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CROWN SYSTEMS

AUTODESK REVIT MEP ADVANCED – ELECTRICAL SYSTEMS

STUDENT GUIDE
V 2014

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PREFACE

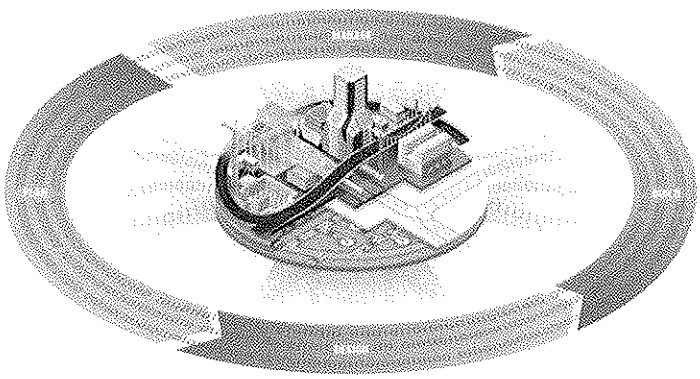
BIM:
BUILDING INFORMATION MODELLING

Building Information Modelling (BIM) is an approach to the entire building life cycle. Autodesk® Revit® Architecture, Autodesk® Revit® MEP, and Autodesk® Revit® Structure are powerful BIM programs that support 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 elements. Having this in place makes the process of any new project flow smoothly and efficiently.

The objective of this training guide is to enable students who have worked with the software to expand their knowledge in setting up office standards with templates that include annotation styles, pre-set views, sheets, and schedules, as well as creating custom element types and families.

BIM for MEP Engineers

- Visualize, simulate and analyse MEP designs before they are built, more clearly Communicating your design intentions and using real-world engineering information
- Analyse energy usage to support sustainable building design objectives and industry requirements.
- Reduce design conflicts with real-time clash and interference detection.



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CHAPTER 1

Creating MEP Project file

In this chapter you learn how to create MEP project using specified template, Linking Architecture / Structure Model, perform monitoring of link file and getting the project coordinates established by the architect

This chapter discuss:

- **Creating a New (MEP) Project**
- **Linking Revit File**
- **Copy / Monitoring of a Link File**
- **Acquiring coordinates**
- **Creating working view**
- **Importing CAD**

AUTODESK. IDAT Precast Solutions TILOS asia powerproject ORACLE PRIMAVERA BIM Estimating with CostOS EM:Systems Novade CM:C

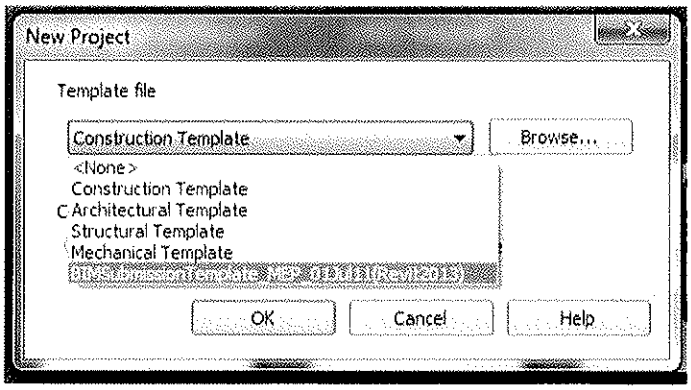
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1.1 Creating New Project (MEP)

MEP projects are typically created using linked architectural models. Plenums and chases should be included when analyzing heating and cooling loads for a project. Consequently, it's often necessary to add levels to the architectural model so that you can recognize the entire volume of an MEP project.

To create a project using a template

1. Click ▸ New ▸ (Project).
2. In the New Project dialog, under Template file, do one of the following:
   - Select a template from the list.
     BIMSubmissionTemplate_MEP_01Jul11(Revit2013)
   - Click Browse, navigate to the desired template (an RTE file), and click Open.



1.2 Linking Architectural / Structural Model

You link a project file using the Import/Link RVT dialog box. While linking, use shared coordinates, origin-to-origin, or center-to-center positioning to specify the location of the linked model in the host project.
When you link an Autodesk® Revit® Architecture or Revit Structure project file, its path is saved in the host Revit MEP project file. After linking, if the linked project file changes, you can reload it in the host project file to view the updated linked project file. If the path of the linked project file changes, you can update its path in the host project file using the Manage Links dialog box. You can access the Manage Links dialog box by selecting Manage Links on the Manage Project panel of the Manage tab or on the Link panel of the Insert tab.

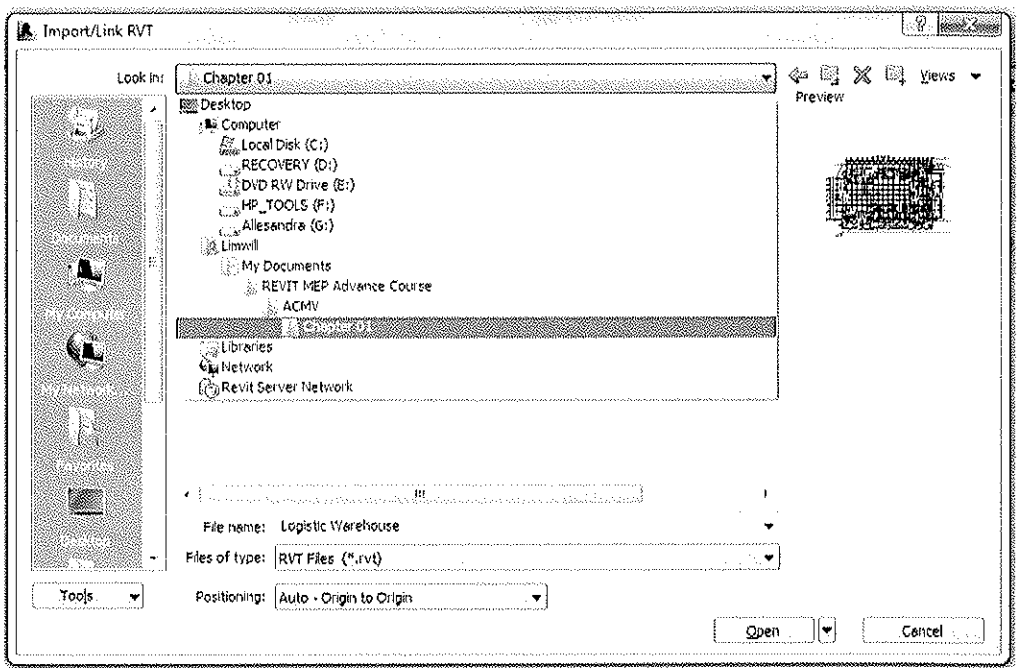
To link Architecture / Structure model

1. Continue working on the New project file and switch to floor plan view in project browser **Floor Plan:PUB-WATER_FP_1ST STOREY**

2. Click Insert tab ➢ Link panel ➢ (Link Revit).

3. In the Import/Link RVT dialog, navigate the select the model to link.

   Logistic Warehouse.rte



4. For Positioning select Auto - Origin to Origin

5. Click Open.

6. On the Quick Access toolbar, click (Save) to save the project

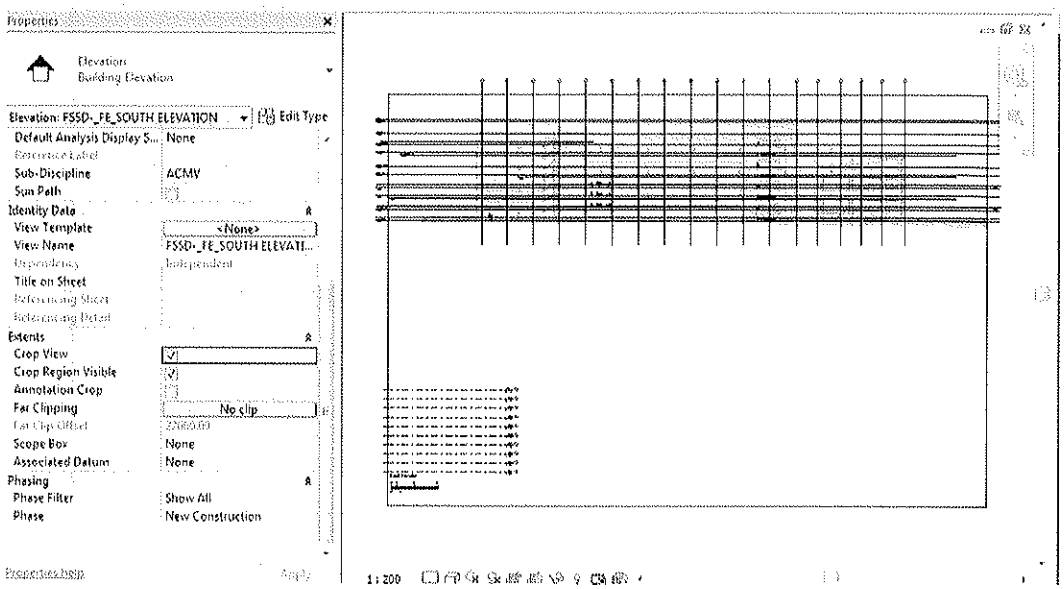
7. Continue working on the new project file and switch the view to **FSSD-_FE_SOUTH ELEVATION** in project browser, zoom in to display both the linked Revit and the datum level of the project

8. Click to select the linked Revit file and key in **PN** (PIN) to pin the model to prevent the linked file to move from the current position.

9. the empty space of model view to deselect the linked model and change the View Scale to 1:200 in the properties under Graphics category or in the view control bar

10. Click on the empty space of model view to deselect the linked model and change the View Scale to 1:200 in the properties under Graphics category or in the view control bar

11. Enable the Crop Region Visible on the properties dialog box and adjust crop window to extents only the linked model and project datum level



12. Click Modify tab ➤ Modify panel ➤ (Align) to align Datum **Level 1** of the project to the **1st STOREY LEVEL** of the Architecture link file, rename Level 1 to 1st STOREY LEVEL and on the project browser rename the view to

13. Continue with Align tool select the **2nd STOREY LEVEL** of the Architecture link and click to select the Datum **Level 2** of the project and rename it 2nd STOREY LEVEL

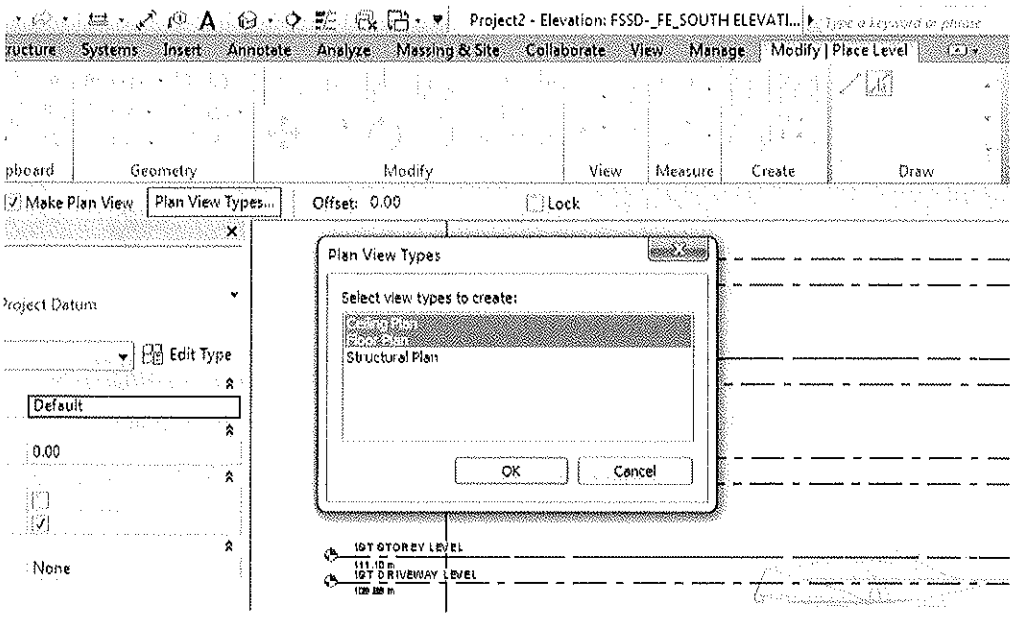
14. Do the same procedure on the ff. Datum Level and consider renaming also the view in project browser. Refer on the table below.

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Project Datum Level	Align to : Archi Storey Level	Level New Name	Browser View Name
Level 1	1ST STOREY LEVEL	1ST STOREY LEVEL	FSSD-FP_1ST STOREY
Level 2	2ND STOREY LEVEL	2ND STOREY LEVEL	FSSD-FP_2ND STOREY
Level 3	3RD STOREY LEVEL	3RD STOREY LEVEL	FSSD-FP_3RD STOREY
Level 4	4TH STOREY LEVEL	4TH STOREY LEVEL	FSSD-FP_4TH STOREY
Level 5	1ST DRIVEWAY LEVEL	1ST DRIVEWAY LEVEL	FSSD-FP_1ST DRIVEWAY
Level 6	1ST STOREY MEZZ.2	1ST STOREY MEZZ.2	FSSD-FP_1ST STOREY MEZZ.2
Level 7	1ST STOREY MEZZ.1	1ST STOREY MEZZ.1	FSSD-FP_STOREY MEZZ.1
Level 8	2ND DRIVEWAY LEVEL	2ND DRIVEWAY LEVEL	FSSD-FP_2ND DRIVEWAY
Level 9	2ND STOREY MEZZ.2	2ND STOREY MEZZ.2	FSSD-FP_2ND STOREY MEZZ.2
Level 10	2ND STOREY MEZZ.1	2ND STOREY MEZZ.1	FSSD-FP_2ND STOREY MEZZ.1

15. On the ribbon, click (Level). To create additional datum Level from Link Architecture Level
    - Architecture tab ➢ Datum panel ➢ (Level)
    - Structure tab ➢ Datum panel ➢ (Level)

Pick Lines is selected as Draw option, offset is equals to zero and Make Plan view is enable with the ff. Plan view type is set



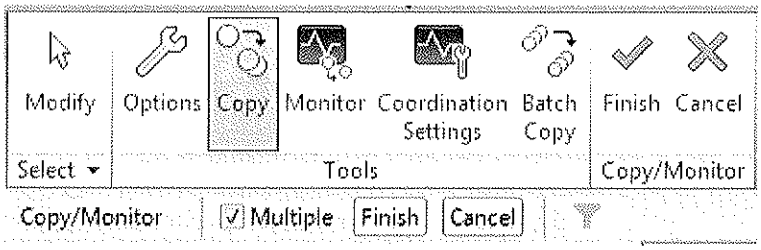
16. On the model view pick the Architectural Level to create additional Level for project and rename the new Level same on the label of link Architecture level

To COPY the Grids of the Link Architecture model

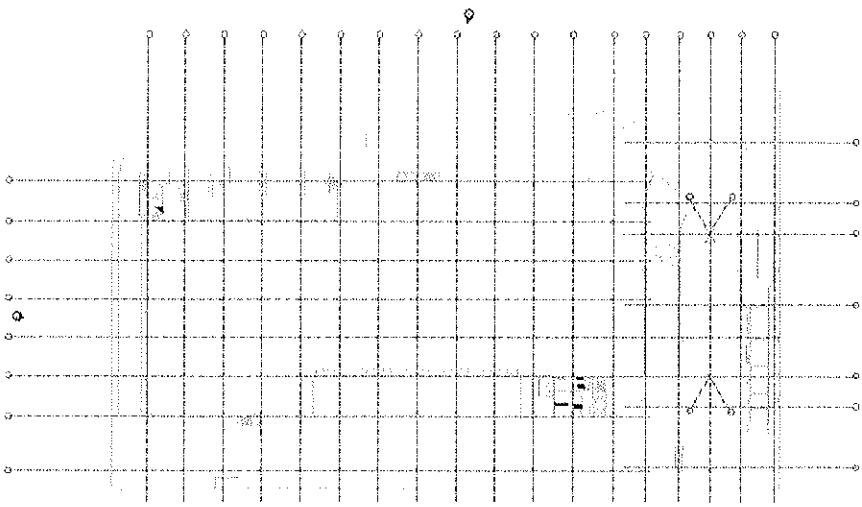
Continue working on the project file or open the project file from the training folder Chapter 1> **Copy_Monitor_Logistic Warehouse.rvt**

1. Open the FSSD-FP_1ST STOREY LEVEL on the project browser Click Collaborate tab ➤ Coordinate panel ➤ Copy/Monitor drop-down ➤ (Select Link).

2. Select the Link Architecture file, on the Copy/Monitor contextual tab select Copy option and select Multiple on the option bar

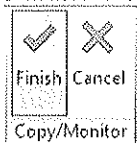


3. On the Model view select all the gridlines. Press **ctrl** on keyboard to allow multiple selection.



4. Click Finish 

on the option bar to finish the selection.

5. Click Finish on Copy/Monitor tab to finish action. 

1.4 Monitoring changes in Linked File

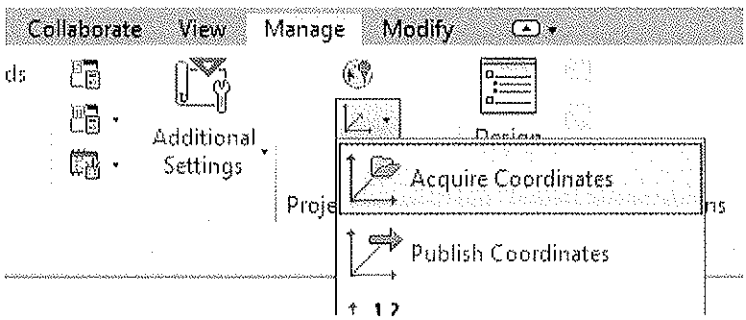
When you acquire coordinates from a linked Revit project, the shared coordinates of the linked project become the shared coordinates of the host project, based on the location of the linked project instance in the host project. There is no change to the host project's internal coordinates. The host project also acquires True North from the linked project. The origin of the linked project's shared coordinates becomes the origin of the host project's shared coordinates.

When a Revit Architecture project acquires coordinates from a linked DWG file, the World Coordinate System (WCS) of the selected linked DWG file becomes the shared coordinate system of the host Revit Architecture project, based on the location of the linked DWG instance. The Y axis of the DWG becomes True North, and the origin of the DWG becomes the origin of the shared coordinate system of the Revit Architecture project.

To acquire coordinates:

Continue working on the project file

1. Click Manage tab ➢ Project Location panel ➢ Coordinates drop-down ➢ Acquire Coordinates.



2. Place the cursor on a linked model instance, and click.

The host model file now has the same shared coordinates as the linked model file. If other loaded linked models share coordinates with the host model, they also acquire the new coordinates.

1.5 Visibility and Graphic Overrides in Linked Models

Linked models, like other elements, can modified by hiding individual elements And categories of elements, and overriding the display settings.

When a model is linked to a host project, any changes you make in the Visibility/Graphics Overrides dialog box (VG) are also made in the linked model by default. For example if you turn off the visibility of the Grids in the host project, it turns off the visibility of Grids both in linked model and project model.

To modify display Settings in a Linked View

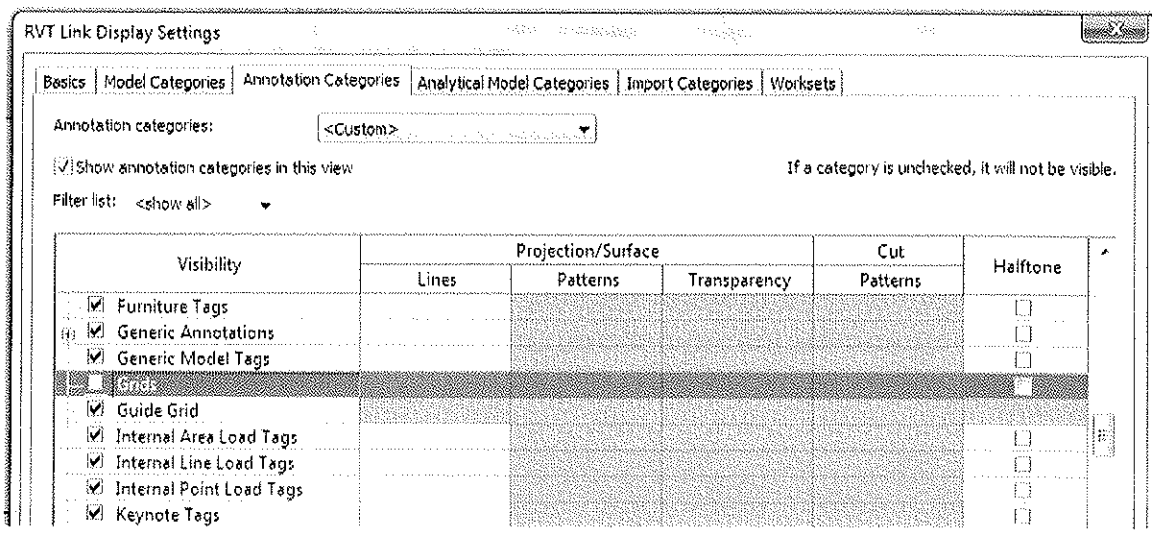
Continue working on the project file or open the project file from the training folder Chapter 1> **C01Visibility Settings_Logistic Warehouse.rvt**

1. Click View tab ➢ Graphics panel ➢ (Visibility/Graphics). Alternatively Type **VV** or **VG** to open Visibility/Graphics Overrides dialog box

2. Switch to Revit Link tab, select by **Host View** under Display Settings column

3. In RVT Link Display Settings under basic tab select **Custom** option. Click Annotation Categories and change **<By host view>** to **<Custom>**

4. Clear the visibility of Grids and click OK twice.



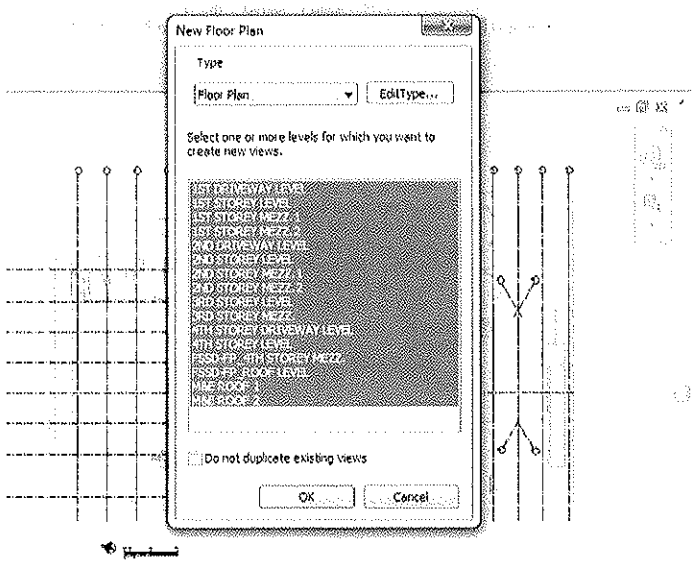
1.6 Creating Working Views

BCA template provide a set of views associated with datum level organize by approving agency. These views are refer as submission view where all the requirements stipulated by the agency should reflect on this views. However when developing the MEP service there is a lot of process and setting need to apply to the views and eventually change the arrangement of the views in browser.

Creating another instance of floor plan views /ceiling view in developing the ACMV is not mandatory but it is recommended as good practice to ensure the neatness and organize browser of the project.

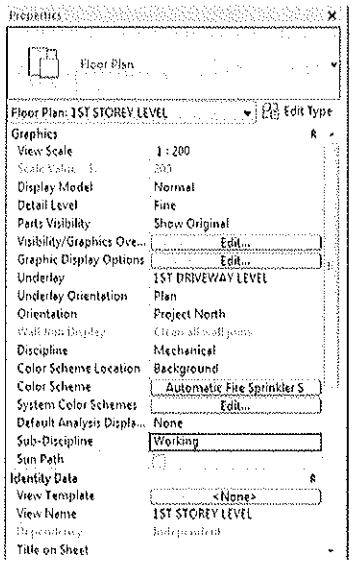
To create Floor plan/ RCP view

1. Click View tab ➢ Create panel ➢ Plan Views drop-down, and then click
   - (Floor Plan)
   - (Reflected Ceiling Plan)
2. In the New Floor Plan dialog:
   - To create a plan view for a level that has an existing plan view, clear Do not duplicate existing views.
   - Select one or more levels for which you want to create a plan view.

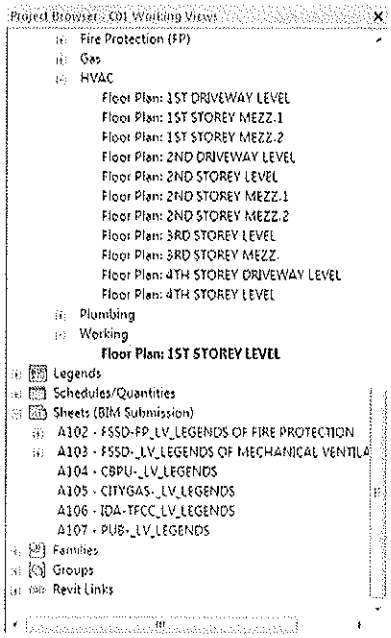


3. In the Project browser open the view **1ST STOREY LEVEL** under HVAC, this is the location of all new created Floor Plan is placed

4. In the Properties Dialog box apply a view template **Linked View FP** and click apply



- Remove the View Template applied by selecting <None> from the list.
- Change the Sub-Discipline **HVAC** to **Working** by Key-in the word Working and click apply. Notice in the project browser the view is move and create a new sub –discipline. Do the same process on the other view under HVAC.



1.7 Importing and Linking Vector Files

Revit enables you to import or link vector data from other CAD programs, such as AutoCAD (DWG and DXF), MicroStation® (DGN), and Trimble® SketchUp® (SKP and DWG). Revit supports importing most DGN surfaces and solids with the exceptions of cones, B-Spline surfaces, and SmartSolids.

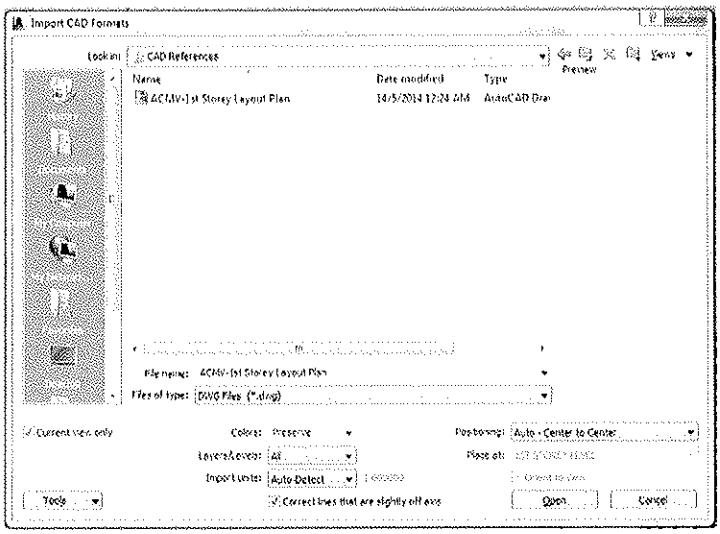
Revit does not internally use layers; however it can recognize layers and its information is retained.

To Import CAD file

Continue working on the project file or open the project file from the training folder Chapter 1> **C01 Importing CAD**

1. Click Insert tab ➤ (Import CAD), or click Insert tab ➤ Link panel ➤ (Link CAD). If you link the file instead of importing it.
2. In the Import CAD Formats or Link CAD Formats dialog, navigate to the training folder Chapter 1 > Cad references> **ACMV–1st Storey Layout Plan.dwg**
3. Set the ff. settings on Import Cad Formats dialog box

- Colors: Preserve
- Layers/Level: All
- Import units: Auto-Detect
- Positioning: Center to Center
- Place at: 1ST STOREY LEVEL
- Current view only is enable



Process: Creating Project File

The following illustration shows the process of creating project file

STEPS	Notes & Setting
Create New Project	➢ Use BCA MEP Submission template. (rte)
Link the Architecture / Structure Model	➢ Positioning is origin to origin
Align Project Level to Link Model Level	➢ Positioning is origin to origin ➢ Pin the Link Model ➢ Use Align tool
Create Additional Level / Delete unnecessary level	
Perform Copy /Monitor on Levels & Grids	➢ Select Multiple option to allow multiple selection
Create Working View	
Import CAD (optional)	

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CHAPTER 2

Project Title block

In this chapter you learn how to edit and modify title block that will use on the project, modifying text and label, Inserting raster image and Manage project Information.

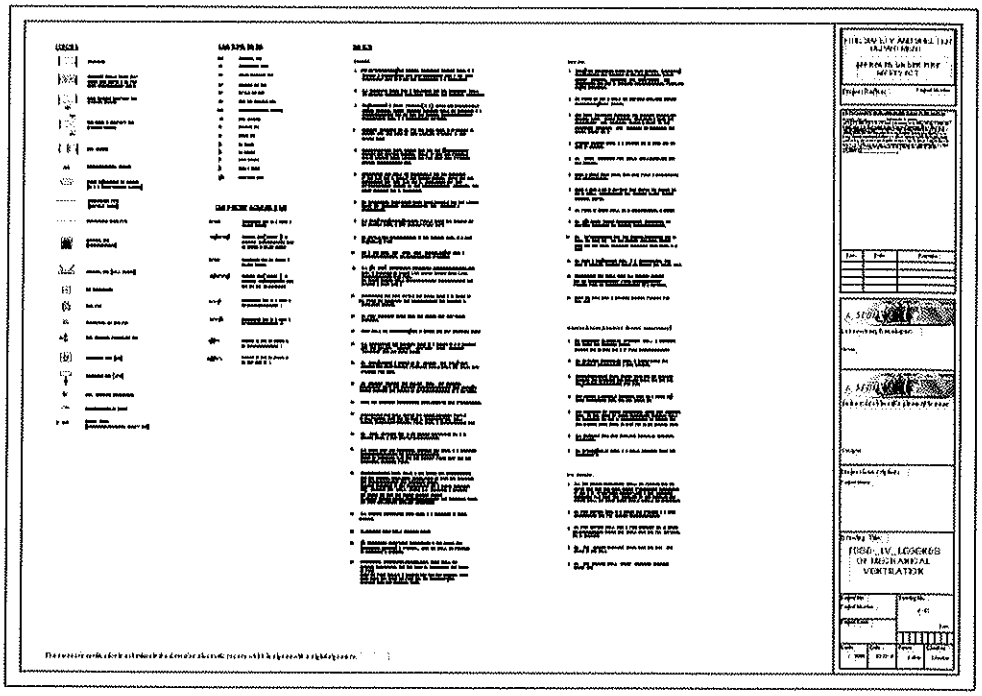
This chapter discuss:

- Editing Titleblock
- Adding Image on sheet
- Creating Text and labels

2.1 Editing Titleblock

BCA Template for Submission provide a preloaded Titleblock that you can use to generate drawing sheet of the project, you can modify or edit this title block to suite on your organization standard as well as conforming on the authorities requirements

Below graphics is the sample Titleblock loaded on BCA template for submission.



To Edit the Titleblock

Continue working on the project file or open the project file from the training folder Chapter 2> **C02 Project Title block.rvt**

1. Open a sheet view **A103 - FSSD-_LV_LEGENDS OF MECHANICAL VENTILATION** under sheet category in the project browser.
2. Select the title block from View Window and click (Edit family) from contextual tab
3. Save the family title block by clicking » (Save As) » family

2.2 Adding Image to Sheet

You can import raster images to a project to use as background images or as visual aids needed during the creation of a model. By default, images are imported behind the model and annotation symbols; however, you can change the display order. You can import images into 2D views only.

To add image to sheet

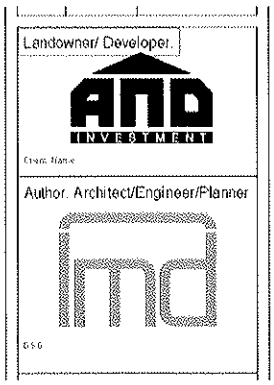
Continue working on the project file or open the project file from the training folder Chapter 2> **C02 Project Title block.rvt**

1. Zoom in to the right portion of the title block, select the two sample images and delete.
2. Click Insert tab ➤ Import panel ➤ (Image).

   Note: If the legacy details are stored using a CAD format, such as DWG, click Insert tab ➤ Import panel ➤ (Import CAD).
3. In the Import Image dialog, navigate to the location of the image file in training files Chapter 2 > **LMD logo.jpg**
4. Select the image file, and click Open.
5. Click in the drawing area to place the image on the sheet.

To reposition the image, drag it to the desired location on the sheet. To resize the image, select it and drag a blue corner dot, or enter the desired height and width on the Properties palette.

6. Import also the Image **AND logo.jpg**, if necessary adjust the location of text header to have a same result shown in graphics below



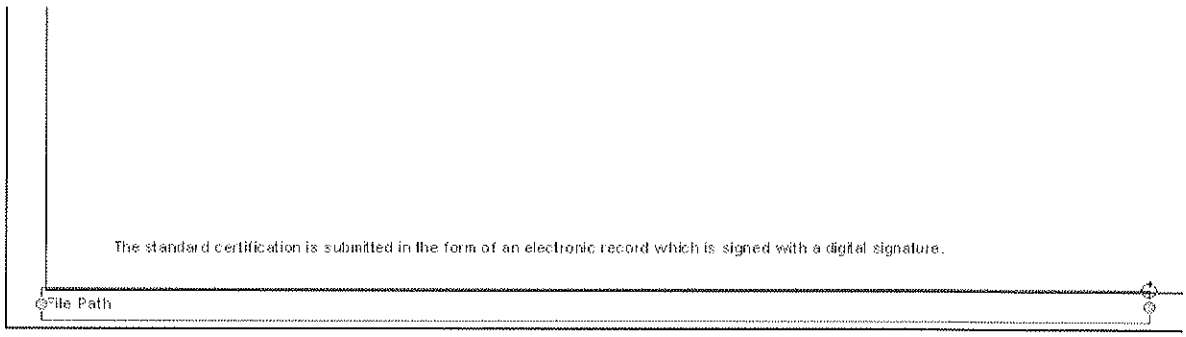
2.3 Annotation Text & Label

An annotation label is a text placeholder added to tags or title blocks. You create a label as part of a tag or title block family while in the Family Editor. When you place the tag or title block in the project, you place substitution text for the label, and the text appears as part of the family.

To place label to sheet

Continue working on the project file or open the project file and zoom in on the lower left part of the title block.

1. In the Family Editor, click Create tab ➤ Text panel ➤ (Label).
2. In the Type Selector, select the label type. **Label 4mm**
3. On the Format panel, select the vertical and horizontal justification.
4. In the drawing area, click to position the tag at lower left portion of the title block.
5. In the Edit Label dialog box select file path list of Category parameters and select add parameter(s) to label.
6. Drag the border of the label going to right.



7. Delete the text above the File path label and save the family to update.
8. Click (Load into Project) to enable to use this title block in the project.

2.4 Manage Project Information

In general, a title block contains placeholders for 2 types of information:

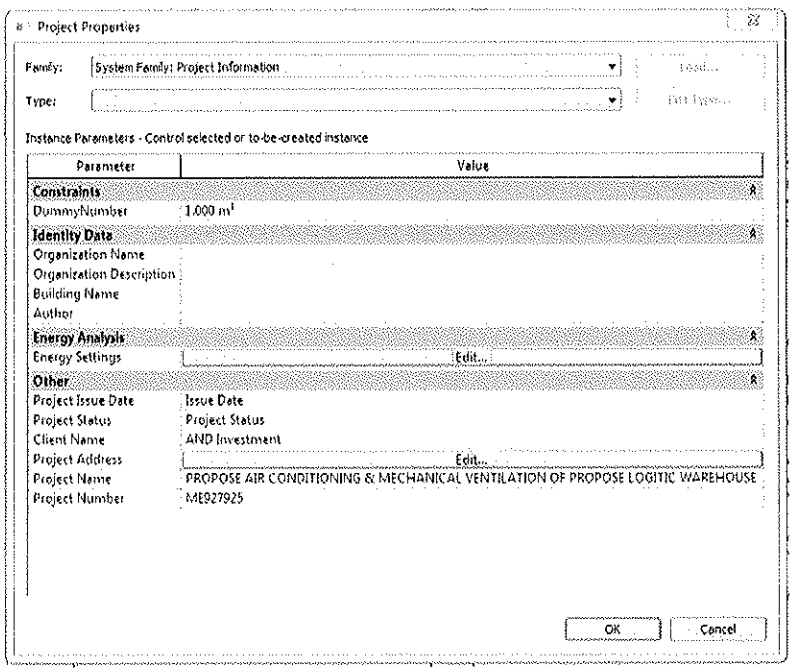
- **Project-specific information**. This information applies to all sheets in the project. Examples: project name, client information, project address.
- **Sheet-specific information**. This information differs for each sheet within a project. Examples: sheet name, sheet number, reviewer, sheet issue date.

When you add a sheet to a project, the project-specific information in the title block displays the appropriate information. You can enter the sheet-specific information directly on the sheet.

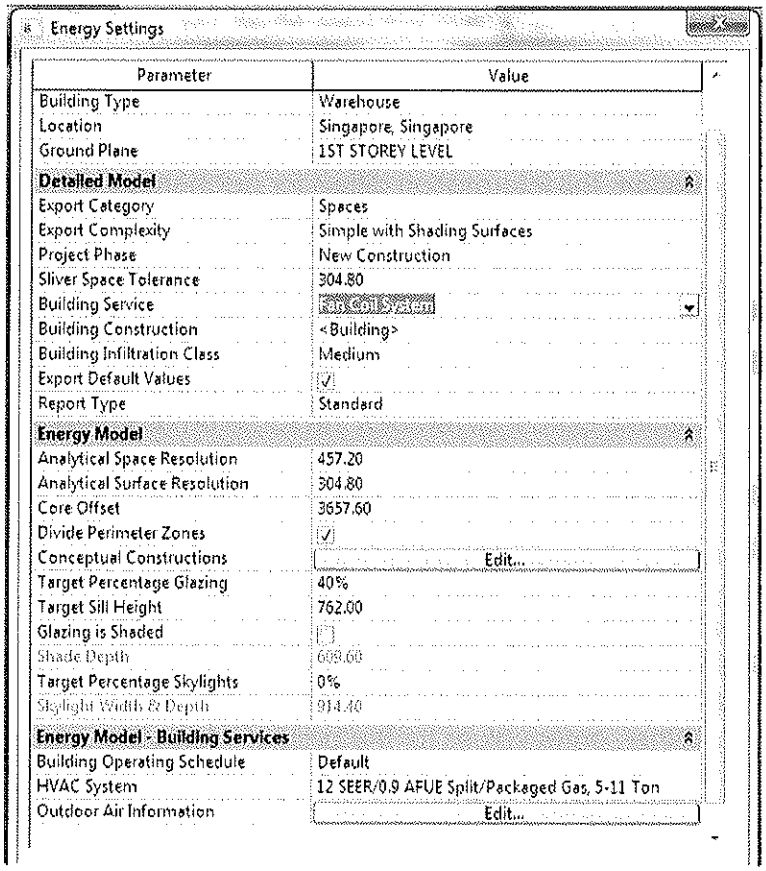
Project-specific information is data that remains the same on all sheets of a project. Examples include the project issue date and status, the client name, and the project's address, name, and number.

To update the title block of a sheet with project-specific information, open the project, and use either of the following methods:

- **Enter the information directly on a sheet.** Open a sheet. Click on the placeholder text for project-specific information in the title block. Update the text as desired.
- **Change project information settings.** Click Manage tab ➤ Settings panel ➤ (Project Information). Under Other, enter values for the project information parameters. Click OK.



Under Energy Analysis click Edit, enter values for the Energy Settings parameters. Click OK.



Revit updates all sheets in the project with the new information.

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CHAPTER 3

Creating Families

In this chapter you learn how to differentiate types of families the building blocks of Revit. Overview of the family editor tool, family template, Reference plane, Adding parametric controls on dimension and family connector and their properties

This chapter discuss:

- Family definition and types
- Overview of Family Editor
- Family Template
- Reference plane
- Adding Parameters
- MEP Connectors

3.1 Family definition and types

A *family* is a group of elements with a common set of properties, called parameters, and a related graphical representation. Different elements belonging to a family may have different values for some or all of their parameters, but the set of parameters (their names and meanings) is the same. These variations within the family are called *family types* or *types*.

In Revit, there are three types of families: Loadable, System, and In-place. The following table describes these types.

FAMILY TYPE	DESCRIPTION
Loadable	These families are created in the Family Editor and can be loaded into a project file
System	These families cannot be opened in the Family Editor. However, these families have specified parameters that can be manipulated in a project. You can transfer these families between projects. Examples of System families are duct, pipe, and walls.
In-Place	These families are created in a project in the context of a custom element with unique geometry that is not intended for reuse.

3.2 Family Editor

The Family Editor is a graphical editing mode in Revit that allows you to create and modify families to include in your project. When you start creating a family, you open a template to use in the editor. The template can include multiple views, such as plans and elevations. The Family Editor has the same look and feel as the project environment in Revit, but it features different tools. The availability of tools depends on the type of family you are editing.

Opening the Family Editor

Use the Family Editor to make changes to existing families or to create new families. The method you use for opening the Family Editor depends on what you want to do.

You use the Family Editor to create and edit loadable families and in-place elements. The tabs and panels change depending on the type of family that you are editing. You do not use the Family Editor to edit system families.

To edit a family from a project

Do one of the following:

- Select an instance of the family in the drawing area, and click Modify | <Element> tab ➤ Mode panel ➤ (Edit Family).
- In the Project Browser, right-click the family and click Edit.
- Double-click an instance of the family in the drawing area.

To edit a loadable family outside a project

1. Click ➤ Open ➤ Family.
2. Browse to the file containing the family, and click Open.

To create a loadable family from a template file

1. Click ➤ New ➤ Family.
2. Browse to the template file, and click Open.

To create an in-place element

- Systems tab ➤ Model panel ➤ Component drop-down ➤ (Model In-Place)

3.3 Family Templates

Family templates are pre-set groupings of parameters and views that aid in the creation of system specific families. After you select a template, Revit MEP starts the Family Editor and opens the commonly used views for that family creation. The template also includes common references that are required to create a family. The common references include reference planes to define the origin and sketching references, common dimensions to help capture design intent, and any solid geometry needed or commonly used to complete the family. The family template files are available in the Imperial Templates & Metric Templates folder.

The following table describes the different types of family templates.

FAMILY TEMPLATE	DESCRIPTION
Wall-based	The wall-based template is used for components inserted into walls. Wall components can include openings so that when you place the component on a wall, it also cuts an opening in the wall.
Ceiling-based	The ceiling-based template is used for components inserted into ceilings. Ceiling components can include openings so that when you place the component on a ceiling, it also cuts an opening in the ceiling.
Floor-based	These families are created in the Family Editor and can be loaded into a project file
Roof-based	The roof-based template is used for components inserted into roofs. Roof components can include openings so that when you place the component on a roof, it also cuts an opening in the roof.
Non-hosted	The non-hosted template is used for components that are not host dependent. A non-hosted component can appear anywhere in a model and can be dimensioned to other non-hosted or host-based components.
Face-based	The face-based template is used for creating workplane-based families that can modify their hosts. Families created from the template can make complex cuts in hosts. Instances of these families can be placed on any surface, regardless of its orientation. It is recommended that all families be created using the face-based template for working in a linked environment so that when there is an architectural design change, the plumbing fixtures that are hosted to the wall move with the wall.

3.4 Reference Plane

Reference planes are used to define relationships among the geometric components within the Family Editor. Reference planes are not displayed when a family is used in a building model, unless a defined relationship between a reference plane and geometry exists,

To create reference plane

1. On Family Editor: Create tab ➢ Datum panel ➢ (Reference Plane)
2. To draw a line:

   On the Draw panel, click (Line).

- In the drawing area, draw the reference planes by dragging the cursor.
- Click Modify to end the line.

To pick an existing line

On the Draw panel, click (Pick Lines).

1. On the Options bar, specify an offset, if desired.
2. Select the Lock option to lock the reference plane to the line.
3. Move the cursor near the line to which you want to place the reference plane and click.

3.5 Family Geometry

You can use both 2- and 3-dimensional geometry to create families. Create solid geometric shapes to represent the element that the family is intended to create. Use 2D line work to add detail to solid geometry in certain views or to create a symbolic plan representation of an element.

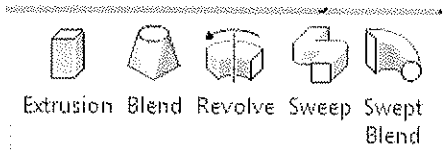
As you create the family geometry, you can specify the visibility, material, and an optional subcategory of the geometry. These settings determine how and when the specific geometric components of the family display.

To ensure the stability of each parametric family, build the family geometry incrementally, testing (flexing) the parametric relationships in each increment.

Methods of creating solid form

There are five (5) methods of creating solid form as the base of your family object, and each method uses a sketched 2D profile as the basis of the 3D shape.

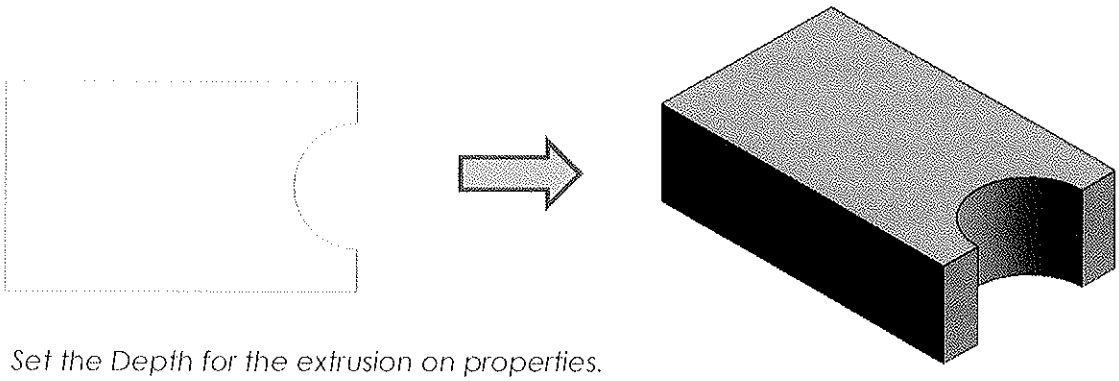
1. **Extrusion** pushes the profile out in one direction.
2. **Blend** links two profiles together.
3. **Revolve** rotates the profile around an axis.
4. **Sweep** extends a profile along a path.
5. **Swept Blend** connects two different profiles along a path.



Forms

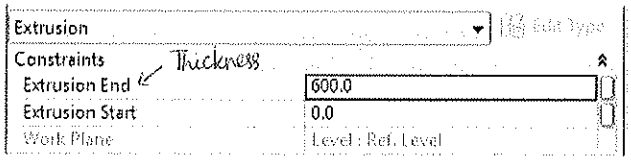
SOLID EXTRUSION

Extrude is the simplest of the four Solid Form Creation Methods. The use of this tool requires two distinct steps. *1. Sketch the profile that you wish to extrude.*



2. Set the Depth for the extrusion on properties.

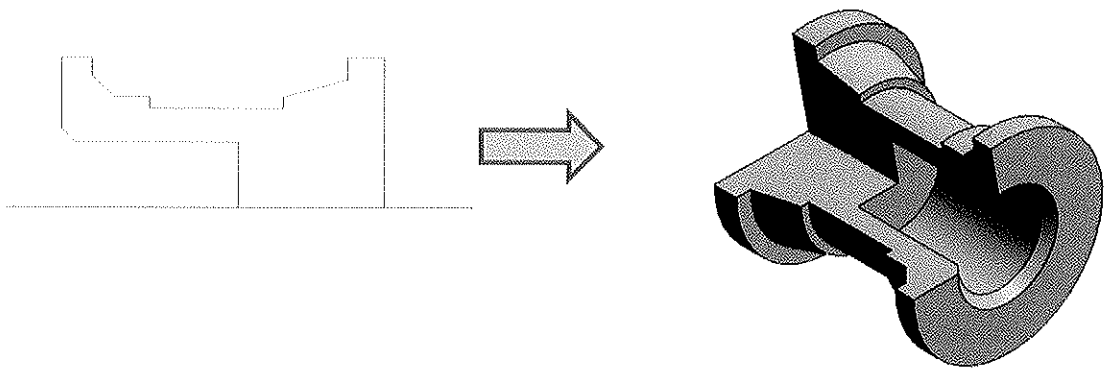
Note: You can also set the absolute Start and End for the extrusion



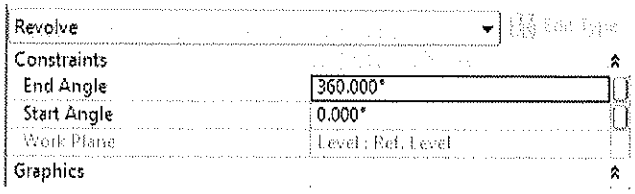
SOLID REVOLVE

This tool is allows you to define a close profile and then revolve this 2D shape around a central axis, to form a 3D mass. Examples of when you may need any object comeson cylindrical shape or dome

1. Sketch profile and define the axis (horizontal blue)



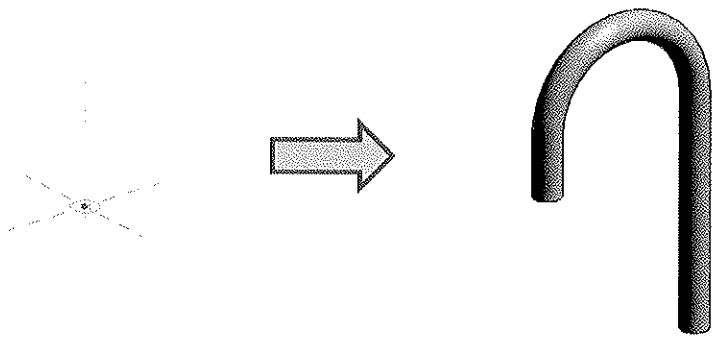
2. Set the End Angle of revolution on properties.



SOLID SWEEP

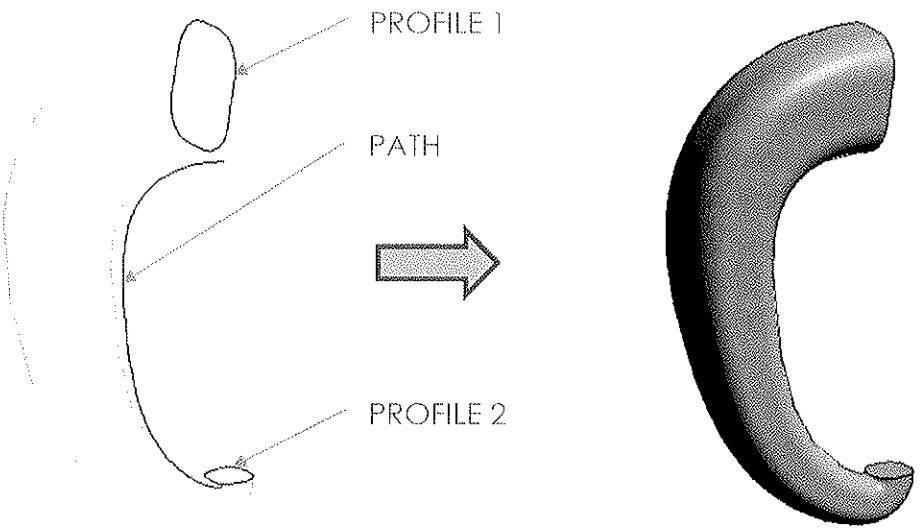
Along with Extrude, the Sweep tool will be used to create 95% of the geometry you need for your components. Using the Sweep tool is a two Step process. First of all we need to draw a 2D path along which our profile will be swept. Note: The 2D path does NOT need to be closed

Sketch path (grey) and the profile (magenta)



SOLID SWEPT BLEND

Creates a blend that sweeps along the defined **path.The** shape of the swept blend is determined by the starting shape, the ending shape and the 2D path that you specify.



CROWN SYSTEMS

CHAPTER 4

Electrical System

In this lesson you specify electrical settings, load the families containing the electrical components that will make up your electrical system, and create schedules that you will need to design the electrical systems for your project.

This chapter discuss:

- **Electrical Settings**
  - Wiring Type
  - Voltage Definition
  - Distribution System
  - Demand factor

- **Lighting Analysis**
  - Required Lighting Level
  - Assigning Lighting Level to spaces
  - Creating solid fill to present required & actual Lighting Level

- **Designing Electrical System**
  - Loading Electrical components
  - Placing Lighting Fixture and Switches
  - Placing Electrical receptacles & Equipment
  - Creating Electrical Logical System
  - Placing wiring
  - Creating Schedule

4.1 Electrical Setting

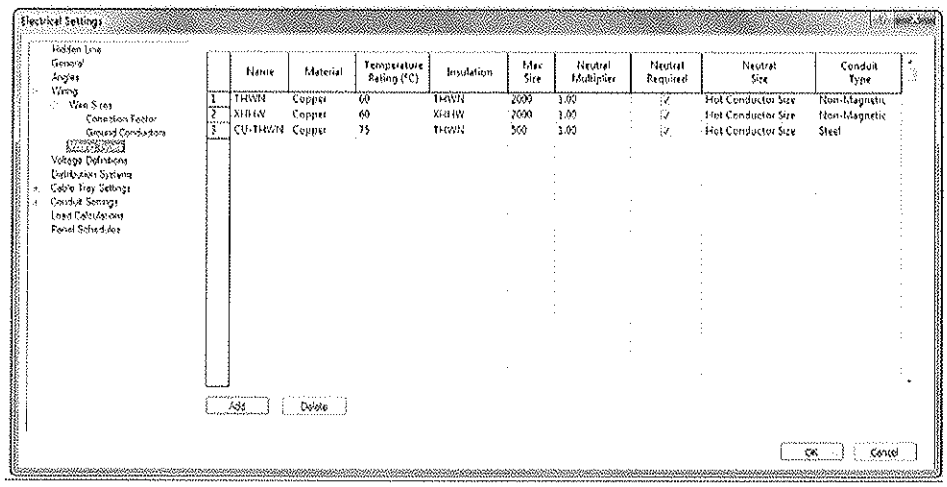
Electrical settings let you specify the voltages, power distribution systems, wiring, and demand factors that you will use in your project. Later, as you place components and create circuits in your electrical plan, Revit MEP checks to assure that those components are compatible with voltages and distribution systems that you specify here.

To specify the Wiring setting:

1. Click Manage tab ➤ Settings panel ➤ MEP Settings drop-down ➤ Electrical Settings.

1. In the Electrical Settings dialog, in the left pane, expand Wiring.
2. Click Wiring Types, and in the right pane, click Add (below the table).
3. Specify the following parameters for this wire type as follows:

Parameters	Value
Name	CU-THWN
Material	Copper
Temperature Rating	75
Insulation	THWN
Max. size	500
Neutral Multiplier	1.0
Neutral Required	check to select
Neutral Size	Hot Conductor
Conduit Type	Steel

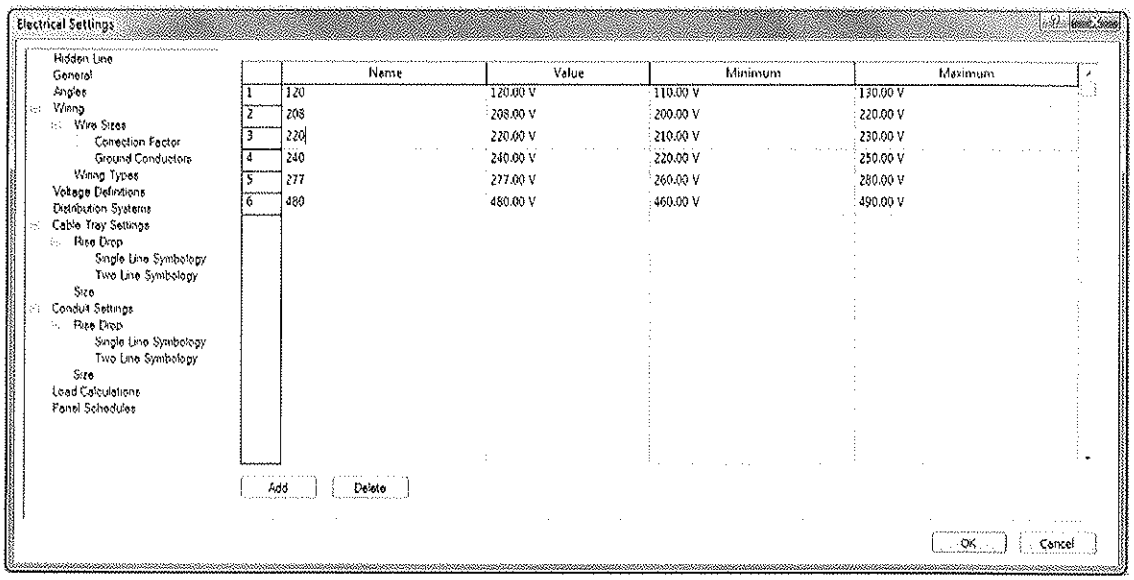


To specify the Voltage Definition:

1. In the tree view, click Voltage Definitions.
2. The Voltage Definitions table is where you specify a range of voltages that will be used with your Voltage Definitions. By specifying a range, you allow circuits to be created between components with rated voltages that do not precisely match the voltage definition value. For example, many components intended for use in a 120V circuit are rated anywhere from 110V to 130V. Regardless of the Name value for a voltage definition, the numeric value in the Value column is the actual voltage used for calculations involving this definition.

Verify that voltage definitions have been specified with the following parameters.

Name	Value	Minimum	Maximum
120	120.00V	110.00V	130.00V
208	208.00V	200.00V	220.00V
240	240.00V	220.00V	250.00V
220	220.00V	210.00V	230.00V
277	277.00V	260.00V	280.00V
480	480.00V	460.00V	490.00V

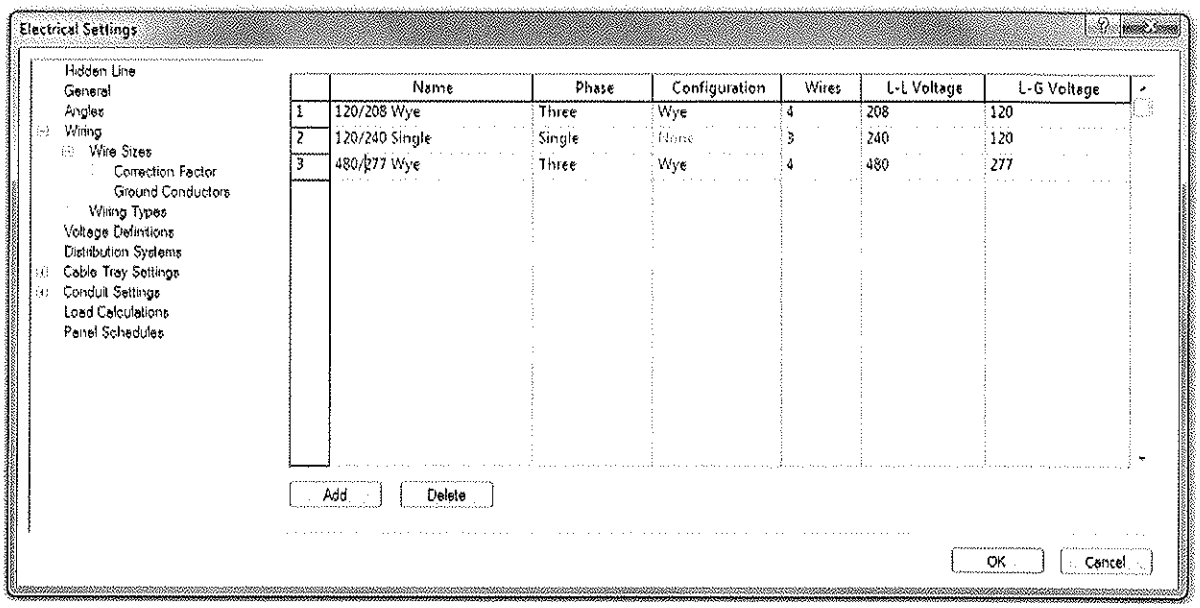


Note: Voltage definitions can be deleted only if they are not currently in use with any distribution system.

To specify the Distribution System:

1. In the tree view, click Voltage Definitions.
2. In the right pane, verify that distribution systems have been specified with the following parameters:

Name	Phase	Configuration	Wires	L-L Voltage	L-G Voltage
120/208 Wye	Three	Wye	4	208	120
120/240 Single	Single	None	3	240	120
480/277 Wye	Three	Wye	4	277	480



Note: Distribution systems can be deleted only if they are not currently assigned to any devices.

To specify the Distribution System:

1. Click Manage tab ➤ Settings panel ➤ MEP Settings drop-down ➤ Demand Factors.
2. You can specify a demand factor to calculate the estimated demand load on a circuit. The demand factor can be determined by

   - a constant value
   - the quantity of connected objects
   - load

4.1 Lighting Analysis

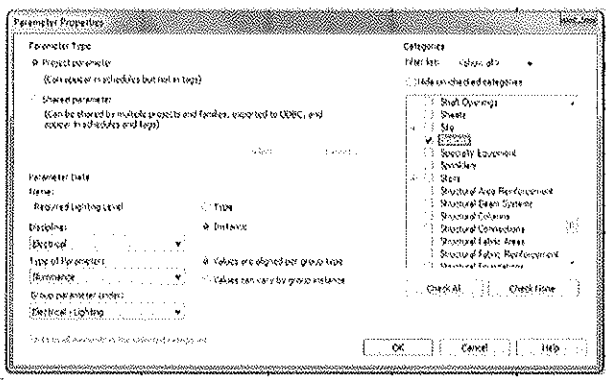
In this topic you specify the lighting levels that are required for the different spaces within the building. Particular lighting levels are generally specified for different types of spaces (offices, restrooms, conference rooms, and so on). You begin by adding a new Project Parameter (Required Lighting Level), then you create a Key Schedule (Lighting Level) that links your new parameter to the various types of spaces in your project. Key schedules provide an efficient way to create an instance parameter that can be used to map specific parameter values to particular key styles. In this case the key style is the type of space and, because the key is linked to your new project parameter, its value becomes to the **Required Lighting Level**.

Later, in the Creating a Space Schedule to Check Required Lighting Levels exercise, you will use the new parameter again to compare the value for **Required Lighting Level** against the **actual illumination** provided by fixtures that you place in the plan.

Before you can specify a lighting requirement for the spaces within your project, you must first create a parameter that will hold the value for the lighting requirement.

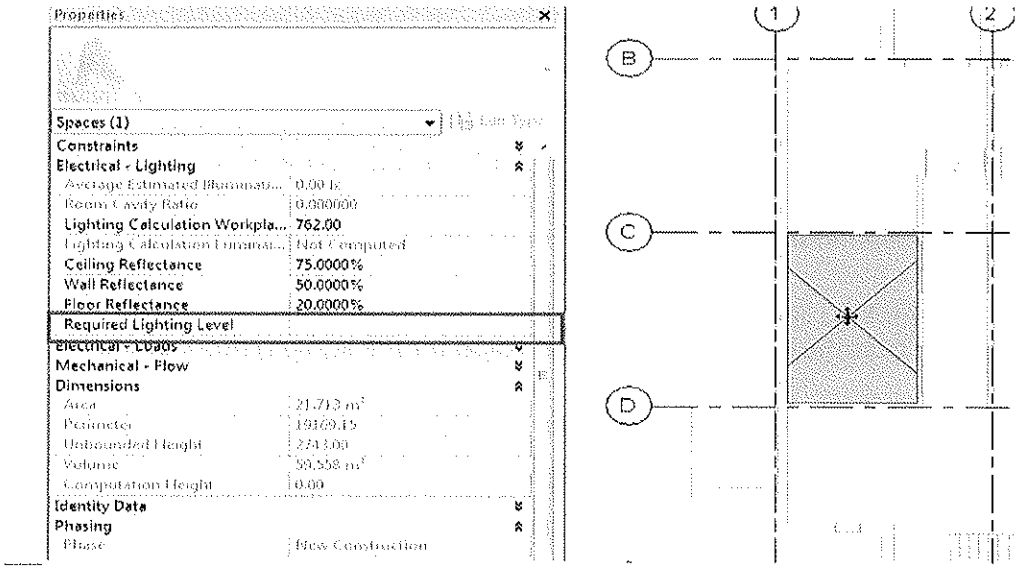
To Create a Required Lighting Level parameter

1. Click Manage tab ➤ Settings panel ➤ (Project Parameters).
2. In the Project Parameters dialog, click Add.
3. In the Parameter Properties dialog:
   - Verify that Project parameter is selected for Parameter Type.
   - Under Parameter Data, enter Required Lighting Level for Name.
   - For Discipline, select Electrical.
   - For Type, select Illuminance.
   - For Group, select Electrical-Lighting.
   - Select Instance.
   - Under Categories, select Spaces.
4. Click OK twice.



The new Required Lighting Level parameter is added to the list in the Project Parameters dialog and is now an instance parameter for Spaces under Electrical - Lighting in the Space Element Properties dialog.

The new parameter you have just created applies to all spaces in the project. To verify this, you can look at the properties for one of the spaces. (see picture below)



You could use your new parameter to enter a Required Lighting Level value in the Element Properties dialog for each space. However, there are many spaces in this project that have similar lighting requirements, and it is more efficient to create a key schedule and use it to assign Required Lighting Level values based on space type.

To create a key schedule

1. Click View tab ➤ Create panel ➤ Schedules drop-down ➤ Schedule/Quantities.
2. In the New Schedule dialog:
   - Select Spaces for Category.
   - For Name, enter Space Lighting Requirements.
     This name will appear as the title for the resulting schedule.
   - Click Schedule keys.
   - For Key Name, enter Lighting Levels.
     Lighting Levels is added as a new instance parameter for the space component. The value that you specify for each Key Name in the schedule will be used to determine the required lighting level for each space type.
3. Click OK.

Space Lighting Requirements	
Key Name	Required Lighting Level

4. On the Fields tab of the Schedule Properties dialog, select Required Lighting Level from the Available fields list, and click Add to add this field to the Scheduled fields (in order) list.
5. Click OK.
6. The key schedule displays in the drawing area.
7. Drag column borders horizontally to the desired column width.
8. On the Options Bar, click New 8 times to add 8 rows in the key schedule, one for each type of space in the building.
9. The new rows are added with 1 through 8 as the default Key Names
   Enter a space type in the Key Name column and a corresponding lighting level in the Required Lighting Level column for the different types of spaces in the project, according to the values in the following table

Key Name	Required Lighting Level
CIRCULATION	377 lx
CONFERENCE	377 lx
ELEC / MECH	215 lx
ENTRY	538 lx
MAINTENANCE	215 lx
OFFICE	323 lx
RESTROOM	323 lx
STORAGE	215 lx

Assigning Lighting Level to spaces

1. In the Project Browser, expand Views (Discipline) ➤ Electrical ➤ Lighting ➤ Lighting Analysis, double-click the 1ST STOREY ILLUMINATION floor plan to make it the active view.
2. Zoom in on the left portion of the building
3. Move the cursor over the space until a cross-hair displays, then right-click, and click Element Properties.
4. In the Element Properties dialog, under Instance Parameters, scroll down to the Identity Data category, and for Lighting Levels parameter, click , and select Open Office.
5. Scroll up to the Electrical - Lighting category, and notice that the value for Required Lighting Level is now 323 lx, the value that you entered for this space type in the key schedule. The value is grayed out and cannot be edited because you associated this parameter with the Key Name specified by the Space Lighting Requirements key schedule.

6. Click OK
7. Using the same method, continue applying Lighting Level keys to the remaining spaces (refer to the table below)

1st Level

Number	Name	Required Lighting Level	Lighting Level
Level 1			
3	VESTIBULE	536 lx	ENTRY
4	CONFERENCE	377 lx	CONFERENCE
5	CONFERENCE	377 lx	CONFERENCE
6	TRAINING	377 lx	CONFERENCE
7	MAIN	215 lx	MAINTENANCE
8	STAIR	377 lx	CIRCULATION
9	HALLWAY	377 lx	CIRCULATION
10	OFFICE	323 lx	OFFICE
11	CONFERENCE	377 lx	CONFERENCE
12	ELEC.	215 lx	ELEC / MECH
13	FEMALE	323 lx	RESTROOM
15	STO.	215 lx	STORAGE
16	VESTIBULE	536 lx	ENTRY
17	LIFT	377 lx	CIRCULATION
18	ELEC.	215 lx	ELEC / MECH
19	ATRIUM	536 lx	ENTRY
19	MALE	323 lx	RESTROOM
20	HALLWAY	377 lx	CIRCULATION
21	MECH.	215 lx	ELEC / MECH
22	OFFICE	323 lx	OFFICE
23	OFFICE	323 lx	OFFICE
24	CONFERENCE	377 lx	CONFERENCE
25	OFFICE	323 lx	OFFICE
26	OFFICE	323 lx	OFFICE
27	OFFICE	323 lx	OFFICE
28	OFFICE	323 lx	OFFICE
55	STAIR	377 lx	CIRCULATION

2nd Level

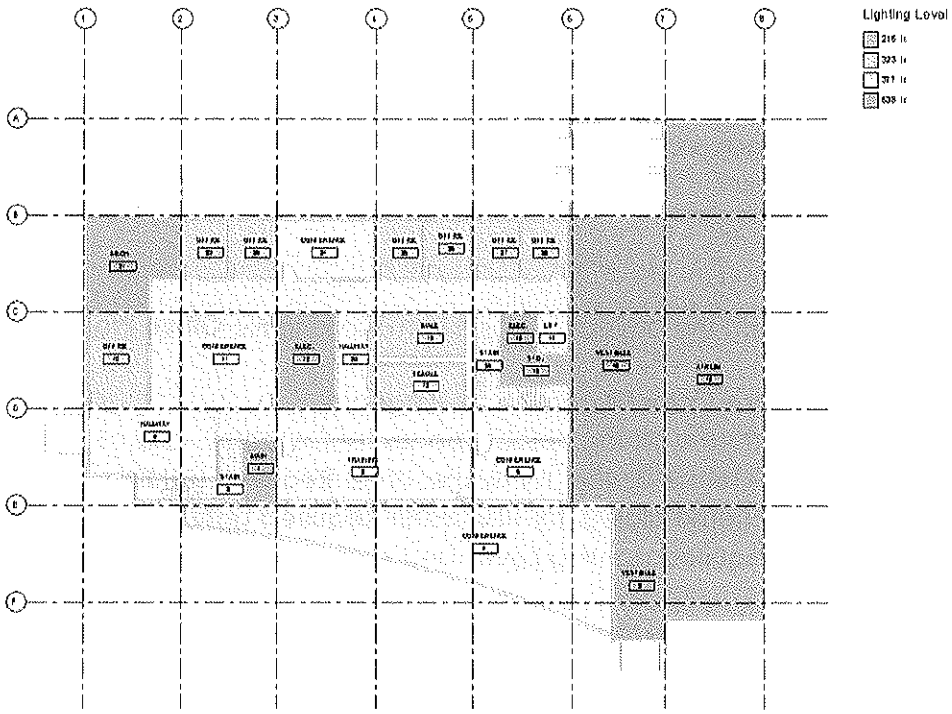
Number	Name	Required Lighting Level	Lighting Level
Level 2			
30	TRAINING	377 lx	CONFERENCE
31	CONFERENCE	377 lx	CONFERENCE
32	TRAINING	377 lx	CONFERENCE
33	MAIN	215 lx	MAINTENANCE
36	ELEC.	215 lx	ELEC / MECH
37	CONFERENCE	377 lx	CONFERENCE
38	CONFERENCE	377 lx	CONFERENCE
41	STO.	215 lx	STORAGE
42	LIFT	377 lx	CIRCULATION
43	ELEC.	215 lx	ELEC / MECH
44	HALLWAY	377 lx	CIRCULATION
45	MALE	323 lx	RESTROOM
46	MECH.	215 lx	ELEC / MECH
46	FEMALE	323 lx	RESTROOM
47	OFFICE	323 lx	OFFICE
48	OFFICE	323 lx	OFFICE
49	CONFERENCE	377 lx	CONFERENCE
50	OFFICE	323 lx	OFFICE
50	HALLWAY	377 lx	CIRCULATION
51	OFFICE	323 lx	OFFICE
52	OFFICE	323 lx	OFFICE
52	STAIR	377 lx	CIRCULATION
53	OFFICE	323 lx	OFFICE
53	STAIR	377 lx	CIRCULATION
79	CONFERENCE	377 lx	CONFERENCE

Creating Space Color Fills According to Required Lighting Levels

Revit MEP lets you add color fills to spaces based on specific space parameters. Space color fills can be helpful as a design tool and as a design communications document. In this exercise you will create a space color fill using the lighting levels that you specified in the previous exercise. Space color fills can be used with any parameter that exists on the space components.

To Add color fill

1. Continue working on the project or open from working file **Office Project - Lighting Level.rvt**
2. Click Annotate tab ➤ Color Fill panel ➤ (Legend).
3. In the Edit Color Scheme dialog, select Spaces for Category, and click (Duplicate).
4. In the New Color Scheme dialog, for Name, enter **Required Lighting**, and click OK.
5. In the Edit Color Scheme dialog, for Title, enter **Required Lighting Levels.**
6. For Color, select Required Lighting Level, and click OK to dismiss the alert message.
7. Click OK.
8. On the Drafting tab on the Design Bar, click Color Scheme Legend, and place it in the drawing.
9. In the Choose Color Scheme dialog:
   - For Space Type, select Spaces,
   - For Color Scheme, select Required Lighting
10. Click OK.
11. Right-click the color scheme legend, and click Element Properties.
12. In the Element Properties dialog, click Edit/New.
13. In the Type Properties dialog, specify the following Type Parameters:
    - Under Graphics, select Show Title.
    - Under Title Text, select Underline.
14. Click OK twice.
15. Drag the color scheme legend preview to the lower-left corner of the plan.
16. The color scheme for the 1ST STOREY ILLUMINATION plan should now look something like the image on next page.



17. Make the **2ND STOREY ILLUMINATION** the active view.
18. Using the same method, activate the color scheme as you did for **1ST STOREY ILLUMINATION**

    Notice that the color scheme you created is still in effect. This is because the color scheme is a type within the project. You can have more than one color scheme in the project, but only one per view.

19. Save the file.

Creating a Space Schedule to Check Required Lighting Levels

In this exercise you create a space lighting analysis schedule that you will use as a check document rather than as a construction document. Your schedule will compare the actual lighting levels in each space against the required lighting levels that you specified in the Defining Required Lighting Levels exercise. As you place lighting fixtures in the spaces in your project, you will refer to the schedule to assure that the lighting level falls within the +/- 55 lx range specified in the schedule.

To create space lighting analysis schedule

1. Click View tab ➤ Create panel ➤ Schedules drop-down ➤ Schedule/Quantities.
2. In the New Schedule dialog

   - Under Category, select Spaces.
   - For Name, enter Space Lighting Analysis
   - Verify that Schedule building components is selected.
   - Click OK.

3. On the Fields tab of the Schedule Properties dialog, scroll down the Available fields list, double-click the following fields to add them to the Scheduled fields (in order) list:

   - Number
   - Name
   - Required Lighting Level
   - Average Estimated Illumination
   - Ceiling Reflectance
   - Wall Reflectance
   - Floor Reflectance
   - Lighting Calculation Workplane

4. In the middle of the Schedule Properties dialog, click Calculated Value.
5. In the Calculated Value dialog:

   - For Name, enter Lighting Delta.
   - For Discipline, select Electrical.
   - For Type, select Illuminance.
   - For Formula, enter Average Estimated Illumination - Required Lighting Level.

NOTE Formulas are case sensitive

6. Click OK.
7. The Lighting Delta parameter is added to the Scheduled fields list.
8. On the Sorting/Grouping tab:

   - For Sort by, select Number.
   - Verify that Ascending is selected.
   - Verify that Itemize every instance is selected.

9. On the Formatting tab, under fields, select Lighting Delta.
10. Click Conditional Format.

11. In the Conditional Formatting dialog:

    - For Field, select Lighting Delta.
    - For Test, select Not Between.
    - For Value, enter -55 lx and 55 lx in the text boxes.

12. Click the Background Color chip.
13. In the Color dialog, under Basic colors, click the red color chip.
14. Click OK twice.
15. On the Formatting tab, under Fields, select Ceiling Reflectance, and click Field Format.
16. In the Format dialog:

    - Clear Use default settings.
    - For Units, verify that Fixed is selected.
    - For Rounding, select 2 decimal places.

17. Click OK.
18. Using the same method, specify rounding to 2 decimal places for the Wall Reflectance and Floor Reflectance fields.
19. Click OK.

<Space Lighting Analysis>

A	B	C	D	E	F	G	H	I
Number	Name	Required Lighting	Average Estimate	Ceiling Reflectanc	Wall Reflectance	Floor Reflectance	Lighting Calculatio	Lighting Delta
Level 1								
21	MECH.	215 lx	0 lx	0.75	0.50	0.20	762	-215 lx
22	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
23	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
24	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
25	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
26	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
27	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
28	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
10	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
11	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
12	ELEC.	215 lx	0 lx	0.75	0.50	0.20	762	-215 lx
19	MALE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
13	FEMALE	323 lx	0 lx	0.75	0.50	0.20	762	-323 lx
16	ELEC.	215 lx	0 lx	0.75	0.50	0.20	762	-215 lx
17	LIFT	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
15	STO.	215 lx	0 lx	0.75	0.50	0.20	762	-215 lx
16	VESTIBULE	538 lx	0 lx	0.75	0.50	0.20	762	-538 lx
18	ATRIUM	538 lx	0 lx	0.75	0.50	0.20	762	-538 lx
3	VESTIBULE	538 lx	0 lx	0.75	0.50	0.20	762	-538 lx
9	HALLWAY	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
20	HALLWAY	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
6	TRAINING	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
5	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
8	STAIR	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
7	MAIN	215 lx	0 lx	0.75	0.50	0.20	762	-215 lx
4	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx
55	STAIR	377 lx	0 lx	0.75	0.50	0.20	762	-377 lx

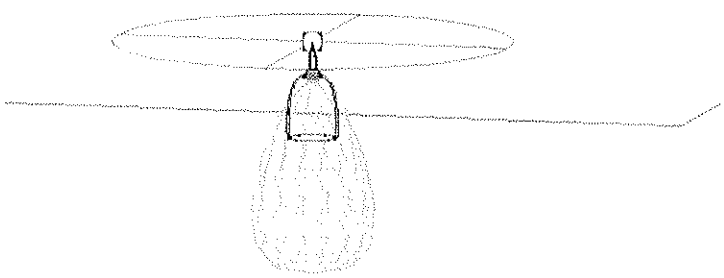
<Space Lighting Analysis>

A	B	C	D	E	F	G	H	I
Number	Name	Required Lighting	Average Estimate	Ceiling Reflectanc	Wall Reflectance	Floor Reflectance	Lighting Calculatio	Lighting Delta
Level 2								
46	MECH.	215 lx	0 lx	0.75	0.50	0.20	762	
47	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
48	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
49	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	
50	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
51	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
52	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
53	OFFICE	323 lx	0 lx	0.75	0.50	0.20	762	
42	LIFT	377 lx	0 lx	0.75	0.50	0.20	762	
43	ELEC	215 lx	0 lx	0.75	0.50	0.20	762	
41	STO.	215 lx	0 lx	0.75	0.50	0.20	762	
31	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	
32	TRAINING	377 lx	0 lx	0.75	0.50	0.20	762	
36	ELEC.	215 lx	0 lx	0.75	0.50	0.20	762	
37	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	
38	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	
44	HALLWAY	377 lx	0 lx	0.75	0.50	0.20	762	
45	MALE	323 lx	0 lx	0.75	0.50	0.20	762	
46	FEMALE	323 lx	0 lx	0.75	0.50	0.20	762	
33	MAIN	215 lx	0 lx	0.75	0.50	0.20	762	
50	HALLWAY	377 lx	0 lx	0.75	0.50	0.20	762	
79	CONFERENCE	377 lx	0 lx	0.75	0.50	0.20	762	
52	STAIR	377 lx	0 lx	0.75	0.50	0.20	762	
53	STAIR	377 lx	0 lx	0.75	0.50	0.20	762	
30	TRAINING	377 lx	0 lx	0.75	0.50	0.20	762	

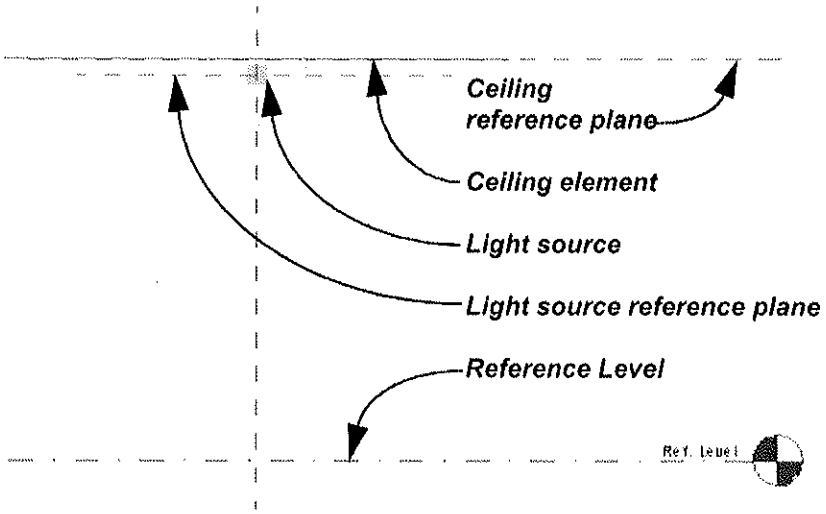
20. Save the project.

Creating a Custom Lighting Fixture family

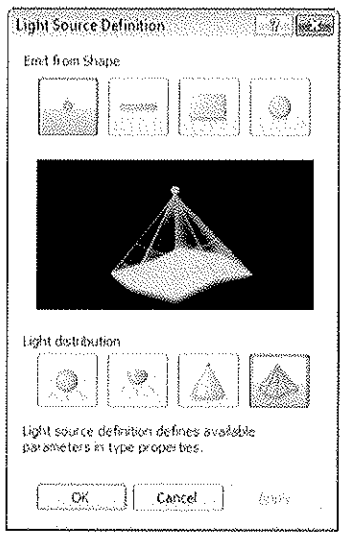
In this practice you will create a new lighting fixture family, modify the light source, create geometry for a pendant and glass shade, and apply a connector, as shown in Figure below. If you have time you can load materials and create family types using Different materials



1. Start a new family based on the **Metric Lighting Fixture ceiling based.rft** template, found in your class folder.
2. Open the Front elevation view. It includes reference planes for the Ceiling and Light Source, a ceiling element, and the Ref. Level as shown in below.



3. Select the light source. In the Modify | Light Source tab > Lighting panel, click (Light Source Definition).
4. In the Light Source Definition dialog box, change the Light distribution to (Photometric Web), as shown in picture below and click OK.



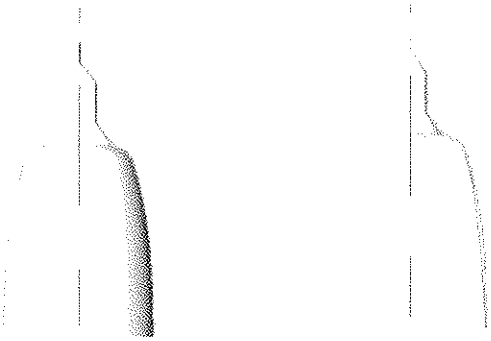
5. Open the Family Types dialog box and set the following values for the parameters:

   - Lamp: CF42TRT
   - Apparent Load: 44.21 VA
   - Tilt Angle: 90
   - Photometric Web File (click): spot_ideal.ies
   - Light Loss Factor: 0.85
   - Initial Intensity: Luminous Flux, 3200

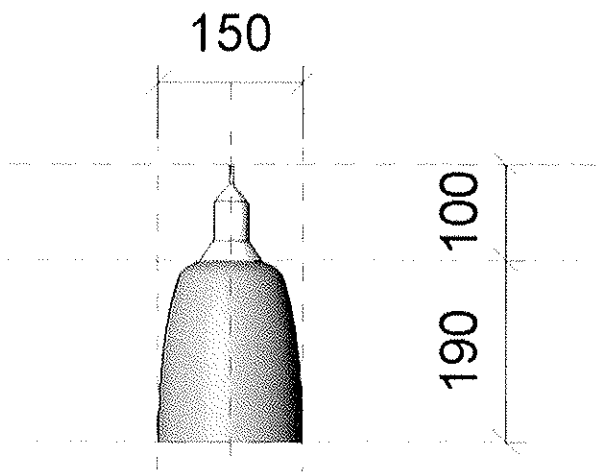
6. In the Family Types dialog box, add two Type parameters for
7. Pendant Material and Glass Material.
8. Save the family.

Creating the fixture geometry.

1. Zoom in on the area near the light source.
2. Add reference planes as needed to help you create two revolves for a pendant and glass shade, similar to that shown in pictures below.



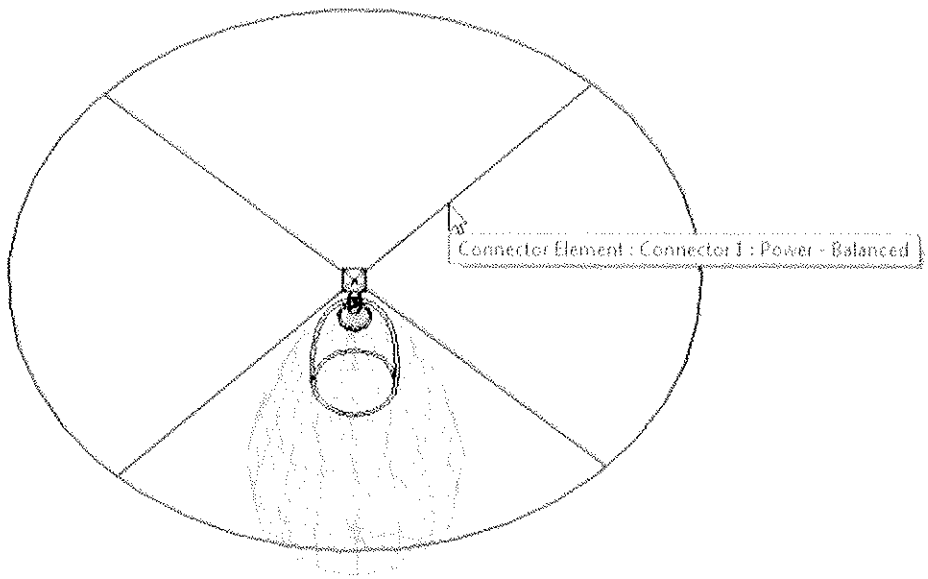
Sketch for Pendant ***Sketch for Glass***



3. Select the pendant revolve. In Properties, in the Materials and Finishes area, for Materials parameter click (Associate Family Parameter)
4. In the Associate Family Parameter dialog box, select Pendant Material and click. OK
5. Repeat this with the glass shade revolve.
6. Save the project.

Adding Electrical Connector

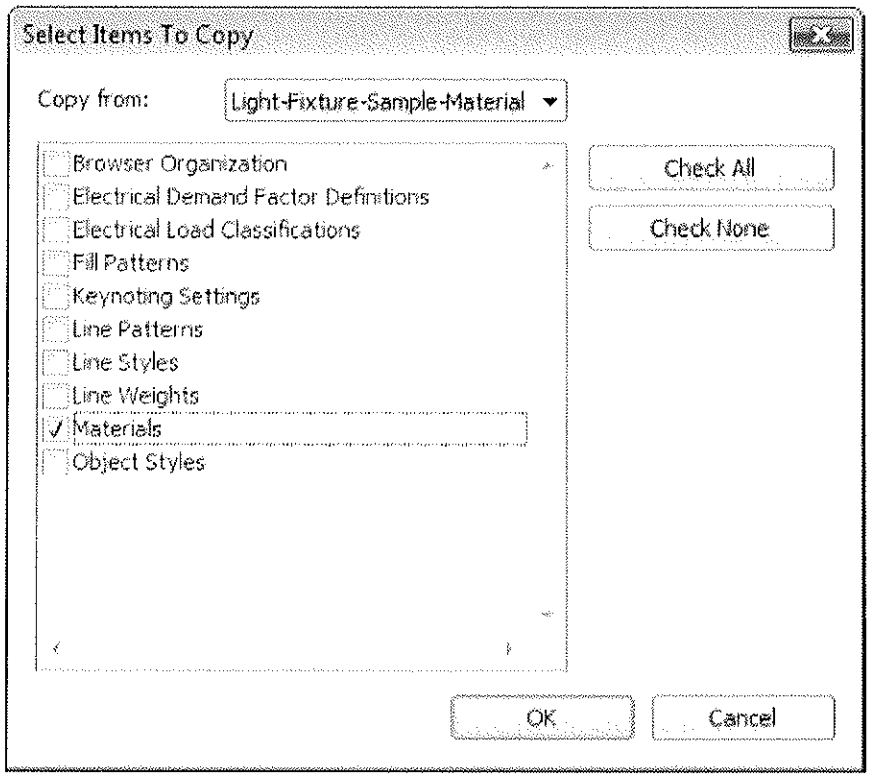
1. Open a 3D view and set the Visual Style to Wireframe.
2. In the Home tab > Connectors panel, click (Electrical Connector).
3. In the Options Bar, select Power - Balanced.
4. Attach the connector to the face of the pendant at the point where the pendant touches the ceiling, as shown below.



5. Click (Modify) and select the connector.
6. In Properties specify the values for the following parameters:
   - Power Factor: 0.95
   - System Type: Power - Balanced (verify)
   - Apparent Load: Associate with the Apparent Load parameter
   - Voltage: 277
   - Load Classification: Lighting
7. Save the family.

Creating Materials

1. In the Manage tab > Settings Panel, click (Materials). In the Materials - Default dialog box, click the Materials tab. There are very few materials to choose from. Close the dialog box.
2. Open the family /MEP/Light-Fixture-Sample-Materials-M.rfa from your class folder. (This is a finished version of the light fixture with several materials added.
3. Switch back to your new light fixture family.
4. In the Manage tab > Settings panel, click (Transfer Project Standards).
5. In the Select Items to Copy dialog box, verify that Copy from
6. is set to Light-Fixture-Sample-Materials-M.rfa and clear everything but Materials



7. Click OK. The materials are copied into the current family.
8. In the Family Types dialog box assign Materials to the Glass
9. Material and Pendant Material parameters.
10. If you have time, create several Family Types that use different colours of glass and different pendant materials.
11. Save the family.

CROWN SYSTEMS

CHAPTER 5

Working on Team Project

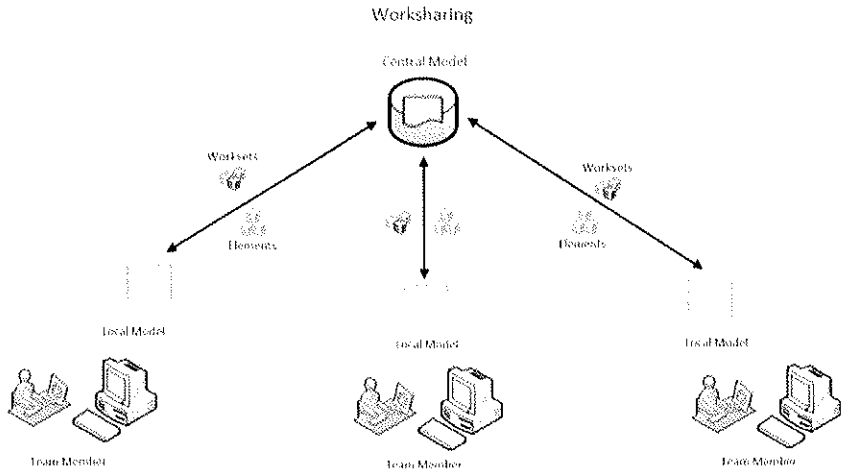
In this chapter you learn how to open workset-related projects, work in Workset-related projects, work with visibility and display options, set up worksets, And use best practices for worksets.

This chapter discuss:

- Create Central File by activating work sharing and dividing The models into workset
- Allow multiple user to work on the same dataset utilizing Local file
- Work with the manage workset
- Control the visibility

5.1 Worksharing Overview

Worksharing is a design method that allows multiple team members to work on the same project model at the same time. When worksharing is enabled, a Revit document can be subdivided into worksets, which are collections of elements in the project.



Team members share a central model

Revit projects can be subdivided into worksets to accommodate such environments. You can enable worksharing to create a central model so that team members can simultaneously make design changes to a local copy of the central model.

5.2 Worksharing Terminology

Term	Definition
central model	The master project model for a workshared project. The central model stores the current ownership information for all elements in the project, and acts as the distribution point for all changes published to the file. All users save their own local copies of the central model, work locally, and then synchronize with central so that other users can see their work.
local model	A copy of the project model that resides on the computer system of the team member who is working on the model. When worksharing is used to distribute project work among team members, each member uses a local model to work on his or her workset (functional area). Team members periodically save their changes to the central model so that others can see the changes and update their local model with the latest project information.
active workset	A collection of elements in a project.A workset is typically a discrete functional area, such as HVAC, electrical, plumbing, or piping. When you enable worksharing, you can divide a project into worksets, with different team members responsible for each workset

con't.

Term	Definition
element borrowing	Allows you to edit an element that you do not own. If no one owns the element, permission to borrow is automatically granted. If another team member is currently editing the element, that team member is the owner, and you must place a request or wait for it to be relinquished so that you can borrow it.
workshared file	A Revit project for which worksets have been enabled.
non-workshared file	A Revit project for which worksets have not been enabled.
collaboration	Multiple team members working on the same project. These team members may be from different disciplines and working in different locations. Methods of collaboration can include worksharing and using linked models.

5.3 Enabling Worksharing

Enabling worksharing involves creating a master project model, known as a central model, from an existing model.

The central model stores the current ownership information for all worksets and elements in the project, and acts as the distribution point for all changes made to the model. All users should save their own local copy of the central model, edit locally in this workspace, and then synchronize with central to publish their changes to the central model so that other users can see their work.

To enable worksharing and create a central model

1. Open the Revit project file (RVT) on exerice file to convert as the central model.
2. Click Collaborate tab ➤ Worksets panel ➤ (Worksets).
   The Worksharing dialog displays, showing the default user-created worksets (Shared Levels and Grids, and Workset1).
3. If desired, rename the worksets.
4. In the Worksharing dialog, click OK. The Worksets dialog displays.
5. In the Worksets dialog, click OK. You do not need to create worksets at this point.
6. Click ➤ Save As ➤ (Project).

7. In the Save As dialog, specify a file name (**ACMV-Logistic Warehouse_Central Model)** and directory location for the central model.
8. In the Save As dialog, click Options.
9. In the File Save Options dialog, select Make this a Central Model after save.

Note: If this is the first time you have saved after enabling worksharing, this option is selected by default and cannot be changed.

10. Click OK.
11. In the Save As dialog, click Save.

5.4 Creating Local copy of Central file.

When you save the central model, be sure that it is saved to a network drive to which all team members have access. If you are using server-based worksharing, Revit Server must be installed on any machine hosting a central model, and the Host role must be enabled in the RSN.ini file on that machine.

For the class set up we will configure the revit to replicate different user accessing the central file and create a local file to save in different directory or folder.

To create a local file (USER 1)

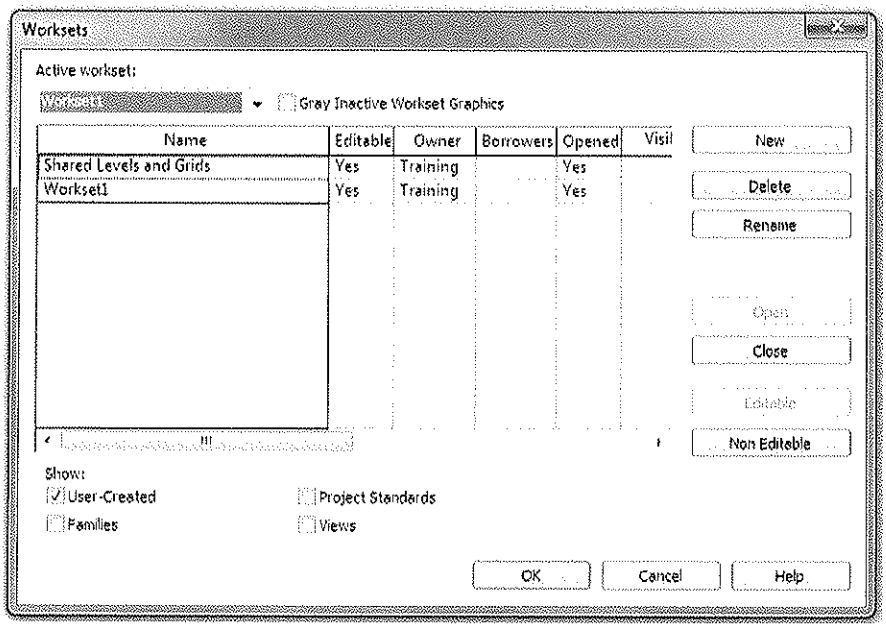
1. Close the Central model
2. Click  > Options.
3. Click General Tab, under Username change the username to USER1
4. Click File Location, Default path for user files, click browse and navigate or create a folder to which the local file will be save.
5. Click OK
6. Click  > Open and look for the location of the central file, on the open dialogue box ensure the Create New Local is selected
7. Click open, you will opening the local file created under the folder you specify on the option.

To create a local file (USER 2)

1. Run again a new Revit Application
2. Click ➢ Options.
3. Click General Tab, under Username change the username to USER2
4. Click File Location, Default path for user files, click browse and navigate or create a folder to which the local file will be save.
5. Click OK
6. Click ➢ Open and look for the location of the central file, on the open dialogue box ensure the Create New Local is selected
7. Click open, you will opening the local file created under the folder you specify on the option.

5.5 Setting up and Managing Workset

When you enable worksharing, several default worksets are created (two default user-created worksets, and worksets for the families that are loaded in the project, project standards, and project views)



The following image shows the Worksets dialog, with the two default user-created worksets, Shared Levels and Grids and Workset1.

To create a new workset

1. Open your local copy of the central model.
2. Click Collaborate tab ➤ Worksets panel ➤ (Worksets).
3. In the Worksets dialog, click New.
4. In the New Workset dialog, enter a name for the new workset.
5. To display the workset in all project views, select Visible in all views.
6. Clear this option if you want the workset to display only in views where you specifically turn on its visibility.
7. Click OK.
8. The new workset displays in the list of worksets; it is editable, and your user name displays for Owner.
9. If you are setting up a workshared model for your team and want to assign owners to each workset, each team member must open a local copy of the central model, select the workset in the Worksets dialog, and then select Yes in the Editable column.
10. When you finish creating worksets, click OK to close the Worksets dialog.
11. If you have added only one new workset, Revit prompts you to make the new workset active. Click Yes or No.

5.6 Adding Element to Workset

To add element on workset

1. Select the workset from the Active Workset drop-down on the status bar or the Collaborate tab ➤ Worksets panel.
2. **Note:** You can select a non-editable workset as the active workset. If you place an element in a non-editable workset, the element becomes non-editable after you synchronize with central. If you add view-specific elements, such as detail lines or dimensions, they are added to the workset of the active project view.
3. If you want all elements that were not created in the active workset to display as gray, click Collaborate tab ➤ Worksets panel ➤ (Gray Inactive Worksets).
4. Add the necessary elements to the Drawing Area.

CROWN SYSTEMS

CHAPTER 6

Saving Workshared File

In this chapter you learn how to open synchronized your local saved files to the central file and relinquished ownership without saving local file

This chapter discuss:

- Synchronizing with central model
- Closing workshared file without saving
- Opening workshared files Independent to the central model
- Relinquishing ownership without synchronizing with central

Saving Workshared File

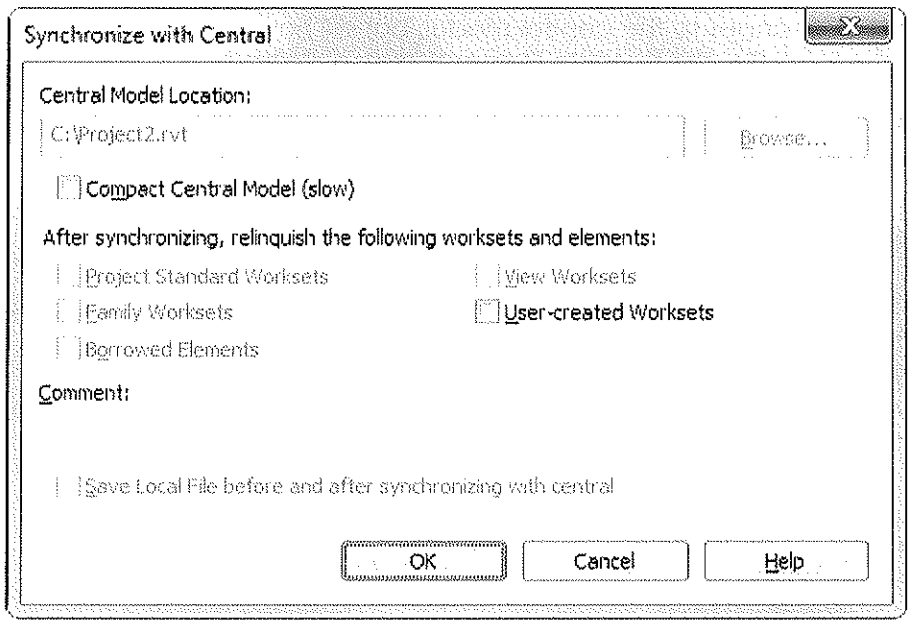
When saving the changes in your local workshared file, you can do either of the following:

- Synchronize with Central
- Save locally

6.1 Synchronizing with Central Model

To Synchronize with Central: Click Collaborate tab ➤ Synchronize panel ➤ Synchronize with Central drop-down ➤ (Synchronize Now).

If you want to modify the Synchronize with Central settings before you synchronize with central: Click Collaborate tab ➤ Synchronize panel ➤ Synchronize with Central drop-down ➤ (Synchronize and Modify Settings). The Synchronize with Central dialog displays.



1. In the Synchronize with Central dialog, verify the location of the central model.
2. If necessary, click Browse to specify a different path for the central model. Specify the new path in the Central File Location dialog, and click OK.
3. Select Compact Central Model to reduce file size when saving.

4. **Note:** Selecting this option increases the time needed to save.

5. Under After synchronizing, relinquish the following worksets and elements, select from the following options:
    a. To make your changed worksets and elements available to other users, select the appropriate check boxes.
    b. To synchronize the changes to central but keep the worksets and elements editable, clear the appropriate check boxes.

6. If desired, enter a comment that is saved to the central model.

7. Verify that save local file before and after synchronizing with central is selected to ensure your local file remains synchronized with central.

8. Click OK.
9. Your changes are saved to the central model and any changes from other team members are copied to your local model.

EDITABLE ELEMENTS

If you have saved all changes to the central model, but still have editable elements when you close the local file, the Editable Elements dialog displays.
If you do not want to keep ownership of the checked out worksets and borrowed elements, click Relinquish elements and worksets; otherwise, click Keep ownership of elements and worksets.

6.2 Opening Workshared Files Independent of the Central Model

Use this procedure to open a file independently for clients who want to see changes or make changes without saving them. Clients can view the file and modify it without worrying about borrowing elements or owning element worksets. This is also useful for project managers who are not working in the project file, but might want to open it for review without interrupting the team.

1. Click  ➤ Open ➤  (Project).
2. In the Open dialog, navigate to the central model and select it.
3. Select Detach from Central.
4. Click Open.

If a non-workshared file is opened with Detach from Central selected, Revit ignores the option, and opens the file normally.

After you open the file, it no longer has any path or permissions information. It is in a state similar to when worksharing was first enabled; all elements in the file can be modified, but no changes can be saved back to the central model. If you save the file, it is saved as a new central model.

Note: If a longer-lasting independent copy of the central model is needed, such as when the central model is suspected to be corrupt, detach from the central model and save it as a new central model. Note that existing local files cannot synchronize with this new central model, and new local files created from the detached central model cannot synchronize with the old central model.

6.3 Closing Workshared File without Saving

If you close your local model without saving, the Changes Not Saved dialog displays.

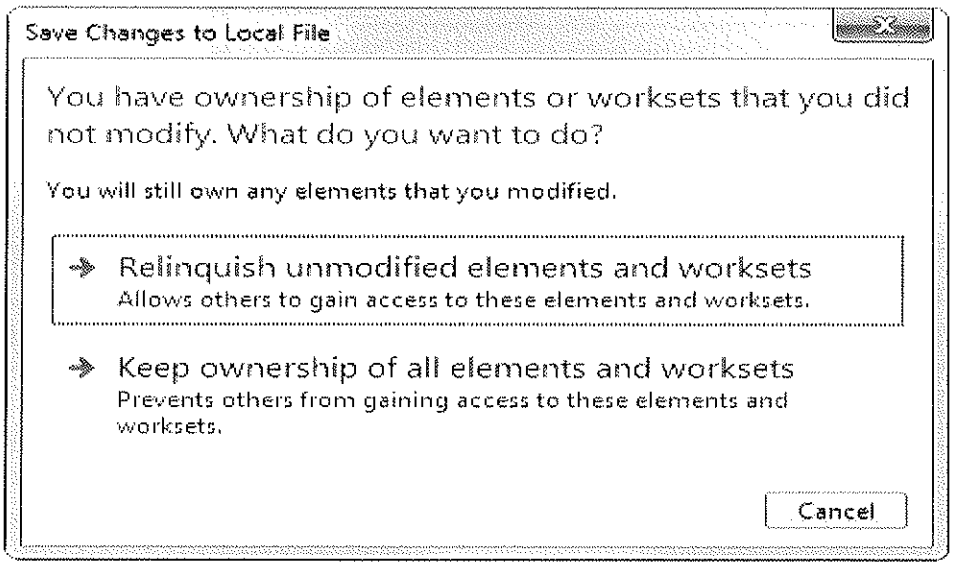
The following sections describe the options.

SYNCHRONIZE WITH CENTRAL

This option saves your changes to the central model. The default settings are selected, including saving your changes to the local model. Also, any changes that have been saved from other team members are copied to your local model.

SAVE LOCALLY

This option saves your changes to the local model without synchronizing them with the central model and displays the Save Changes to Local File dialog. Because you did not synchronize with Central, you still own any elements you modified.

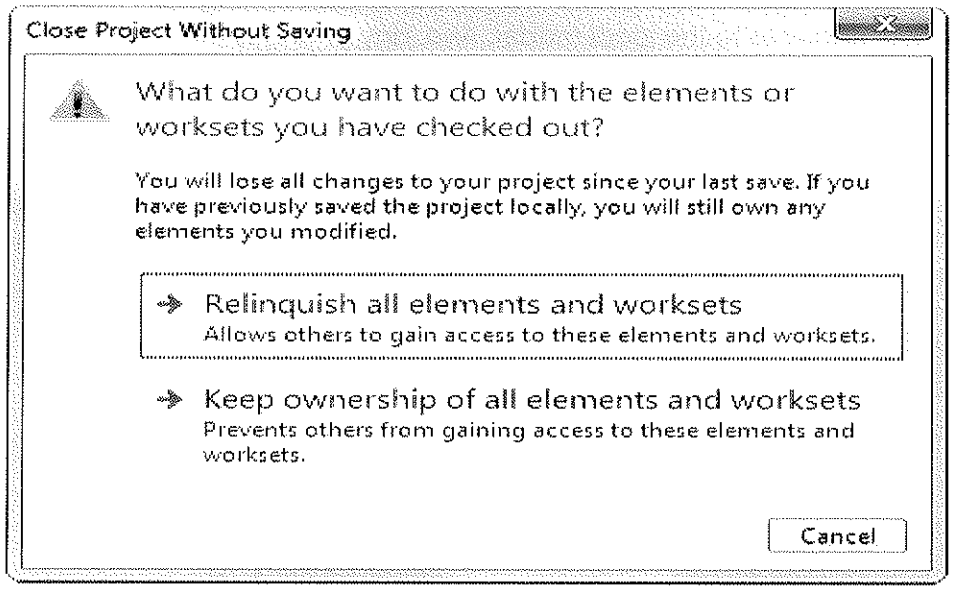


You have the following options:

- Click Relinquish unmodified elements and worksets if you want others to have access to them. Unchanged editable elements and worksets are relinquished, and the local model is saved. You remain the borrower of any elements you changed in the editable worksets.
- Click Keep ownership of all elements and worksets to retain all editing permissions when the local model is saved. The local model closes without synchronizing with central or relinquishing worksets or borrowed elements.

DO NOT SAVE THE PROJECT

This option discards any changes you made to the local model. It has no effect on your last save to the local model. This option rolls back the state of your local model to the last time you saved it and displays the Close Project Without Saving dialog.



You have the following options:

- Click Relinquish all elements and worksets to let others gain access to both modified and unmodified elements and worksets. You relinquish all changes you made to the elements you borrowed and the worksets you own.
- Click Keep ownership of all elements and worksets to retain ownership of the elements you borrowed and the worksets you own. You will lose the changes you made.

6.4 Relinquishing Ownership without Synchronizing with Central

To relinquish editable elements for which you have editing permissions without synchronizing with the central model:

1. With the local model open, click Collaborate tab ➤ Synchronize panel ➤ (Relinquish All Mine).
2. Revit checks for any changes that require synchronizing with central:
    a. If there are no changes to the model elements, ownership of the worksets and borrowed elements is relinquished. A dialog does not display.
    b. If there are changes, ownership status does not change. You still own any model elements you modified. A dialog displays telling you that you made changes and suggests synchronizing with central.
3. Click Close to close the dialog, if one displays.
4. If you do not mind discarding your local changes, you can relinquish permissions and borrow elements. Open the central model directly or create a new local file from the central model, and choose Relinquish All Mine. Best practice is to discard your original local file so that you do not accidentally work on an outdated file or the wrong local file. If you retain your original local file, be aware that if other users have modified elements that you used to own, the original local file will be incompatible with the central model.

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IMPORTANT

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Author: Limwill Donasco

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SME One Asia Prominent Award | **Oracle Primavera:** Top ASEAN Reseller | **Autodesk:** 1st Platinum Partner in ASIA | Best Performing Partner in ASEAN | Best Performing Partner in AEC | Worldwide Channel Sales Platinum Club Winner