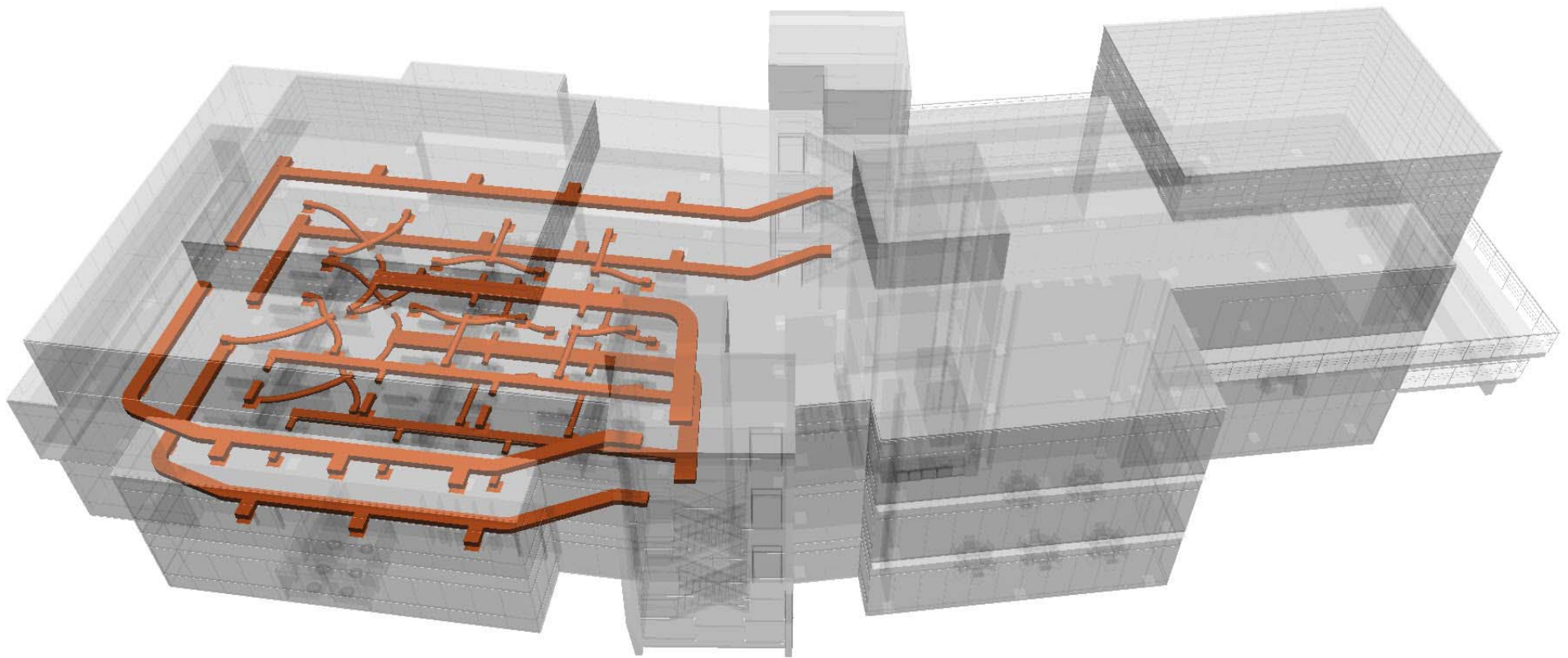
Name	Description	Priority	Color	Selection Expression
Double Glass Doors	Architecture	3	0	Search for items of type " Doors " where Type is equal to " Curtain Wall Dbl Glass "

- Explore the item sets by using the viewing control tools found with the *Item Sets* dialog. In addition, set the camera within the building by first applying some of the Saved Views (**1st Floor**, **2nd Floor**, etc.).

Creating Items Sets using Multiple Item Types

So far we have created Item Sets where we searched for properties within a single item type. In this section, we will look at how we can create an Item Set from multiple item types. In our example, we'll create an item set for the HVAC system.

- Create a Multiple Item Type Selection Expression
- Create an Items Set for the HVAC system
- Visually manipulate Items Sets



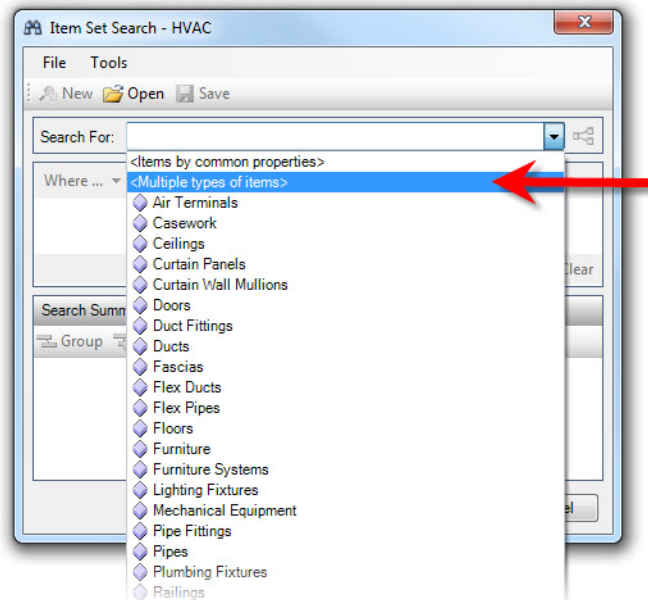
1. Continuing in the **Office Building.dgn**, from the *Item Sets* dialog, click the **New Item Set** icon.

2. Create another **New Item Set** based on the values as shown:

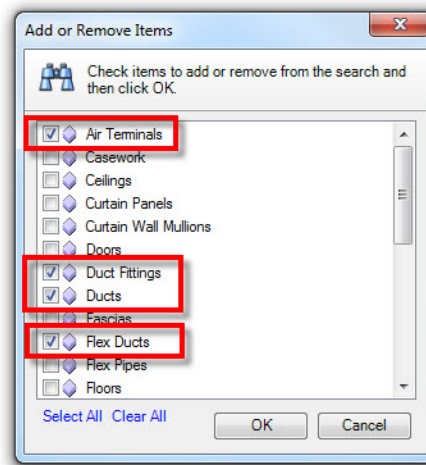
Name	Description	Priority	Color
HVAC	MEP	6	255,89,13

3. With the **HVAC** item set still selected, choose the icon, **Search for Items**.

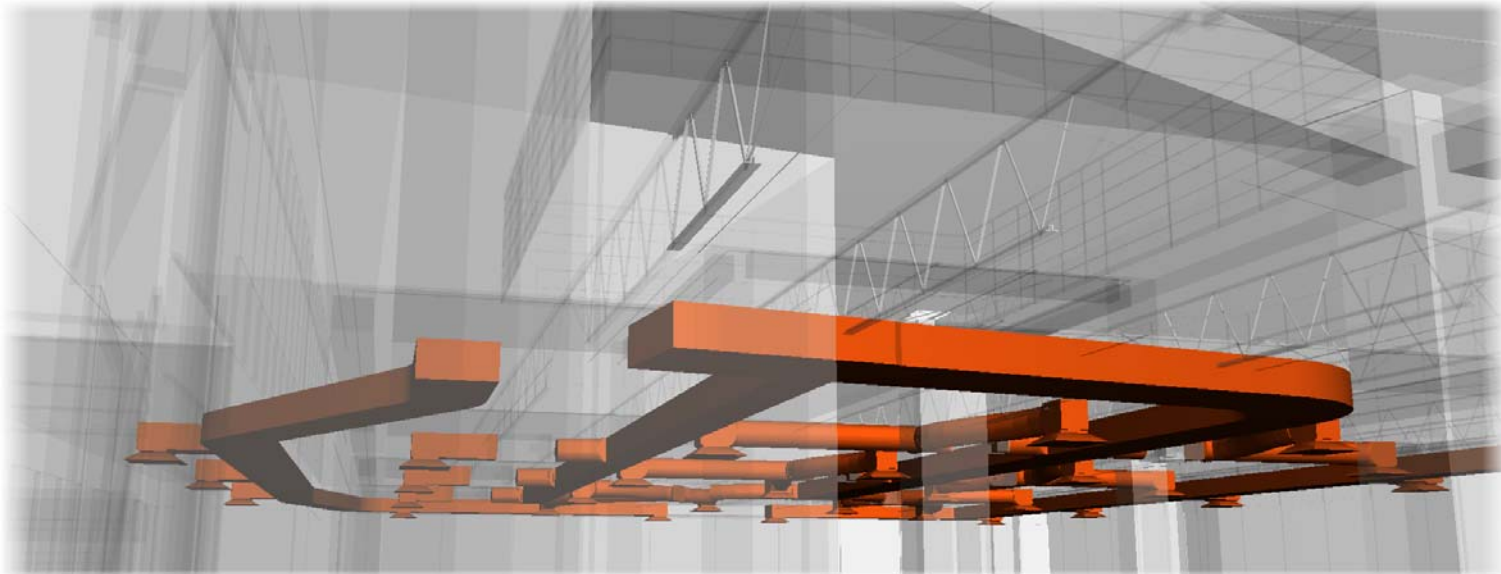
4. In the *Search For* drop-down menu of the *Item Set Search* dialog, select **Multiple types of items**.



5. In the *Add or Remove Items* dialog, select **Air Terminals**, **Duct Fittings**, **Ducts** and **Flex Ducts**. Click **OK** when finished.



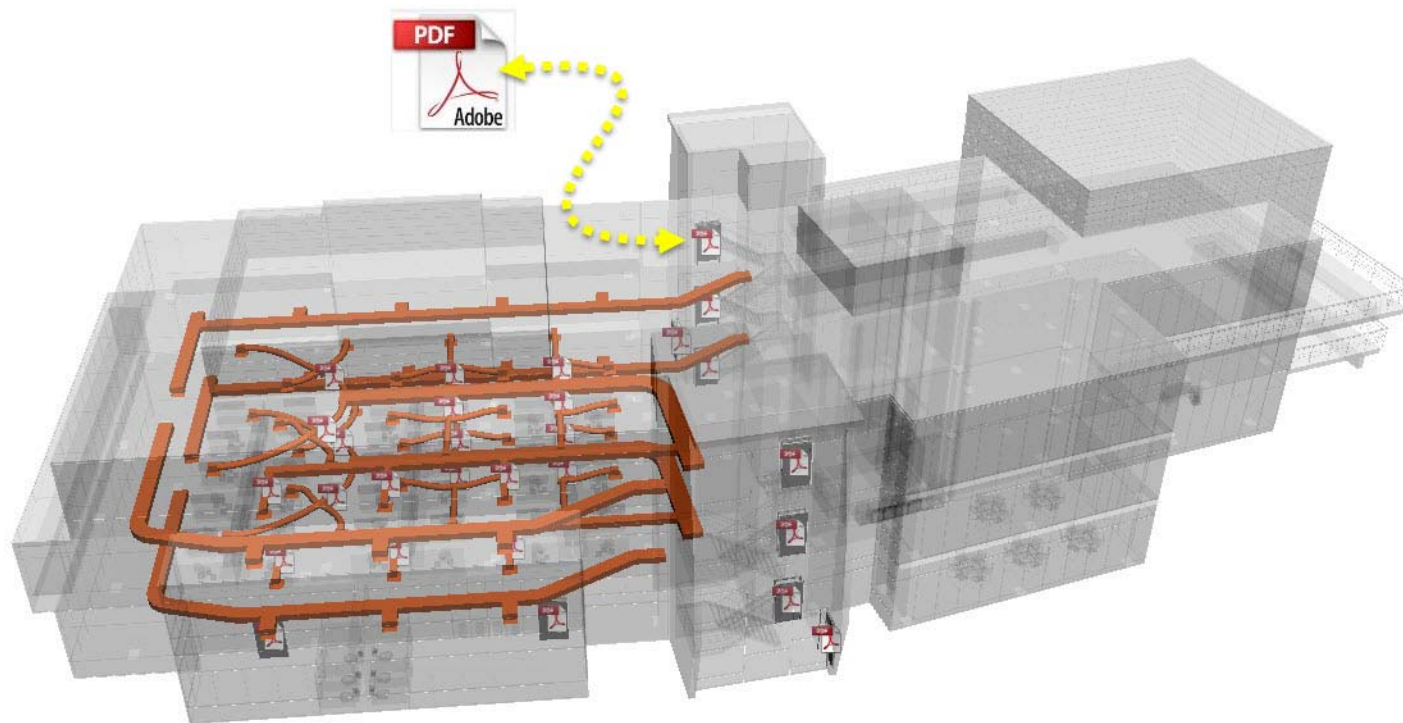
6. Click **OK** for the *Item Set Search* dialog and then **Activate** the item set.
7. Explore the **HVAC** item set by using the viewing control tools found with the *Item Sets* dialog. In addition, set the camera within the building by first applying some of the Saved Views (**1st Floor**, **2nd Floor**, etc.).



Attaching Links to Item Sets

You can create links to any of the graphics in your items sets to many different file types. For example, PDF's, Office documents like Word or Excel. CAD files like DGN, DWG, SHP as well as all the common raster formats like jpeg and tiff. In this section, we will attach/link specifications (PDF) to the doors and another set of specifications to HVAC components.

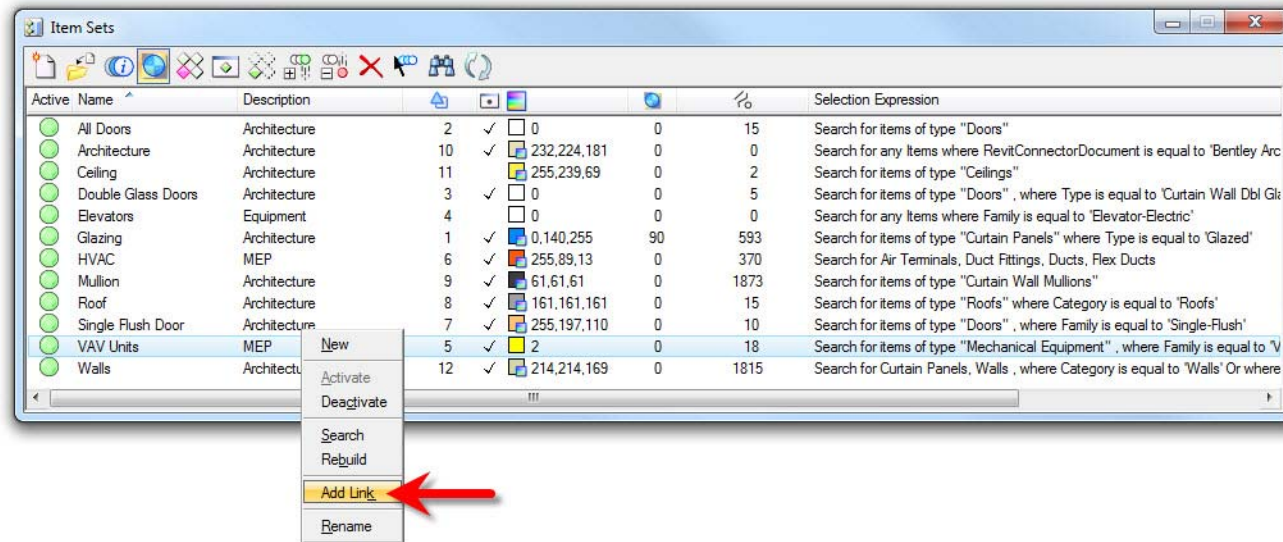
- Create Item set
- Visually manipulate Items Sets
- Attach PDF link doors and HVAC systems



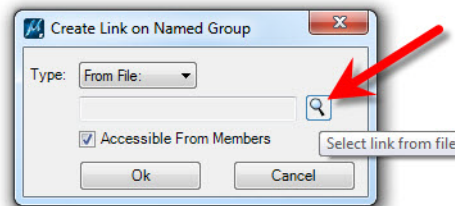
1. Continuing in the **Office Building.dgn**, apply the Saved View, **Aerial 02** to **View 1**.
2. From the **Item Sets** dialog, click the **New Item Set** icon and base the settings as shown below:

Name	Description	Priority	Color	Selection Expression
VAV Units	MEP	5	2	Search for items of type " Mechanical Equipment " where " Family " is equal to " VAV Unit - Single Duct "

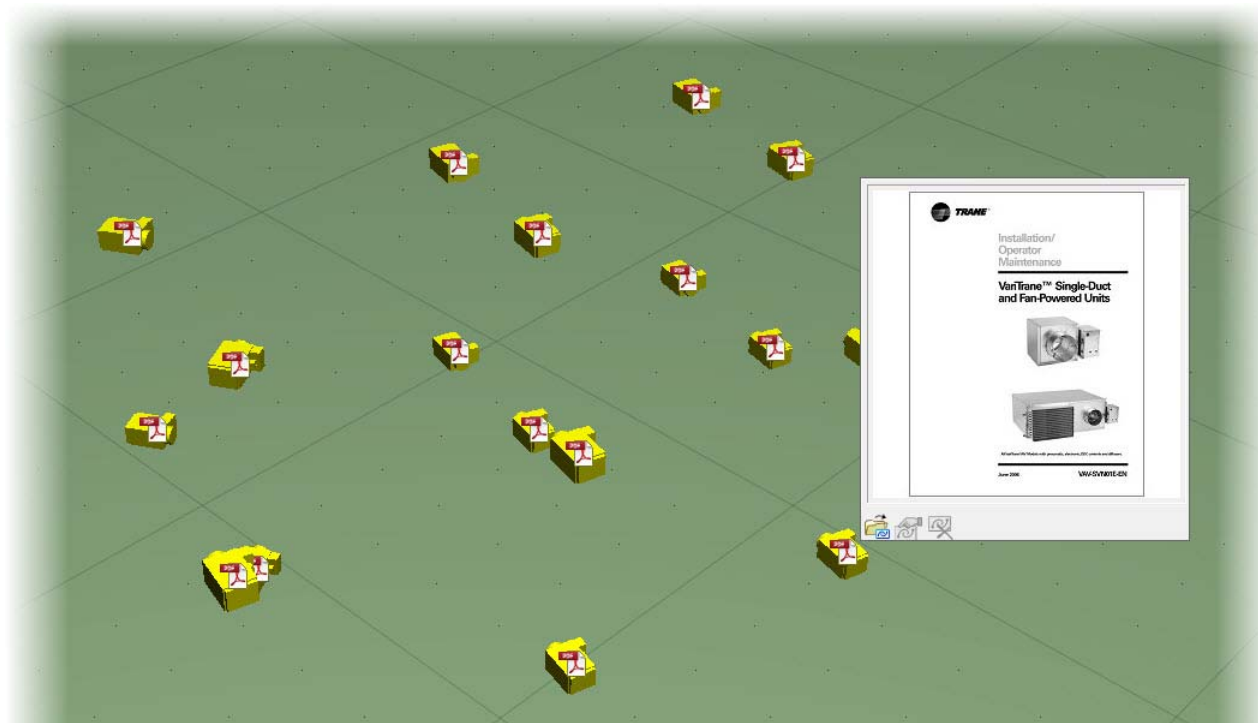
3. enable the viewing control tools, **Isolate** and **Zoom** and disable the any other.
4. Right-click on the **VAV Units** item set. From the context menu, select **Add Link**.



5. In the *Create Link on Named Group* dialog, click the browse icon, **Select link from file**, and browse to the *data* sub-folder where the dataset was saved. Select the file, **vav_unitiom.pdf**.



6. Highlight the **vav_unitiom.pdf** in the *Link Target* dialog and click **OK**.
7. In the *Create Link on Named Group* dialog, click **OK** to finish the command.
8. You will now notice PDF icons (Markers) at each of the units. Position your cursor over one of these markers and a transparent toolbox will appear. Move your cursor onto this toolbox and it will now be opaque. Either click the first icon, **Open Link** or click directly onto the Preview.



9. In the *Items Sets* dialog, right-click onto the **Single Flush Door** item set and select, **Add Link**.
10. Click the browse icon and then select the **Prefit_Specs.pdf** in the *Link Target* dialog and click **OK**.
11. In the *Create Link on Named Group* dialog, click **OK** to finish the command.
12. Explore the **VAV Units** and **Single Flush Doors** item sets by using the viewing control tools found with the *Item Sets* dialog. In addition, set the camera within the building by first applying some of the Saved Views (**1st Floor**, **2nd Floor**, etc.).

