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Autodesk® Revit® 2022
BIM Management: Template and Family Creation

Learning Guide

Imperial Units - 1st Edition

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ASCENT - Center for Technical Knowledge®
Autodesk® Revit® 2022
BIM Management: Template and Family Creation

Imperial Units - 1st Edition

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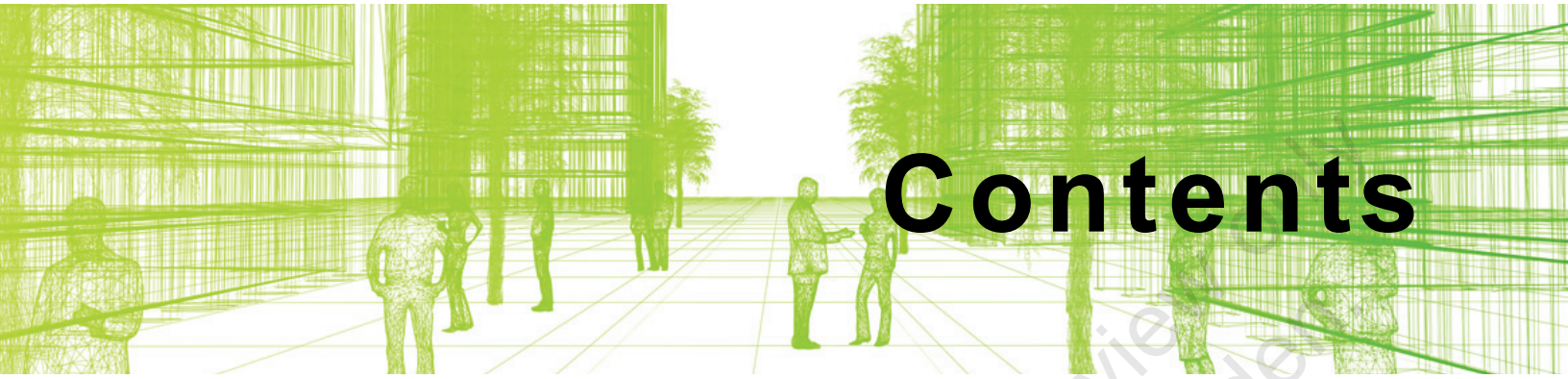

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Preface

Building Information Modeling (BIM) is an approach to the entire building life cycle. Autodesk® Revit® is a powerful BIM program for architecture, MEP, and structure that supports the ability to coordinate, update, and share design data with team members throughout the design construction and management phases of a building's life. A key component in managing the BIM process is to establish a company foundation for different types of projects by creating standard templates and custom family elements. Having this in place makes the process of any new project flow smoothly and efficiently.

The objective of the *Autodesk® Revit® 2022 BIM Management: Template and Family Creation* guide is to enable users who have worked with the software to expand their knowledge in setting up office standards with templates that include annotation styles, preset views, sheets, and schedules, as well as creating custom system, in-place, and component families.

This guide contains practices that are specific to each discipline.

Topics Covered

- Create custom templates with annotation styles, title blocks, and custom element types.
- Create schedules, including material takeoff schedules with formulas.
- Create custom wall, roof, and floor types, as well as MEP system families.
- Set up a component family file with a parametric framework.
- Create family geometry.
- Create family types.
- Modify the visibility of components and incorporate additional family items such as controls, MEP connectors, and nested components.
- Create specific families, including in-place families, profiles, annotations, and parameters.

This guide also contains discipline-specific practices for families, including doors, windows, railings, pipe fittings, light fixtures, gusset plates, and built-up columns.

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Prerequisites

- Access to the 2022.0 version of the software, to ensure compatibility with this guide. Future software updates that are released by Autodesk may include changes that are not reflected in this guide. The practices and files included with this guide might not be compatible with prior versions (e.g., 2021).
- You should be comfortable with the fundamentals of the Autodesk Revit software, as found in the *Autodesk Revit 2022: Fundamentals for Architecture*, *Autodesk Revit 2022: Fundamentals for Structure*, or *Autodesk Revit 2022: Fundamentals for MEP* guides. Knowledge of basic techniques is assumed, such as creating standard elements, copying and moving elements, and creating and working with views. Information on Collaboration Tools, Conceptual Design, and Site and Structural Design are covered in other guides.

Note on Software Setup

This guide assumes a standard installation of the software using the default preferences during installation. Lectures and practices use the standard software templates and default options for the Content Libraries.

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Cherisse is an Autodesk Certified Professional for Revit as well as an Autodesk Certified Instructor. She brings over 19 years of industry, teaching, and technical support experience to her role as a Learning Content Developer with ASCENT. With a passion for design and architecture, she received her Associates of Applied Science in Drafting and Design and has worked in the industry assisting firms with their CAD management and software implementation needs as they modernize to a Building Information Modeling (BIM) design environment. Although her main passion is the Revit design product, she is also proficient in AutoCAD, Autodesk BIM 360, and Autodesk Navisworks. Today, Cherisse continues to expand her knowledge in the ever-evolving AEC industry and the software used to support it.

Cherisse Biddulph has been the Lead Contributor for *Autodesk Revit BIM Management: Template and Family Creation* since 2020.

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In This Guide

The following highlights the key features of this guide.

Feature	Description
Practice Files	The Practice Files page includes a link to the practice files and instructions on how to download and install them. The practice files are required to complete the practices in this guide.
Chapters	A chapter consists of the following - Learning Objectives, Instructional Content, Practices, Chapter Review Questions, and Command Summary. • **Learning Objectives** define the skills you can acquire by learning the content provided in the chapter. • **Instructional Content**, which begins right after Learning Objectives, refers to the descriptive and procedural information related to various topics. Each main topic introduces a product feature, discusses various aspects of that feature, and provides step-by-step procedures on how to use that feature. Where relevant, examples, figures, helpful hints, and notes are provided. • **Practice** for a topic follows the instructional content. Practices enable you to use the software to perform a hands-on review of a topic. It is required that you download the practice files (using the link found on the Practice Files page) prior to starting the first practice. • **Chapter Review Questions**, located close to the end of a chapter, enable you to test your knowledge of the key concepts discussed in the chapter. • **Command Summary** concludes a chapter. It contains a list of the software commands that are used throughout the chapter and provides information on where the command can be found in the software.
Appendices	Appendices provide additional information to the main course content. It could be in the form of instructional content, practices, tables, projects, or skills assessment.

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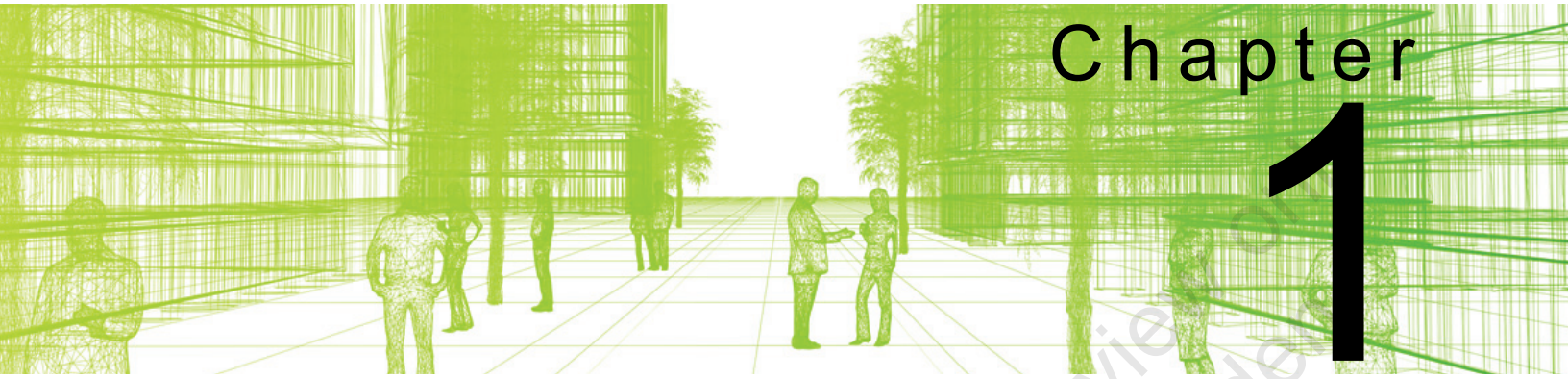

Chapter 1

Creating Custom Templates

Custom templates can save you time and effort when creating similar projects by providing an efficient way to apply your organization's graphic and documentation standards. Templates can include items such as levels, views, sheets, schedules, and annotation types for text, dimensions, and tags. A custom title block is a typical family that is added to templates that ensures that sheets are created with the appropriate information. You may also want to add rule-based view filters and view templates to project template files for improved workflow within the project.

Learning Objectives in This Chapter

- Create project templates.
- Use resource projects to store additional system families, details, schedules, and other data.
- Create standard text and dimension types for use in your projects.
- Modify callout, elevation, and section tags and specify which tags are loaded in a template.
- Create title blocks, including detail lines, text, labels, symbols, regions, and revision schedules.
- Set up visibility/graphic override filters for various categories of elements.
- Create and apply view templates.

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1.1 Preparing Project Templates

A project template is a file that contains information that can be used over and over to create new projects. The goal is to save time by using company standards, enabling you to concentrate on the design. For example, predefined levels (as shown in Figure 1–1 for a residential project) and the associated plan views and elevations provides a starting point for a model.

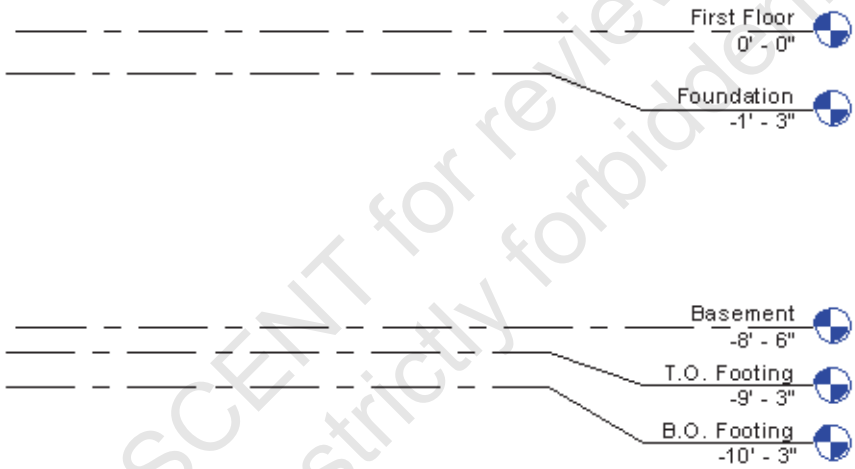

Figure 1–1

- Some items in a project template include:
  - **Project views -** Levels, schedules, legends, sheets, plan views, and view templates.
  - **Project-based settings -** Project units, object styles, fill patterns, line styles, discipline-specific settings, etc.
  - **Families -** System families, component families, custom families, and title blocks.
  - **Print settings -** Define printers and print settings.
  - **Annotation types -** Dimension style, text, arrowheads, and tags.
- If you provide constant work to a specific client (e.g., a school system or government entity), you can create a template specific to their projects with associated title blocks and other information.
- You can also store items such as sheets, schedules, families, and drafting views (details) in a separate resource file and add the elements to the current project, as needed.
- As you create new templates, families, and title blocks, it is recommended that you save them in a safe location where they will not be deleted and are outside of the Revit file structure.

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How To: Create a Project Template File

Project templates are located in the C:\ProgramData\Autodesk\RVT 2022\Templates\English (Metric) or English-Imperial folder.

1. In the *File* tab, expand (New) and click (Project).
   - Alternatively, on the Revit Home screen, click (New...) in the *MODELS* area, as shown in Figure 1–2.

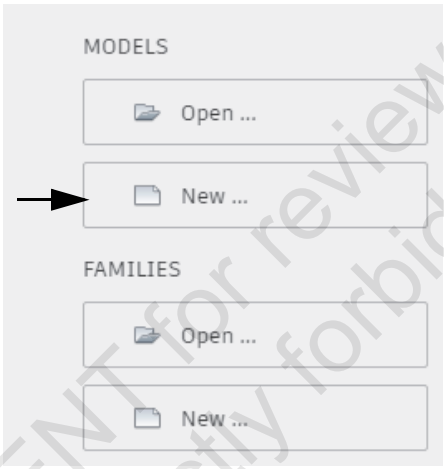

Figure 1–2

2. In the New Project dialog box, in the *Template file* area, select a template file to begin with or select **<None>** to use a blank project file.
3. In the *Create new* area, select **Project template**, as shown in Figure 1–3.
   - Project template files have the extension .rte.

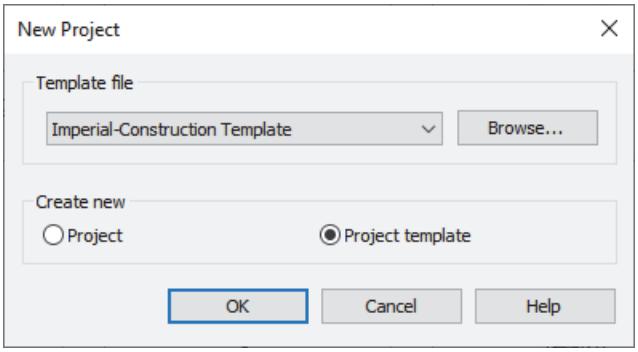

Figure 1–3

4. Click **OK**.
5. Add settings, families, views, etc., as needed to the new file.
6. Save the project template file.

- To save time, use an existing project or template that includes some of the basics you need rather than starting from scratch. Note: Make sure to clean up all existing project data that is not standard.

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- If you select **<None>** in the *Template file* list, you are prompted to specify the initial unit system for the project: **Imperial** or **Metric**, as shown in Figure 1–4. Choosing this option requires all settings to be defined and updated versus choosing a predefined template that is similar to your needs.

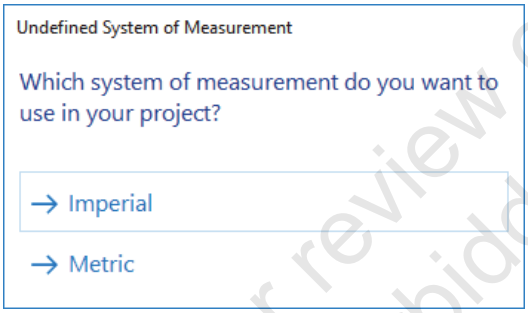

Figure 1–4

Managing Settings

Most of the settings stored in a template file are found in the *Manage* tab>Settings panel, as shown in Figure 1–5. These settings include Materials, Object Styles, Snaps, and Additional Settings (e.g., Line Styles, Fill Patterns, Annotations, etc.)

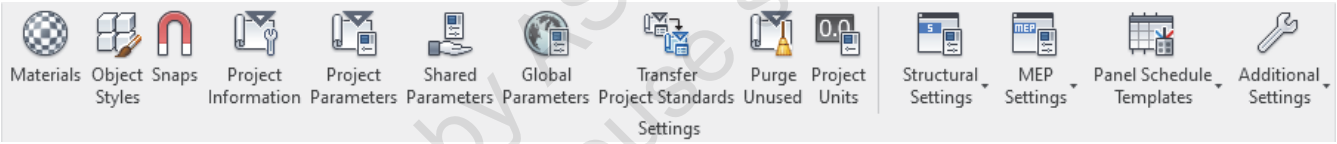

Figure 1–5

- Specific Structural Settings, MEP Settings, and Panel Schedule Templates are also included in the Settings panel.

For more information on managing settings, see:

- A.1 General Settings
- A.2 Creating Object Styles
- A.3 Creating Fill Patterns
- A.4 Creating Materials
- A.5 Settings for Mechanical Projects
- A.6 Settings for Electrical Projects
- A.7 Settings for Structural Projects

Families in Templates

There are two kinds of families that can be set up in template files: *system families*, such as the duct shown in Figure 1–6, and *component families,* such as the air terminal shown in Figure 1–6.

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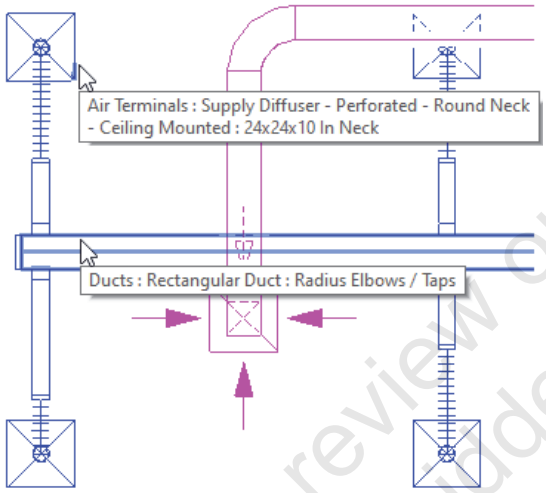

Figure 1–6

For more information on setting up system families, see Chapter 3: Custom System Families.

System Families are families that are predefined in Revit projects and templates. Unlike external loadable families, system families can be created by duplicating existing types and modifying the *Type Parameters*, as shown in Figure 1–7. This can only be done within a project and helps to establish the company standard for the families set up in a template file. System families include walls, wall foundations, floors, structural slabs, ceilings, stairs, railings, and roofs. They also include duct, pipe, cable tray, and conduit types, along with some annotation types, such as text and dimensions.

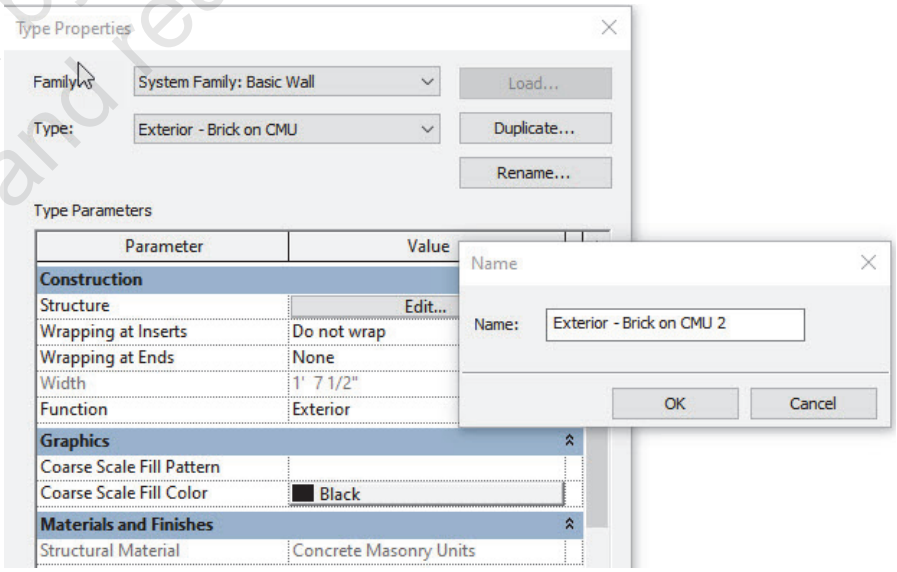

Figure 1–7

For more information on creating component families, see Chapter 4: Component Family Concepts.

Component Families are external loadable families that are created outside of a project and can be loaded directly in a template file with types and sizes that are used frequently. Component families include elements such as furniture, trees, beams, columns, mechanical equipment, and electrical fixtures.

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How To: Load a Family from the Revit Library

1. In the *Insert* tab>Load from Library panel, click (Load Family).
   - Alternatively, you can load a family by starting a loadable family command, then in the *Modify* contextual tab>Mode panel, click (Load Family).
2. In the Load Family dialog box, locate the folder that contains the family or families you want to load, as shown in Figure 1–8.
   - The program remembers the last-used folder. If the Load Family dialog box does not default to the Revit Library folder, click on **Imperial Library** in the Places panel.

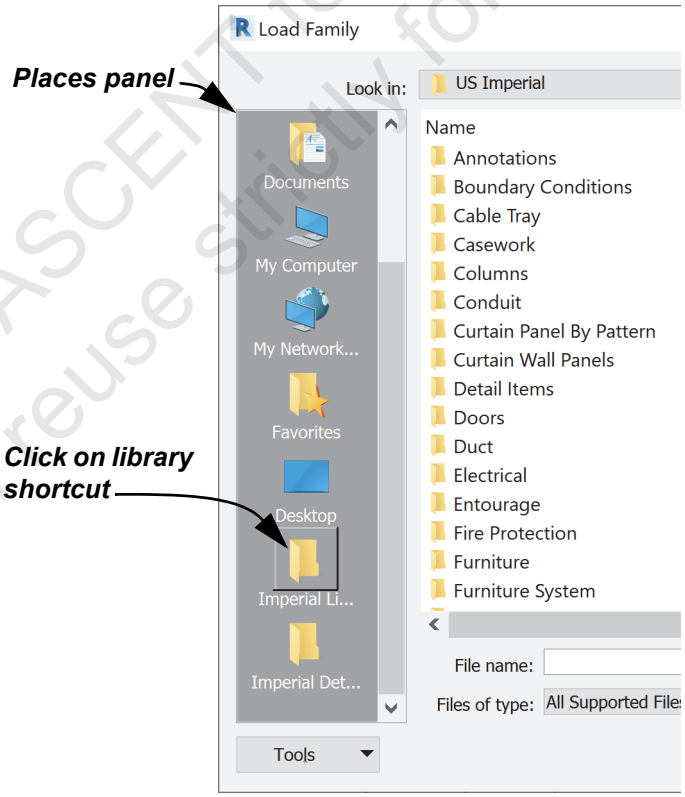

Figure 1–8

3. Select the family or families you want to load. You can hold <Ctrl> to select multiple families.
4. Click **Open**.

- Note: When inserting a family using a loadable family command, after you load the family your cursor will have the loaded element at the end of the cursor to prompt you to place the element. You will need to press <Esc> twice or click (Modify) to clear the cursor.

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How To: Load an Autodesk Family

In addition to loading families from the installed Revit Library, you can also load families from the Autodesk online library using hte **Load Autodesk Family** command.

1. In the *Insert* tab>Load from Library panel, click (Load Autodesk Family).
2. In the Load Autodesk Family dialog box, filter your search by typing in what kind of family you are looking for or click on a category in the *Browse* section, as shown in Figure 1–9.

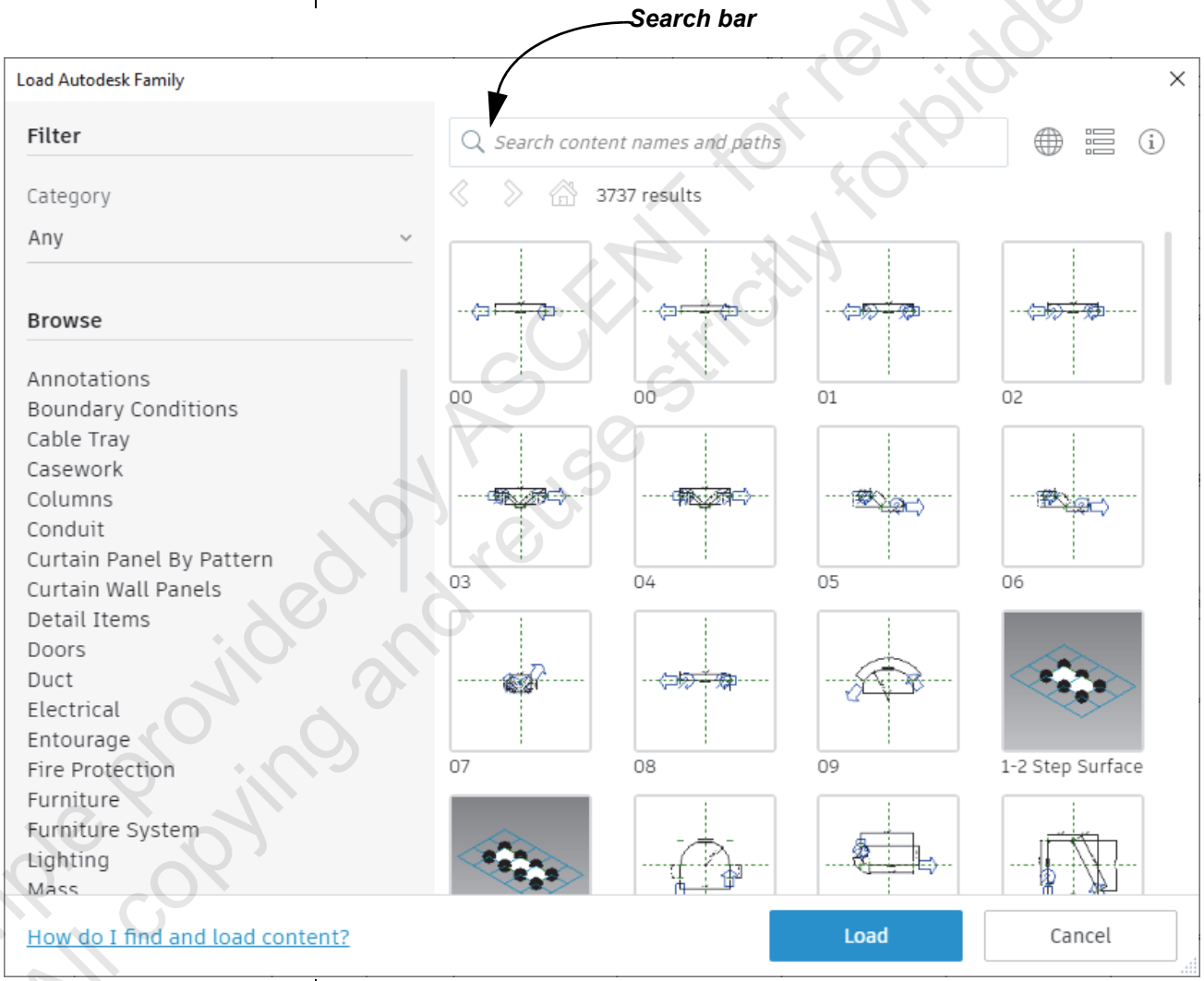

Figure 1–9

3. Click **Load** to load the family into your project.

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Review Loaded Families

You can review which families have already been loaded to determine which families still need to be loaded.

How To: Review the Loaded Families

1. In the Project Browser, expand the **Families** node.
2. Expand various nodes within the Families node, such as the **Cable Trays>Cable Tray with Fittings** node shown on the left in Figure 1–10, to verify which families (in this case, which cable tray families) have been loaded into the template.
3. Select the family name, such as **Channel Cable Tray**, to review its Properties, as shown on the right in Figure 1–10.

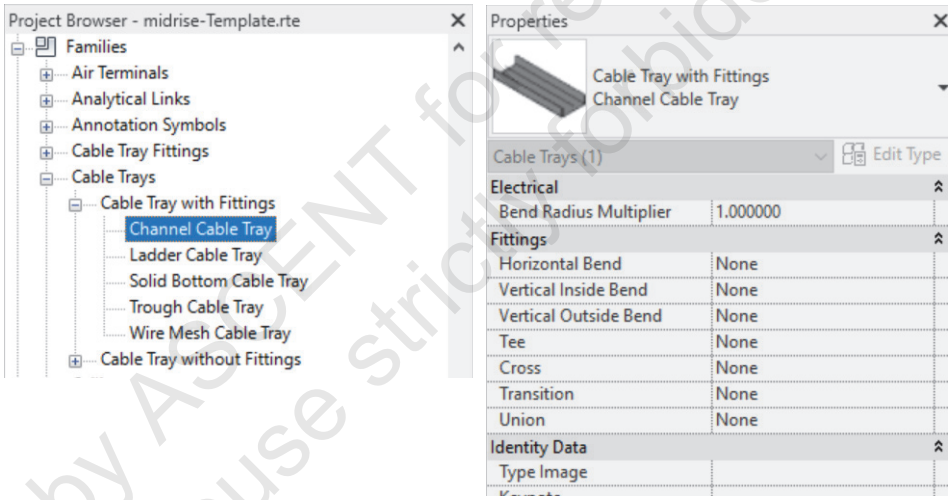

Figure 1–10

- Alternatively, you can start a command like **Door**, **Air Terminal**, or **Plumbing Fixture** to verify from the Type Selector which families are loaded. If a family is not loaded, a dialog box will display (as shown in Figure 1–11). Click **Yes** to launch the Load Family dialog box.

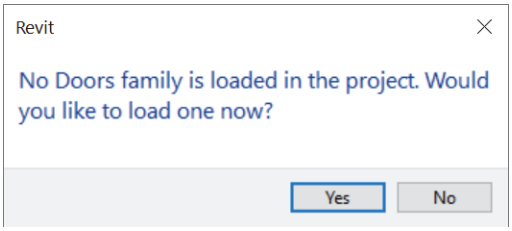

Figure 1–11

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Purging Unused Components

You can clean up a template by removing unnecessary elements from a project, including individual component types, as shown in Figure 1–12.

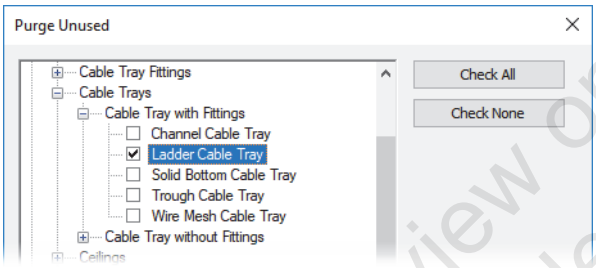

Figure 1–12

- Some elements are nested in other elements, and it might require several rounds of purging the project to remove them.

How To: Purge Unused Elements

1. In the *Manage* tab>Settings panel, click (Purge Unused).
2. The Purge Unused dialog box opens and all elements will be selected. Click **Check None** to clear the selection.
3. Select only the elements that you want to purge.
4. Click **OK**.

Purging unused components not only helps simplify the component list, but also, more importantly, reduces the project file size.

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Using Resource Projects

Although you can use a template file to start a project, you might also want to have resource projects that include additional system and component families, pre-drawn details (as shown in Figure 1–13), schedules, and sheets. You can then copy these elements into a new template or the current project, as needed.

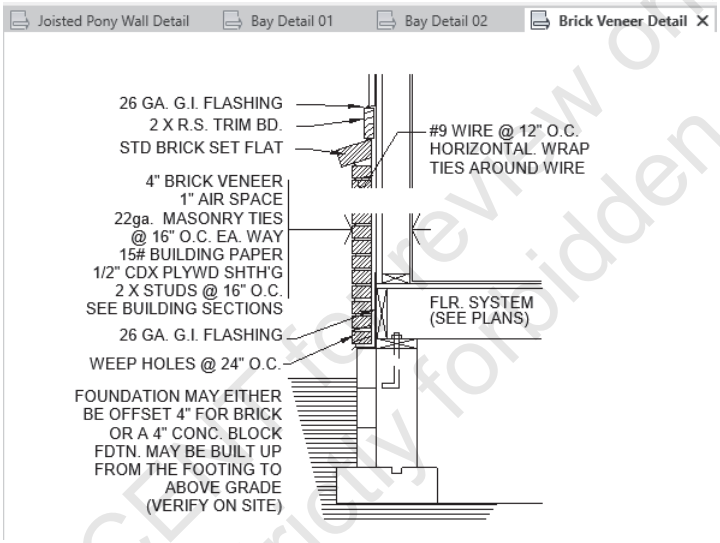

Figure 1–13

- To copy drafting views (details), sheets, schedules, or reports into the current project, use **Insert Views from File**.
- To copy system families (e.g., wall, floor, duct, pipe, wire types, etc) or annotations (e.g., text and dimension styles, materials, etc.), use **Transfer Project Standards**.
- To copy component families from a resource project, use **Copy to the Clipboard** and either **Paste Aligned to Selected Levels** or **Paste Aligned to Selected Views**.

How To: Insert Views from an Existing Project

1. In the *Insert* tab>Load from Library panel, expand (Insert from File) and click (Insert Views from File).
2. In the Open dialog box, select the project file you want to copy from.
3. In the Insert Views dialog box, select the views you want to insert into the current project, as shown in Figure 1–14.

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- In the lower left corner, you can select **Preview selection** to preview your selection.

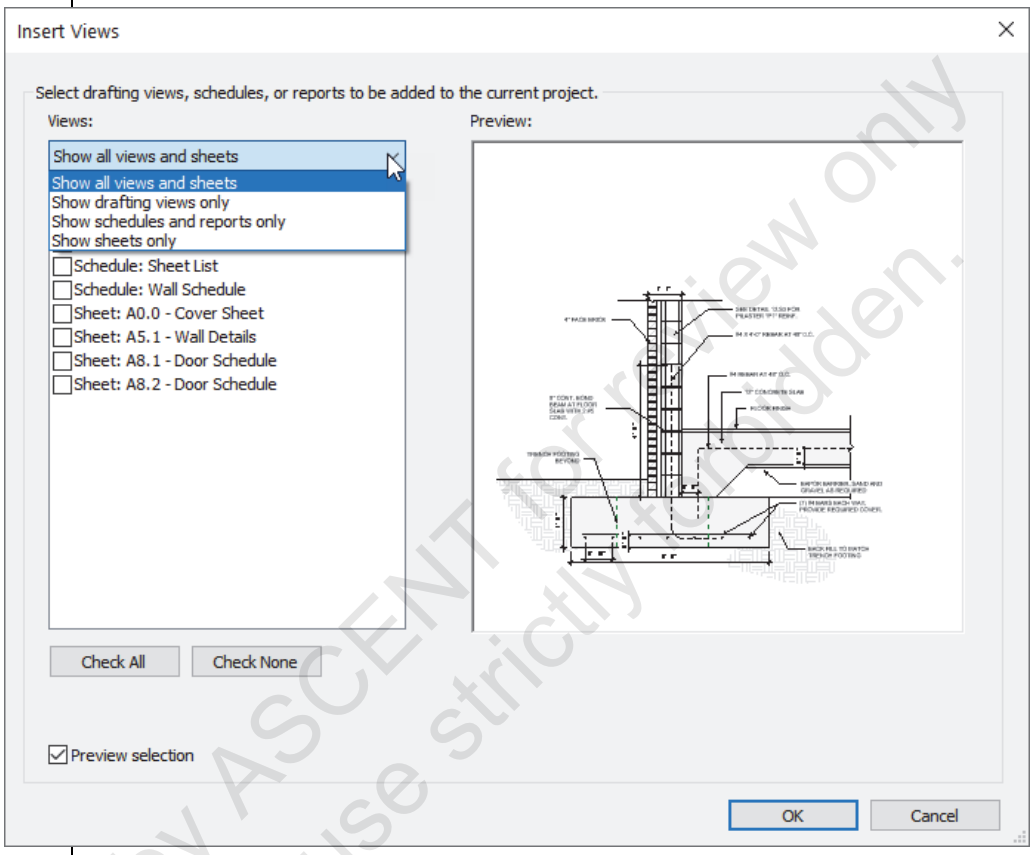

Figure 1–14

4. Click **OK**. The views are added to the file.

- Schedules are completed with the information in the current project. Sheets are added, but do not include any views.

How To: Transfer Project Standards

1. Open the project from which you want to transfer information.
2. Switch to the current project you are copying to.
3. In the *Manage* tab>Settings panel, click (Transfer Project Standards).
4. In the Select Items To Copy dialog box, expand the Copy from drop-down list and select the file to copy from.

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*Click **Check None** or **Check All**, as needed.*

5. Select the items you want to copy into the current project, as shown in Figure 1–15. Then, click **OK**.

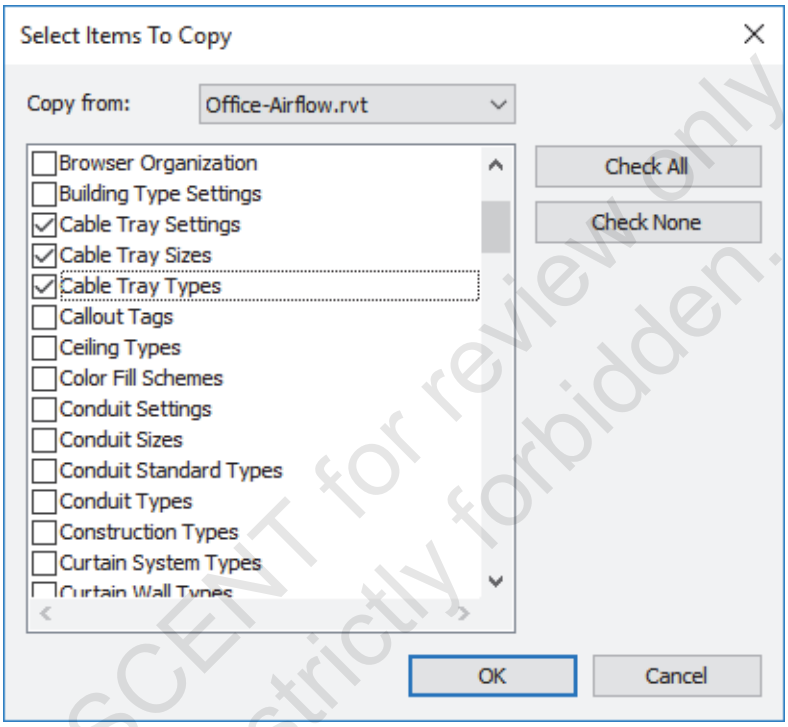

Figure 1–15

- All types of the selected category will be copied. You do not have the option to select individual types.
- If the Duplicate Types dialog box displays (shown in Figure 1–16), choose **Overwrite** or **New Only** to update the existing project.

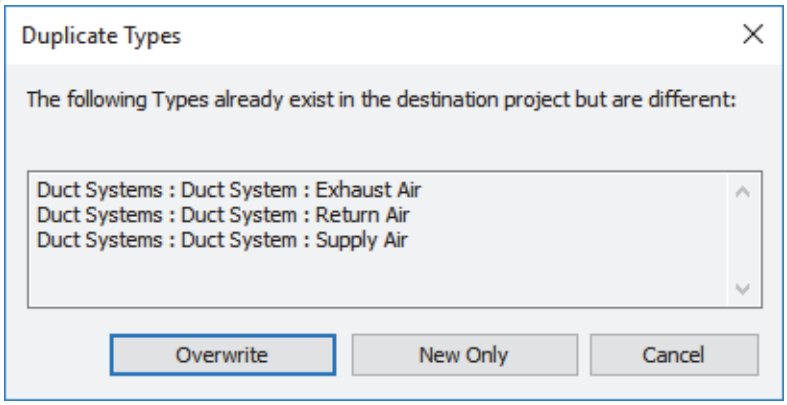

Figure 1–16

- Floor, ceiling, and elevation section plan view types and Revit link visibility settings cannot be transferred and need to be set up manually.

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Setting Default Template Files

If your company uses several different templates, you can create a list that displays in the New Project dialog box, as shown in Figure 1–17.

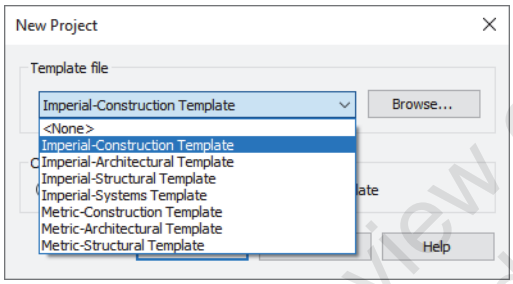

Figure 1–17

How To: Set the Default Template Files List

1. In the *File* tab, click **Options**.
2. In the Options dialog box, in the left pane, select **File Locations**, as shown in Figure 1–18.

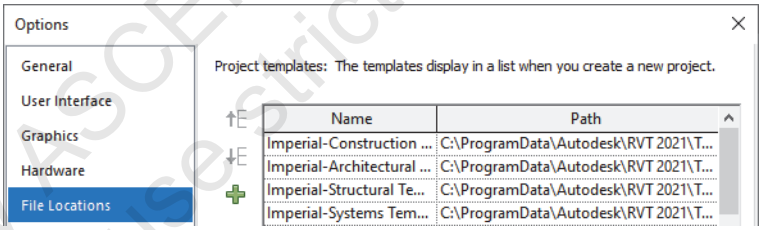

Figure 1–18

   - Use (Add Value) to add additional templates (RTE).
   - To put your templates in order, use (Move Rows Up) and (Move Rows Down). Move the templates that are used most often to the top.
   - Use (Remove Value) if you do not need a template anymore.
3. Once the template is loaded, you can click on the name in the *Name* column to change it or leave it with its default file name. You can also click on any of the other names in the *Name* column and change them if needed.
4. To update a template, click on the file path in the *Path* column and select the (Browse) button.
5. In the Browse for Template File dialog box, navigate to the correct folder, select the template file, and click **Open**.

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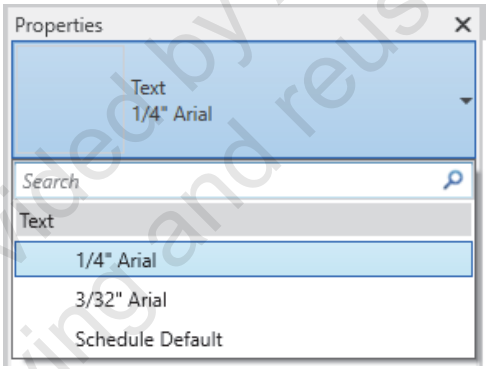
Practice 1a

Prepare Project Templates: Architecture

Practice Objectives

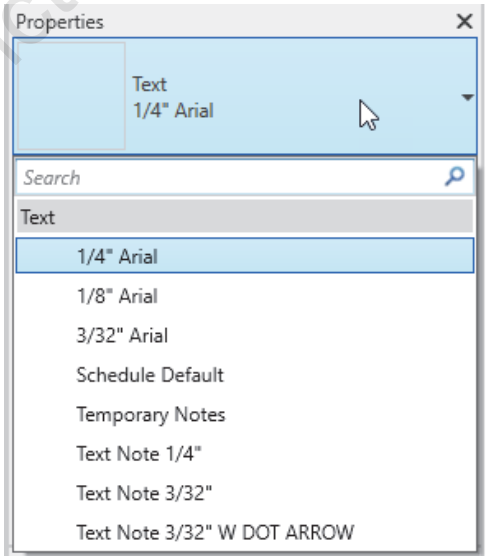
- Create a new project template file.
- Add levels with plan views.
- Review existing system and component families.
- Load a component family.
- Insert views and transfer project standards from a resource project.

In this practice, you will create a new template file based on an existing template and add several levels to the project. You will review the existing system and component families and load a component family. You will then insert views and transfer project standards from a resource project, as shown for text types before in Figure 1–19 and after in Figure 1–20.



Before

Figure 1–19



After

Figure 1–20

Task 1 - Establish a project template file.

1. On the Home screen, click **New...** in the *MODELS* area, or if currently in a model, in the *File* tab, expand (New) and click (Project).

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2. In the New Project dialog box, select **Imperial-Architectural Template**.

3. In the *Create new* area, select **Project template**, as shown in Figure 1–21, and click **OK**.

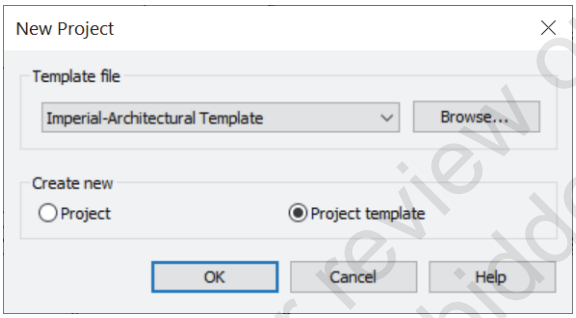

Figure 1–21

4. In the Quick Access Toolbar, click (Save) and save the template in the practice files *Architectural >Template Files* folder as **Midrise-Template.rte**.

Task 2 - Add default levels.

1. Open an elevation view.

2. Click on the level head and rename *Level 1* to **Floor 1** and *Level 2* to **Floor 2**. Click **Yes** to rename the corresponding views.

3. Change the **Floor 2** height to **16'-0"**, as shown in Figure 1–22.

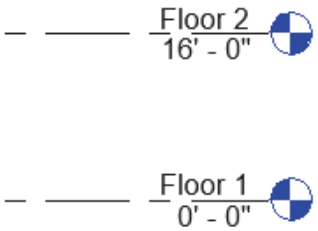

Figure 1–22

4. In the *Architecture* tab>Datum panel, click (Level).

5. In the Options Bar, verify that the **Make Plan View** option is selected and click **Plan View Types...**.

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6. In the Plan View Types dialog box, select the **Ceiling Plan** and **Floor Plan** view types, as shown in Figure 1–23, and click **OK**.

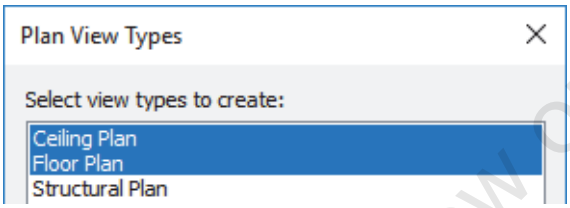

Figure 1–23

7. Add three more levels above **Floor 2** with a distance of **12'-0"** between each level, and two levels below **Floor 1** with a distance of **10'-0"** between them. Rename them as shown in Figure 1–24. Click **Yes** to rename the corresponding views.

Scale change and dimensions are added for clarity.

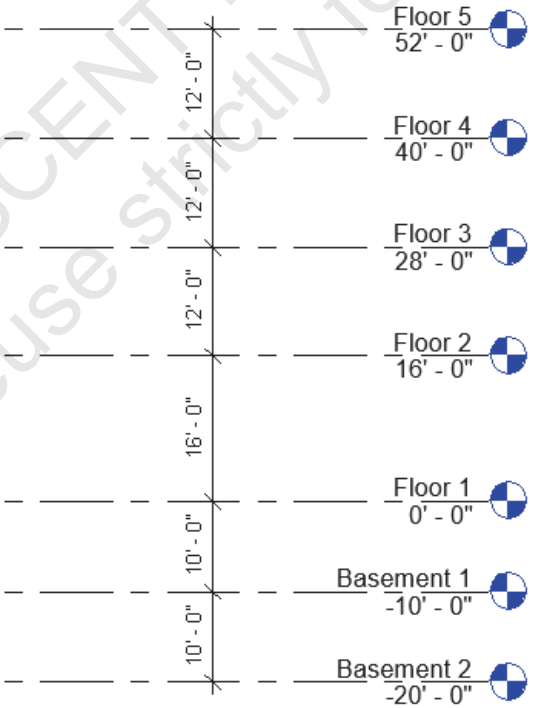

Figure 1–24

8. Return to the Floor 1 plan view.
9. Save the template.

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Task 3 - Load a component family.

1. In the *Insert* tab>Load from Library panel, click (Load Family).
   - By using the **Load Family** command, you can load any type of component. If you use a specific command, such as **Column** or **Door**, you can only load that type of family.
2. In the Load Family dialog box, navigate to the Revit Library's *Columns* folder and select the **Doric Column.rfa** family to load, then click **Open**.
3. Save the template.

Task 4 - Review existing family elements in the template.

In this task, you will review existing families in a project using both the Type Selector and the Project Browser.

1. In the *Annotate* tab>Text panel, click (Text).
2. Expand the list in the Type Selector. Only a few text types are available, as shown in Figure 1–25.

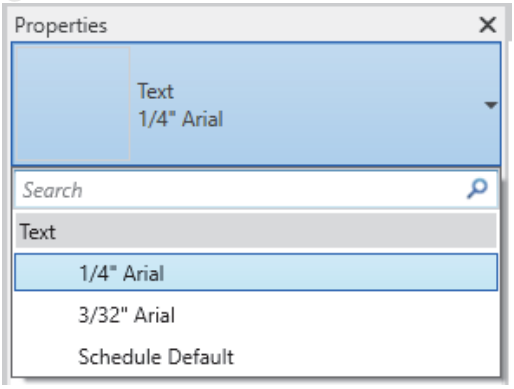

Figure 1–25

3. In the *Architecture* tab>Build panel, select (Component) and review the list of families in the Type Selector.
4. In the *Architecture* tab>Build panel, click (Column) and note that **Doric Column** is showing in the Type Selector.

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5. In the Project Browser, expand the **Families>Columns** node and note that **Doric Column** is listed there as well, as shown in Figure 1–26. Continue to expand nodes within the Project Browser to see what other families are loaded in the project.

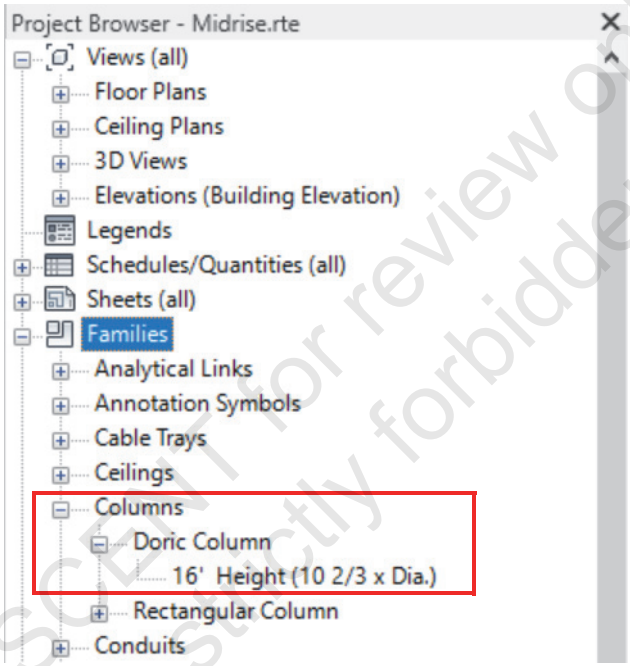

Figure 1–26

6. Save the template.

Task 5 - Copy information from a resource project.

1. Close any open projects other than the template file.
2. In the *Insert* tab>Load from Library panel, expand (Insert from File) and click (Insert Views from File).
3. In the Open dialog box, navigate to the *Revit 2022 BIM Management Practice Files>Reference* folder, select **Construction Resource Project.rvt**, and click **Open**.
4. In the Insert Views dialog box, set the Views drop-down list to **Show all views and sheets**.

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5. Select one or two drafting views and one or two schedules from the list, as shown in Figure 1–27.

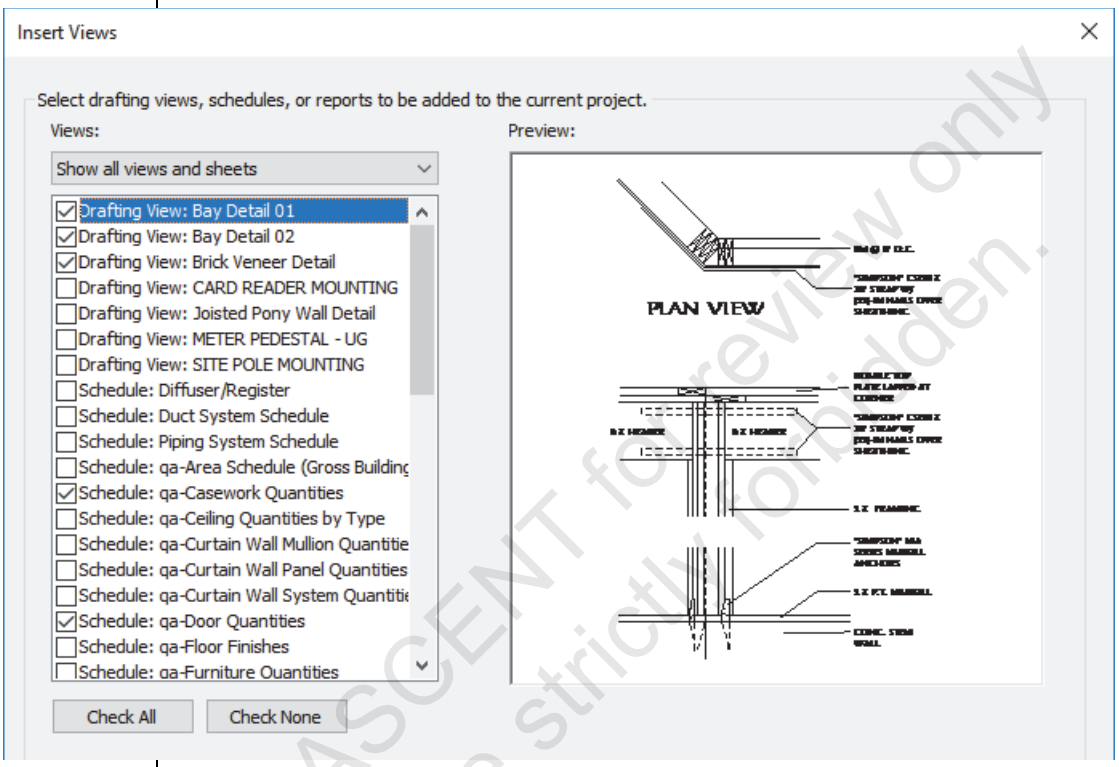

Figure 1–27

6. Click **OK**.
7. If the Duplicate Types warning displays, click **OK** and close any warning messages that pop up.
8. In the Project Browser of your template file, review the new drafting views and schedules that are added.
9. Return to the floor plan view.
10. In the *Manage* tab>Settings panel, click (Transfer Project Standards).
11. In the Select Items To Copy dialog box, note that the Copy from drop-down list is set to **Construction Resource Project.rvt**, which is the project that was just used for inserting a view from a file.

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Note: If the Insert from File command was not used, you would have had to open the project in order to transfer standards.

12. Click **Check None**, select **Text Types** (as shown in Figure 1–28), and click **OK**.

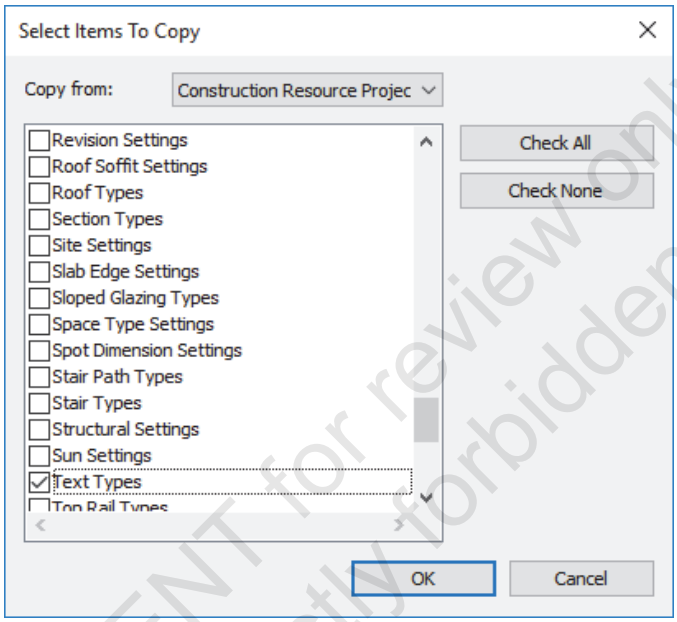

Figure 1–28

13. If the Duplicate Types dialog box displays, select **New Only** because you do not want to overwrite existing text types in your template.

14. Start the **Text** command and look at the expanded list of text types that are now available, as shown in Figure 1–29.

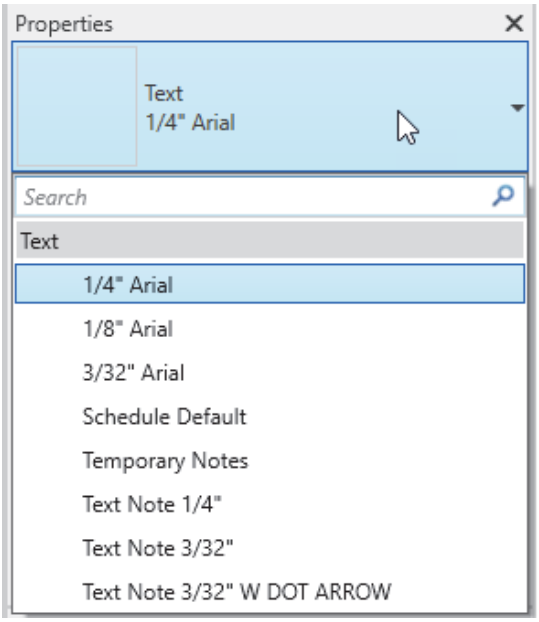

Figure 1–29

15. Click (Modify).

16. Save and close the template file.

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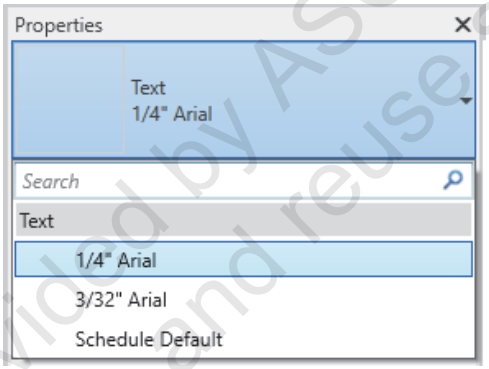
Practice 1b

Prepare Project Templates: MEP

Practice Objectives

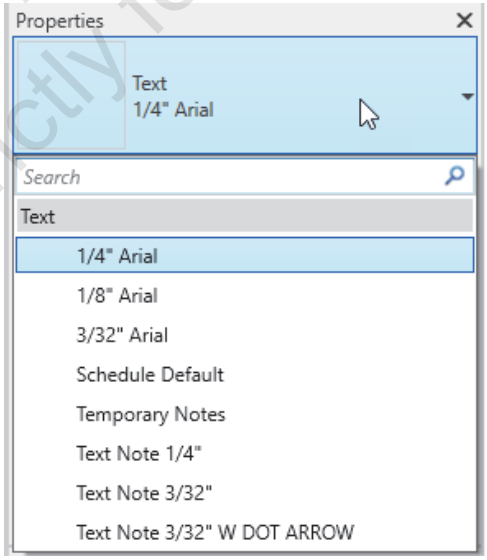
- Create a new project template file.
- Review existing system and component families.
- Load a component family.
- Insert views and transfer project standards from a resource project.

In this practice, you will create a new template file based on an existing template. You will review the existing system and component families and load a component family. You will then insert views and transfer project standards from a resource project, as shown for text types before in Figure 1–30 and after in Figure 1–31.



Before

Figure 1–30



After

Figure 1–31

Task 1 - Establish a project template file.

1. On the Home screen, click **New...** in the *MODELS* area, or if currently in a model, in the *File* tab, expand (New) and click (Project).

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2. In the New Project dialog box, select the **Imperial-Systems Template**. This template will have electrical, mechanical, and plumbing views and families in it.

   - For an electrical template, click **Browse...** and select **Electrical-Default.rte**.
   - For a mechanical template, click **Browse...** and select **Mechanical-Default.rte**.
   - For a plumbing template, click **Browse...** and select **Plumbing-Default.rte**.

3. In the *Create new* area, select **Project template**, as shown in Figure 1–32, and click **OK**.

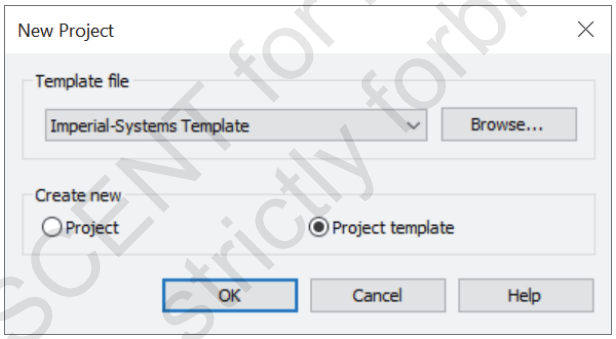

Figure 1–32

4. In the Quick Access Toolbar, click (Save) and save the template in the practice files *MEP>Template Files* folder as **Midrise-Template.rte**.

Note: MEP templates typically do not have additional levels. Levels are created using **Copy/Monitor** with a linked file.

Task 2 - Load a component family.

1. In the *Insert* tab>Load from Library panel, click (Load Family).

   - By using the **Load Family** command, you can load any type of component. If you use a specific command, such as **Mechanical Equipment**, you can only load that type of family.

2. In the Load Family dialog box, navigate to the Revit Library's *Mechanical>MEP* folder and select the **Indoor AHU - Horizontal - Chilled Water Coil.rfa** family to load, then click **Open**.

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Task 3 - Review existing family elements in the template.

In this task, you will review existing families in a project using both the Type Selector and the Project Browser.

1. In the *Annotate* tab>Text panel, click (Text).
2. Expand the list in the Type Selector. Only a few text types are available, as shown in Figure 1–33.

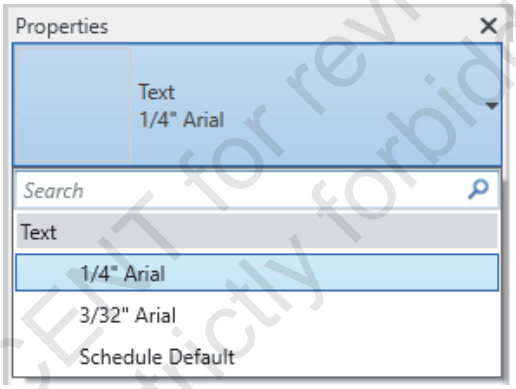

Figure 1–33

3. In the *Systems* tab>Model panel, select (Component) and review the list of families in the Type Selector.
4. In the *Systems* tab>Mechanical panel, click (Mechanical Equipment). Note that **Indoor AHU - Horizontal - Chilled Water Coil** is showing in the Type Selector.

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5. In the Project Browser, expand the **Families>Mechanical Equipment** node and note that **Indoor AHU - Horizontal - Chilled Water Coil** is listed there as well, as shown in Figure 1–34. Continue to expand nodes within the Project Browser to see what other families are loaded in the project.

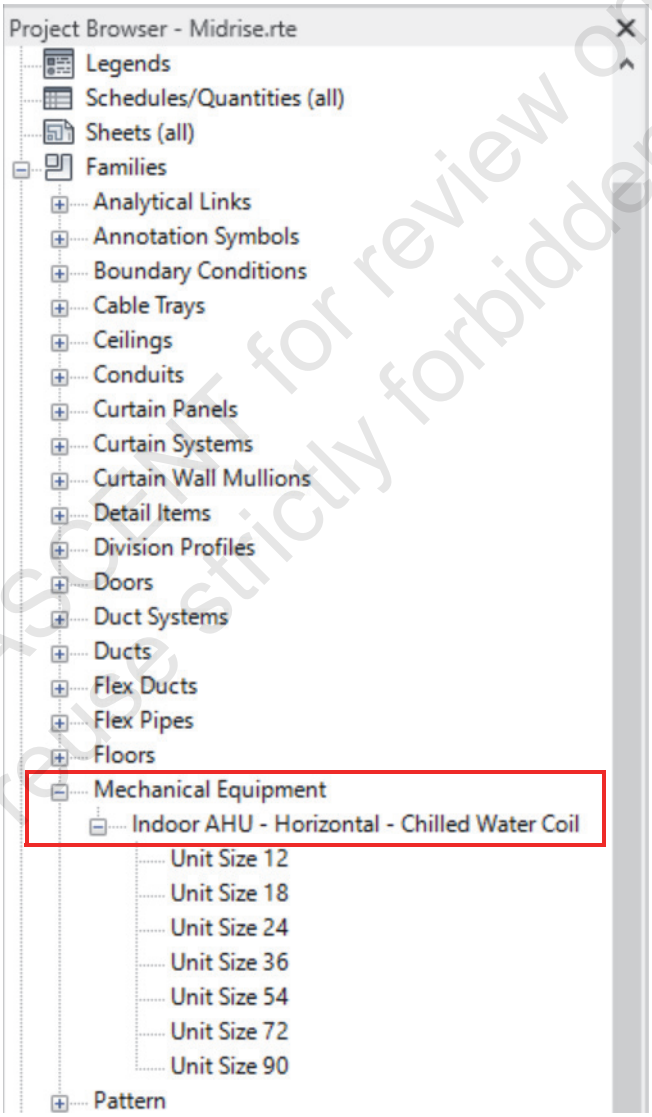

Figure 1–34

6. Save the template.

Task 4 - Copy information from a resource project.

1. Close any open projects other than the template file.

2. In the *Insert* tab>Load from Library panel, expand (Insert from File) and click (Insert Views from File).

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3. In the Open dialog box, navigate to the *Revit 2022 BIM Management Practice Files>Reference* folder, select **Construction Resource Project.rvt**, and click **Open**.

4. In the Insert Views dialog box, set the Views drop-down list to **Show all views and sheets**.

5. Select one or two drafting views and one or two schedules from the list, as shown in Figure 1–35.

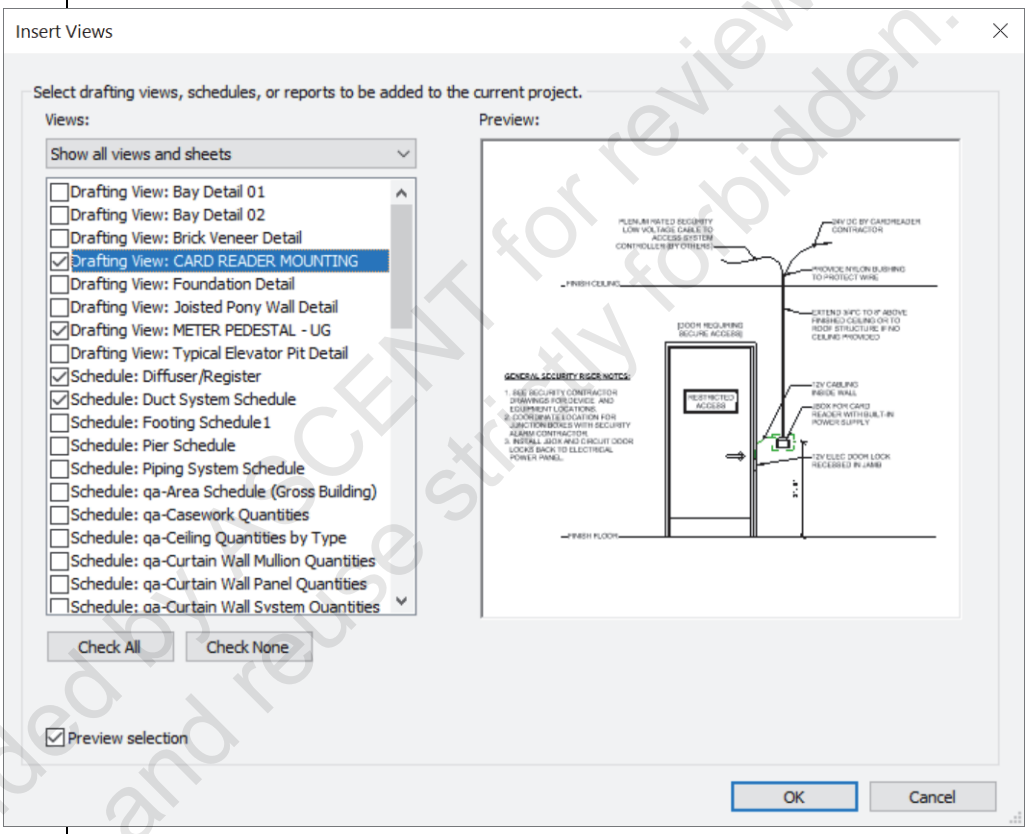

Figure 1–35

6. Click **OK**.

7. If the Duplicate Types warning displays, click **OK** and close any warning messages that pop up.

8. In the Project Browser of your template file, review the new drafting views and schedules that are added.

If you started with the systems or electrical template, the drafting views will be in the Architectural section in the Project Browser.

9. Return to the floor plan view.

10. In the *Manage* tab>Settings panel, click (Transfer Project Standards).

11. In the Select Items To Copy dialog box, note that the Copy from drop-down list is set to **Construction Resource Project.rvt**, which is the project that was just used for inserting a view from a file.

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Note: If the Insert from File command was not used, you would have had to open the project in order to transfer standards.

12. Click **Check None**, select **Text Types** (as shown in Figure 1–36), and click **OK**.

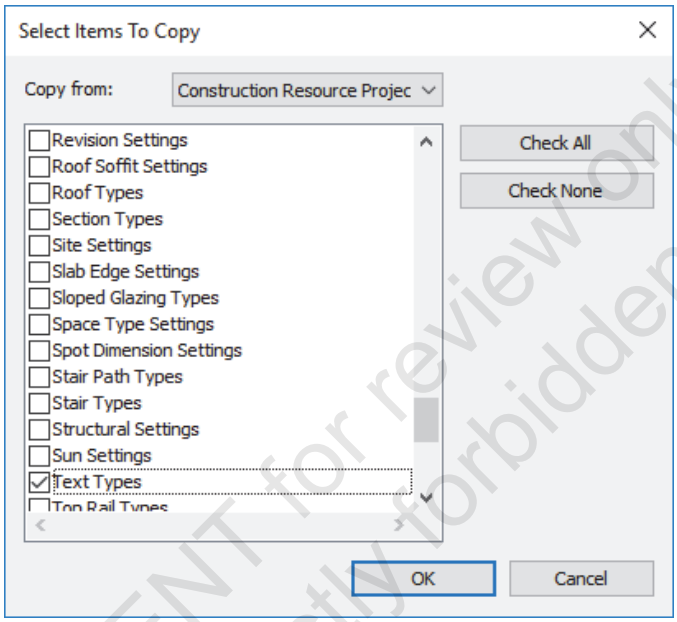

Figure 1–36

13. If the Duplicate Types dialog box displays, select **New Only** because you do not want to overwrite existing text types in your template.

14. Start the **Text** command and look at the expanded list of text types that are now available, as shown in Figure 1–37.

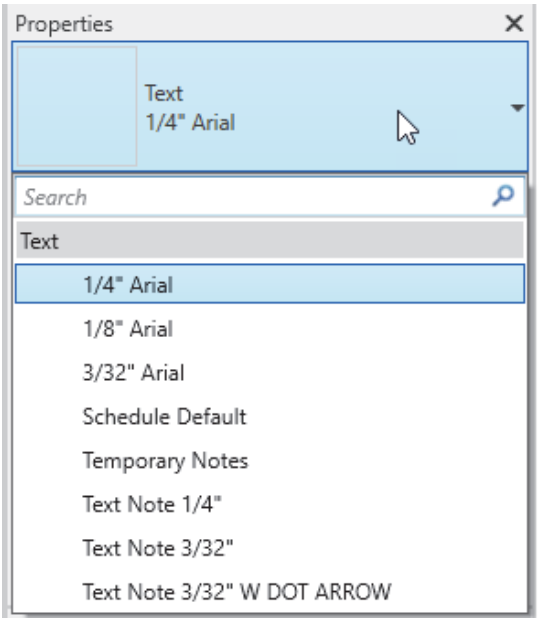

Figure 1–37

15. Click (Modify).

16. Save and close the template file.

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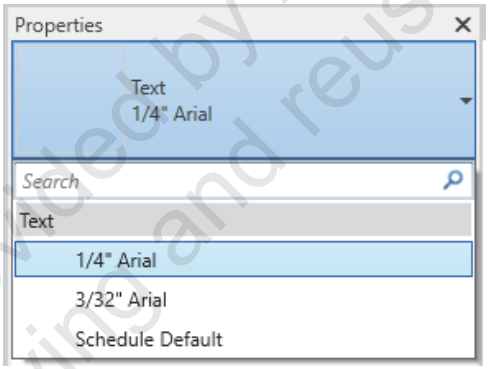
Practice 1c

Prepare Project Templates: Structural

Practice Objectives

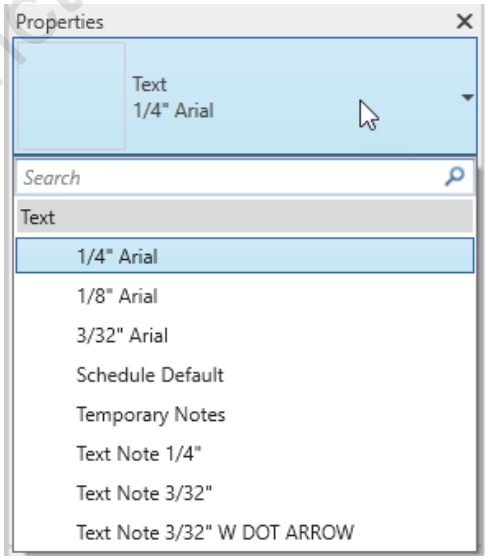
- Create a new project template file.
- Add levels with plan views.
- Review existing system and component families.
- Load a component family.
- Insert views and transfer project standards from a resource project.

In this practice, you will create a new template file based on an existing template and add several levels to the project. You will review the existing system and component families and load a component family. You will then insert views and transfer project standards from a resource project, as shown for text types before in Figure 1–38 and after in Figure 1–39.



Before

Figure 1–38



After

Figure 1–39

Task 1 - Establish a project template file.

1. On the Home screen, click **New...** in the *MODELS* area, or if currently in a model, in the *File* tab, expand (New) and click (Project).

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2. In the New Project dialog box, select the **Imperial-Structural Template**.

3. In the *Create new* area, select **Project template**, as shown in Figure 1–40, and click **OK**.

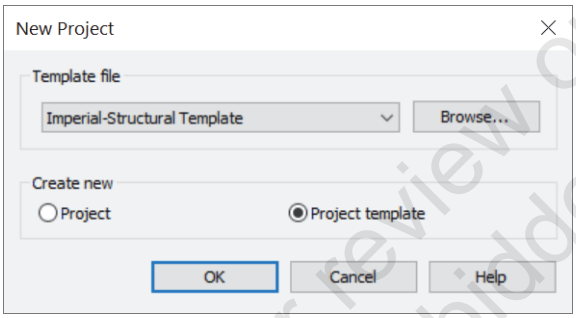

Figure 1–40

4. In the Quick Access Toolbar, click (Save) and save the template in the practice files *Structural>Template Files* folder as **Midrise-Template.rte**.

Task 2 - Add default levels.

1. Open an elevation view.
2. Click on the level head and rename *Level 1* to **Ground Floor** and *Level 2* to **TOS-Floor 1**. Click **Yes** to rename the corresponding views.
3. Change the **TOS-Floor 1** height to **14'-7"**, as shown in Figure 1–41.

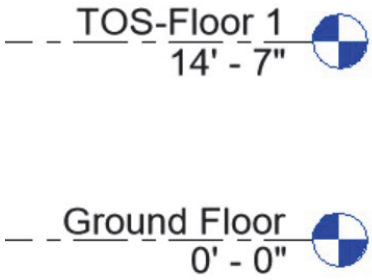

Figure 1–41

4. In the *Structure* tab>Datum panel, click (Level).
5. In the Options Bar, verify that the **Make Plan View** option is selected and click **Plan View Types...**.

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6. In the Plan View Types dialog box, select the **Structural Plan** view type, as shown in Figure 1–42, and click **OK**.

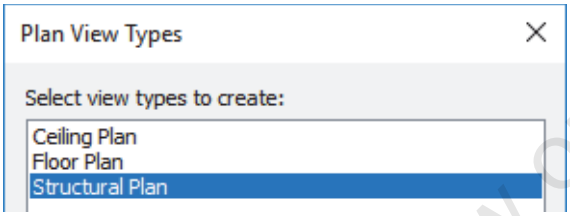

Figure 1–42

7. Add three more levels above **TOS-Floor 1** with a distance of **15'-0"** between each level, and one level below **Ground Floor** with a distance of **15'-0"** between them. Rename them as shown in Figure 1–43. Click **Yes** to rename the corresponding views.

Scale change and dimensions are added for clarity.

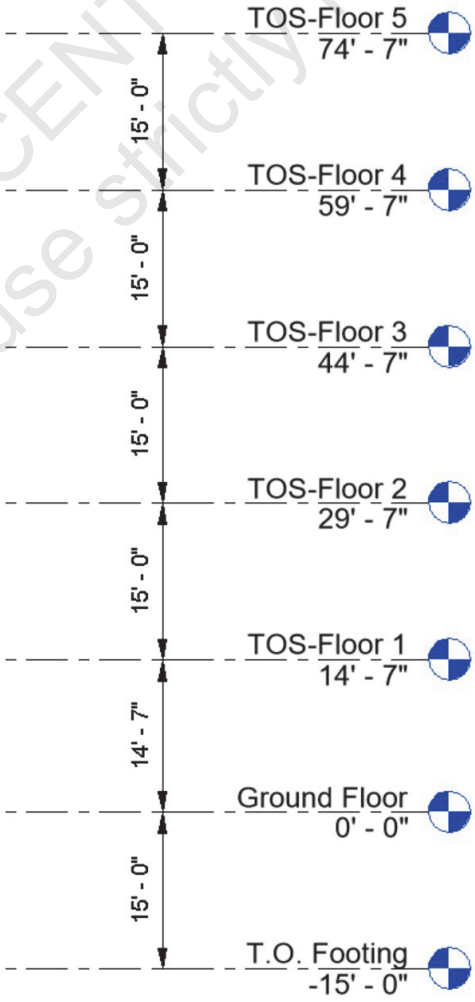

Figure 1–43

8. Return to the Ground Floor plan view.
9. Save the template.

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Task 3 - Load a component family.

1. In the *Insert* tab>Load from Library panel, click (Load Family).
   - By using the **Load Family** command, you can load any type of component. If you use a specific command, such as **Column** or **Truss**, you can only load that type of family.
2. In the Load Family dialog box, navigate to the Revit Library's *Structural Columns>Steel* folder, select **Pipe-Column.rfa**, and click **Open**.
3. In the Specify Types dialog box, select **Pipe8STD** and click **OK**.
4. Save the template.

Task 4 - Review existing family elements in the template.

In this task, you will review existing families in a project using both the Type Selector and the Project Browser.

1. In the *Annotate* tab>Text panel, click (Text).
2. Expand the list in the Type Selector. Only a few text types are available, as shown in Figure 1–44.

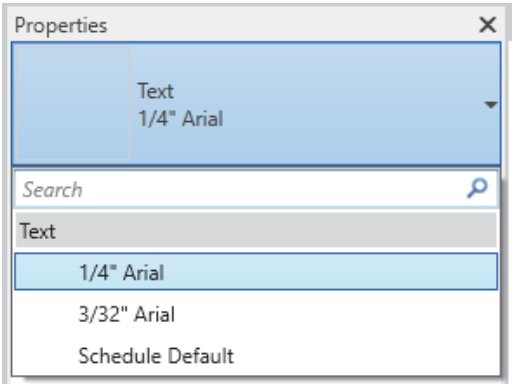

Figure 1–44

3. In the *Structure* tab>Model panel, select (Component) and review the list of families in the Type Selector.
4. In the *Structural* tab>Structure panel, select (Column). Note that **Pipe8STD** is displayed in the Type Selector.

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5. In the Project Browser, expand the **Families>Structural Columns>Pipe-Column** node and note that **Pipe8STD** is listed there as well, as shown in Figure 1–45. Continue to expand nodes within the Project Browser to see what other families are loaded in the project.

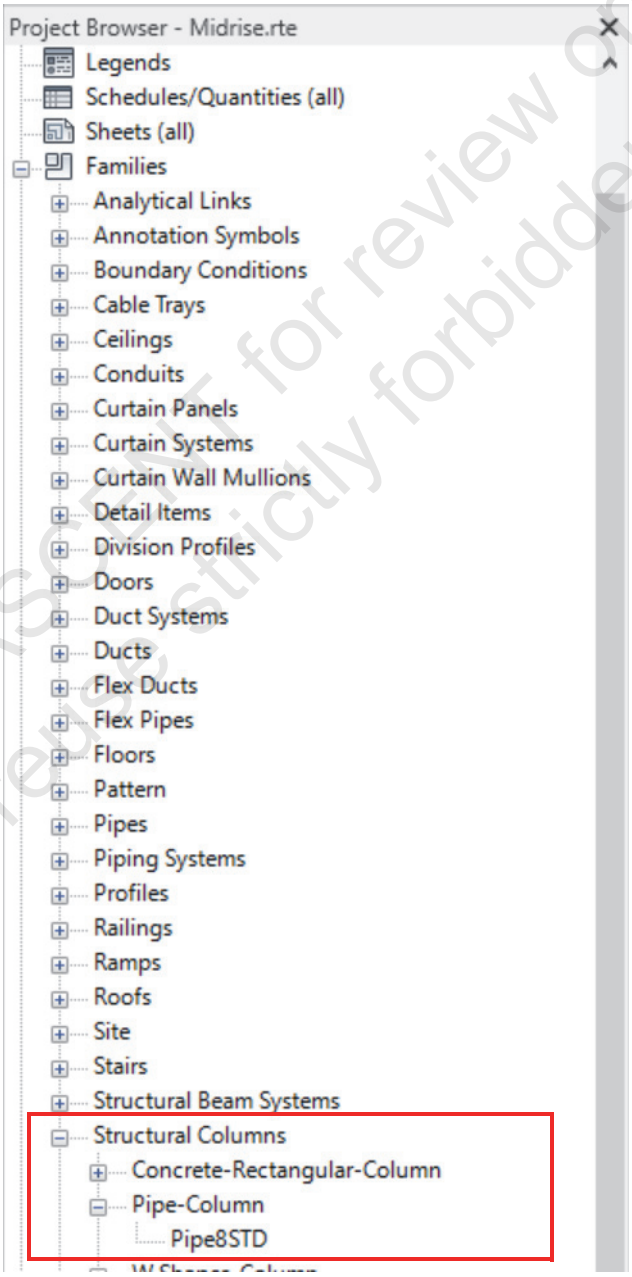

Figure 1–45

6. Save the template.

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Task 5 - Copy information from a resource project.

1. Close any open projects other than the template file.
2. In the *Insert* tab>Load from Library panel, expand (Insert from File) and click (Insert Views from File).
3. In the Open dialog box, navigate to the *Revit 2022 BIM Management Practice Files>Reference* folder, select **Construction Resource Project.rvt**, and click **Open**.
4. In the Insert Views dialog box, set the Views drop-down list to **Show all views and sheets**.
5. Select one or two drafting views and one or two schedules from the list, as shown in Figure 1–46.

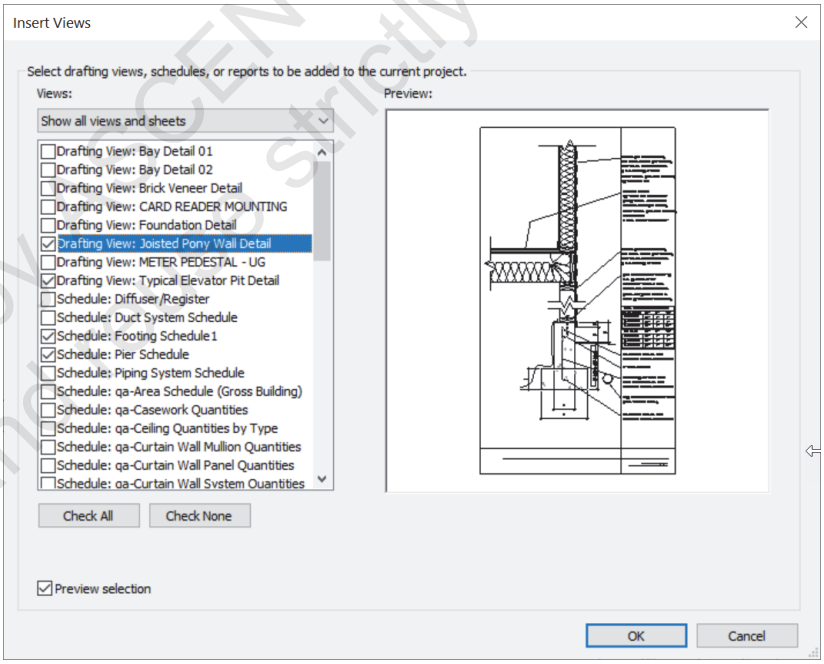

Figure 1–46

6. Click **OK**.
7. If the Duplicate Types warning displays, click **OK** and close any warning messages that pop up.
8. In the Project Browser of your template file, review the new drafting views and schedules that are added.
9. Return to the floor plan view.

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10. In the *Manage* tab>Settings panel, click (Transfer Project Standards).

11. In the Select Items To Copy dialog box, note that the Copy from drop-down list is set to **Construction Resource Project.rvt**, which is the project that was just used for inserting a view from a file.

Note: If the Insert from File command was not used, you would have had to open the project in order to transfer standards.

12. Click **Check None**, select **Text Types** (as shown in Figure 1–47), and click **OK**.

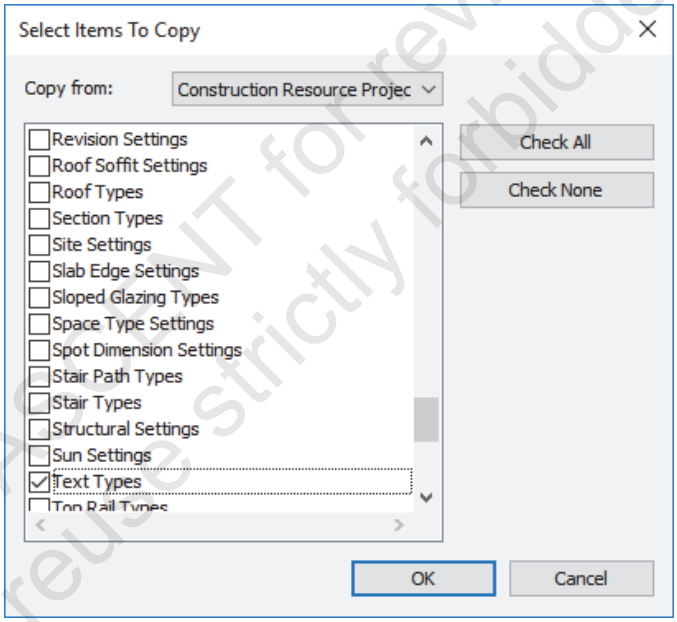

Figure 1–47

13. If the Duplicate Types dialog box displays, select **New Only** because you do not want to overwrite existing text types in your template.

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14. Start the **Text** command and look at the expanded list of text types that are now available, as shown in Figure 1–48.

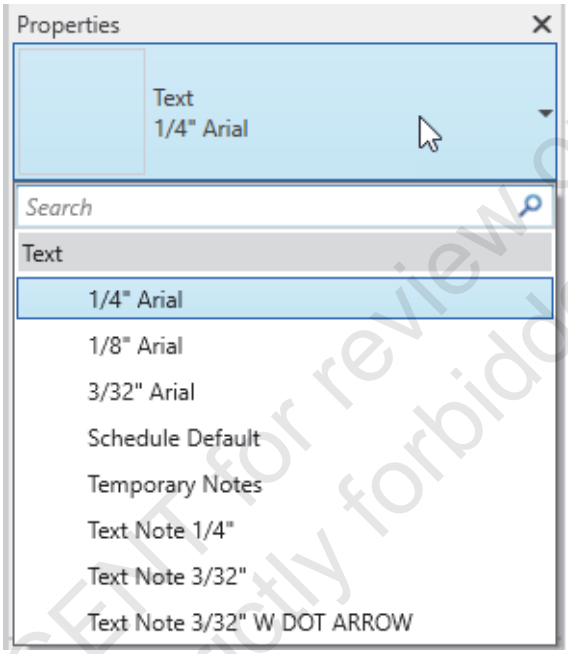

Figure 1–48

15. Click (Modify).

16. Save and close the template file.

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1.2 Customizing Annotation Types

Establishing annotation style types is an important part of template creation. You can customize annotation types in your project template file, including dimensions, text, arrowheads, and tags. Figure 1–49 shows the different types of annotations. Within each annotation type, you can customize font, text size, background, leaders, etc.

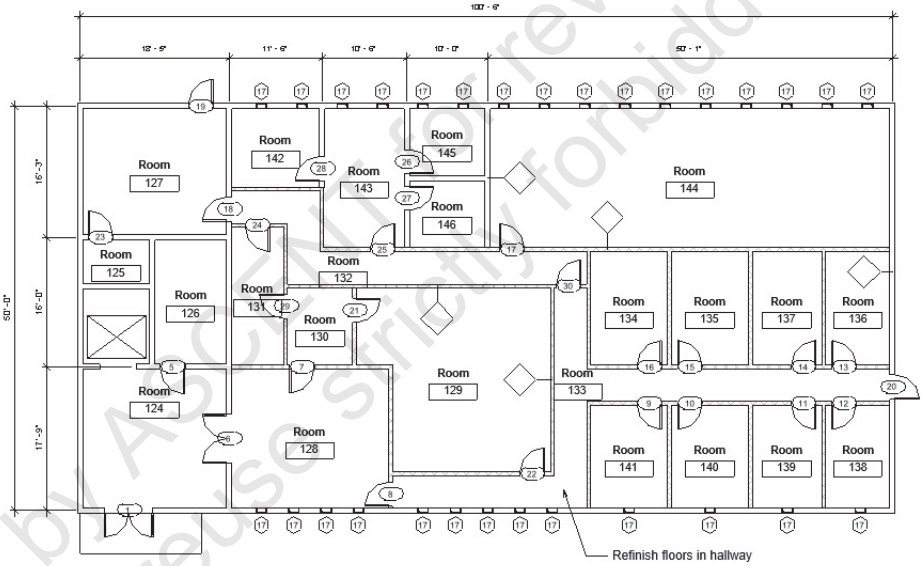

Figure 1–49

Text, Dimensions, and Arrowheads are all system families and are depicted with the label **System Family** in front of the name in their Type Properties (as shown in Figure 1–50) and component families. This means they have a standard set of parameters, which you can modify and save as a type.

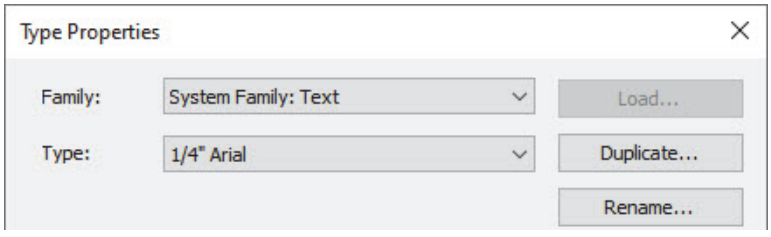

Figure 1–50

Callout, section, and elevation tags can be modified in Revit. Most other tags, like door, window, and beam tags, are created using component families.

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Creating Text Types

Text types are used to standardize text formatting (such as the font, text height, etc.), as shown in Figure 1–51. They can be created for both annotative text and model text.

ARIAL AT 1/4"

CITY BLUEPRINT AT 1/8"

ARIAL AT 3/32", BOLD

Figure 1–51

- The **Text** command places 2D text at the height you need for the final plot. The view scale controls the height of the standard text in the views.
- The *Text Size* parameter represents the height of an upper case letter. (Verify that the text in projects created in earlier versions of the software displays as expected.)
- The **Model Text** command places work plane based 3D text that is typically used on buildings, walls, doors, or signs, as shown in Figure 1–52. Text types for model text should be the actual height of the final signage element and are not affected by the view scale.

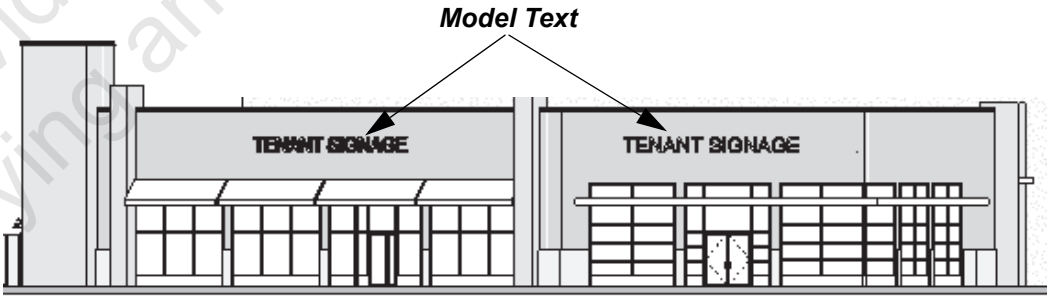

Figure 1–52

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How To: Create a Text Type

1. Start the **Text** command.
2. In Properties, click (Edit Type) or in the *Annotate* tab>Text panel title, click (Text Types).
3. In the Type Properties dialog box, click **Duplicate...**.
4. Type a new name and click **OK**.The new type is activated.
5. Modify the parameters as needed for the new type, as shown for annotation text in Figure 1–53.

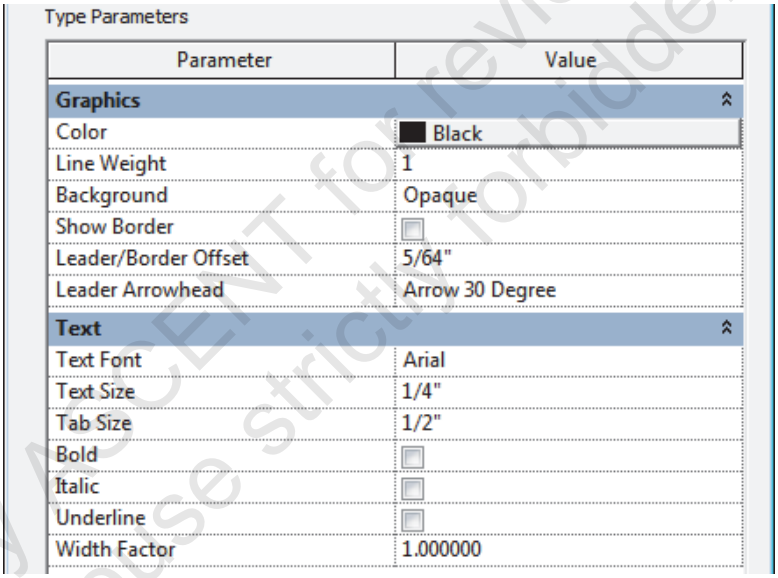

Figure 1–53

6. Click **OK** to finish.

How To: Create a Model Text Type

1. In the *Architecture* tab>Model panel, click (Model Text). Alternatively, in the *Structure* tab>Model panel, click (Model Text).
2. In the Edit Text dialog box, keep the default text and click **OK**, then place the text in the view.
3. Select the model text and from Properties, click **Edit Type**.
4. In the Type Properties dialog box, click **Duplicate...**.
5. Type a new name and click **OK**. The new type is activated.
6. Modify the parameters as needed for the new text type.
7. Click **OK** to finish.

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Creating Dimension Types

Dimensions are one of the more complex system families in terms of the number of parameters you can modify. They include options for the Dimension Text, Dimension Line, Tick Marks, and Witness Lines. You can specify information such as the units, color, and all of the gap sizes between elements, as shown in Figure 1–54.

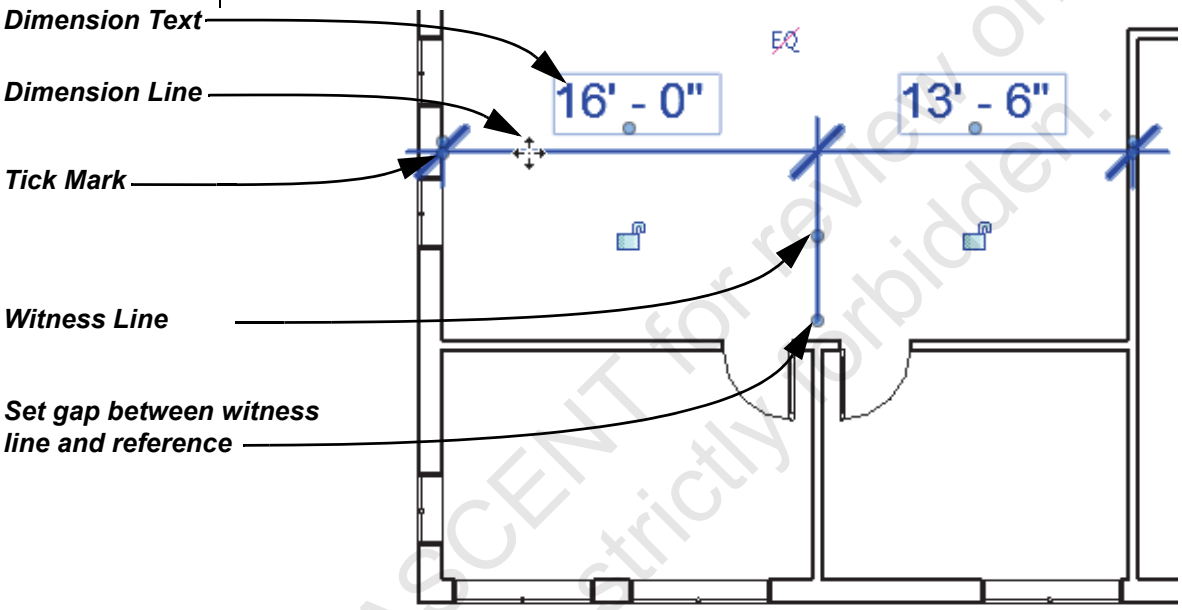

Figure 1–54

- You can add a suffix or prefix to a dimension type by creating a type-driven dimension style. Duplicate the dimension style and specify a set prefix and suffix within the type parameters. This eliminates the need for users to manually modify the dimension every time they need to add a prefix or suffix.

How To: Create Dimension Types

1. In the *Annotate* tab>Dimension panel, expand the Dimension panel title (as shown in Figure 1–55) and click the dimension type with the icon next to it that you want to create.

You create separate types for each dimension method.

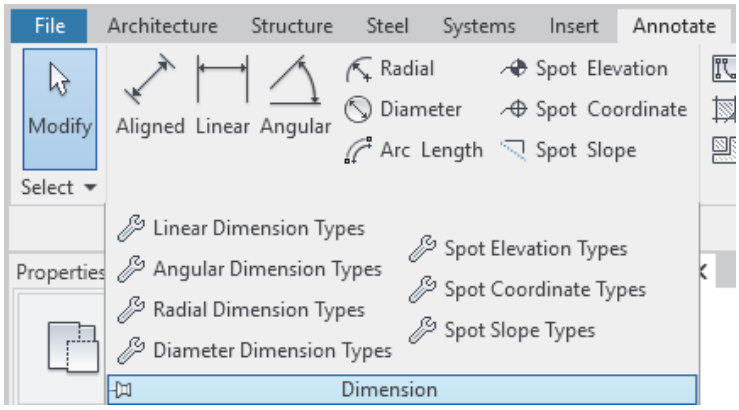

Figure 1–55

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2. In the Type Properties dialog box, click **Duplicate...**.
3. Type a new name and click **OK**. The new type is activated.
4. Modify the parameters as needed for the new type, as shown in Figure 1–56.
   - Values for parameters (such as text size, witness line extension, etc.) are the actual plot size for these elements. The view scale controls how large they are in the specific view.
   - Specify a prefix or suffix for *Primary Units*, as shown in Figure 1–56.

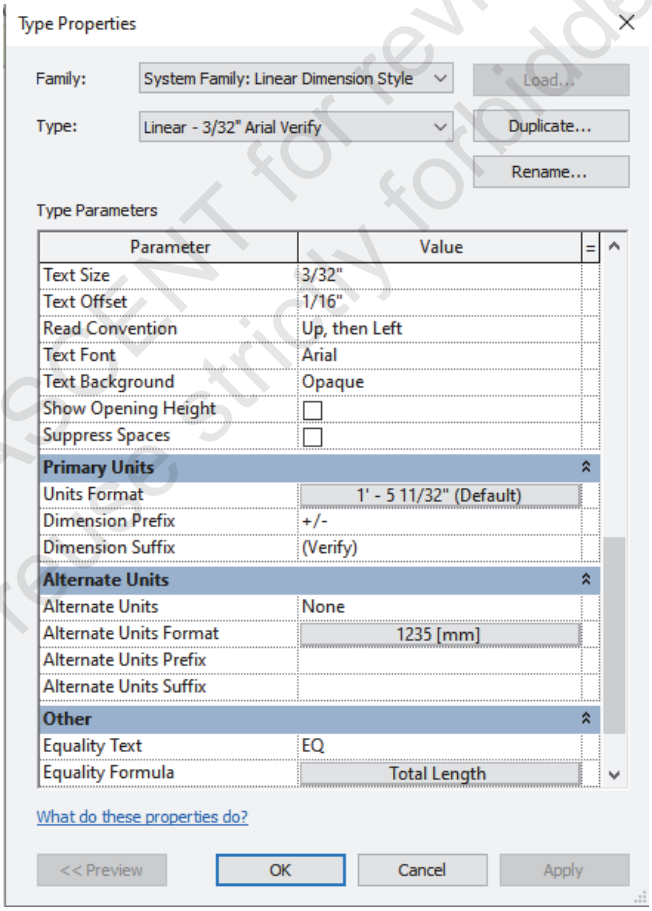

Figure 1–56

5. Click **OK** when you are finished.

- For linear dimensions, you can specify a *Leader Type*, *Shoulder Length*, and *Leader Tick Mark*, as well as the *Show Leader When Text Moves* option that is used when the text is pulled away from the dimension string. You can also specify the text inserted for *Equality Text* (the default is **EQ**).
- You can specify a *Text Background* option. If you set the value to **opaque**, it automatically masks any elements behind the text. If it is set to **transparent**, anything the text overlaps is still visible.

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- If you are dimensioning doors and windows by their widths rather than their centers, you can also have the opening height displayed with the dimension. Select **Show Opening Height**.

Loading Tags and Symbols

Tags and symbols are 2D component families that must be loaded into a project. Not all types of tags need to be in each project, so you can choose which ones you want to include in your templates. For example, if you are working in an architectural project, you can load tags such as the door, window, and wall shown in Figure 1–57.

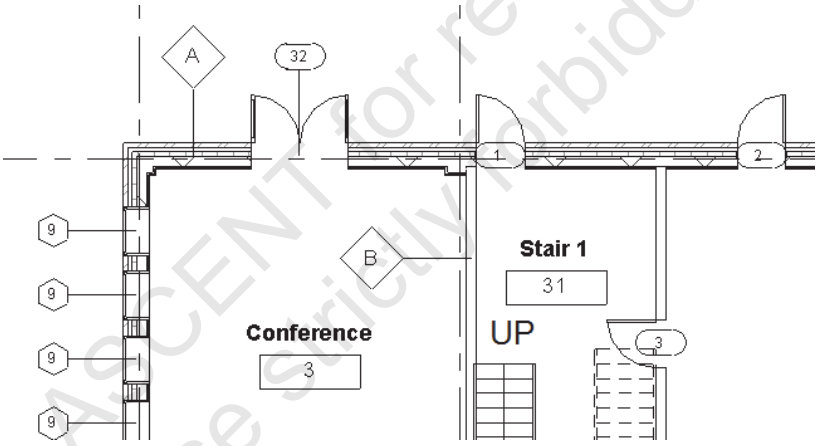

Figure 1–57

How To: Specify Loaded Tags and Symbols

1. In the *Annotate* tab>Tag panel, expand the panel title and click (Loaded Tags and Symbols).
2. In the Loaded Tags and Symbols dialog box, use the *Filter list* field to limit the types of tags you are looking for by discipline, as shown in Figure 1–58.

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Some elements, such as Floors and Structural Fabric Reinforcement, have both tags and symbols. They can both be specified in this dialog box.

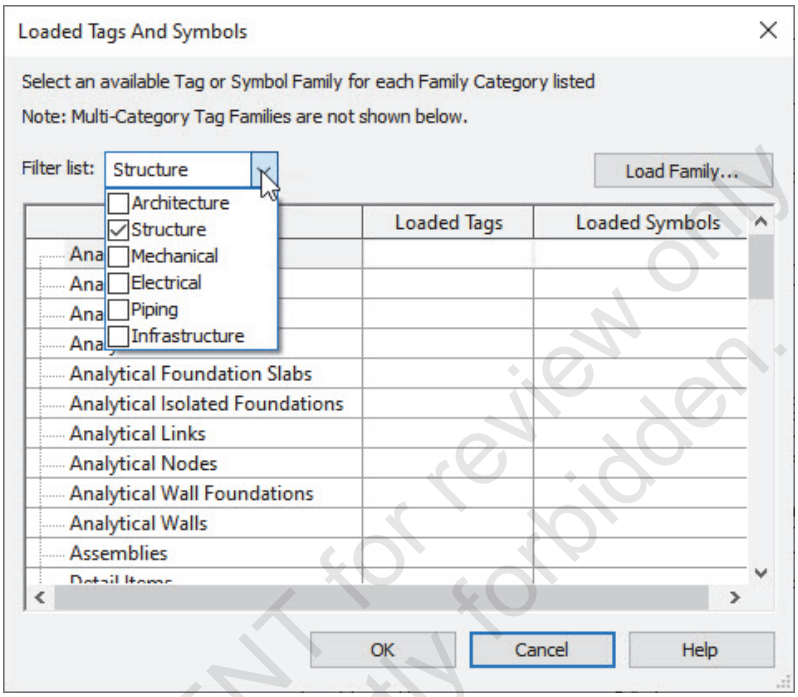

Figure 1–58

3. Click **Load Family...**.
4. In the Load Family dialog box, navigate to the appropriate library and folder. Note, tags are typically found in the Revit Library's *Annotations* folder and sorted within discipline sub-folders.
5. Select the required tags and click **Open**. Hold <Ctrl> or <Shift> to select multiple tags.
6. The selected tags are assigned to their appropriate categories.
7. When you have loaded all of the tags that you need for a project, click **OK**.
8. If multiple tags are loaded for a category, you can choose which one is the default tag by choosing it in the *Loaded Tags* column, as shown in Figure 1–59.

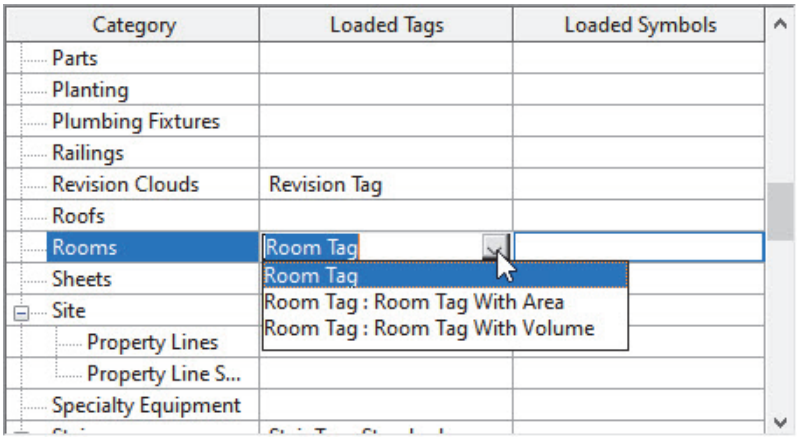

Figure 1–59

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Specifying View Tags

Callouts, Elevations, and Section markers are system family view tags and can be modified to suit office standards. For example, you can create a new Elevation view type containing a tag that displays the view name by duplicating an existing one and modifying the properties, as shown in Figure 1–60.

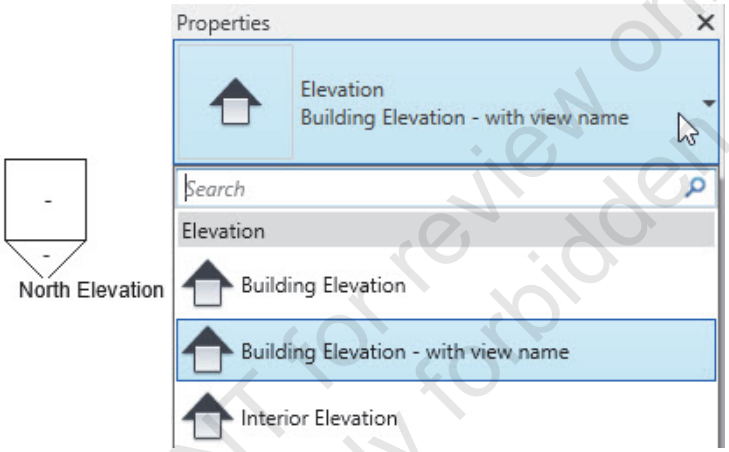

Figure 1–60

How To: Create Custom System Family Tags for View Types

1. In the *View* tab>Create panel, click (Callout), (Elevation), or (Section), and in Properties, click (Edit Type). In the Type Properties dialog box, select an existing type, then duplicate and name the new view type, as shown for an elevation view in Figure 1–61.

Each view type has different parameters.

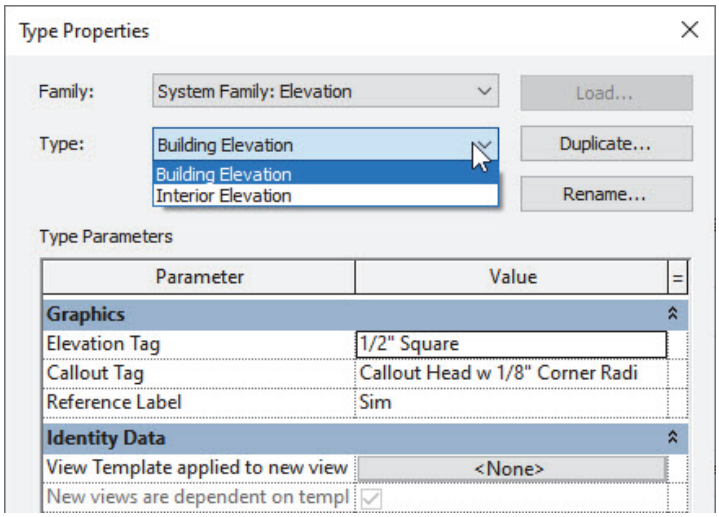

Figure 1–61

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2. Beside any of the tag parameters, click in the *Value* column and then click (Browse).
3. In the Type Properties dialog box for the tag, select from an existing tag type or duplicate a tag type, and specify a new mark element from a list of families that have been loaded into the project, as shown in Figure 1–62.

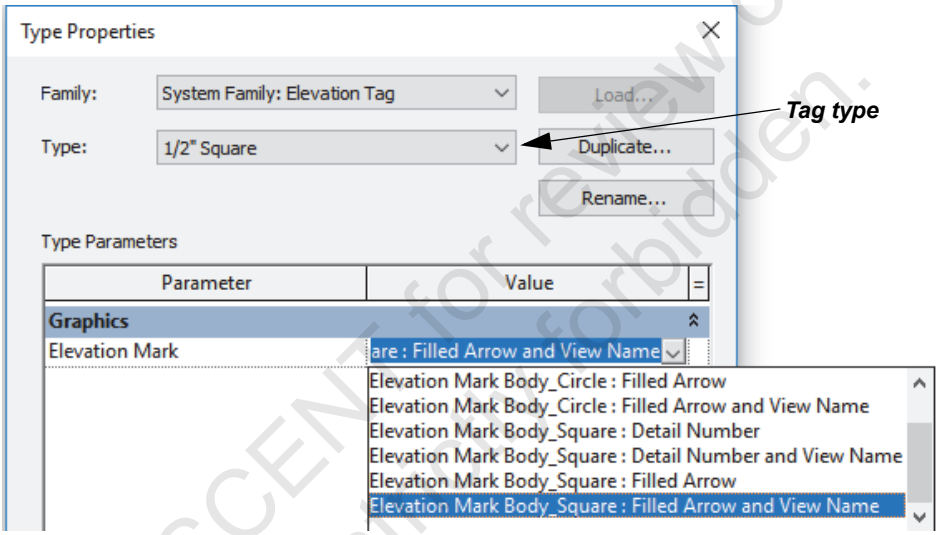

Figure 1–62

4. Click **OK** to apply the tag type.
5. Modify the other parameters as needed and click **OK** to close the Type Properties dialog box.

- Levels (shown in Figure 1–63) and grids (shown in Figure 1–64) are also system families that are set up in Type Properties and include component families such as the *Symbol* **Level Head-Circle** and **Grid Head-Circle**.

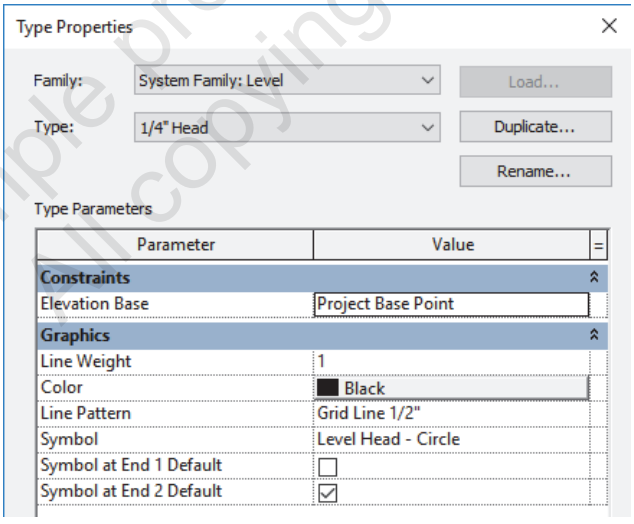

Figure 1–63

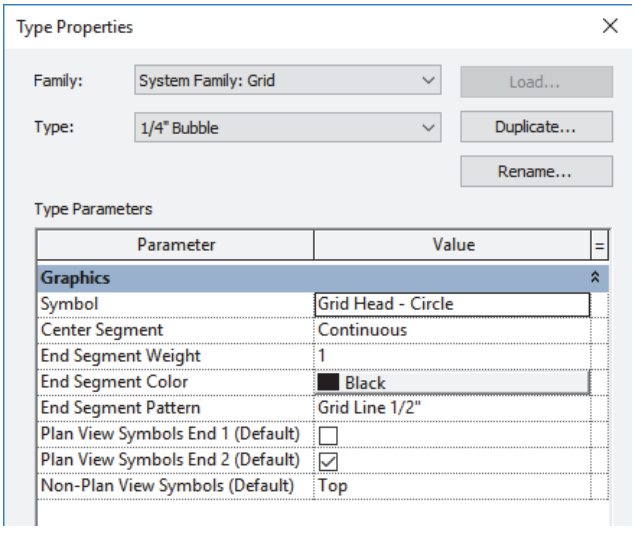

Figure 1–64

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How To: Create Custom System Family Tag Types from an Existing Tag

1. In the *Manage* tab>Settings panel, expand (Additional Settings), expand (Annotations), and select (Callout Tags), (Elevation Tags), (Arrowheads), or (Section Tags).
2. In the Type Properties dialog box for the tag, select from an existing tag type or duplicate a tag type, as shown in Figure 1–65.

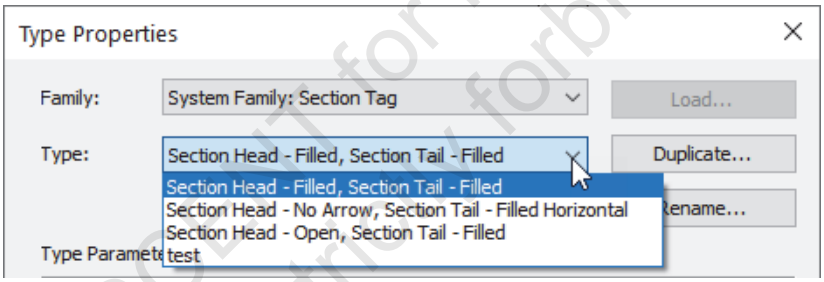

Figure 1–65

3. In the Type Parameters area, in the *Graphics* section, specify a new mark element from a list of families that have been loaded into the project, as shown in Figure 1–66.

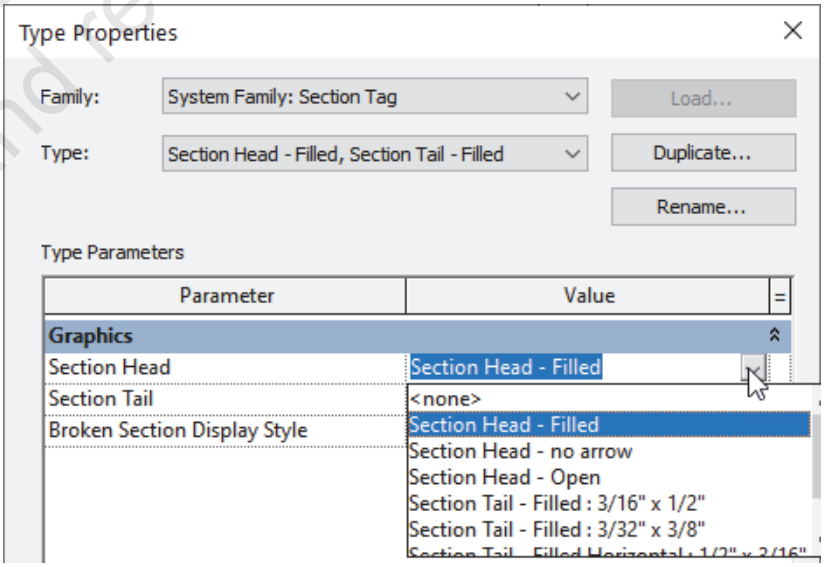

Figure 1–66

4. Click **OK**.

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Practice 1d

Customize Annotation Types: All Disciplines

Practice Objectives

- Set up text and dimension types.
- Load tags.
- Create a new view tag.

In this practice, you will create text types, duplicate and modify dimension styles (as shown in Figure 1–67), and load typical tags into the project template file. You will also create a new elevation tag that includes the view name information.

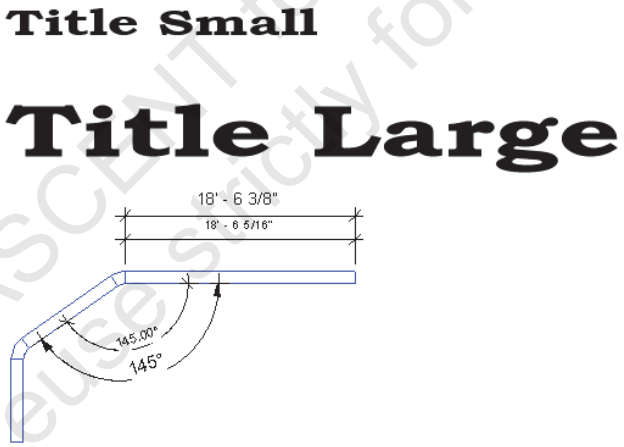

Figure 1–67

Task 1 - Create text types.

1. Open the project template **Midrise-Template.rte** that you created in the previous practice. If you did not complete the previous practice, open the template found in the practice files folder that relates to your discipline:
   - *Architectural>Template Files>* **Midrise-Template-Architectural-1.rte**
   - *MEP>Template Files>***Midrise-Template-MEP-1.rte**
   - *Structural>Template Files>* **Midrise-Template-Structural-1.rte**
2. Start the **Text** command.
3. In Properties, click (Edit Type)
4. In the Type Properties dialog box, click **Duplicate...**.

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5. Type the *Name* **Title Small** and click **OK**.The new type is activated.

6. In the *Text* section, select a font and other options, as needed. Set the *Text Size* to **1/4"**, as shown in Figure 1–68.

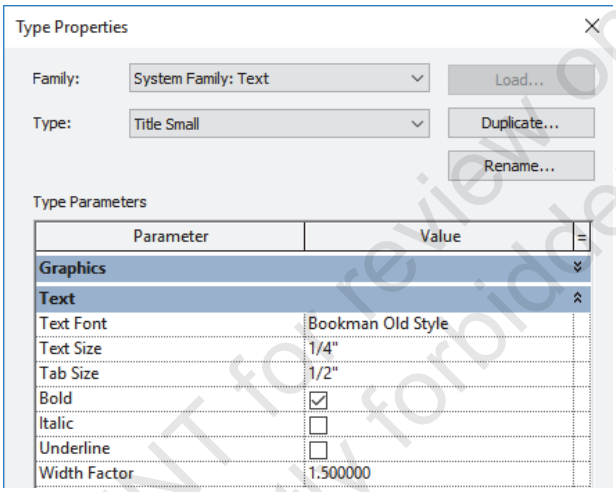

Figure 1–68

7. Click **OK** and type in some text using the new text type.

8. Create a duplicate of the new text type named **Title Large**. Change the *Text Size* to **1/2"** and add some text using the new type.

9. Save the template file.

Task 2 - Create dimension styles.

1. Model a few linear elements (such as walls, beams, or duct) and add two linear and two angular dimensions shown in Figure 1–69.

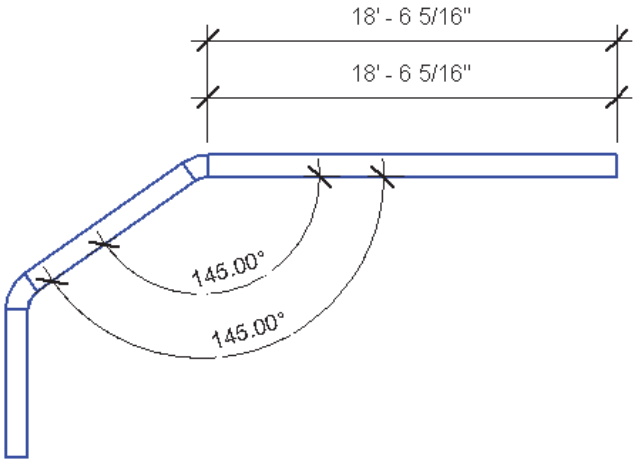

Figure 1–69

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2. Click (Modify).
3. Select the outer most linear dimension.
4. In the Properties, click **Edit Type**.
5. In the Type Properties dialog box, duplicate the type and name it **Linear - Standard**.
6. In the *Text* group, change the *Text Size* to **1/8"**.
7. Click on *Units Format.* In the Format dialog box, clear the check mark for **Use project settings** and change the *Rounding* to the **nearest 1/8"**, as shown in Figure 1–70.

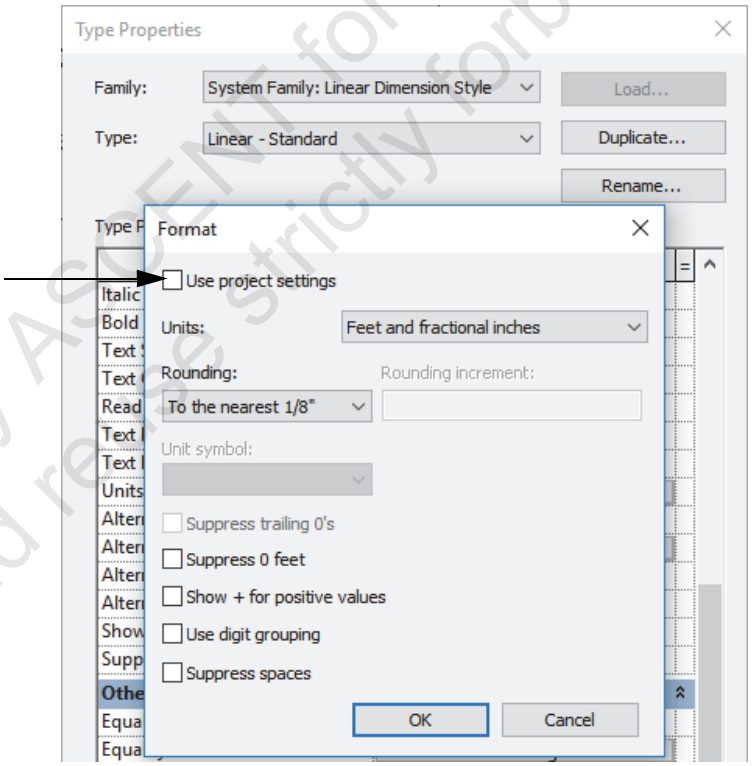

Figure 1–70

8. Click **OK** twice to finish. The linear dimension updates to the new style.
9. Select the outermost angular dimension. Duplicate the type and name it **Angular - Standard**.
10. In the Type Properties dialog box, in the *Graphics* group, change the *Tick Mark* to **Arrow Filled 30 Degree**.
11. In the *Text* group, change the *Text Size* to **1/8"** and the *Units Format* to **0 decimal places**.

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12. Click **OK** twice to finish. The angular dimension updates as shown in Figure 1–71.

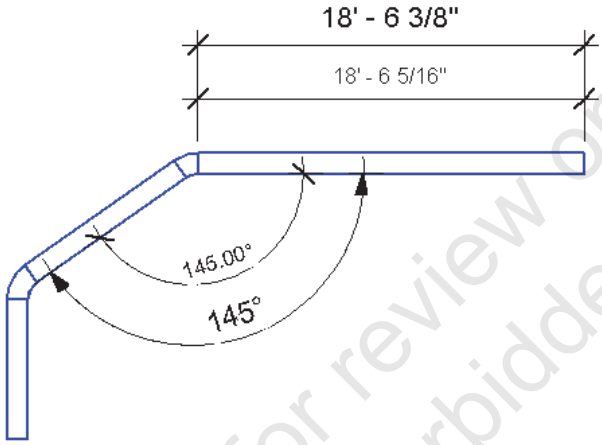

Figure 1–71

13. Select and delete the sample text, elements, and dimensions. Note that the types did not delete from the project.

14. Save the template.

Task 3 - Load tags.

1. In the *Annotate* tab, expand the Tag panel title, and click (Loaded Tags and Symbols).

2. In the Loaded Tags and Symbols dialog box, set the *Filter list* to match your discipline(s).

3. Click **Load Family...** and load the following tags from the Revit Library's *Annotations* folder's subfolders into the discipline-specific project template.

Architecture:

Folder	Tag Name
Architectural	Casework Tag.rfa, Furniture Tag.rfa, and Furniture System Tag.rfa

MEP:

Folder	Tag Name
Mechanical>Duct	Duct Fitting Tag.rfa
Electrical	Lighting Fixture Tag.rfa
Pipe	Pipe Fitting Size Tag.rfa

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Structure:

Folder	Tag Name
Architectural	Floor Tag.rfa, Wall Tag.rfa
Structural	Structural Column Tag-45.rfa

4. The tags are automatically assigned to the correct *Category*, as shown for the Architectural tags in Figure 1–72.

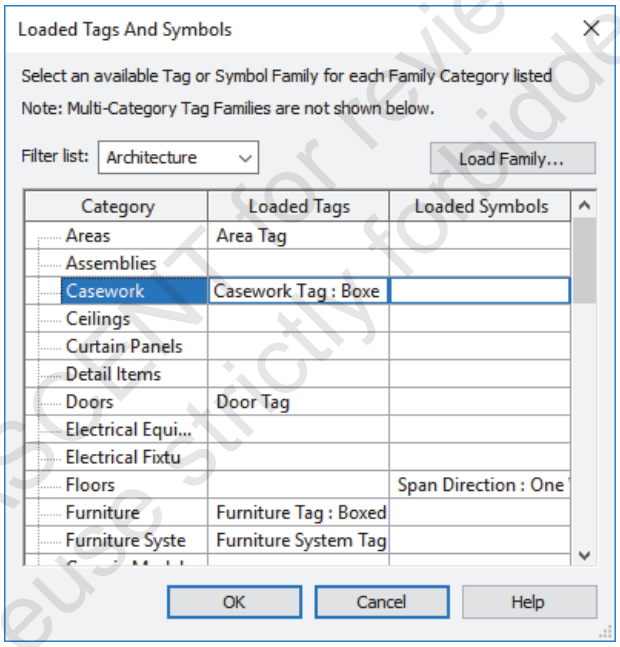

Figure 1–72

5. Click **OK**.
6. Save the template file.

Task 4 - Modify an elevation tag.

1. In the plan view, zoom to where you can see one of the existing building elevation view markers.
2. Select the pointed end of the marker.
3. In the Type Selector, verify that **Elevation>Building Elevation** is displayed.
4. In Properties, click **Edit Type**.
5. In the Type Parameters, select the Value beside *Elevation Tag* and then click the … (Browse) button.

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6. A second Type Properties dialog box displays for the Elevation Tag System Family. Duplicate this type and add **with Name** to the end.

7. In the *Elevation Mark* drop-down list, select **Elevation Mark Body_Square: Detail Number and View Name**, as shown in Figure 1–73.

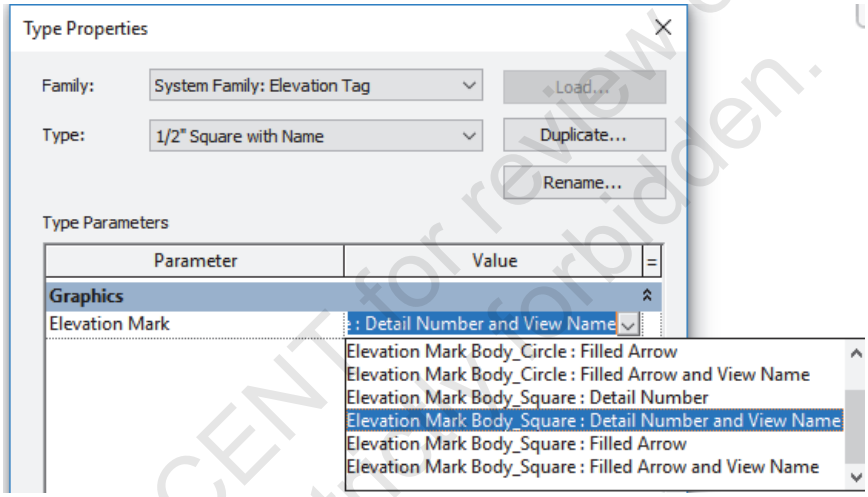

Figure 1–73

8. Click **OK**. The Elevation Tag updates as shown in Figure 1–74.

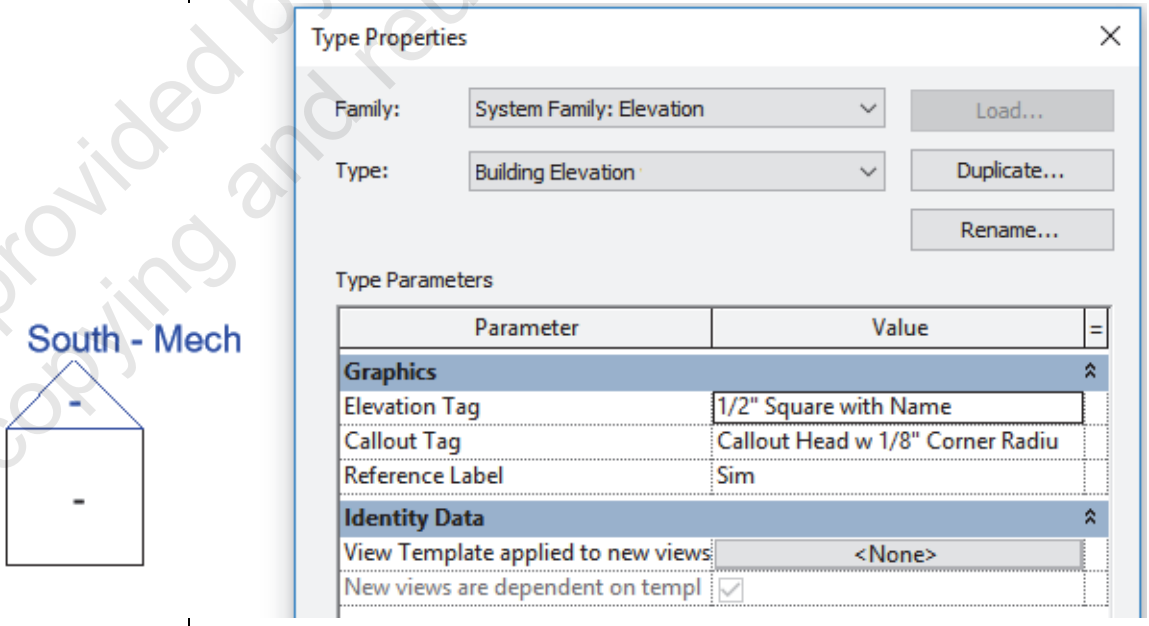

Figure 1–74

9. Click **OK** and zoom to fit the view.

10. Save and close the template.

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1.3 Creating Title Blocks

Title blocks (as shown in Figure 1–75) are a Revit family and contain information about the company and consultants designing the project, project information (such as project name and number), and sheet-specific information (such as sheet numbers and drawn by). They are created by sketching detail lines and adding text, symbols, and regions, as well as image files for company logos. The variable information is stored in labels. Some of these parameters never change, some are project-specific, and some are sheet-specific.

Figure 1–75

- Once you have title blocks customized, you can add them to templates and set up views and sheets in the template.

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How To: Create a Title Block

Title block templates are located in the C:\ProgramData\Autodesk\RVT 2022\Family Templates\English(Metric) or English-Imperial folder.

1. In the *File* tab, expand (New) and click (Title Block).
   - Alternatively, on the Home screen, in the *FAMILIES* area, click (New...), as shown in Figure 1–76. Navigate to the Revit Library's *Family Templates>English-Imperial>Titleblocks* folder.

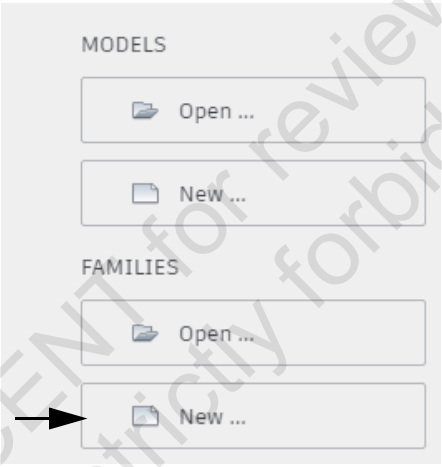

Figure 1–76

*You can select from several preset sizes or create a custom size by selecting **New Size.rft**.*

2. In the New Title Block - Select Template File dialog box, you should default to the *Titleblocks* folder location, as shown in Figure 1–77. Select a template file size from the list and click **Open**.

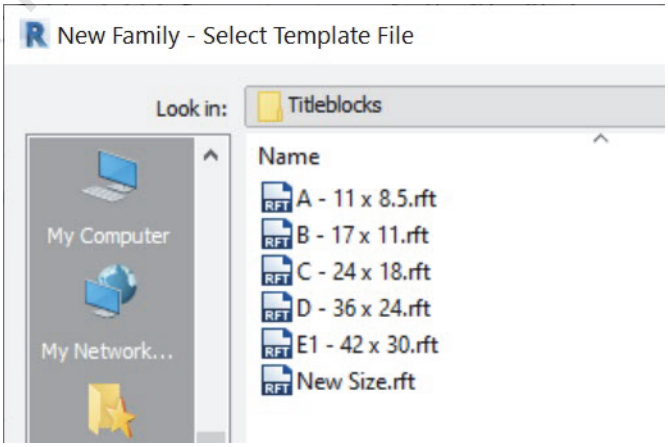

Figure 1–77

- A new family file opens and you will now be in Family Editor mode with a modified ribbon, as shown in part in Figure 1–78.

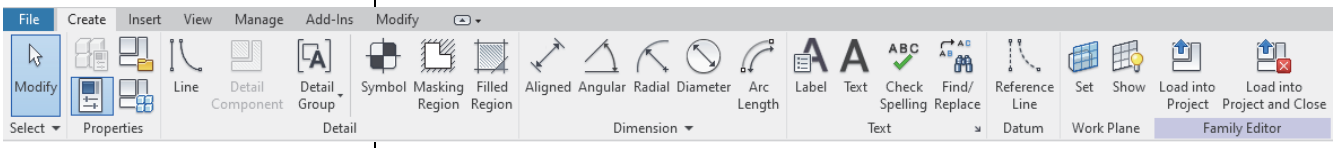

Figure 1–78

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3. Add lines, filled regions, symbols, text, and labels (which are covered next).
   - If you select a template with a standard size, a rectangle of that size displays in the view.
   - If you select **New Size**, a rectangle with dimensions displays. Edit the dimensions to modify the size.
   - You can use reference lines and dimensions to help place the elements in the title block family. They are not displayed when the title block is inserted.
4. You will save your new title block as a Revit family (.rfa) file type.

Adding Labels

Labels are not just text but elements that are assigned to specific parameters and can be added to title blocks or tags. They can change without modifying the rest of the elements. For example, you would use annotation text for the words **Drawn By:** and a label for the initials of the person who did the work (by default displaying DRW in Figure 1–79), because that varies from sheet to sheet.

Figure 1–79

- The title block template comes with one text type and one label type already defined. You can create additional types in Properties by duplicating types. The **Text** and **Label** parameters are similar, but you must create separate types for each of them.
- Labels use Rich Text Format so that they match text notes.

How To: Create a Label

1. Open a new or existing tag or title block family with an .rft extension.
2. In the Family Editor, in the *Create* tab>Text panel, click (Label).

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3. In the *Modify | Place Label* tab>Alignment panel, specify the alignments: **Left**, **Center**, **Right**, **Top**, **Center Middle**, or **Bottom**, as shown in Figure 1–80.

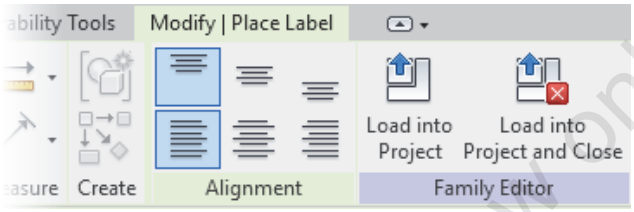

Figure 1–80

4. Click in the view window to place the label, as shown in Figure 1–81.

Figure 1–81

5. In the Edit Label dialog box (shown in Figure 1–82), select a label from the *Category Parameters* list and double-click or click (Add parameter(s) to label). You can select more than one by holding <Ctrl> or <Shift>.

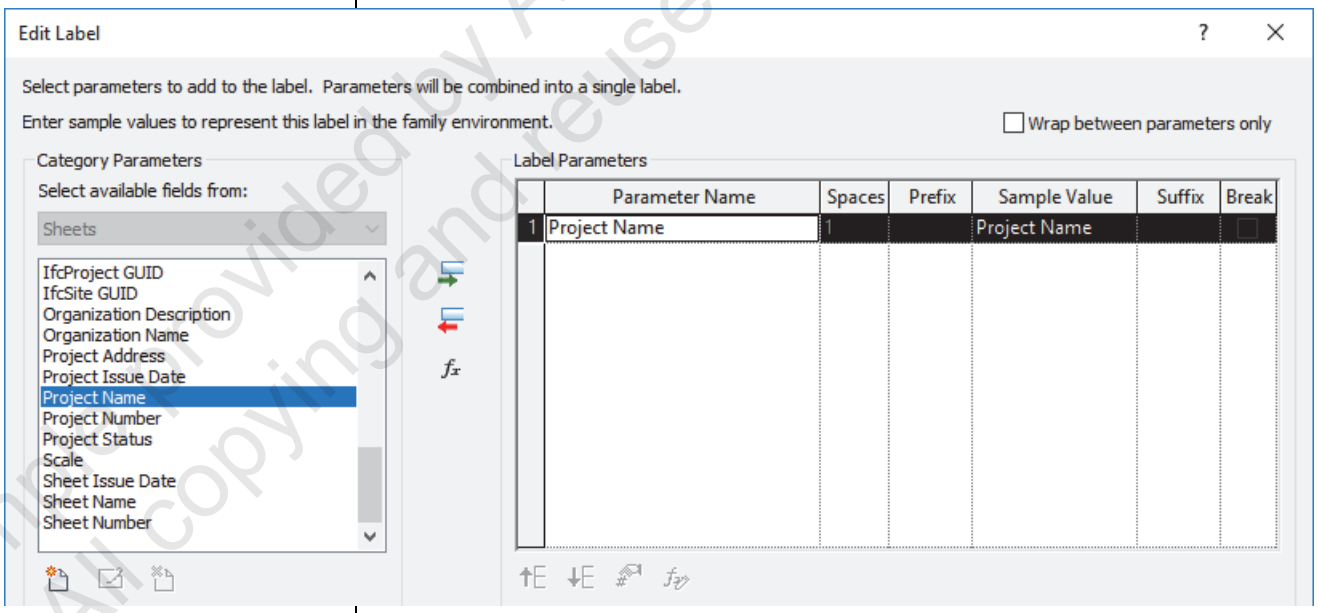

Figure 1–82

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6. Enter the *Sample Value* and specify any other options, if needed.
   - If you are using several parameters in one label, select **Wrap between parameters only** and **Break** (in column) options to separate them while still permitting a word wrap, as shown in Figure 1–83.

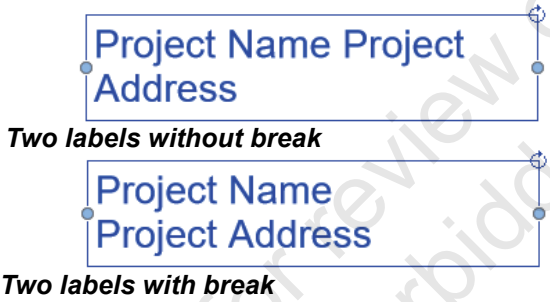

Figure 1–83

   - Click (Move parameter up) and (Move parameter down) to reorder multiple parameters.
   - If you select a numerical parameter, click (Edit parameter's units format) to change, if needed.
   - Click (Add calculated parameter to label) to use a formula based on other parameters.

For more information on creating parameters and calculated parameters, see 2.6 Working with Project Parameters.

Click (Add Parameter) to create a new parameter for the project. This option requires the use of a Shared parameter. For more information, see *6.4 Working with Shared Parameters*.

7. Click **OK** when you have finished editing the label.

- While placing the label, you can rotate or stretch it (as shown in Figure 1–84), or select a point for an additional label.

Figure 1–84

- You can also rotate or stretch a label once it has been placed in the title block.

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Adding Revision Schedules

A table of revisions included in a project and/or sheet is typically added to a company title block, as shown in Figure 1–85. In Revit, you can create a Revision Schedule that is then linked to the Sheet Issues/Revision Table in the project.

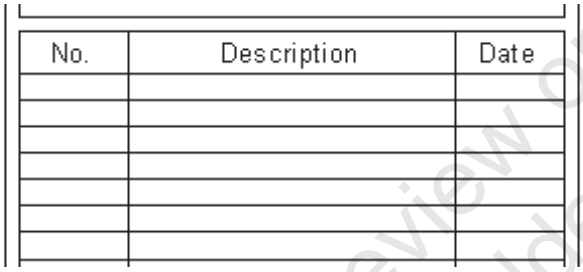

Figure 1–85

How To: Add Revision Schedules to Title Blocks

1. Open a new or existing title block with an .rft extension.
2. In the Family Editor, in the *View* tab>Create panel, click (Revision Schedule).
3. The Revision Properties dialog box displays. Click on each of the tabs along the top and modify the settings as needed.

Within the tabs, there are tools that are grayed out that you will not be able to use.

Fields Tab

In the *Fields* tab, you can select from a list of available fields and organize them in the order in which you want them to display in the schedule. Several are already selected for you, as shown in Figure 1–86. You can also sort the available fields by Parameter Type, Discipline, or Value Type.

You can also double-click on a field to move it from the Available fields area to the Scheduled fields area or double-click on a field to remove it from the Scheduled fields area.

- In the *Available fields* area, select one or more fields you want to add to the schedule and click (Add parameter(s)). The field(s) are placed in the *Scheduled fields (in order)* area.
- Click (Remove parameter(s)) to move a field from the *Scheduled fields* area back to the *Available fields* area.
- Use (Move parameter up) and (Move parameter down) to change the order of the scheduled fields.

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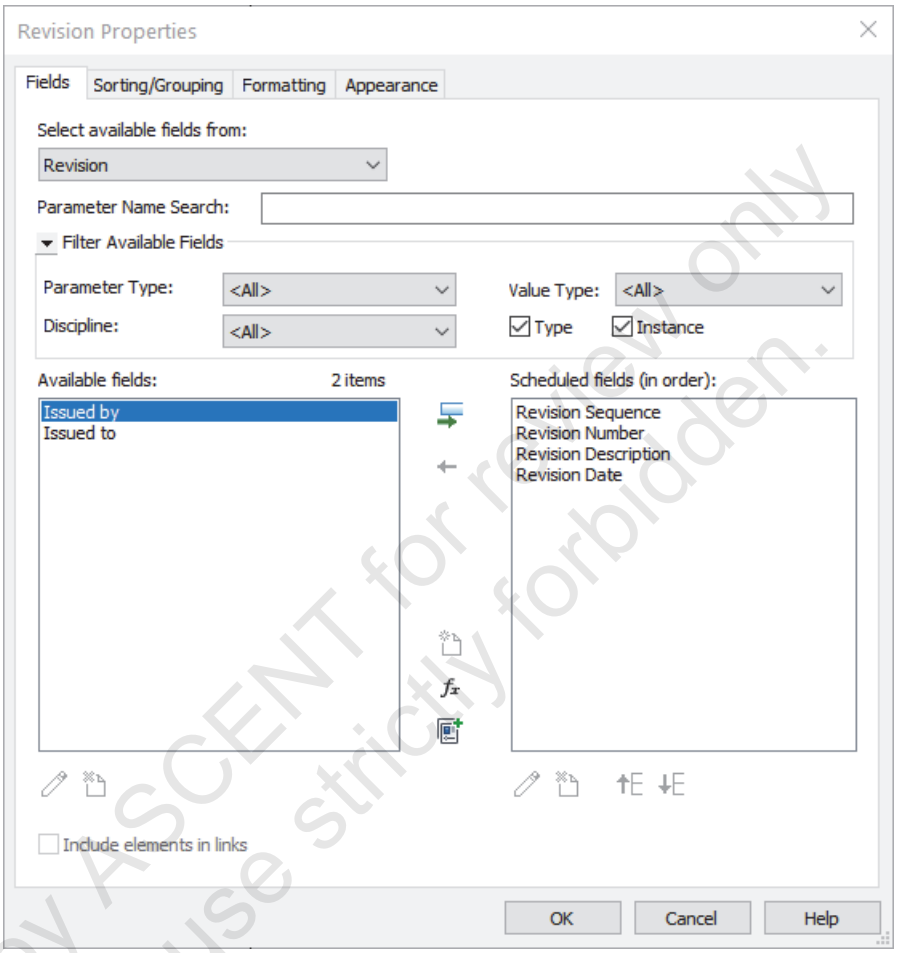

Figure 1–86

Other Fields Tab Options

Select available fields from	Enables you to select additional category fields for the specified schedule. The available list of fields depends on the original category of the schedule. Typically, it includes room information.
f_x **(Add Calculated parameter)**	Enables you to create a field that uses a formula based on other fields.
(Combine parameters)	Enables you to combine two or more parameters in one column.You can put any fields together even if they are used in another column.

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Sorting/Grouping Tab

In the *Sorting/Grouping* tab, you can set how you want the information to be sorted, as shown in Figure 1–87. For example, you can sort by **Revision Sequence** and add another option in the *Then by* section(s). You can also check or uncheck the **Itemize every instance** option.

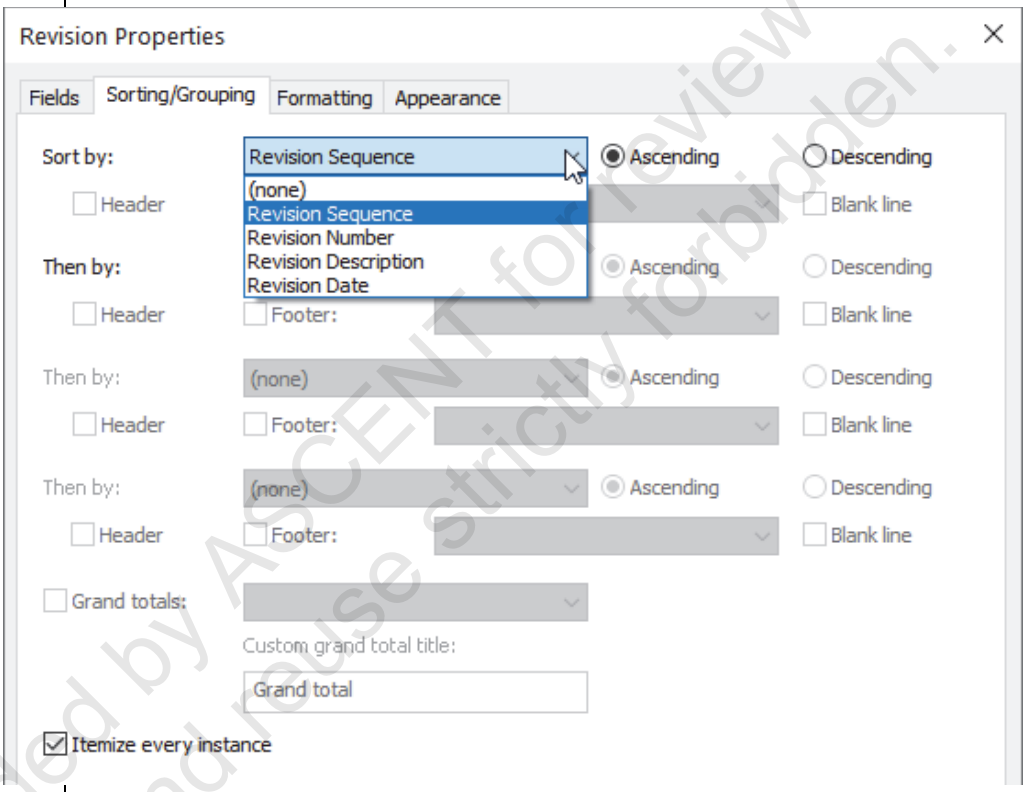

Figure 1–87

Sort by/Then by	Enables you to select the field(s) you want to sort by. You can select up to four levels of sorting.
Ascending/ Descending	Enables you to sort fields in **Ascending** or **Descending** order.
Itemize every instance	If selected, displays each instance of the element in the schedule. If not selected, displays only one instance of each type.

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Formatting Tab

In the *Formatting* tab, you can control how the headers of each field display, as shown in Figure 1–88. The *Multiple values indication* options enable you to control how fields with multiple values display.

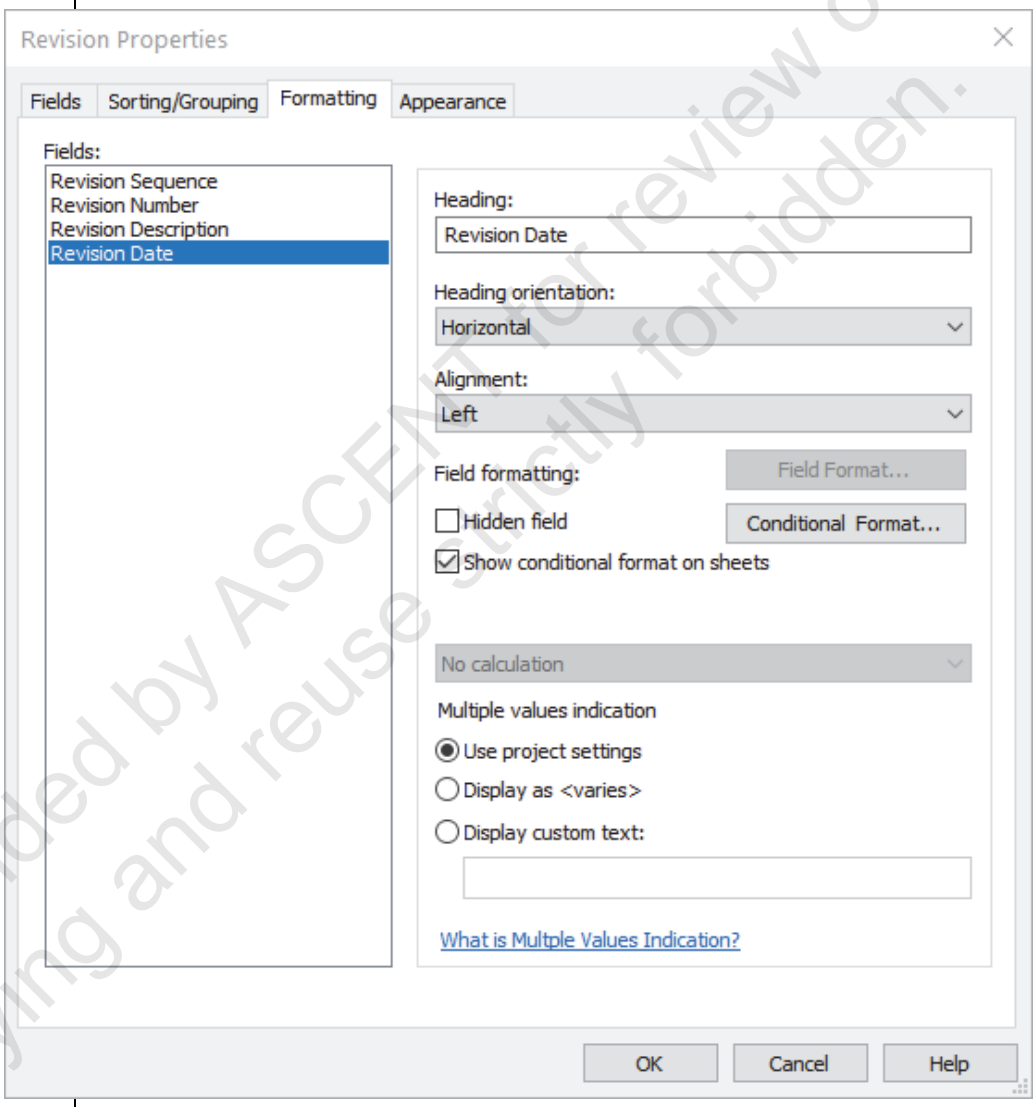

Figure 1–88

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Appearance Tab

In the *Appearance* tab, you can select how you want to build the schedule: from the **Top-down** or **Bottom-up**, as shown in Figure 1–89. You can also set the *Height* to **Variable** or **User defined**.

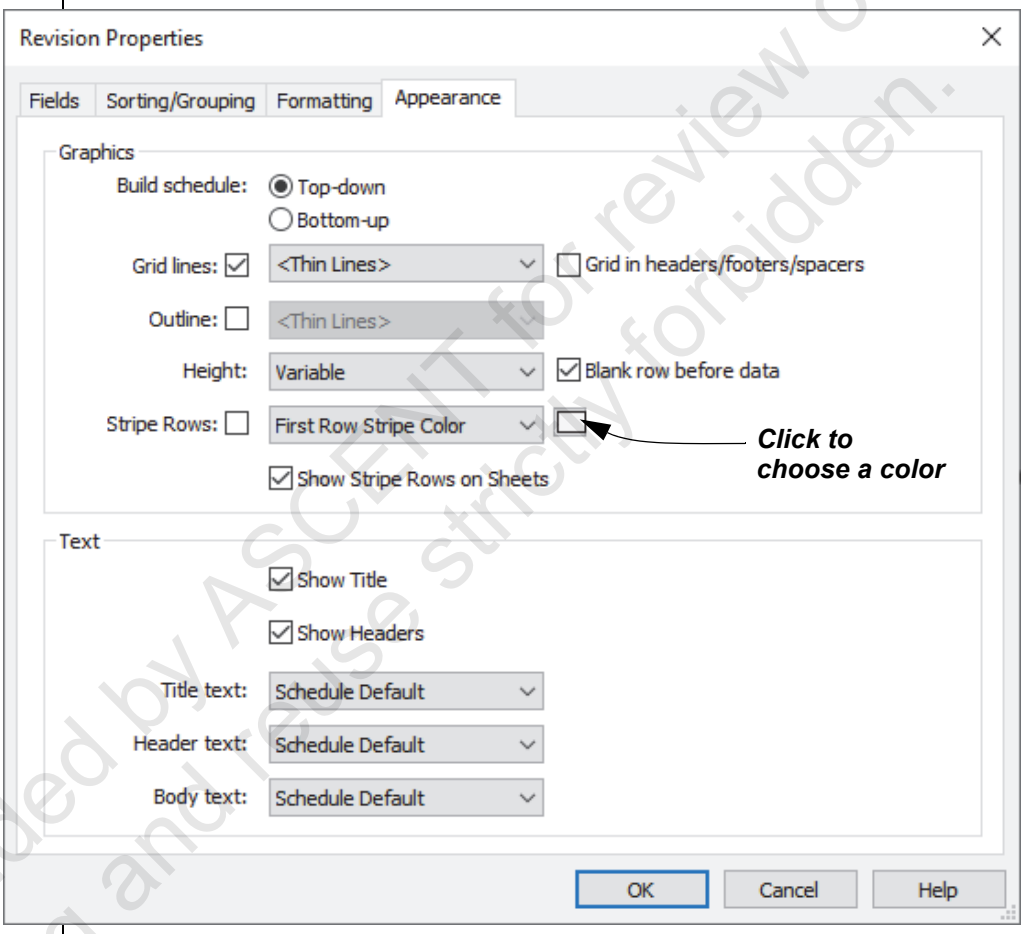

Figure 1–89

- If the *Height* is set to **Variable**, it will add lines to the schedule as revisions are added to a project. If the *Height* is set to **User defined,** a predefined number of rows is created within the revision schedule on the title block.
- The *Stripe Rows* option allows you to highlight alternating rows within the schedule to help differentiate the rows in large schedules. You can select the option for the highlight to start on the first or second row and select the color option. This will appear on the sheet and in print.

4. Click **OK**. The schedule view displays, as shown in Figure 1–90.

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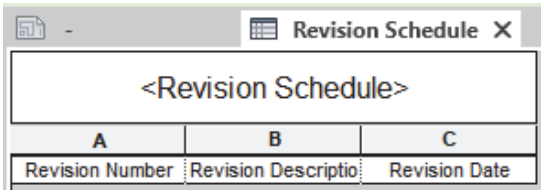

Figure 1–90

5. Click on the sheet view tab (it has no name) to make it the active view, as shown in Figure 1–91.

Figure 1–91

6. In the Project Browser, expand **Views (all)>Schedules** and drag and drop the schedule onto the sheet.

- If the height is set to **User defined**, an additional control displays at the bottom of the schedule. Use it to set the height of the schedule, as shown in Figure 1–92.

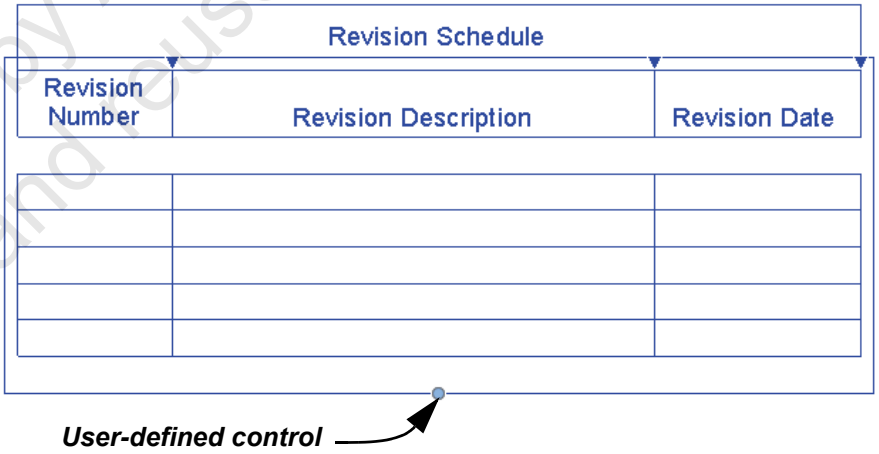

Figure 1–92

- In the Options Bar, you can change the *Rotation on the Sheet* to **None**, **90° Clockwise**, or **90° Counterclockwise**.

7. Save the title block.

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Adding Sheets to Project Templates

You can create sheets that are typically used in projects in the template and even place views on them as placeholders, as shown in Figure 1–93. Note that the view is empty in the template, but as you draw elements in the project they automatically display in the view and on the sheet.

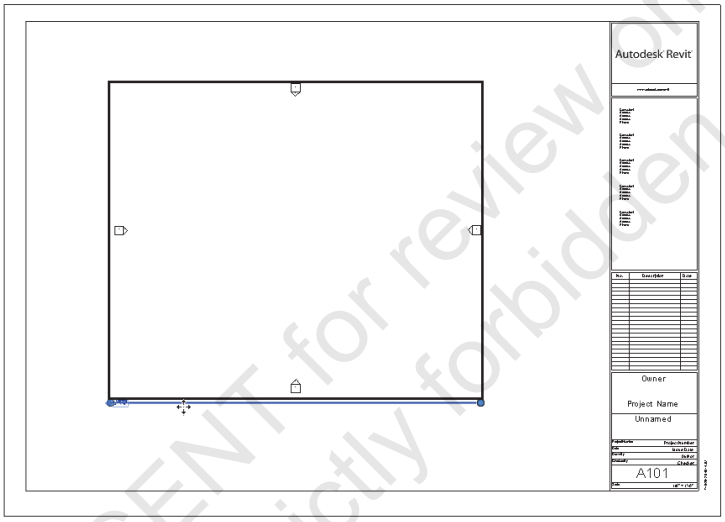

Figure 1–93

- You can create many sheets that are typically used in a project or you can create a Sheet List and populate it with sheet names that can be used as placeholder sheets.
- You can also copy sheets from a resource project.

Presetting a Starting View

For more information on creating Sheet Lists, see A.8 Additional Schedule Types.

When you create a project template or project, it can help to specify a starting view. This can be any of the standard views, such as plan, elevation, 3D view, or one that is specifically created. This is often a Drafting View (as shown in Figure 1–94), a Legend View with information about the project (such as a project bulletin board), or the cover sheet for the project. You can add text as placeholders for project information you will add when the project is started.

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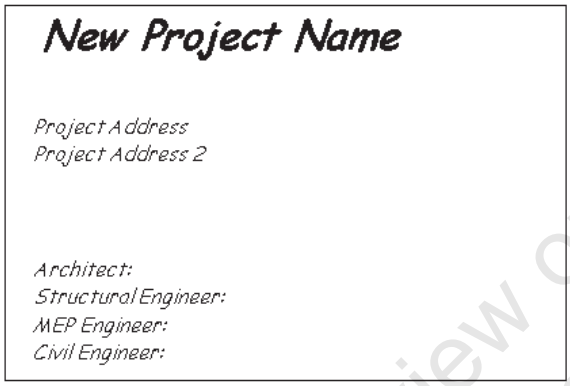

Figure 1–94

How To: Set a Starting View

1. Within your company template, set up the view or sheet that you want to use as the starting view.
2. In the *Manage* tab>Manage Project panel, click (Starting View).
3. In the Starting View dialog box, select the view or sheet that you want to use, as shown in Figure 1–95.

By default, the starting view is the last view that was open before closing or <Last Viewed>.

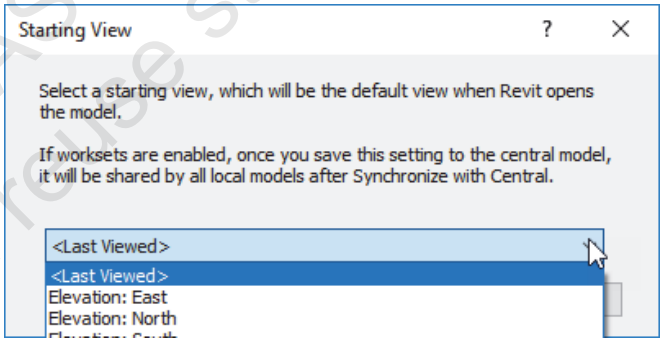

Figure 1–95

4. Click **OK** and save your template.

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Practice 1e

Create Title Blocks: All Disciplines

Practice Objectives

- Draw a custom title block including detail lines, text, labels, and a revision table.
- Set up sheets in the template using the new title block.

In this practice, you will create a new title block by adding lines, text, labels, logo, and a revision schedule similar to Figure 1–96. You will then load it into a project template file and create several standard sheets.

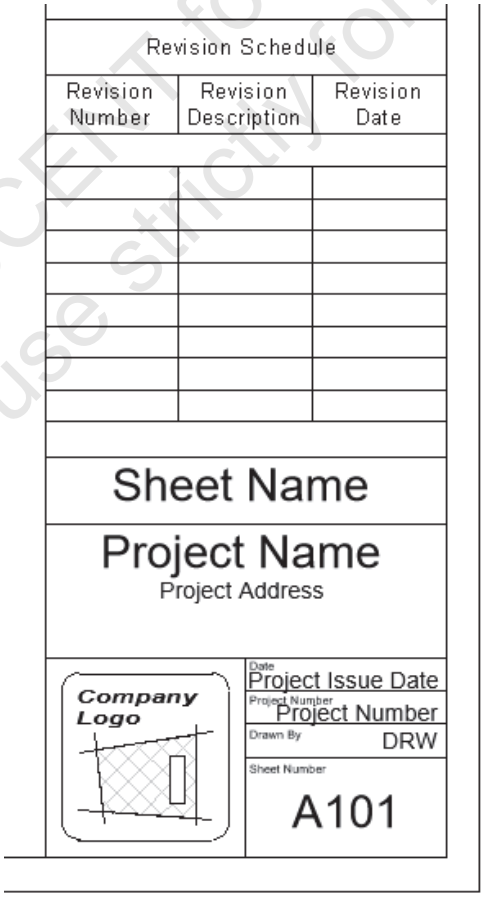

Figure 1–96

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Task 1 - Create a title block.

1. In the *File* tab, expand (New) and click (Title Block). Alternatively, on the Home screen, in the *FAMILIES* area, click (New...).
2. In the New Title Block - Select Template File dialog box, select **D - 36 x24.rft** and click **Open**.
3. Save the title block by going to the File menu>**Save as> Family** and save the title block as **Company TBLK.rfa** in the practice files *Reference* folder.
4. Create the title block linework by going to the *Create* tab> Detail panel and clicking (Line). Create lines on the inside of the existing rectangle **1/4"** away from the top, bottom, and right sides. Draw a line **1"** away on the left margin. Trim the lines in all four corners.
5. Draw lines in the lower right corner of the title block, as shown in Figure 1–97.

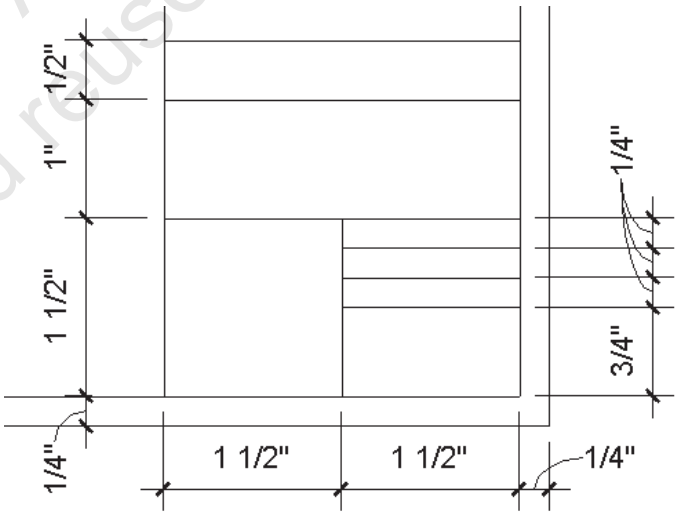

Figure 1–97

6. In the *Create* tab>Detail panel, click (Symbol). When prompted to load a generic annotation family, click **Yes**.
7. In the Load Family dialog box, navigate to the *Revit 2022 BIM Management Practice Files>Reference* folder, select **Company Logo.rfa**, and click **Open**. Add the symbol to the lower left corner of the new title block. It is designed to fit within the square.

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8. In the *Create* tab>Text panel, click (Text). In Properties, click (Edit Type) and create the following Text type:

Type Name	Font	Size	Bold	Background
Arial 1/16"	Arial	1/16"	No	Transparent

9. In the *Create* tab>Text panel, click (Label).

10. In Properties, click (Edit Type) and create the following Label types:

Type Name	Font	Size	Bold	Background
Arial 1/8"	Arial	1/8"	No	Transparent
Arial 1/4"	Arial	1/4"	No	Transparent

11. Using the following steps, add text and labels to the title block, as shown in Figure 1–98.

Figure 1–98

You can use Reference Lines to place the text and labels exactly.

- **Text:**
  - Use (Text) with the *text type* **Arial 1/16"** to add text in the lower right spaces for the *Date*, *Project Number*, *Drawn By*, and *Sheet Number*.
- **Labels:**

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- Use (Label) with the *label type* **Arial 1/4"** and (Align Center) justification to add the *Sheet Name*, *Project Name*, and *Sheet Number*. Move and stretch the labels to fit in the title block.
- Using the *label type* **Arial 1/8"** and (Align Center) justification, add the *Project Address* below the *Project Name*.
- Using the *label type* **Arial 1/8"** and (Align Right) justification, add the *Project Issue Date*, *Project Number*, and *Drawn By*.

Task 2 - Add a revision schedule to the title block.

1. In the title block Family Editor, in the *View* tab>Create panel, click (Revision Schedule).
2. In the Revision Properties dialog box>*Fields* tab, set up the fields as shown in Figure 1–99.

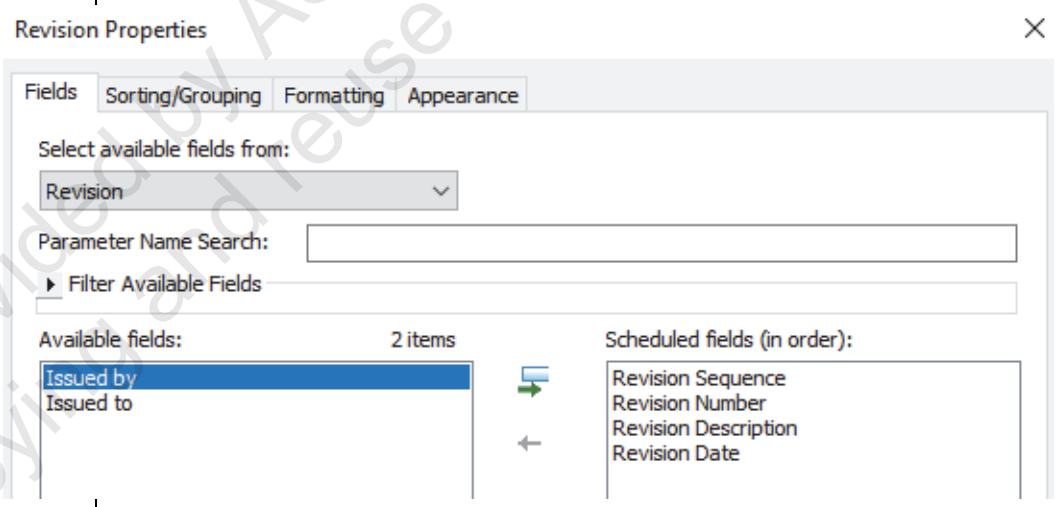

Figure 1–99

3. Accept the defaults for the *Sorting/Grouping* and *Formatting* tabs.
4. Select the *Appearance* tab and change the *Height* to **User defined**.
5. Click **OK**.

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6. Return to the sheet view.
7. In the Project Browser, expand **Views (all)>Schedules** to display the available schedules, as shown in Figure 1–100.

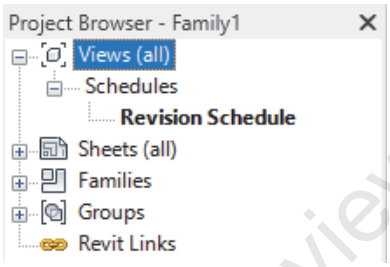

Figure 1–100

8. Drag and drop the revision schedule onto the sheet.
9. Move it above the sheet name and resize it to display several lines, as shown in Figure 1–101. Align it to the edge of the title block.

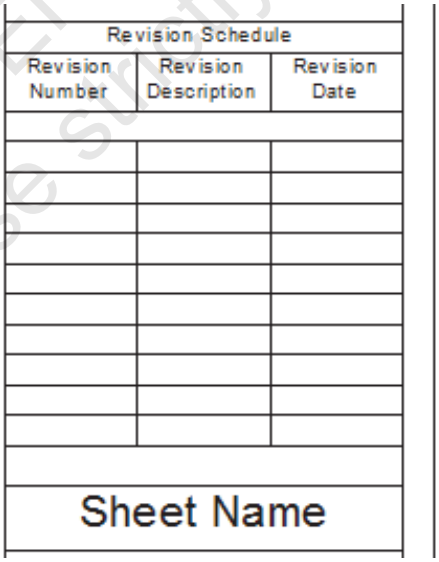

Figure 1–101

10. Save and close the title block.

Task 3 - Set up sheets in a project template using the new title block.

1. Open the template found in the practice files folder that relates to your discipline:
   - *Architectural>Template Files>* **Midrise-Template-Architectural-2.rte**
   - *MEP>Template Files>***Midrise-Template-MEP-2.rte**
   - *Structural>Template Files>* **Midrise-Template-Structural-2.rte**

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2. In the *View* tab>Sheet Composition panel, click (Sheet).
3. In the New Sheet dialog box, click **Load...**.
4. In the Load Family dialog box, navigate to the practice files folder, select **Company TBLK.rfa** (that you just created), and click **Open**.
   - If you did not complete the previous tasks, open **Sample TBLK.rfa** from the *Revit 2022 BIM Management Practice Files>Reference* folder and click **Open**. In the New Sheet dialog box, select the title block that you just loaded and click **OK**.
5. In the Project Browser, select the new sheet, right-click, and select **Rename** and rename it to **CS000 – Cover Sheet**.
6. Using the **Title Large** text type, add text for the project name and address, as shown in Figure 1–102.

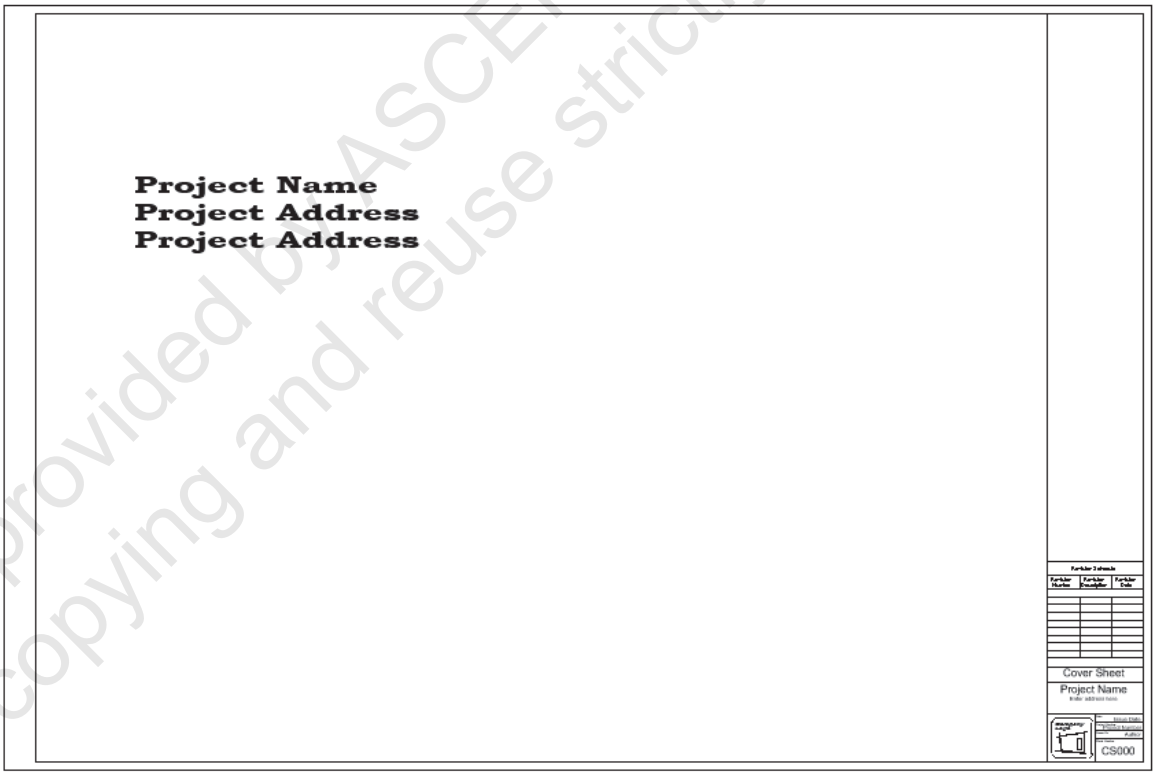

Figure 1–102

7. In the *Manage* tab>Manage Project panel, click (Starting View).

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8. In the Starting View dialog box, select **Sheet: CS000 - Cover Sheet** as shown in Figure 1–103.

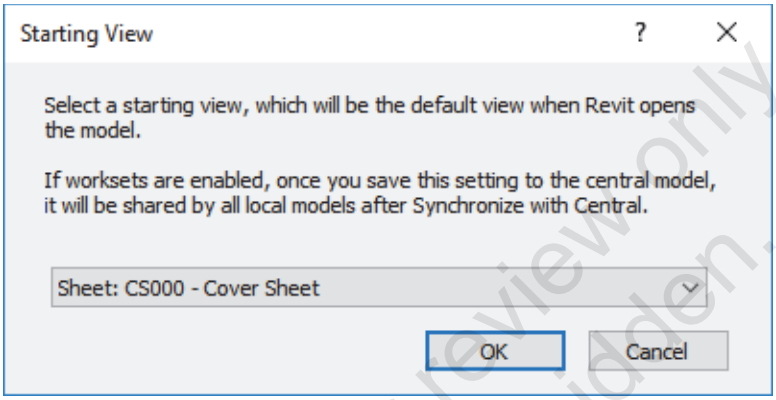

Figure 1–103

9. Create another sheet with the new title block and name it according to your discipline below. Make sure to use the grips to stretch the text box.
   - **A201 – First Floor Plan**
   - **M201 - First Floor Plan Mechanical**
   - **E201 - First Floor Plan Electrical**
   - **P201 - First Floor Plan Plumbing**
   - **S201 - First Floor Plan Structural**
10. Open this sheet view. Drag the associated **Level 1** floor plan view onto the sheet, as shown in Figure 1–104.

No elements are on the view, but it acts as a placeholder on the sheet. Elements display as they are drawn.

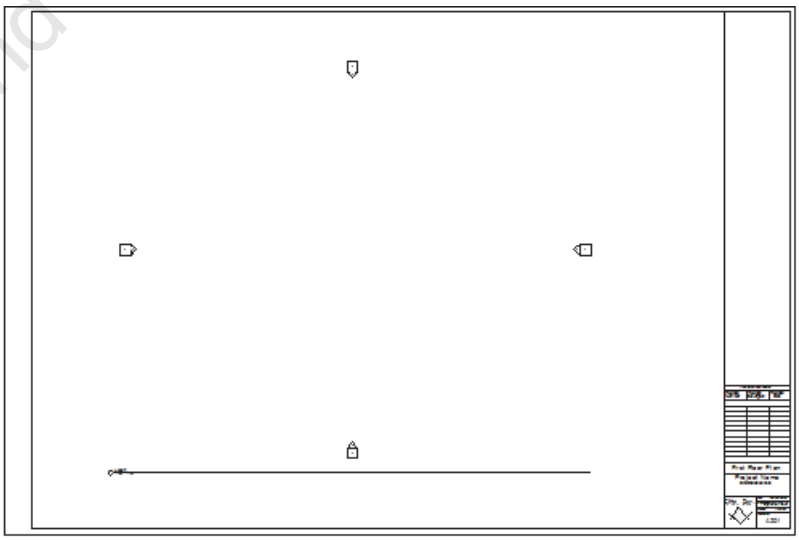

Figure 1–104

11. Save and close the template file.

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1.4 Setting Up View Filters

Rule-based view filters used in conjunction with Visibility/Graphic Overrides are a powerful tool that can be saved in template files. They can be used to test conditions in a project or modify the information that display in a view. For example, a fire evacuation plan might have walls with different fire ratings that display with thicker lineweights, as shown in Figure 1–105. MEP projects frequently use view filters to control which systems display in a view.

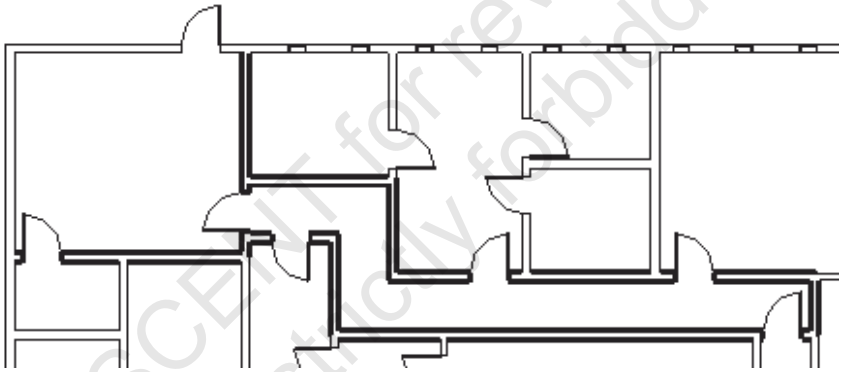

Figure 1–105

- There are two types of filters: **rule-based filters**, used in Visibility/Graphic Overrides, and **selection-based filters**, used by selection sets.
    - Selection-based filters are not something you would set up in a template, but are used when you want to modify multiple elements at the same time in a view. You cannot add categories or apply rules to a selection-based filter like you can with a rule-based filter, but you can use selection-based filters to isolate, hide, or apply graphic settings to the set.

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How To: Create a Rule-Based Filter

1. In the *View* tab>Graphics panel, click (Filters). The Filters dialog box opens, as shown in Figure 1–106.

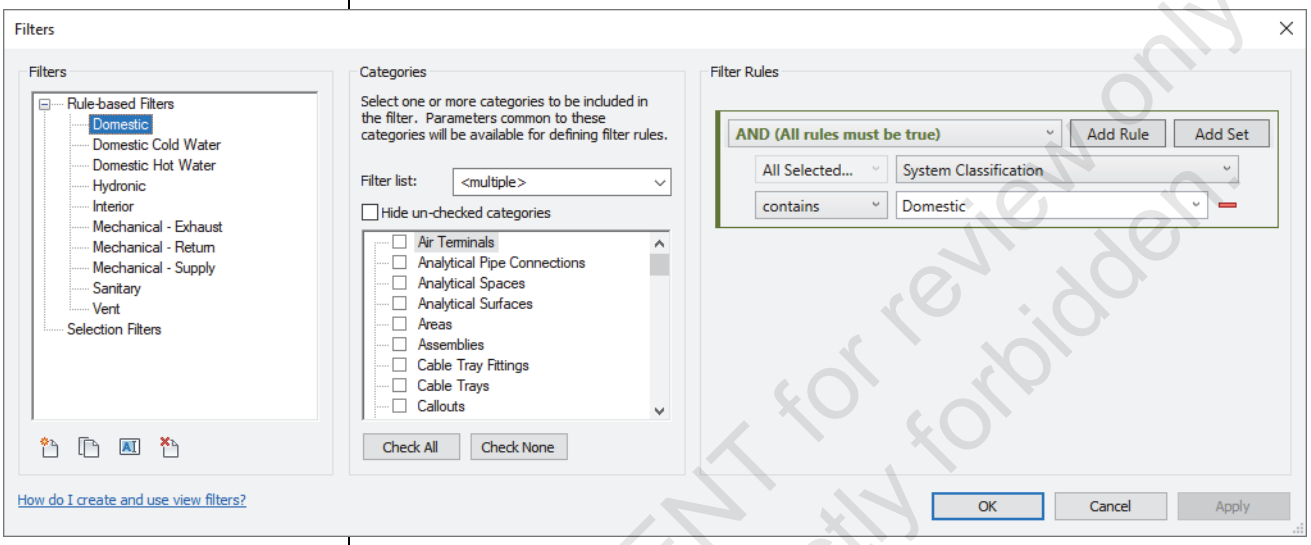

Figure 1–106

2. In the *Filters* area, select the **Rule-based Filters** node or an existing filter and click (New) or (Duplicate), as shown in Figure 1–107. Name the new filter and click **OK**.
3. In the *Categories* area, filter the list by discipline and then select the categories to include in the filter, as shown in Figure 1–107. Use **Check All** and **Check None** to help select the categories.

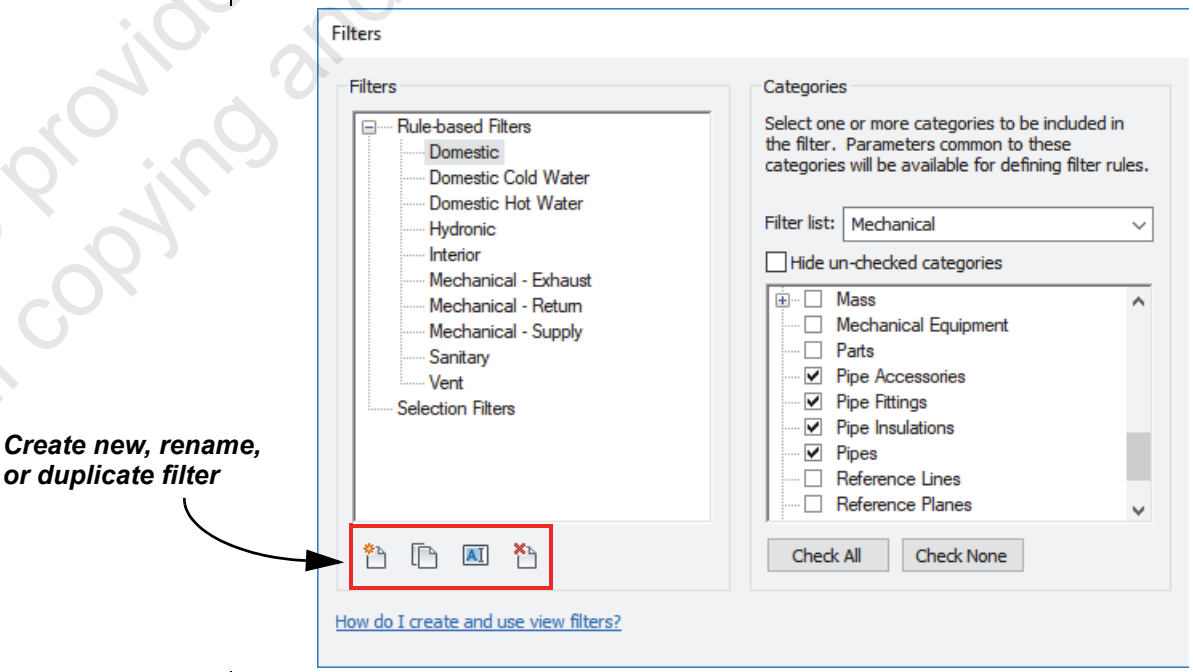

Figure 1–107

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- Although you can select multiple categories, you can only filter by the parameters the categories have in common.

4. In the *Filter Rules* area, select the *Condition* (type of filter) you want to create (**AND** or **OR**) as shown in Figure 1–108.

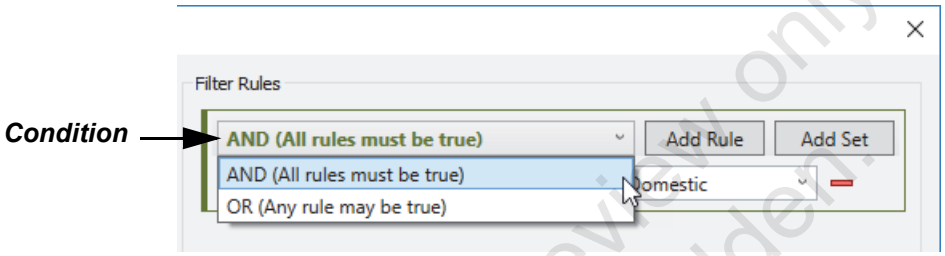

Figure 1–108

5. For each filter, specify the *Categories*, *Parameter*, *Operator*, and *Value*, as shown in Figure 1–109.

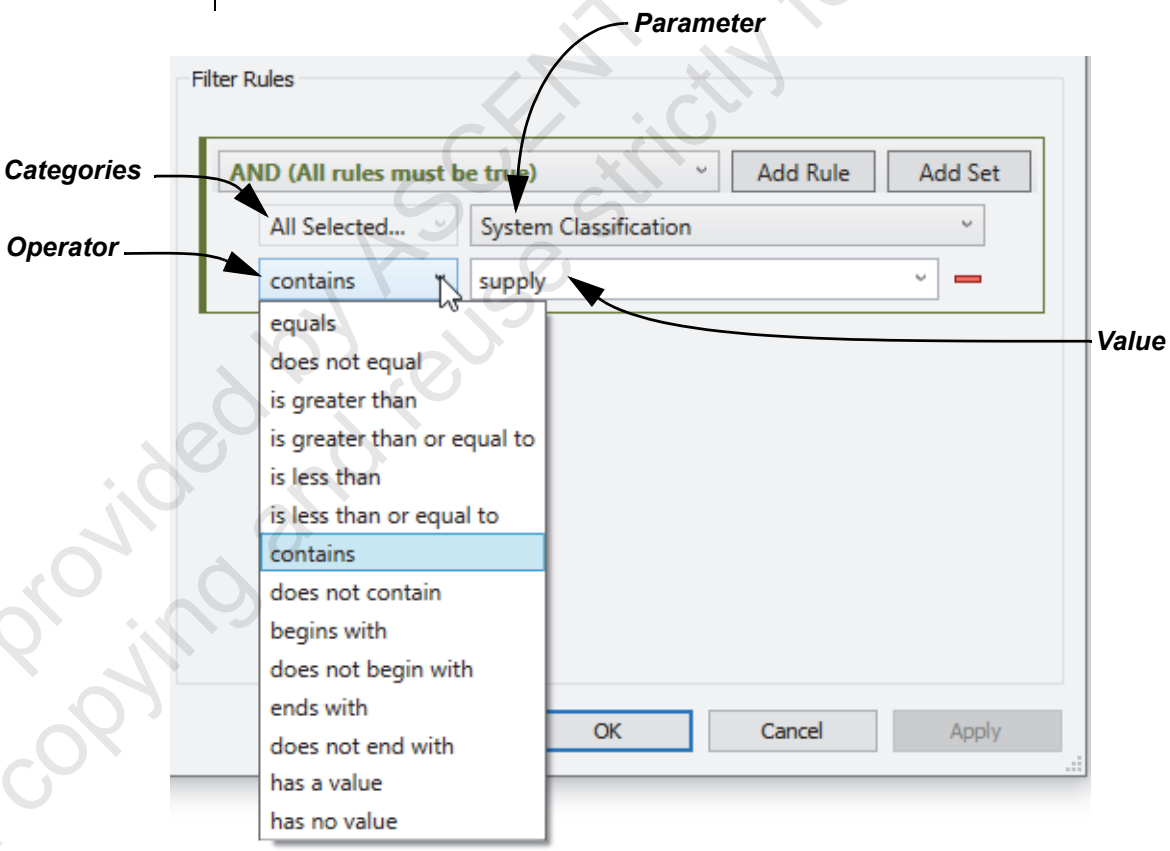

Figure 1–109

- Click **Add Rule** to add a rule to the existing Condition.
- Click **Add Set** to add a nested Condition and filters.

6. Click **Apply** to save the changes and remain in the dialog box, or click **OK** to finish.

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- If you create more than one filter rule, they are applied in order.
- OR rules can reference multiple categories and all parameters from the selected categories can be used in the rule, not just those that are common to the categories.
- Building nested filters is complex. It is recommended to start with an **AND** condition and then add **OR** conditions to further identify the elements.
- Test your filters thoroughly before applying them in a template.

How To: Apply Visibility/Graphic Overrides Filters

1. Type **VG** or **VV** or in the *View* tab>Graphics panel, click (Visibility/Graphics) to open the Visibility/Graphic Overrides dialog box for the view that you are in. Select the *Filters* tab, as shown in Figure 1–110.

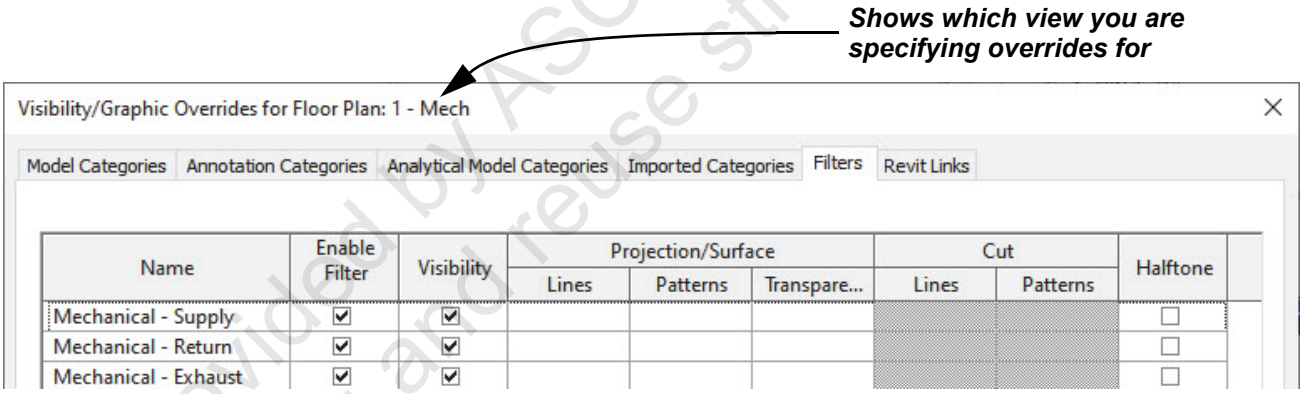

Figure 1–110

2. Click **Add** to add a filter to the list.
3. In the Add Filters dialog box, select the filter(s) you want to add, as shown in Figure 1–111. Then, click **OK**.

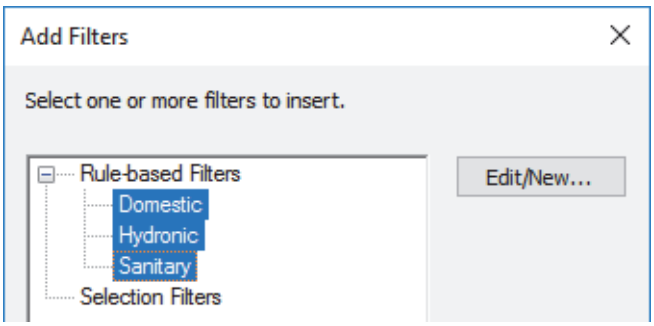

Figure 1–111

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- If the filter you want is not defined, click **Edit/New...** to open the Filters dialog box, where you can define a new filter or edit an existing one.
- Filters added are applied to the current view only.

4. In the Visibility/Graphic Overrides dialog box, assign the overrides you want for the filter, as shown in Figure 1–112.

   - **Visibility:** To hide the filtered elements in the view, uncheck this box.
   - **Enable Filter:** To disable the filter effects in the view, uncheck this box.

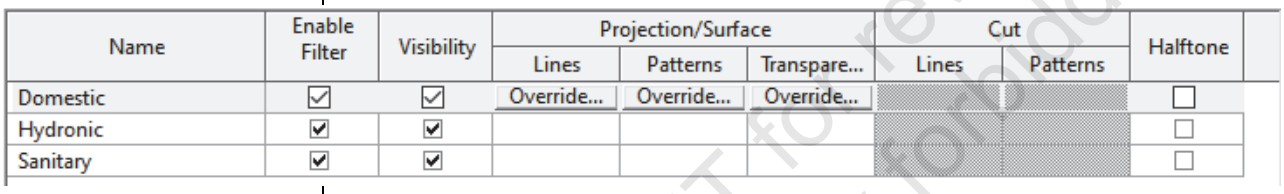

Figure 1–112

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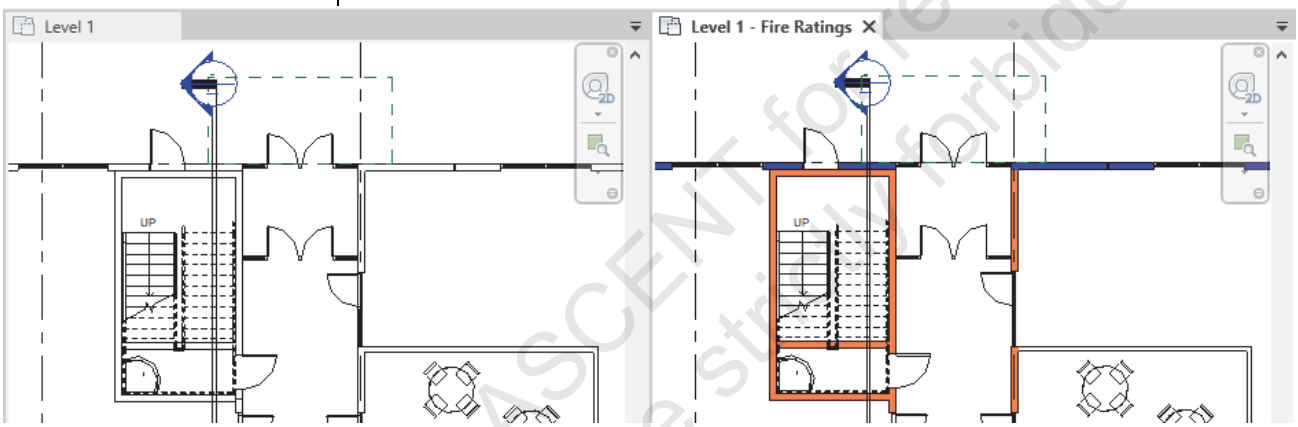
Practice 1f

Set Up View Filters: Architecture

Practice Objectives

- Create rule-based filters.
- Add view filters to a view and set up overrides.

In this practice, you will create rule-based filters for wall fire ratings. You will duplicate a view and add the filters with overrides set up in Visibility/Graphic Overrides. The original view and modified view are shown in Figure 1–113.



Original view *Duplicated view with filters and overrides*

Figure 1–113

Note: This practice uses view filters in an existing project so you can add a filter and then see the impact of what it does. They should be set up originally in a template.

Task 1 - Create filters.

1. In the practice files *Architectural* folder, open **Office-Fire Ratings.rvt**.

2. In the *View* tab>Graphics panel, click (Filters).

3. In the Filters dialog box, click (New), name the new filter **Fire Rating - 1 Hour**, and click **OK**.

4. In the *Categories* area, set the *Filter list* to **Architecture**. Select **Walls**.

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5. In the *Filter Rules* area, set the **AND** condition as follows, as shown in Figure 1–114:
   - *Parameter:* **Fire Rating**
   - *Operator:* **equals**
   - *Value:* **1 Hour**

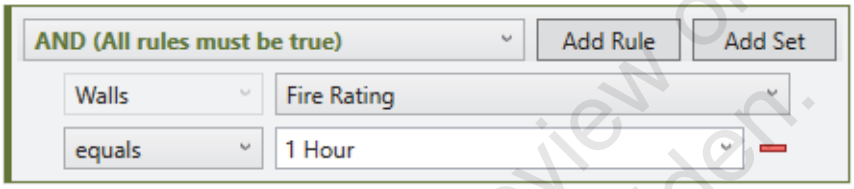

Figure 1–114

6. Click **Apply** and remain in the Filters dialog box.
7. Select the new **Fire Rating - 1 Hour** filter and click (Duplicate).
8. Select the duplicated filter and click (Rename) or right-click on the duplicated filter and click **Rename**. In the Rename dialog box, type **Fire Rating - 2 Hours** and click **OK**.
9. Modify the *Filter Rule* to **Fire Rating - equals - 2 Hours**, as shown in Figure 1–115.

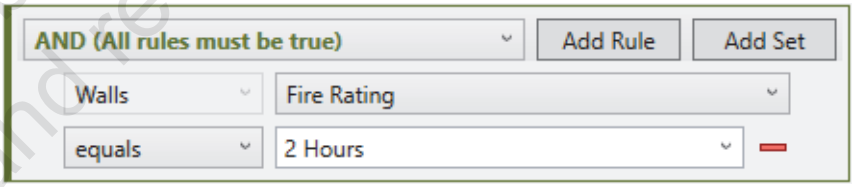

Figure 1–115

   - Note: You will need to type in **2 Hours** because this fire rating does not yet display in the project.

10. Click **OK** to close the Filters dialog box.

Task 2 - Test the view filters.

1. Duplicate the Floor Plans>**Level 1** view and name it **Level 1 - Fire Ratings**.
2. Open only the **Level 1** and **Level 1 - Fire Ratings** views and type **WT** to tile them side by side.
3. Zoom in on the core of the building in both views.

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4. In the **Level 1 - Fire Ratings** view, open the Visibility/Graphic Overrides dialog box.
5. In the *Filters* tab, click **Add**.
6. In the Add Filters dialog box, select the Fire Rating filters, as shown in Figure 1–116, and click **OK**.

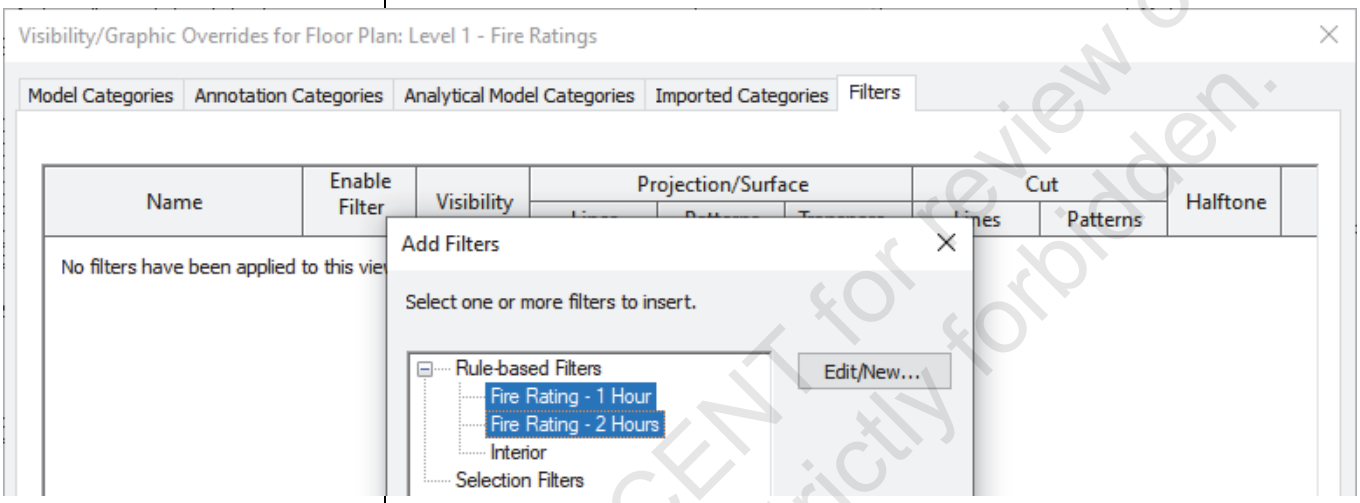

Figure 1–116

7. For the **Fire Rating - 1 Hour** filter, in the *Cut>Patterns* column, select **Override**.
8. In the Fill Pattern Graphics dialog box, change the *Foreground Pattern* to **Solid Fill** and *Color* to an orange, as shown in Figure 1–117. Click **OK**.

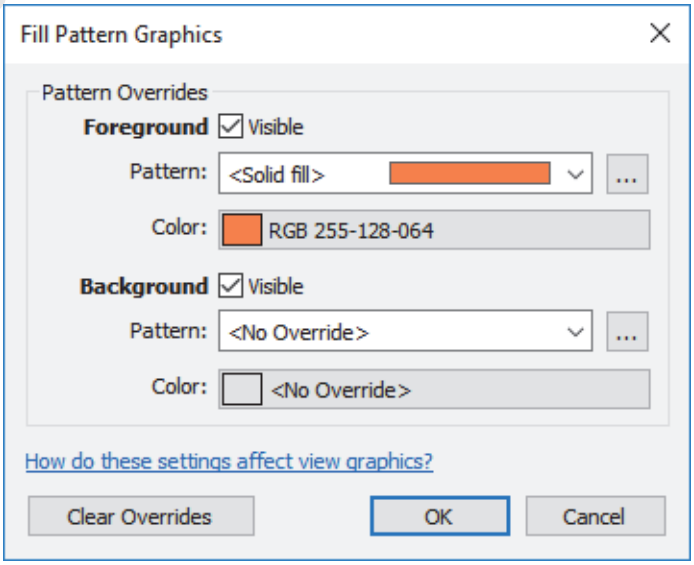

Figure 1–117

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9. Repeat the process for the **Fire Rating - 2 Hours** view filter using a different color, as shown in Figure 1–118.

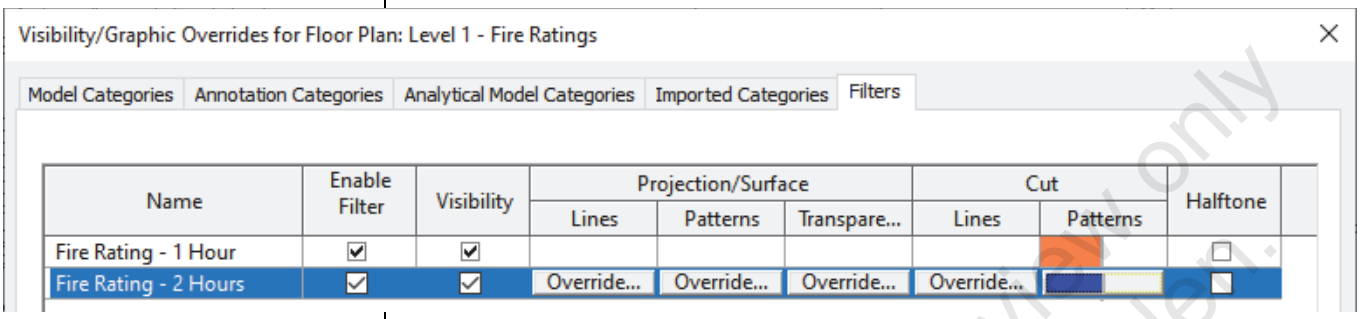

Figure 1–118

10. Click **OK**. The filter overrides display in the Fire Ratings view but not in the original view.

11. Select one of the exterior walls (**Basic Wall (WT-04)**) and in Properties, click **Edit Type**.

This is an example. Typically, exterior walls are not set up with this type of fire rating unless they are part of a fire wall.

12. Scroll down to the *Identity Data* section and beside *Fire Rating,* type in **2 Hours**, as shown in Figure 1–119. Then, click **OK**.

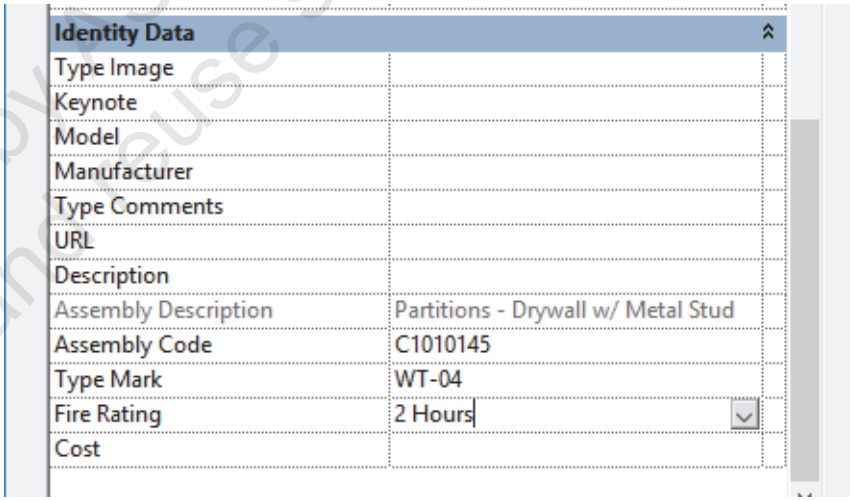

Figure 1–119

- The value of the Fire Rating parameter must match the name of the filter exactly. Edit the filter if the walls do not change color.

13. Save and close the project.

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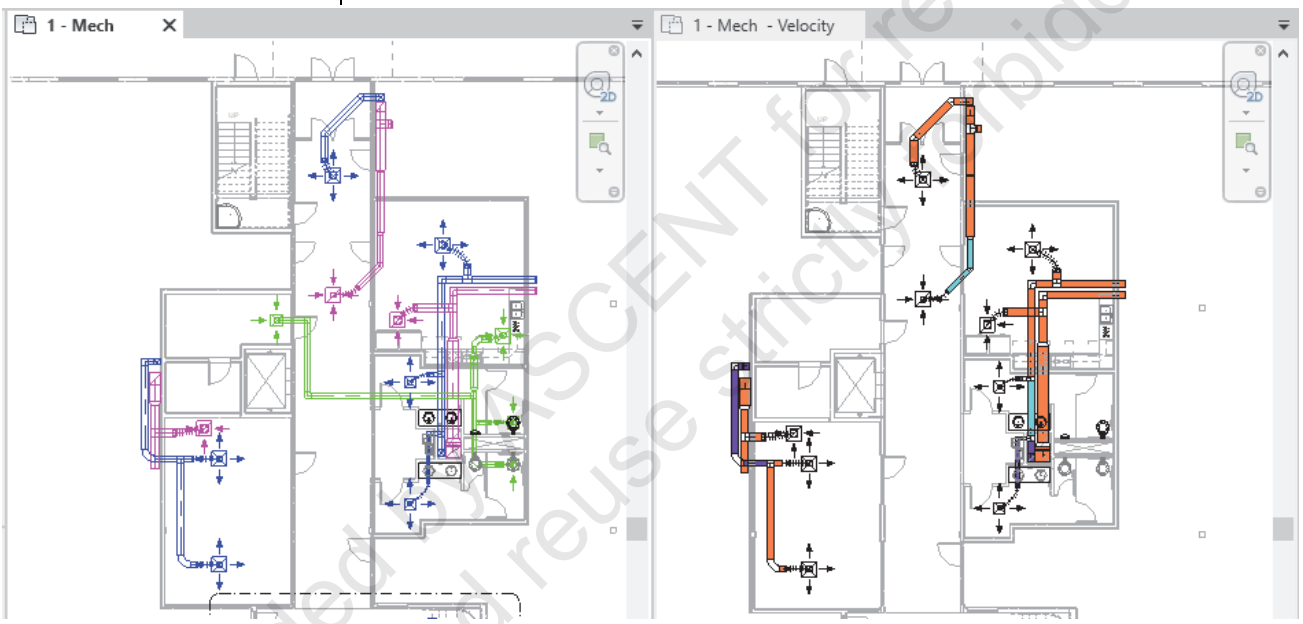
Practice 1g

Set Up View Filters: MEP

Practice Objectives

- Create rule-based filters.
- Add view filters to a view and set up overrides.

In this practice, you will create rule-based filters. You will duplicate a view and add the filters with overrides set up in Visibility/Graphic Overrides. The original view and modified view are shown in Figure 1–120.



Original view *Duplicated view with filters and overrides*

Figure 1–120

Note: This practice uses view filters in an existing project so you can add a filter and then see the impact of what it does. They should be set up originally in a project template.

Task 1 - Create three new filters.

1. In the practice files *MEP* folder, open **Office-Velocity.rvt**.
2. In the *View* tab>Graphics panel, click (Filters).
3. In the Filters dialog box, click (New), name the new filter **Mechanical - Low Velocity**, and click **OK**.
4. In the *Categories* area, set the *Filter list* to **Mechanical**. Select **Ducts** and **Flex Ducts**.

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5. In the *Filter Rules* area, set the **AND** condition as follows, as shown in Figure 1–121:
   - *Parameter:* **Velocity**
   - *Operator:* **is less than or equal to**
   - *Value:* **900.00 FPM**

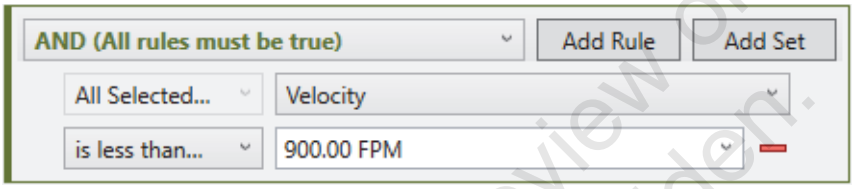

Figure 1–121

6. Click **Apply** and remain in the Filters dialog box.
7. In the *Filters* section, select the new **Mechanical - Low Velocity** filter and click (Duplicate).
8. Select the duplicated filter and click (Rename) or right-click on the duplicated filter and click **Rename**. In the Rename dialog box, type **Mechanical - Medium Velocity** and click **OK**.
   - You will see that there is already a filter rule that was copied when duplicating the Low Velocity filter.
9. Change the existing Velocity rule's *Operator* to **is greater than or equal to**, as shown in Figure 1–122.
10. Click **Add Rule** to create a second rule and set it up as shown in Figure 1–122 using **Velocity - is less than or equal to - 1900.00 FPM**.

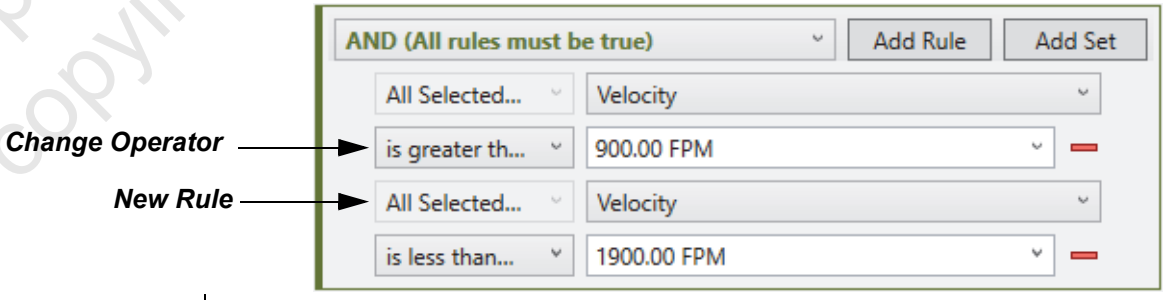

Figure 1–122

11. Click **Apply**.

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12. Create an additional filter named **Mechanical - High Velocity** set up as shown in Figure 1–123. Use **is greater than** as the condition.

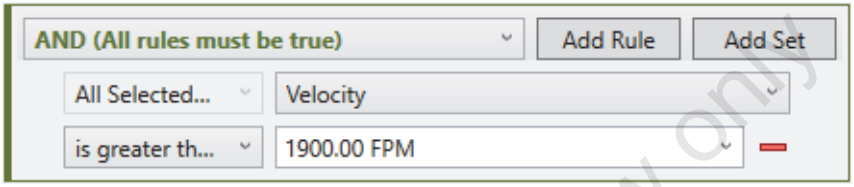

Figure 1–123

13. Click **OK** to close the Filters dialog box.

Task 2 - Test the view filters.

1. Duplicate with Details the Mechanical>Floor Plans>**1 - Mech** view and name it **1 - Mech - Velocity**.
2. Open only the **1 - Mech** and **1 - Mech - Velocity** views and type **WT** to tile them side by side.
3. Zoom in on the central core of the building in both views. Both views display the duct colors set up in the Duct System properties for Supply, Return, and Exhaust.
4. In the **1 - Mech - Velocity** view, open the Visibility/Graphic Overrides dialog box and open the *Filters* tab. Three existing filters are available for the Mechanical duct systems.
5. In the *Filters* tab, click **Add**.
6. In the Add Filters dialog box, select the three new filters as shown in Figure 1–124. Click **OK**.

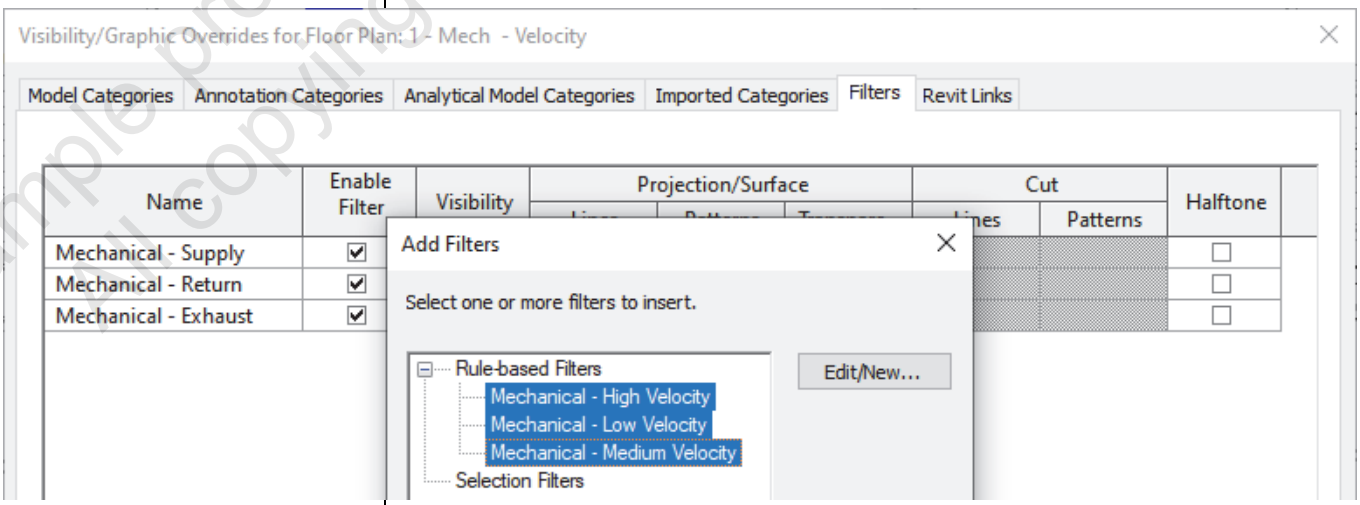

Figure 1–124

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7. Move the velocity-based filters to the top of the list using the **Up** and **Down** buttons.
8. For the **Mechanical - Low Velocity** filter, in the *Projection/Surface>Patterns* column, select **Override**.
9. In the Fill Pattern Graphics dialog box, change the *Pattern* to **Solid Fill** and the *Color* to an orange, as shown in Figure 1–125. Click **OK**.

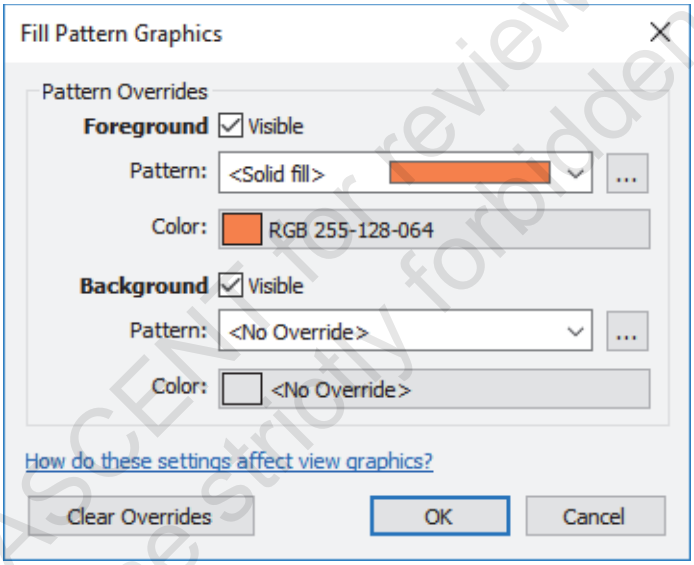

Figure 1–125

10. For the other velocity filters, create a similar overrides using other colors.
11. For the Supply and Return filters, set the *Projection Lines* override *Color* to **Black**. Then, clear the *Visibility* check on the Exhaust filter, as shown in Figure 1–126.

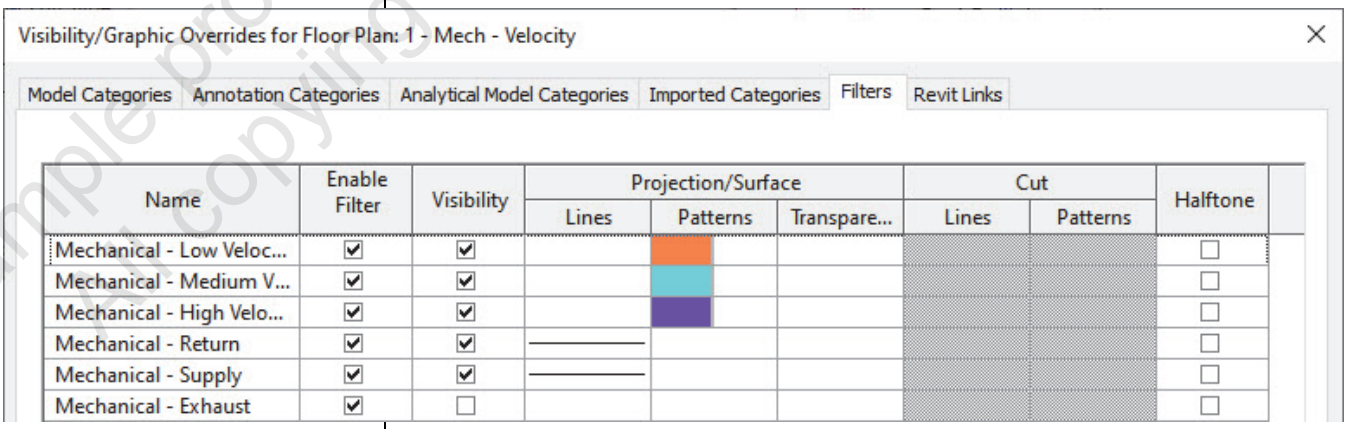

Figure 1–126

12. Click **OK**. The filter overrides display in the velocity view, but not in the original view.
13. Save and close the project.

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Practice 1h

Set Up View Filters: Structure

Practice Objectives

- Create rule-based filters.
- Add view filters to a view and set up overrides.

In this practice, you will create rule-based filters for element materials. You will duplicate a view and apply the filters with overrides set up in Visibility/Graphic Overrides. The modified view is shown in Figure 1–127.

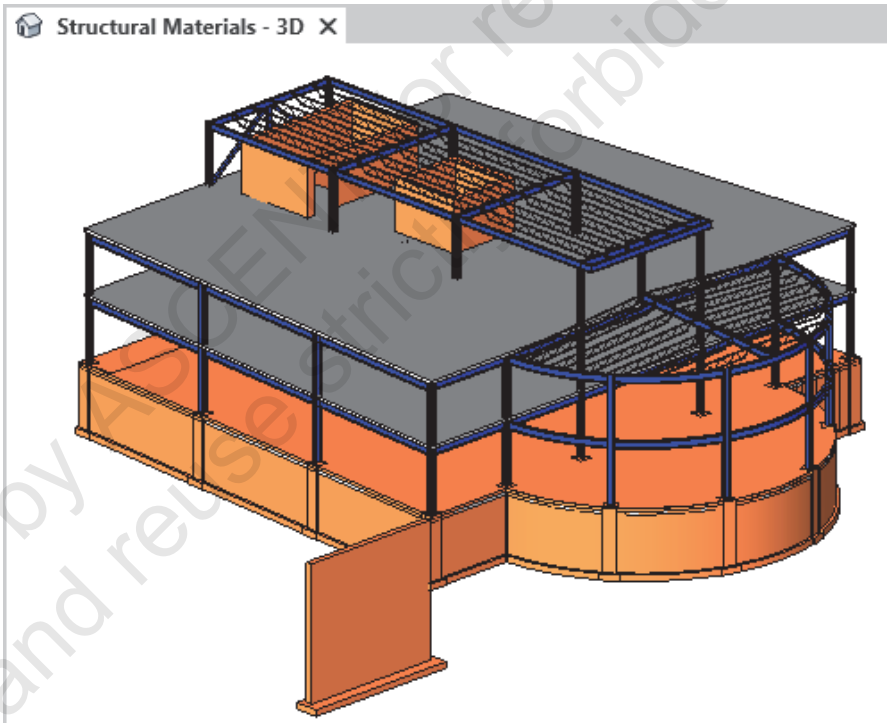

Figure 1–127

Note: This practice uses view filters in an existing project so you add a filter and then see the impact of what it does. They should be set up originally in a template.

Task 1 - Create filters.

1. In the practice files *Structural* folder, open **Office-Materials.rvt**.
2. In the *View* tab>Graphics panel, click (Filters).
3. In the Filters dialog box, click (New), name the new filter **Concrete** and click **OK**.

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An alternate way to make these filters is to do one for each material.

4. In the *Categories* area, set the *Filter list* to **Structure**. Select **Structural Columns**, **Structural Foundations**, **Structural Framing** and **Walls**.

5. In the *Filter Rules* area, set the **OR** condition as follows, as shown in Figure 1–128:

   - *Parameter:* **Structural Material**
   - *Operator:* **equals**
   - *Value:* **Concrete - Cast-in-Place Concrete**

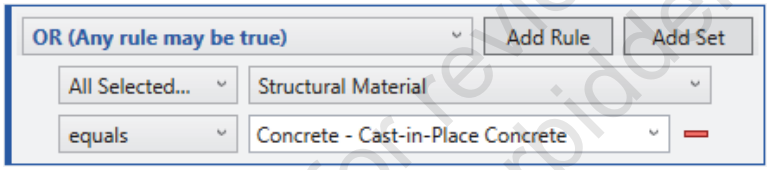

Figure 1–128

6. Click **Add Rule** and add another rule, as follows:

   - *Parameter:* **Structural Material**
   - *Operator:* **equals**
   - *Value:* **Masonry - Concrete Masonry Units**

7. Click **Apply** and remain in the Filters dialog box.

8. Select the new **Concrete** filter and click (Duplicate).

9. Select the duplicated filter and click (Rename) or right-click on the duplicated filter and click **Rename**. In the Rename dialog box, type **Steel** and click **OK**.

10. Modify the *Filter Rules* to **Structural Material - equals - Metal - Steel - ASTM A500 - Grade B - Rectangular and Square** and **Metal - Steel - ASTM A992**, as shown in Figure 1–129.

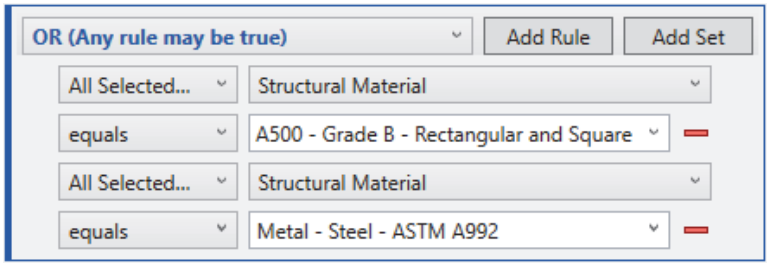

Figure 1–129

11. Click **OK** to close the Filters dialog box.

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Task 2 - Test the view filters.

1. In the Project Browser, duplicate 3D Views>**{3D}** view and rename it to **Structural Materials - 3D**.
2. Open the Visibility/Graphic Overrides dialog box.
3. In the *Filters* tab, click **Add**.
4. In the Add Filters dialog box, select both of the filters, as shown in Figure 1–130, and click **OK**.

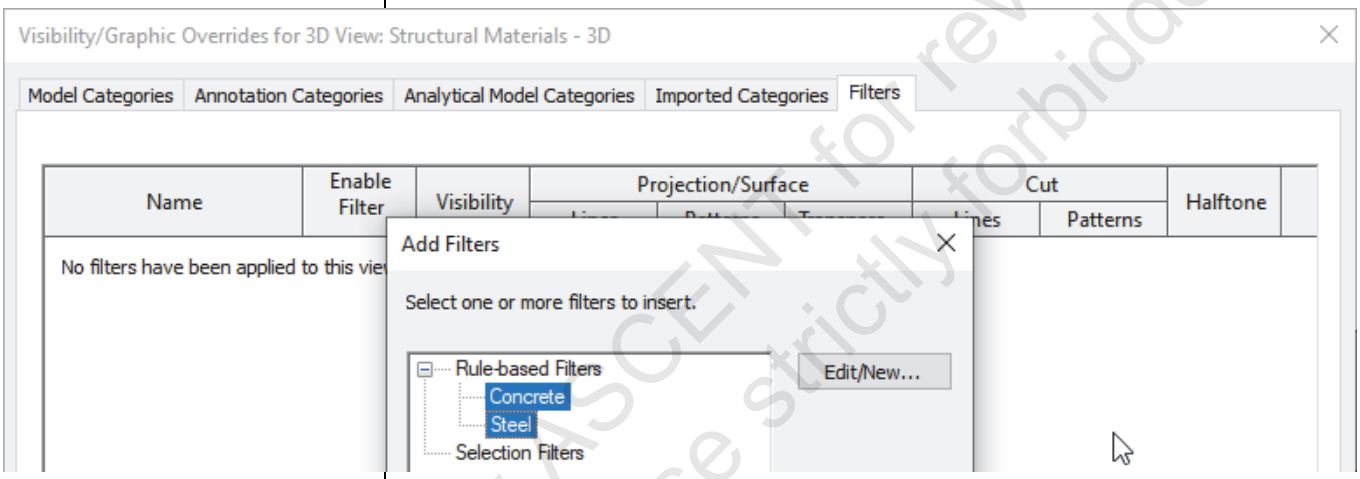

Figure 1–130

5. For the Concrete Filter in the *Projection/Surface>Patterns* column, select **Override**.
6. In the Fill Pattern Graphics dialog box, change the *Foreground Pattern* to **Solid Fill** and *Color* to an orange, as shown in Figure 1–131. Click **OK**.

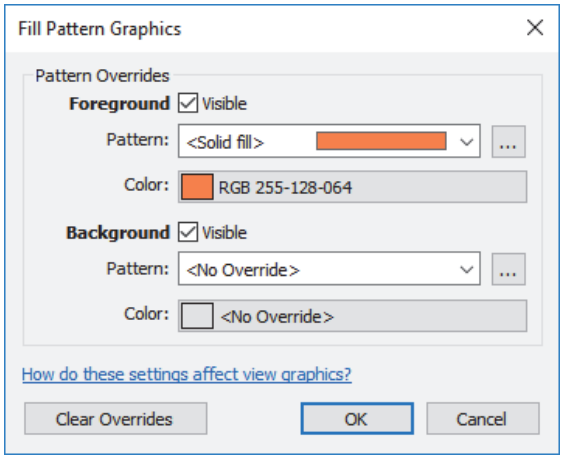

Figure 1–131

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7. Repeat the process for the Steel using a different color, as shown in Figure 1–132.

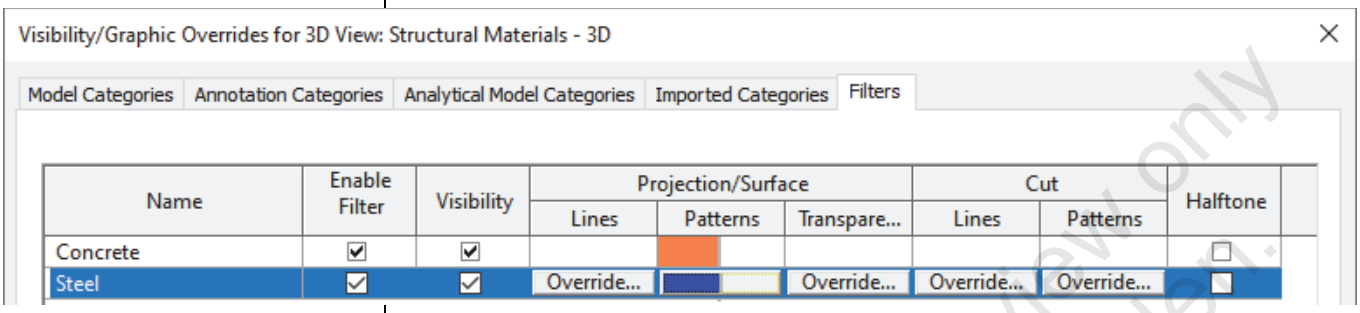

Figure 1–132

8. Click **OK**. The Filter overrides display in the view.
9. Save and close the project.

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1.5 Adding View Templates

View templates applied to views, consisting of specific view properties and visibility options, ensure that company standards are applied. For example, you can create a view template that displays spaces, but hides the MEP systems in a view (as shown in Figure 1–133), while another view template displays duct systems but not plumbing fixtures (as shown in Figure 1–134).

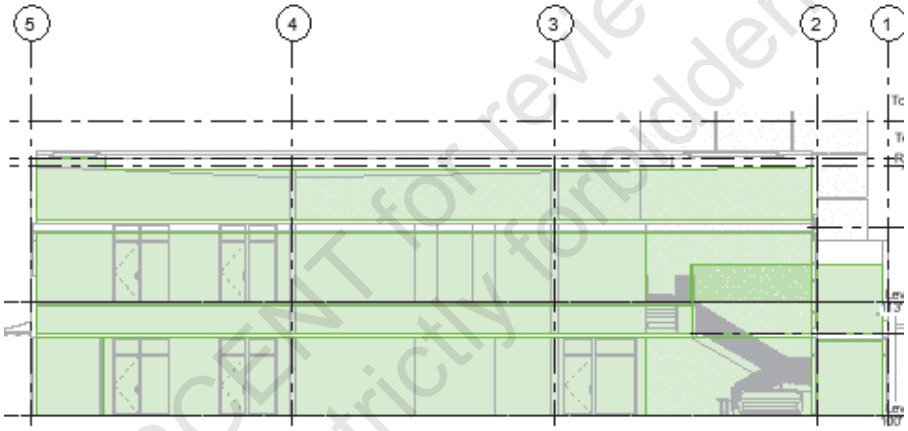

Figure 1–133

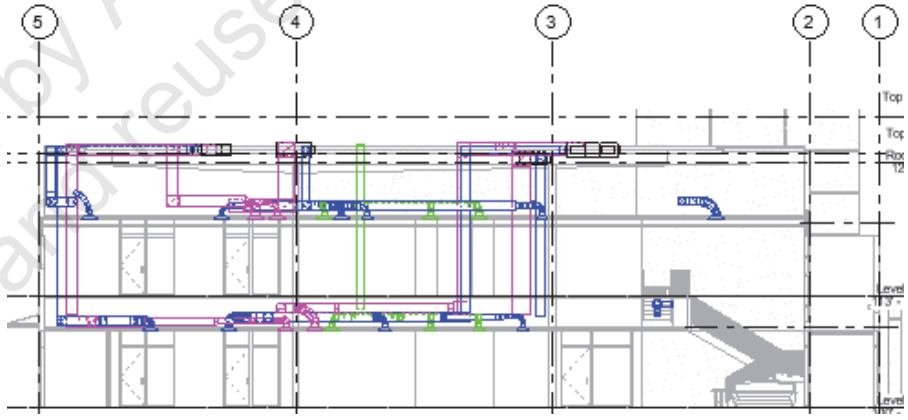

Figure 1–134

- View templates can be applied when creating plan views or to new view types. This applies view settings and graphic properties more quickly.

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- A view template can be applied to a view so that users are allowed to modify the view settings; however, you can also make the view dependent upon the view template so that changes to a single view cannot be made by users, as shown with the detail level options in Figure 1–135, which are grayed out so users cannot change them. Locking the view prevents users from modifying the settings and aids in establishing a company graphic standard to views.

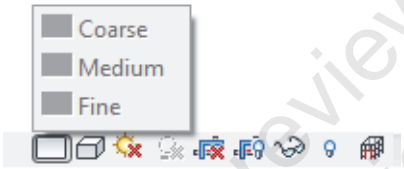

Figure 1–135

How To: Create a View Template from an Existing View

1. Set up a view the way you want it with *Scale*, *Detail Level*, *Visibility Graphic Overrides*, and other *View Settings*. For example, you can create a view template for furniture plans that displays furniture with black lines, walls, doors, and windows as half-tone, and grid lines hidden, as shown in Figure 1–136.

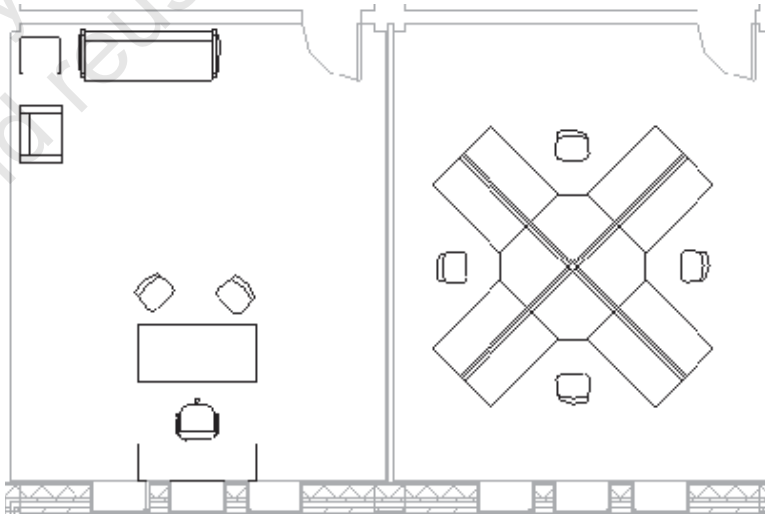

Figure 1–136

2. In the Project Browser, right-click on the view and select **Create View Template from View** or, on the *View* tab> Graphics panel, expand (View Template), and click (Create Template from Current View).
3. In the New View Template dialog box, type a name for the view template.

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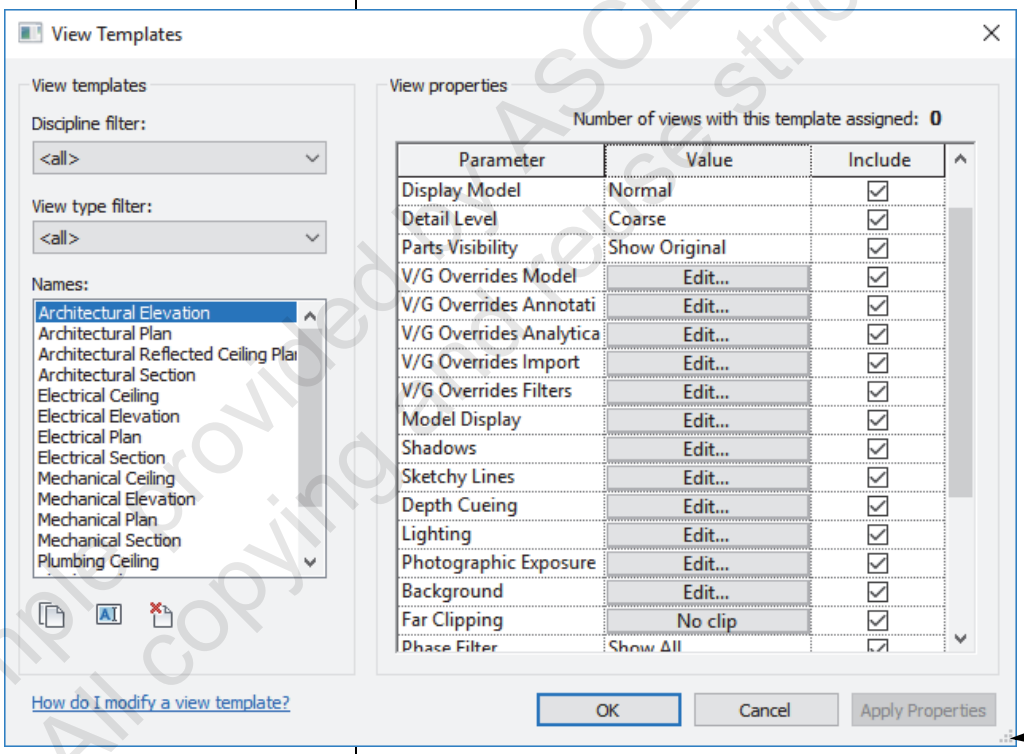
4. Click **OK**.
5. In the View Template dialog box, make adjustments as needed and then click **OK**.

How To: Create a View Template

1. In the *View* tab>Graphics panel, expand (View Template) and then click (Manage View Templates).
2. In the View Template dialog box, under the *Names* list, select a view similar to the one you want to create and click (Duplicate).
3. In the New View Template dialog box, type a new name for the view template and click **OK**.
4. Select the new view template (as shown in Figure 1–137) and modify the parameter values in the *View properties* area.
   - You can adjust the size of the View Template dialog box by clicking and dragging the lower right corner.



Click and drag to adjust the size of the dialog box

Figure 1–137

5. Click **OK** to finish.

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Note that the different view types have different view parameters. For example, 3D views have options for Rendering and Perspectives that plan views do not have.

- To limit the number of view templates that display, filter the list by selecting an option in the *Discipline filter* and *View type filter* drop-down lists, as shown in Figure 1–138.

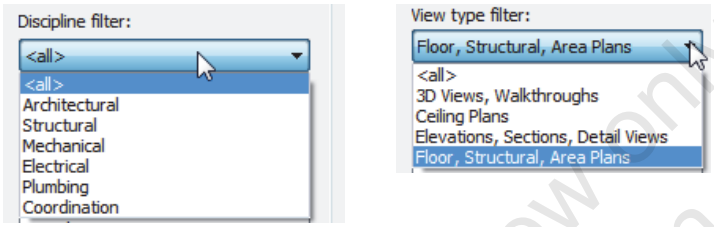

Figure 1–138

- If you do not want a specific View properties Parameter to be controlled by the view template that is applied to views, clear the check mark in the *Include* column for the parameters you do not want to include. You can also create overrides to the view template by changing parameter values.

How To: Create a New View and Apply a View Template

1. In the *View* tab>Create panel, click on (Plan Views), then click (Floor Plan) or (Reflected Ceiling) or (Structural Plan).
2. In the New Floor Plan dialog box, uncheck **Do not duplicate existing views** and select a view from the list, using the <Ctrl> or <Shift> keys to select more than one.
3. Click the **Edit Type...** button.
4. In the Type Properties dialog box, click on the button next to the *View Template applied to new view* parameter, as shown in Figure 1–139.

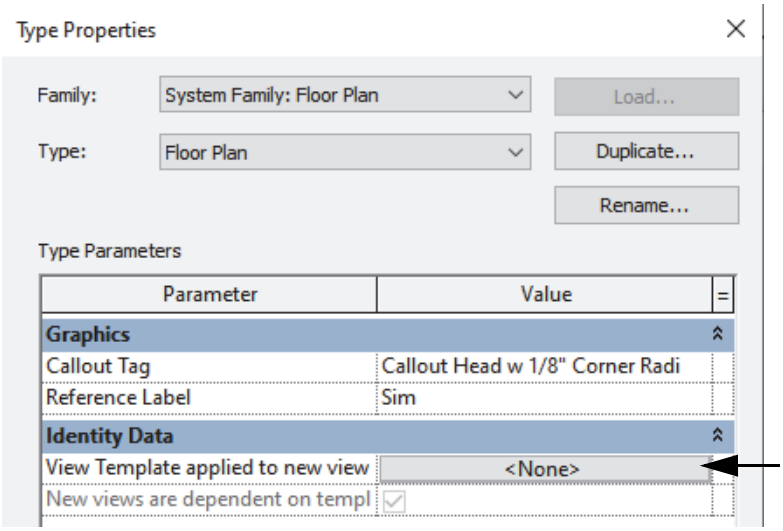

Figure 1–139

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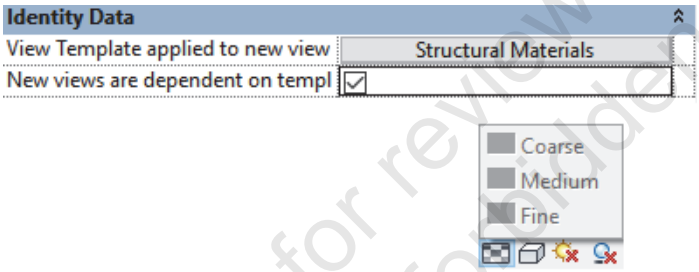
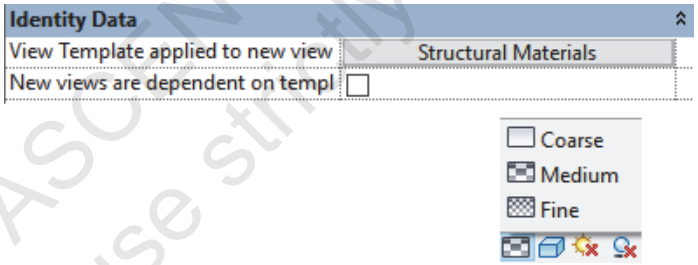
5. This opens up the Assign View Template dialog box, where you can select the view template you want applied. Select a view template and click **OK.**
6. In the View Properties dialog box, if you check the box next to **New Views are dependent on template**, the settings in the view template are used and users cannot override the settings. If it is unchecked, users can override the settings, as shown in Figure 1–140.



Settings locked



Settings unlocked

Figure 1–140

How To: Create a New View Type with a View Template

1. Open a view of the type you want to create. For example, if you want to create a new plan view type, select an existing Floor Plan view, or if you want to create a new elevation view type, select an existing Elevation view.
2. In Properties, click **Edit Type**.
3. Duplicate the existing type and give it a new name.
4. Specify the *Callout Tag* and *Reference Label*, set the view template for the *View Template applied to new view* option, and select **New views dependent on template**, as shown in Figure 1–141. This locks the view to be dependent on the view template settings that are applied.

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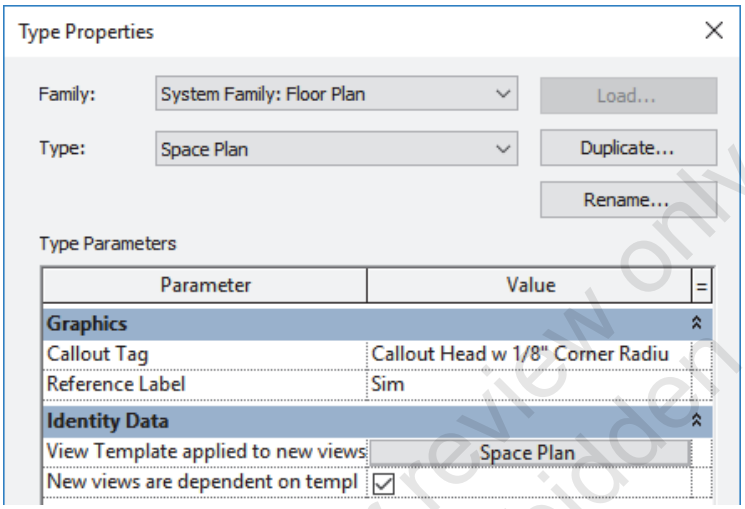

Figure 1–141

5. Click **OK**.

- When you create a new view, you can select the view type from the drop-down list, as shown for a new floor plan in Figure 1–142. The view is also placed in its own group in the Project Browser, as shown in Figure 1–143.

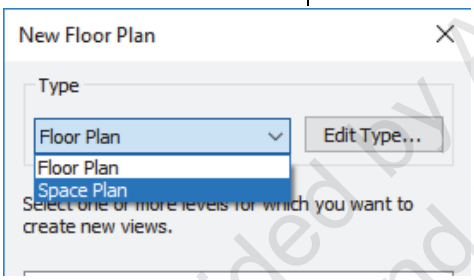

Figure 1–142

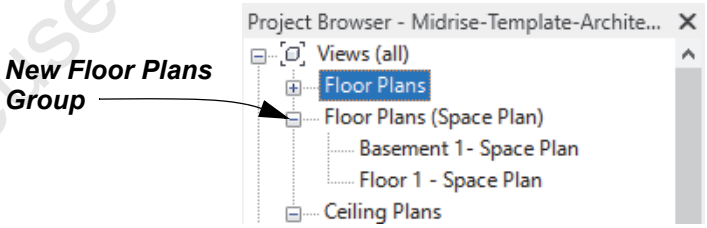

Figure 1–143

How To: Set the Default View Template for a View

1. In the Project Browser, select one or more views.
2. In Properties, in the *Identity Data* group, click the button next to *View Template*, as shown in Figure 1–144. The name on the button varies according to the template that has already been assigned.

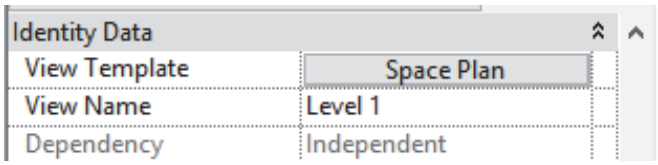

Figure 1–144

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3. In the Assign View Template dialog box, select the appropriate template and click **OK**. This locks the view to be dependent on the view template settings that are applied.

- You can apply view templates to any view as many times as necessary.
- If you want to start a new view template based on an existing view, in the Assign View Template dialog box, select **Show Views**. The *Names* list expands to include all of the related views in the project.

Hint: Temporary View Properties

As you are working, it can be helpful to temporarily override the view. You can do this by selecting a view template from the View Control Bar, as shown in Figure 1–145.

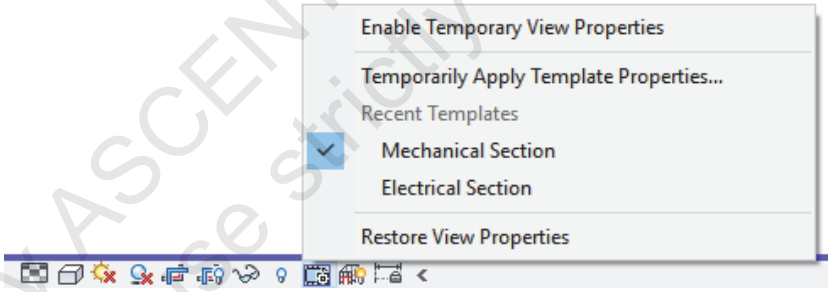

Figure 1–145

1. In the View Control Panel, expand (Temporary View Properties) and select **Enable Temporary View Properties**.
2. Expand (Temporary View Properties) again and select **Temporarily Apply Template Properties**. Alternatively, if you have already used the process, you can select from a list of view templates, as shown in Figure 1–145.
3. In the dialog box, select the view template you want to apply and click **OK**.
4. When you are finished, expand (Temporary View Properties) and select **Restore View Properties**.

- Some companies create a “working view” template to be used as a temporary override, rather than having separate working views.

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Practice 1i

Add View Templates: Architecture

Practice Objectives

- Create a view template from an existing view.
- Create a view template from within Manage View Templates.
- Duplicate views and apply the view templates.

In this practice, you will create view templates from an existing view and modify the view template using **Manage View Templates**. You will then duplicate views and apply the view templates to other views, as shown in Figure 1–146.

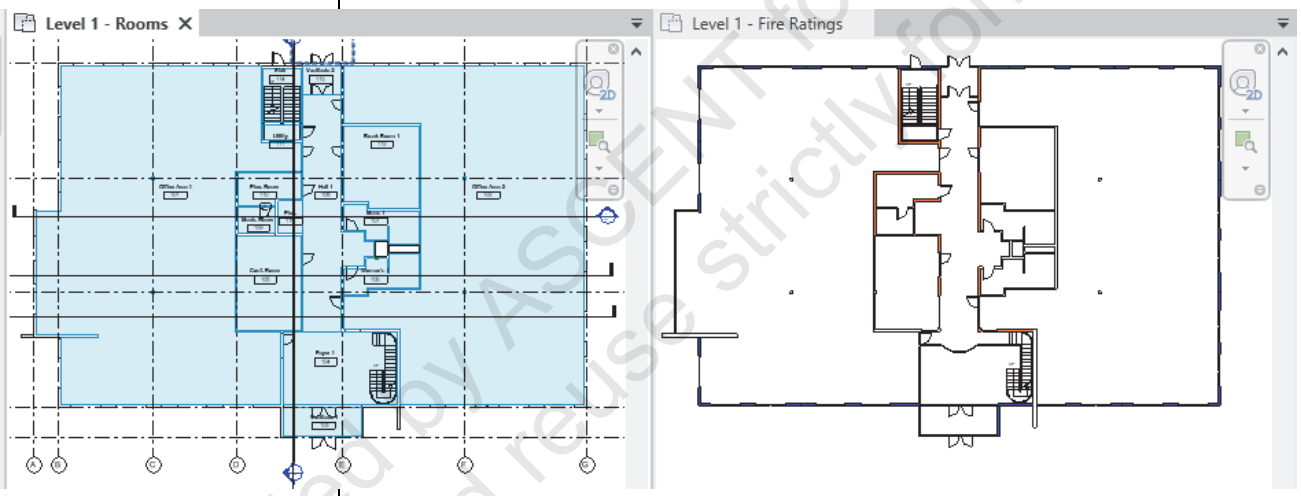

Figure 1–146

Note: This practice uses view templates in an existing project so you can create a view template and then see the impact of what it does. They should be set up originally in a project template.

Task 1 - Create a view template from an existing view.

1. In the practice files *Architectural* folder, open **Office-Rooms.rvt**.
2. In the **Level 1 - Fire Ratings** view hide the grids, elevations, sections, furniture, plumbing fixtures, and similar elements. (Hint: Select one element of each category and type **VH**).
3. In the Project Browser, in the *Floor Plans* group, right-click on the **Level 1 - Fire Ratings** view and select **Create View Template From View**. Name it **Fire Ratings**.

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4. In the View Templates dialog box, next to **V/G Override Filters**, click the **Edit...** button.

5. In the Visibility/Graphic Overrides dialog box, *Filters* tab, review the filters and overrides and click **OK**.

6. In the *View properties* group, in the *Include* column, clear the check marks from all of the options except *Detail Level, V/G Overrides Model, V/G Overrides Annotation, V/G Overrides Filters,* and *Model Display,* as shown in Figure 1–147. Click **OK**.

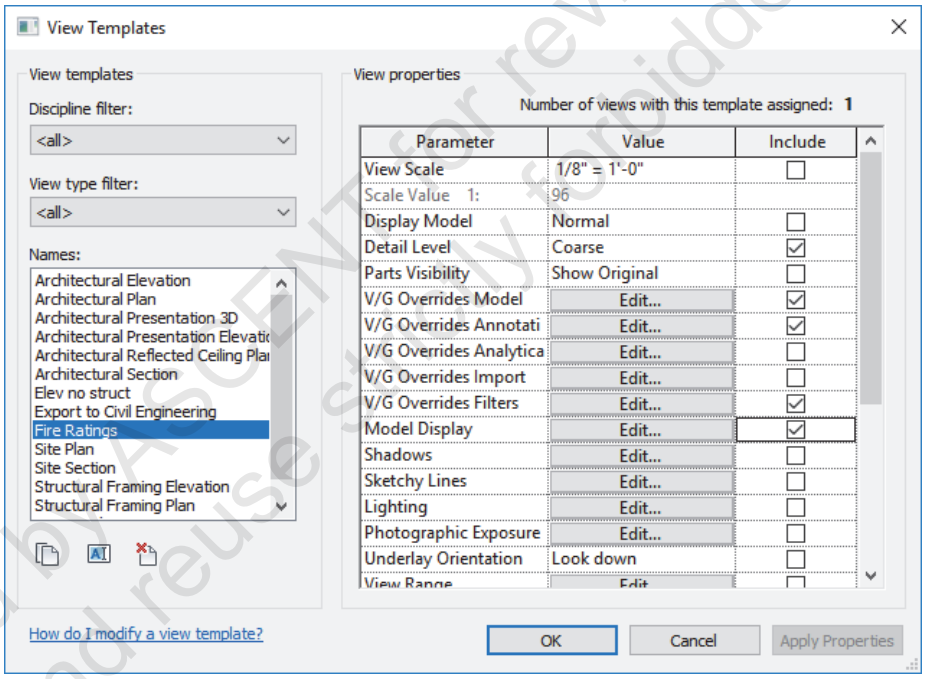

Figure 1–147

Task 2 - Apply view templates to views.

1. In the Project Browser, duplicate the **Level 2** view and rename it as **Level 2 - Fire Ratings**.

   - Note what the view looks like, e.g., note grids, sections, elevation marks, etc.

2. In Properties, in the *Identity Data* group, select the button beside *View Template*.

3. In the Assign View Template dialog box, select **Fire Ratings** and click **OK**.

4. Review the View Control Bar options. Note that you can't make any changes to the view controls of this view, as shown in Figure 1–148.

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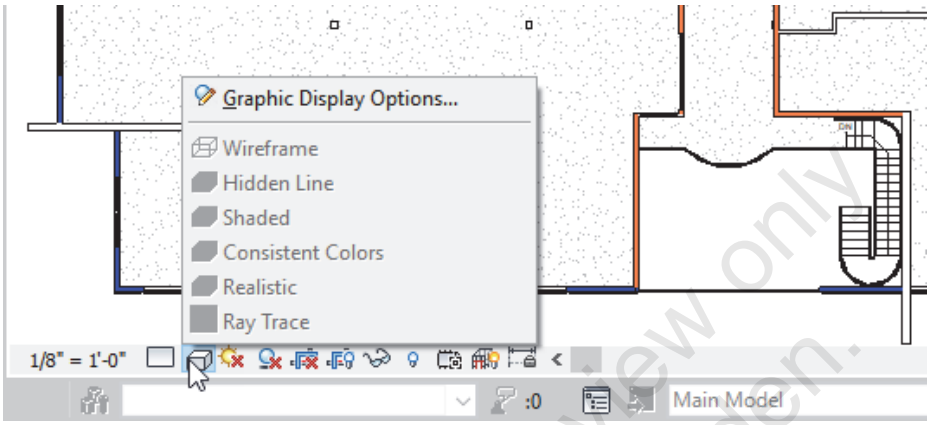

Figure 1–148

5. Switch to the **Level 1 - Fire Ratings** view. Note that you can still make changes to the View Controls of this view because a view template has not been applied to the view.
6. Return to the **Level 2 - Fire Ratings** view. Turn off the floor in this view by going to the *View* tab>Graphics panel, expanding (View Template) and clicking (Manage View Templates). In the View Templates dialog box, select **Fire Ratings**.
7. In the *View properties* group, next to *V/G Overrides Model*, click the **Edit...** button.
8. In the Visibility/Graphic Overrides dialog box, set the *Filter List* to **Architecture** and toggle off **Floors**.
9. Click **OK** to close each of the dialog boxes. The floor in the **Level 2 - Fire Ratings** view automatically toggles off.
10. Save the project.

Task 3 - Create a view template through Manage View Templates.

1. In the *View* tab>Graphics panel, expand (View Template) and click (Manage View Templates).
2. In the View Template dialog box, set the *View type filter* to **Floor, Structural, Area Plans**.
3. In the *Names* list, select **Architectural Plan** and click (Duplicate).
4. Name the new view **Room Plan**.
5. Next to *V/G Overrides Model*, click the **Edit...** button.

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6. Verify the *Filter List* is set to **Architecture**.
7. Select the **All** button and click on one check mark to clear all the check marks from all of the model elements.
8. Select the **None** button to deselect everything.
9. Toggle on **Doors, Rooms, Stairs, Walls,** and **Windows**.
10. Select and expand *Rooms* and select **Interior Fill**, as shown in Figure 1–149.

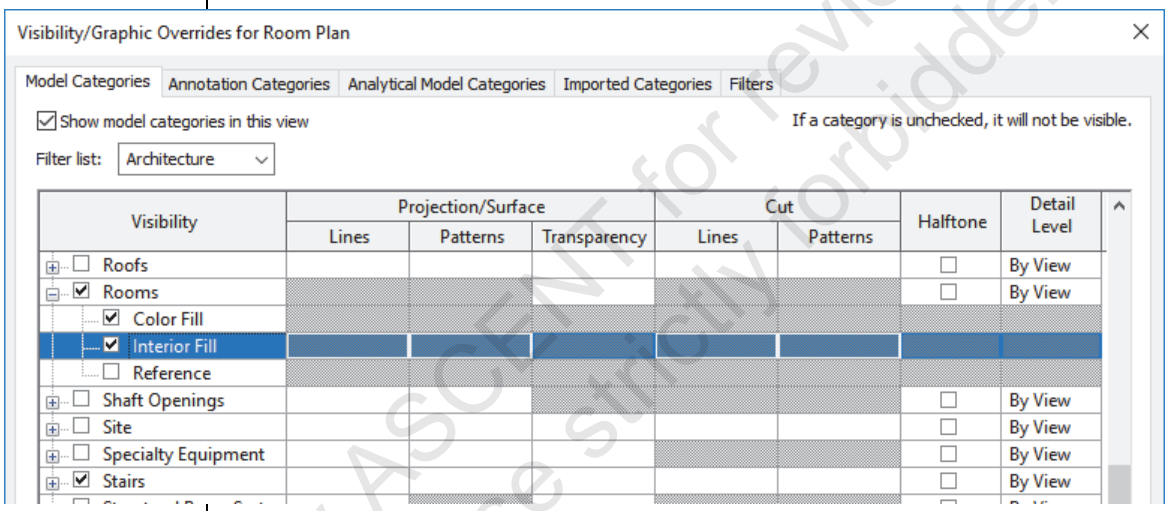

Figure 1–149

11. Click **OK**.
12. In the View Templates dialog box, clear the check marks in the *Include* column beside *View Scale* and *View Range*. Click **OK**.
13. Use the **Duplicate with Detailing** command on the **Level 1** and **Level 2** views and rename them as **Level 1 - Rooms** and **Level 2 - Rooms.**
14. In the Project Browser, select both of the new room views.
15. In Properties, in the *Identity Data* group, select the button beside *View Template* and apply the **Room Plan** view template to the views.
16. Open **Level 1**, **Level 1 - Fire Ratings**, and **Level 1 - Rooms** views and compare them.
17. Save and close the project.

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Practice 1j

Add View Templates: MEP

Practice Objectives

- Create a view template from an existing view.
- Create a view template from within Manage View Templates.
- Duplicate views and apply the view templates.

In this practice, you will create view templates from an existing view and modify the view template using **Manage View Templates**. You will then duplicate views and apply the view templates to other views, as shown in Figure 1–150.

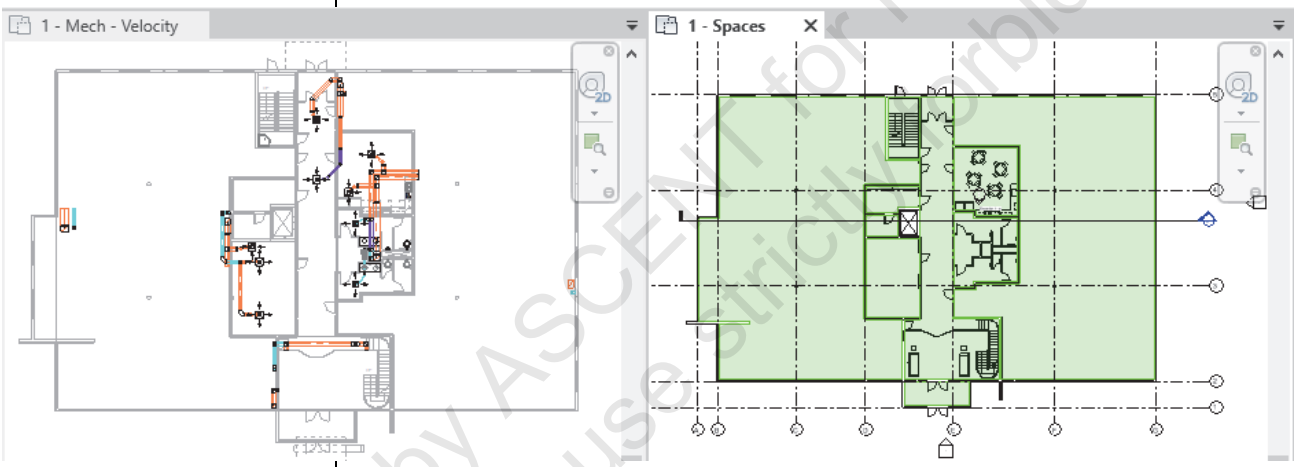

Figure 1–150

Note: This practice uses view templates in an existing project so you can create a view template and then see the impact of what it does. They should be set up originally in a project template.

Task 1 - Create a view template from an existing view and apply view template to views.

1. In the practice files *MEP* folder, open **Office-Spaces.rvt**.
2. In the Project Browser, in the *Mechanical>Floor Plans* area, right-click on the **1 - Mech - Velocity** view and select **Create View Template From View**.
3. Name the new view template **Velocity Duct Plan** and click **OK**.
4. In the View Templates dialog box, next to **V/G Override Filters**, click the **Edit...** button. The Visibility/Graphic Overrides dialog box opens with the *Filter* tab selected. You can see that the filters and overrides set up in the view are included in the view template.

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5. Click **OK** twice to close the dialog boxes.
6. Duplicate the **2 - Mech** view and rename it as **2 - Mech - Velocity**.
7. In Properties, in the *Identity Data* group, select the button beside *View Template*.
8. In the Assign View Template dialog box, select **Velocity Duct Plan** and click **OK**.
9. Review the View Control Bar options. Note that you cannot make any changes to the view controls of this view, as shown in Figure 1–151.

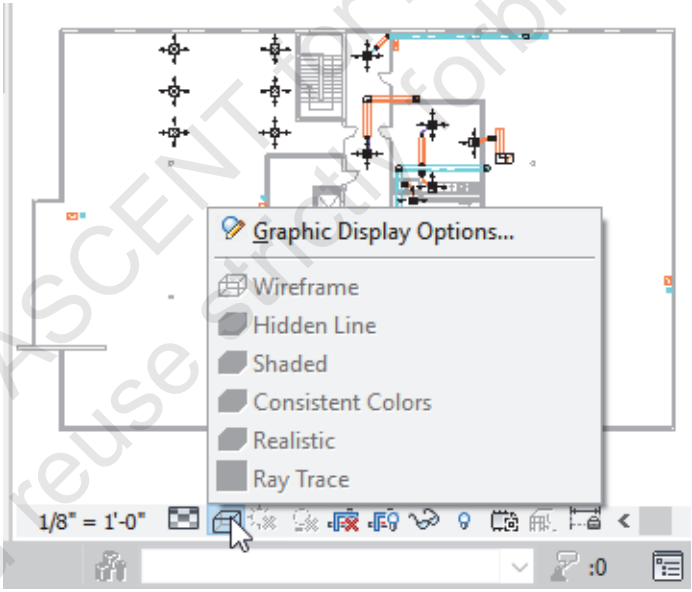

Figure 1–151

10. Switch to the **1 - Mech - Velocity** view. Note that you can still make changes to the View Controls of this view.

Task 2 - Create a view template through Manage View Templates.

1. In the *View* tab>Graphics panel, expand (View Template) and click (Manage View Templates).
2. In the View Templates dialog box, set the *View type filter* to **Floor, Structural, Area Plans**.
3. In the *Names* list, select **Architectural Plan** and click (Duplicate).

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4. Name the new view **Space Plan**.
5. Next to *V/G Overrides Model*, click **Edit...**.
6. In the Visibility/Graphic Overrides dialog box, set the *Filter List* to **Mechanical**, **Electrical**, and **Piping**.
7. Select the **All** button and click on one check mark to clear all the check marks from all of the model elements.
8. Select **None** to deselect the selection.
9. Scroll down, select and expand *Spaces,* and select **Interior**, as shown in Figure 1–152.

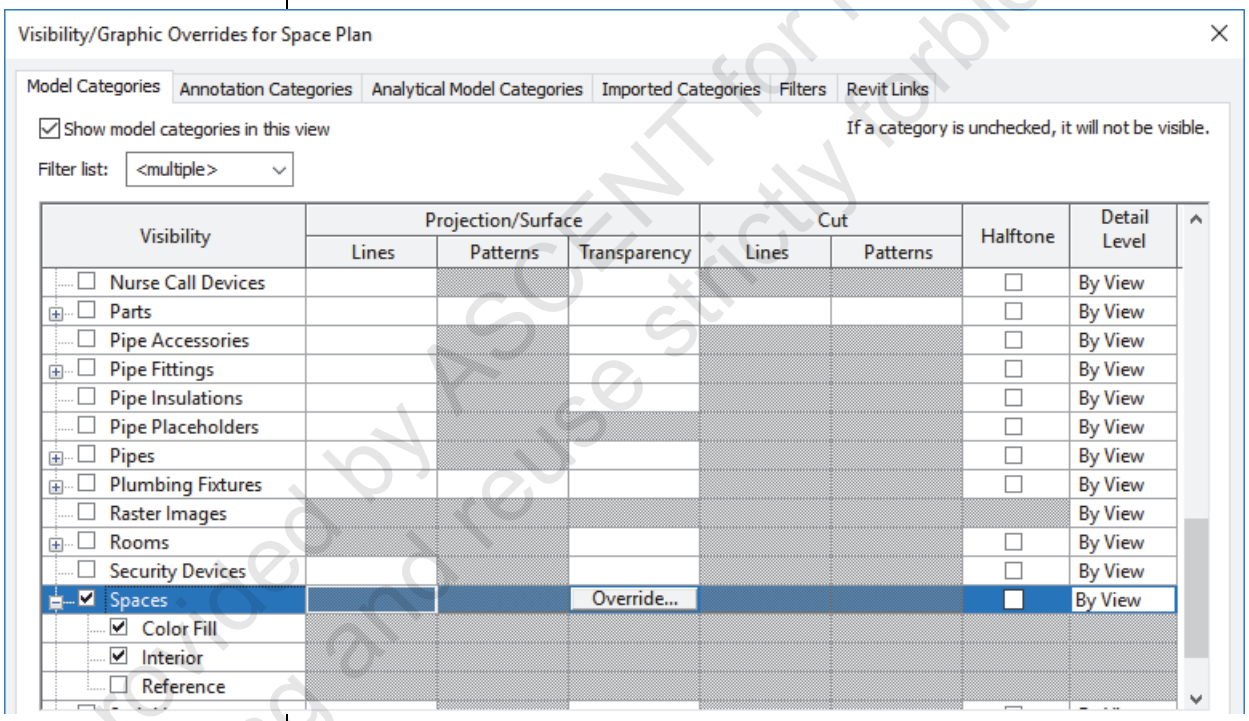

Figure 1–152

10. Click **OK.**
11. In the View Templates dialog box, clear the check marks in the *Include* column beside *View Scale* and *View Range*.
12. Change the *Discipline* to **Coordination** and click **OK**.
13. Save the project.

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Task 3 - Apply the view template to views.

1. Use **Duplicate with Detailing** to duplicate the **1 - Mech** and **2 - Mech** views and rename them as **1 - Spaces** and **2 - Spaces.**

   - You need to include the space tags in the views so you must duplicate with detailing.

2. In the Project Browser, select both spaces views.

3. In Properties, in the *Identity Data* group, select the button beside *View Template*. and apply the **Space Plan** view template to the views.

4. In the Project Browser, the views are automatically moved to the **Coordination** node and the spaces display in the view but none of the MEP elements display, as shown in Figure 1–153.

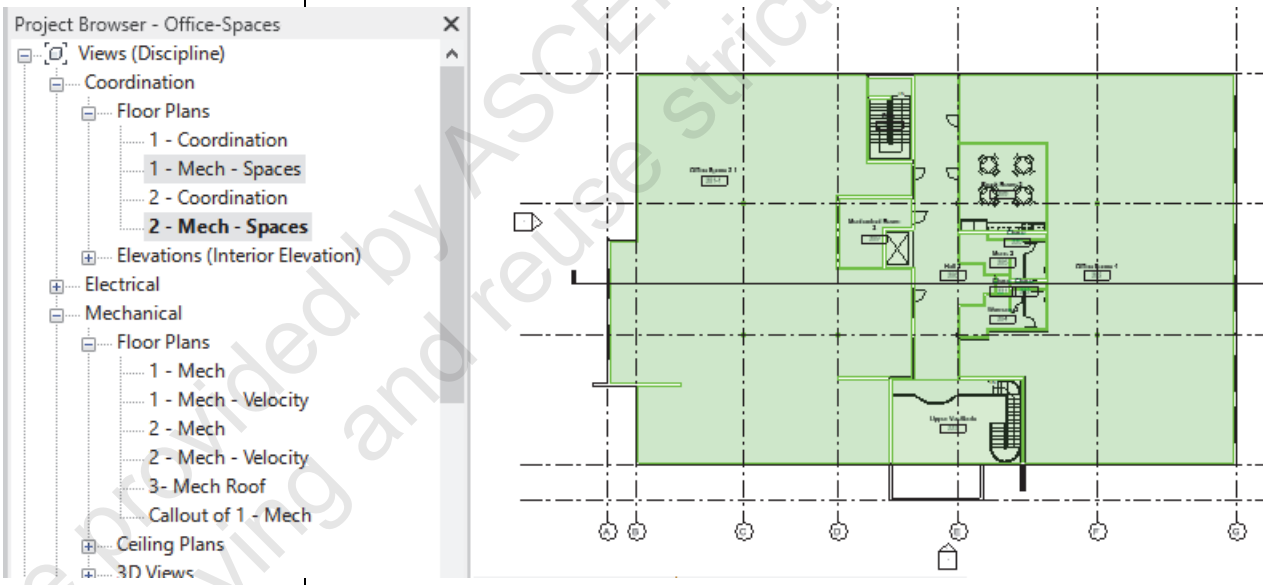

Figure 1–153

   - If the spaces are not showing as expected, reload the linked **Office-Link.rvt** file.

5. Save and close the project.

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Practice 1k

Add View Templates: Structure

Practice Objectives

- Create a view template from an existing view.
- Create a view template from within Manage View Templates.
- Duplicate views and apply the view templates.

In this practice, you will create a view template from an existing view and modify the view template using **Manage View Templates**. You will then duplicate views and apply the view template to other views, as shown in Figure 1–154.

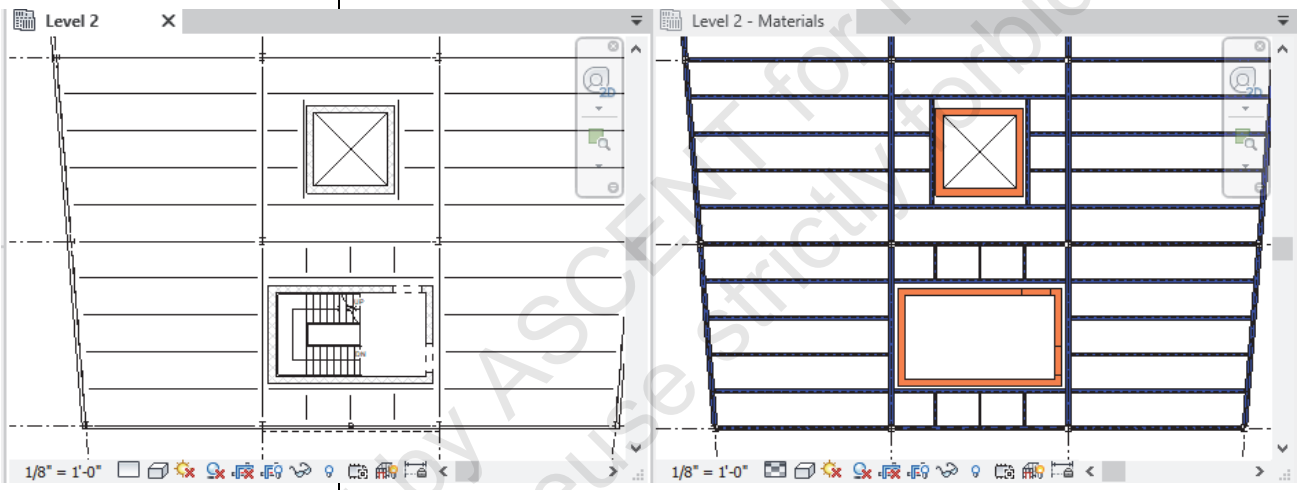

Figure 1–154

Note: This practice uses view templates in an existing project so you can create a view template and then see the impact of what it does. They should be set up originally in a project template.

Task 1 - Create a view template from an existing view.

1. In the practice files *Structural* folder, open **Office-View Template.rvt**.
2. In the Project Browser, in the *3D Views* area, right-click on the **Structural Materials - 3D** view and select **Create View Template From View**.
3. Name the new view template **Structural Materials** and click **OK**.
4. Next to **V/G Override Filters**, click the **Edit...** button. The Visibility/Graphic Overrides dialog box opens with the *Filter* tab selected. You can see that the filters and overrides set up in the view are included in the view template.

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5. Click **OK**.
6. In the *Include* column, clear the check marks from everything except the *Detail Level, V/G Overrides Model,* and *V/G Overrides Filters* categories.
7. Click **OK**.
8. Save the project.

Task 2 - Apply the view template to views.

1. Duplicate the Structural Plans>**Level 1** view and rename it **Level 1 - Materials**.
2. Right-click on the new view and select **Apply Template Properties**.
3. In the Apply View Template dialog box, set the *View type filter* to **<all>** and select **Structural Materials**, as shown in Figure 1–155.

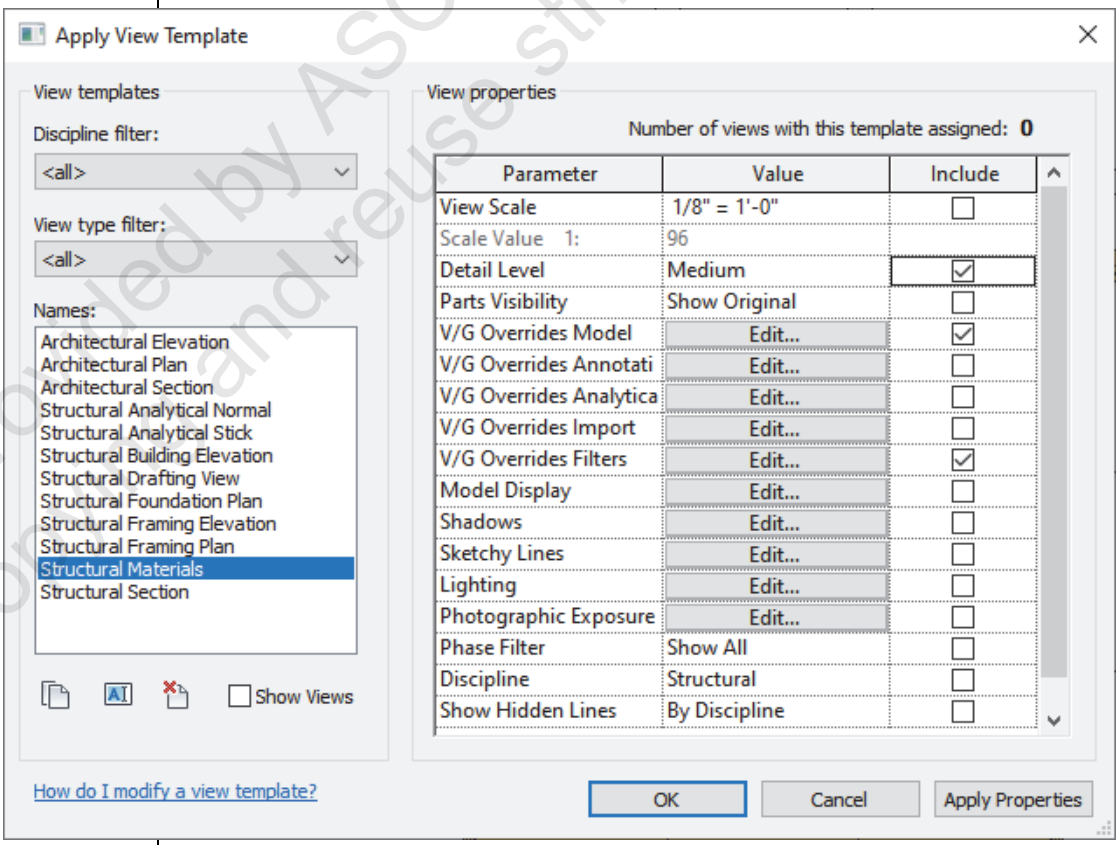

Figure 1–155

4. Click **OK**.

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5. The plan displays with most of the design in the concrete filter color. Compare the new floor plan view with the existing **Level 1** view, as shown in Figure 1–156.

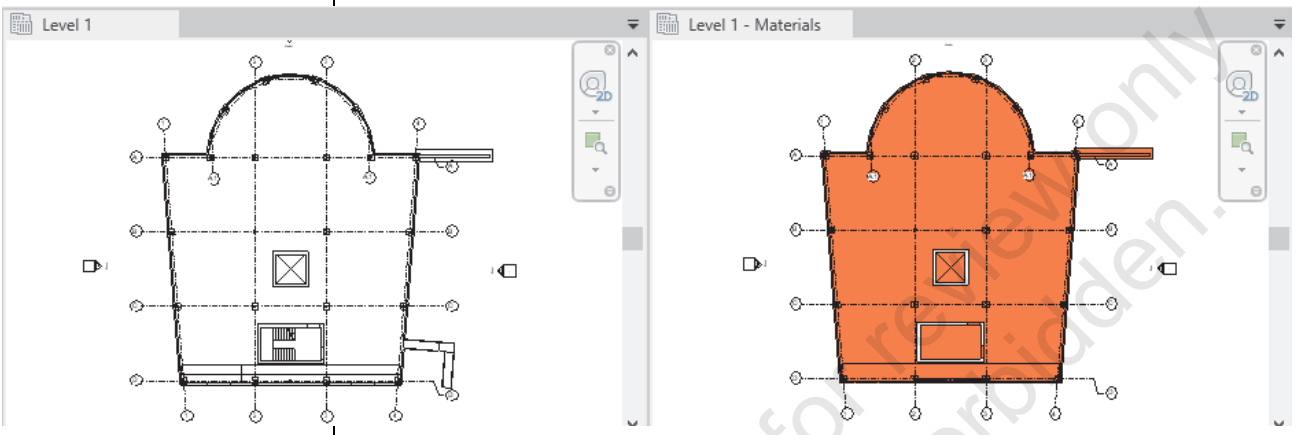

Figure 1–156

6. Duplicate the **Level 2** view and rename it as **Level 2 - Materials.**

7. In Properties, in the *Identity Data* group, select the button beside *View Template*.

8. In the Assign View Template dialog box, set the *View type filter* to **<all>** and select **Structural Materials**. Click **OK**.

9. Review the View Control Bar options. Note that you cannot make any changes to the Detail Levels of this view, as shown in Figure 1–157, because they are all grayed out and controlled by the view template.

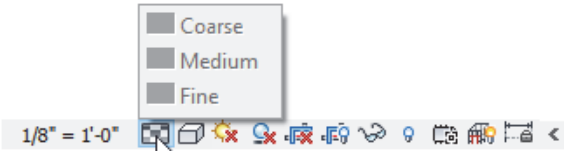

Figure 1–157

10. Switch to the **Level 1 - Materials** view. Note that you can still make changes to the Detail Levels of this view.

Task 3 - Modify a view template through Manage View Templates.

1. Switch to the **Level 2 - Materials** view.

2. In the *View* tab>Graphics panel, expand (View Template) and click (Manage View Templates).

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3. In the *Names* list, select **Structural Materials**.
4. Next to *V/G Overrides Model*, click **Edit...**. In the Filter list, only turn on **Structure**.
5. In the Visibility/Graphic Overrides dialog box, toggle off **Floors**.
6. Click **OK** twice to close the dialog boxes. The Steel color now displays because the floor has been removed, but the masonry concrete walls do not display as expected, as shown in Figure 1–158.

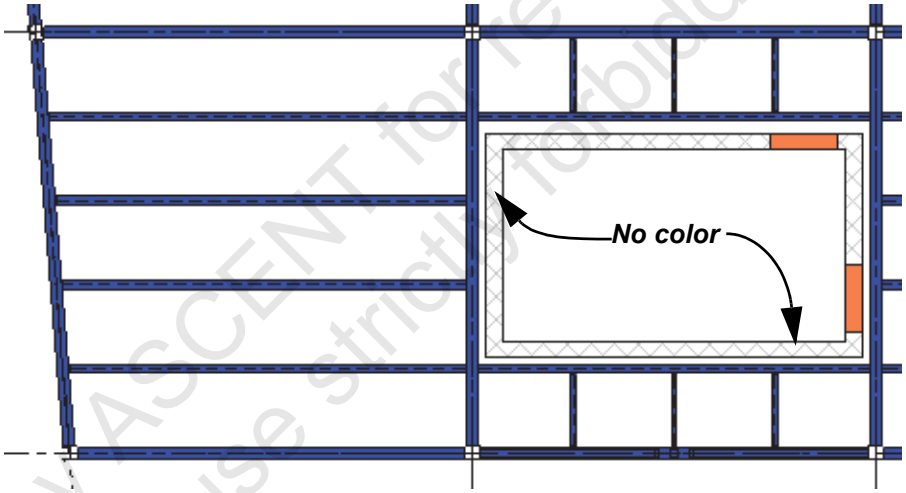

Figure 1–158

7. Open the Manage View Templates dialog box again and select **Structural Materials**.
8. Edit the *V/G Overrides Filters*.
9. In the Visibility/ Graphic Overrides dialog box, add overrides to the *Cut Patterns* to match the *Projection/Surface Pattern* overrides, as shown in Figure 1–159.

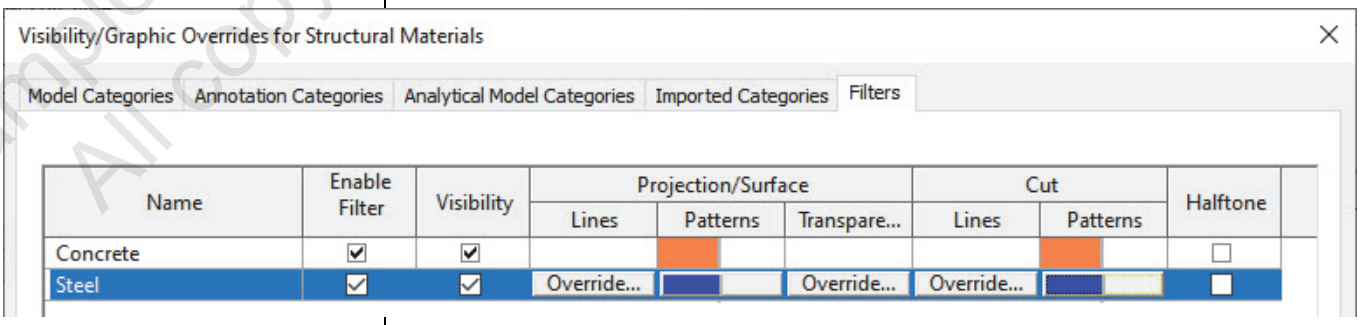

Figure 1–159

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10. Click **OK** to close the dialog boxes and the information is updated in the view as shown in Figure 1–160.

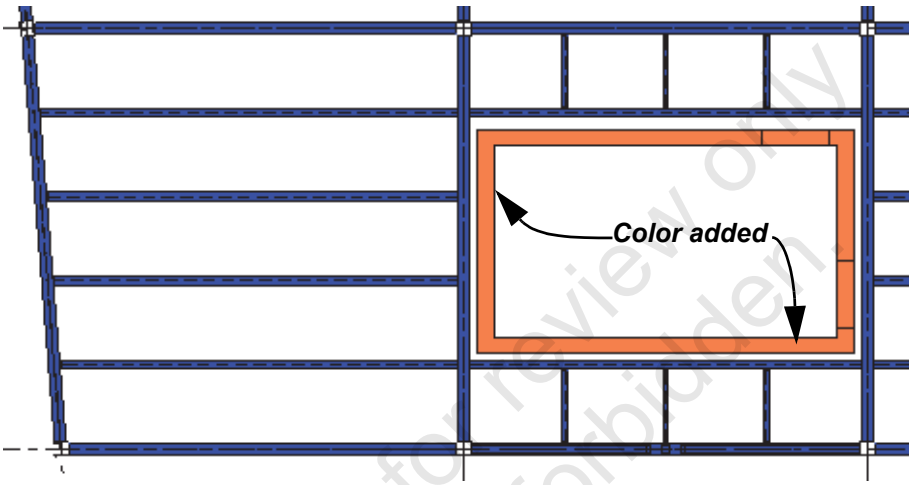

Figure 1–160

11. Save and close the project.

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Chapter Review Questions

1. Which of the following items are NOT set in a template file?
   a. Units
   b. Annotation types
   c. Title blocks
   d. Keyboard shortcuts
2. What is a label?
   a. A text type used in title blocks.
   b. A dimension with text instead of numbers.
   c. A type of text with variable information.
3. When you want to create new text types, such as those shown in Figure 1–161, you need to duplicate an existing one.

Figure 1–161

   a. True
   b. False
4. Which of the following enables you to assign a view template consistently to a view so that no changes can be made to the view parameters?
   a. In the view's Properties, select a view template.
   b. In the Project Browser, right-click on the view and select **Apply Template Properties**.
   c. In the view's Properties, click **Edit Type** and assign a view template.
5. Which of the following parameters are included in a view template? (Select all that apply.)
   a. View Scale
   b. V/G Overrides Model
   c. Project Units
   d. Detail Level

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Command Summary

Button	Command	Location
Templates		
	Callout Tags	• **Ribbon:** *Manage* tab>Settings panel> expand Additional Settings
	Elevation Tags	• **Ribbon:** *Manage* tab>Settings panel> expand Additional Settings
	Floor Plan	• **Ribbon:** *View* tab>Create panel> expand Plan Views
	Loaded Tags and Symbols	• **Ribbon:** *Annotate* tab>Tag panel> expand the panel title
	Section Tags	• **Ribbon:** *Manage* tab>Settings panel> expand Additional Settings
Annotation		
	Dimension Types	• **Ribbon:** *Annotate* tab>Dimensions panel>expand the panel title
	Text	• **Family Editor** • **Ribbon:** *Create* tab>Text panel
Title Blocks		
	Label	• **Family Editor** • **Ribbon:** *Create* tab>Text panel
	New Title Block	• **Ribbon:** *File* tab> New
	Revision Schedule	• **Family Editor** • **Ribbon:** *View* tab>Create panel
View Templates and Filters		
	ApplyTemplate Properties to Current View	• **Ribbon:** *View* tab>Graphics panel> expand View Templates • **Project Browser:** (*right-click on a view*) **Apply Template Properties...**
	Create View Template From View	• **Ribbon:** *View* tab>Graphics panel> expand View Templates • **Project Browser:** (*right-click on a view*)
	Filters	• **Ribbon:** *View* tab>Graphics panel
	Manage View Templates	• **Ribbon:** *View* tab>Graphics panel> expand View Templates
	Temporary View Properties	• View Control Bar

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