Multi-Discipline Coordination

When architects and engineers from different disciplines collaborate on a building project, they must share information about essential parts of the design, so that all teams are working with the same assumptions. By coordinating efforts across disciplines, the teams avoid expensive errors and rework.

To simplify design coordination and change management, the Revit products provide the following tools:

- **Copy/Monitor**: Monitors essential elements (of the same type) between the host project and a linked model, or within one project. When one team moves or changes a monitored element, other teams are notified so that they can adapt their designs or work with team members to resolve issues. See Copy/Monitor Overview.

- **Coordination Review**: Displays a list of warnings about monitored elements that have moved or changed. Teams can periodically review this list, specify an action (such as reject the change or modify the design), and enter comments to communicate with other teams. See Coordination Review.

- **Interference Check**: Identifies elements that interfere with one another within a project, or between the host project and a linked model. The interference check locates invalid intersections between elements of different types, whereas the Copy/Monitor tool monitors pairs of elements of the same type. See Interference Checking.

Topics in this section

- Copy/Monitor Overview
- Copy/Monitor Workflow for Linked Models
- Copying Levels for Monitoring
- Copying Elements for Monitoring
- Monitoring Elements in a Linked Model
- Monitoring Elements in the Current Project
- Specifying Options for Copy/Monitor
- Stopping Element Monitoring
- Coordination Review
- Copy/Monitor Best Practices
- Troubleshooting Copy/Monitor Issues

Copy/Monitor Overview

When multiple teams collaborate on a project, effectively monitoring and coordinating work can help to reduce mistakes and expensive rework. Use the Copy/Monitor tool to ensure that changes to essential elements are communicated across teams.

Topics in this section

- When Should I Use Copy/Monitor?

- What Elements Can I Copy or Monitor?
- Copy/Monitor Methods
- Copy/Monitor and Workshared Projects

When Should I Use Copy/Monitor?

Use the Copy/Monitor tool when

- The architectural team, the structural team, and the engineering team use Revit software.

- Each team must be informed of changes to levels, grids, and other elements that are essential to the overall design.

- The teams will link project files to work on the same building design. Each team maintains its own version of the project file and uses appropriate Revit software to develop the design for their specific discipline. Each project file is linked to the other project files to share information about changes to monitored elements in the building design. (For an alternative method, see Copy/Monitor and Workshared Projects.)

For example, the architect uses Revit Architecture to design the architectural model. The structural engineer uses Revit Structure to create an empty structural project. Then the engineer uses Copy/Monitor to copy levels and grids from the architectural model, providing a starting point for the structural design. Likewise, the architect links the structural model into the architectural project to monitor levels and grids. Whenever the architect or structural engineer moves or changes a level or grid, the other team member is notified of the change.

Related topics

- What Elements Can I Copy or Monitor?
- Copy/Monitor Methods
- Copy/Monitor Workflow for Linked Models

What Elements Can I Copy or Monitor?

Use the Copy/Monitor tool to monitor changes to the following types of elements:

- Levels
- Grids
- Columns (but not slanted columns)
- Walls
- Floors
- Openings

When monitoring walls, you can specify whether to monitor openings, including those for doors and windows. When monitoring floors, you can specify whether to monitor floor inserts and openings,

such as shafts.

The Copy/Monitor tool is not intended to be used with:

- slanted columns

- in-place elements

  If you need to represent in-place elements from a linked model, you can copy and paste them into the current project. See Copying Elements from a Linked Revit Model.

- design options

- project phasing

  When you use Copy/Monitor to copy an element from a linked model into the current project, the copied element is assigned to the New Construction phase. It does not inherit the phase assigned to the original element in the linked model. See also Phase Mapping Linked Revit Models.

Related topics

- When Should I Use Copy/Monitor?

- Copy/Monitor Methods

- Copy/Monitor Workflow for Linked Models

Copy/Monitor Methods

When you start the Copy/Monitor tool, you can select Use Current Project or Select Link. Then you can select Copy or Monitor:

- **Copy**: Creates a copy of a selected item and establishes a monitoring relationship between the copied element and the original element. If the original element changes, a warning alerts you when you open the project or reload the linked model. (This Copy tool is different than the other Copy tools, which are used for copying and pasting.)

- **Monitor**: Establishes a monitoring relationship between 2 elements of the same type. If an element changes, a warning alerts you when you open the project or reload the linked model.

The following topics describe how Copy/Monitor works depending on which methods you choose.

Topics in this section

- Copy Elements within the Current Project

- Copy Elements from a Linked Model

- Monitor Elements in the Current Project

- Monitor Elements in a Linked Model

Copy Elements within the Current Project

When you start the Copy/Monitor tool, select Use Current Project, and then select Copy, you can copy and monitor selected elements within the same project.

For example, use this method in Revit Architecture when you have created architectural columns and you want to copy structural columns to the same locations. When an architectural column is moved, a warning reminds you to move its structural column.

You can also use this method when implementing Copy/Monitor in a workshared project. See Copy/Monitor and Workshared Projects.

Copy Elements from a Linked Model

When you start the Copy/Monitor tool, choose Select Link, and then select Copy, you can copy elements from a linked model to the current project, and monitor changes to the original elements. When an element in the linked model changes, a warning alerts you of the change.

For example, you can copy levels and grids from a linked architectural model into a structural model. When a level or grid is moved in the architectural model, a warning alerts structural engineers.

See Copying Levels for Monitoring and Copying Elements for Monitoring.

Monitor Elements in the Current Project

When you start the Copy/Monitor tool, select Use Current Project, and then select Monitor, you can establish relationships between elements in the current project, and monitor changes to the elements. When an element changes, a warning alerts you of the change.

For example, use this method to monitor 2 grid lines. If a grid line is moved, a warning alerts you so that you can adjust the other grid line, if needed. See Monitoring Elements in the Current Project.

You can also use this method when implementing Copy/Monitor in a workshared project. See Copy/Monitor and Workshared Projects.

Monitor Elements in a Linked Model

When you start the Copy/Monitor tool, choose Select Link, and then select Monitor, you can establish relationships between elements in a linked model and corresponding elements in the current project, and monitor changes to the elements in the linked model. When an element in the linked model changes, a warning alerts you.

For example, in an architectural model, use this method to monitor levels and grids in a linked structural model. When a level or grid line is moved in the structural model, a warning alerts architects.

See Monitoring Elements in a Linked Model.

Copy/Monitor and Workshared Projects

As an alternative to using Copy/Monitor to coordinate changes between linked models, you can use it to coordinate changes in a workshared project. This practice is best suited to a small interdisciplinary team that is working on a building project at the same office or location.

When you start the Copy/Monitor tool, select Use Current Project. Then select Copy or Monitor, depending on your needs.

For example, suppose a building model is organized into the following worksets:

- Shared Levels and Grids: editable only by the project manager

- Interior: used by the interior designer to plan the interior of the building in Revit Architecture

- Exterior: used by the lead architect to plan the exterior of the building in Revit Architecture

- Structure: used by the structural engineer to plan the structural model in Revit Structure

The structural engineer uses Revit Structure to open the Structural workset, and then uses Copy to copy levels and grids from the Shared Levels and Grids workset. If the project manager moves or changes any levels or grids, the structural engineer receives a warning upon reloading the central model or performing a coordination review.

The interior designer uses Revit Architecture to open the Interior workset, and then uses Monitor to establish relationships between interior walls and exterior walls. If the lead architect moves or changes an exterior wall, the interior designer receives a warning upon reloading the central model or performing a coordination review.

Copy/Monitor Workflow for Linked Models
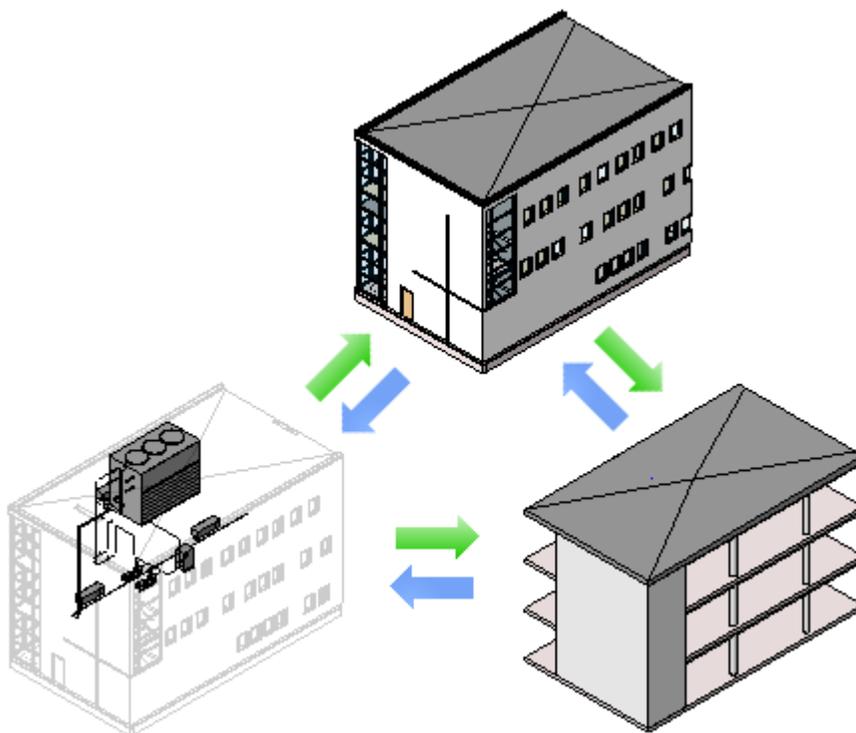
The following workflow describes a typical process to coordinate efforts between an architectural team and a structural team working on the same building using linked models. The process is similar when coordinating efforts between an architectural team and an MEP team, or a structural team and

an MEP team.

To use Copy/Monitor with linked models

1. The architect uses Revit Architecture to create the architectural model, as follows:

   a. Creates levels and grids, at a minimum. The architect can also add columns, walls, floors, and other elements.

   b. Saves the architectural project file.

2. The engineer uses Revit Structure to create an empty structural project, as follows:

   a. Uses a structural project template that defines the desired views and settings.

      See Structural Template and Creating a Custom Project Template.

   b. Saves the empty structural project file.

3. The engineer copies relevant architectural elements into the empty project, as follows:

   a. Links the architectural model into the empty project.

      See Linking Revit Models.

   b. Pins the linked model in place, so that it cannot be moved inadvertently, as follows:

      ● Selects the linked model in the drawing area.
        Tip Move the cursor over the linked model in the drawing area. When its boundary is highlighted, click to select the link.

      ● Clicks Modify RVT Links tab ➤ Modify panel ➤ Pin.

   c. Copies levels from the architectural model into the project.

      See Copying Levels to Monitor.

   d. Copies grids and other elements from the architectural model into the project.

      See Copying Elements for Monitoring.

   e. (Optional) Hides the linked architectural model.

      See Hiding a Linked Model in a View.

   f. Adds structural elements to the structural model, as desired.

   If any copied elements are moved or changed in the architectural model, the engineers are notified of the changes when they open their project or reload the architectural model. These warnings also display in a coordination review.

4. In the architectural model, the architect monitors relevant structural elements, as follows:

   a. Links the structural model into the architectural project.

      See Linking Revit Models.

   b. Pins the linked model in place.

   c. Monitors (without copying) levels and grids (and other elements) in the structural model.

      See Monitoring Elements in the Current Project.

   d. (Optional) Hides the linked structural model.

   e. Adds architectural elements to the architectural model, as desired.

   If any monitored elements are moved or changed in the structural model, architects are notified

of the changes whenever they open the architectural project or reload the model. These warnings also display in a coordination review.

5. At regular intervals, architects or engineers can do the following:

    ● Perform a coordination review to see changes to monitored elements, communicate with team members, and take appropriate action. (See Coordination Review.)

    ● Perform an interference check to identify invalid intersections of elements between the current project and a linked model. (See Interference Checking.)

Related topics

● Copy/Monitor Best Practices

● Troubleshooting Copy/Monitor Issues

Copying Levels for Monitoring

You can copy levels from a linked model into the current project, and monitor them for changes. See Copy/Monitor Overview.

For instructions on copying other types of elements for monitoring, see Copying Elements for Monitoring.

1. Open an existing project or start a new project.

    You will copy levels from a Revit model into this project.

2. Prepare a view:

    a. Open an elevation view.

    b. Click View tab ➤ Graphics panel ➤ View Properties.

    c. In the Properties dialog, for Discipline, select Coordination.

    This setting ensures that the view displays elements for all disciplines (architectural, structural, mechanical, and electrical).

3. Delete existing levels from the current project.

    When you delete existing levels, Revit Architecture also deletes corresponding plan views for the deleted levels. You will create new plan views based on the copied levels.

    Note You can delete all but one level. Change the name of this level to Original Level, and change its extents (far to the left or right of the drawing area) so that you can distinguish it from a copied level and delete it later.

4. Link the model into the current project.

    See Linking Revit Models.

5. Pin the linked model in place, so that it cannot be moved inadvertently:

    ● In the drawing area, select the linked model.

    Tip Move the cursor over the linked model in the drawing area. When its boundary is highlighted, click to select the link.

    ● Click Modify RVT Links tab ➤ Modify panel ➤ Pin.

6. (Optional) Display the linked model in halftone, so that you can distinguish its elements from

those in the current project.

See Displaying a Linked Model in Halftone.

7. Start the Copy/Monitor tool:

    a. Click Collaborate tab ➤ Coordinate panel ➤ Copy/Monitor drop-down ➤ Select Link.

    b. Select the linked model in the drawing area.

8. Specify options for the levels to copy.

    For example, you can specify an offset for levels, or add a prefix or suffix to level names. See Specifying Options for Copy/Monitor.

9. Copy the levels for monitoring:

    a. Click Copy/Monitor tab ➤ Tools panel ➤ Copy.

    b. In the linked model, select the levels to copy.

        To select multiple levels, on the Options Bar, select Multiple. Then select the levels in the drawing area, and click Finish on the Options Bar.

        You can use a selection box and a filter to select all levels in the linked model. See Selecting Elements Using a Filter.

    c. Click Copy/Monitor tab ➤ Copy/Monitor panel ➤ Finish.

    The copied levels now display in the current project.

    When you select a copied level, the monitor icon ⬚ displays next to it to indicate that it has a relationship with the original level in the linked model.

    If the levels are moved, changed, or deleted in the linked model, you are notified of the changes when you open the current project or reload the linked model. These warnings also display in a coordination review. (See Coordination Review.)

10. Delete the remaining original level from the current project.

    When you delete the level, Revit Architecture also deletes the related plan view.
    Note When you delete the final level in a Revit Architecture project, the site view is also deleted. For instructions on creating a new site view, see Site Plan Was Deleted.

11. Create plan views for the new levels:

    a. Click View tab ➤ Create panel ➤ Plan Views drop-down, and select the desired type of plan view.

    b. In the New Plan dialog, select one or more levels from the list, specify the desired scale, and click OK.

    c. (Optional) Repeat this process to create other types of plan views.

The plan view names display in the Project Browser. To rename a view, right-click the view name, and click Rename.

12. (Optional) Hide the linked model.

     See Hiding a Linked Model in a View.

Related topics

- Copy/Monitor Workflow for Linked Models

- Copy/Monitor Best Practices

- Troubleshooting Copy/Monitor Issues

Copying Elements for Monitoring

You can copy elements from a linked model into the current project, and monitor them for changes. See Copy/Monitor Overview.

Use the following procedure to copy grids, columns, walls, and floors (including related openings and inserts) for monitoring. To copy levels for monitoring, see Copying Levels to Monitor.

Best Practice Copy one type of element at a time. After copying, check to make sure that you achieved the desired result, and then copy the next type of element.

To copy elements to monitor

1. Open an existing project or start a new project.

    You will copy elements from a Revit model into this project.

2. Prepare a view:

    a. Open a project view where you will be able to see the copied elements.

        For example, use a floor plan view to copy grids, columns, walls, floors, and related openings for monitoring.

    b. Click View tab ➤ Graphics panel ➤ View Properties.

    c. In the Properties dialog, for Discipline, select Coordination.

    This setting ensures that the view displays elements for all disciplines (architectural, structural, mechanical, and electrical).

3. (Optional) If you plan to copy grids into the current project, delete existing grids.

4. Link the model into the current project.

    See Linking Revit Models.

5. Pin the linked model in place, so that it cannot be moved inadvertently:

    - In the drawing area, select the linked model.
      Tip Move the cursor over the linked model in the drawing area. When its boundary is highlighted, click to select the link.

    - Click Modify RVT Links tab ➤ Modify panel ➤ Pin.

6. (Optional) Display the linked model in halftone, so that you can distinguish its elements from those in the current project.

    See Displaying a Linked Model in Halftone.

7. Start the Copy/Monitor tool:

    a. Click Collaborate tab ➤ Coordinate panel ➤ Copy/Monitor drop-down ➤ Select Link.

    b. Select the linked model in the drawing area.

8. Specify options for the elements to copy.

    For example, you can copy openings and inserts in walls and floors, or change the family type for copied elements. See Specifying Options for Copy/Monitor.

9. Copy the elements for monitoring:

    a. Click Copy/Monitor tab ➤ Tools panel ➤ Copy.

    b. Select the elements to copy.

        To select multiple elements, on the Options Bar, select Multiple. Then select the elements in the drawing area, and click Finish on the Options Bar.

        You can use a selection box and a filter to select elements in the linked model. See Selecting Elements Using a Filter.

    c. Click Copy/Monitor tab ➤ Copy/Monitor panel ➤ Finish.

    When you select a copied element in the current project, the monitor icon ⬚ displays next to it to indicate that it has a relationship with the original element in the linked model.
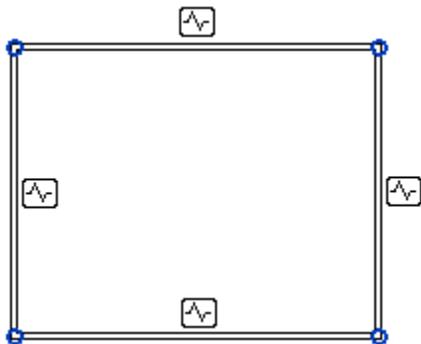
    If copied elements are moved, changed, or deleted in the linked model, you are notified of the changes when you open the current project or reload the linked model. These warnings also display in a coordination review. (See Coordination Review.)

10. (Optional) Hide the linked model.

    See Hiding a Linked Model in a View.

Related topics

- Copy/Monitor Workflow for Linked Models

- Copy/Monitor Best Practices

- Troubleshooting Copy/Monitor Issues

Monitoring Elements in a Linked Model

You can establish and monitor relationships between elements in the current project and a linked model without copying the elements into the current project. (See Monitor Elements in a Linked Model.) When a monitored element changes, a warning message displays.
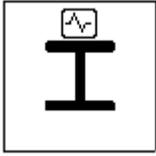
You establish relationships between pairs of corresponding elements. For example, select a grid line in the current project, and then select a grid line in the linked model to form a relationship between them. You cannot monitor unlike pairs, such as a grid line and a level. If you select an opening in a wall or floor, you can monitor other openings or inserts.

To monitor elements in a linked model without copying

1. Open a project.

2. Prepare a view:

    a. Open a project view where you can see the elements to be monitored.

    b. Click View tab ➤ Graphics panel ➤ View Properties.

    c. In the Properties dialog, for Discipline, select Coordination.

        This setting ensures that the view displays elements for all disciplines (architectural, structural, mechanical, and electrical).

    d. Link the model into the current project.

        See Linking Revit Models.

    e. Pin the linked model in place, so that it cannot be moved inadvertently:

        ● In the drawing area, select the linked model.
          Tip Move the cursor over the linked model in the drawing area. When its boundary is highlighted, click to select the link.

        ● Click Modify RVT Links tab ➤ Modify panel ➤ Pin.

    f. (Optional) Display the linked model in halftone, so that you can distinguish its elements from those in the current project.

        See Displaying a Linked Model in Halftone.

3. Click Collaborate tab ➤ Coordinate panel ➤ Copy/Monitor drop-down ➤ Select Link, and select the linked model in the drawing area.

4. Click Copy/Monitor tab ➤ Tools panel ➤ Monitor.

5. Select an element in the current project.

6. Select a corresponding element of the same type in the linked model.

    The monitor icon ⟨Λ⟩ displays next to the element to indicate that it has a relationship with another element.

    An architectural column and a structural column (plan view) with a monitoring relationship

7. Continue selecting as many element pairs as desired.

8. Click Copy/Monitor tab ➤ Copy/Monitor panel ➤ Finish.

If you modify one of the elements in a pair, a warning indicates that a monitored element has changed. These warnings also display in a coordination review. See Coordination Review.

Related topics

- Copy/Monitor Workflow for Linked Models

- Copy/Monitor Best Practices

- Troubleshooting Copy/Monitor Issues

Monitoring Elements in the Current Project

You can establish and monitor relationships between 2 elements of the same type in the current project without copying the elements. (See Monitor Elements in the Current Project.) When a monitored element changes, a warning message displays.
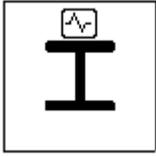
You establish relationships between pairs of corresponding elements. For example, select a grid line, and then select another grid line to form a relationship between them. You cannot monitor unlike pairs, such as a grid line and a level. If you select an opening in a wall or floor, you can monitor other openings or inserts.

To monitor elements without copying in the current project

1. Open a project.

2. Open a project view where you can see the elements to be monitored.

3. Click Collaborate tab ➤ Coordinate panel ➤ Copy/Monitor drop-down ➤ Use Current Project.

4. Click Copy/Monitor tab ➤ Tools panel ➤ Monitor.

5. Select one element.

6. Select another element of the same type to create a relationship between those elements.

   T he monitor icon displays next to the element to indicate that it has a relationship with another element.

   An architectural column and a structural column (plan view) with a monitoring relationship

7. Continue selecting as many element pairs as desired.

8. Click Copy/Monitor tab ➤ Copy/Monitor panel ➤ Finish.

If you modify one of the elements in a pair, a warning indicates that a monitored element has changed. These warnings also display in a coordination review. See Coordination Review.

Related topics

● Copy/Monitor Workflow for Linked Models

● Copy/Monitor Best Practices

● Troubleshooting Copy/Monitor Issues

Specifying Options for Copy/Monitor

Before you select elements to copy for monitoring, specify options for the element type. The Copy/Monitor options apply only to elements that you select after specifying the options.

1. Begin the procedure to copy levels or other elements to monitor, and follow the steps through "Start the Copy/Monitor tool."

    For instructions, see Copying Levels for Monitoring or Copying Elements for Monitoring.

    When you reach the step "Specify options for the elements to copy," proceed as follows.

2. Click Copy/Monitor tab ➤ Tools panel ➤ Options.

    On the Copy/Monitor Options dialog, tabs contain options for different element types. Use these options to make the copied element different from the original element in various ways.

3. Click the tab for the type of element to copy, and change values in the New type column as desired:

If you want to...	Then...
Prevent Revit Architecture from copying elements of a certain type	Locate the element type in the Original type column. On the same line in the New type column, select Don't copy this Type.
Apply a different type to copies of selected elements	Locate the element type in the Original type column. On the same line in the New type column, select the type to apply to the copies.
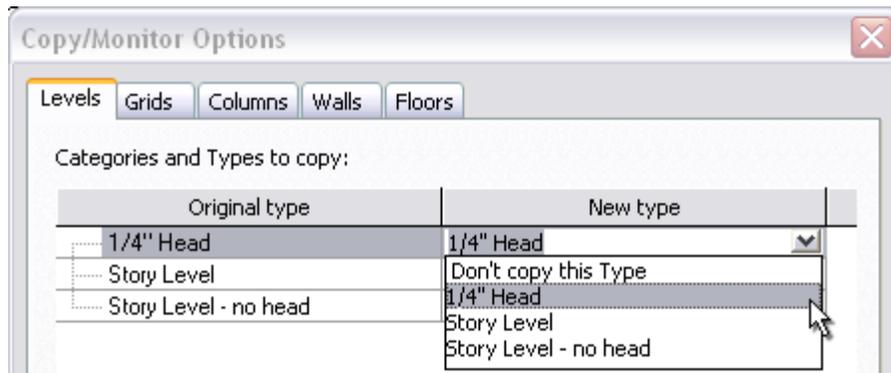
4. Under Additional Copy Parameters, specify the desired values for

    ● levels

    ● grids

    ● columns

    ● walls

    ● floors

5. Click OK to close the Copy/Monitor Options dialog.

For further instructions, return to Copying Levels for Monitoring or Copying Elements for Monitoring.

Related topics

● Copy/Monitor Workflow for Linked Models

● Copy/Monitor Best Practices

● Troubleshooting Copy/Monitor Issues

Topics in this section

● Copy/Monitor Parameters for Levels

● Copy/Monitor Parameters for Grids

● Copy/Monitor Parameters for Columns

● Copy/Monitor Parameters for Walls

● Copy/Monitor Parameters for Floors

Copy/Monitor Parameters for Levels

Before selecting levels to copy for monitoring, specify the following parameter values on the Copy/Monitor Options dialog. See Specifying Options for Copy/Monitor and Copying Levels for Monitoring.

Offset level

Offsets the copied level vertically from the original level by a specified value.

For example, to account for the thickness of floor finishes that are not needed on structural levels, engineers can enter a negative number for the offset level. As a result, the copied levels will be located below the corresponding architectural levels.

Reuse levels with the same name

When you select this option, if the current project contains a level with the same name as a level in the linked model, a new level is not created. Instead, the existing level in the current project is moved to match the location of the level in the linked model, and monitoring is established between these levels.

Reuse matching levels

Select one of the following values:

- **Don't reuse**: Creates a copy of a level, even if the current project already contains a level at the same elevation.

- **Reuse if Elements match exactly**: If the current project contains a level that occurs at the same elevation as a level in the linked model, the level is not copied. Instead, Revit Architecture creates a relationship between these levels in the current project and the linked model.

- **Reuse if within offset**: If the current project contains a level that occurs at a similar elevation as a level in the linked model (within the value of the Offset Level parameter), the level is not copied. Instead, Revit Architecture creates a relationship between these levels in the current project and the linked model.

Add suffix to level name

Enter a suffix to be added to the names of copied levels.

Add prefix to level name

Enter a prefix to be added to the names of copied levels.

Copy/Monitor Parameters for Grids

Before selecting grids to copy for monitoring, specify the following parameter values on the Copy/Monitor Options dialog. See Specifying Options for Copy/Monitor and Copying Elements for Monitoring.

Reuse grids with the same name

When you select this option, if the current project contains a grid line with the same name as a grid line in the linked model, a new grid line is not created. Instead, the existing grid line in the current project is moved to match the location of the grid line in the linked model, and monitoring is established between these grid lines.

Reuse matching grids

Select one of the following values:

- **Don't reuse**: Creates a copy of a grid line, even if the current project already contains a grid line at the same location.

- **Reuse if Elements match exactly**: If the current project contains a grid line that occurs at the same location as a grid line in the linked model, the grid line in the linked model is not copied. Instead, Revit Architecture creates a relationship between these grid lines in the current project and the linked model.

Add suffix to grid name

Enter a suffix to be added to the names of copied grids.

Add prefix to grid name

Enter a prefix to be added to the names of copied levels.

Copy/Monitor Parameters for Columns

Before selecting columns to copy for monitoring, specify the following parameter value on the Copy/Monitor Options dialog. See Specifying Options for Copy/Monitor and Copying Elements for Monitoring.

Note You cannot copy slanted columns for monitoring.

Split columns by levels

Architects often design models using columns that extend in one solid piece through several levels of the building. However, structural engineers often prefer that columns extend only from one level to the next. This design avoids problems with the analytical model.

Use this parameter to specify that columns extending through multiple levels in the linked model will be split into shorter columns at level lines when copied into the current project.
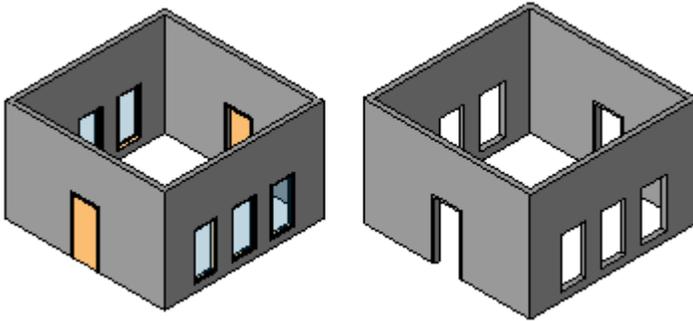
Copy/Monitor Parameters for Walls

Before selecting walls to copy for monitoring, specify the following parameter value on the Copy/Monitor Options dialog. See Specifying Options for Copy/Monitor and Copying Elements for Monitoring.

Copy windows/doors/openings

Select this option if you want the copied wall to include hosted openings, including openings for inserts (such as doors and windows).

In the following example, walls with doors and windows in Revit Architecture (left) retain the corresponding openings when copied into Revit Structure (right).


Copy/Monitor Parameters for Floors

Before selecting floors to copy for monitoring, specify the following parameter value on the Copy/Monitor Options dialog. See Specifying Options for Copy/Monitor and Copying Elements for Monitoring.

Note When you use Copy/Monitor to copy a floor from an architectural model to a structural model, you can make the copied floor a structural floor. Edit the floor's instance properties in Revit Structure to specify its Structural parameter. See Modifying Instance Properties.

Copy openings/inserts

When Revit Architecture copies selected floors, it also copies any hosted inserts and openings, such as shaft openings.

In the following example, floors with a shaft opening have been copied into Revit Structure.
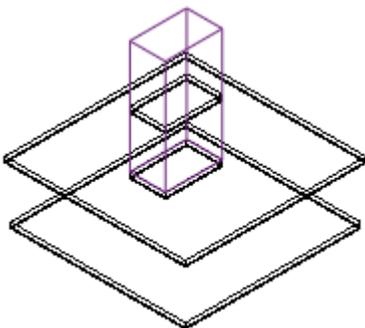
Stopping Element Monitoring

1. Select one or more monitored elements.

    When you select a monitored element, the monitor icon displays next to it.

2. Click Multi-Select tab or Modify <Element> tab ➤ Monitor panel ➤ Stop Monitoring.

You can also stop the monitoring of all elements by removing the linked model from the host project. See Link Management Options.

Related topics

- Copy/Monitor Overview

- Copying Levels for Monitoring

- Copying Elements for Monitoring

- Monitoring Elements in the Current Project

Coordination Review

When architects, structural engineers, and MEP engineers collaborate on a building project, they can use the Copy/Monitor tool to monitor essential parts of the design and coordinate changes among the teams. They can also use the Coordination Review tool to review warnings about changes to the monitored elements, communicate with other teams working on the same project, and resolve issues regarding changes to the building model.

Coordination Monitor warnings can occur because

- A monitored element is changed, moved, or deleted.

- A hosted element (door, window, or opening) is added, moved, changed, or deleted in a monitored wall or floor.

Changes to view-specific properties, such as view scale and visibility, do not generate Coordination Monitor warnings.

Topics in this section

- Reviewing Warnings for Monitored Elements
- Creating a Coordination Review Report
- Actions for Coordination Review

Reviewing Warnings for Monitored Elements

After you establish relationships between elements using the Copy/Monitor tool, you can perform a coordination review to view and address any warnings generated by changes to those elements.

1. Click Collaborate tab ➤ Coordinate panel ➤ Coordination Review drop-down, and then select one of the following options:

If you want to...	Then...
Review warnings for elements	Click Use Current Project.

that are monitored within the current project	
Review warnings for elements that are monitored in a linked model	Click Select Link. Then select the linked model in the drawing area.

The Coordination Review dialog displays a list of warnings for monitored elements. If you are reviewing warnings for a linked model, the Coordination Review dialog displays warnings for the current (host) project and the linked model on separate tabs.

Note To check for comments (such as proposed changes) from team members who work on the linked project, click the tab for that project.

2. Expand items in the Message column until you can see values in the Action column.

3. (Optional) To display or hide information about the elements related to each warning, click Elements.

4. (Optional) To locate a changed element in the current project, select the warning in the Coordination Review dialog, and click Show.

    Revit Architecture highlights the element in the drawing area. If needed, Revit Architecture opens another view to display the element.

    If you want to see the changed element in a different view, you can double-click a view name in the Project Browser without exiting the Coordination Review dialog.

5. For each item, specify the appropriate action.

    See Actions for Coordination Review.

6. (Optional) Enter comments regarding an action:

    a. In the Comment column, click Add comment.

    b. Enter comments in the Edit Comment dialog.

    c. Click OK.

    Use comments to communicate with cross-functional team members. When other team members open or reload the linked model and perform a coordination review, they can see these comments for each changed element.

7. (Optional) Export the coordination review to an HTML report.

    See Creating a Coordination Review Report.

Creating a Coordination Review Report

After performing a coordination review, you can create an HTML report to save a record of the changes, actions, and related comments, or to communicate with team members about the project. If desired, you can open the HTML file in a spreadsheet application to organize or enhance the information.

1. Review warnings for monitored elements, and leave the Coordination Review dialog open.

    See Reviewing Warnings for Monitored Elements.

2. (Optional) Change the display of warnings:

    - To change how the list of warnings is sorted, for Group by, select an option.

    - To display or hide information about the elements related to each warning, click Elements.

    - To hide postponed messages, in the Show group, clear Postponed.

    - To hide rejected changes, in the Show group, clear Rejected.

3. Click Create Report.

4. In the Export Revit Coordination Report dialog, specify a name and location for the HTML file.

5. Click Save.

Actions for Coordination Review

When performing a coordination review, you can specify how to handle each change in the current project. To specify an action for a change, click in the Action column and select an action from the drop-down list. The available action values vary depending on the type of change.

Note Actions that result in changes only affect the current project. They do not make changes to a linked model.

Postpone/Do nothing: Take no action. This value leaves the change to be addressed at a later time.

Reject: Select this action to indicate that the change made to the element in the project is incorrect. Instead, a change must be made to the associated monitored element in the linked model.

Accept difference: Select this action to indicate that the change made to the monitored element is acceptable, and to update the relationship without changing the corresponding element. For example, suppose 2 monitored grid lines are 200 mm apart, and one is moved to 300 mm away. When you select Accept difference, the monitored grid lines are not moved, and the relationship is updated to 300 mm.

Modify: A grid line or wall centerline has changed or moved. Select Modify to apply this change to the corresponding element in the current project.

Rename: The name of a monitored element has changed. Select Rename to apply this change to the corresponding element in the current project.

Move: A monitored element has moved. Select Move to apply this change to the corresponding element in the current project.

Ignore new elements: A new hosted element was added to a monitored wall or floor. Select this action to ignore the new element in the host. It will not be monitored for changes.

Copy new elements: A new hosted element was added to a monitored wall or floor. Select this action to add the new element to the host, and monitor it for changes.

Delete element: A monitored element has been deleted. Select this action to delete the corresponding element in the current project.

Copy Sketch: The sketch or boundary of a monitored opening has changed. Select this action to change the corresponding opening in the current project.

Update extents: The extents of a monitored element have changed. Select this action to change the corresponding element in the current project.

Copy/Monitor Best Practices

Performance: Use Copy/Monitor to monitor changes to the smallest number of elements required to coordinate efforts across teams. Overuse of Copy/Monitor without thoughtful planning can result in performance degradation.

File names: After you link a model to the current project and establish relationships between elements for monitoring, do not change file names for the linked model or the current project. If you do, the monitoring relationships cannot be maintained.

Grids: Do not associate grids with a scope box until after you have copied the grids from a linked model to the host project. You cannot view scope boxes that are defined in a linked model.

Columns: When using Copy/Monitor to copy columns from an architectural model to a structural model, use the Split Columns by Levels option. For example, if the architect adds columns that span levels 1 - 4, the engineer can split the columns at each level. This design avoids problems with the analytical model. See Specifying Options for Copy/Monitor and Copy/Monitor Parameters for Columns.

Walls: To ensure that you copy all walls in the model, use a selection box and a filter in a plan view, or use a 3D orthographic view.

Floors: Use Copy/Monitor to copy a floor from an architectural model to a structural model. To make it a structural floor, edit the floor's instance properties in Revit Structure to specify its Structural parameter. See Modifying Instance Properties.

Shape-edited floors: If you use Copy/Monitor to copy a shape-edited floor (or slab), the copied element is flat. Use the Slope Arrow tool to slope slabs when possible, or use a separate slab in each building model. See Slope Arrow.

Spaces: If you link an architectural model to an MEP model, use the architectural model to place spaces in the MEP model. After linking the architectural model, open a view in Revit MEP and select the linked model. Click Modify RVT Links tab ➤ Element panel ➤ Element Properties drop-down ➤ Type Properties. In the Type Properties dialog, select Room Bounding. You can then reference elements in the linked model when creating spaces. See Room Boundaries in Linked Models.

If you encounter problems, see Troubleshooting Copy/Monitor Issues.

Troubleshooting Copy/Monitor Issues

This section provides solutions to issues that you may encounter when using the Copy/Monitor tool to monitor changes to elements.

Topics in this section

- Cannot See Monitored Elements in View

- Coordination Monitor Alert
- Instance of Linked RVT File Needs Coordination Review
- Site Plan Was Deleted
- Walls Copied to Revit Structure Are Inaccurate

Cannot See Monitored Elements in View

Symptom: You used the Copy/Monitor tool to monitor elements, but you cannot see them in the current view.

Issue: The Copy/Monitor tool is typically used to coordinate changes made by teams of different disciplines (architectural, structural, and MEP). By default, many project views display only elements related to the relevant discipline. For example, in Revit Structure, structural plans only display structural elements; they do not display architectural elements.

Solution: To ensure that you can see all types of elements in a view, change the discipline for the view:

1. Open a project view where you expect to be able to see the monitored elements.

2. Click View tab ➤ Graphics panel ➤ View Properties.

3. In the Properties dialog, for Discipline, select Coordination.

    This setting ensures that the view displays elements for all disciplines (architectural, structural, mechanical, and electrical).

If you still cannot see the monitored elements:

1. Click View tab ➤ Graphics panel ➤ Visibility/Graphics.

2. On the Model Categories tab, make sure that the desired elements are selected in the Visibility column.

3. On the Revit Links tab, make sure that the linked file is selected in the Visibility column.

Coordination Monitor Alert

Warning: Coordination Monitor alert

Issue: This warning displays when a monitored element has been moved, changed, or deleted.

Solution: Perform a coordination review to identify the changes, and then take action to address them. See Reviewing Warnings for Monitored Elements.

Instance of Linked RVT File Needs Coordination Review

Warning: Instance of linked .rvt file needs Coordination Review.

Issue: This warning displays when you open, load, or reload a project with monitored elements, and one or more of those elements have changed since the last time the project was opened or loaded.

Solution: Perform a coordination review to identify the changes, and take action to address them. See Reviewing Warnings for Monitored Elements.

Site Plan Was Deleted

Symptom: After deleting levels from a Revit Architecture project, the site view no longer exists.

Issue: When you delete all levels in a Revit Architecture project, the site view is also deleted.

Solution: Create a site view as follows:

1. Click View tab ➤ Create panel ➤ Plan Views drop-down ➤ Floor Plan.

2. In the New Plan dialog, clear Do not duplicate existing views.

3. Under Floor Plan views, select the level on which to base the site view.

4. Select the desired scale, and click OK.

5. In the Project Browser, rename the newly created floor plan view to **Site**.

6. Open the Site view.

7. Click View tab ➤ Graphics panel ➤ View Templates drop-down ➤ Apply new template to current view.

8. In the Apply View Template dialog, under View Templates, select Site Plan.

9. Under View Properties, change any view properties as desired for the site view.

10. Click OK.

Walls Copied to Revit Structure Are Inaccurate

Symptom: Walls copied from Revit Architecture to Revit Structure are not positioned properly.

Issue: When you copied a wall from Revit Architecture to Revit Structure, you changed the wall type to represent the structural core. However, the copied walls do not align with the core of the architectural walls.

This problem occurs because a copied wall is positioned based on the centerline of the wall, not the centerline of the core of the wall. If the centerline of the structural wall does not match the centerline of the architectural wall, the copied walls are not positioned properly.

Solution: To avoid this problem, you can do either of the following:

- Use the architectural wall type for the copied walls in the structural model.

- Do not use Copy/Monitor to copy walls into the structural model. Instead, do the following in the

structural model:

1. Create a wall style that represents only the structural core of the wall.

2. Link the architectural model into the structural model, and pin it in place.

3. Using the new structural wall type, manually trace new walls over the architectural walls in the linked model.

4. Use the Align tool to align and constrain the walls in the structural model to the walls in the architectural model.