



ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

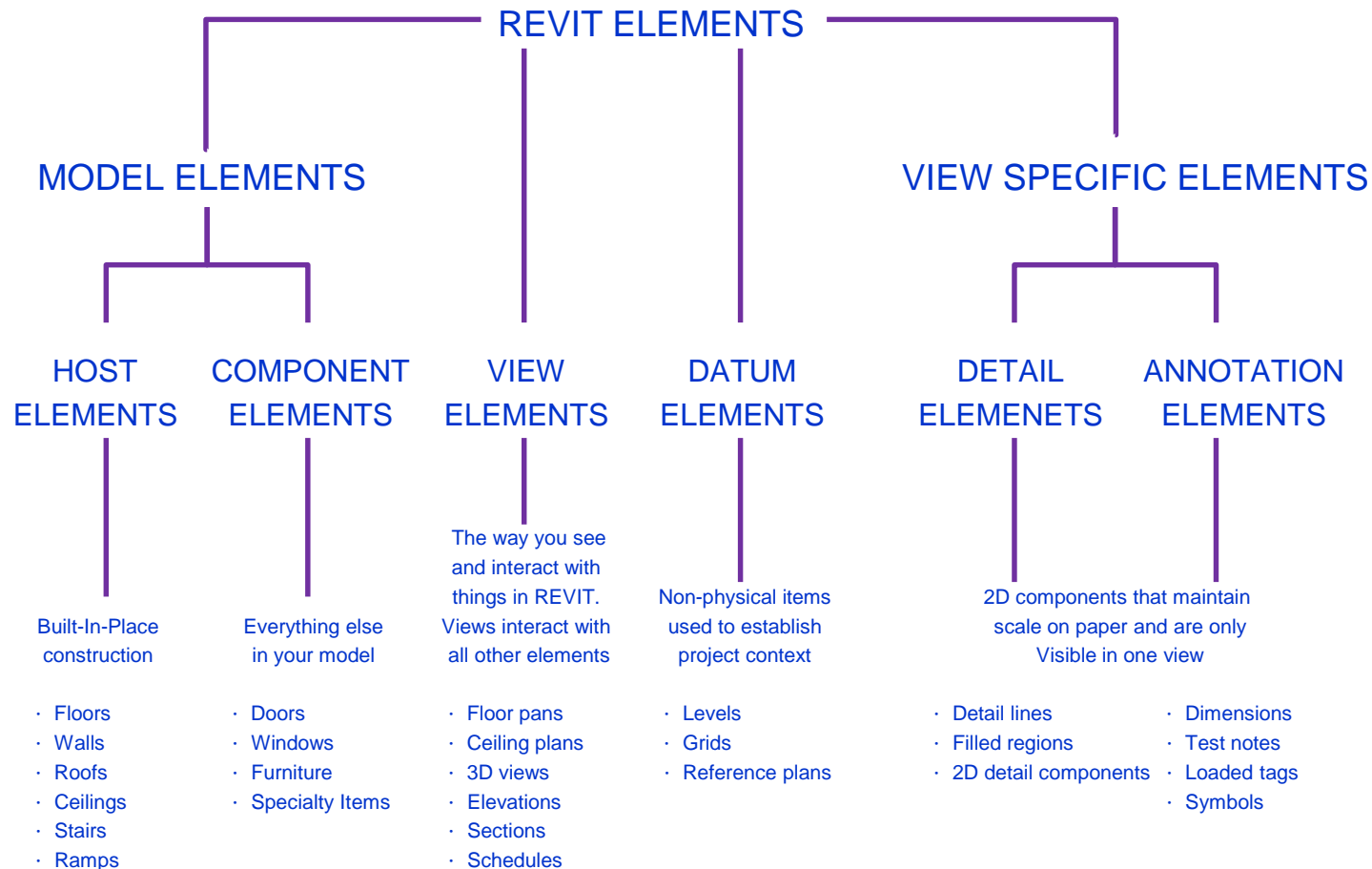
CEII MEP (REVIT)

REVIT MEP 2016 – What's New

- Piping Flow Units
- Performance and Volume Only Setting for Calculations
- Improved Snapping
- MEP Fabrication Detailing
- Sequence for Power Circuits
- Most Recently Used Panel Circuiting
- Move Circuits
- ASHRAE Table Information

REVIT ELEMENTS

There are several types of elements, each representing something fundamental to your project

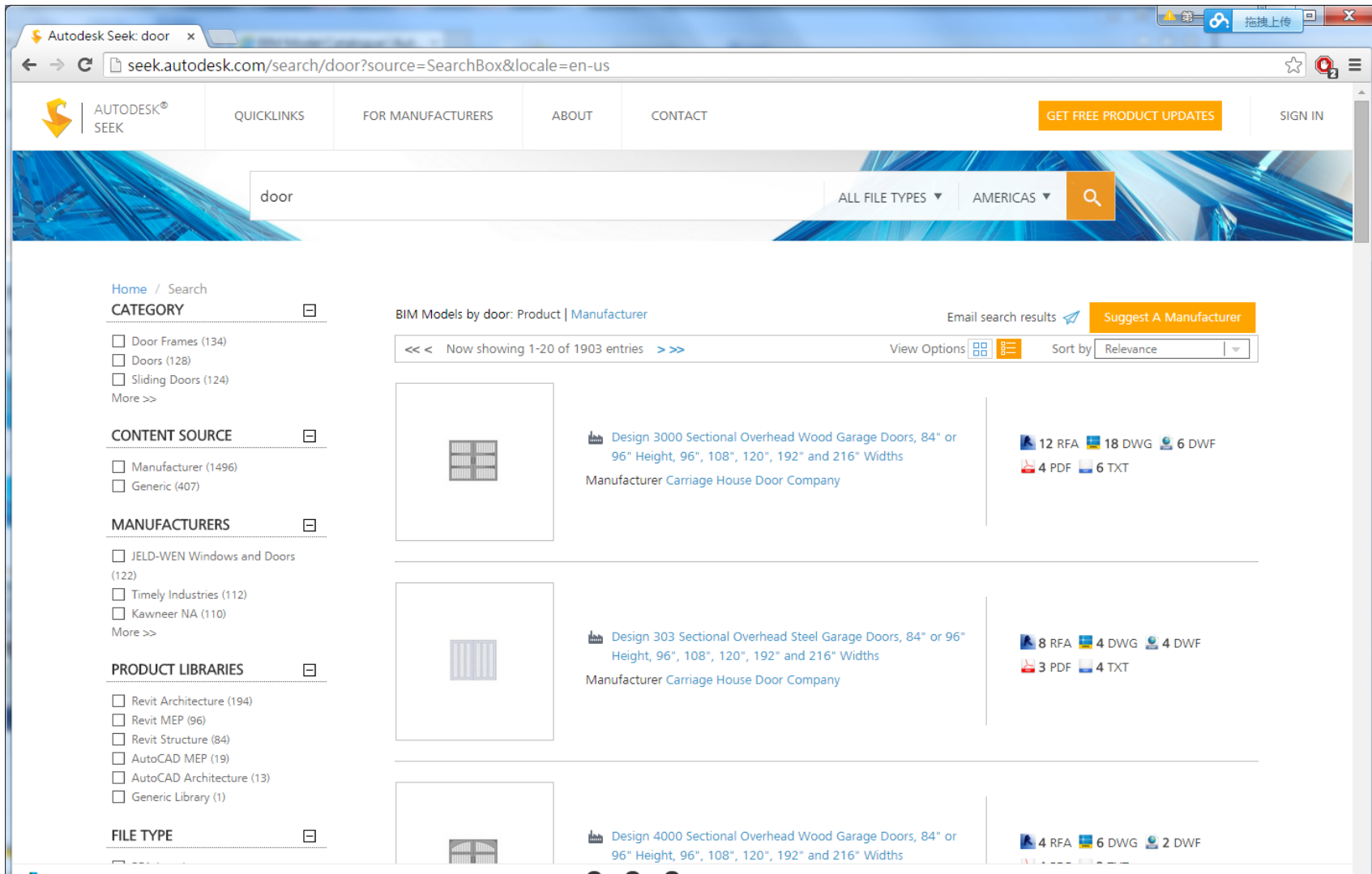


BEST PRACTICES

- Find a suitable Family
 - Office Standard Library
 - Out-of-the-box Autodesk Library
 - Online Libraries
- Modify an existing Family
- Build it yourself
- FLIP (Family Library Interchange Program)

BEST PRACTICES

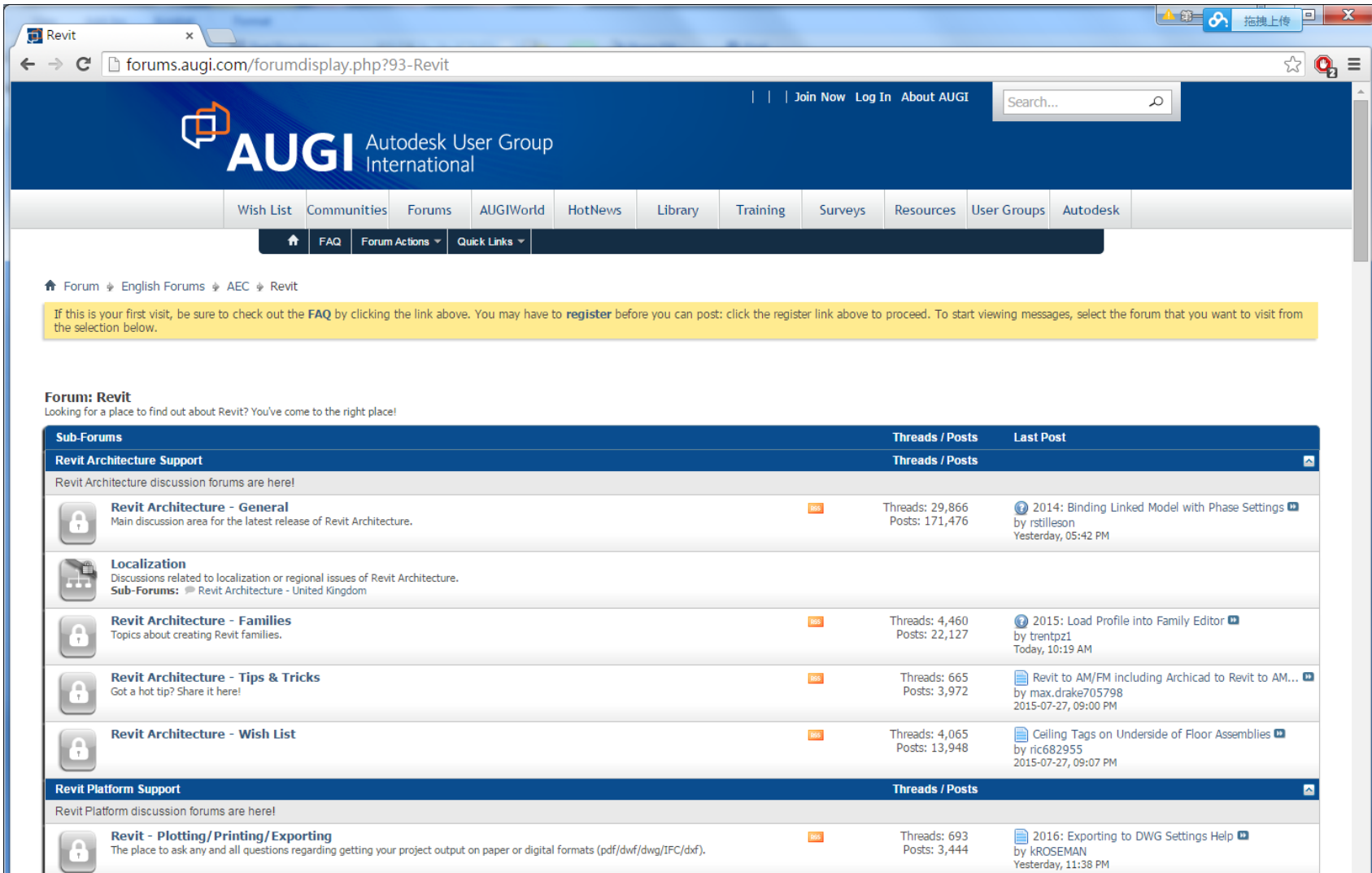
- Autodesk Seek (<http://seek.autodesk.com>)



CEII MEP (REVIT)

BEST PRACTICES

- Autodesk User Group International (<http://forums.augi.com>)



The screenshot displays the AUGI (Autodesk User Group International) forums website. The browser address bar shows the URL forums.augi.com/forumdisplay.php?93-Revit. The website header includes the AUGI logo and navigation links such as "Join Now", "Log In", and "About AUGI". A search bar is also present.

The main navigation menu includes links to "Wish List", "Communities", "Forums", "AUGIWorld", "HotNews", "Library", "Training", "Surveys", "Resources", "User Groups", and "Autodesk". Below this, there are links to "FAQ", "Forum Actions", and "Quick Links".

The forum page is titled "Forum: Revit" and includes a welcome message: "Looking for a place to find out about Revit? You've come to the right place!".

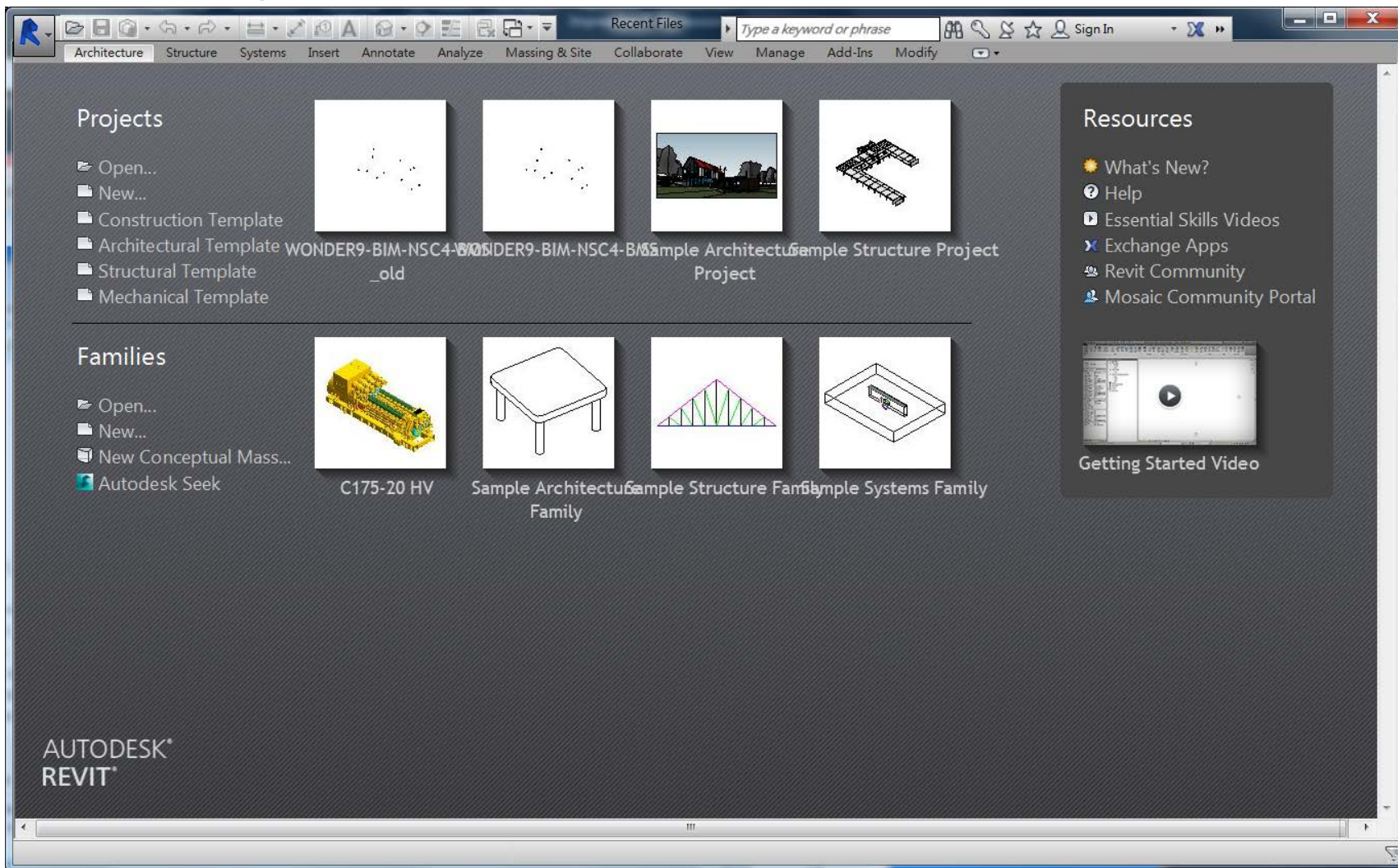
The forum structure is organized into sub-forums, with the following details:

Sub-Forums	Threads / Posts	Last Post
Revit Architecture Support		
Revit Architecture discussion forums are here!		
Revit Architecture - General Main discussion area for the latest release of Revit Architecture.	Threads: 29,866 Posts: 171,476	2014: Binding Linked Model with Phase Settings by rstilleson Yesterday, 05:42 PM
Localization Discussions related to localization or regional issues of Revit Architecture. Sub-Forums: Revit Architecture - United Kingdom		
Revit Architecture - Families Topics about creating Revit families.	Threads: 4,460 Posts: 22,127	2015: Load Profile into Family Editor by trentp21 Today, 10:19 AM
Revit Architecture - Tips & Tricks Got a hot tip? Share it here!	Threads: 665 Posts: 3,972	Revit to AM/FM including Archicad to Revit to AM... by max.drake705798 2015-07-27, 09:00 PM
Revit Architecture - Wish List	Threads: 4,065 Posts: 13,948	Ceiling Tags on Underside of Floor Assemblies by ric682955 2015-07-27, 09:07 PM
Revit Platform Support		
Revit Platform discussion forums are here!		
Revit - Plotting/Printing/Exporting The place to ask any and all questions regarding getting your project output on paper or digital formats (pdf/dwf/dwg/IFC/dxf).	Threads: 693 Posts: 3,444	2016: Exporting to DWG Settings Help by kROSEMAN Yesterday, 11:38 PM

CEI MEP (REVIT)

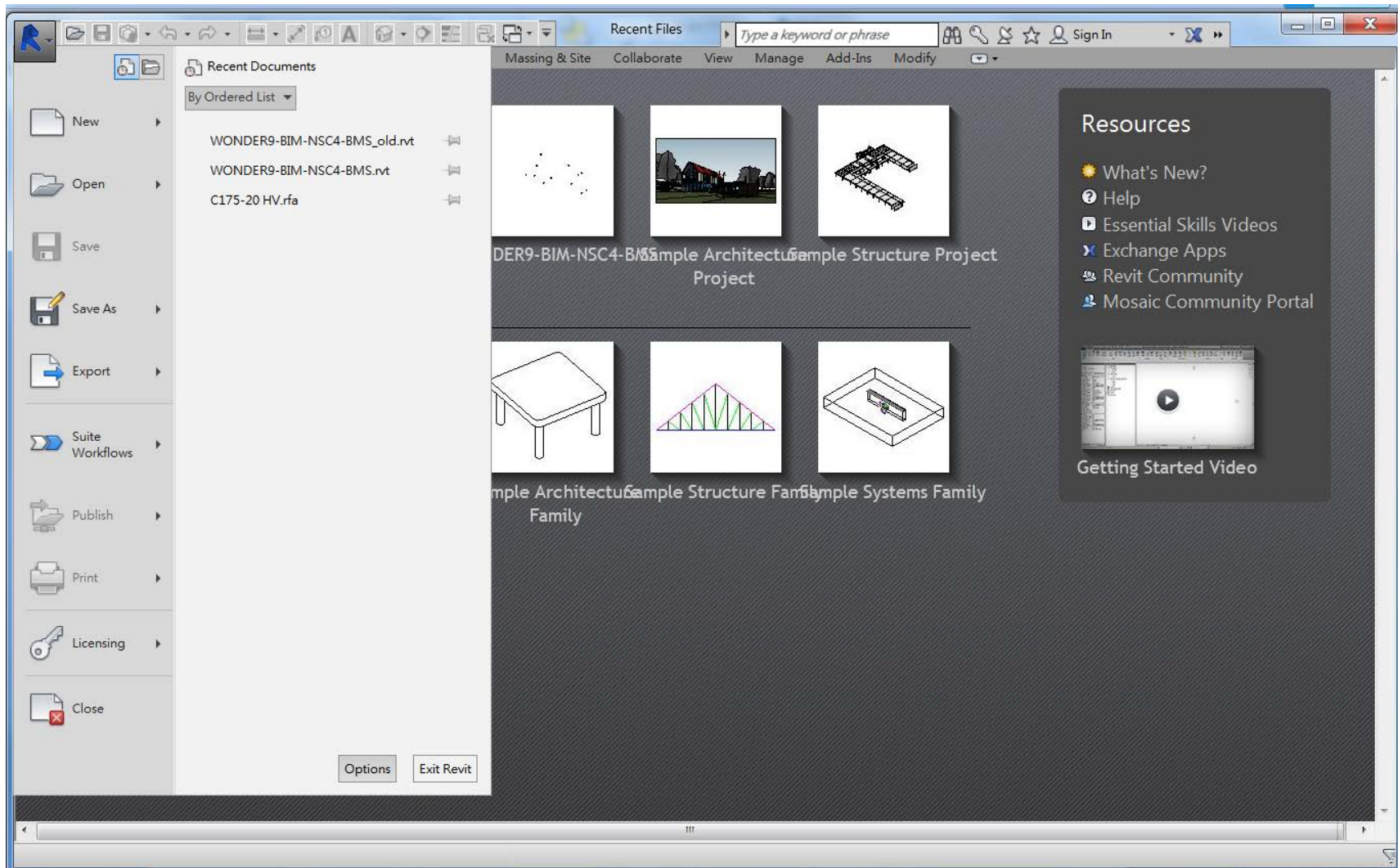
The REVIT Interface

- Startup Screen



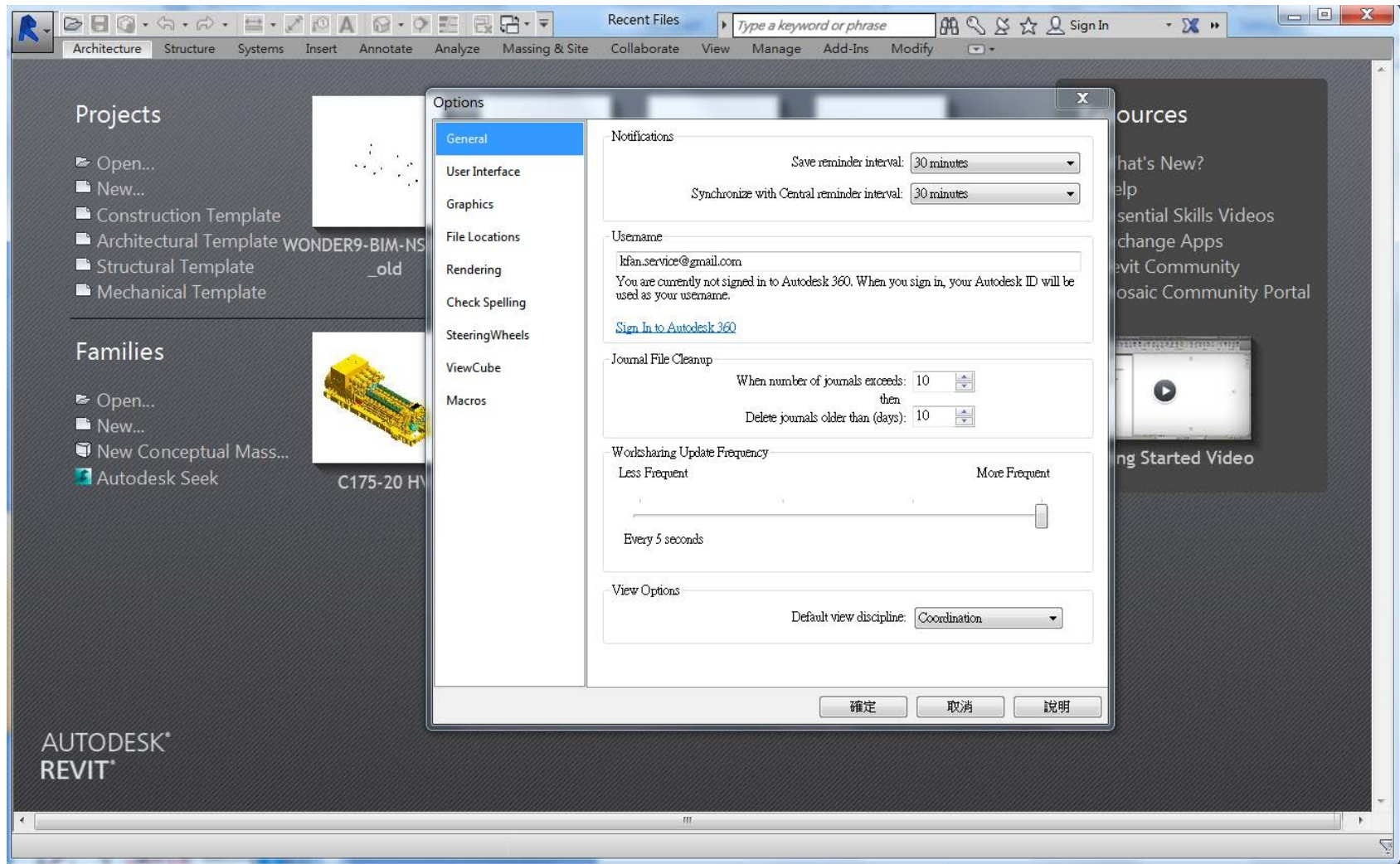
The REVIT Interface

- Options



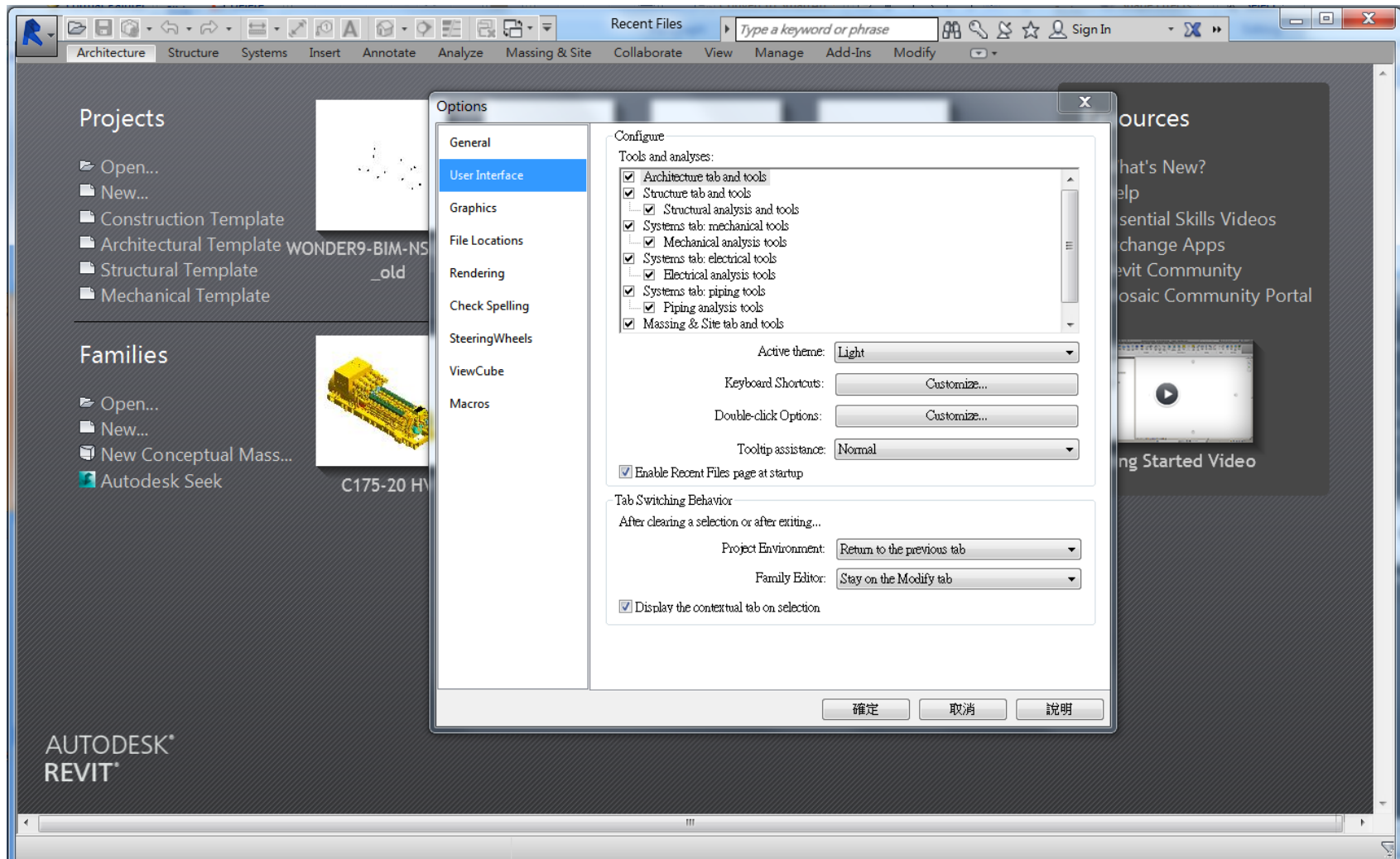
The REVIT Interface

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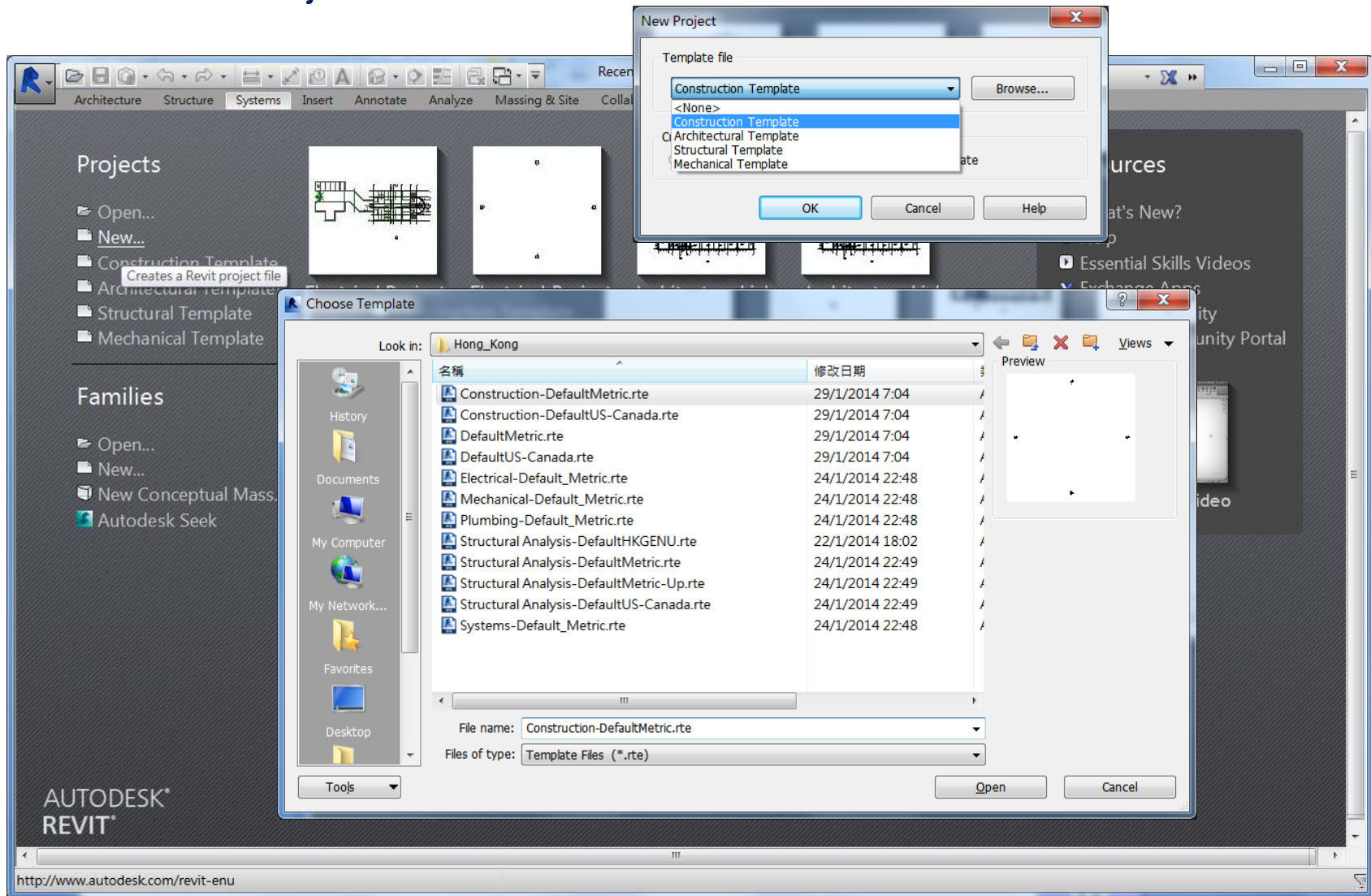
The REVIT Interface

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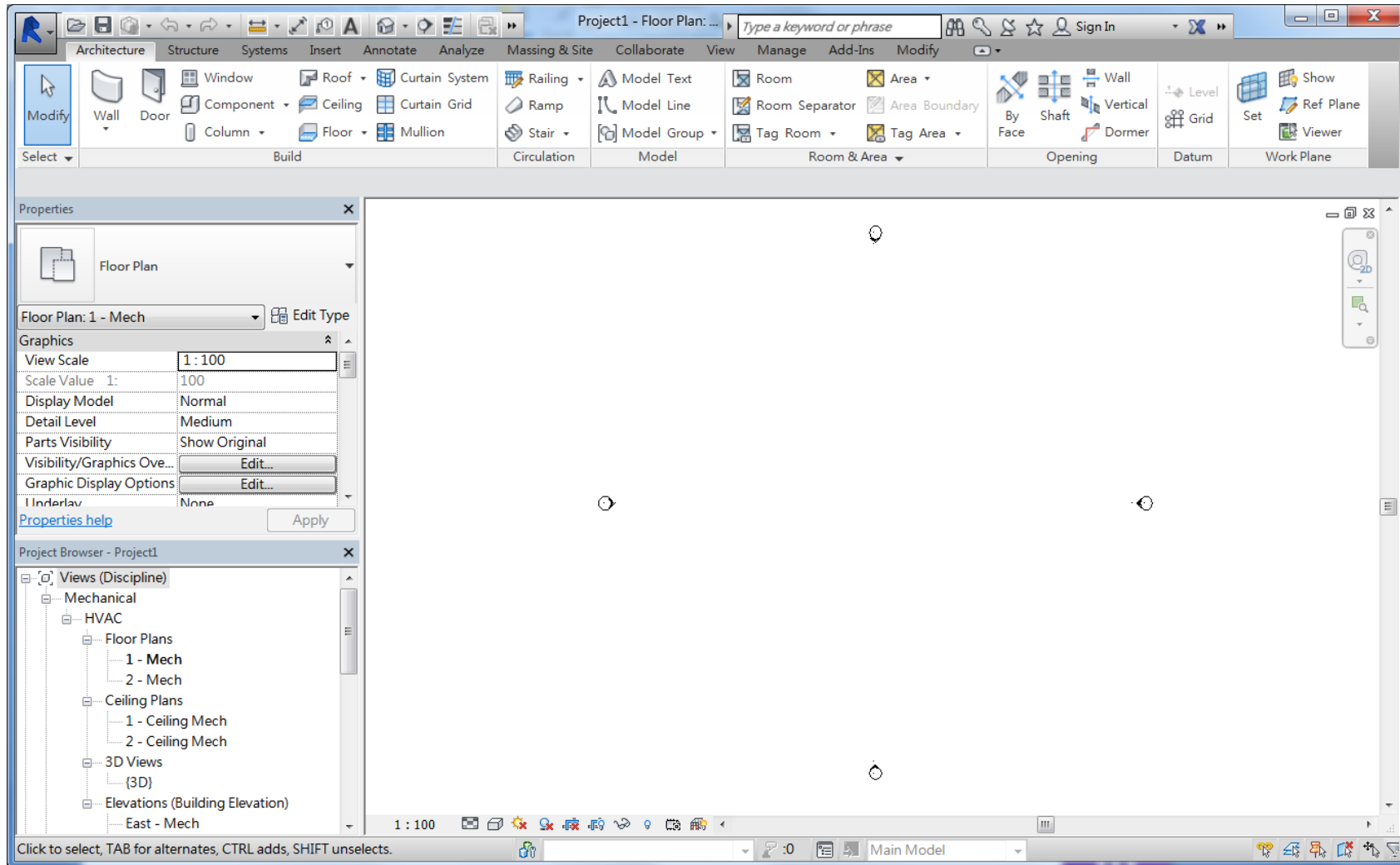
Project startup

- New Project



Project startup

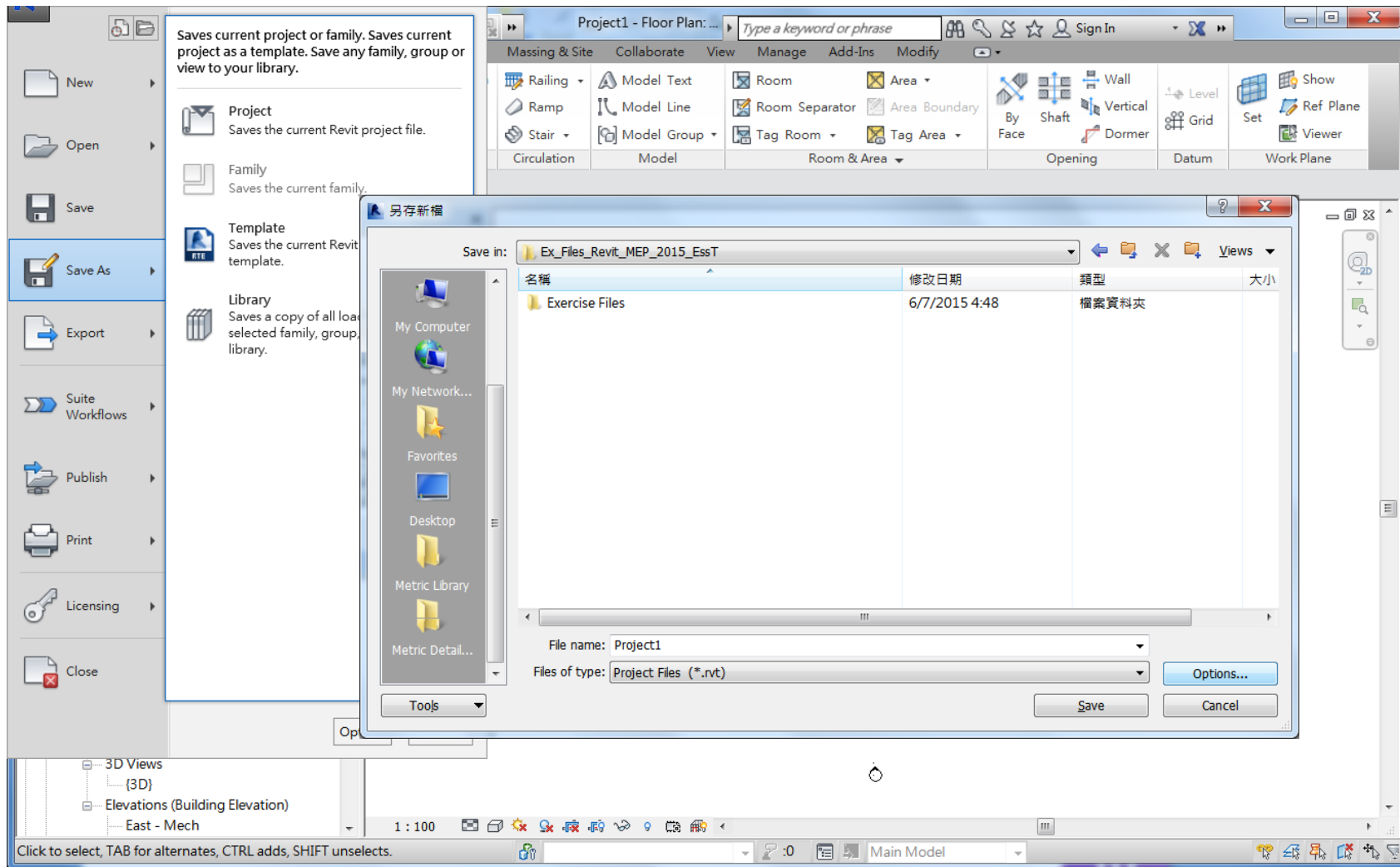
- New Project



CEII MEP (REVIT)

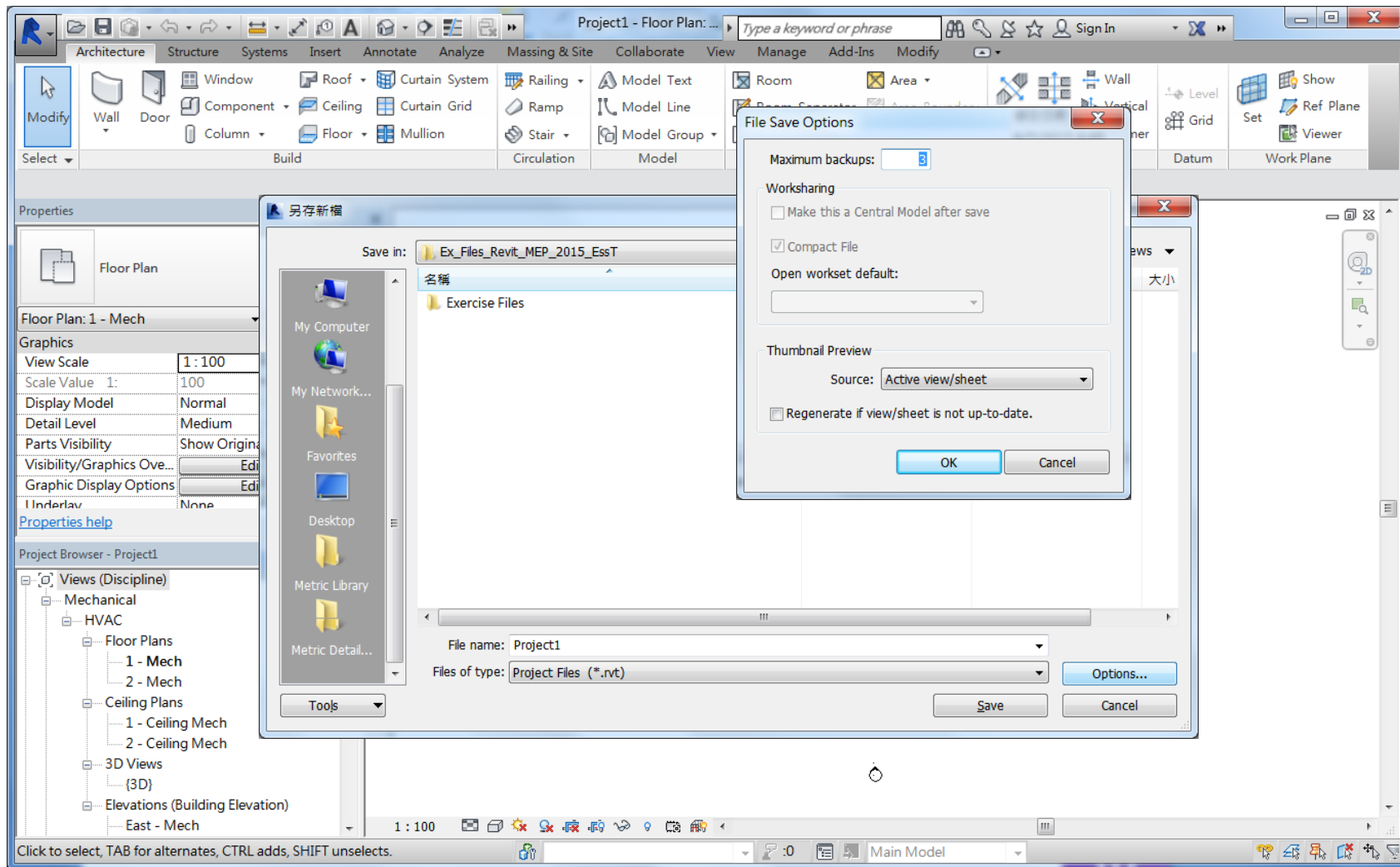
Project startup

- Save As



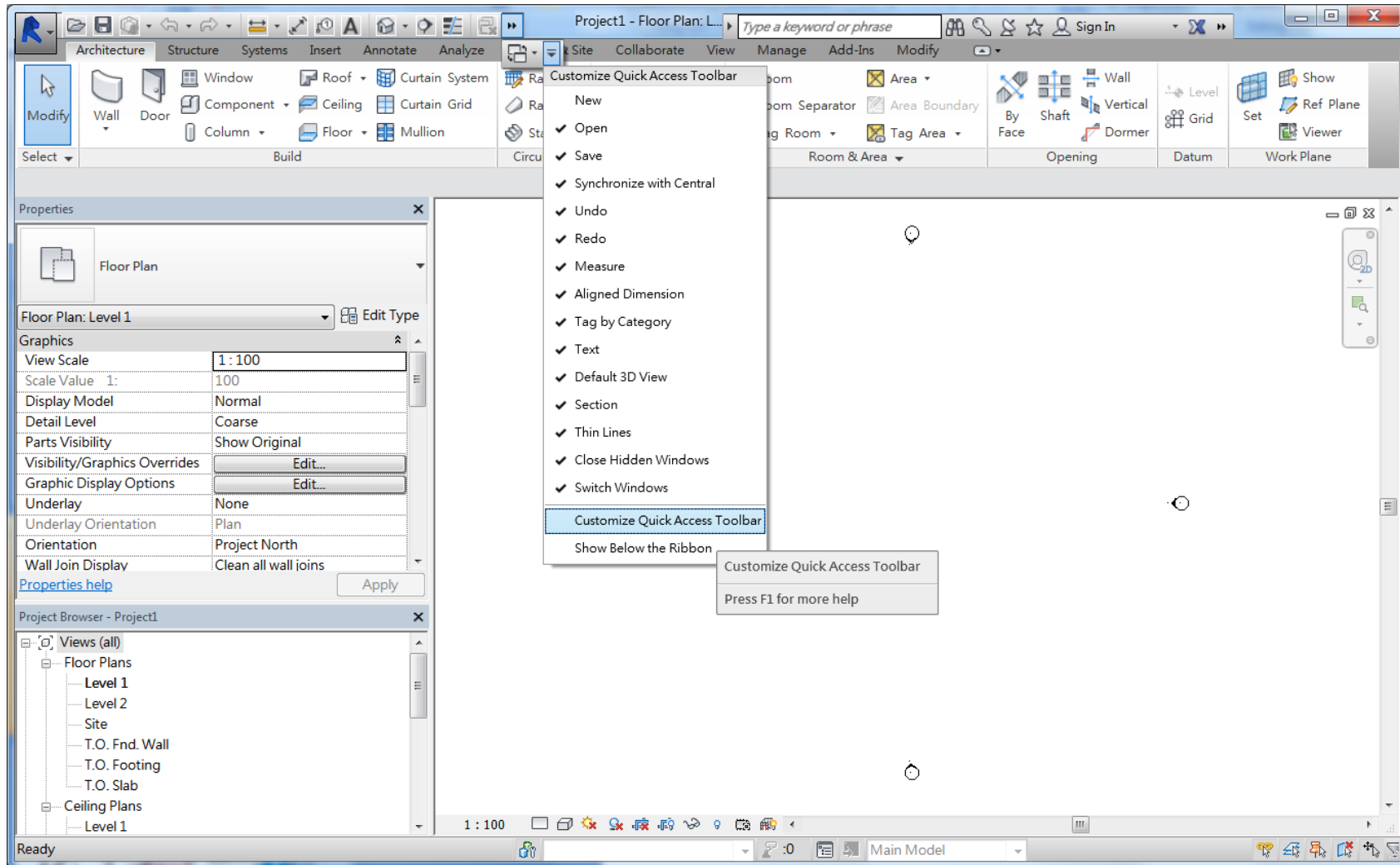
Project startup

- Save As



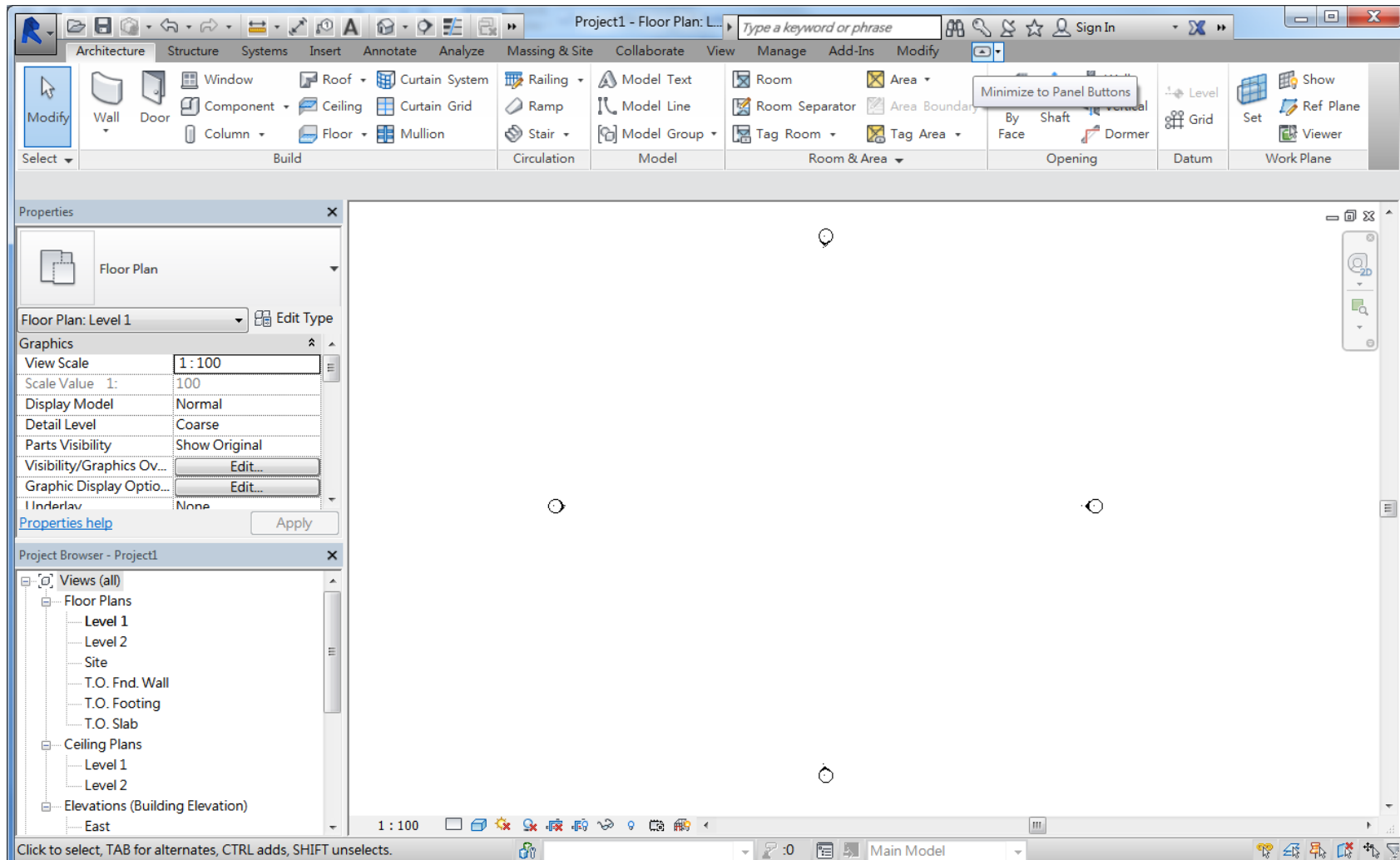
Customizing the Interface

- Quick Access Toolbar



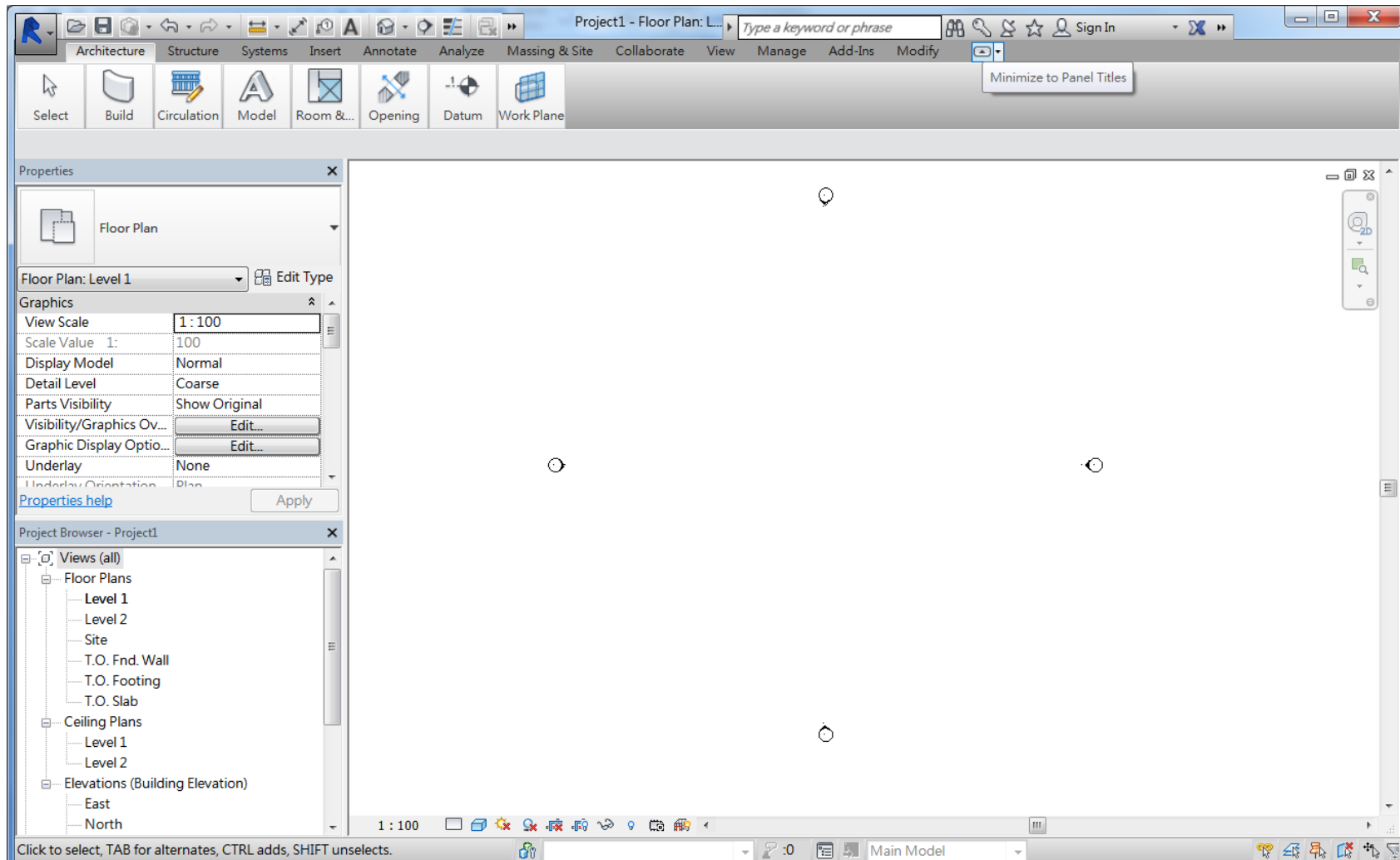
Customizing the Interface

- Ribbon



Customizing the Interface

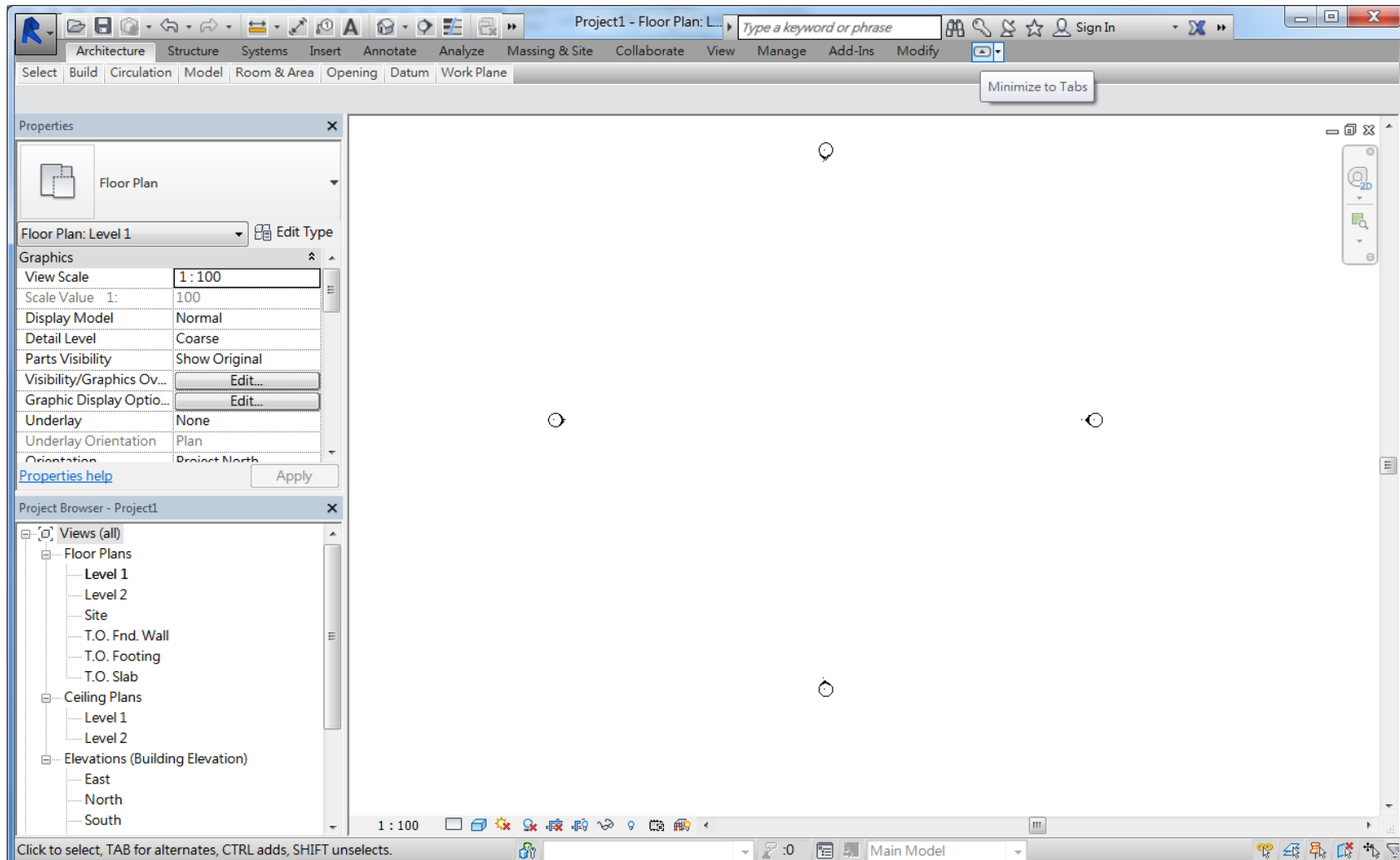
- Ribbon



CEII MEP (REVIT)

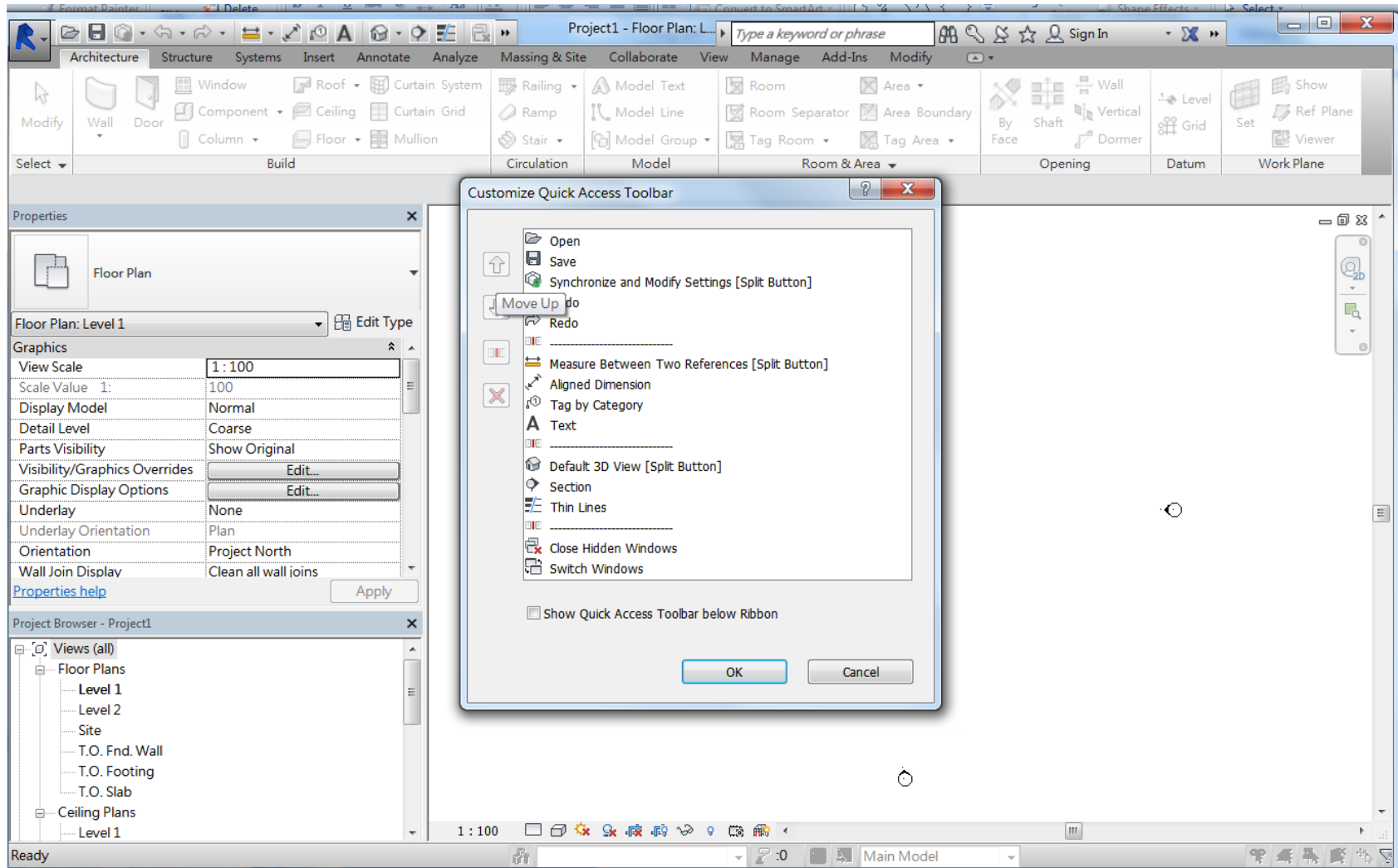
Customizing the Interface

- Ribbon



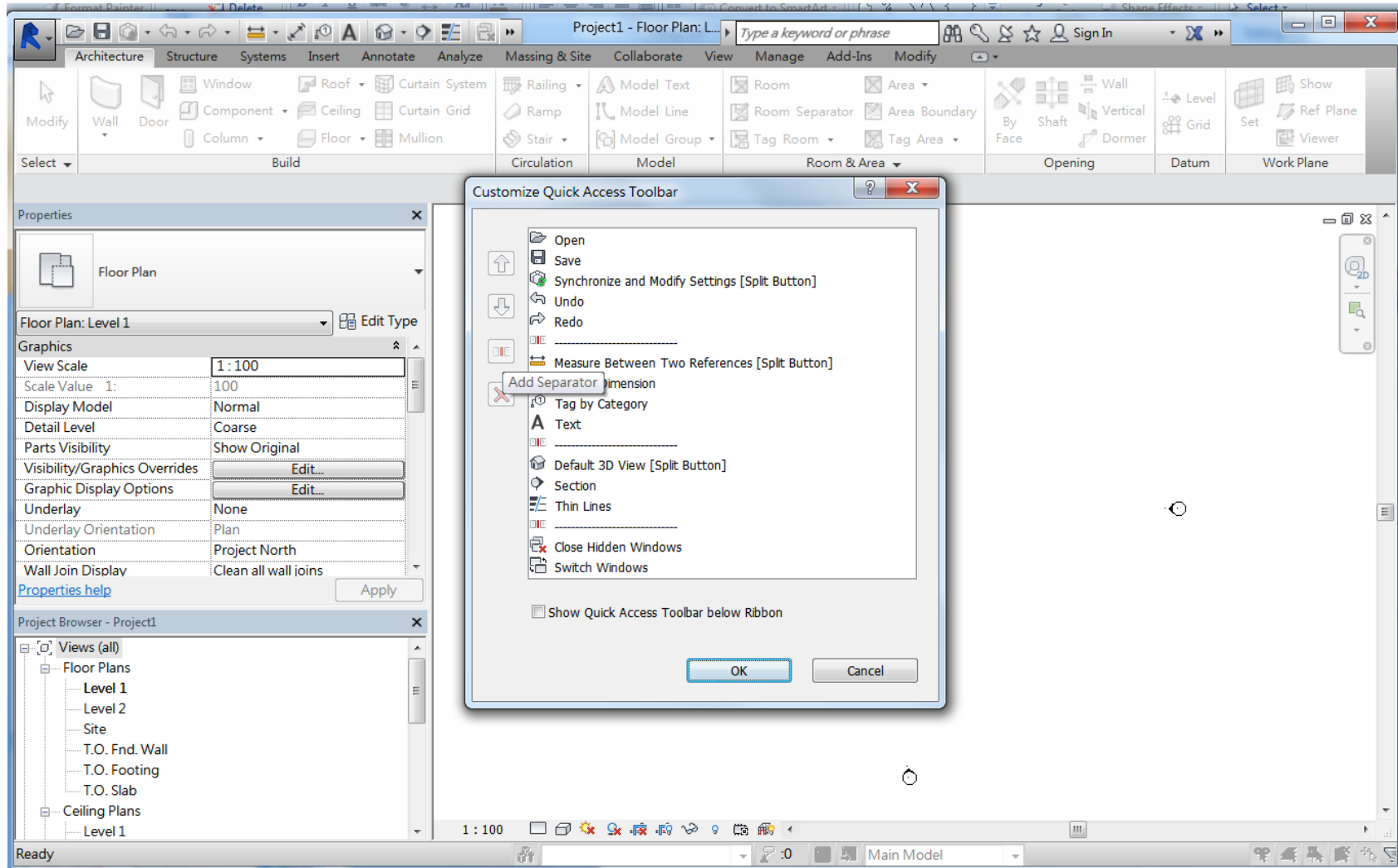
Customizing the Interface

- Quick Access Toolbar



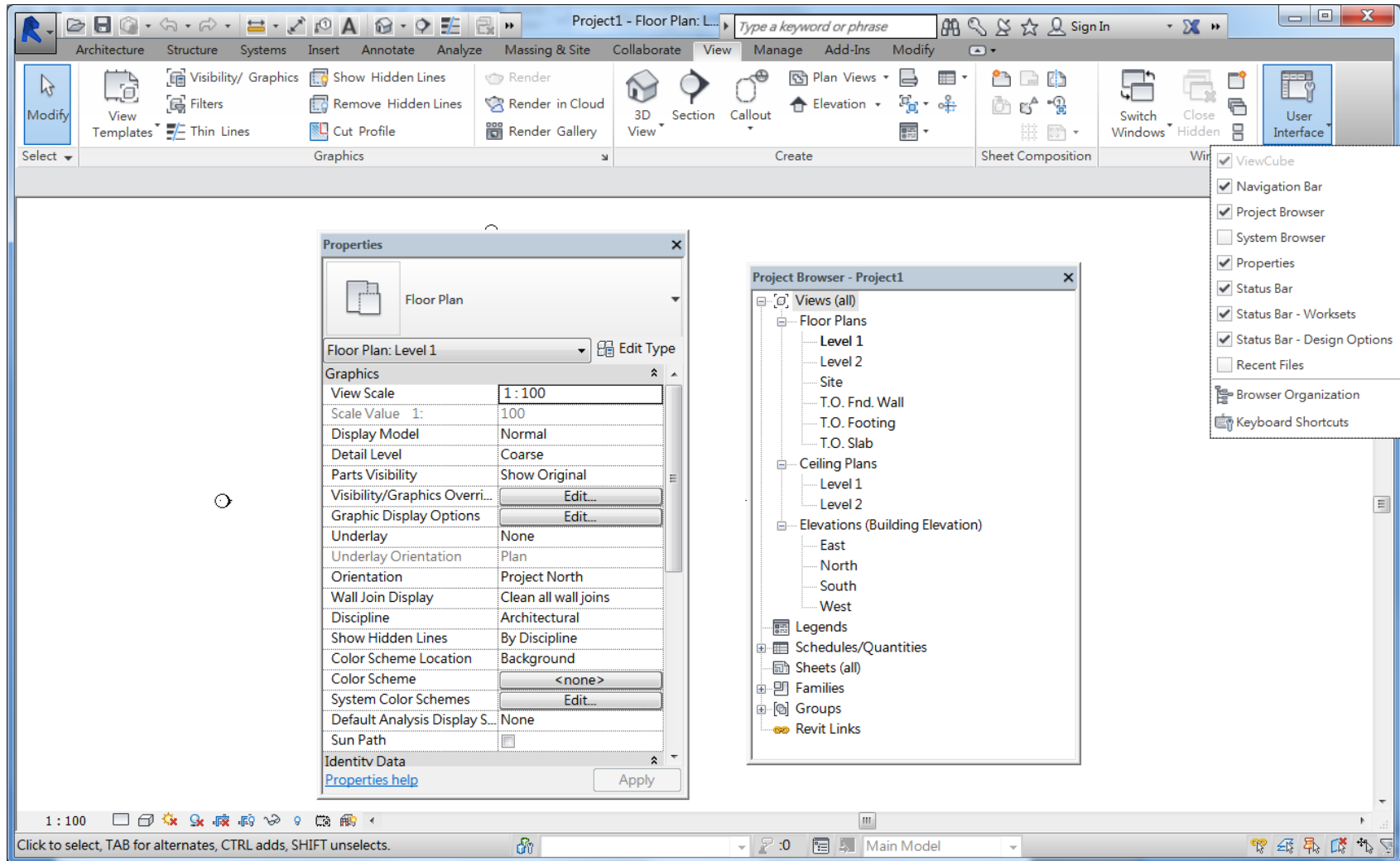
Customizing the Interface

- Quick Access Toolbar



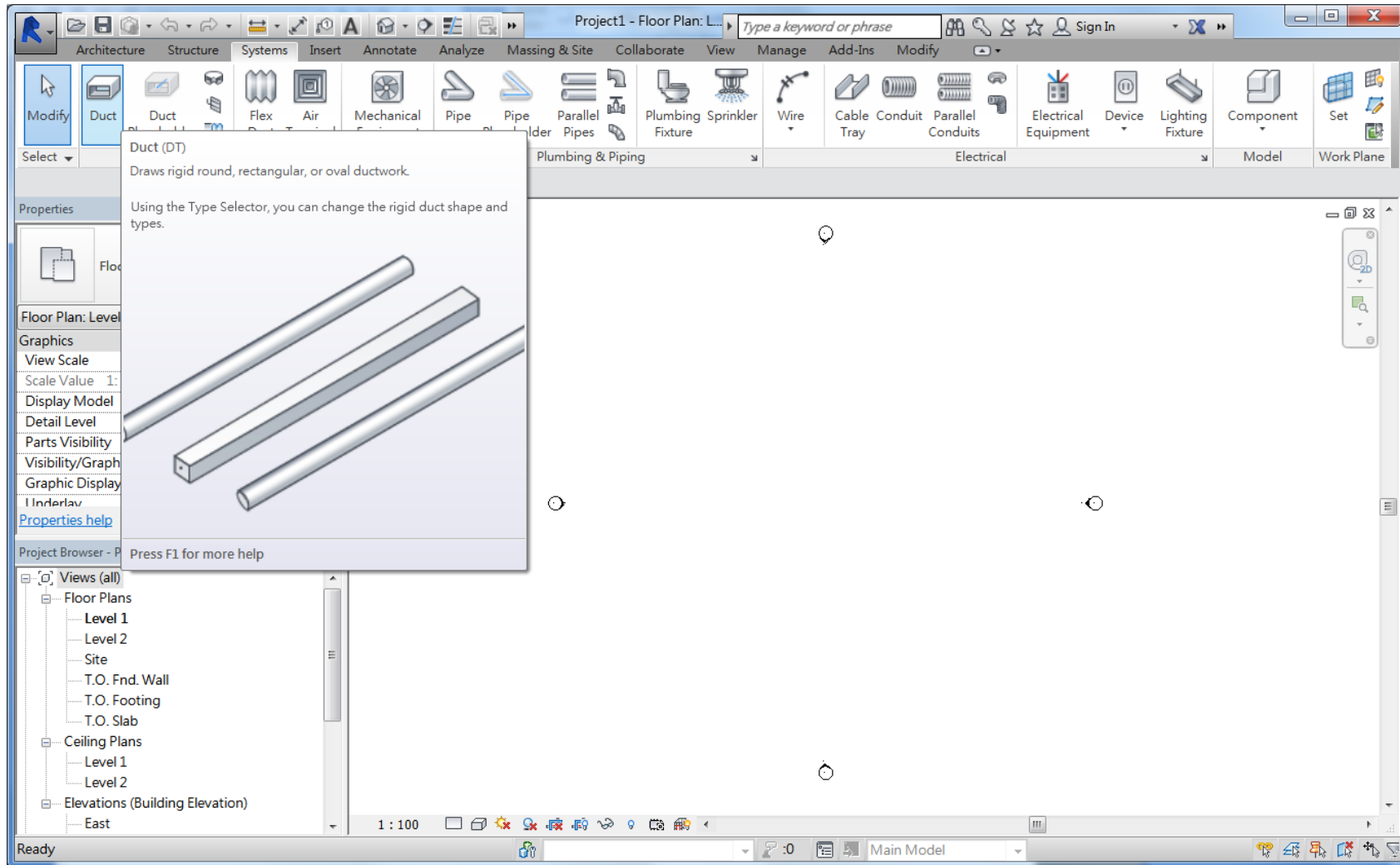
Customizing the Interface

- Properties Panel and Project Browser Panel



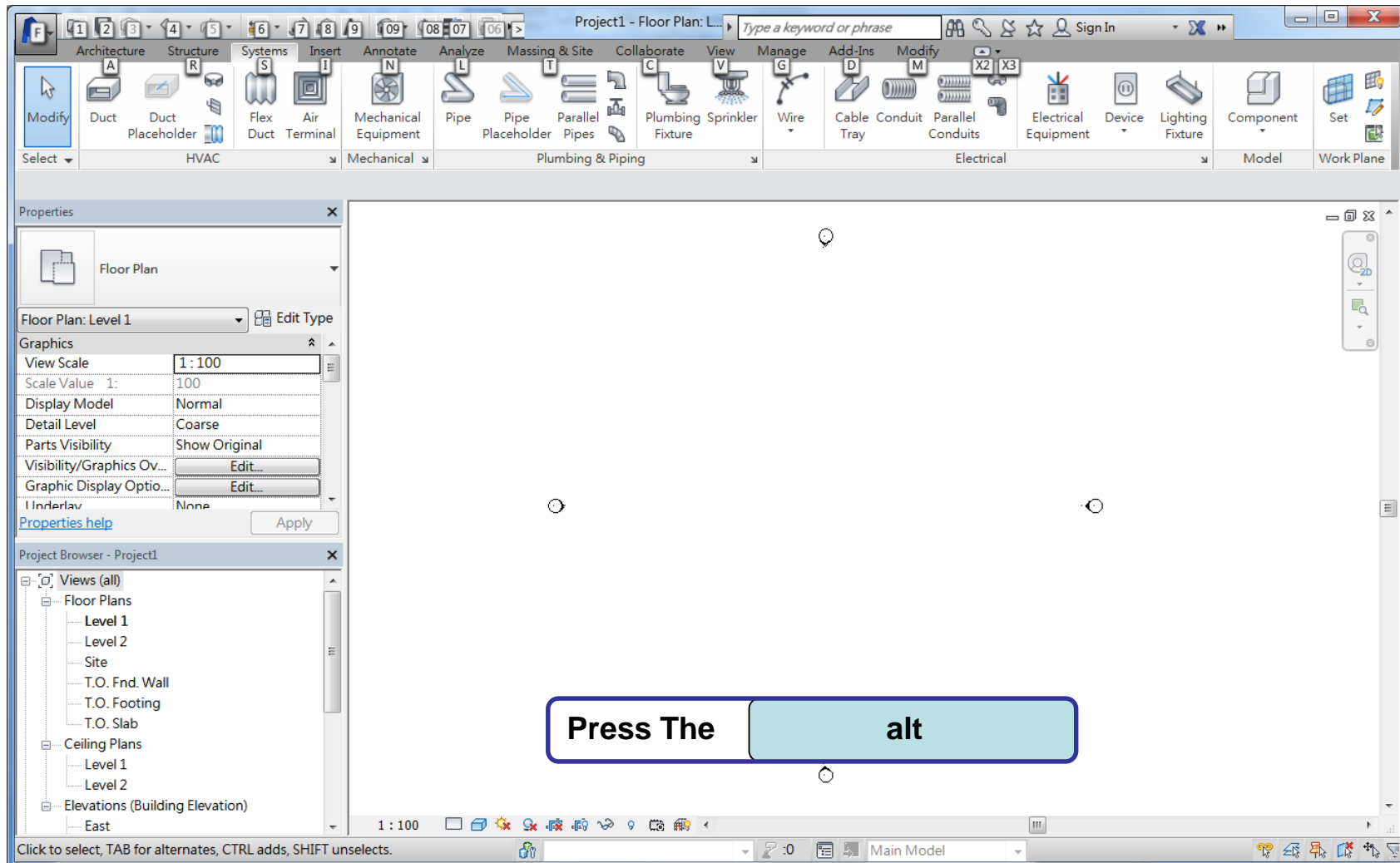
Customizing the Interface

- Keyboard Shortcuts



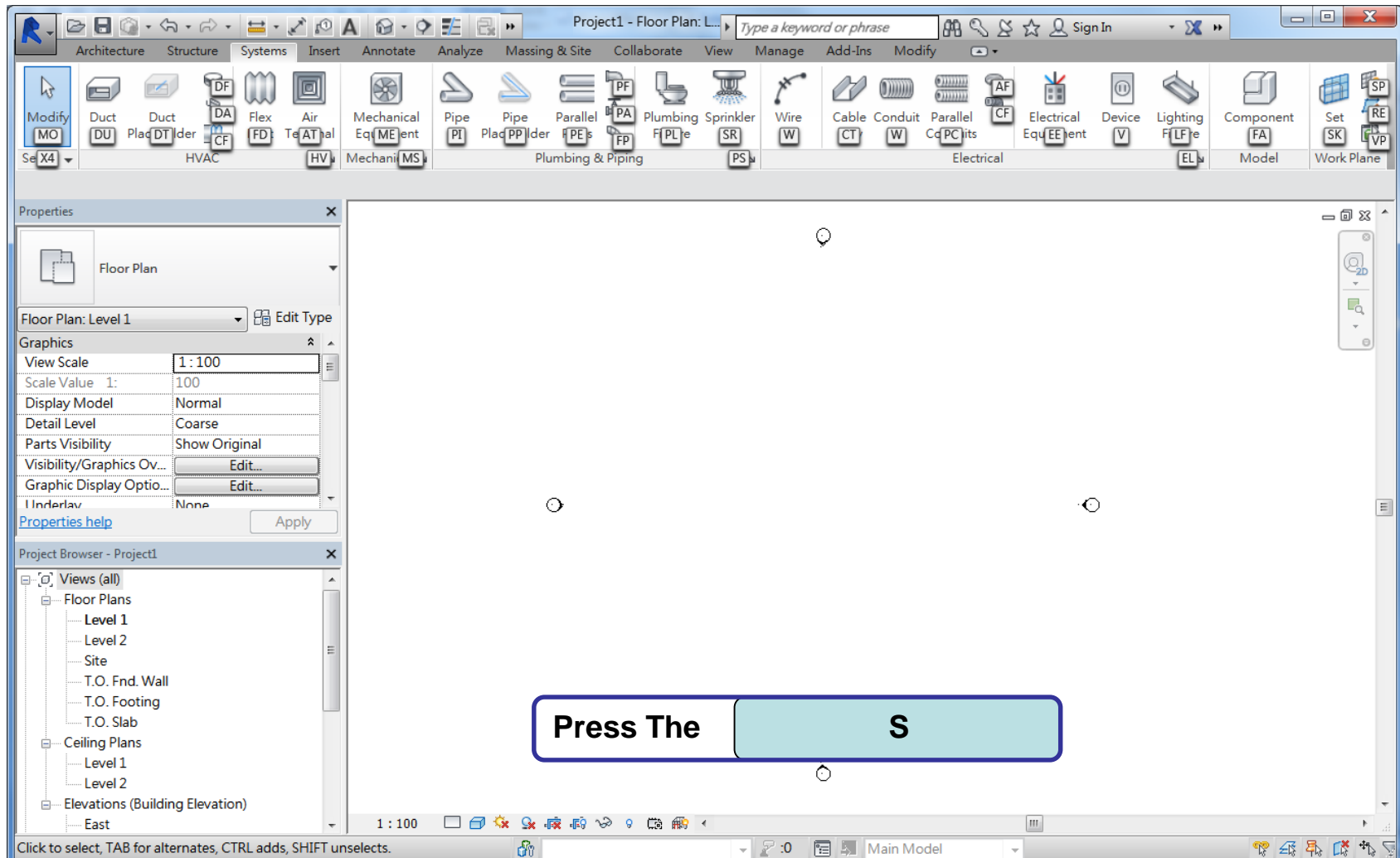
Customizing the Interface

- Keyboard Shortcuts



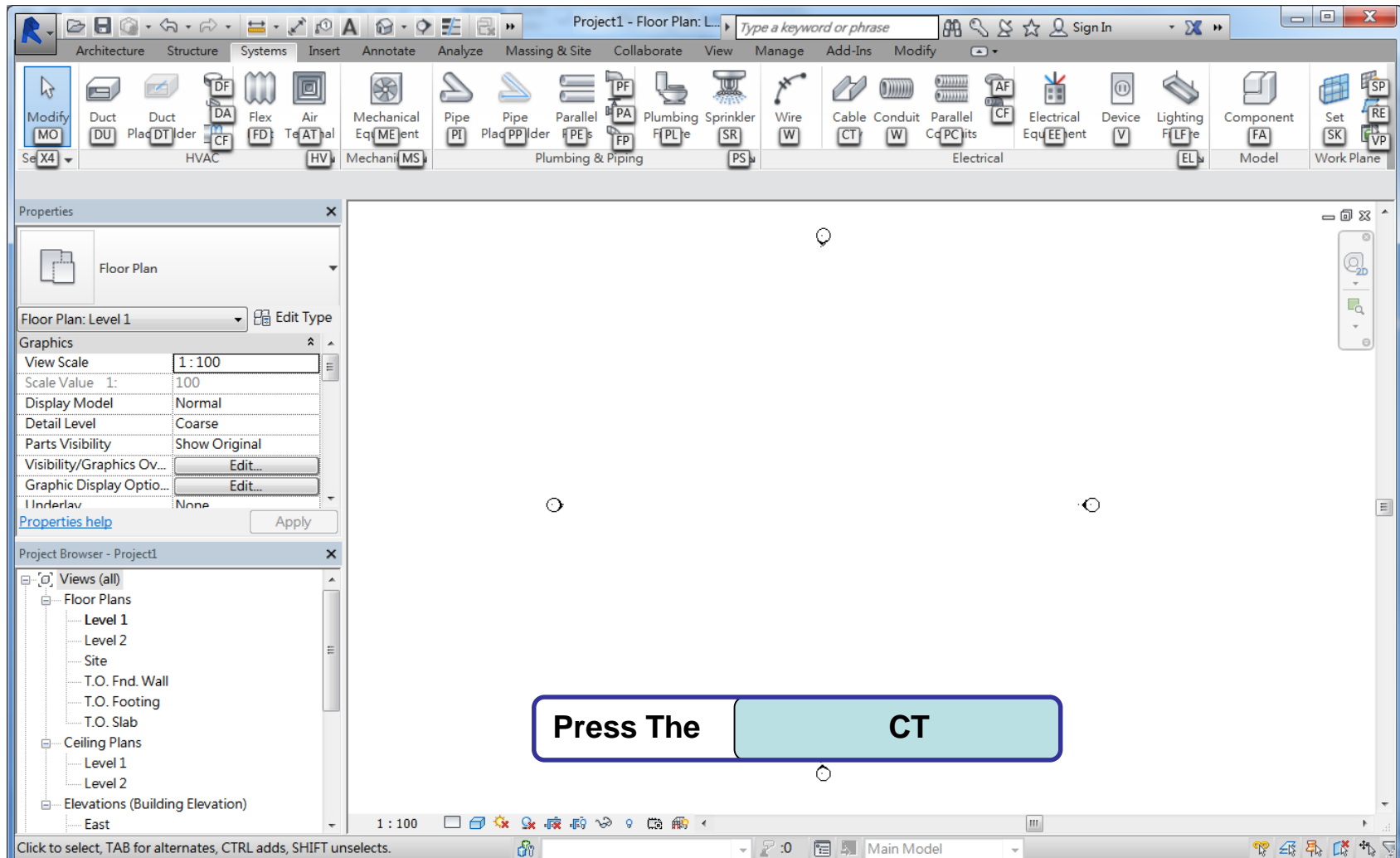
Customizing the Interface

- Keyboard Shortcuts



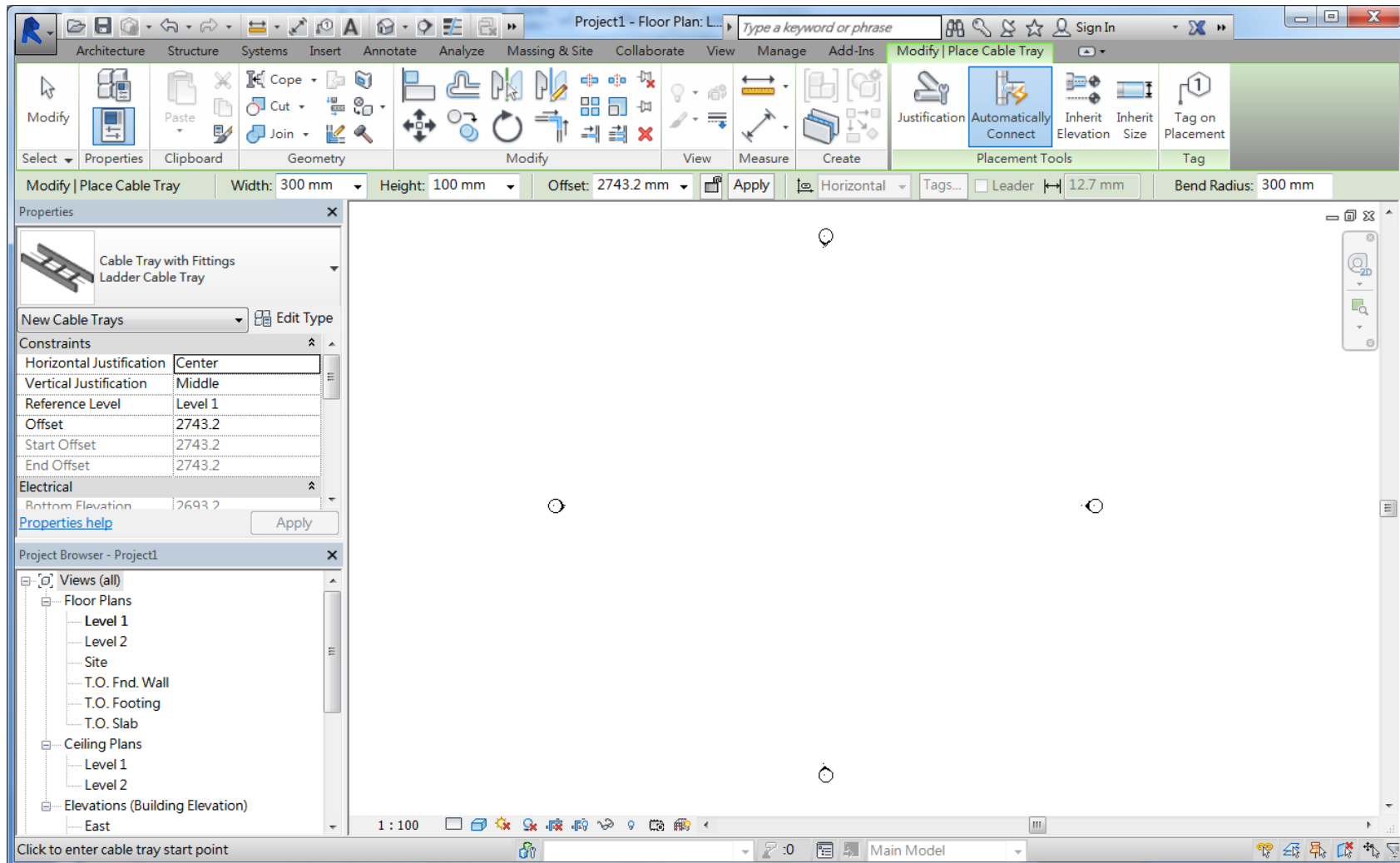
Customizing the Interface

- Keyboard Shortcuts



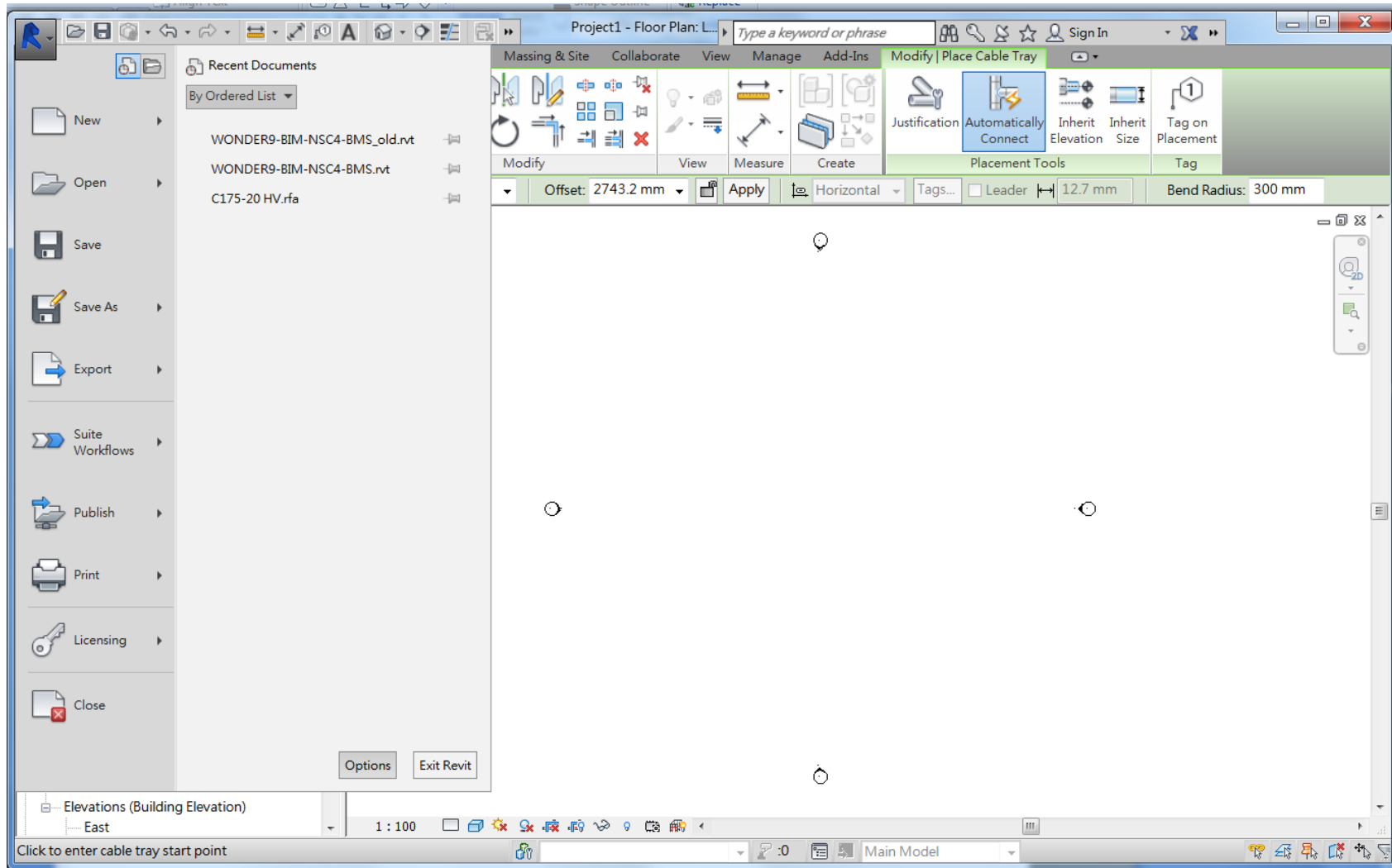
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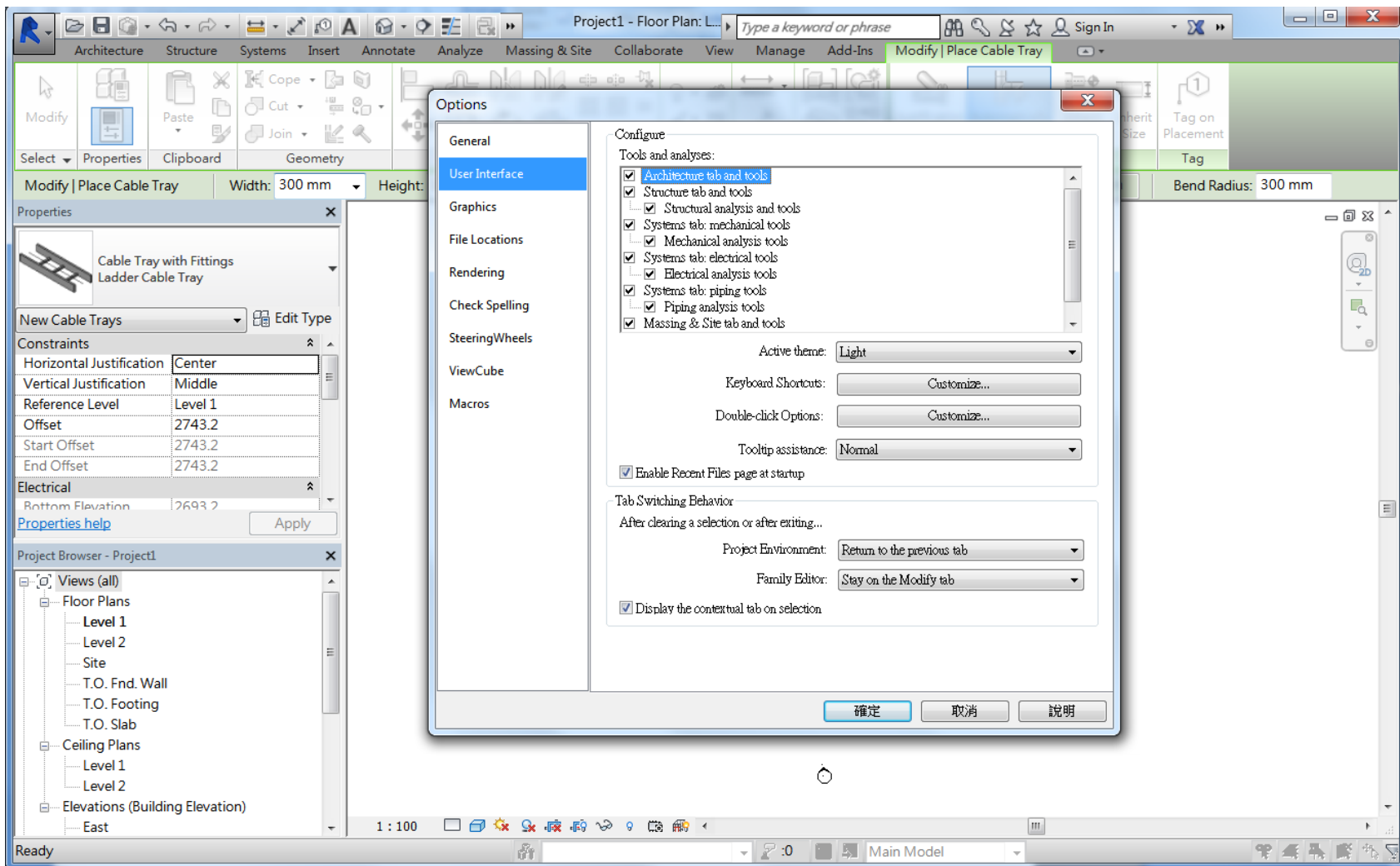
Customizing the Interface

- Keyboard Shortcuts



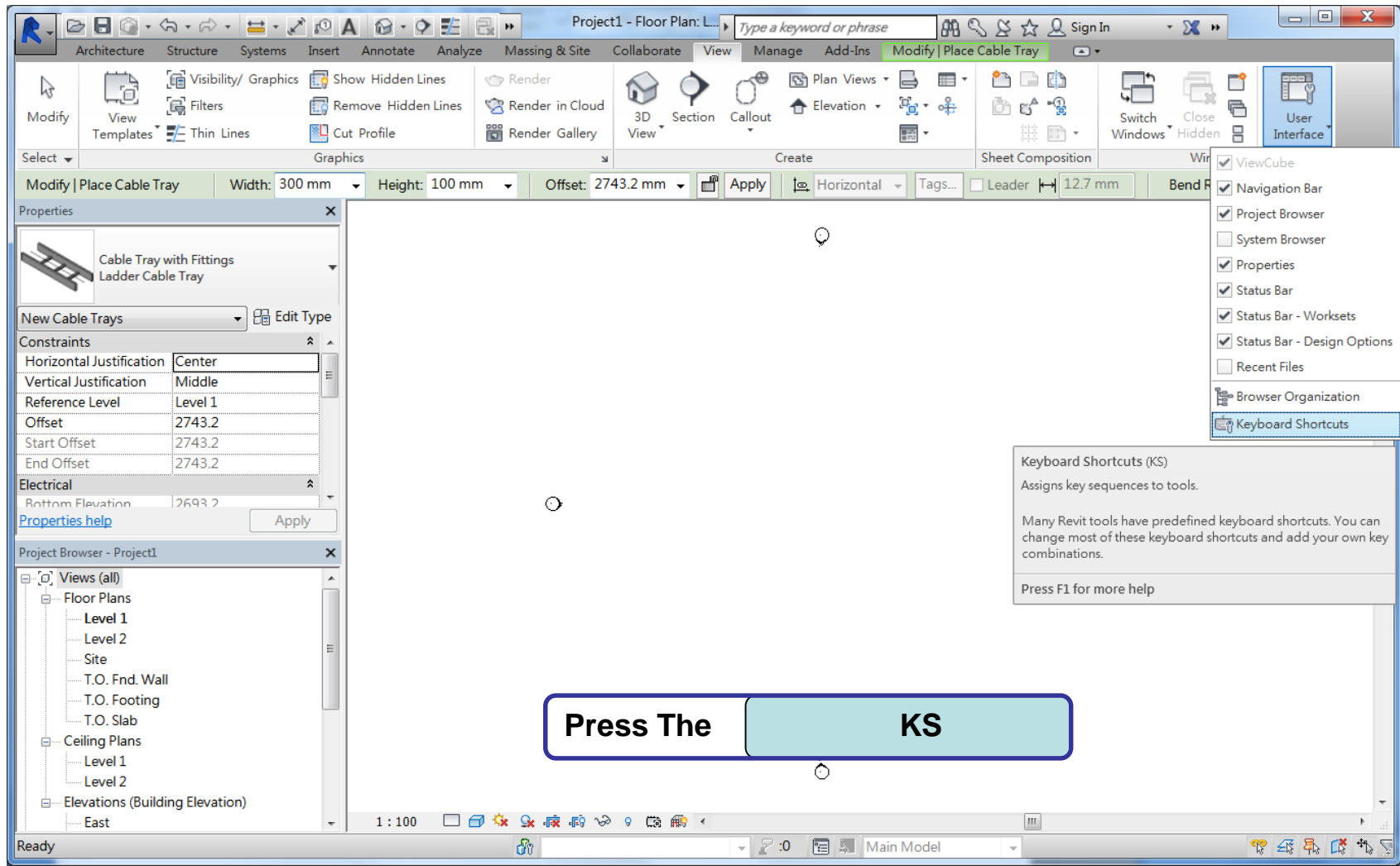
Customizing the Interface

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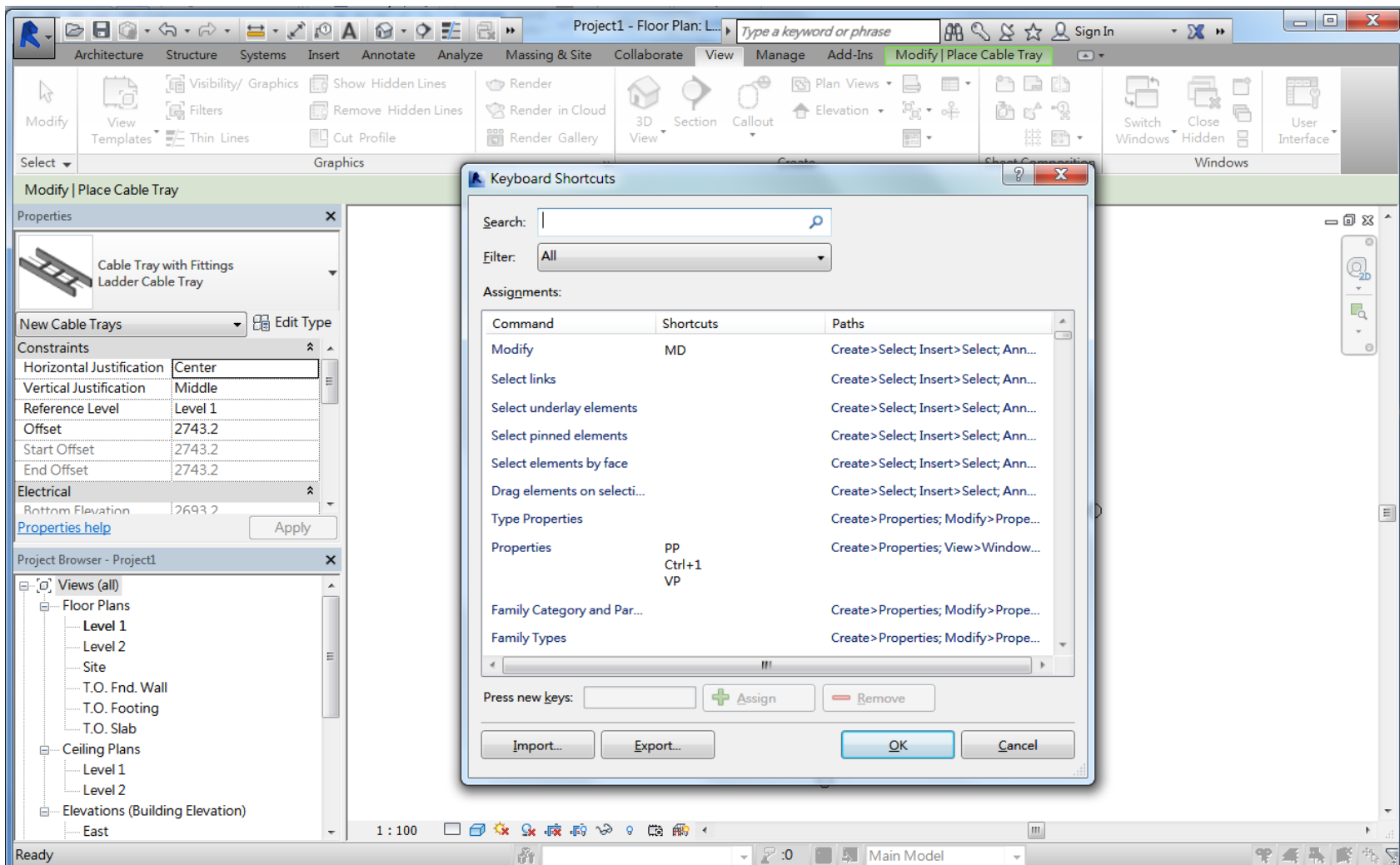
Customizing the Interface

- Keyboard Shortcuts



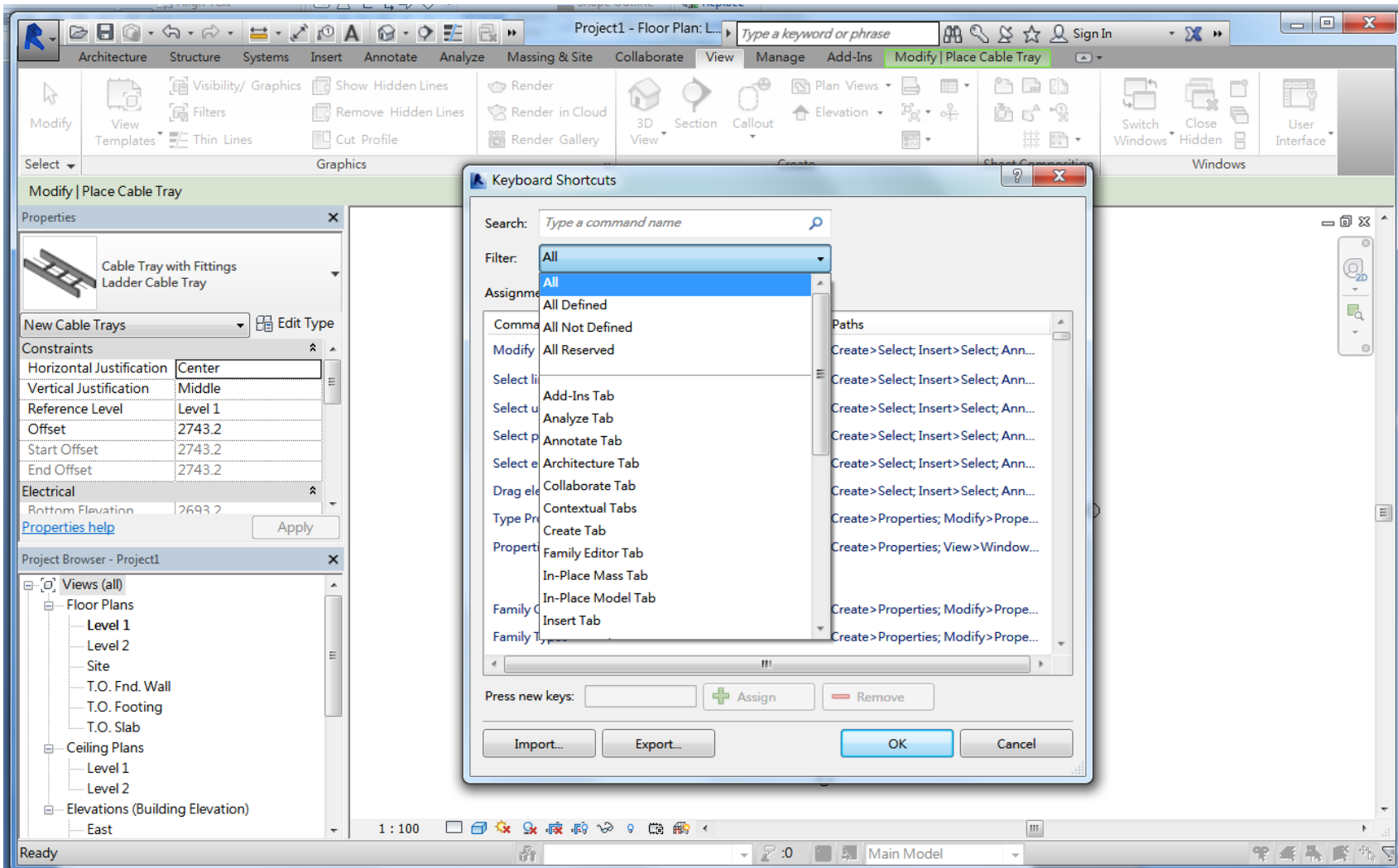
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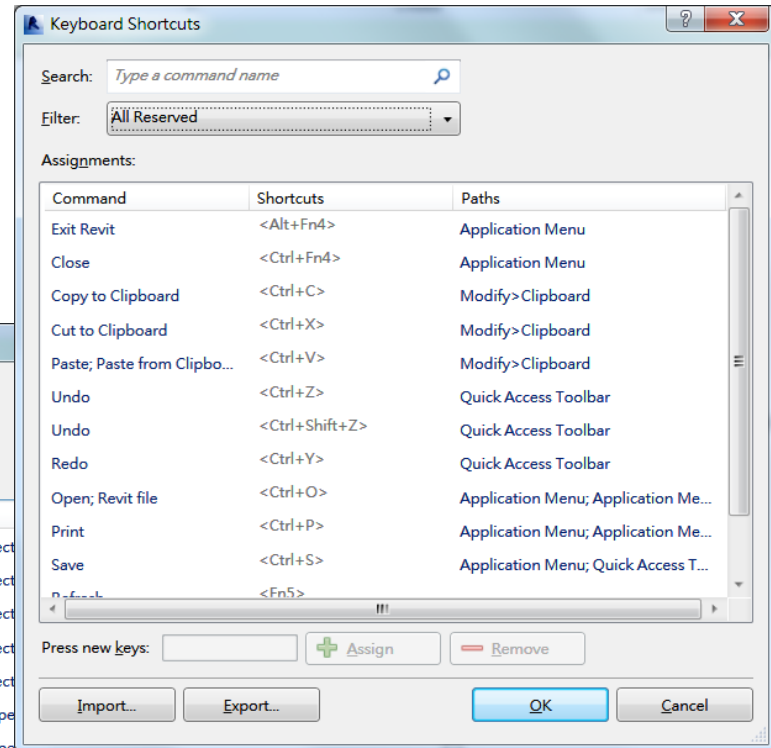
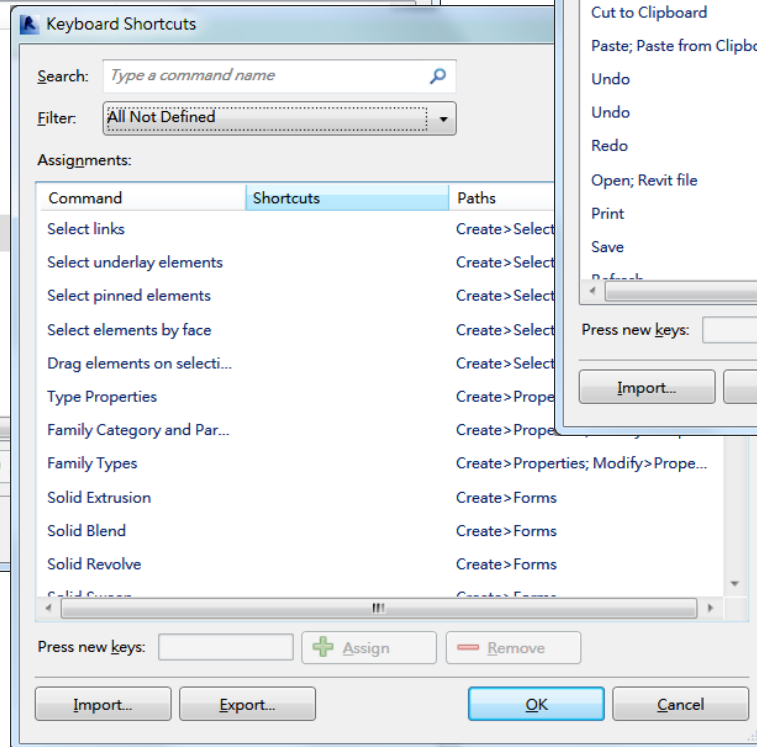
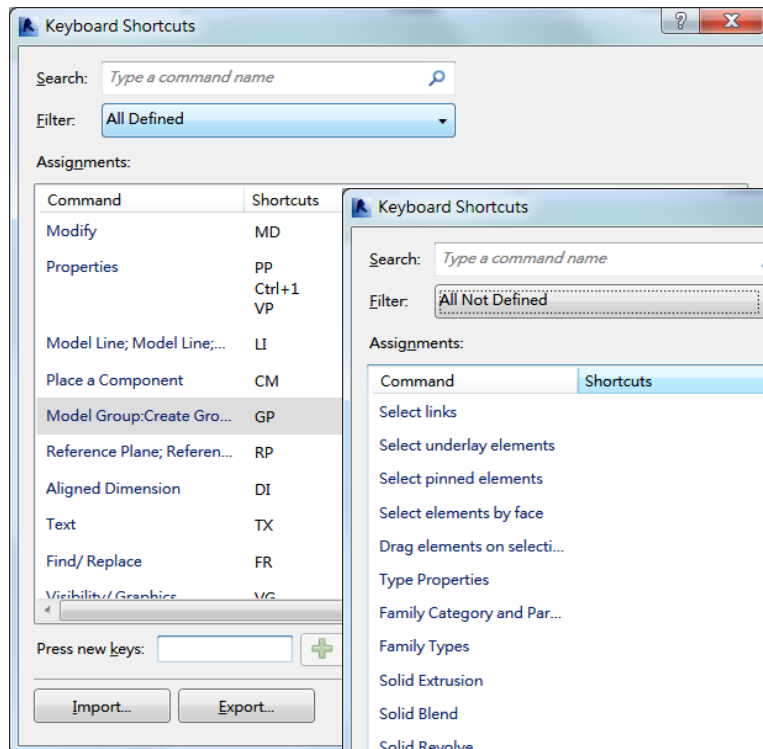
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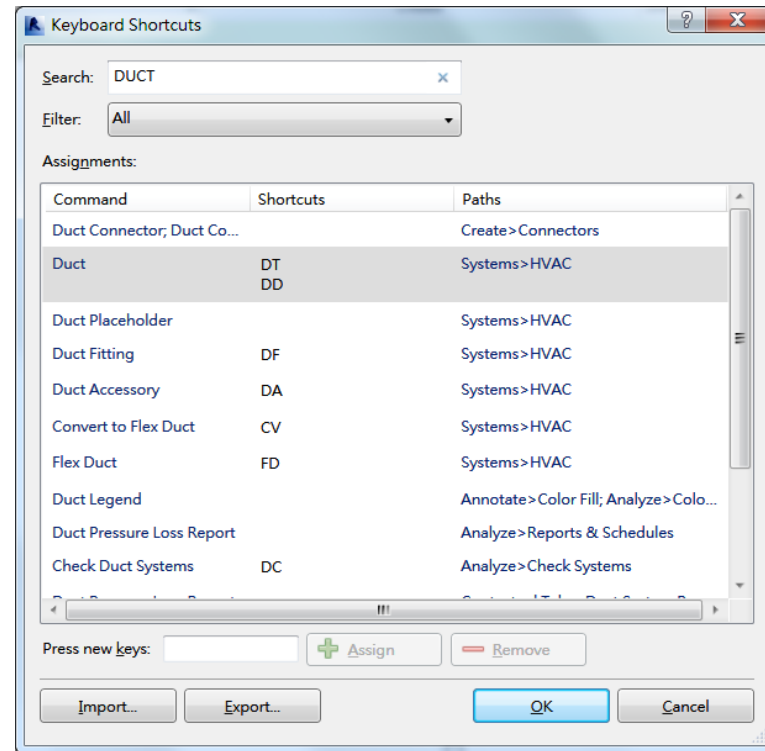
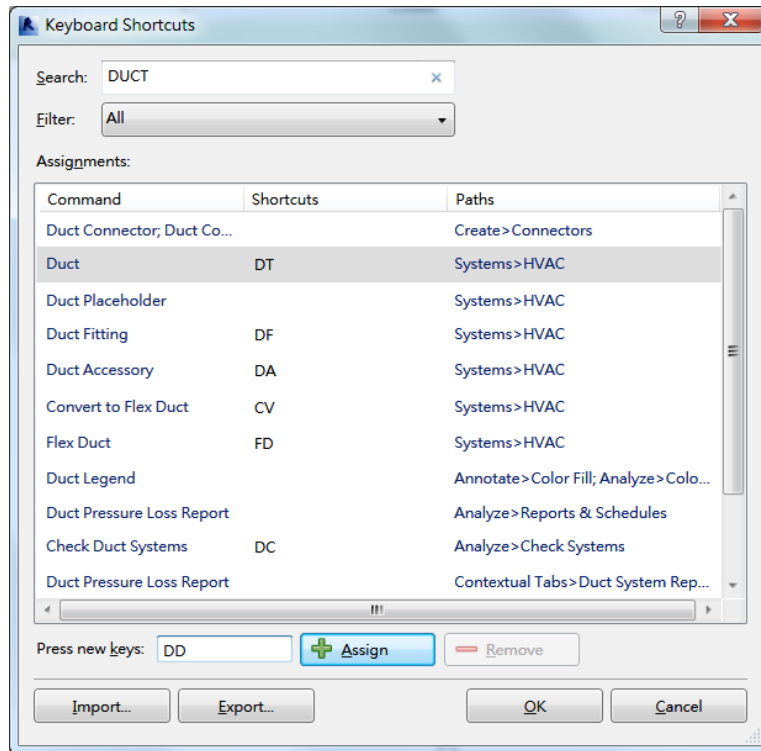
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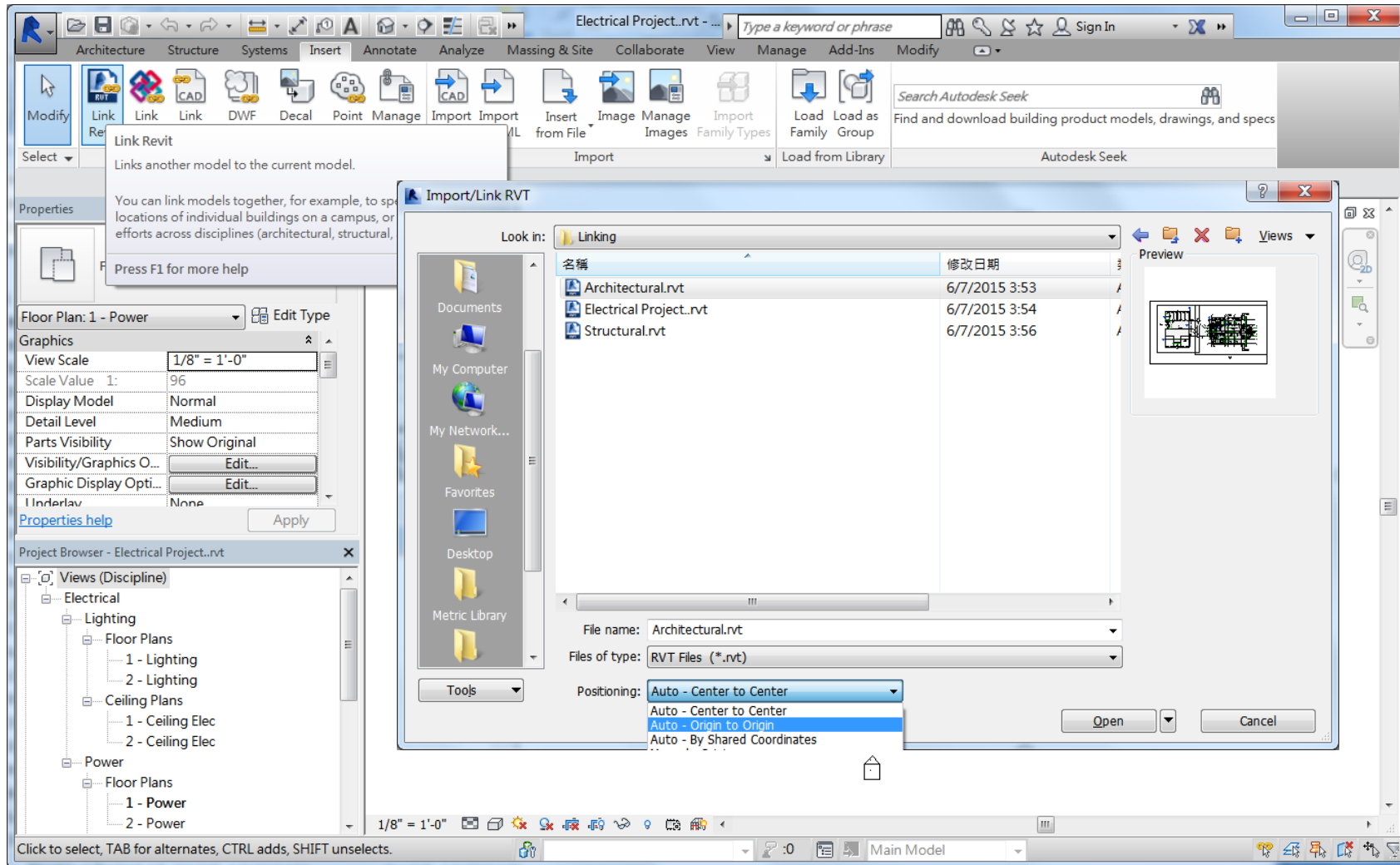
Customizing the Interface

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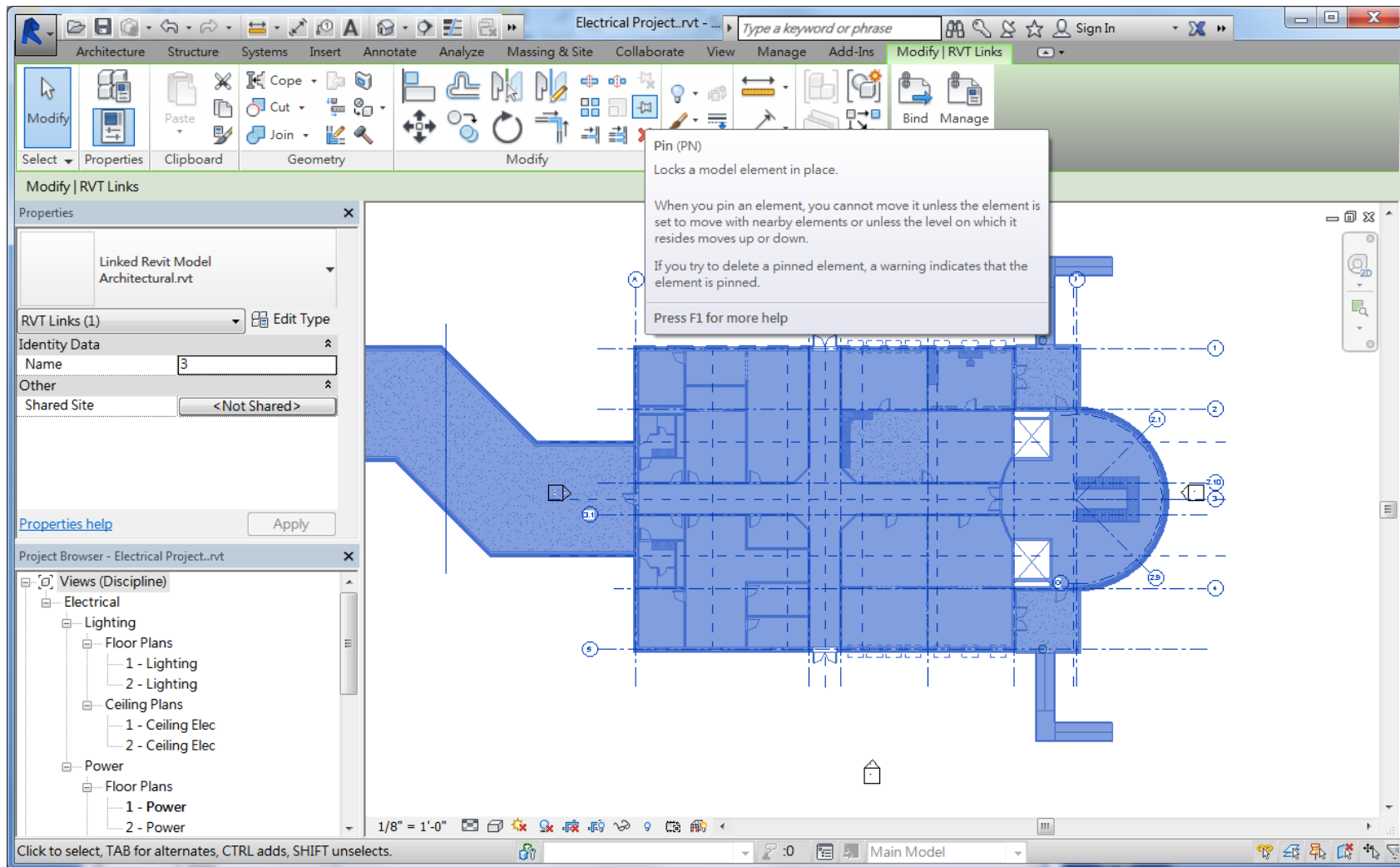
Linking Model

- Link Architectural / Structural Model



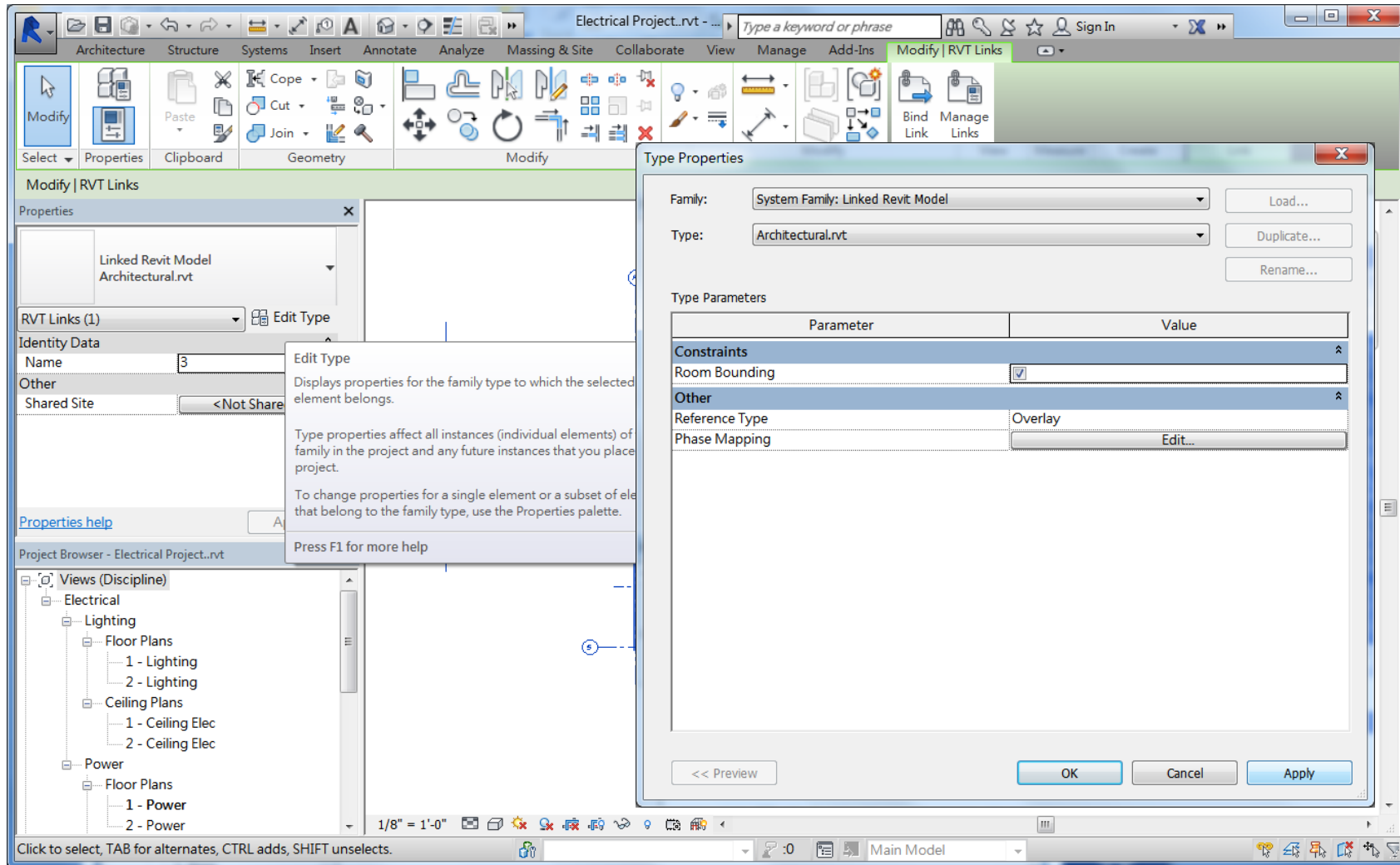
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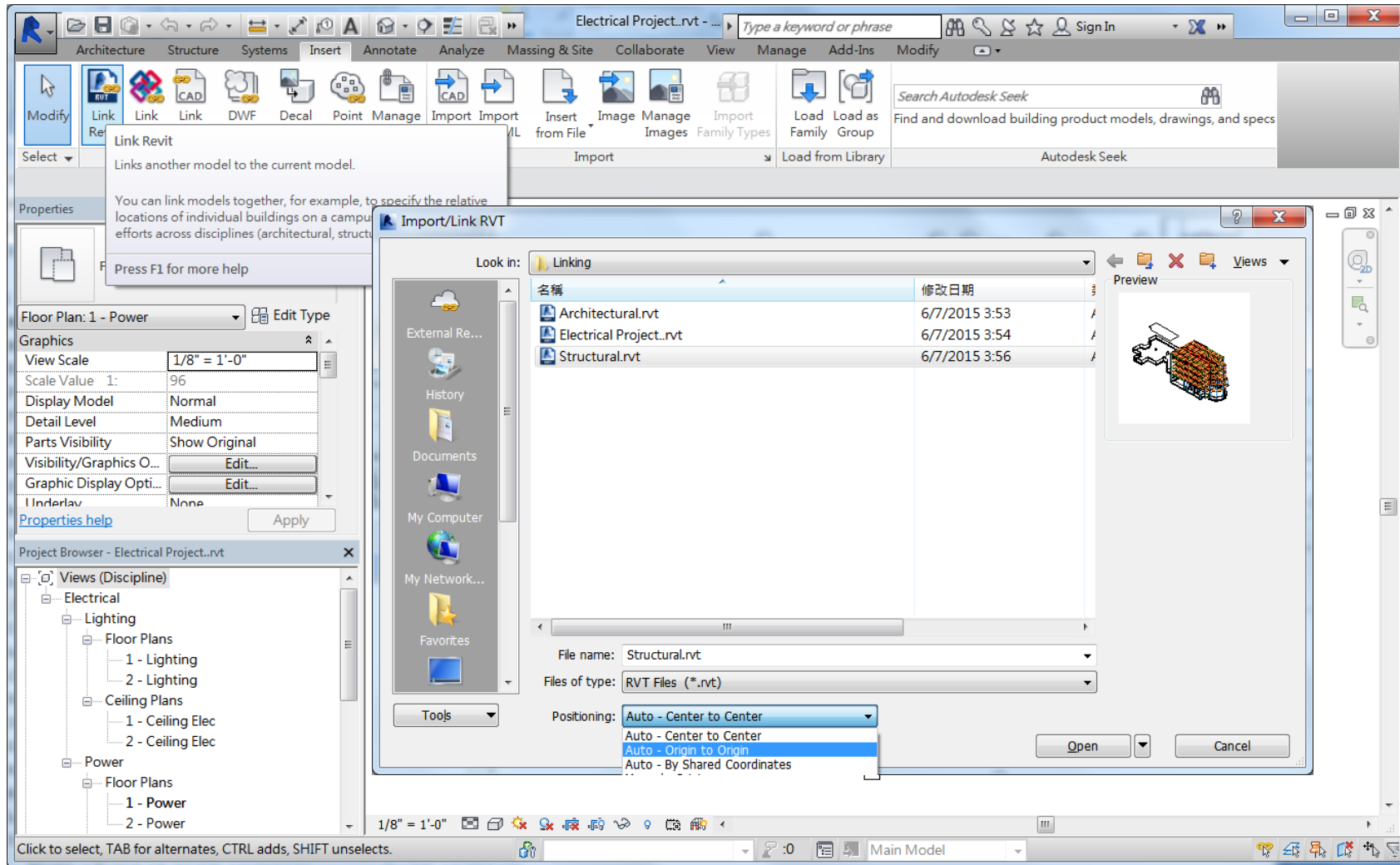
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- Link Architectural / Structural Model



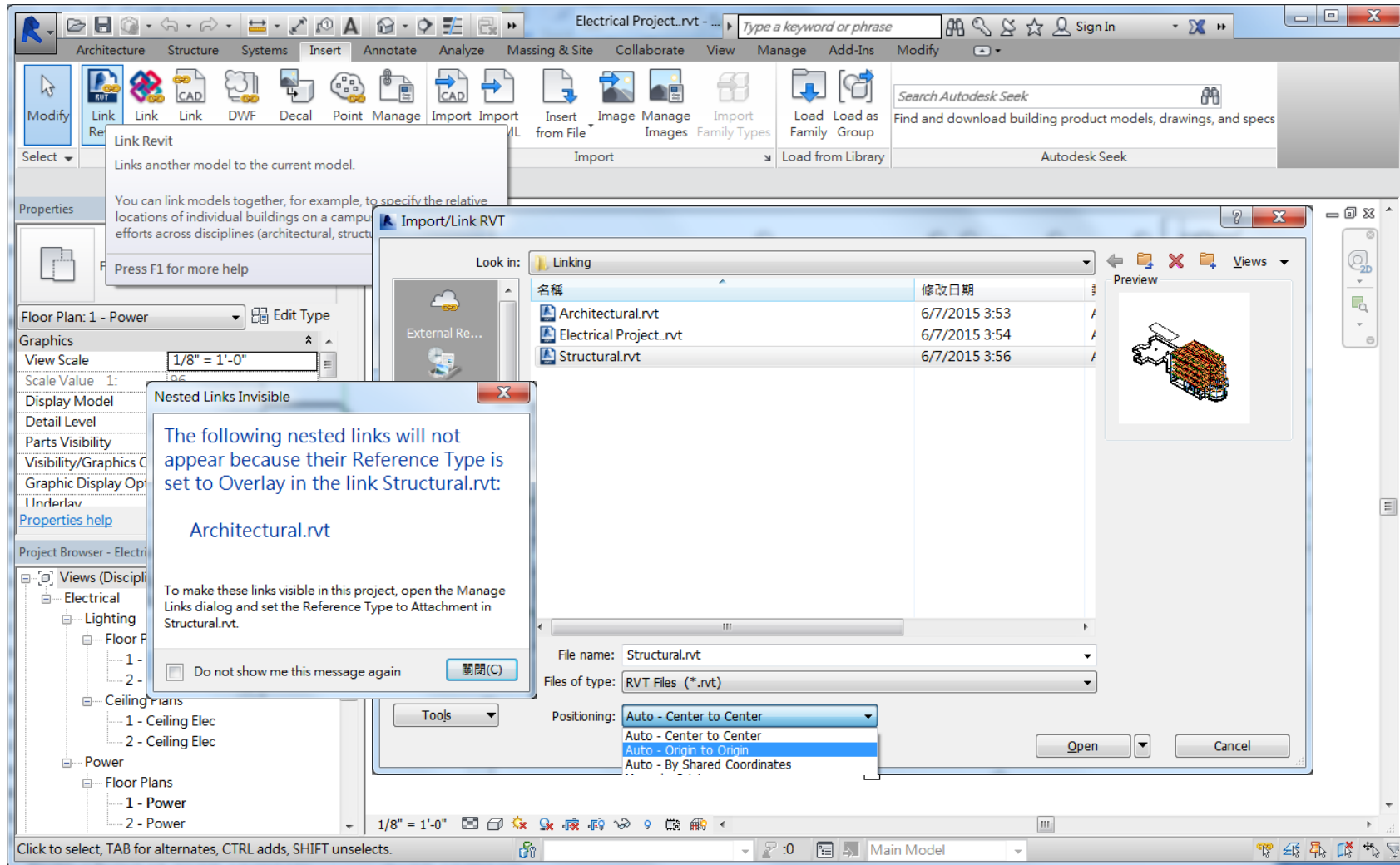
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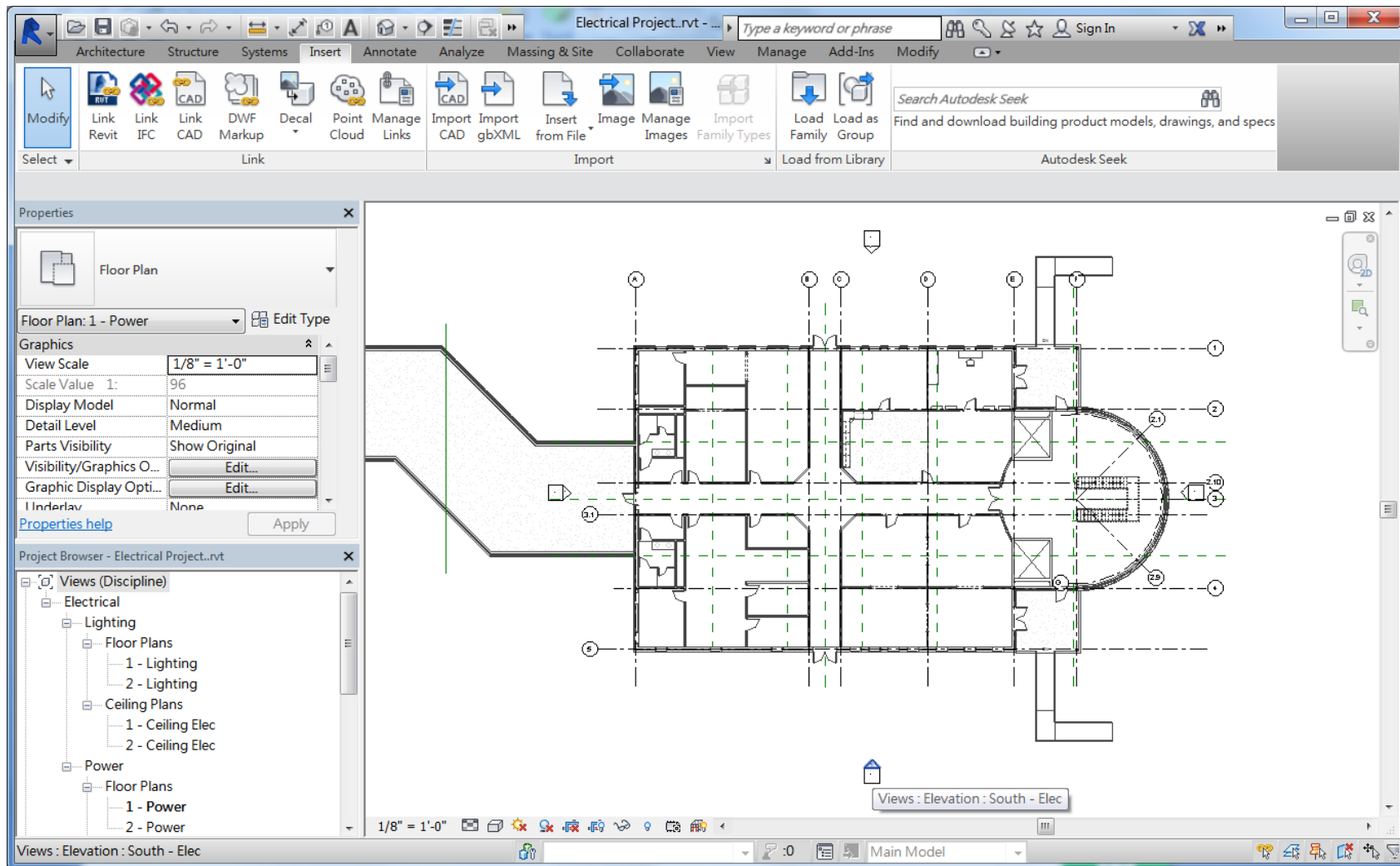
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Copying Level and Monitoring

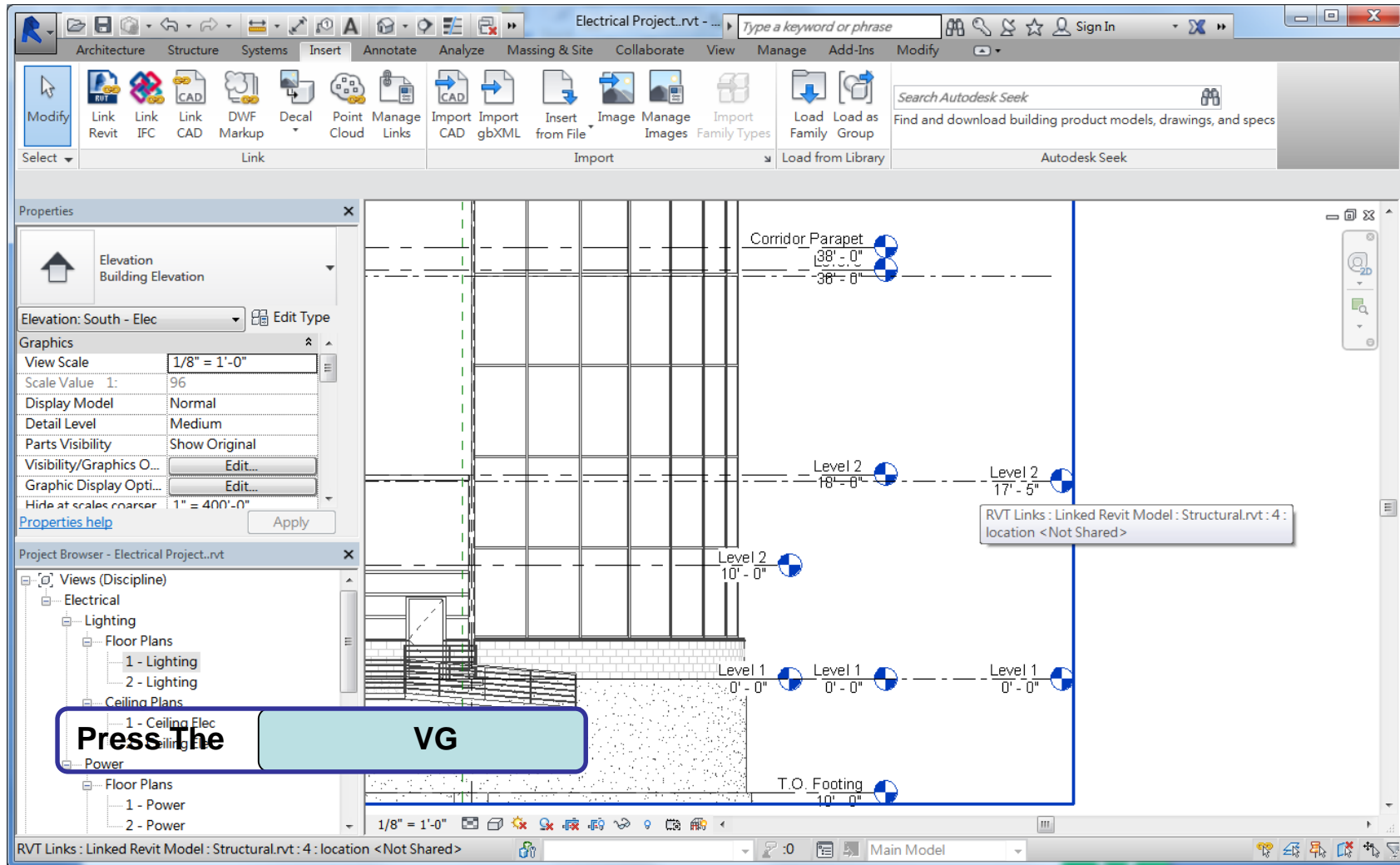
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CEII MEP (REVIT)

Level Copying and Monitoring

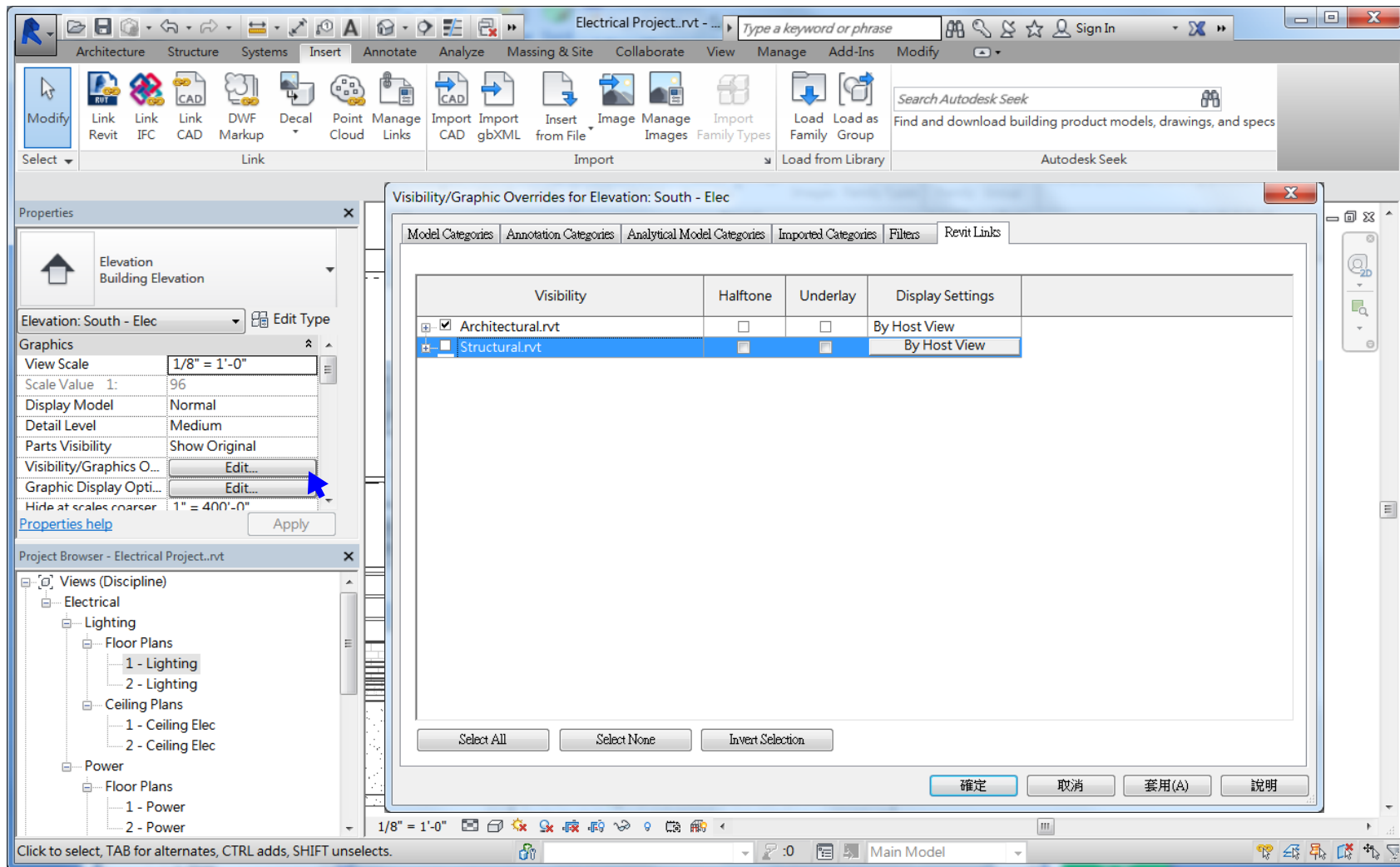
- Reference Levels from Linked Model



CEI MEP (REVIT)

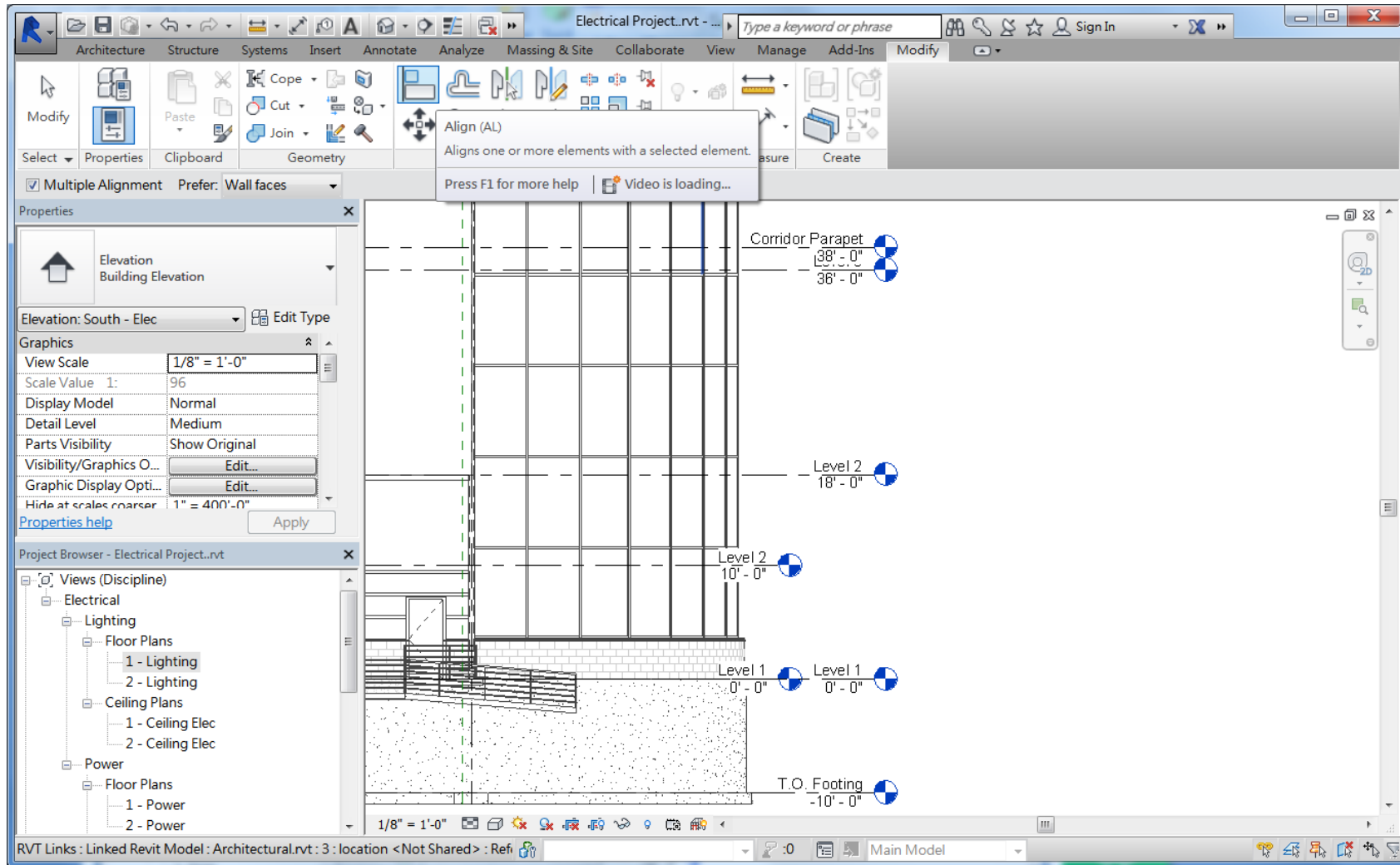
Level Copying and Monitoring

- Reference Levels from Linked Model



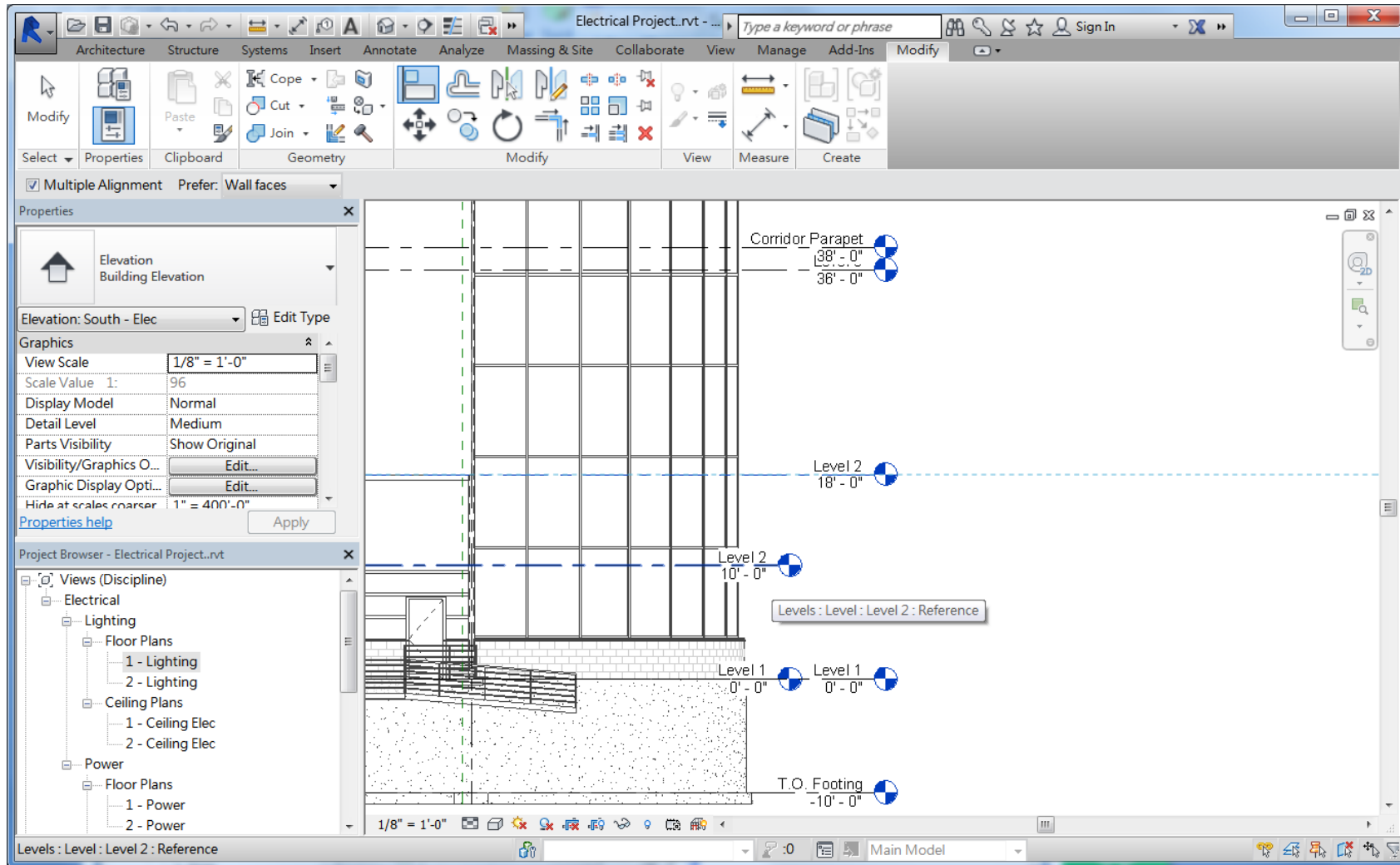
Level Copying and Monitoring

- Reference Levels from Linked Model



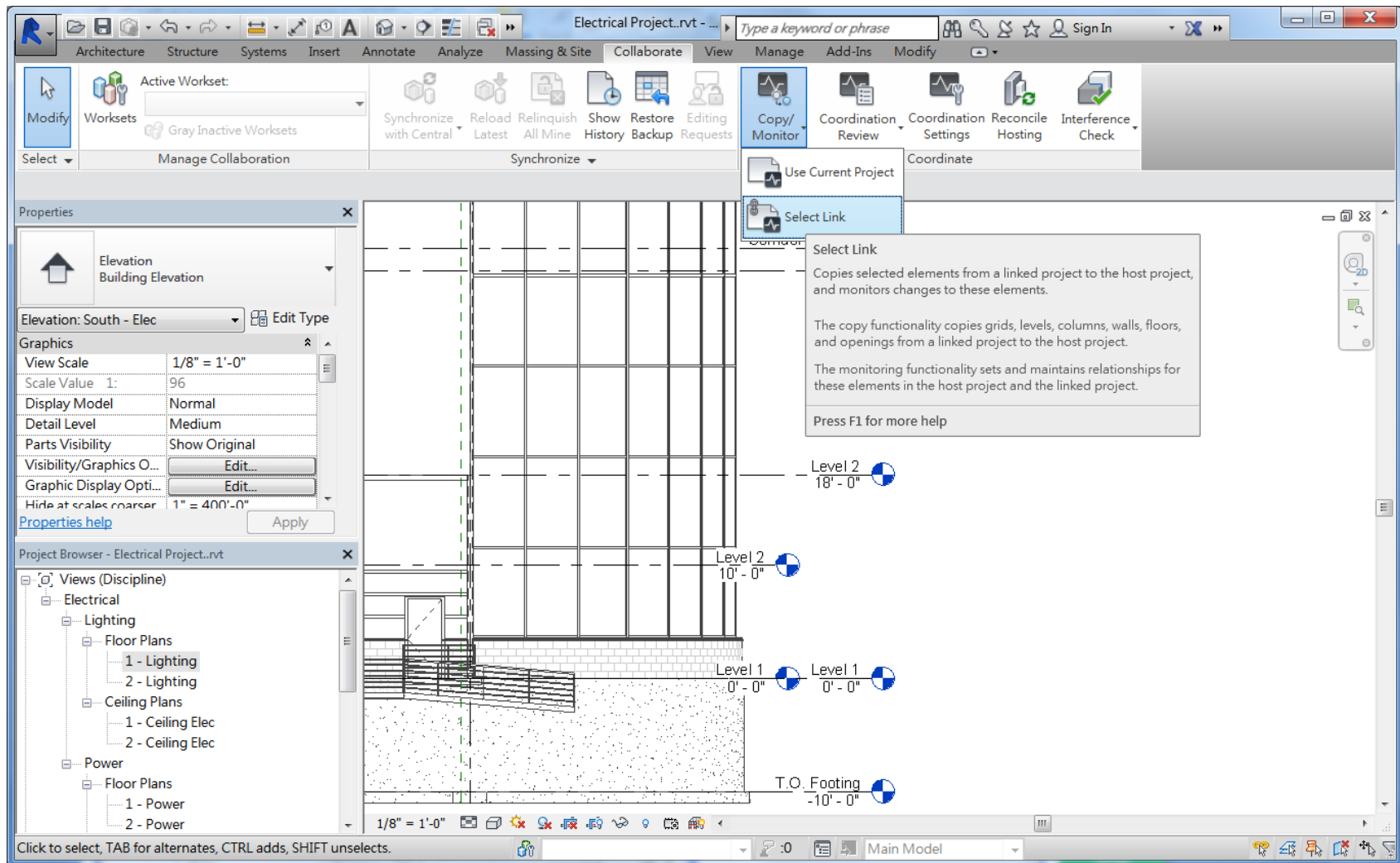
Level Copying and Monitoring

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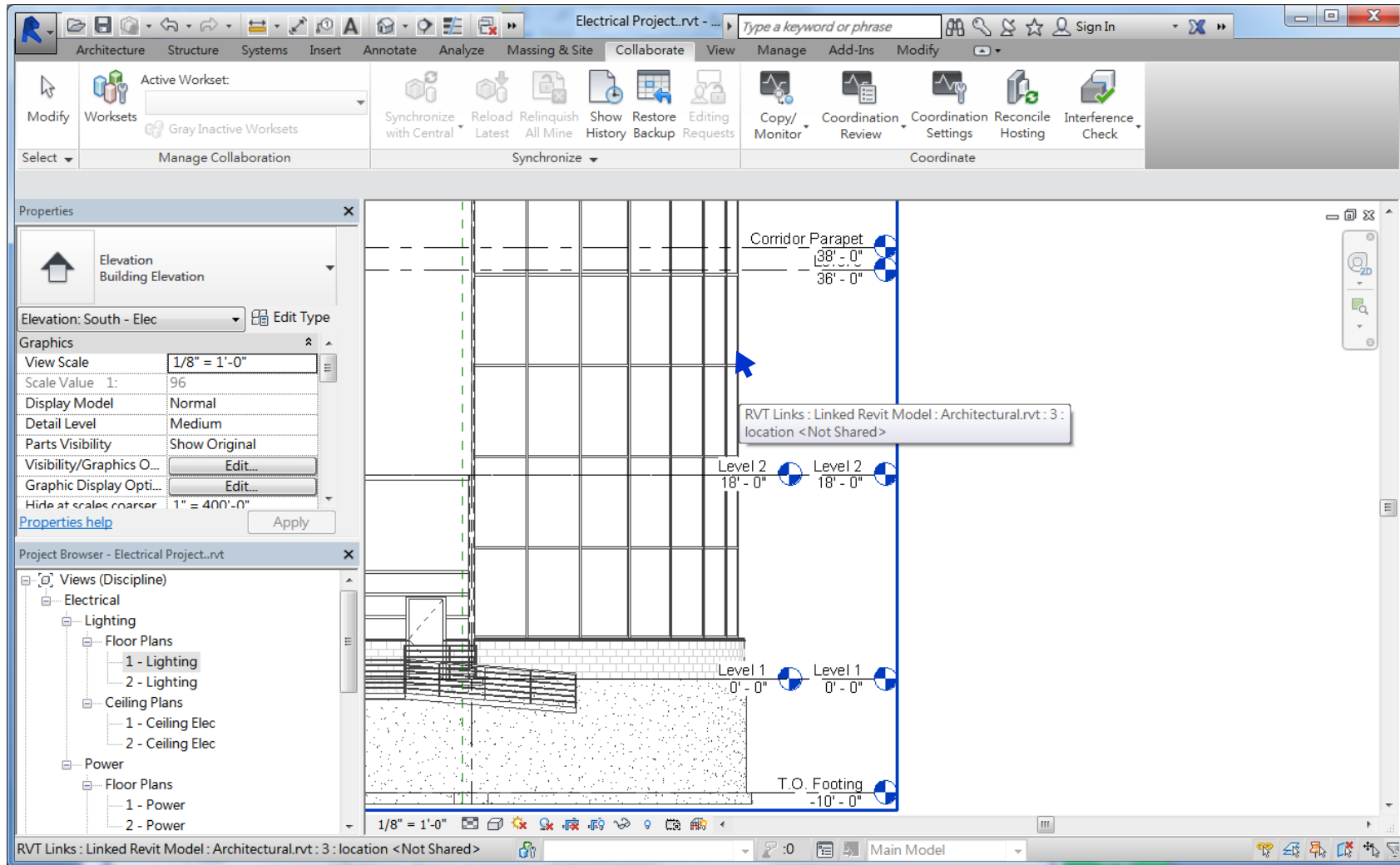
Level Copying and Monitoring

- Reference Levels from Linked Model



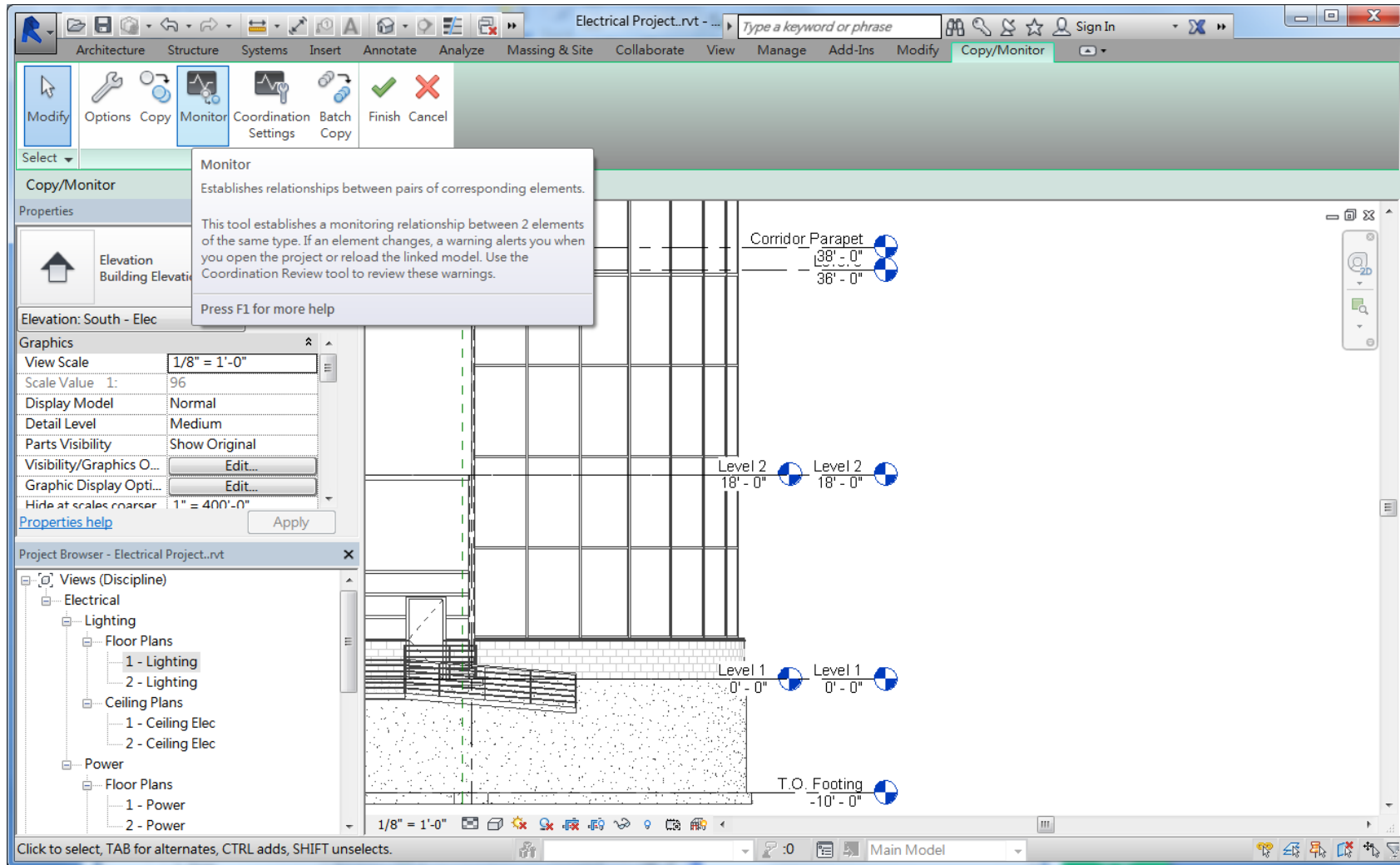
Level Copying and Monitoring

- Reference Levels from Linked Model



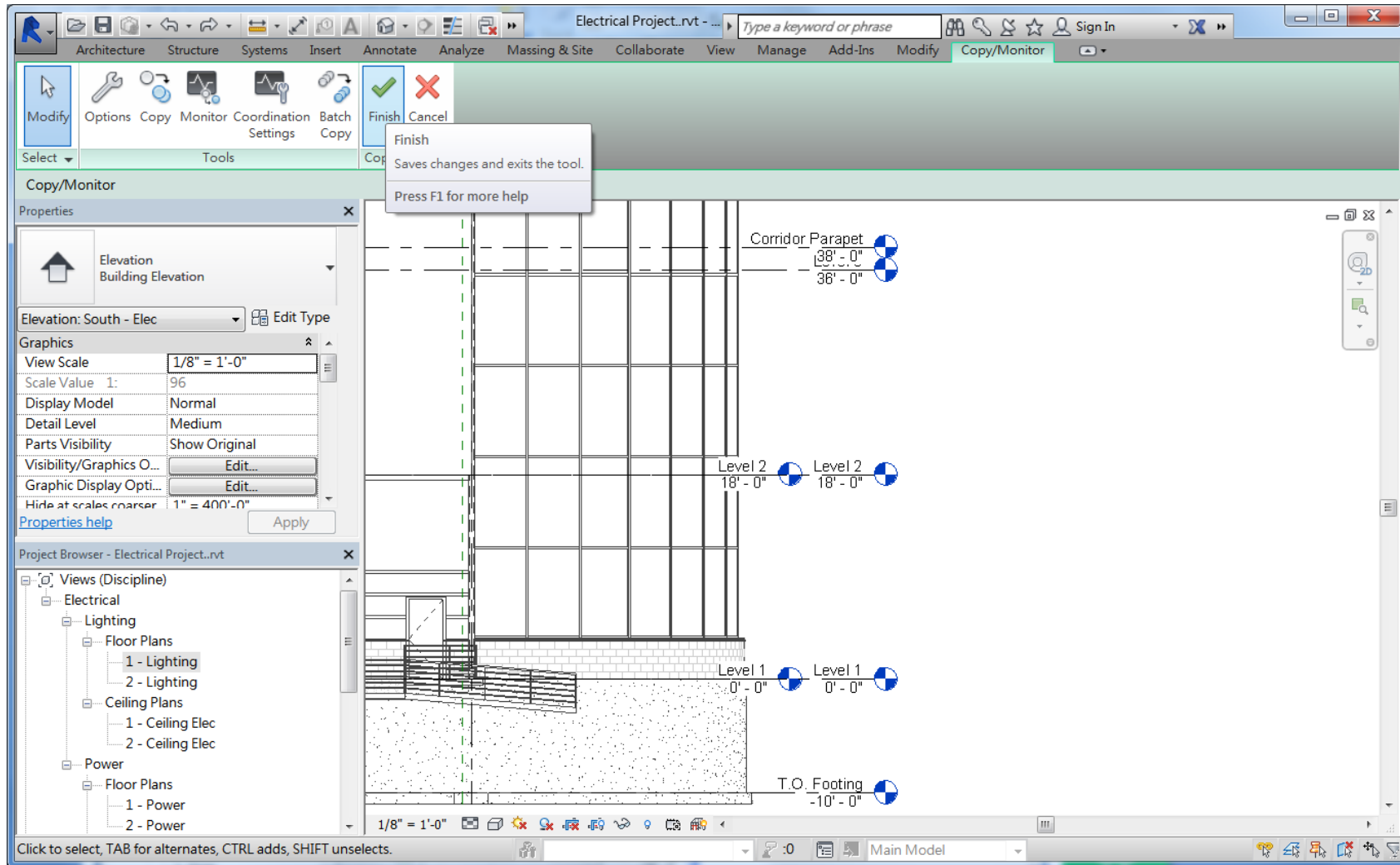
Level Copying and Monitoring

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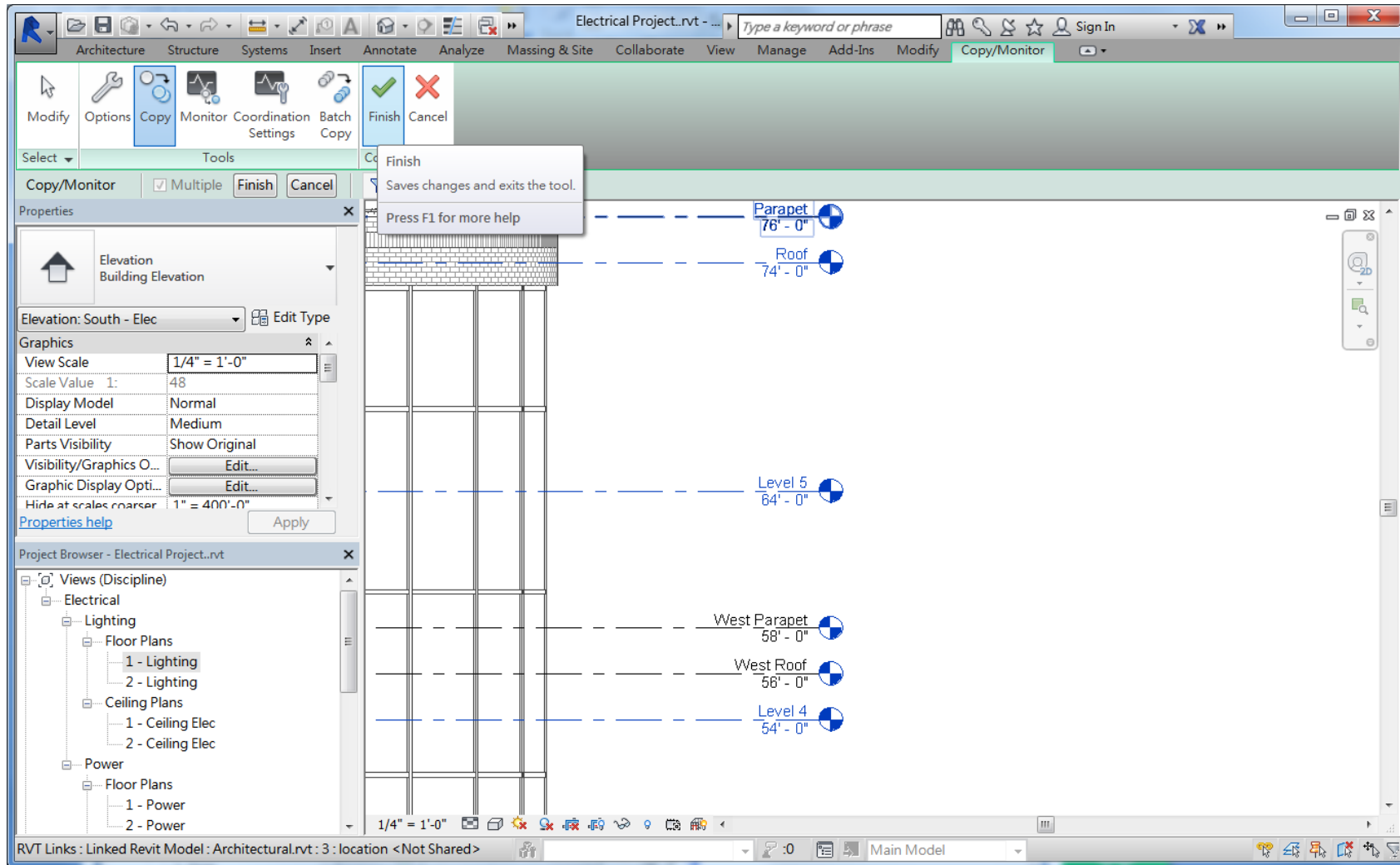
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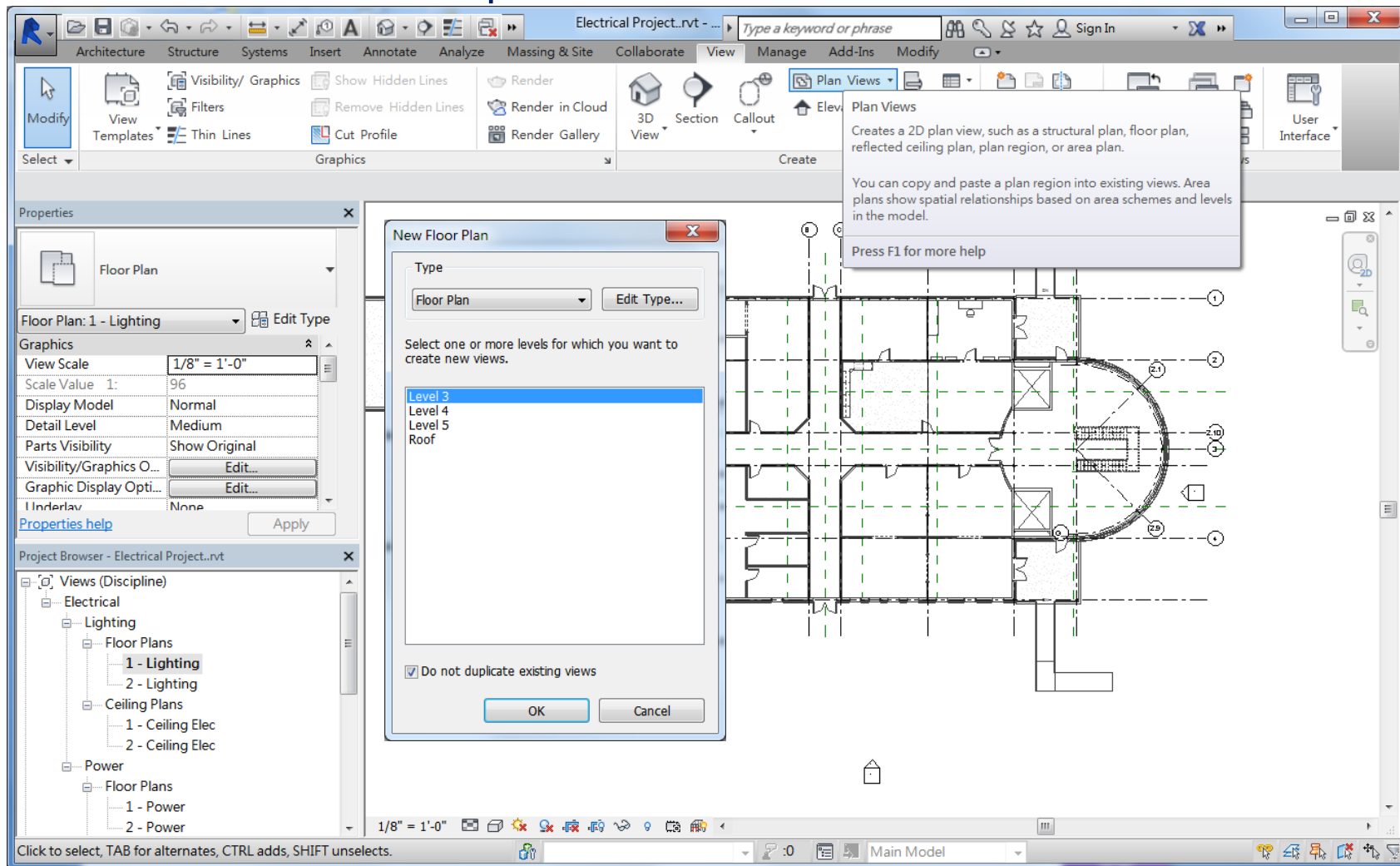
Level Copying and Monitoring

- Reference Levels from Linked Model



Creating Floor Plan

- Allocate the floor plan from defined level



Creating Floor Plan

- Allocate the floor plan from

The screenshot illustrates the Revit MEP interface during the creation of a floor plan. The main window shows the 'Type Properties' dialog for a 'Floor Plan' type, with the 'Identity Data' section showing 'View Template applied to new views' set to 'Electrical Plan'. Overlaid on this is the 'New Floor Plan' dialog, which shows 'Level 3' selected. Another dialog, 'Apply View Template', is also open, showing a list of view templates with 'Electrical Plan' selected. The background shows the Revit interface with the 'Properties' panel on the left and the 'Project Browser' on the bottom left.

Type Properties

Family: System Family: Floor Plan
Type: Floor Plan

Type Parameters

Parameter	Value
Graphics	
Callout Tag	Callout Head w 1/8" Corner Radius
Reference Label	Sim
Identity Data	
View Template applied to new views	Electrical Plan
New views are dependent on template	<input checked="" type="checkbox"/>

New Floor Plan

Type: Floor Plan

Select one or more levels for which you want to create new views.

- Level 3
- Level 4
- Level 5
- Roof

Apply View Template

View Templates

Discipline filter: <all>

View type filter: Floor, Structural, Area Plans

Names:

- <None>
- 1 - Lighting
- 1 - Power
- 2 - Lighting
- 2 - Power
- Architectural Plan
- Electrical Plan**
- Mechanical Plan
- Plumbing Plan

☒ Show Views

View Properties

Number of views with this template assigned: 0

Parameter	Value	Include
View Scale	1/8" = 1'-0"	<input checked="" type="checkbox"/>
Scale Value 1:	96	
Display Model	Normal	<input checked="" type="checkbox"/>
Detail Level	Medium	<input checked="" type="checkbox"/>
Parts Visibility	Show Original	<input checked="" type="checkbox"/>
V/G Overrides Model	Edit...	<input checked="" type="checkbox"/>
V/G Overrides Annotati	Edit...	<input checked="" type="checkbox"/>
V/G Overrides Analytical	Edit...	<input checked="" type="checkbox"/>
V/G Overrides Import	Edit...	<input checked="" type="checkbox"/>
V/G Overrides Filters	Edit...	<input checked="" type="checkbox"/>
V/G Overrides RVT Links	Edit...	<input checked="" type="checkbox"/>
Model Display	Edit...	<input checked="" type="checkbox"/>
Shadows	Edit...	<input checked="" type="checkbox"/>
Sketchy Lines	Edit...	<input checked="" type="checkbox"/>
Lighting	Edit...	<input checked="" type="checkbox"/>
Photographic Exposure	Edit...	<input checked="" type="checkbox"/>

Properties

Floor Plan

Floor Plan: 1 - Lighting

Graphics

View Scale: 1/8" = 1'-0"

Scale Value 1: 96

Display Model: Normal

Detail Level: Medium

Parts Visibility: Show Orig

Visibility/Graphics O...: E

Graphic Display Opti...: E

I Underlay: None

Project Browser - Electrical Project.rvt

- Views (Discipline)
- Electrical
- Lighting
- Floor Plans
- 1 - Lighting
- 2 - Lighting
- Ceiling Plans
- 1 - Ceiling Elec
- 2 - Ceiling Elec
- Power
- Floor Plans
- 1 - Power
- 2 - Power

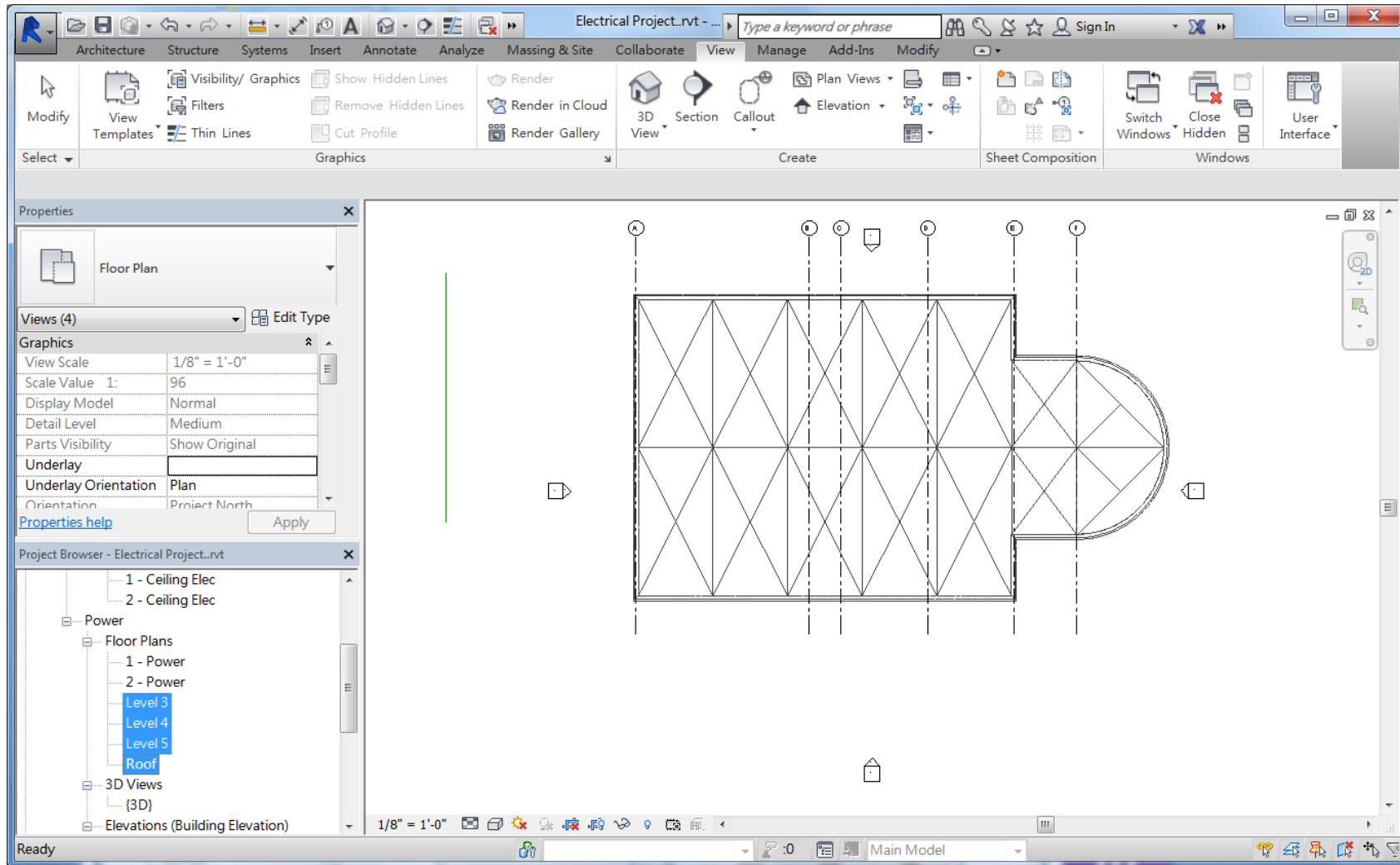
1/8" = 1'-0"

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

Main Model

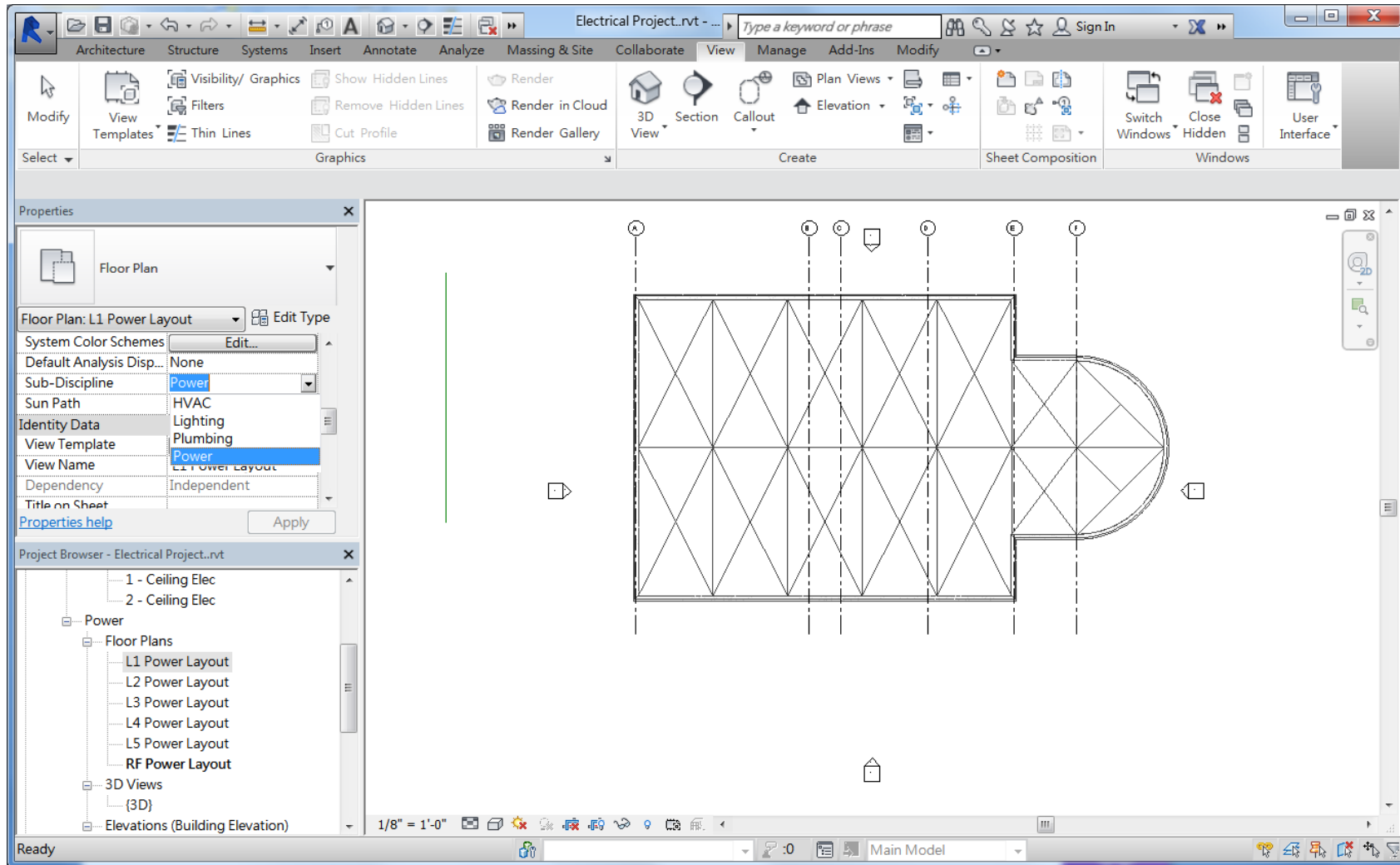
Creating Floor Plan

- Allocate the floor plan from defined level



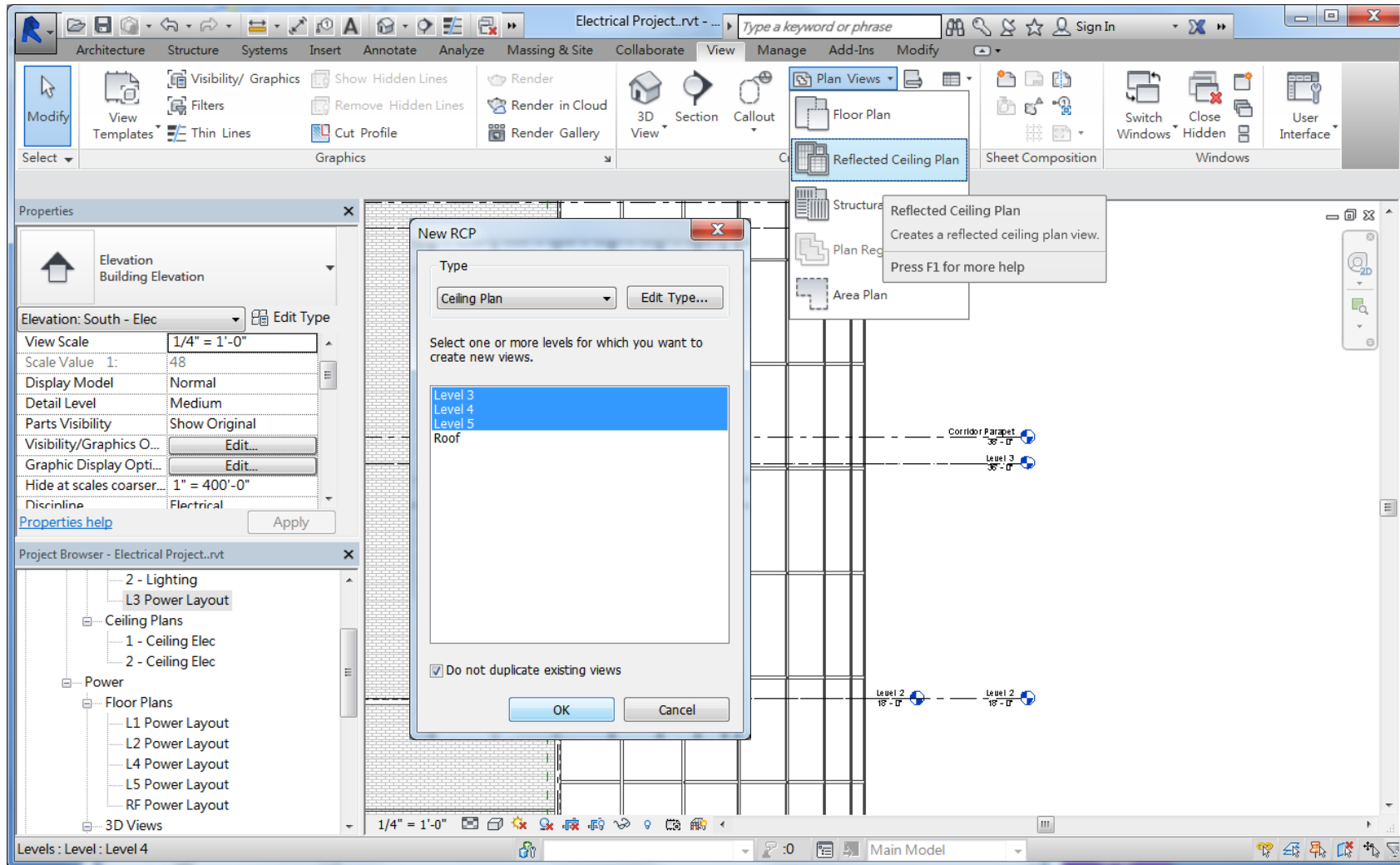
Creating Floor Plan

- Allocate the floor plan from defined level



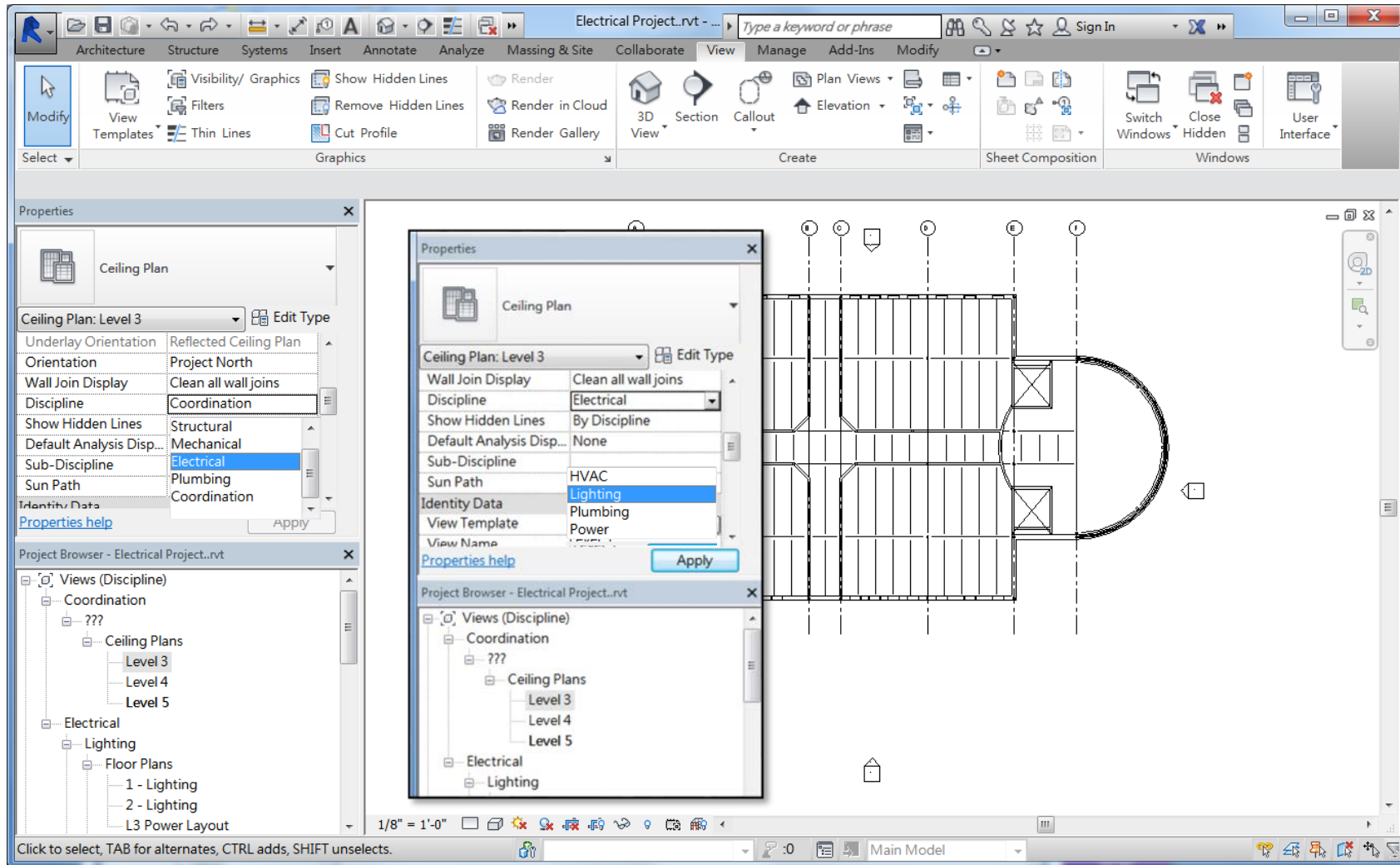
Creating Floor Plan

- Allocate the floor plan from defined level



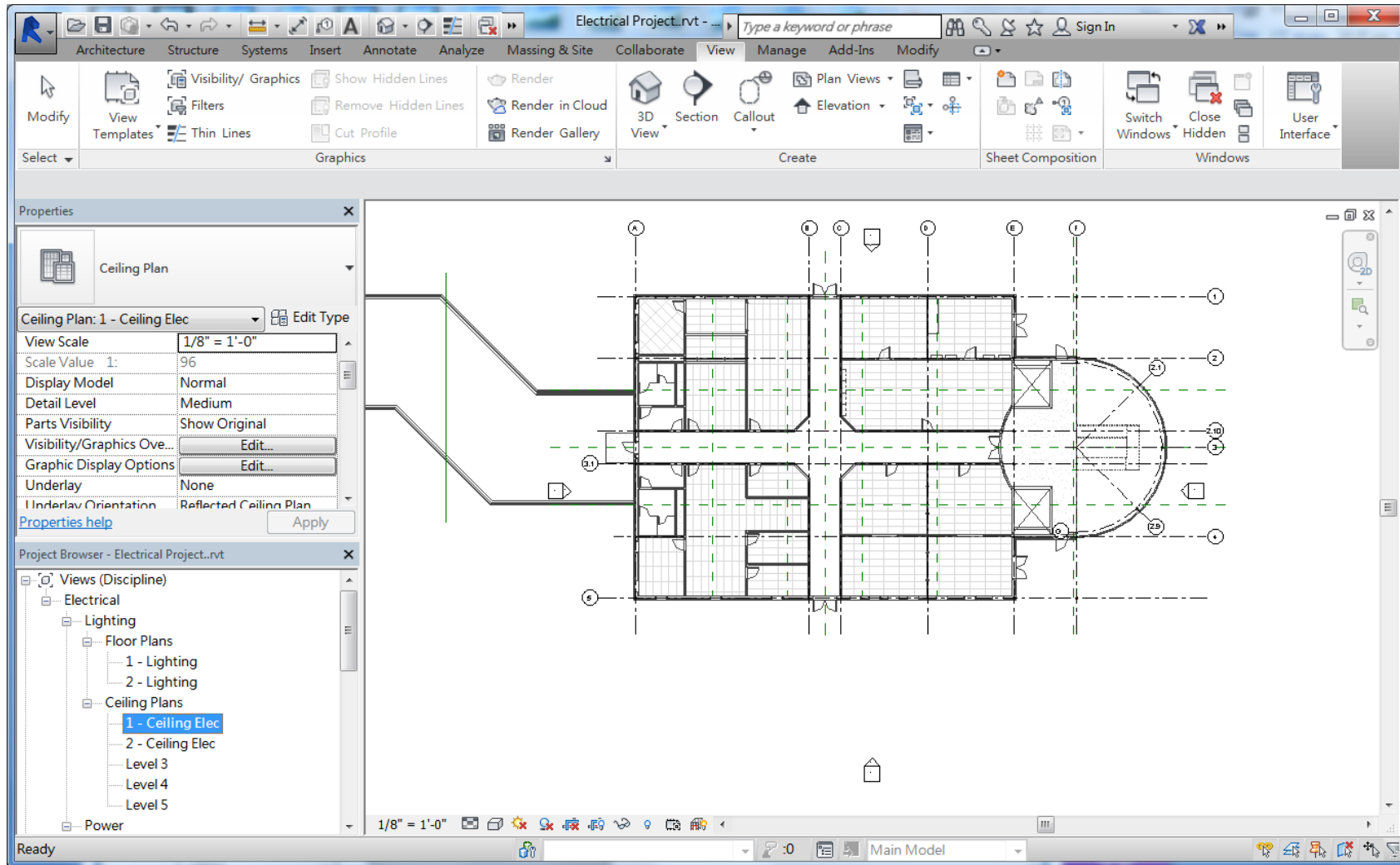
Creating Floor Plan

- Allocate the floor from defined level



Creating Floor Plan

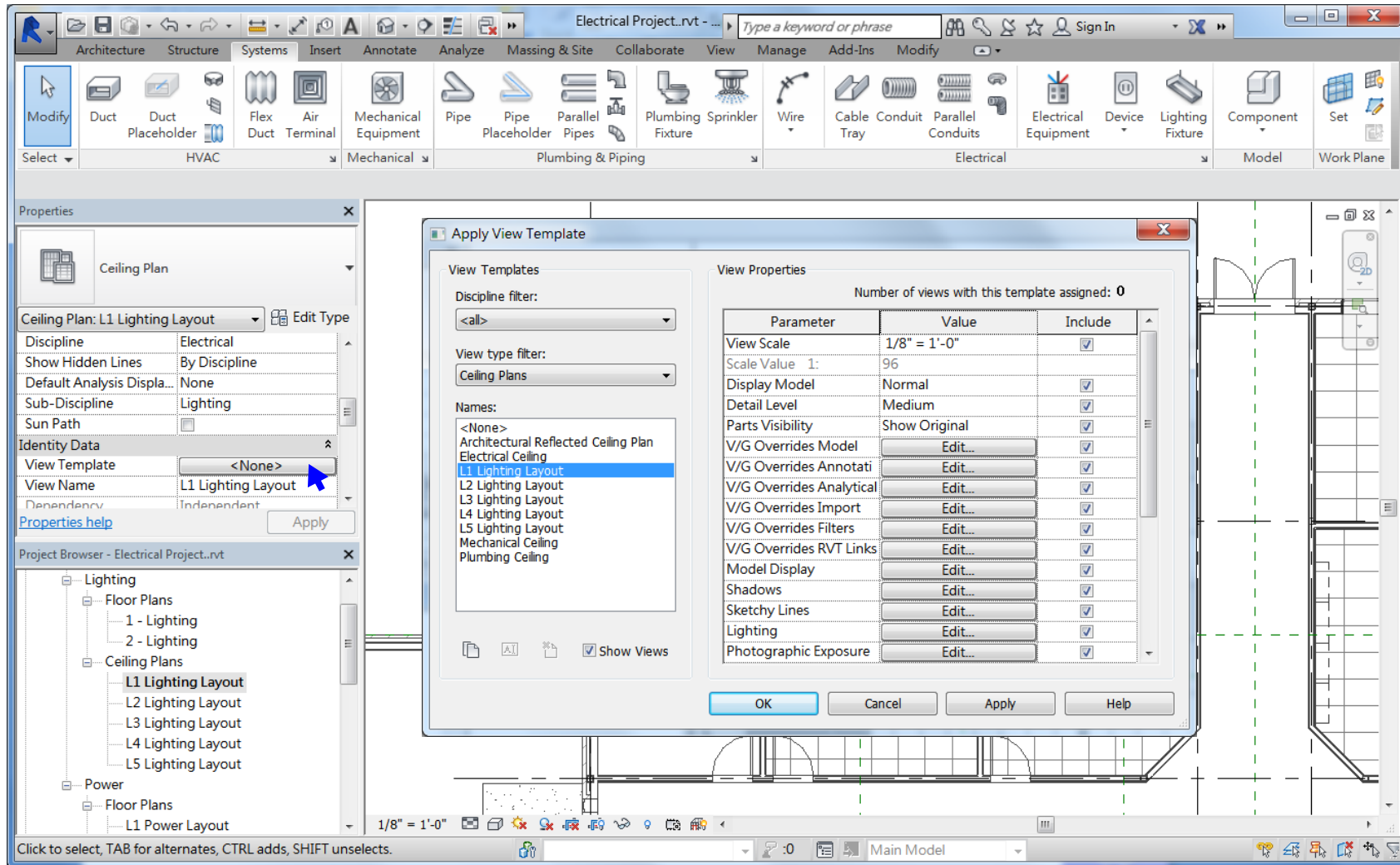
- Allocate the floor plan from defined level



CEILING MEP (REVIT)

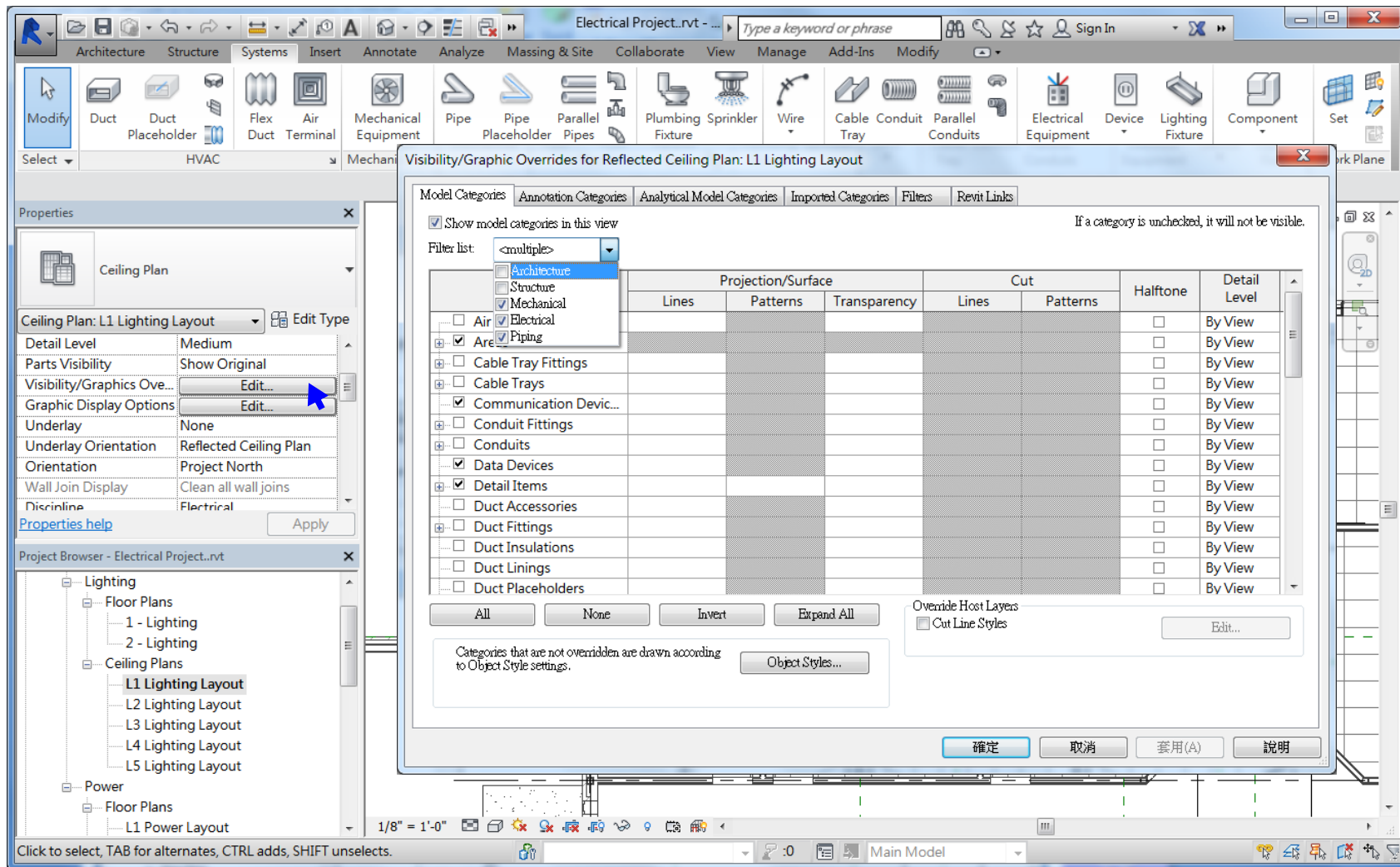
Viewing in Model

- Controlling a view to be a layout



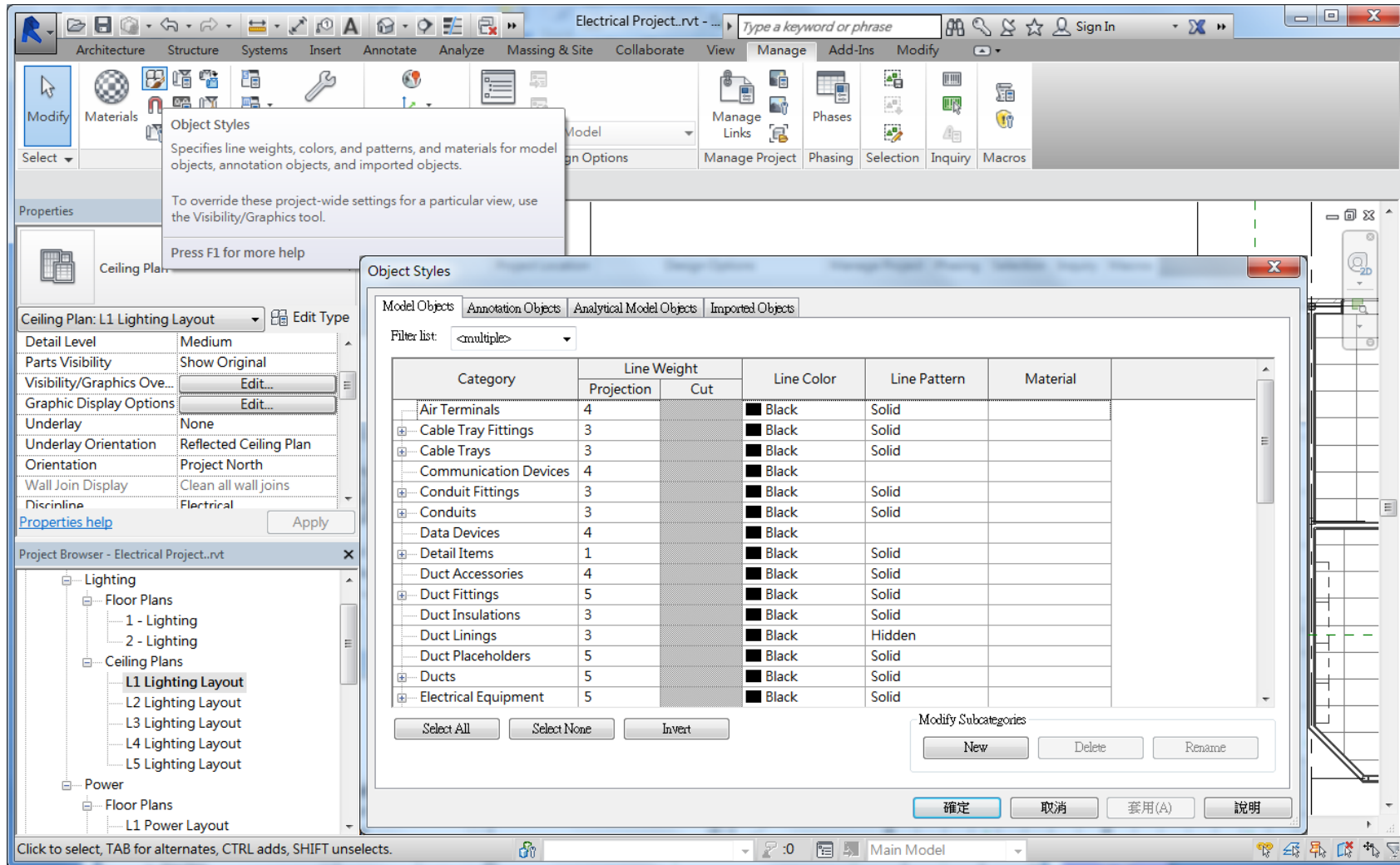
Viewing in Model

- Controlling a view to be a layout



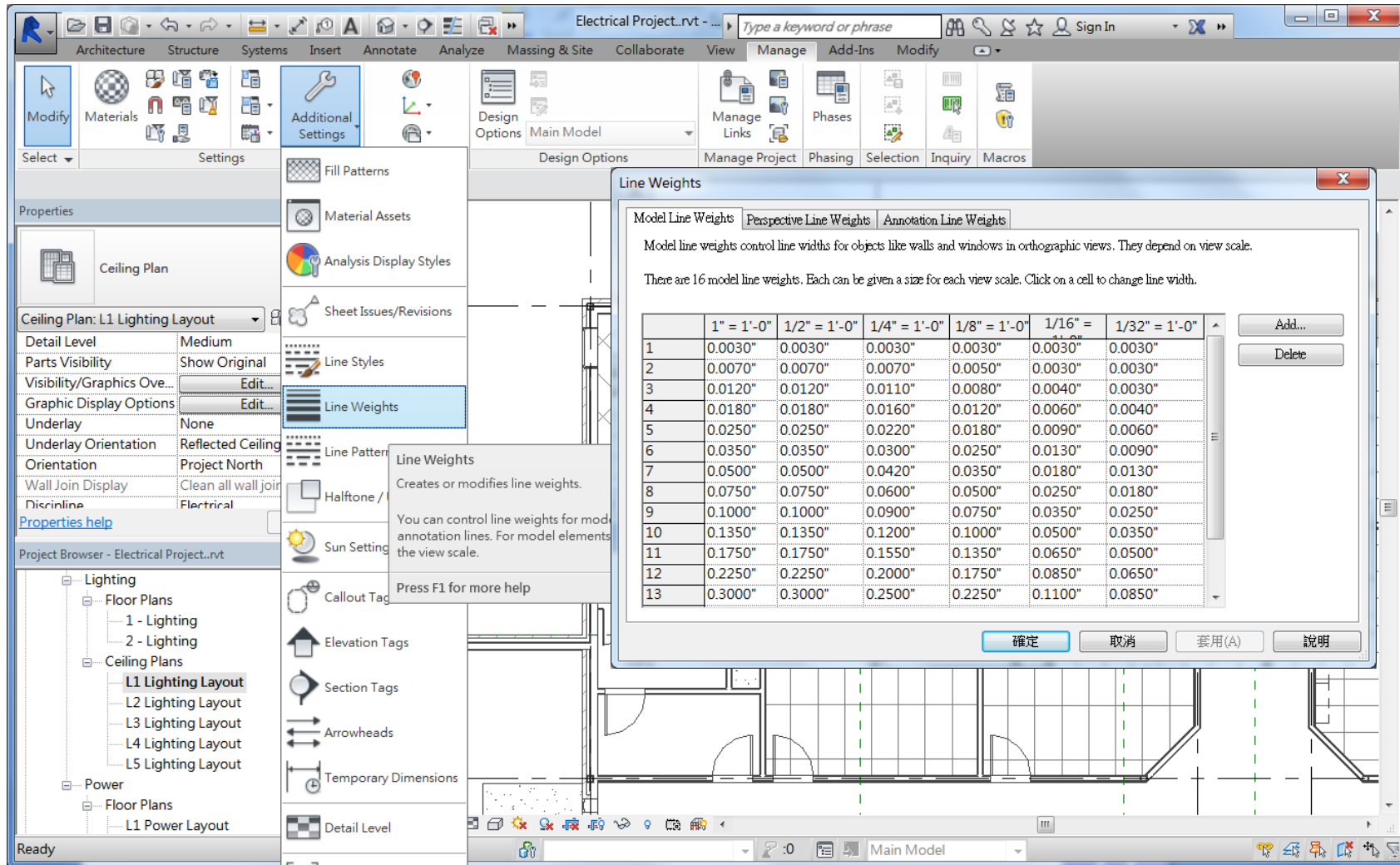
Viewing in Model

- Controlling a view to be a layout



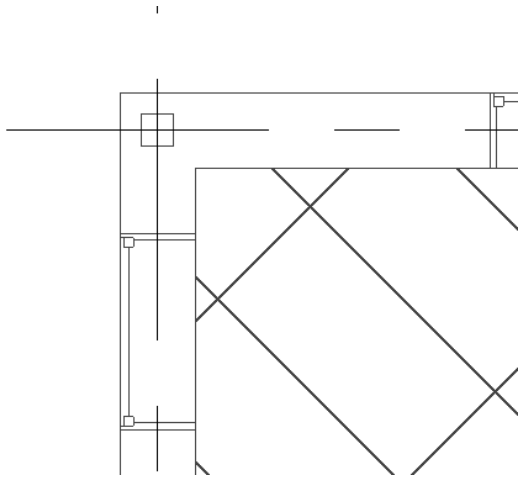
Viewing in Model

- Controlling a view to be a layout

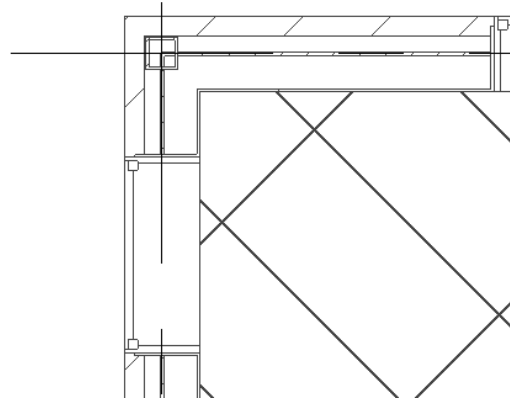


Viewing in Model

- Controlling a view to be a layout



Coarse



Medium / Fine



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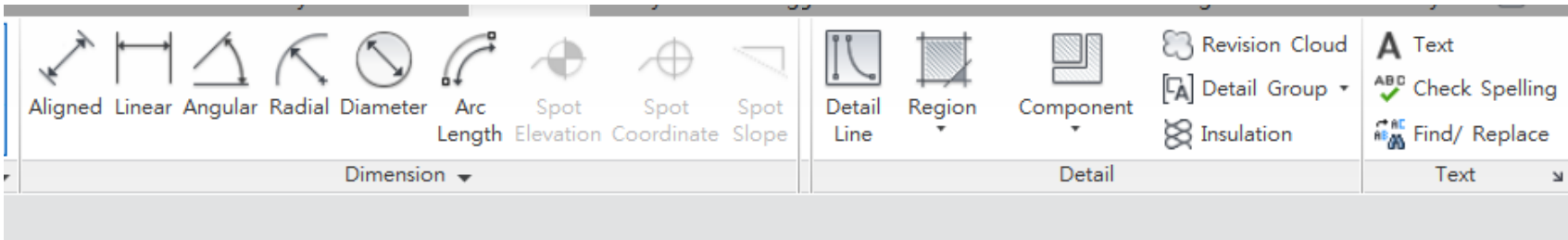
CEII MEP (REVIT)

REVIT Workflow

- Create detail view

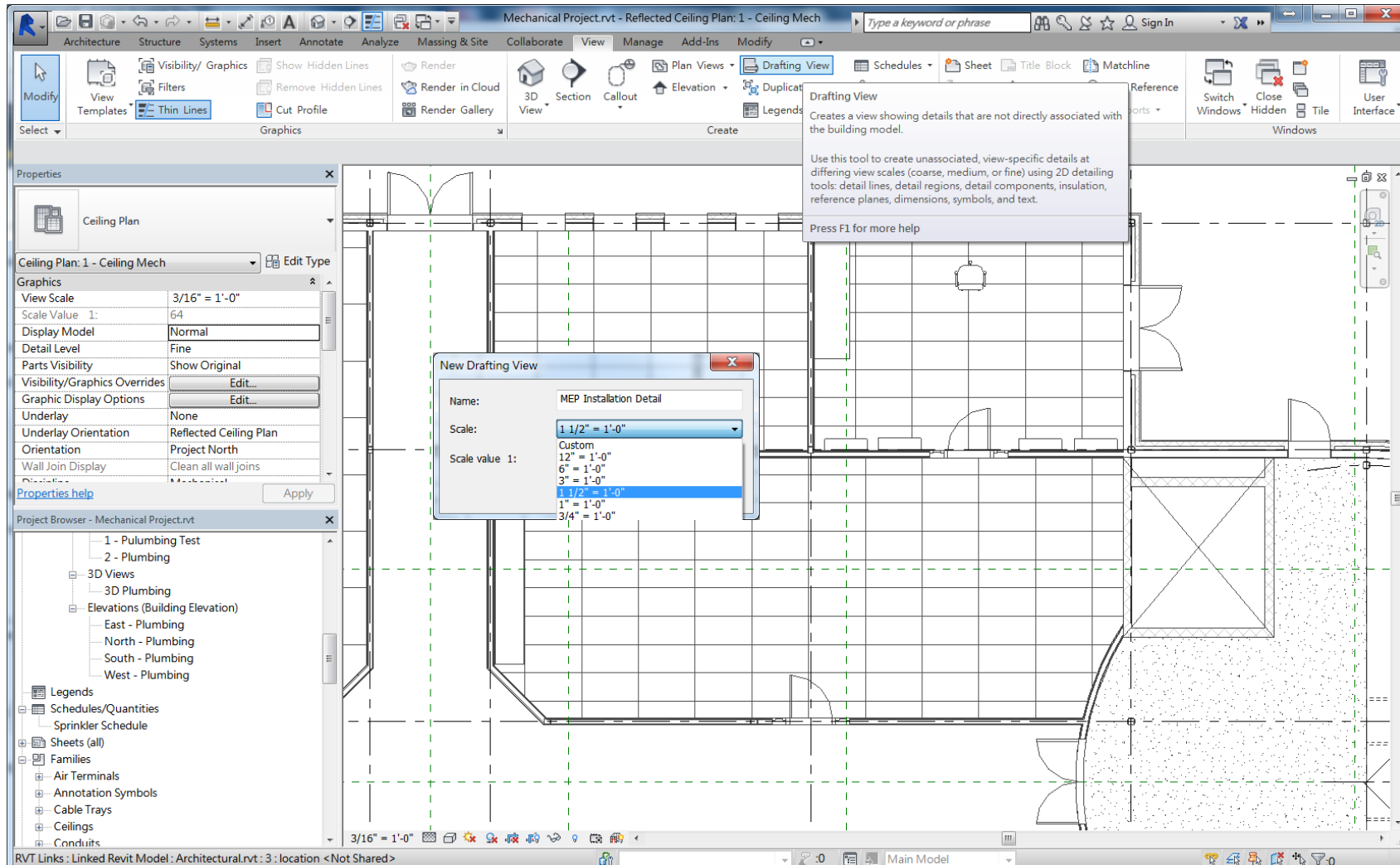
Drafting and Detailing Tools

Whether you are embellishing a model view or creating a detail or diagram on a drafting view, the Annotate tab provides the necessary drafting tools to generate line work, patterns, and symbols. The Detail panel enables you to draw line works that is specific to the view in which it is created, which allows you to select from an assortment of line tools to create either lines or shapes.



REVIT Workflow

- Create detail view



CEILING MEP (REVIT)

REVIT Workflow

- Import CAD

CAD Details

- One of the primary benefits of Revit is the ability to reuse CAD drawings. Making the transition to Revit can use CAD details and diagrams in your Revit projects, and re-create in Revit format to build a new library of details for use on projects.
- Converting CAD details to Revit reduces the number of CAD files have to link into projects, which helps improve file performance.
- But explode an imported CAD file, text and line styles are created for each unique text style and layer within the CAD file. The more of these unnecessary styles that bring into project, the poorer file performance will be. It also opens the door for deviation from standards, because nonstandard text styles and line patterns will be available for use in other areas of the project.
- The Purge Unused tool cannot remove them , but they could be removed manually from the project in the Line Patterns dialog box.

REVIT Workflow

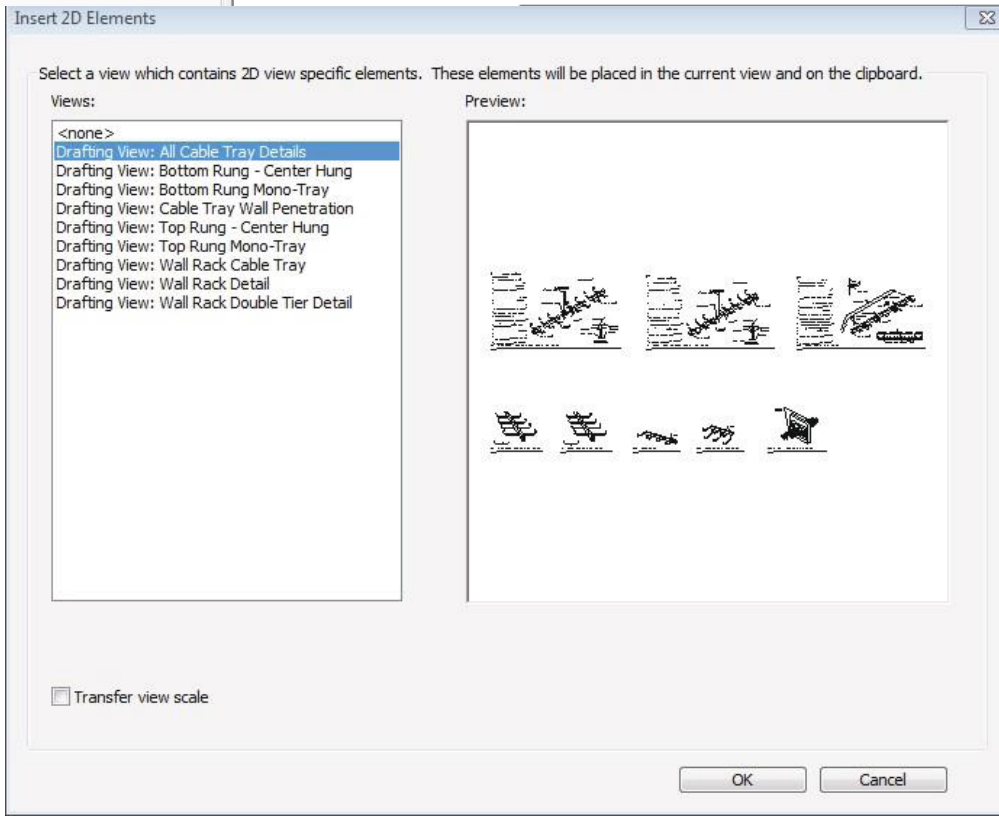
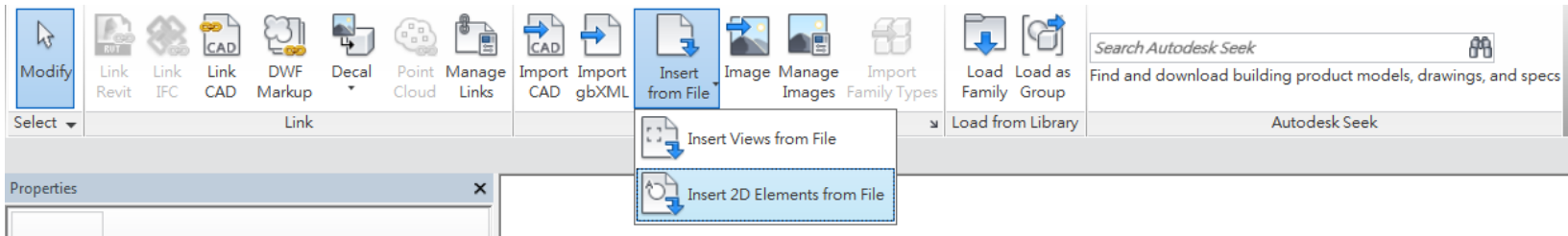
- Import details

Revit Details

- Saving a drafting view as a file allows to put it in a location where build a library of details and diagrams that can be accessed for use on other projects.
- Organize detail library in any manner that suits workflow or processes.
- Another option is to create a drafting view that has several common details on it. The view can then be saved as a file and the file can be opened for editing. Within this new file, the drafting view can be duplicated and a new drafting view for each detail created, leaving you with a single file containing multiple drafting views, each with its own unique detail. This makes it easy to locate specific details or to place an entire group of details into your project.

REVIT Workflow

- Import details



REVIT Workflow

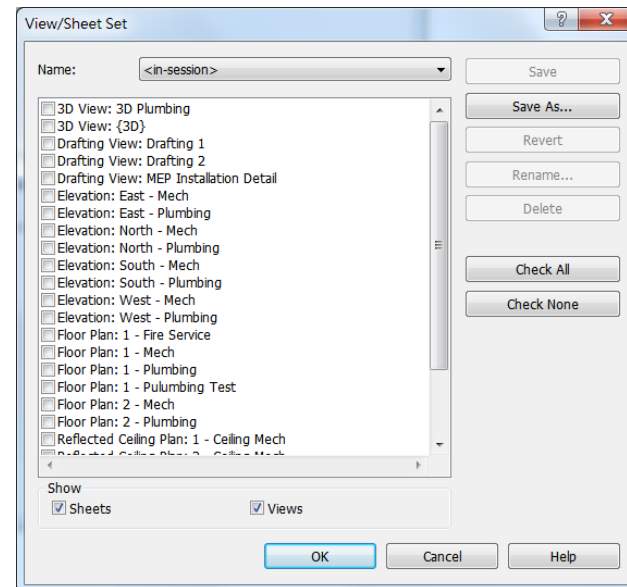
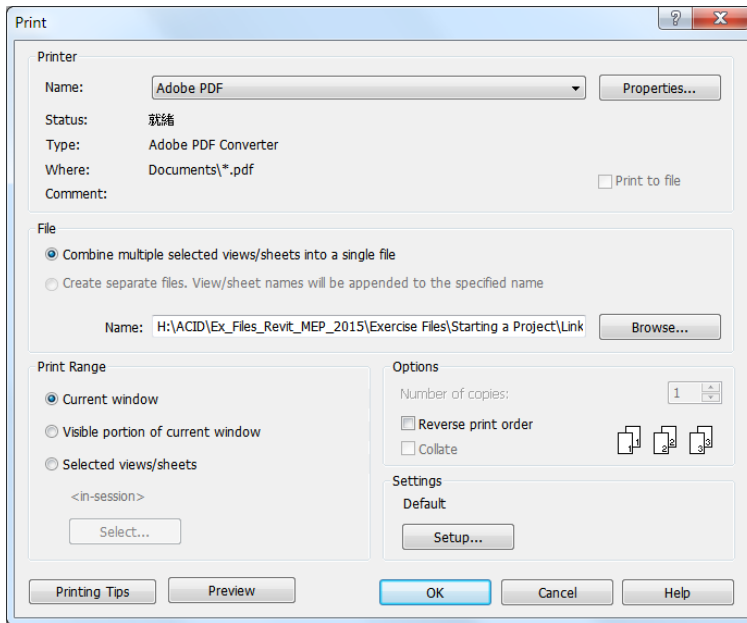
- Create and print sheet
- Revit can produce construction documents of the same quality that we have grown accustomed to in traditional CAD systems.
- Sheet features that allow to combine a Titleblock and create construction documents from model which can include the schedules, details, diagrams, plan, section, and elevation.
- Titleblocks are a unique family type within Revit. A titleblock typically contains information about the project in general along with information specific to the items shown on the sheet. The most effective way to provide information on a titleblock is by using parameters.
- The use of parameters lets you make changes in a single location that updates all of your sheets in the project.

REVIT Workflow

- Create and print sheet
- There are so many types of printers and print drivers that it would be difficult, if not impossible, to describe print settings that would work for everyone on every project. The best thing that you can do to make your printing tasks easier and more efficient is to take a sample project and experiment with different print settings until the desired results are achieved.
- Any of the views in your project can be printed, except for schedules. A schedule would have to be placed on a sheet so that the sheet could be printed. Schedules can be exported to TXT files for use in and for printing by other software.
- The Name drop-down list at the top is for saved print setups. Once you have established the settings that produce the desired print quality, you can save the setup for future use.

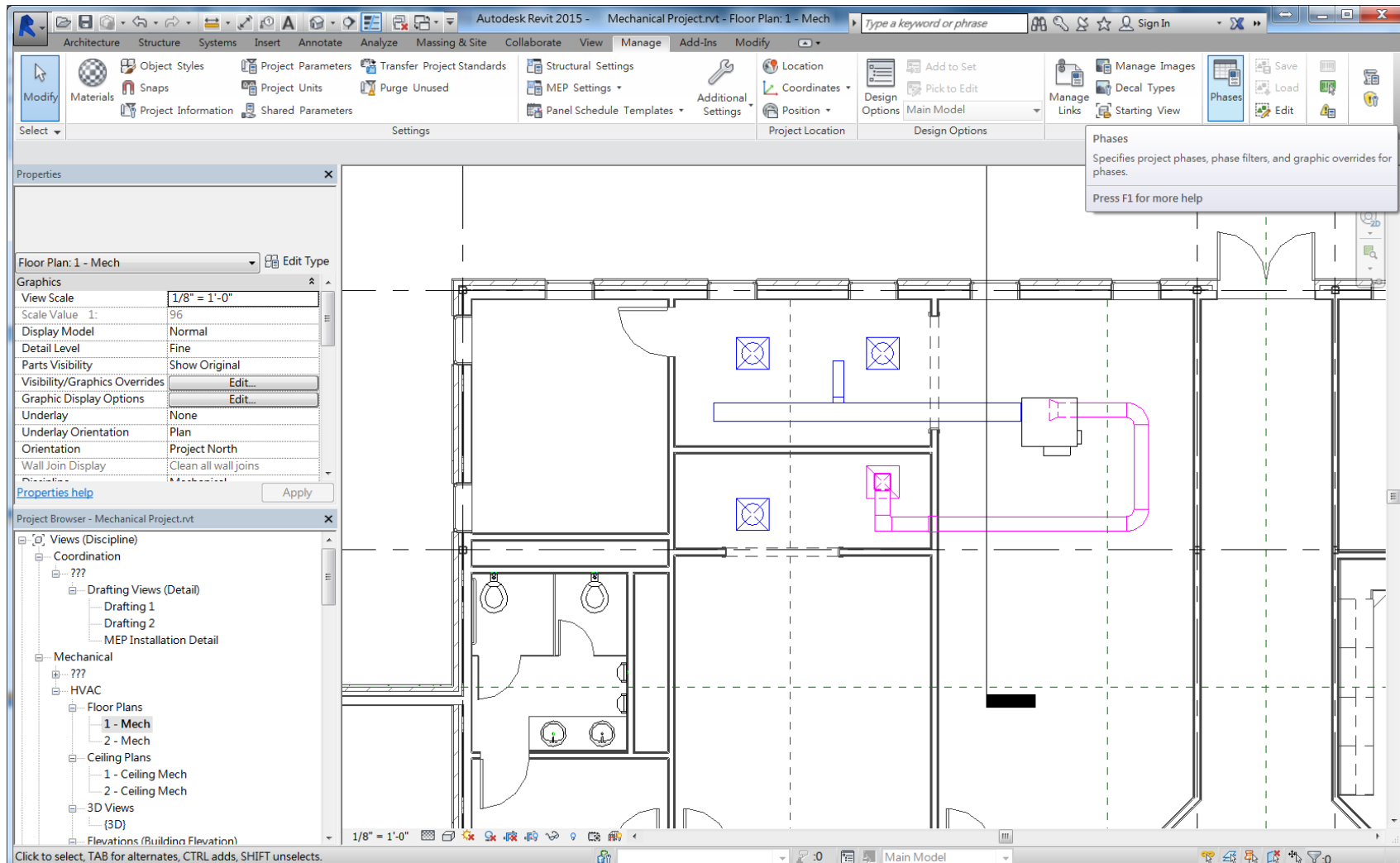
REVIT Workflow

- Create and print sheet



REVIT Workflow

- Phasing



CELL MEP (REVIT)

REVIT Workflow

- Phasing

Phasing: a timeline for your project

- Phases represent key points in time
- Assign geometry to phases
- Each element has parameter for:
 - Phase Created
 - Phase Demolished
- Determine which phase a view shows
- Each view has phase parameters:
 - Phase
 - Phase Filter

REVIT Workflow

- Making and Controlling Revisions
- Revisions are part of nearly every project.
- Keep track of revisions to a Revit project by using a revision schedule in titleblock families and managing the revisions with Revit.
- When make a change to model and want to issue it as a revision, it can be drawn a revision cloud directly in the view, or the cloud can be drawn on the sheet displaying the view. Either way, it should first establish the properties of the revision.
- To create a revision in project, click the Revisions button on the Sheet Composition panel of the View tab. This tool can also be found on the Additional Settings button of the Manage tab, under Sheet Issues/Revisions.



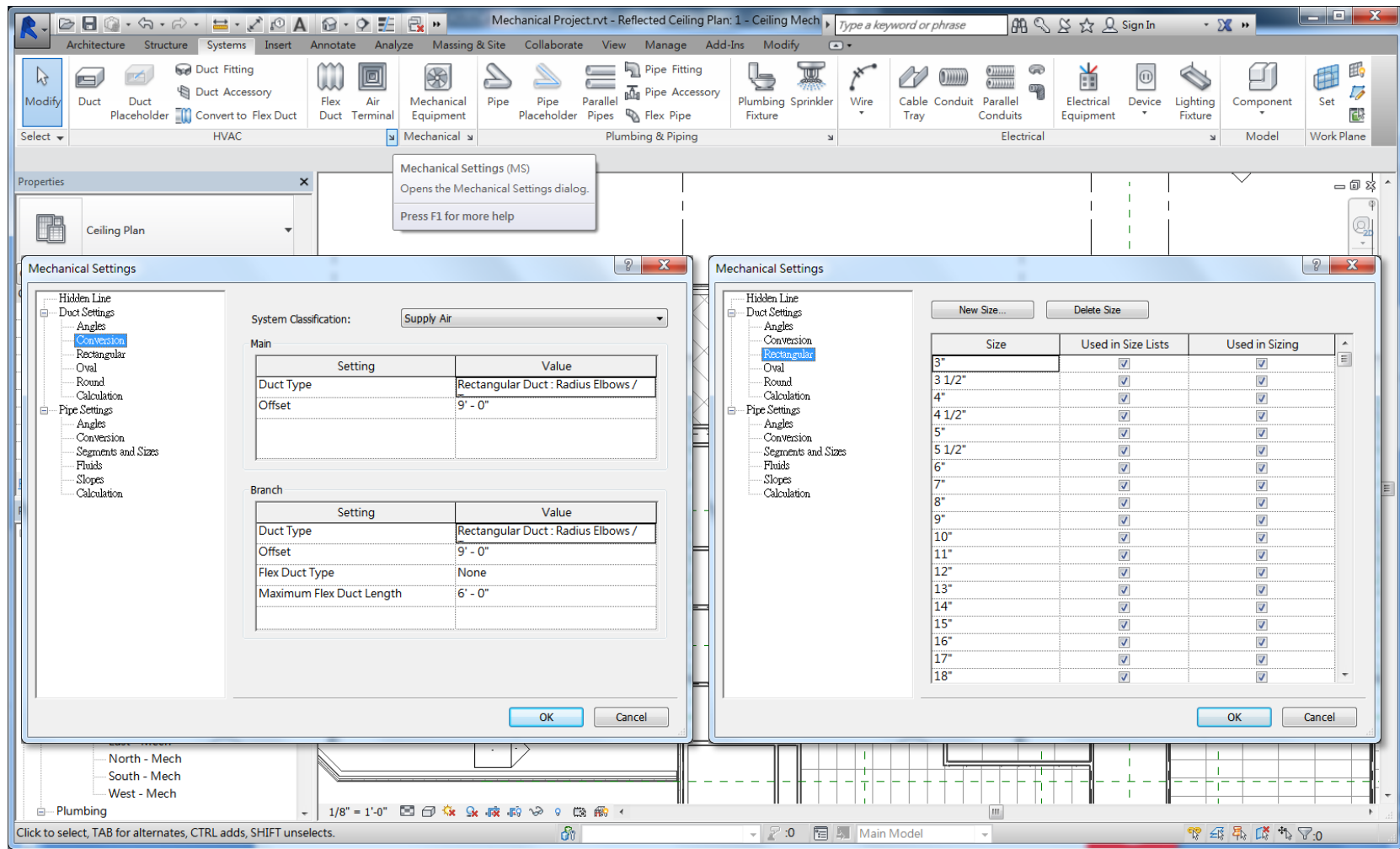
ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

CEII MEP (REVIT)

REVIT Mechanical

- Mechanical Settings



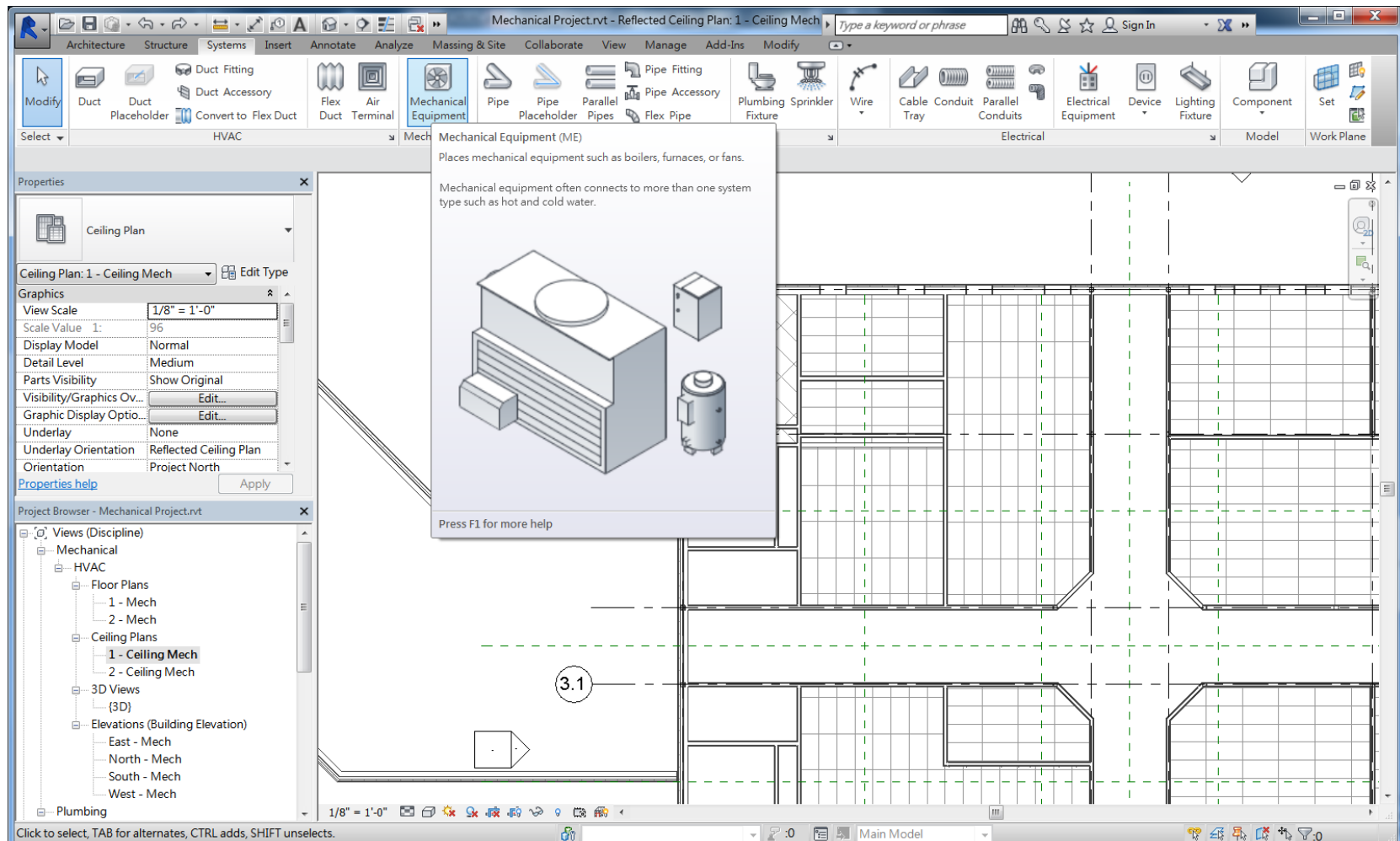
CEI MEP (REVIT)

REVIT Mechanical

- Adding Mechanical Equipment
 - Air Conditioning / Heating Units
 - AHU / PAU / FCU etc.
 - VAV Boxes
 - FANs
 - Exhaust Air Fan / Return Air Fan / Supply Air Fan etc.
 - Heating and Cooling Elements
 - Heating Coils / Chilled-water Coils / Reheat Coils etc.

REVIT Mechanical

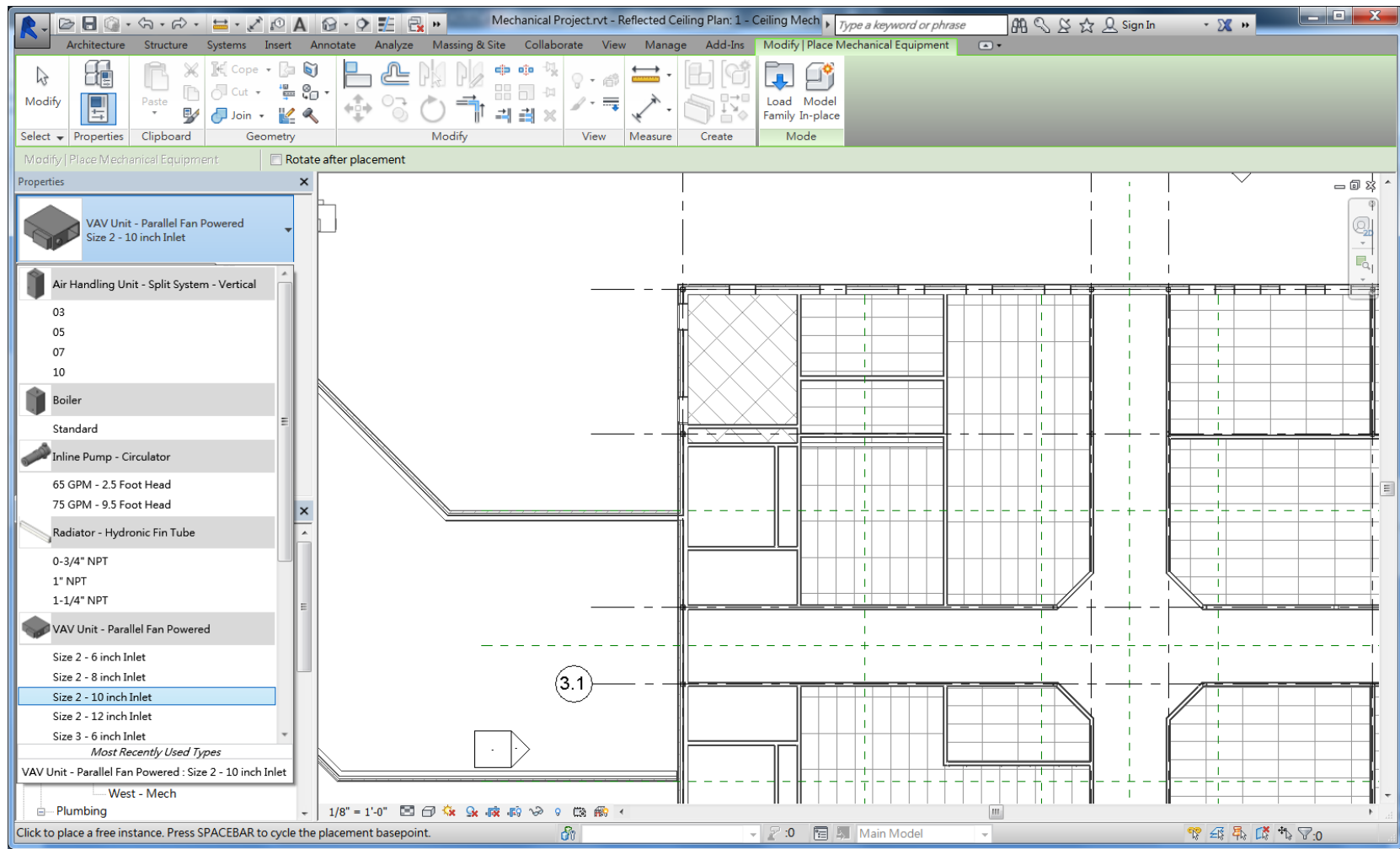
- Adding Mechanical Equipment



CEII MEP (REVIT)

REVIT Mechanical

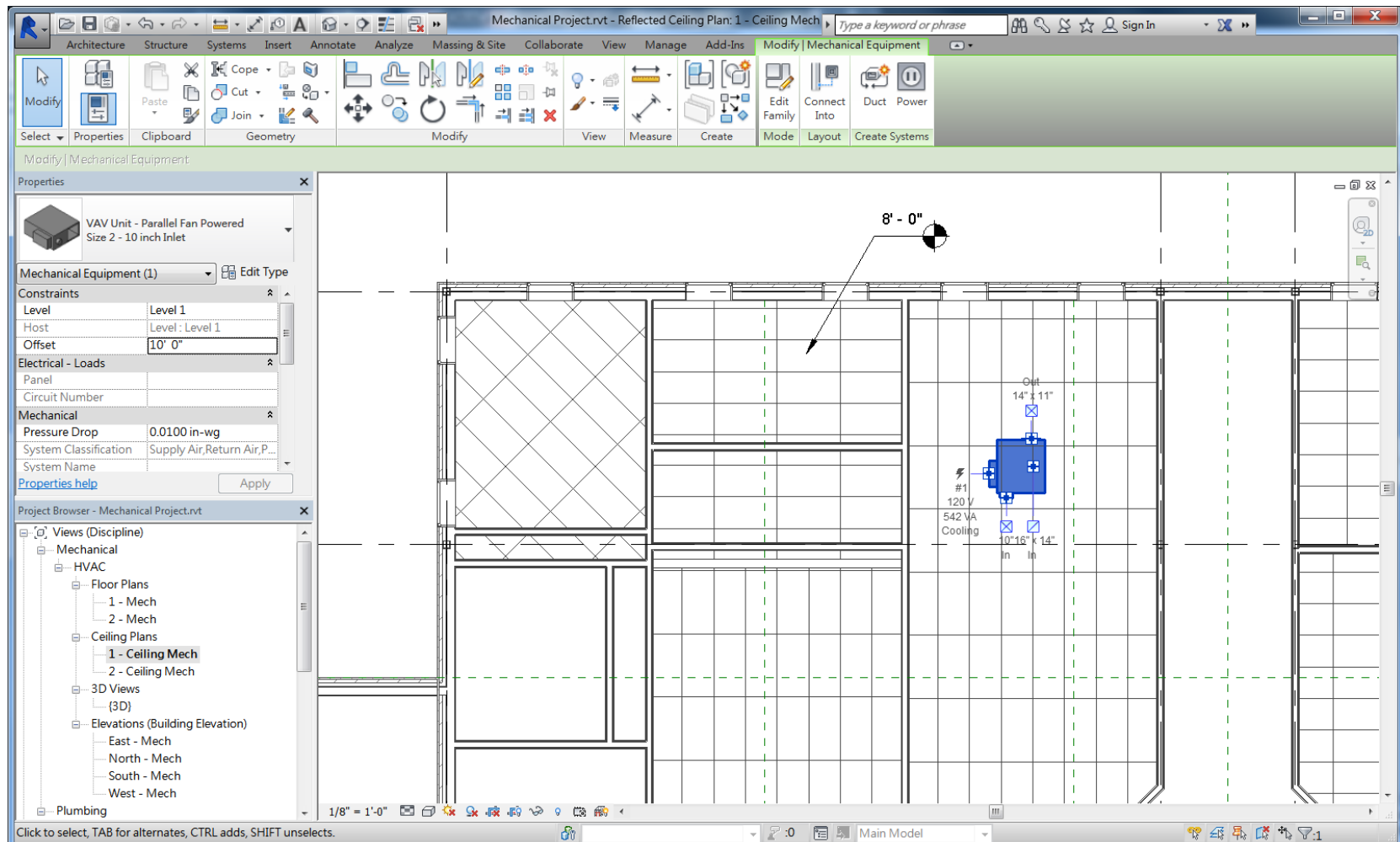
- Adding Mechanical Equipment



CEI MEP (REVIT)

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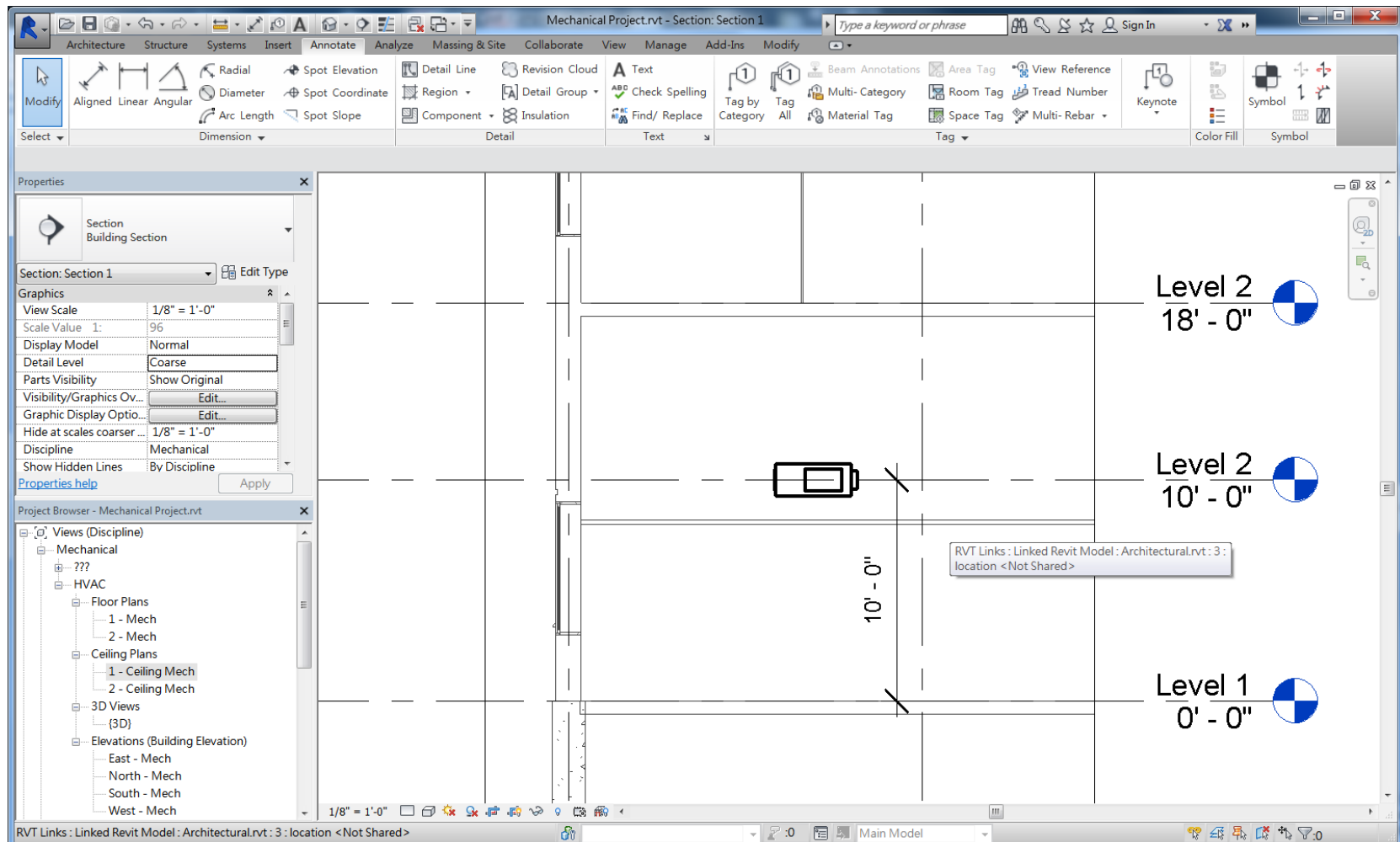
- Adding Mechanical Equipment



CEI MEP (REVIT)

REVIT Mechanical

- Adding Mechanical Equipment



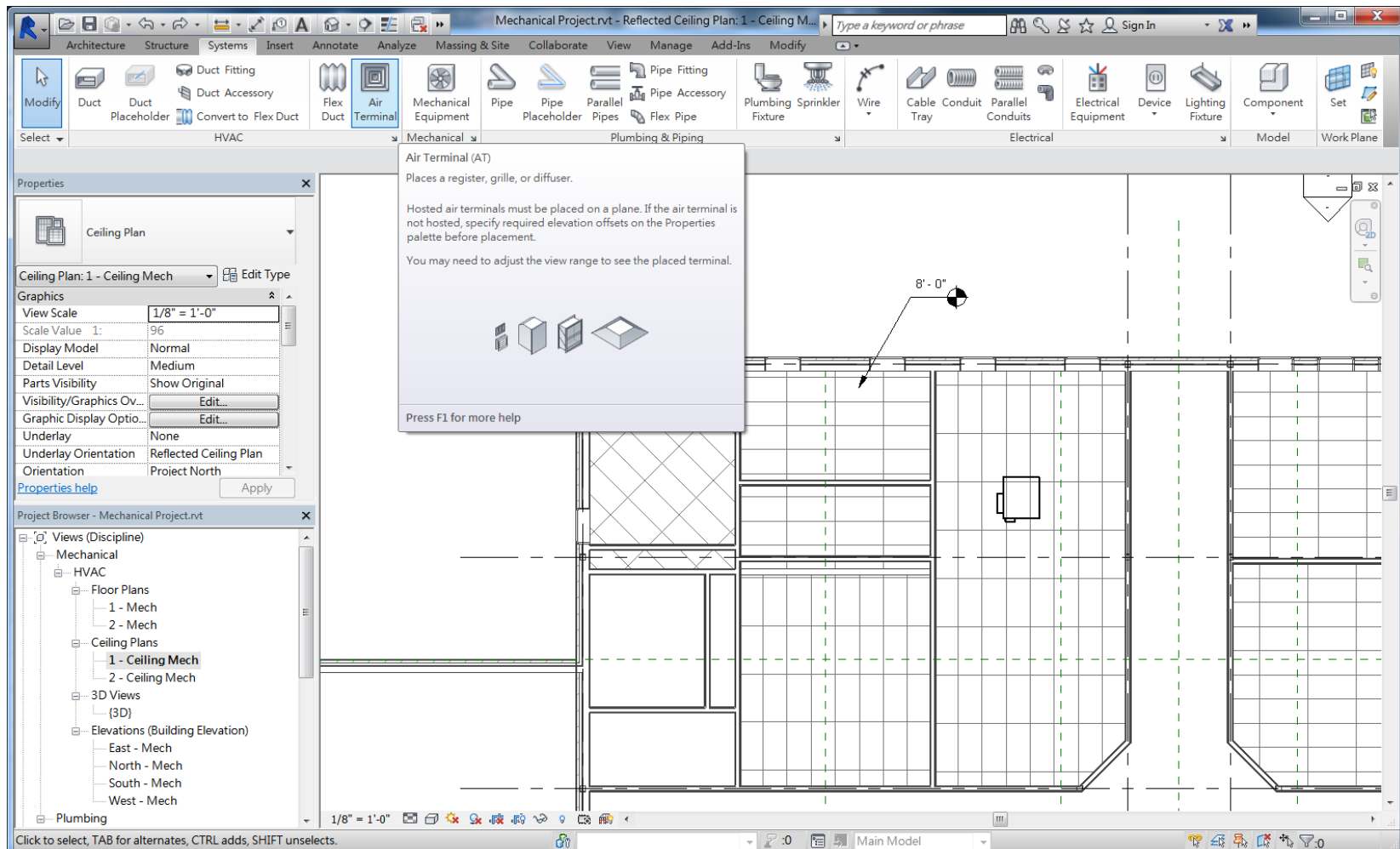
CEII MEP (REVIT)

REVIT Mechanical

- Adding Air Terminals
 - Air Distribution Components
 - Diffusers in a ceiling
 - Duct Mounted sidewall diffusers
 - Wall Mounted
 - Floor diffusers
 - Suspended

REVIT Mechanical

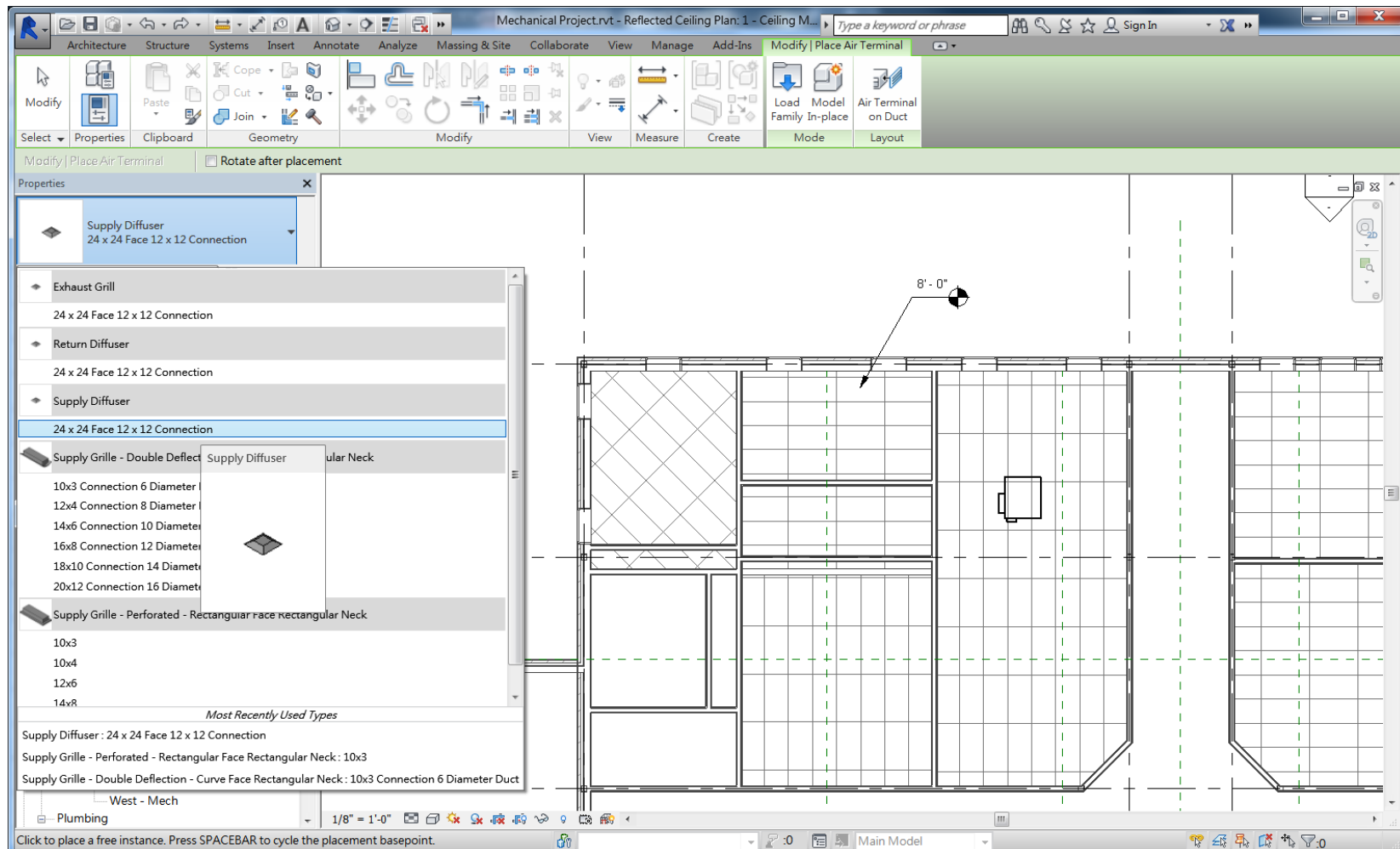
- Adding Air Terminals



CEII MEP (REVIT)

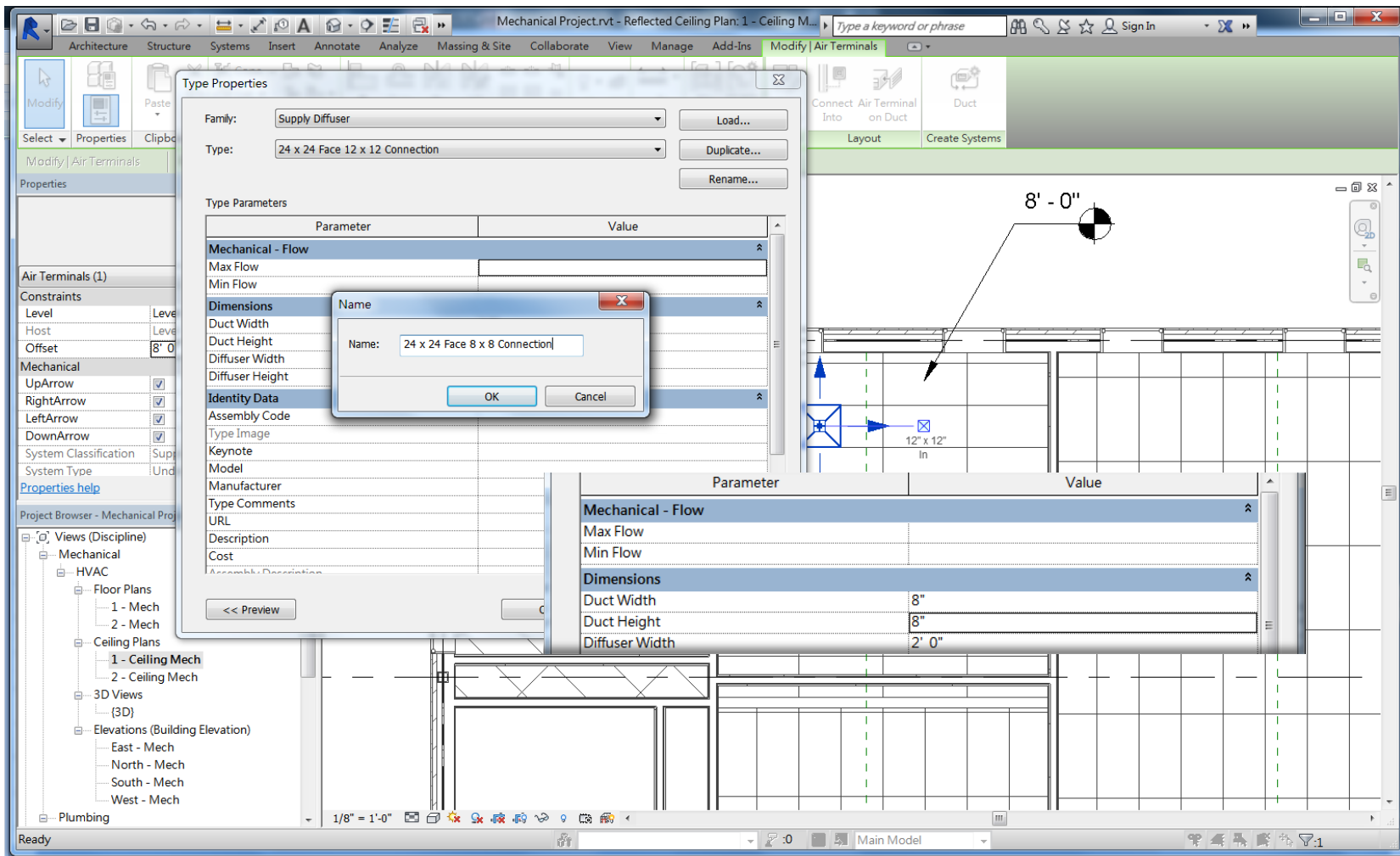
REVIT Mechanical

- Adding Air Terminals



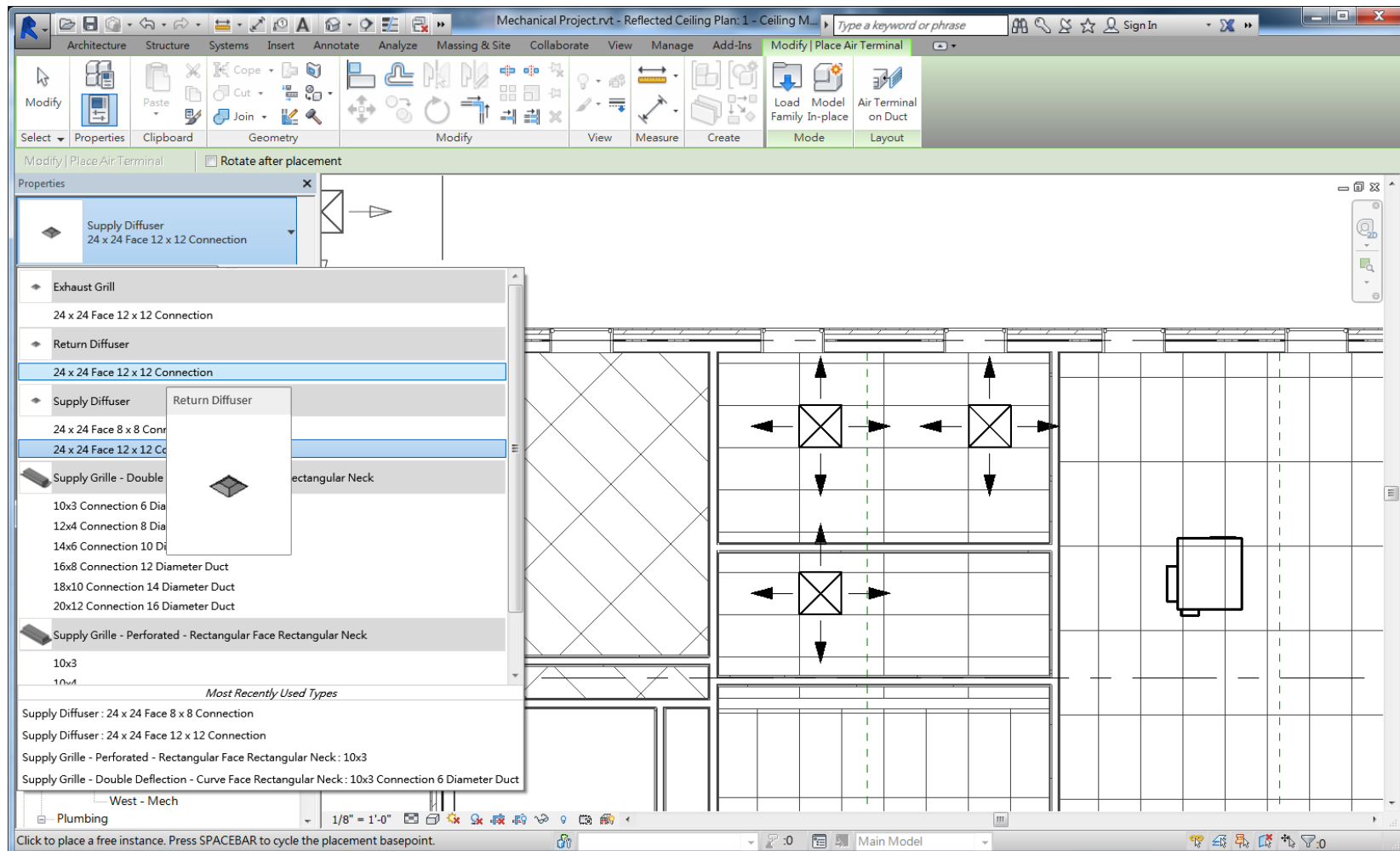
REVIT Mechanical

- Adding Air Terminals



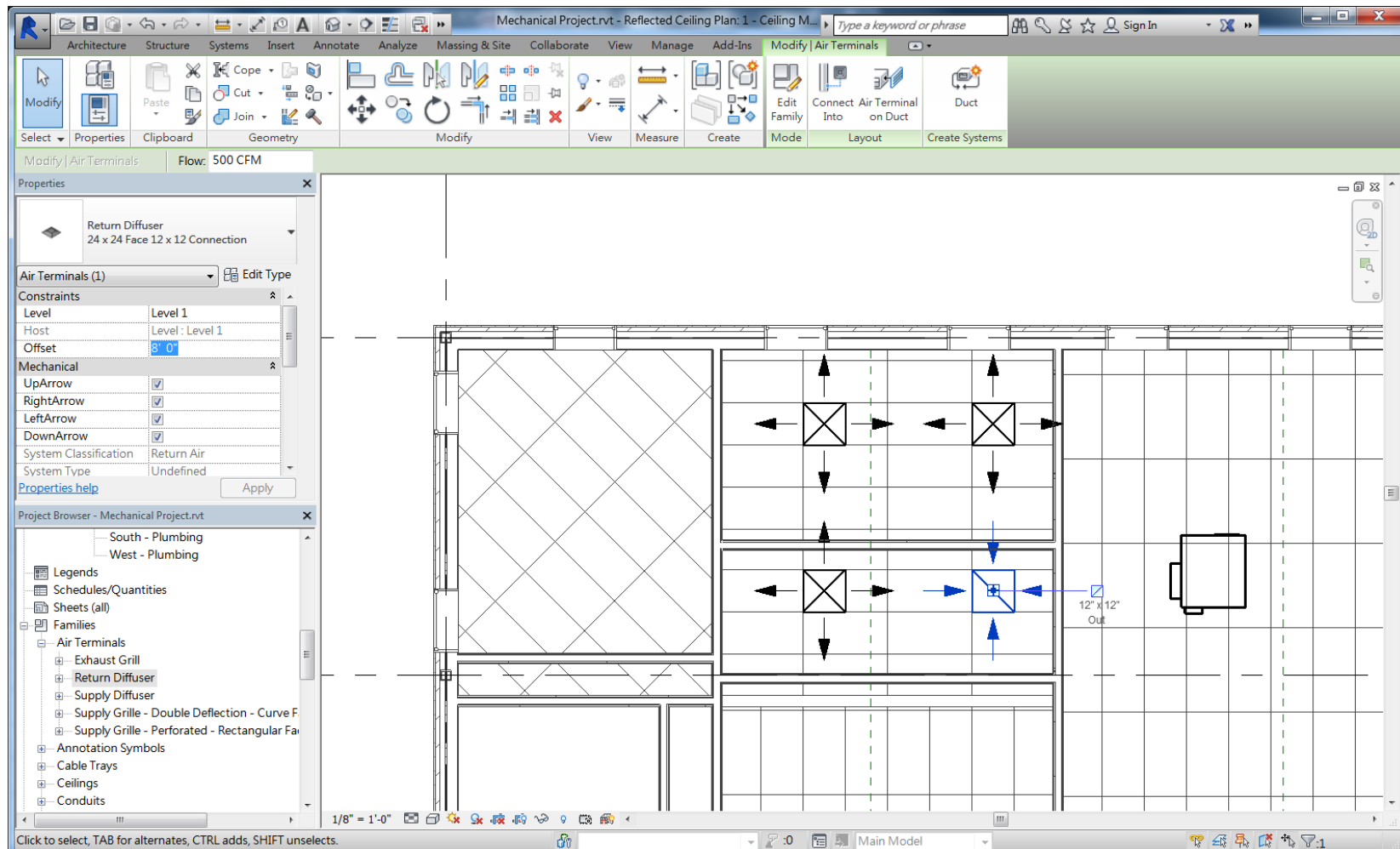
REVIT Mechanical

- Adding Air Terminals



REVIT Mechanical

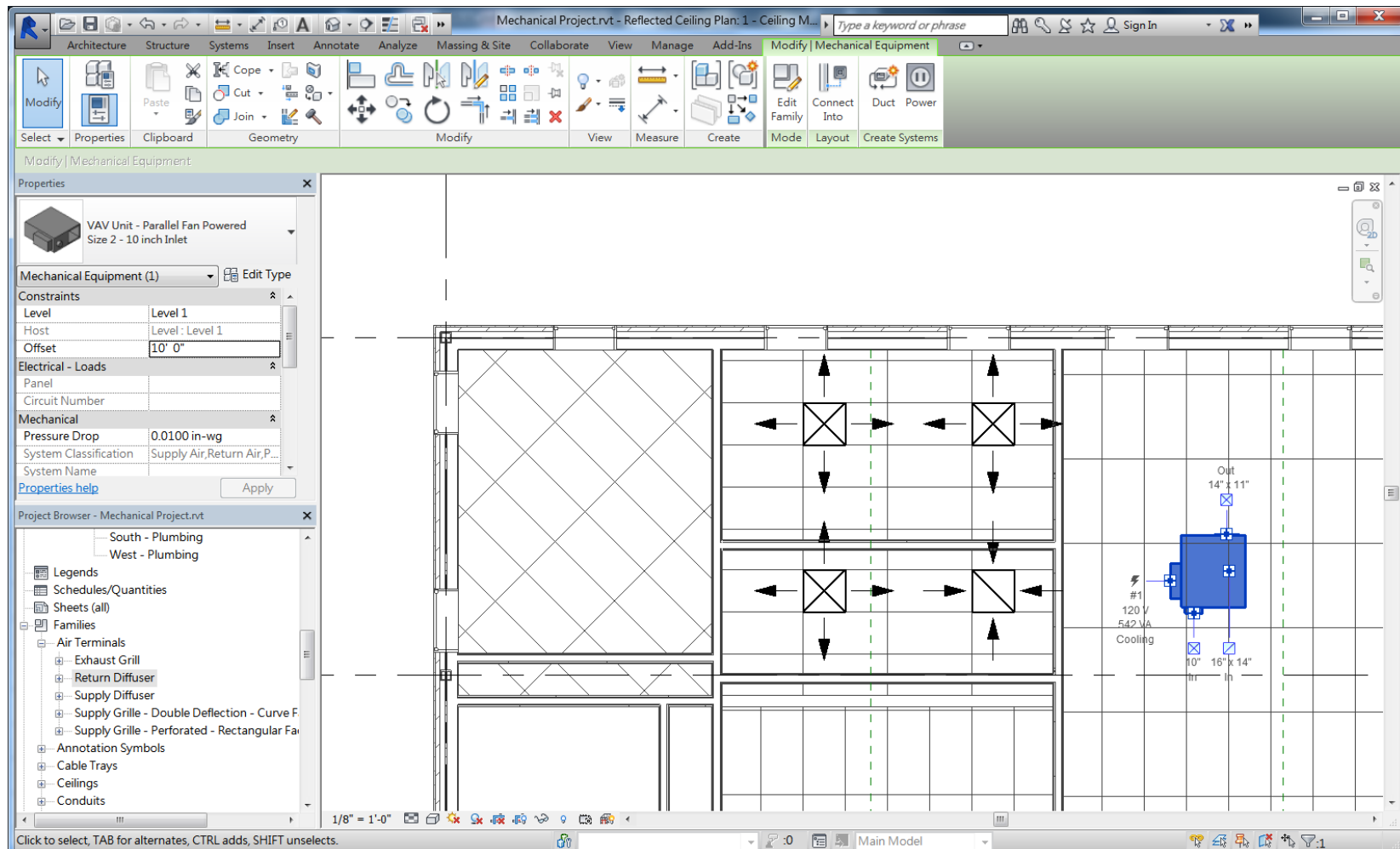
- Adding Air Terminals



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REVIT Mechanical

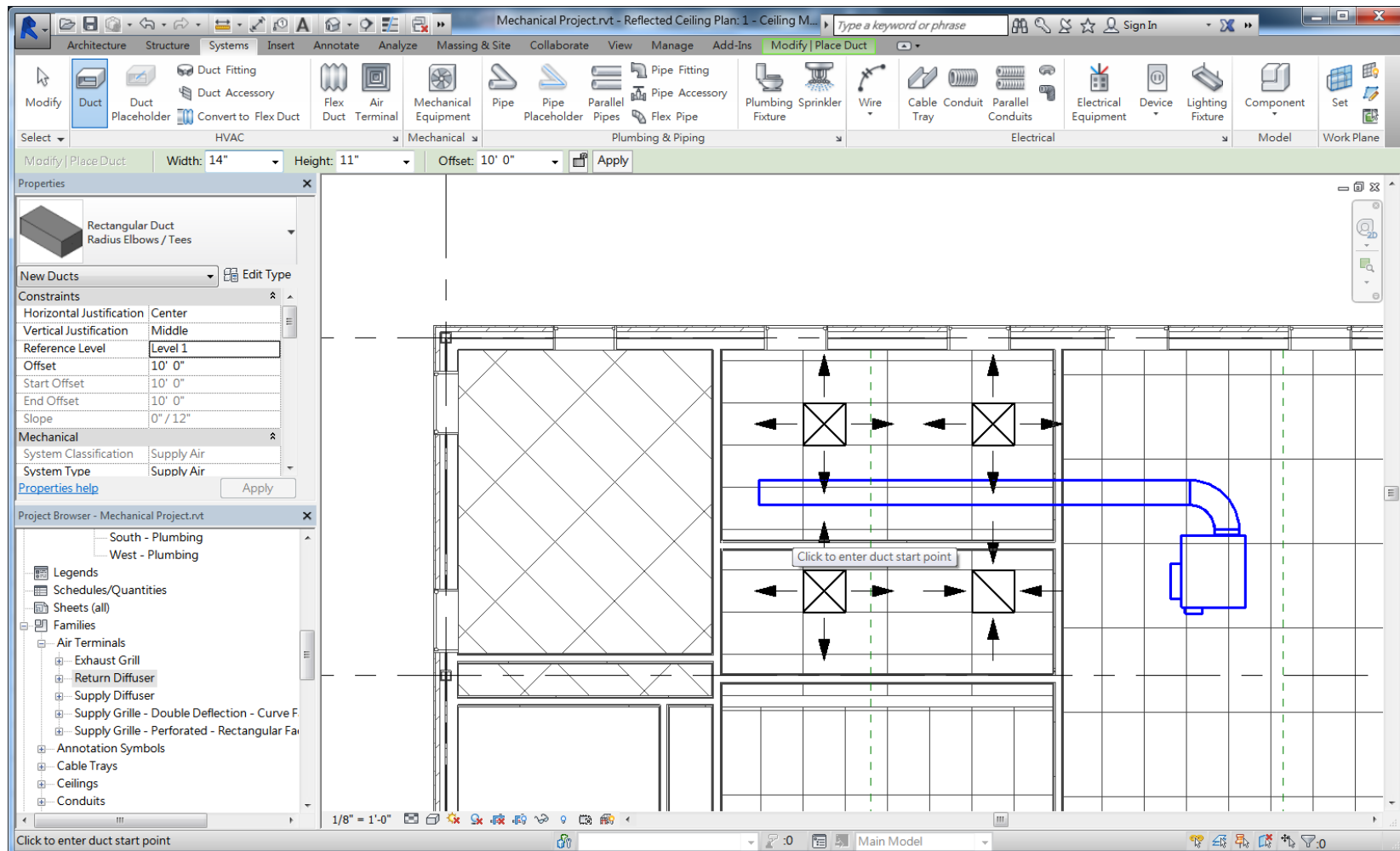
- Adding Supply Duct



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REVIT Mechanical

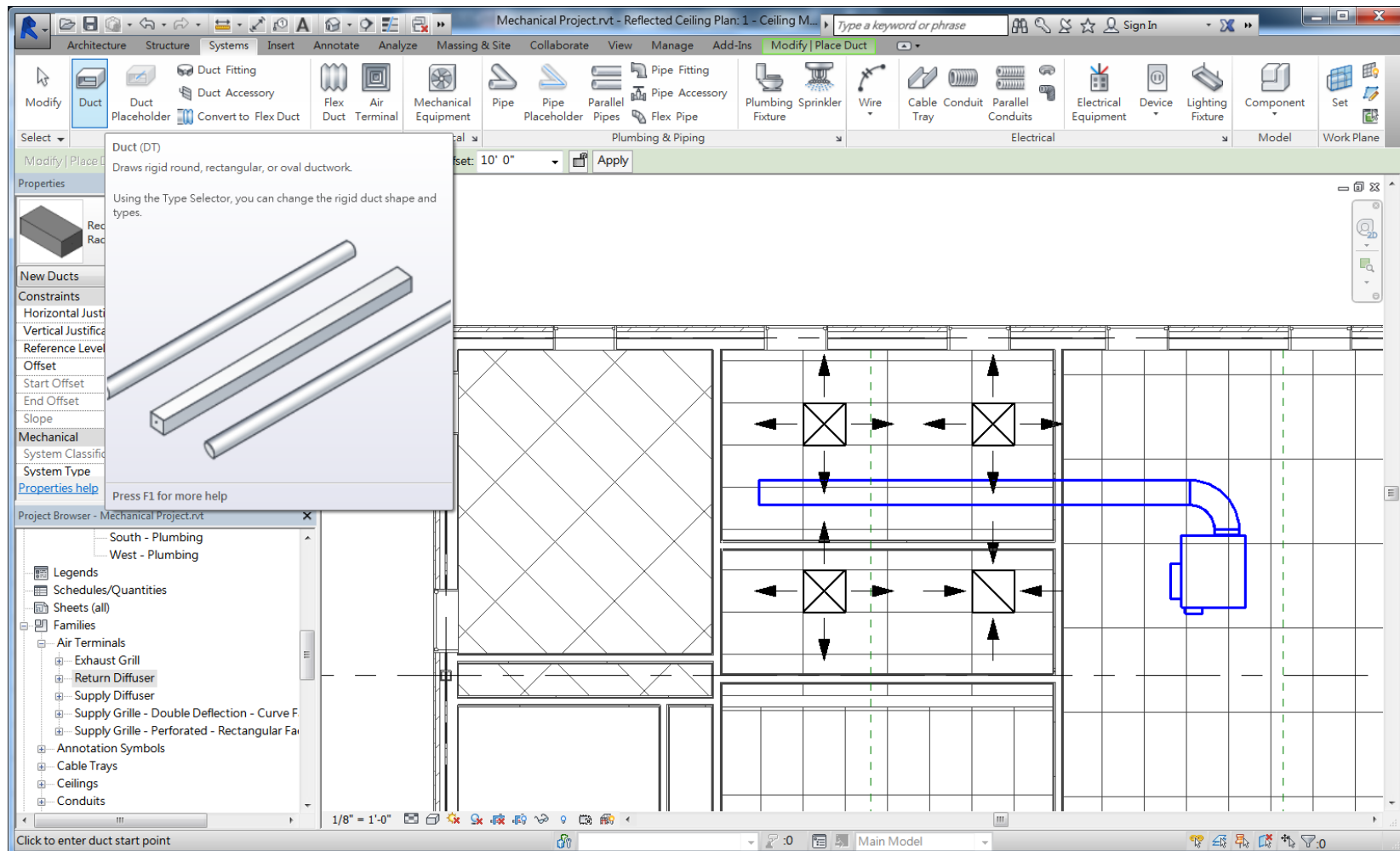
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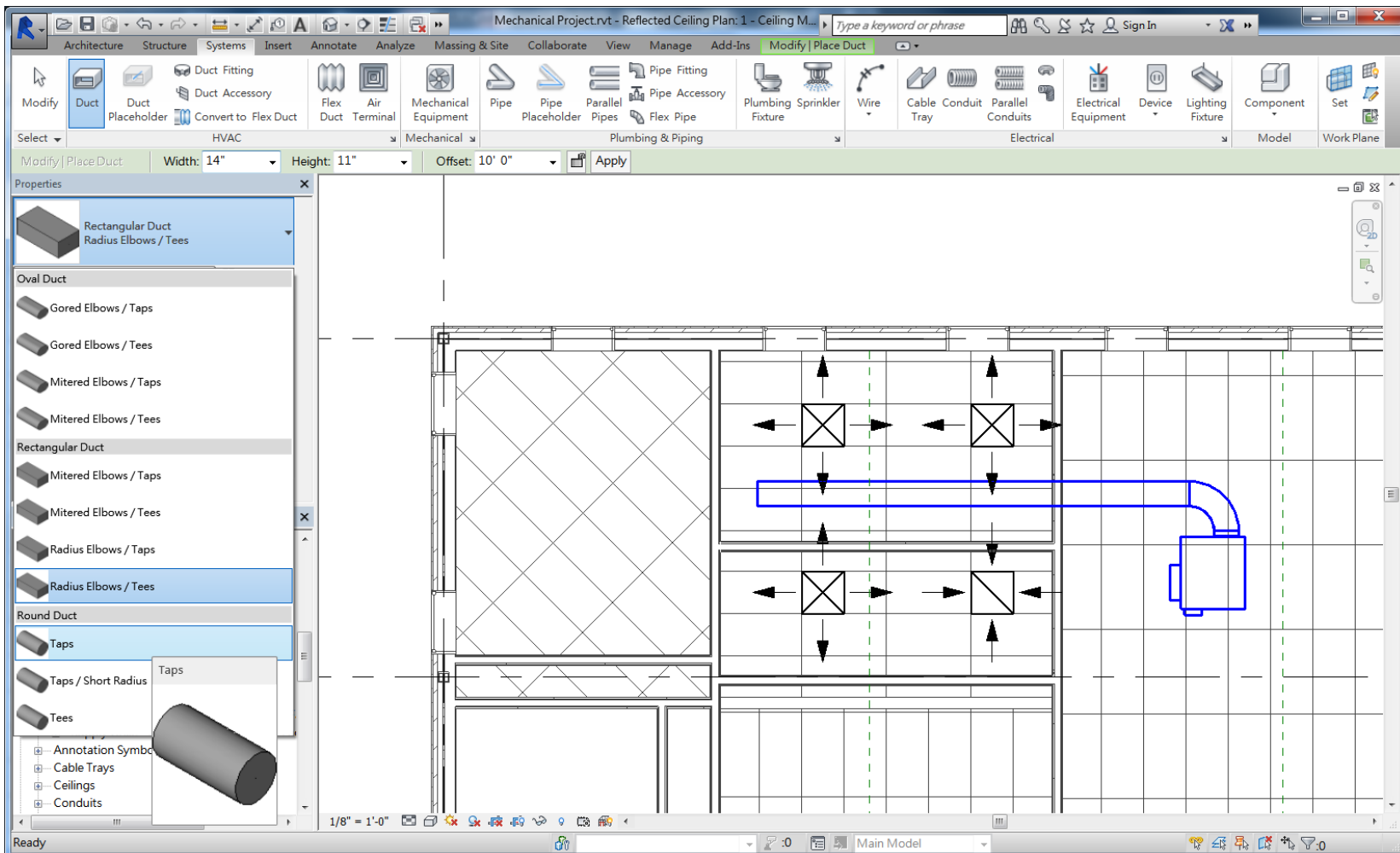
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REVIT Mechanical

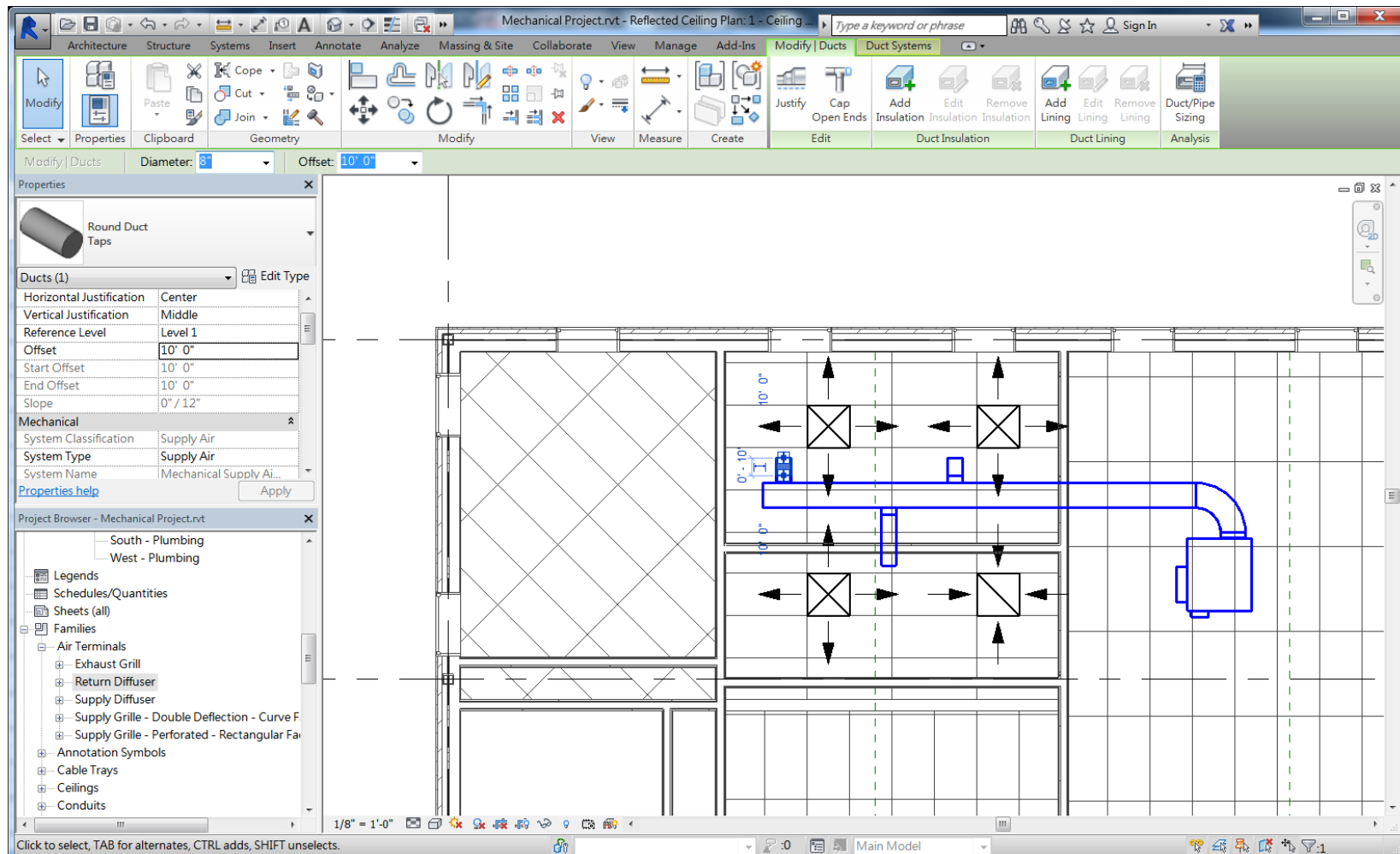
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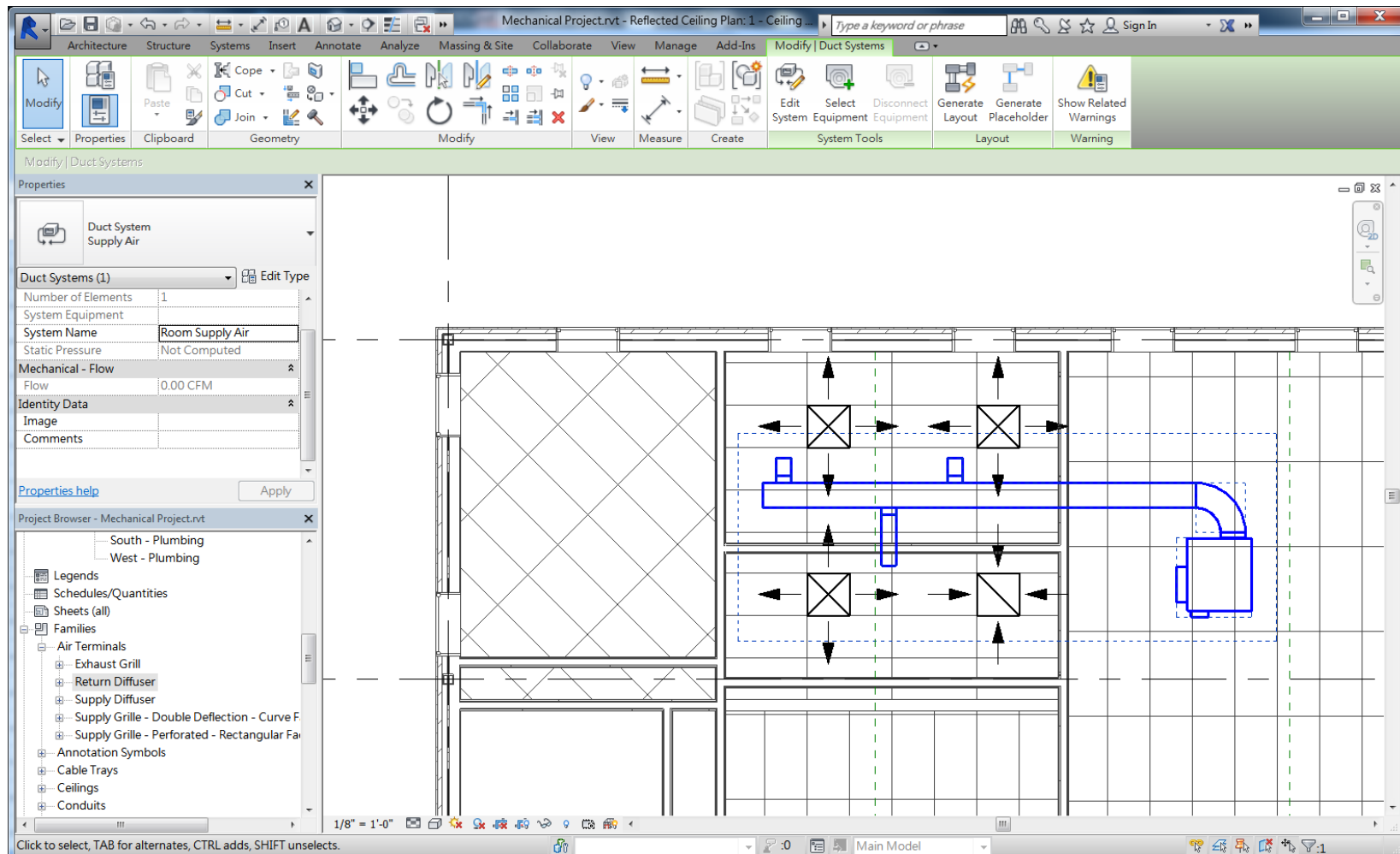
REVIT Mechanical

- Adding Supply Duct



REVIT Mechanical

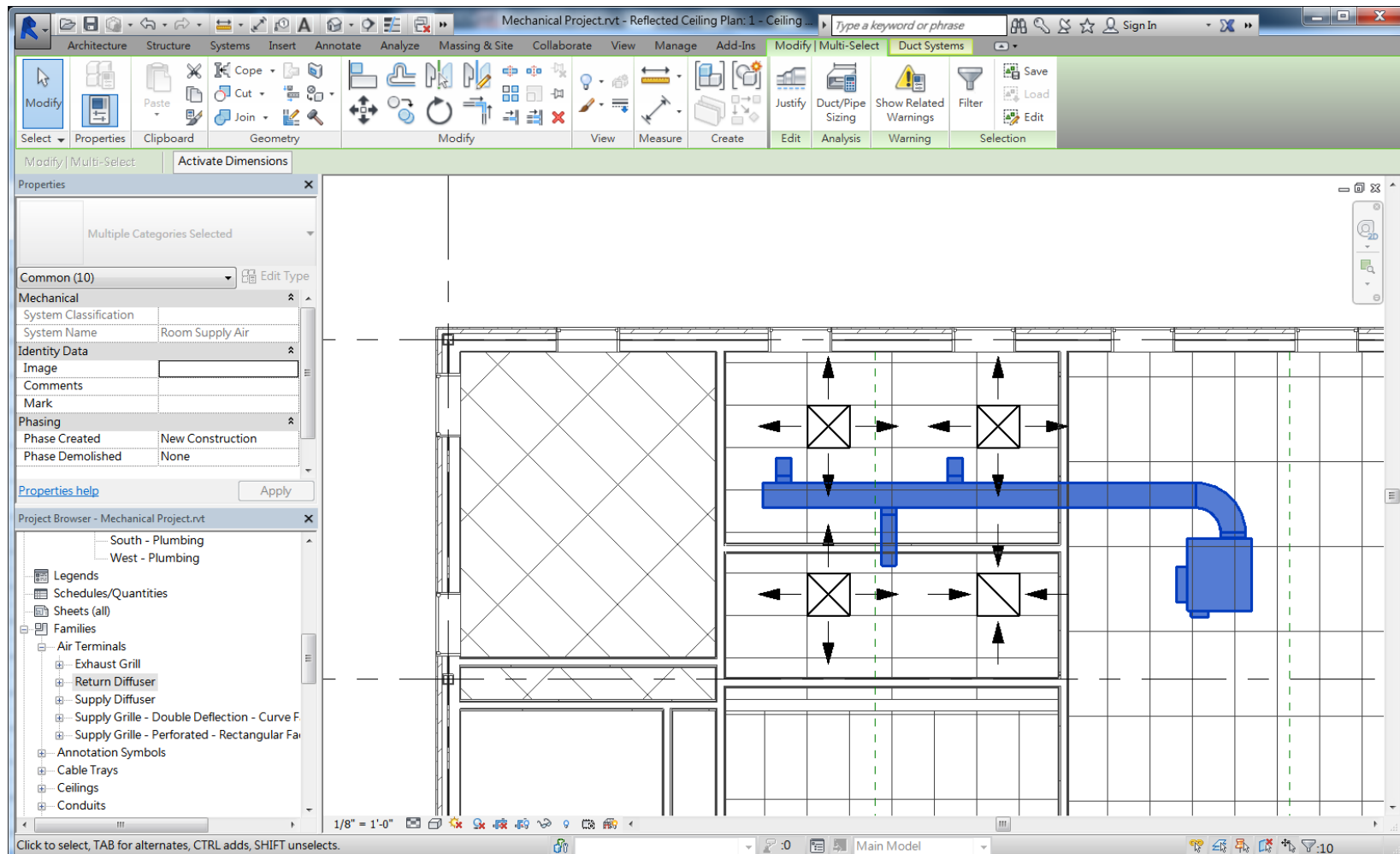
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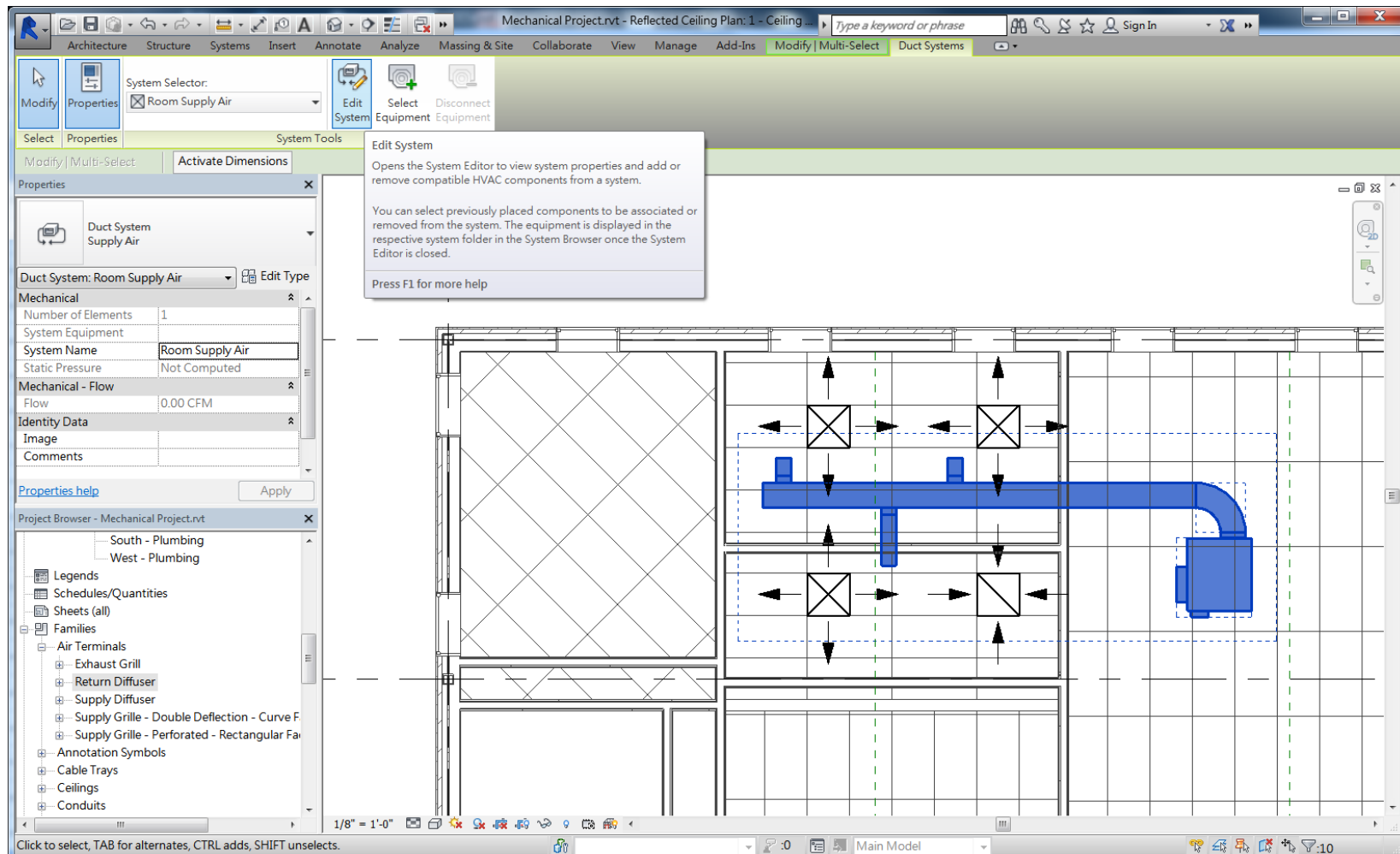
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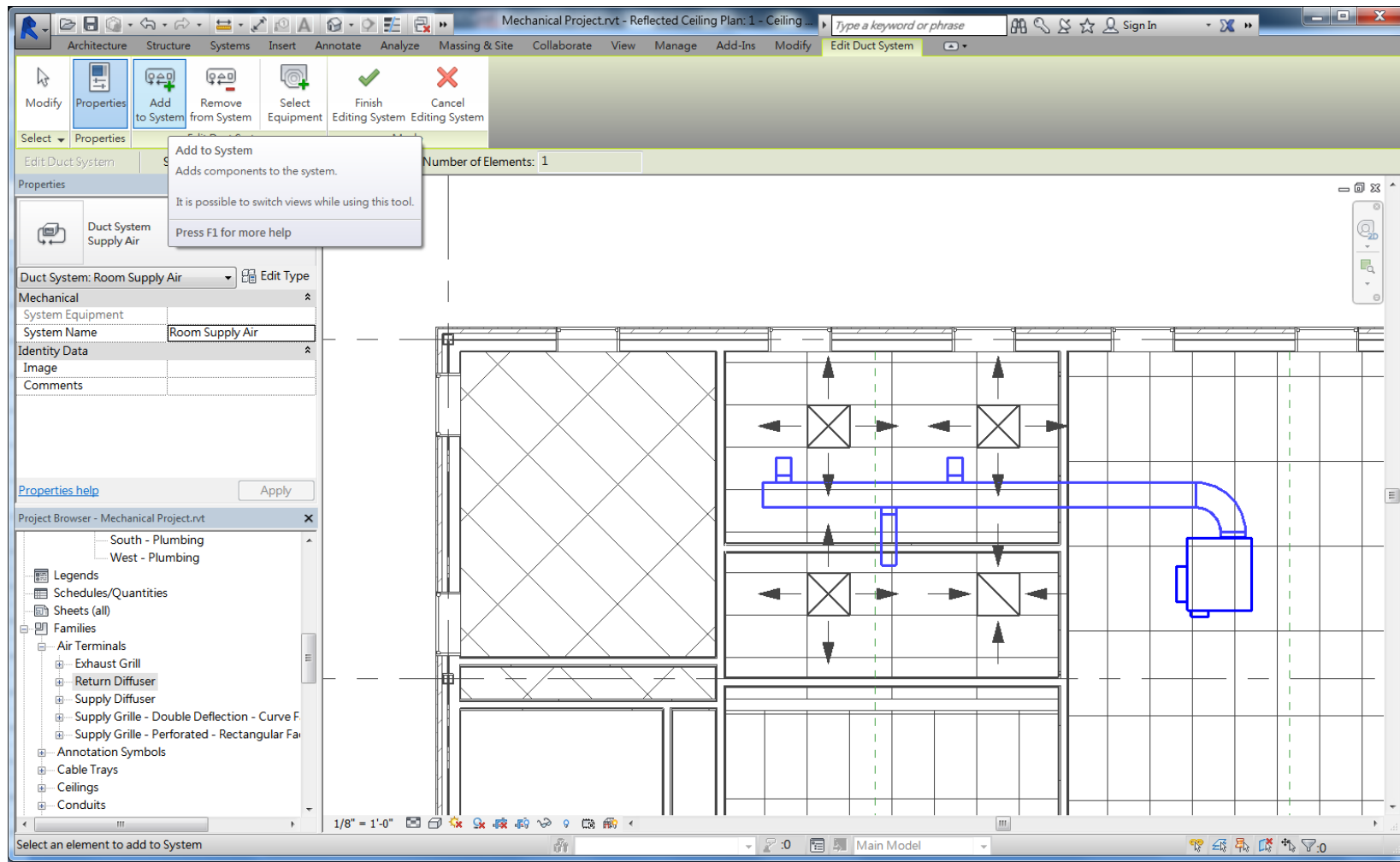
REVIT Mechanical

- Adding Supply Duct



REVIT Mechanical

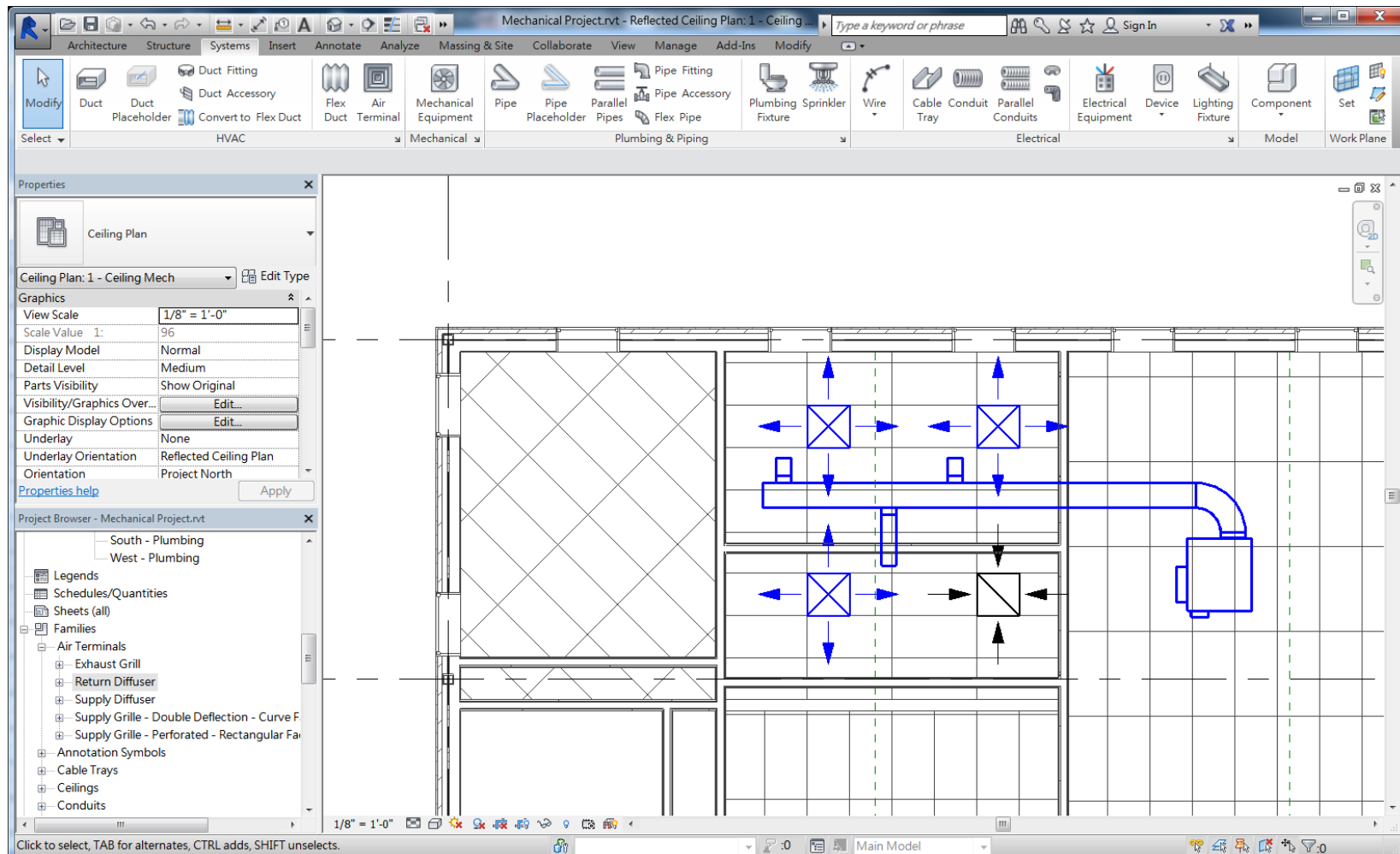
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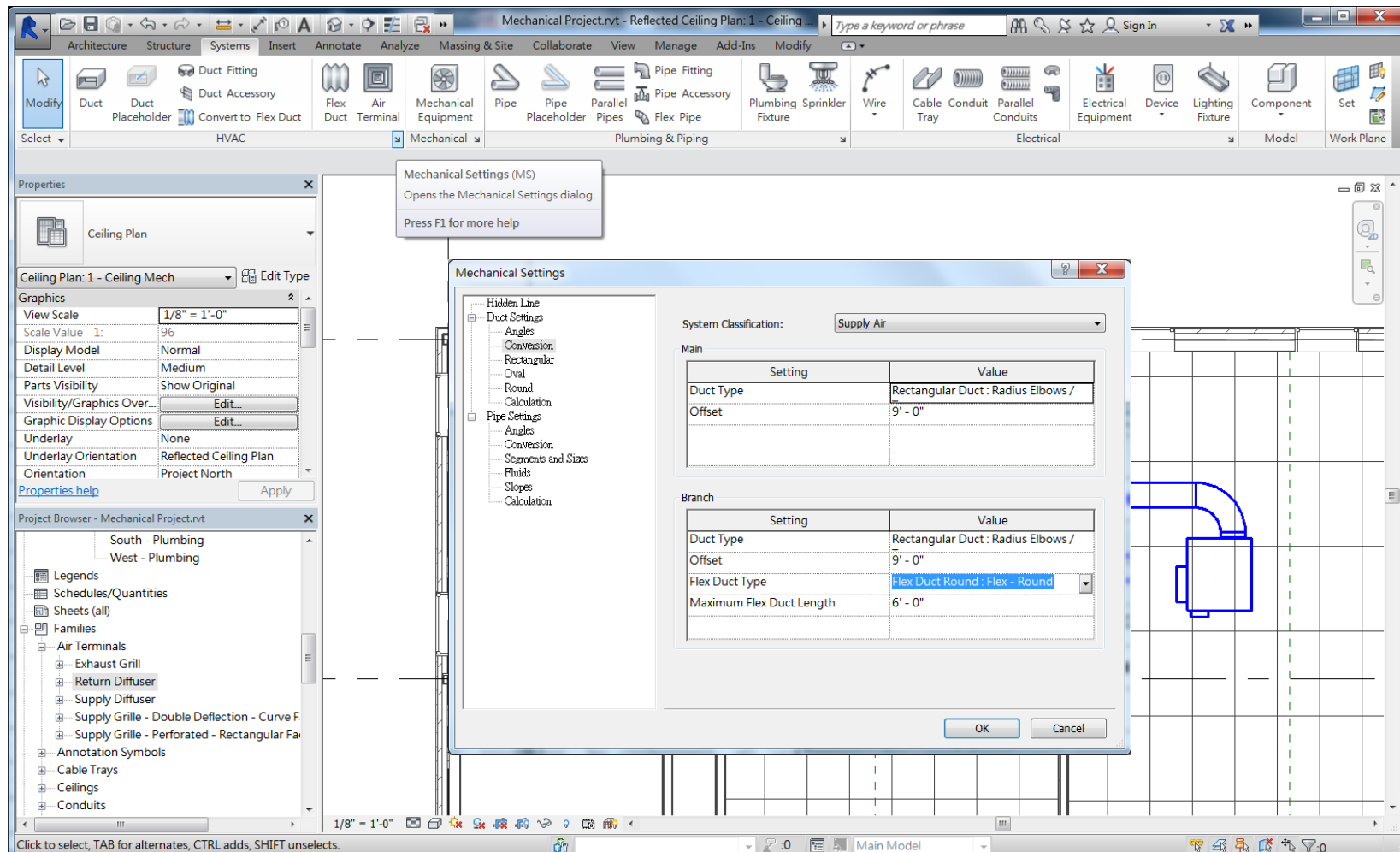
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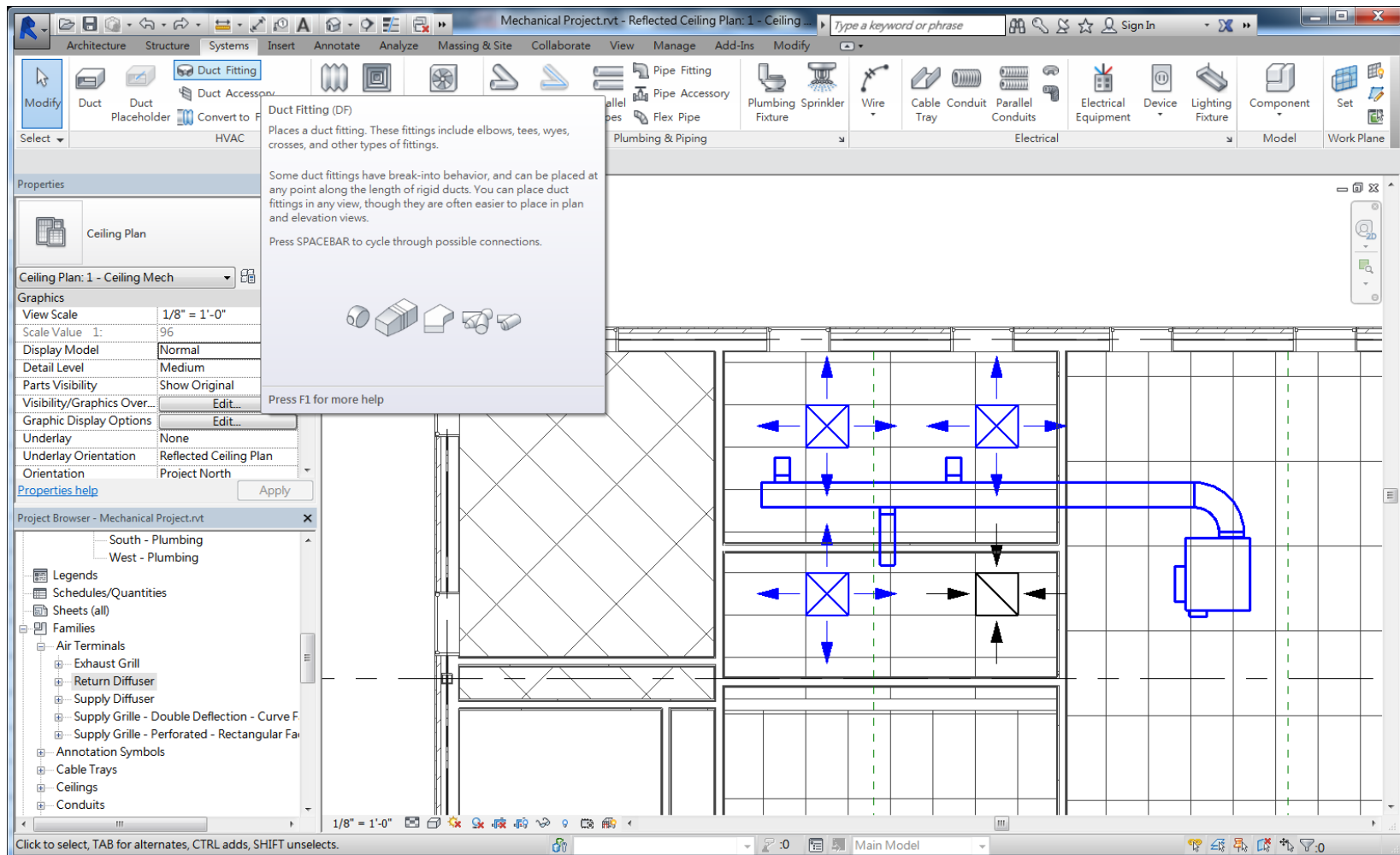
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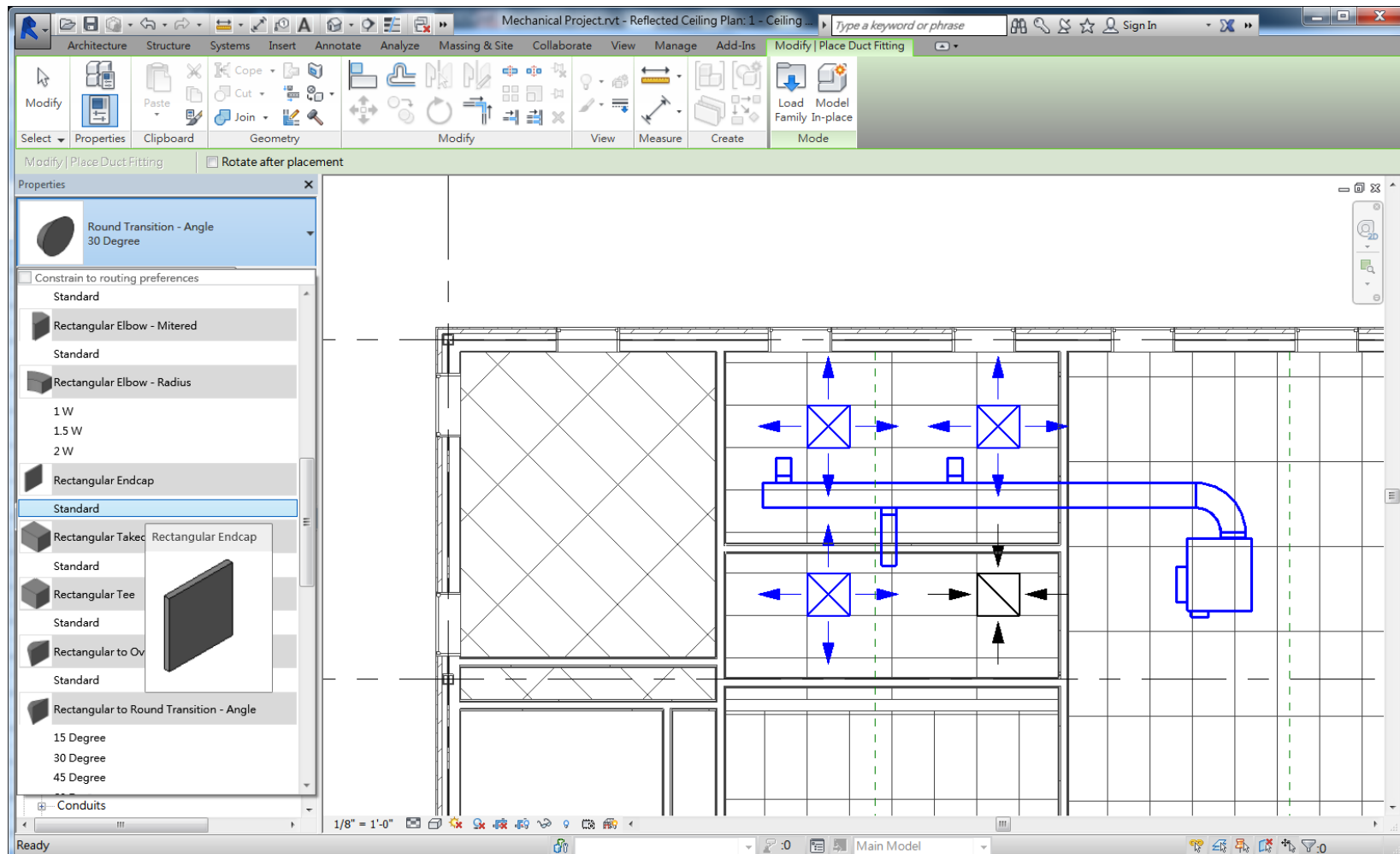
REVIT Mechanical

- Adding Supply Duct



REVIT Mechanical

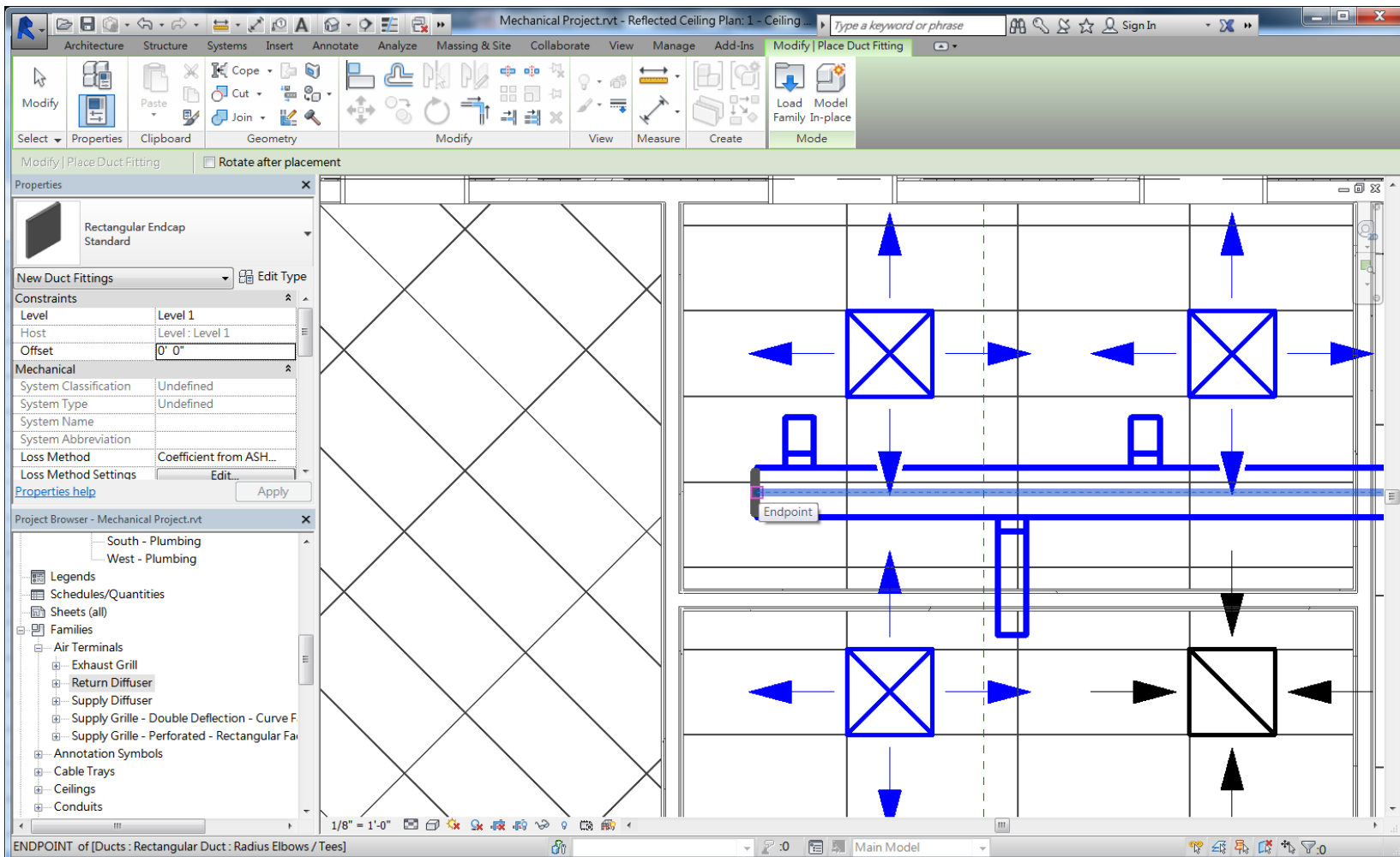
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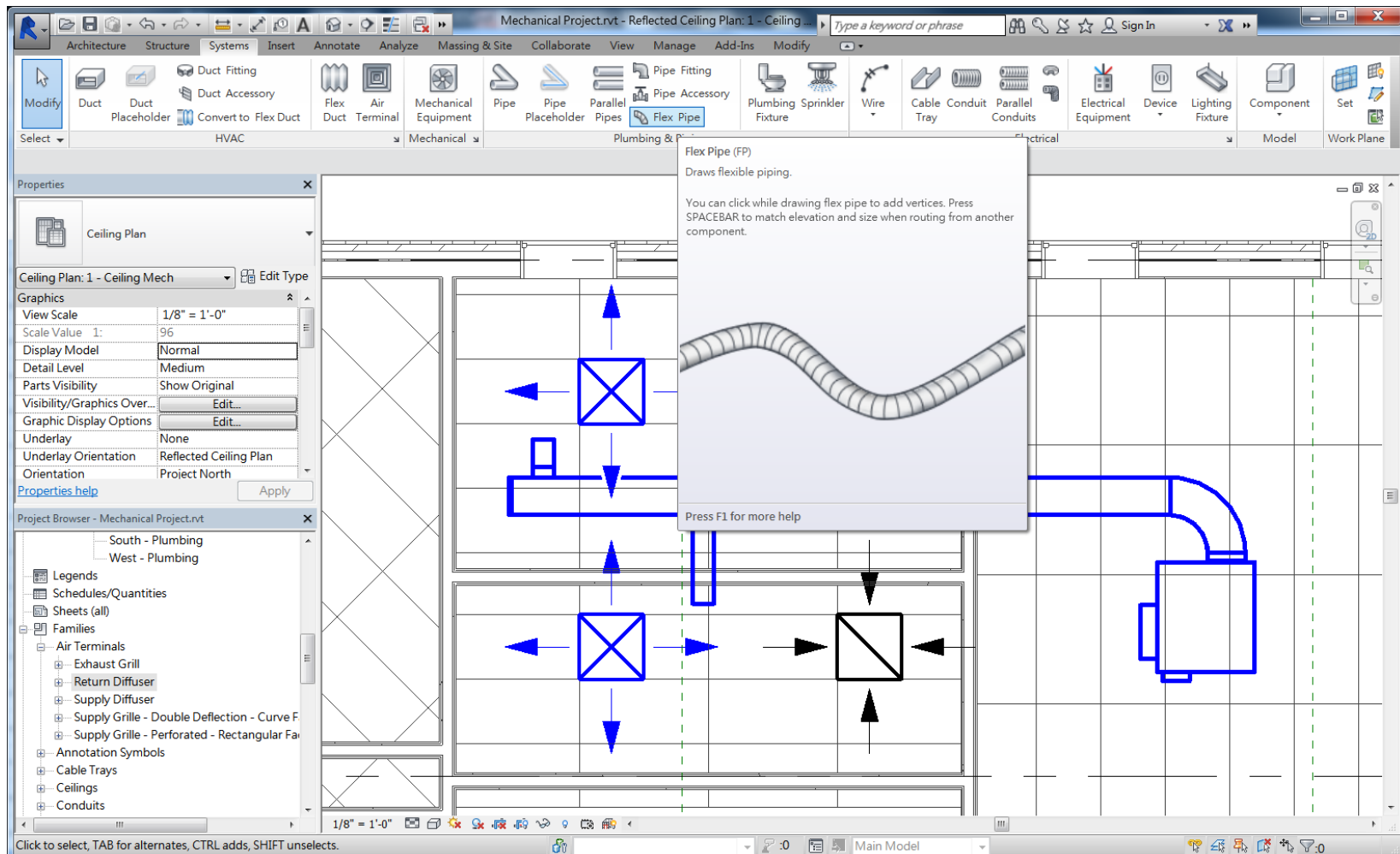
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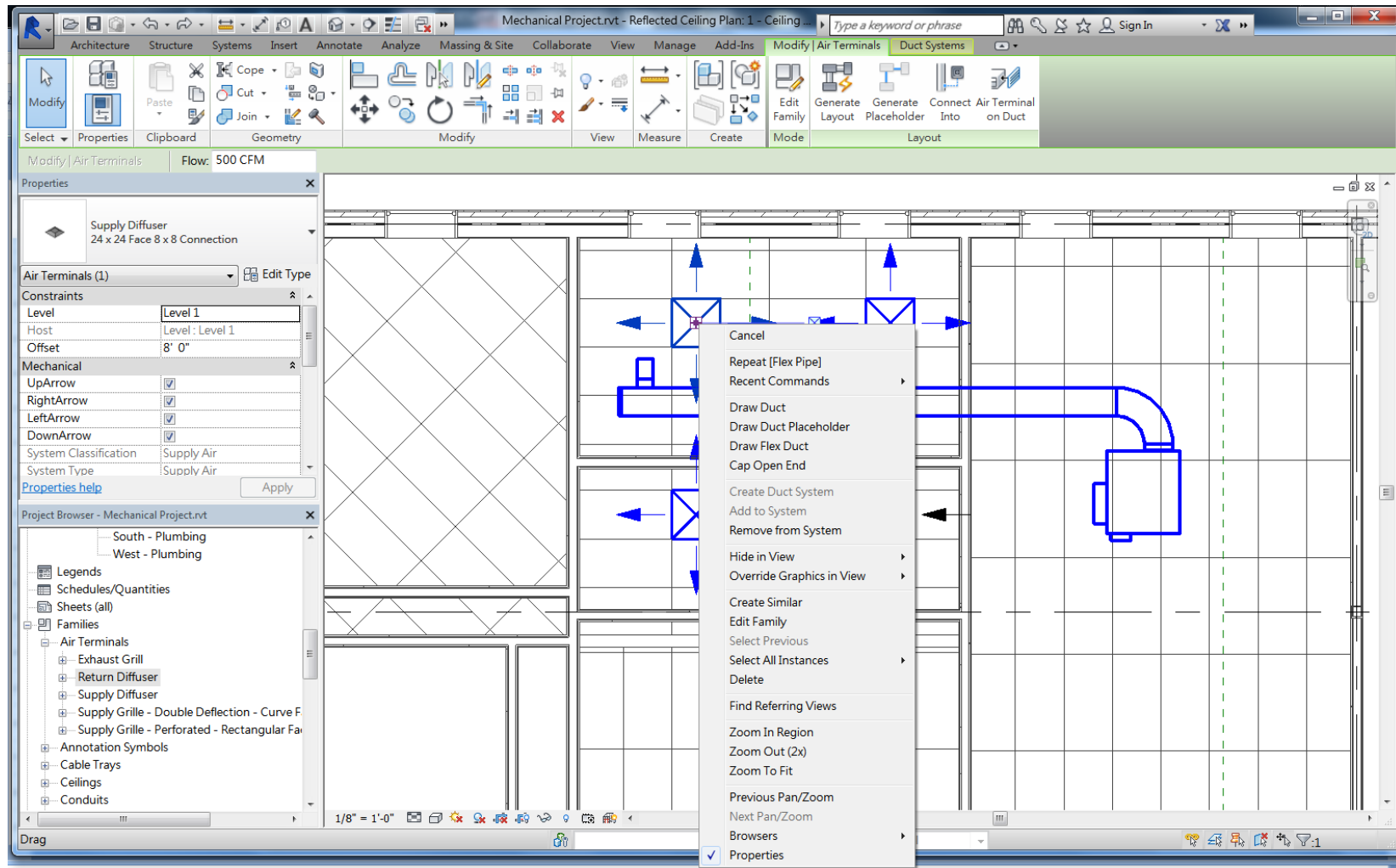
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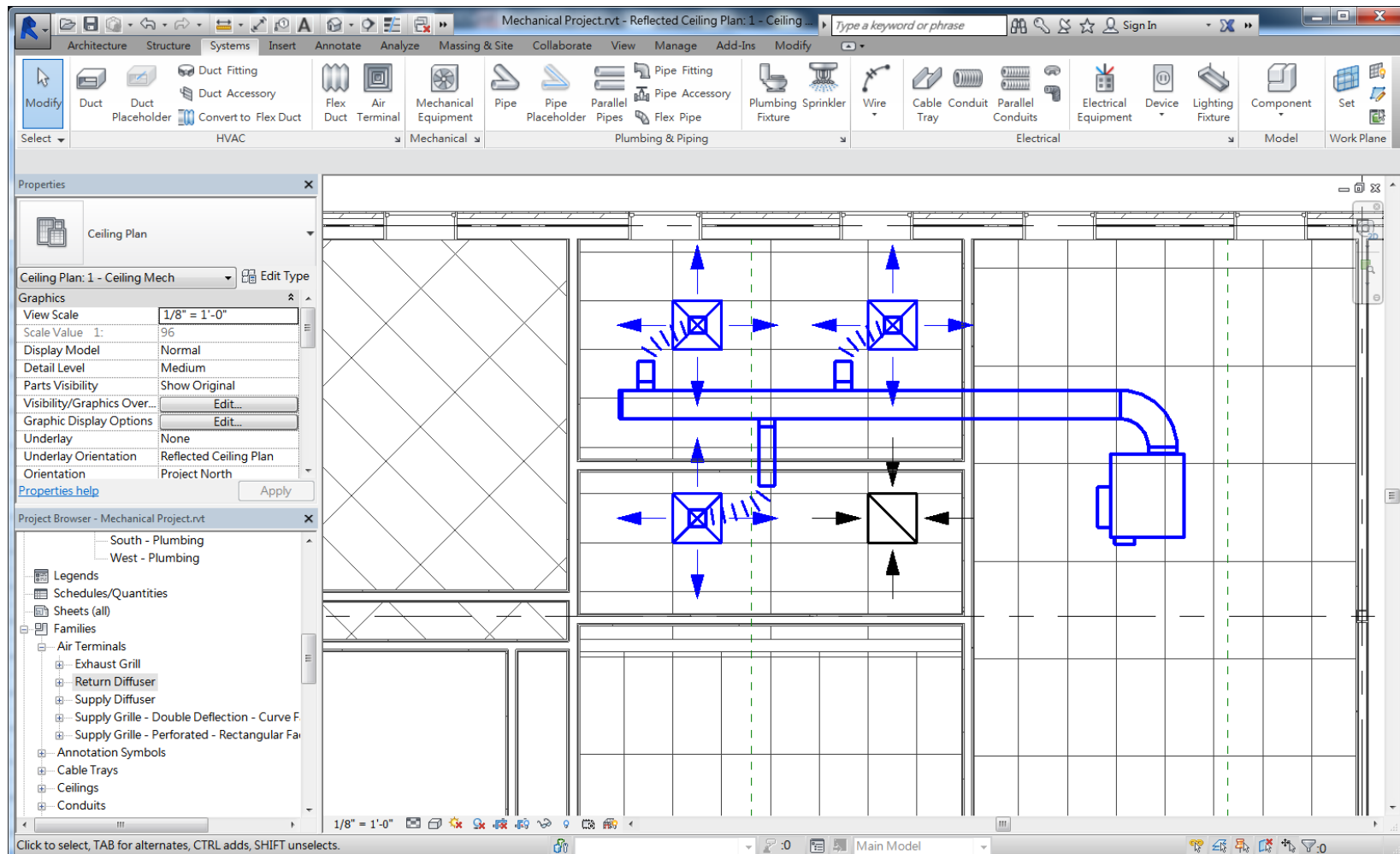
REVIT Mechanical

- Adding Supply Duct



REVIT Mechanical

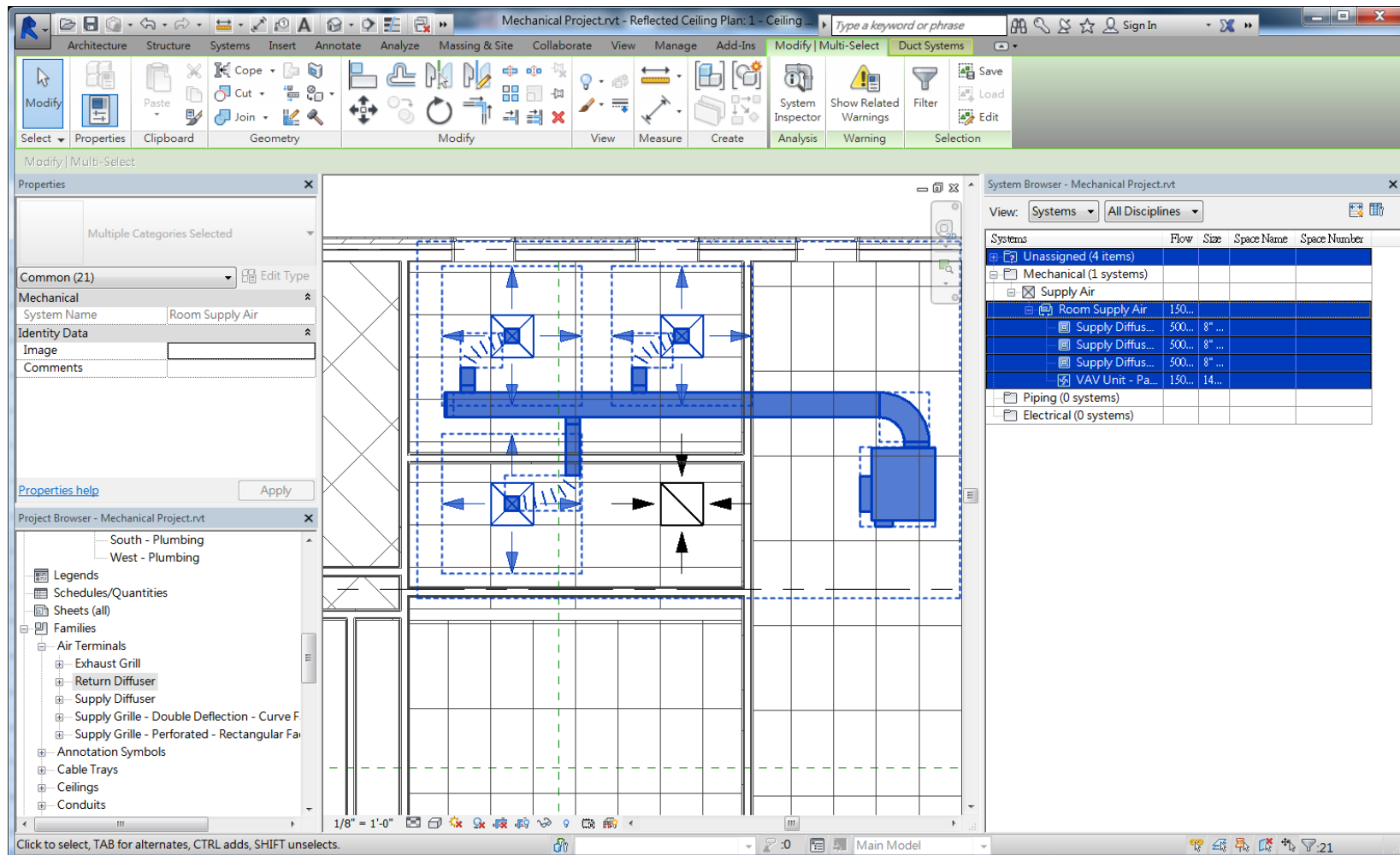
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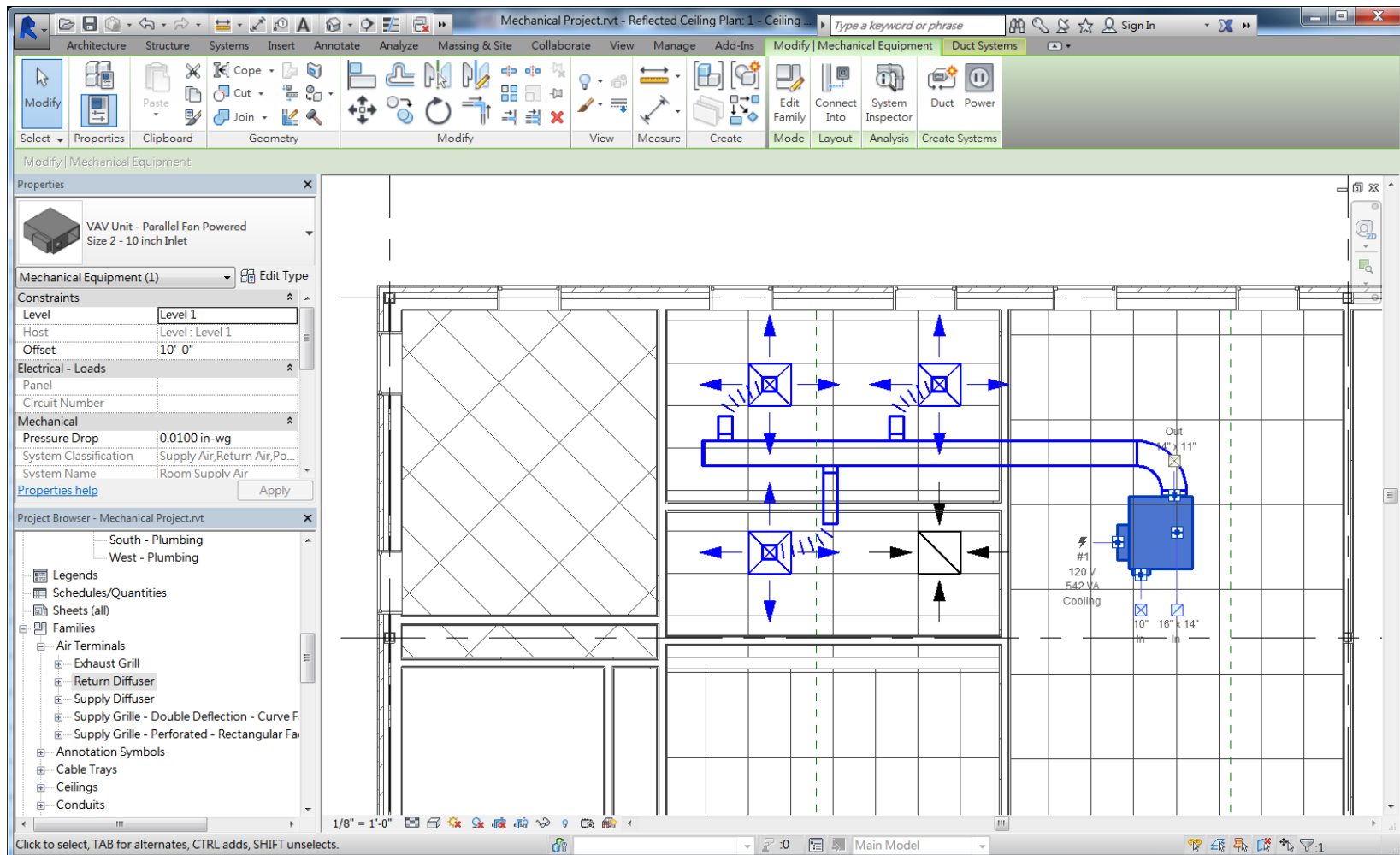
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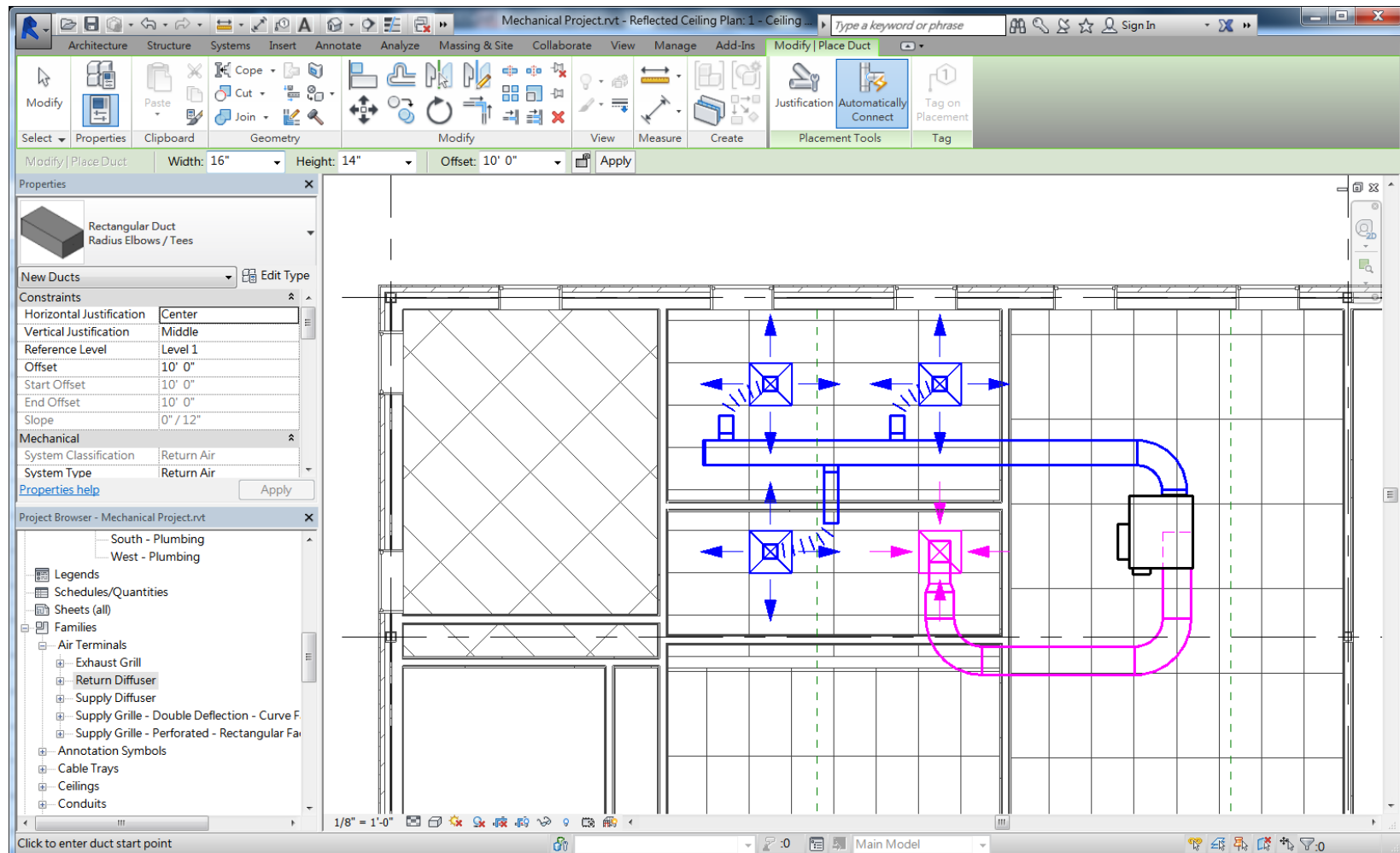
REVIT Mechanical

- Adding Return Duct



REVIT Mechanical

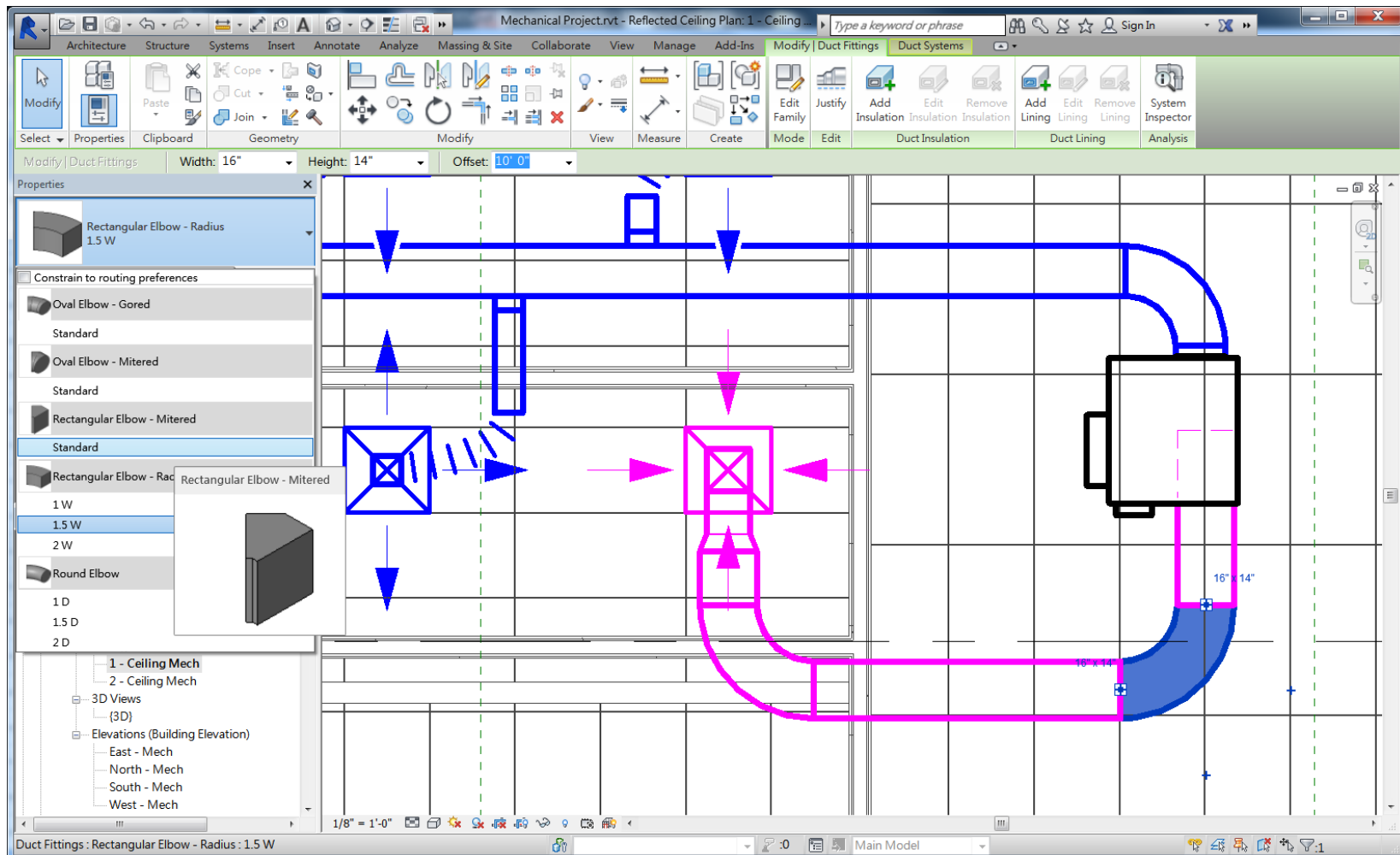
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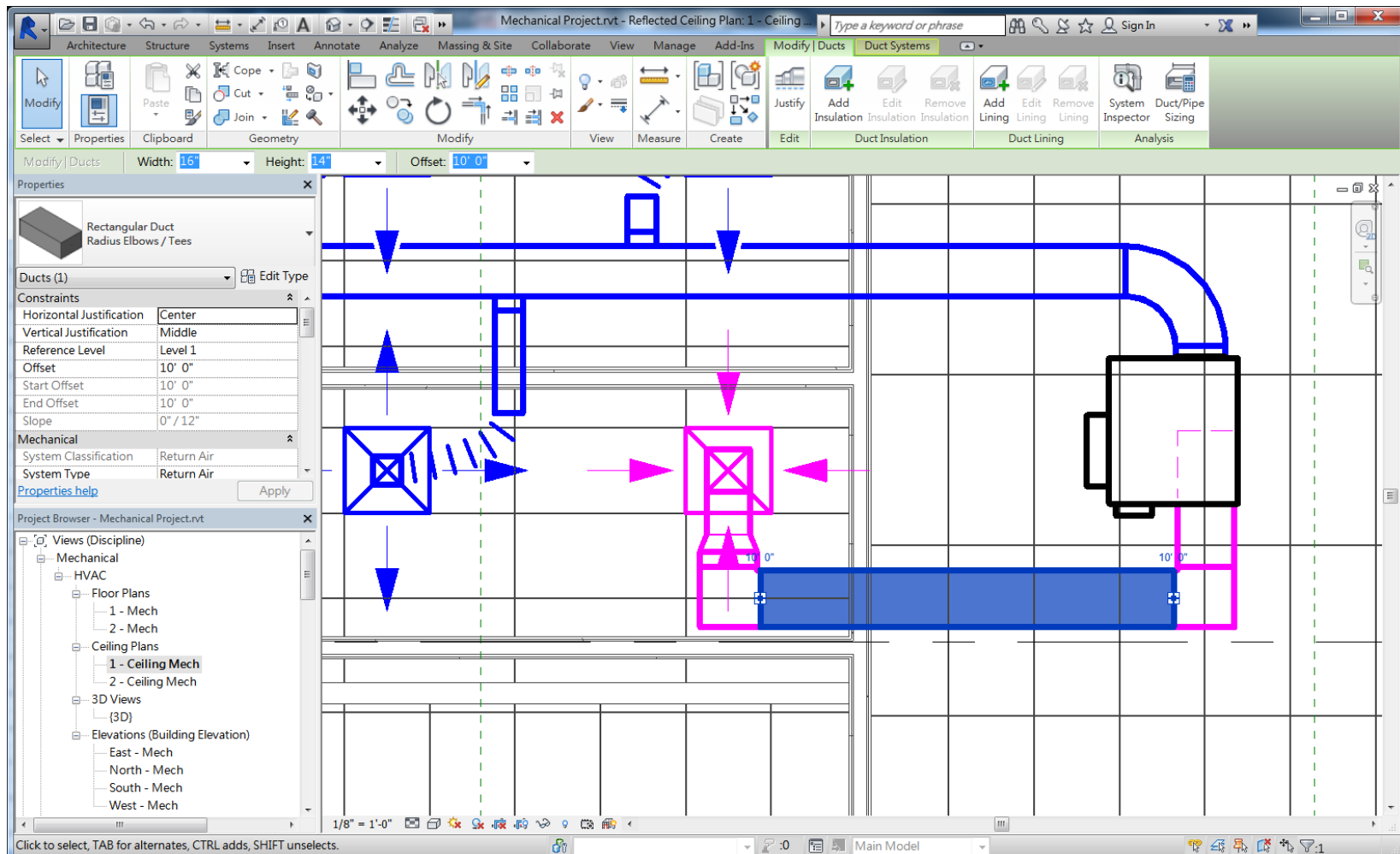
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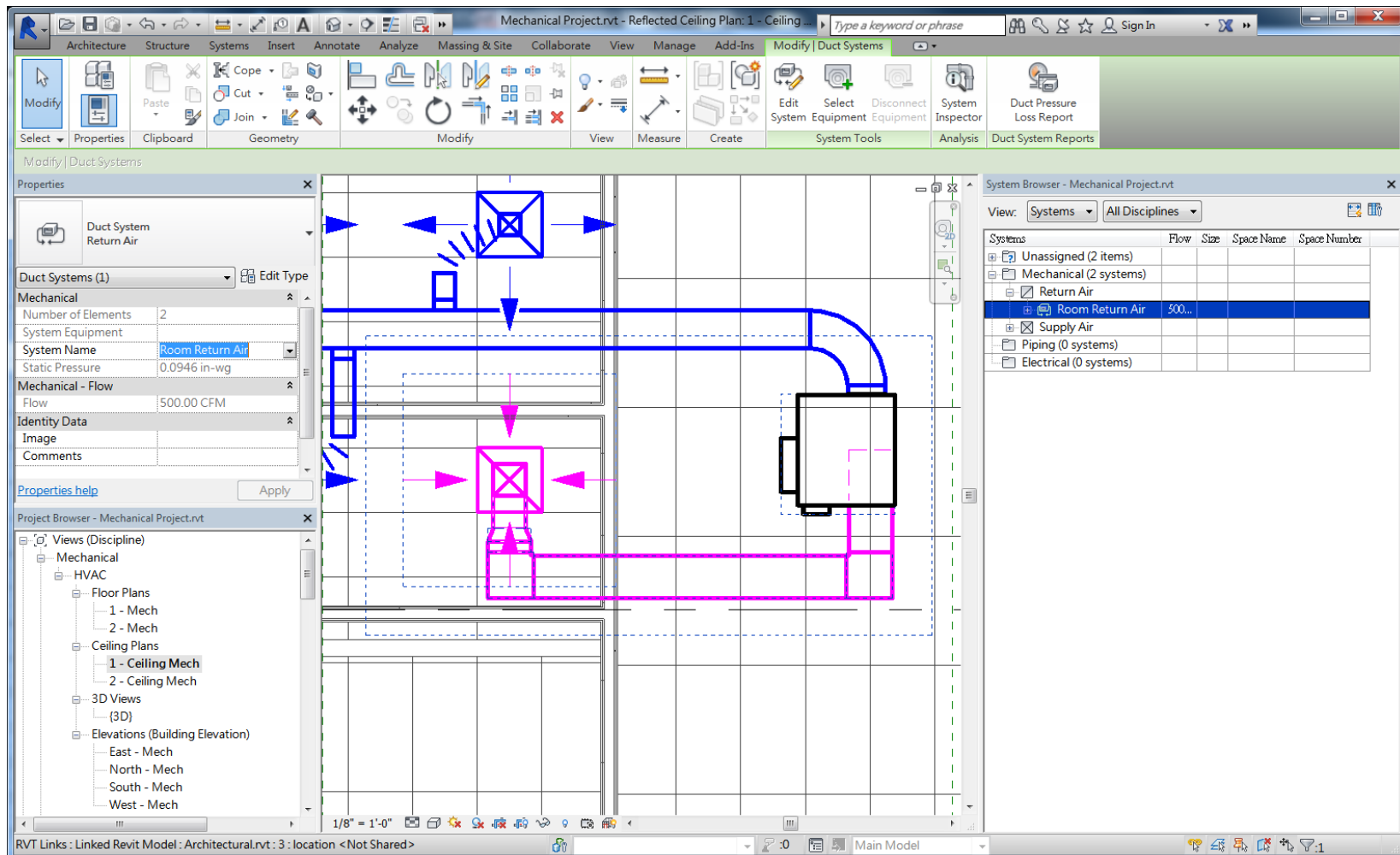
REVIT Mechanical

- Adding Return Duct



REVIT Mechanical

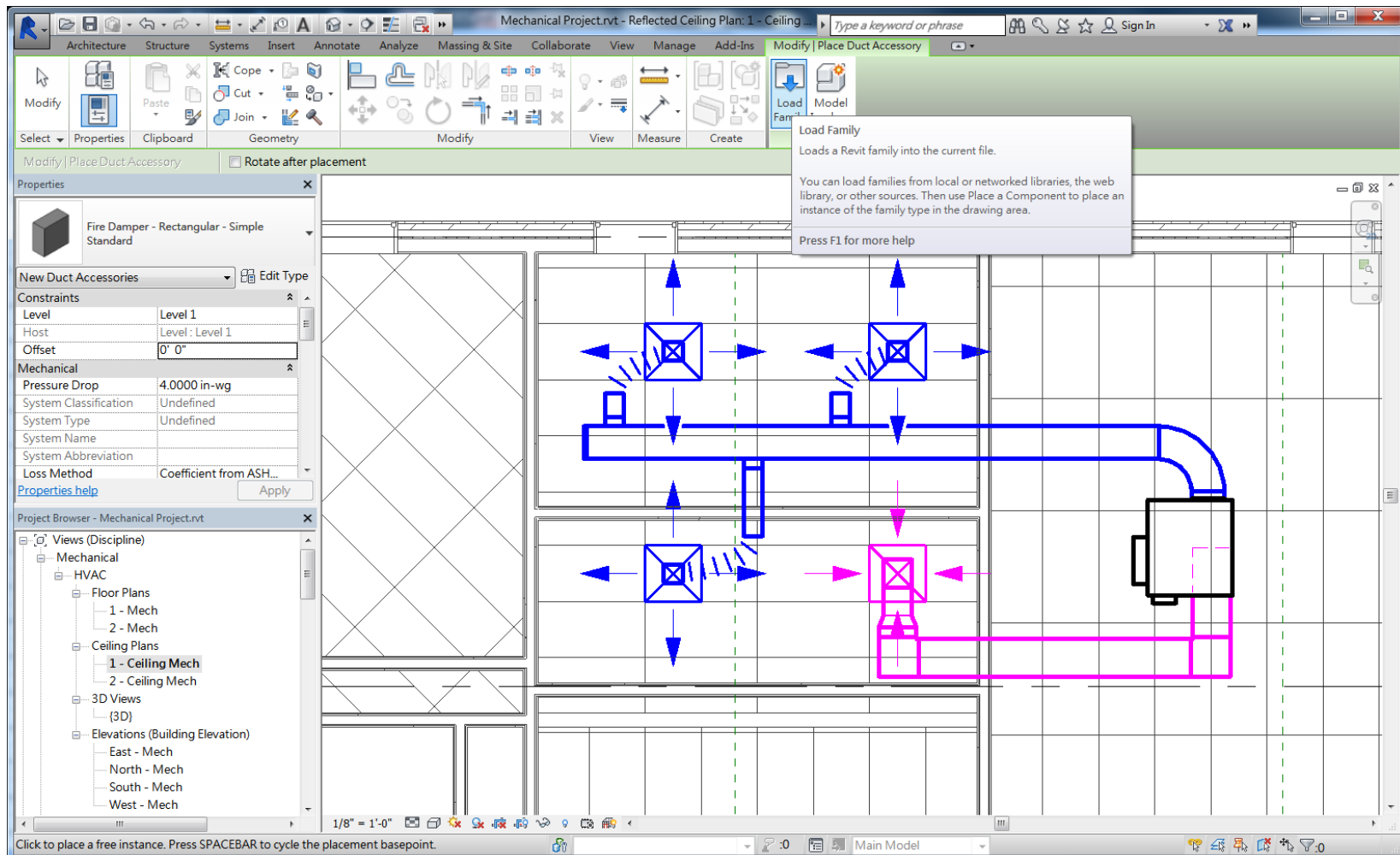
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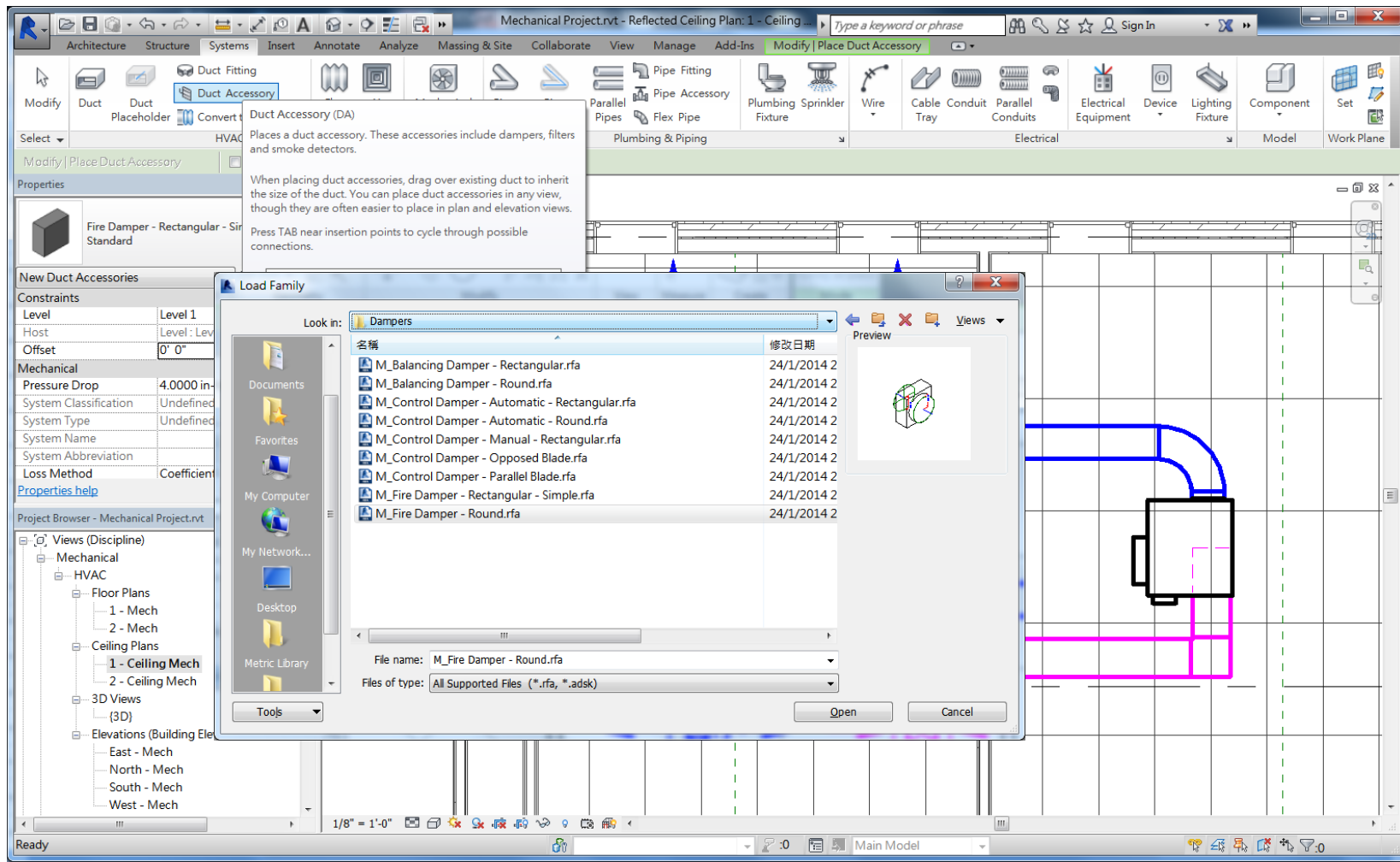
REVIT Mechanical

- Adding Duct Accessories and Fittings



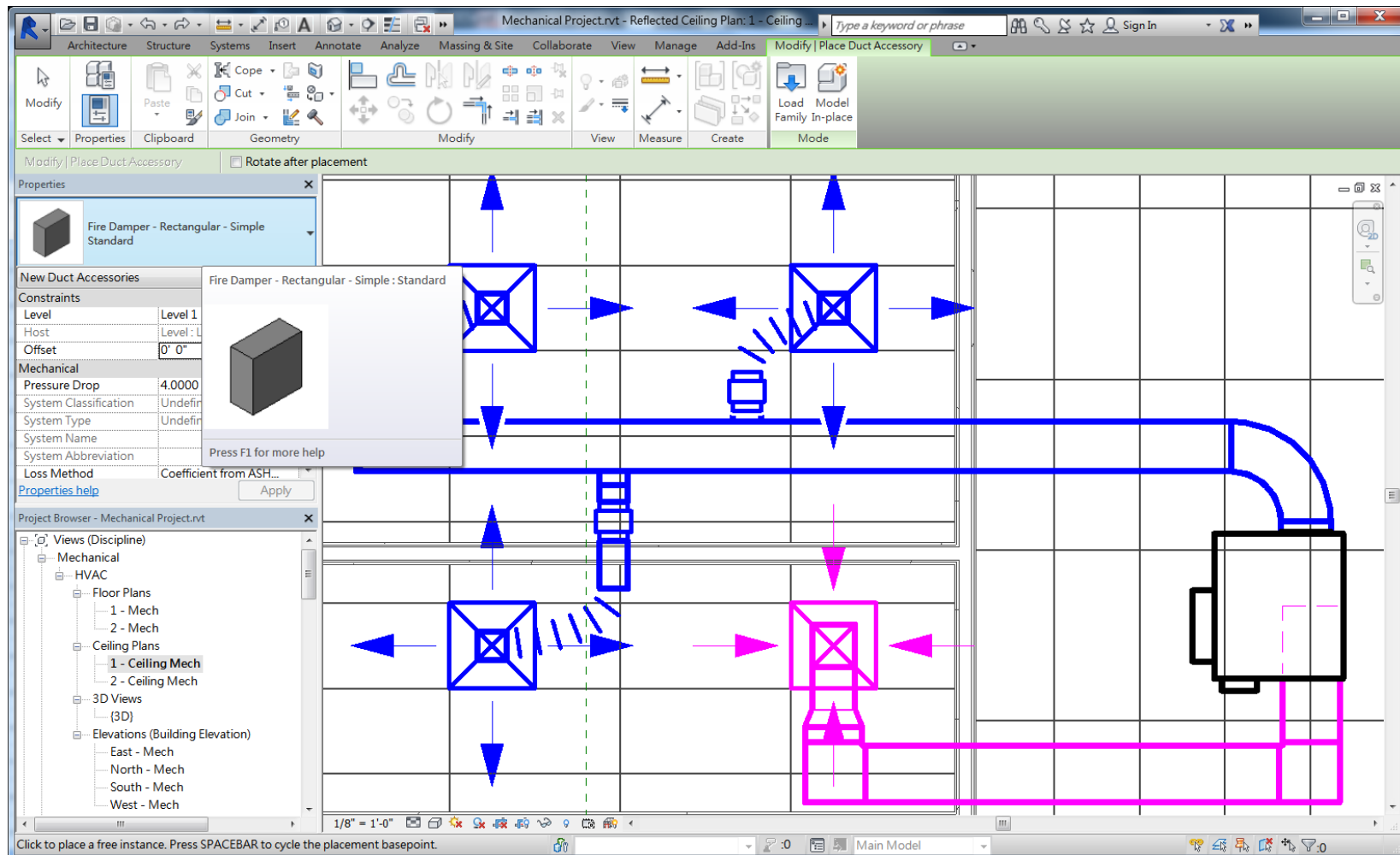
REVIT Mechanical

- Adding Duct Accessories and Fittings



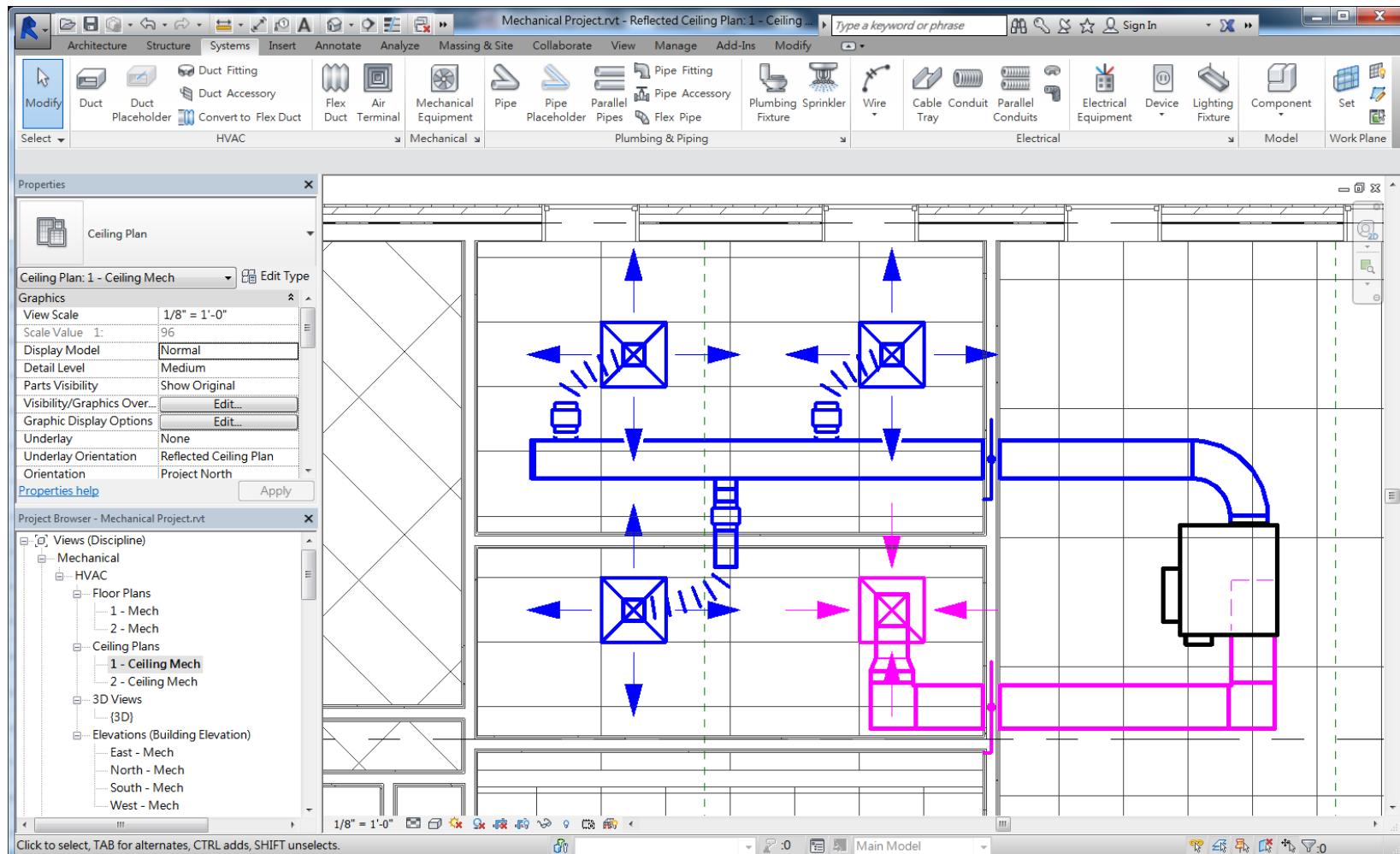
REVIT Mechanical

- Adding Duct Accessories and Fittings



REVIT Mechanical

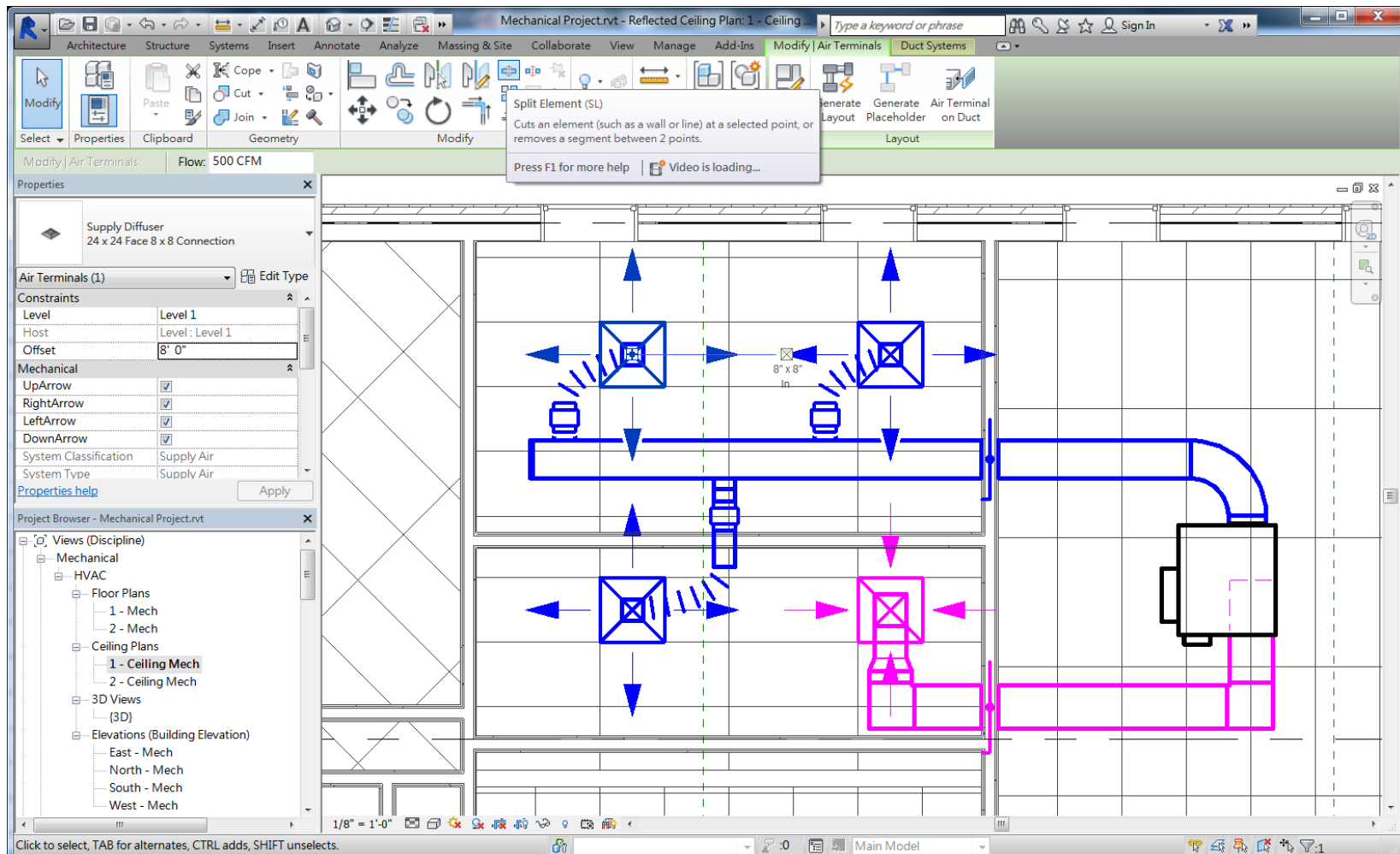
- Adding Duct Accessories and Fittings



CEI MEP (REVIT)

REVIT Mechanical

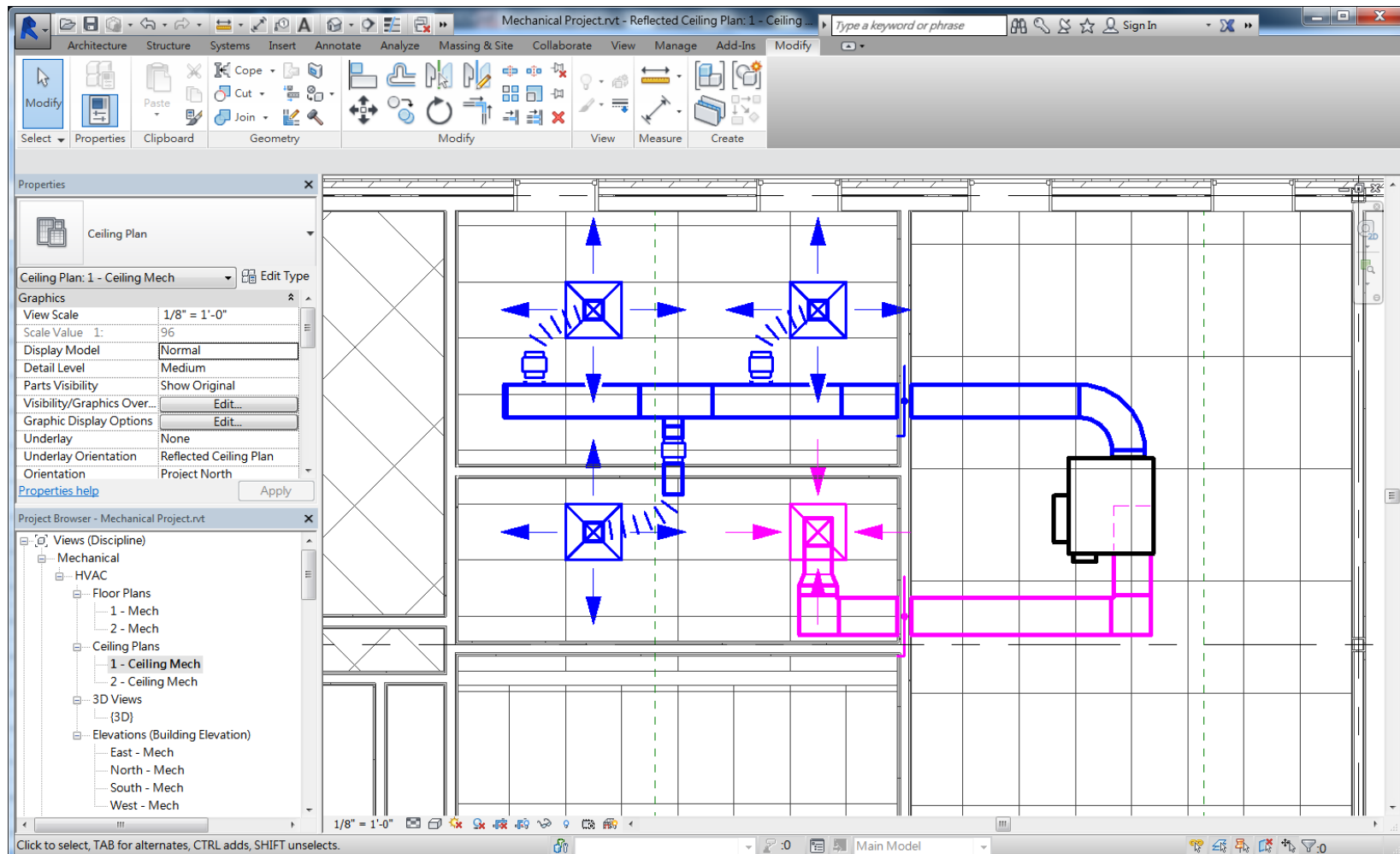
- Sizing Duct



CEI MEP (REVIT)

REVIT Mechanical

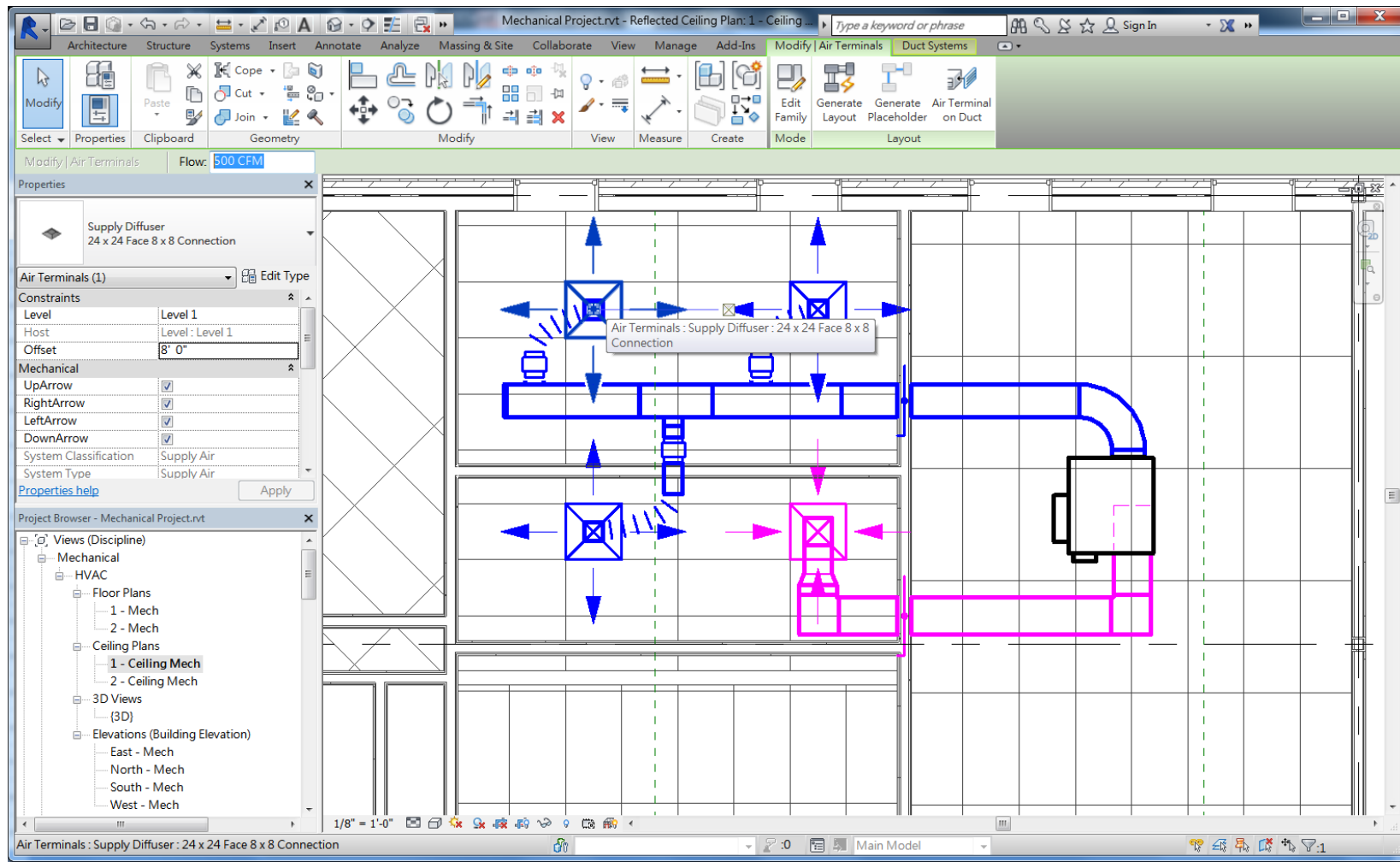
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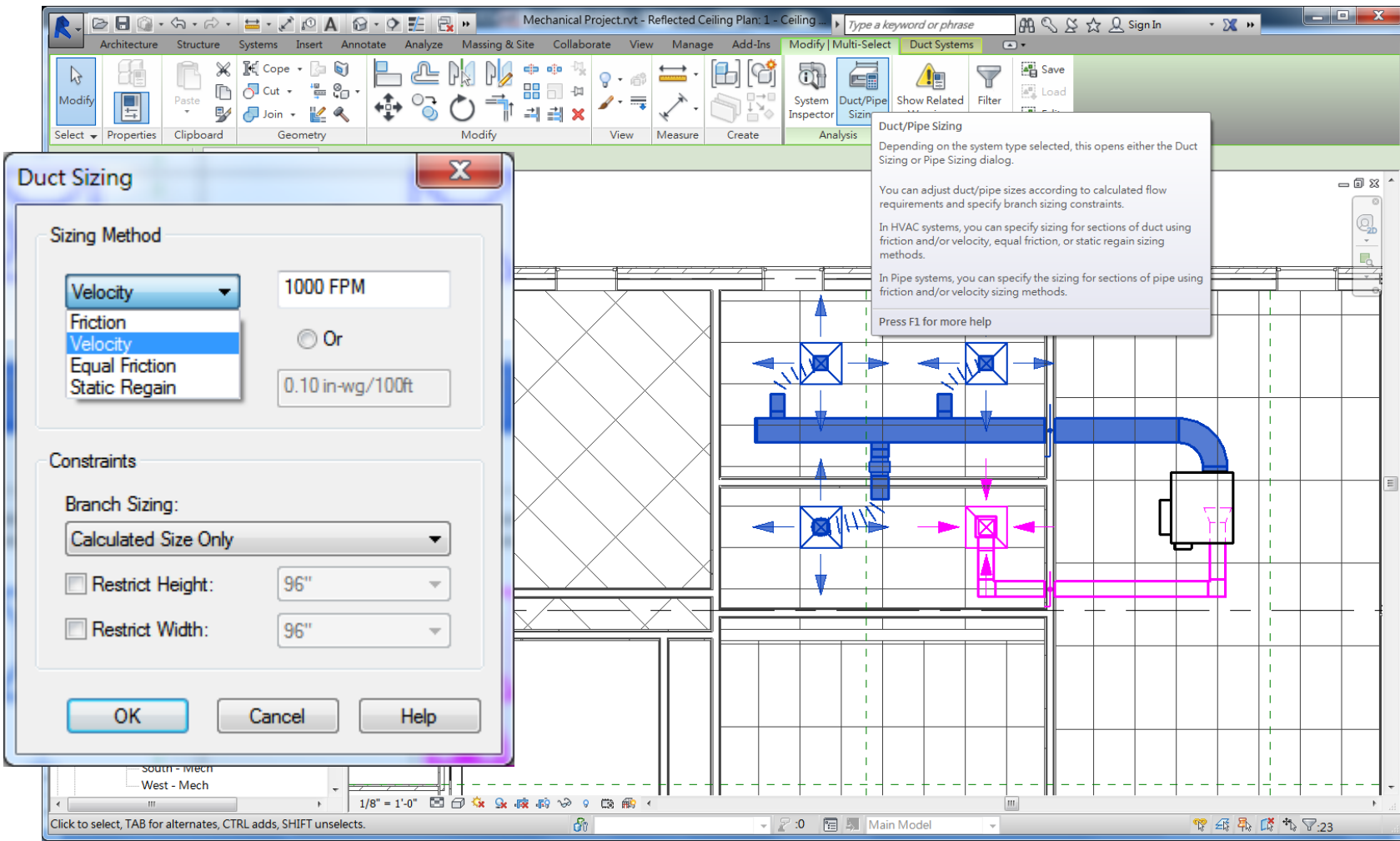
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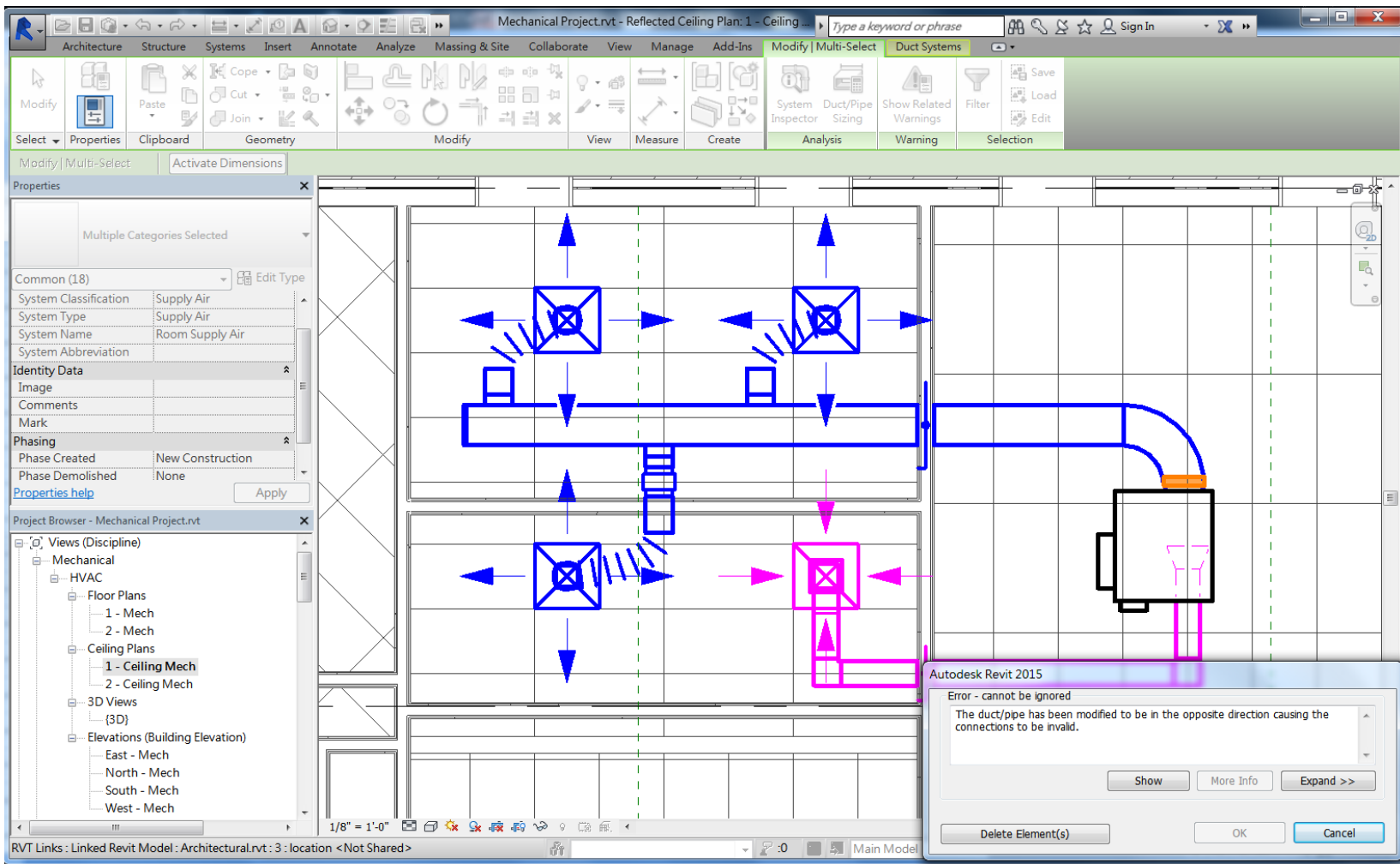
REVIT Mechanical

- Sizing Duct



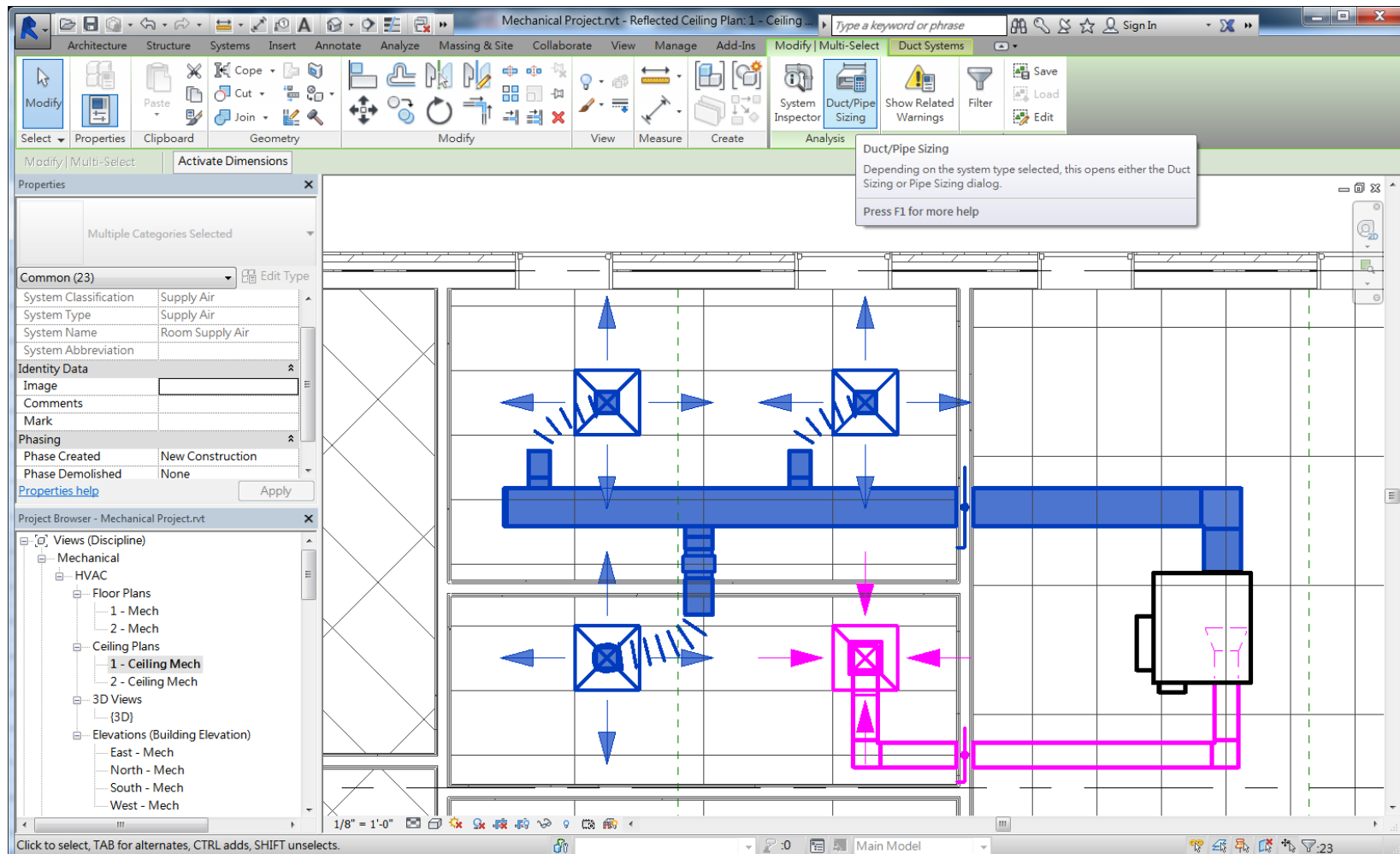
REVIT Mechanical

- Sizing Duct



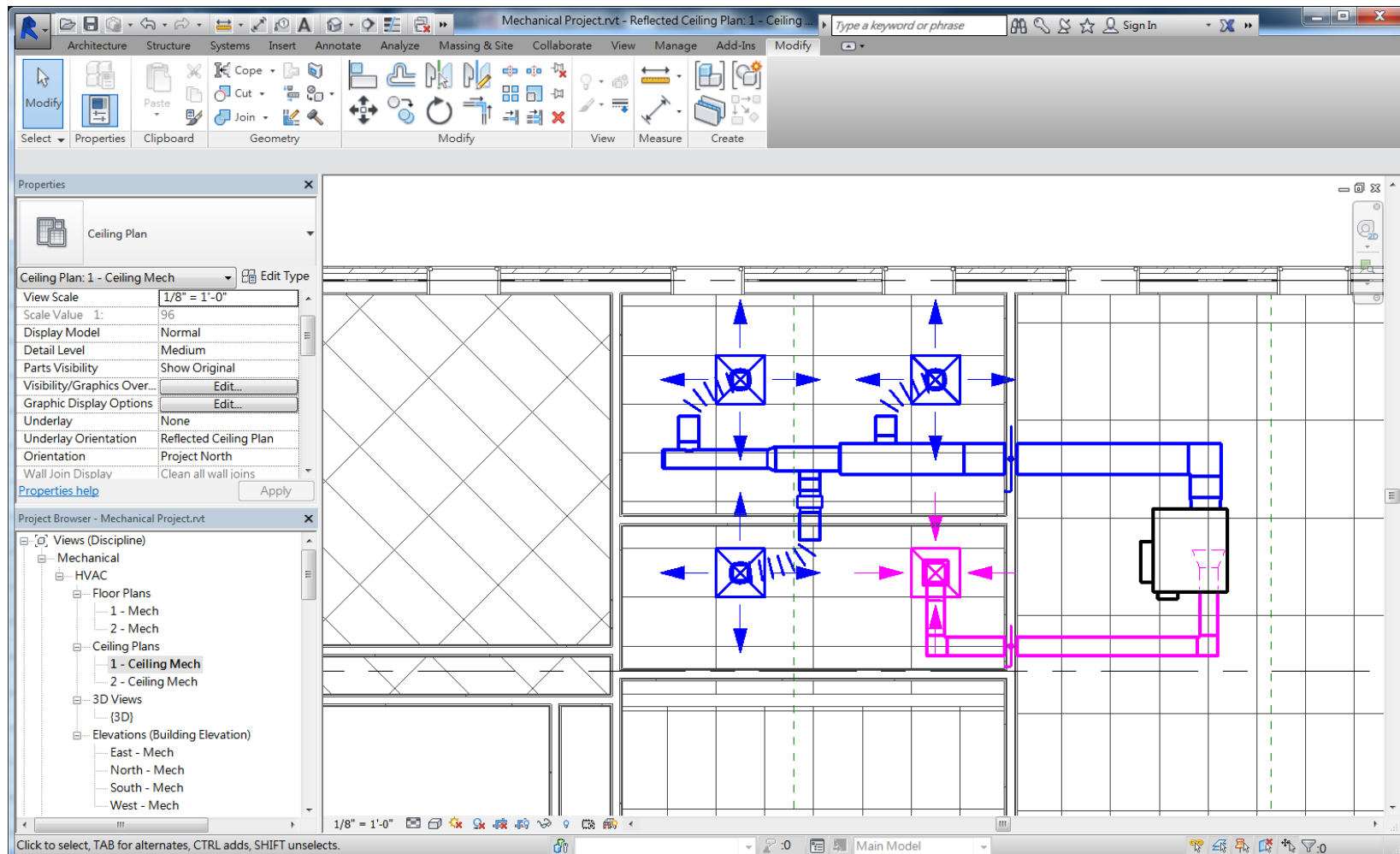
REVIT Mechanical

- Sizing Duct



REVIT Mechanical

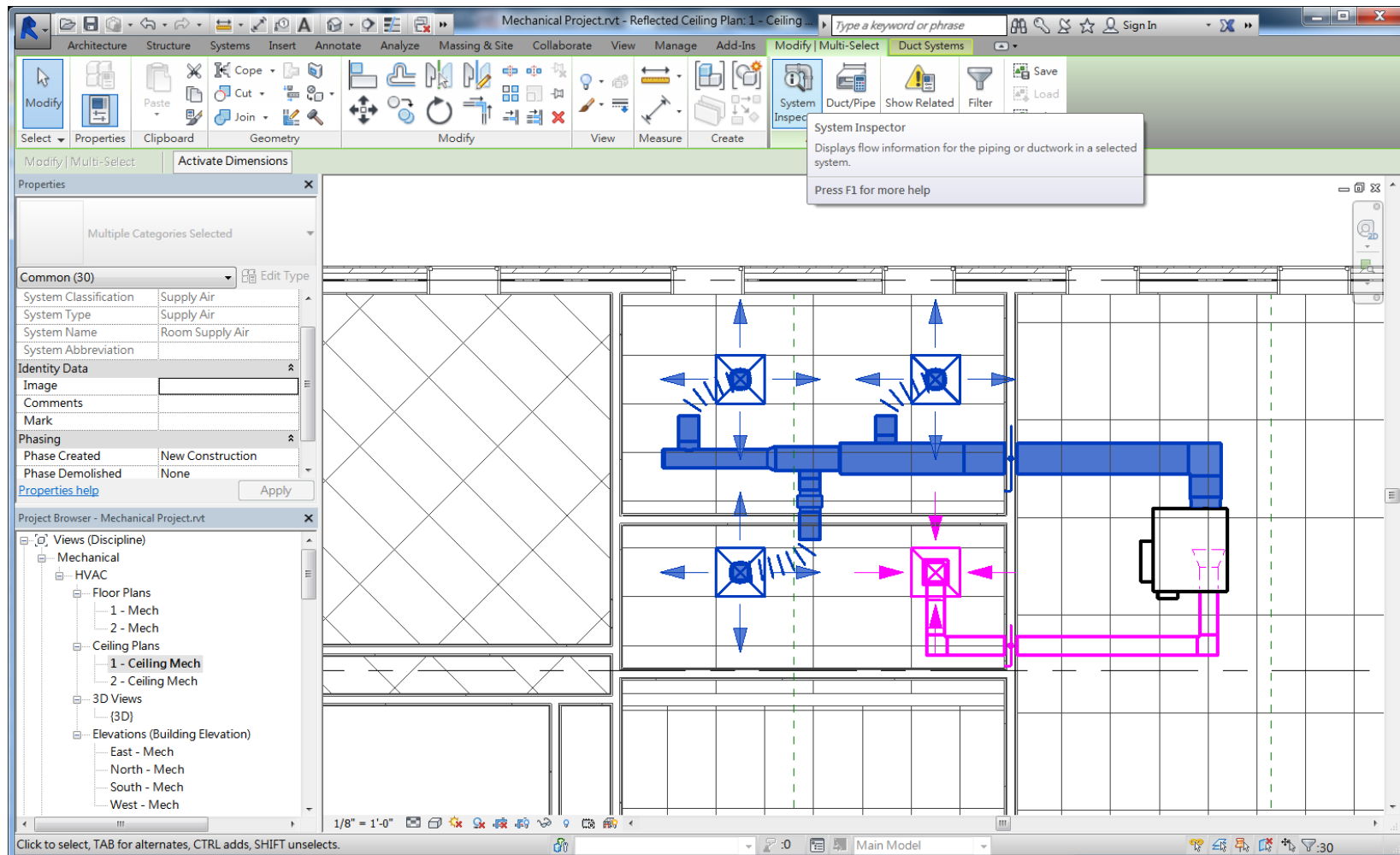
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CEI MEP (REVIT)

REVIT Mechanical

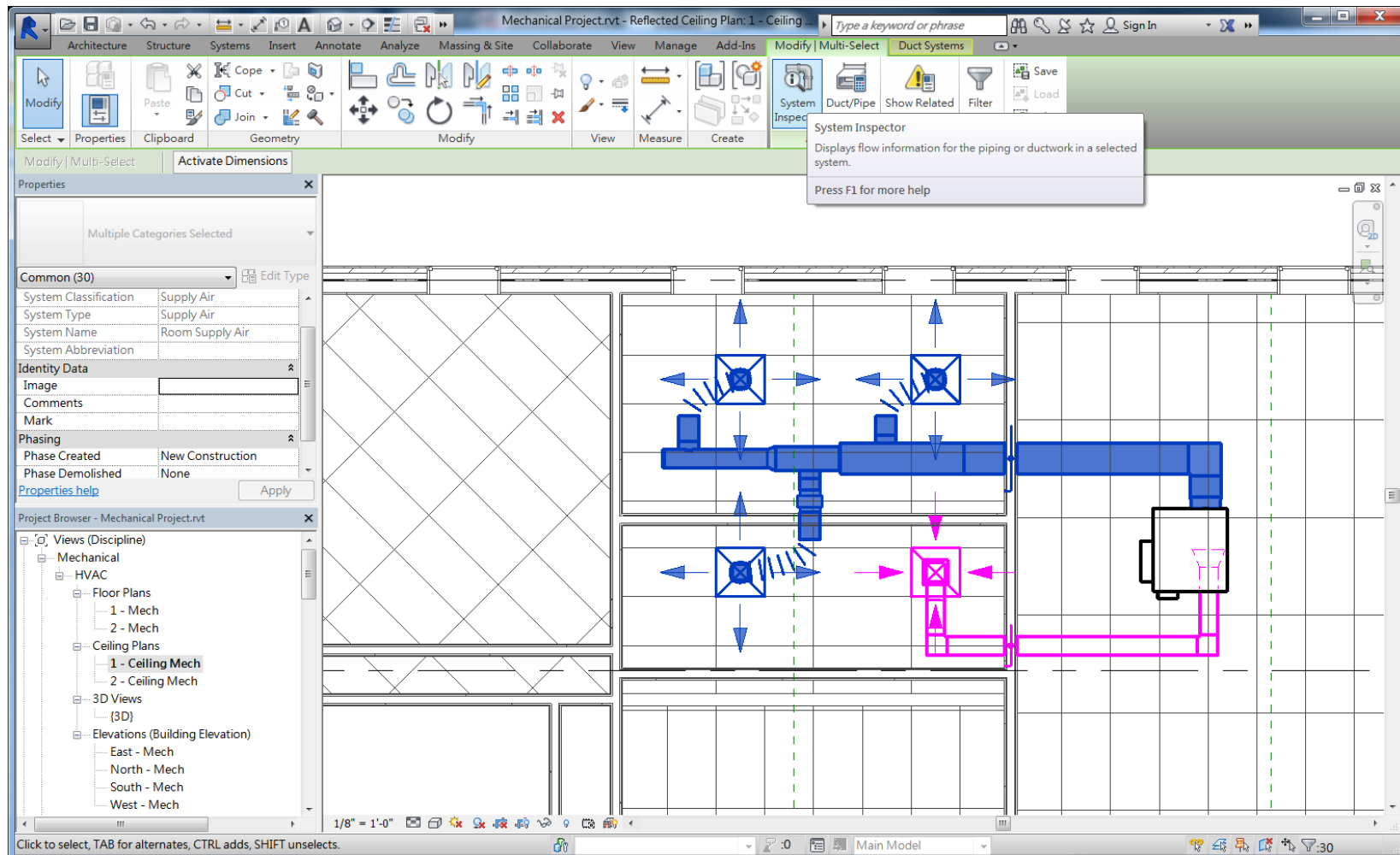
- System Inspector



CEI MEP (REVIT)

REVIT Mechanical

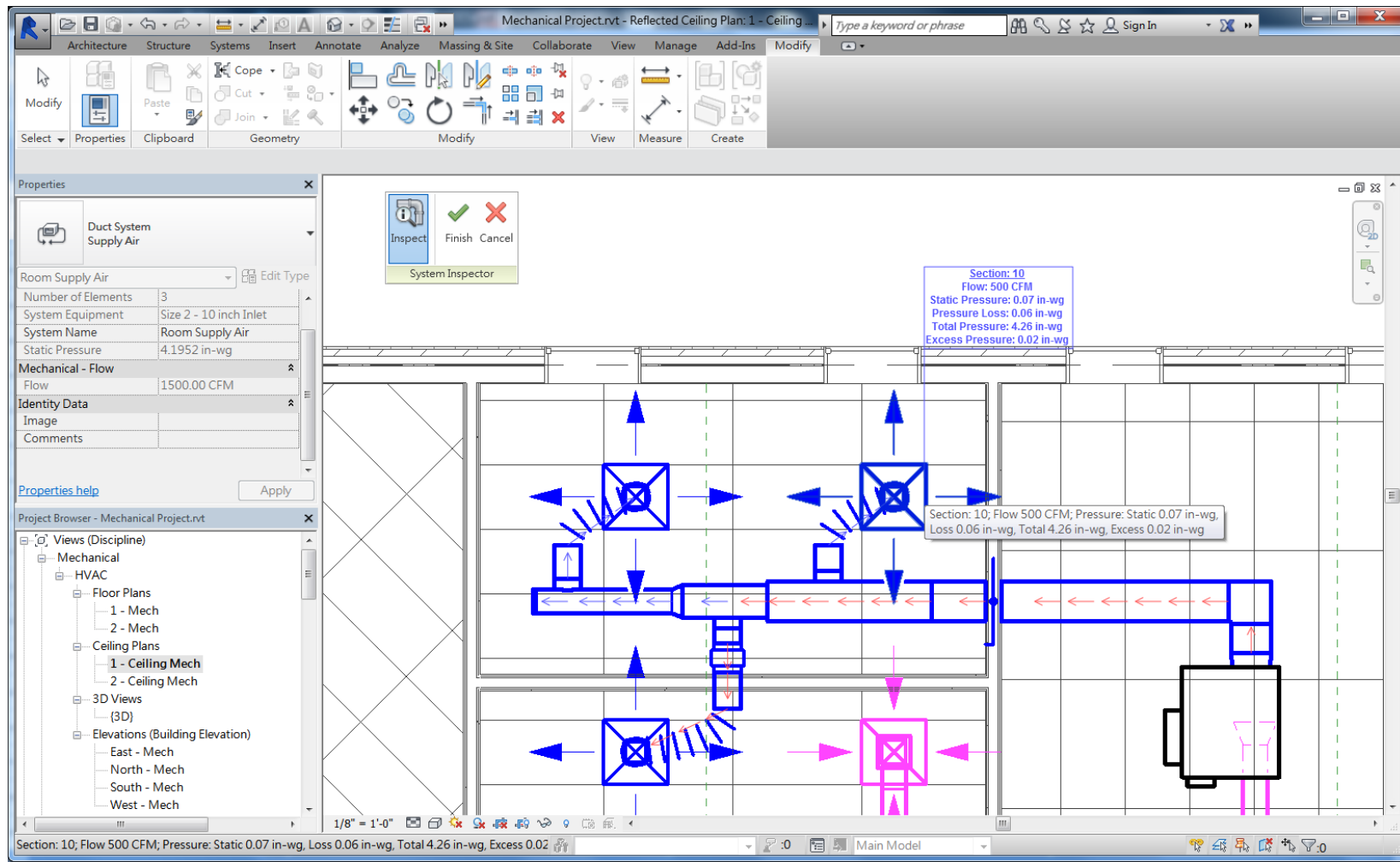
- System Inspector



CEI MEP (REVIT)

REVIT Mechanical

- System Inspector





ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

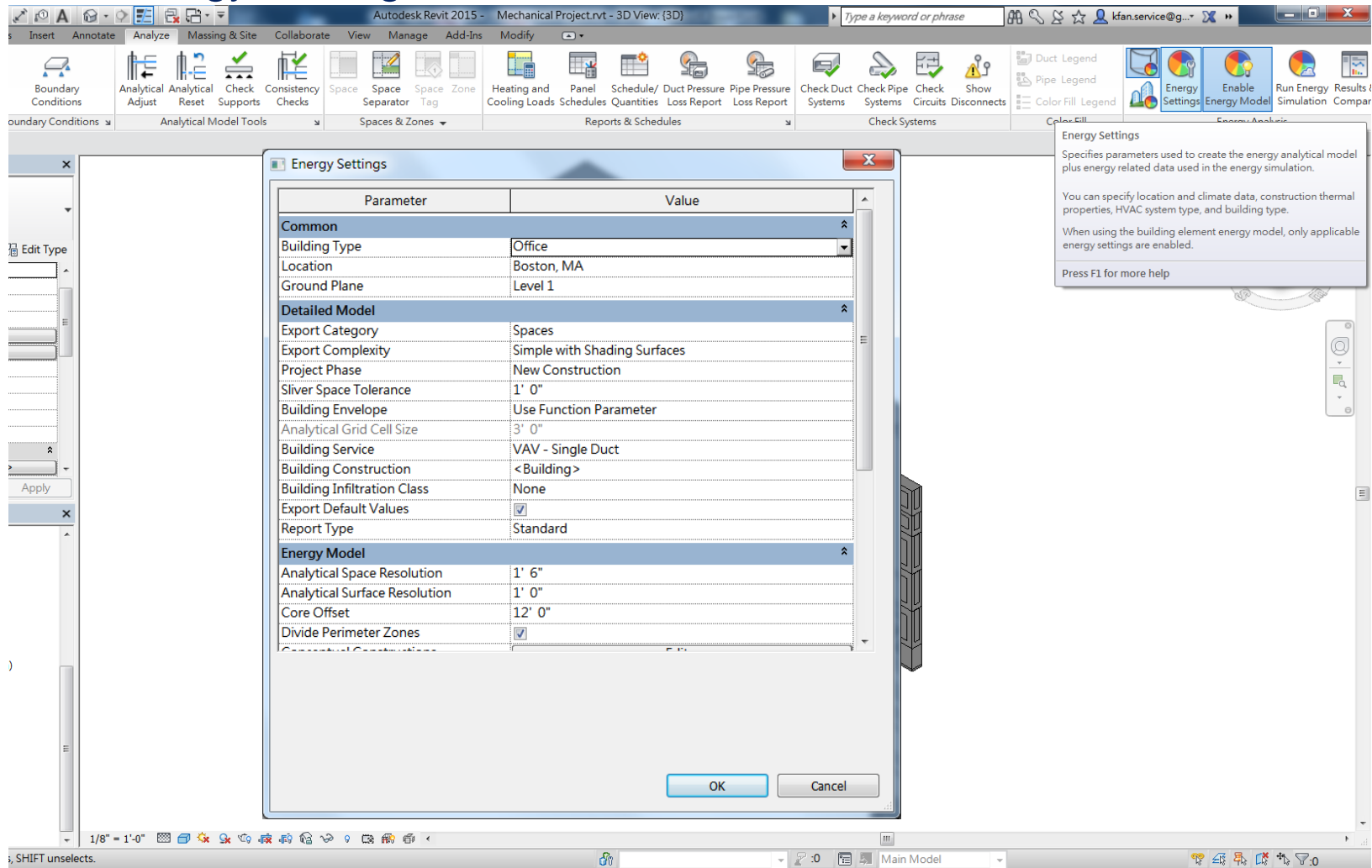
CEII MEP (REVIT)

REVIT Mechanical

- HVAC Cooling and Heating Load Analysis
 - A conceptual energy analysis
 - A building element energy analysis
 - Export gbXML data to load-simulating software
 - export the space load data via a Green Building XML(gbXML) schema file to an external simulation software program
 - Heating and cooling analysis
 - Analyze duct and pipe system pressure

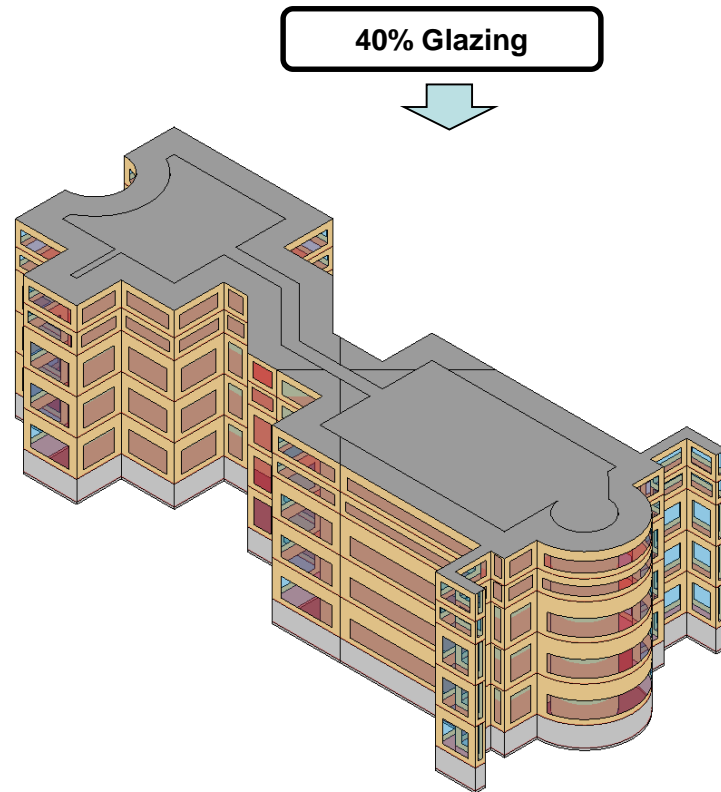
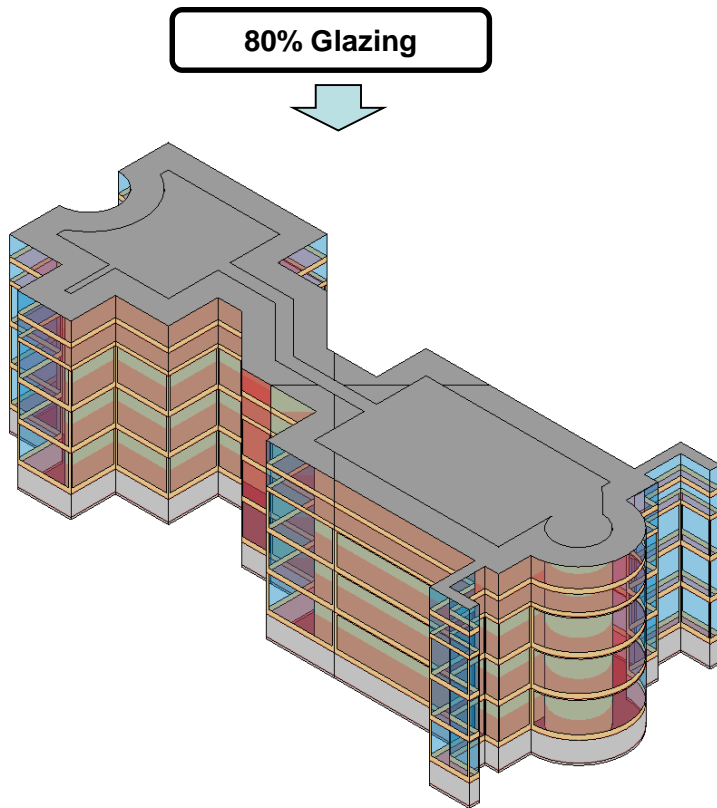
REVIT Mechanical

- Energy Setting



REVIT Mechanical

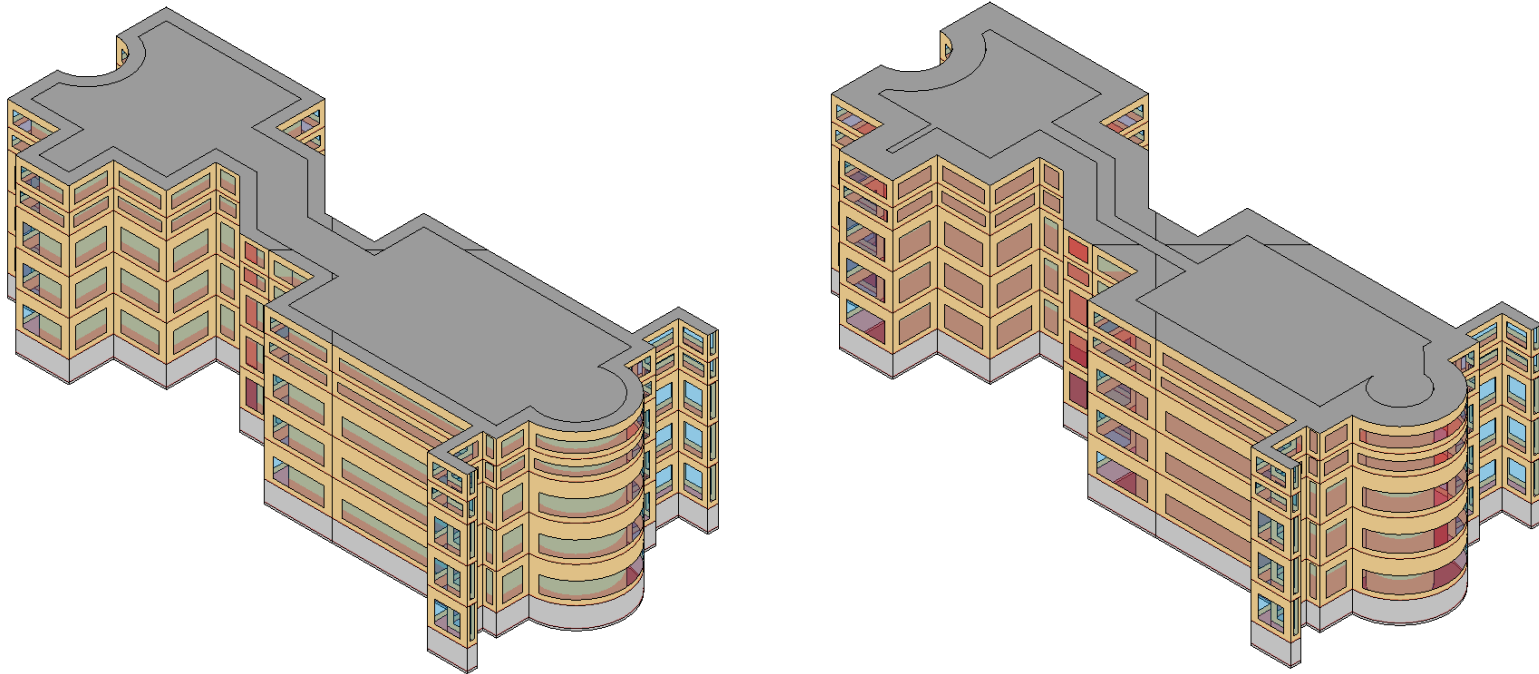
- Energy Setting



REVIT Mechanical

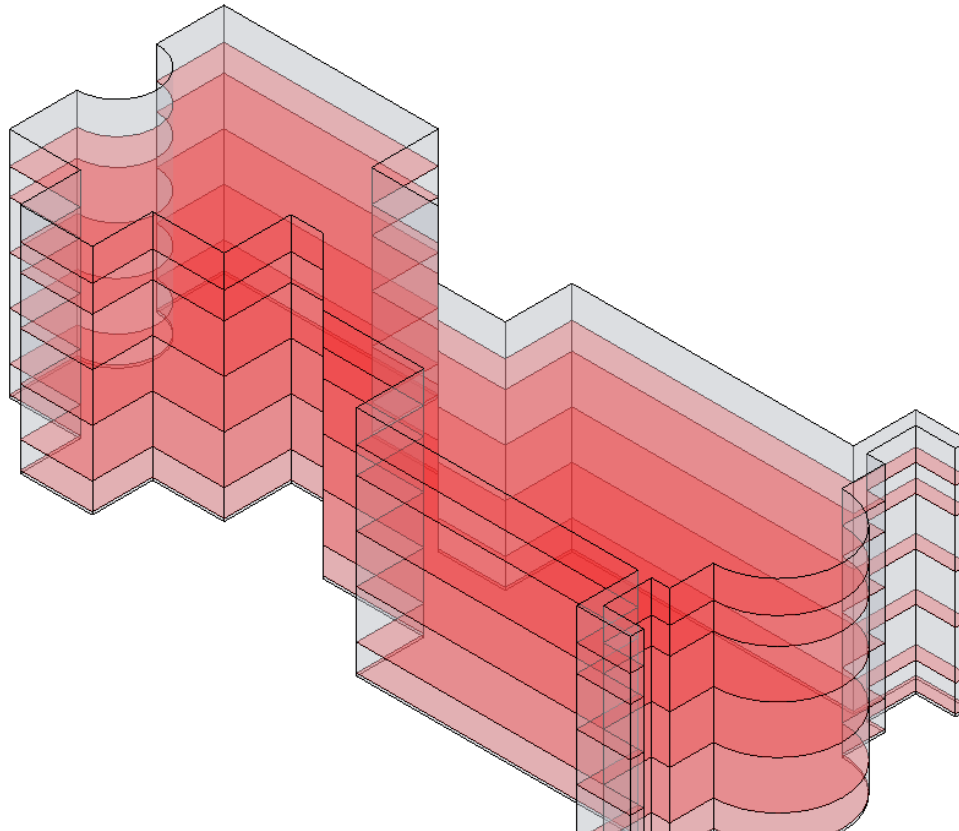
- Energy Setting

Core offset



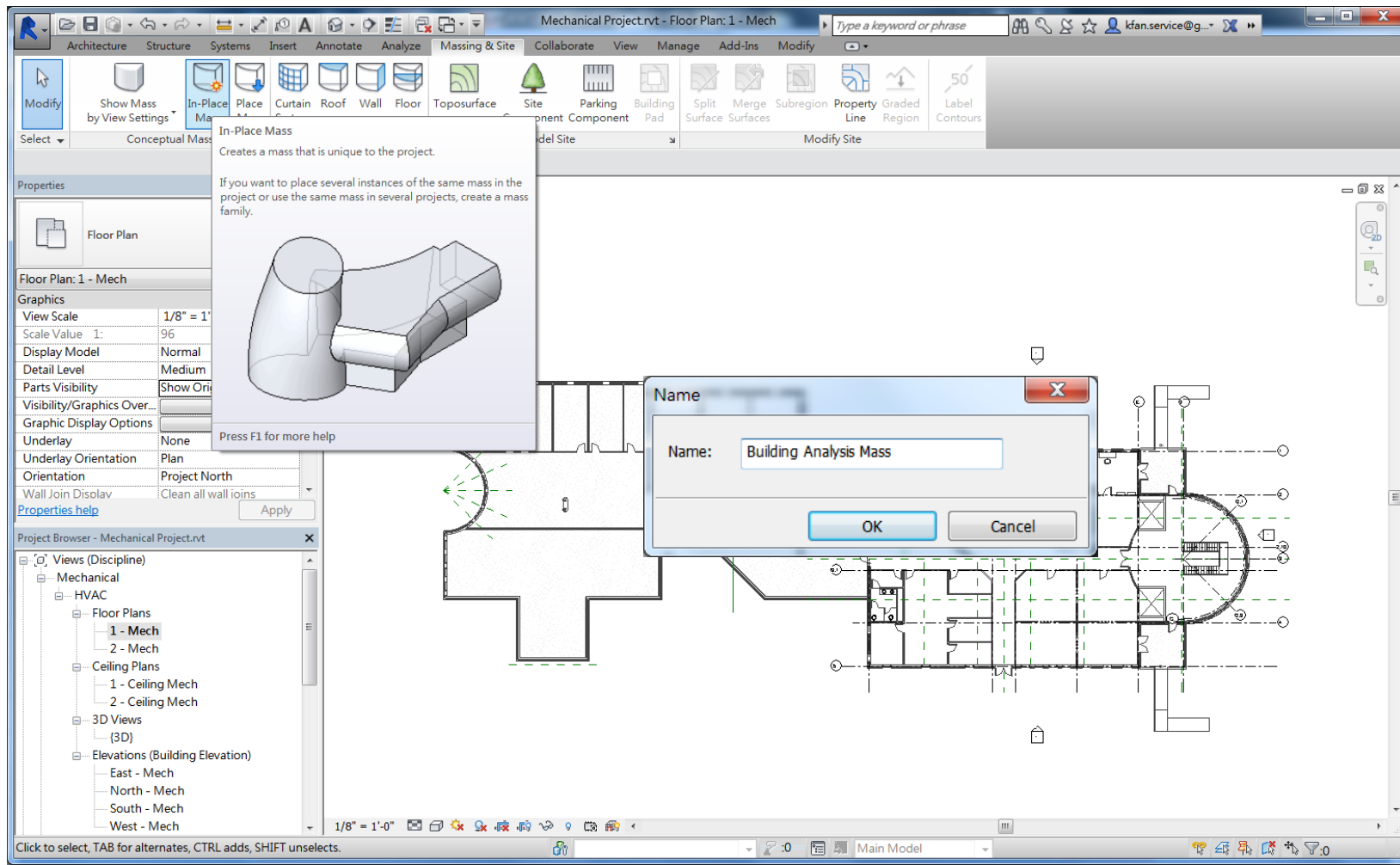
REVIT Mechanical

- A conceptual energy analysis
 - run an analysis on a project while it is in its conceptual design phase.



REVIT Mechanical

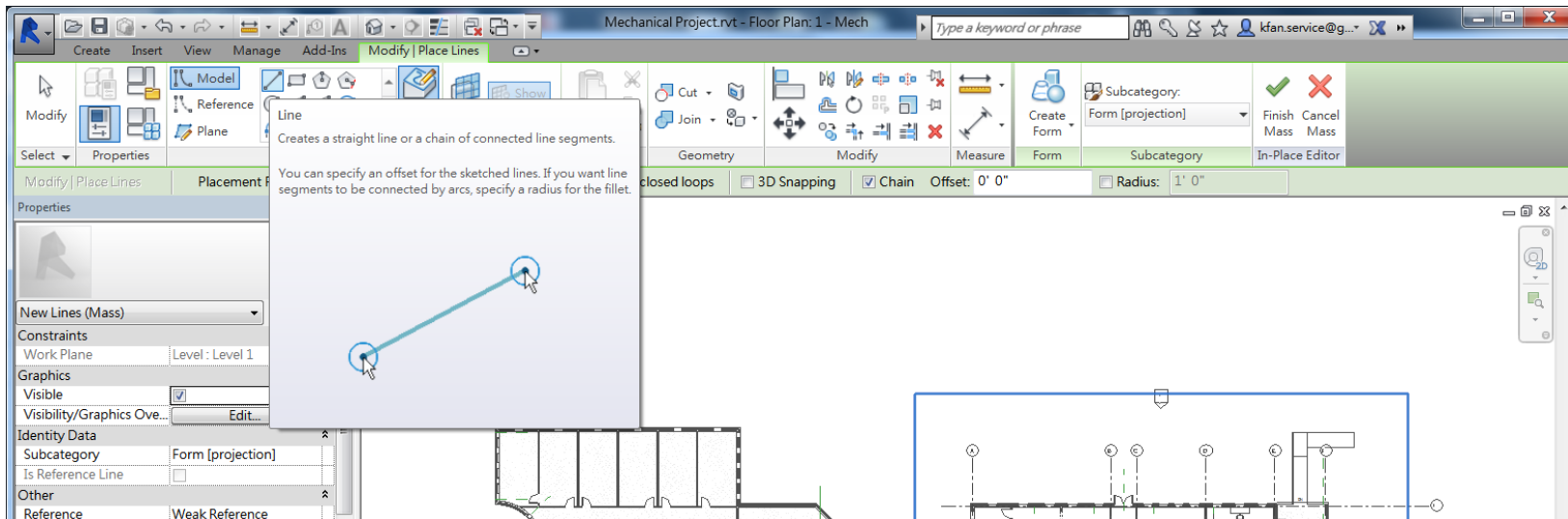
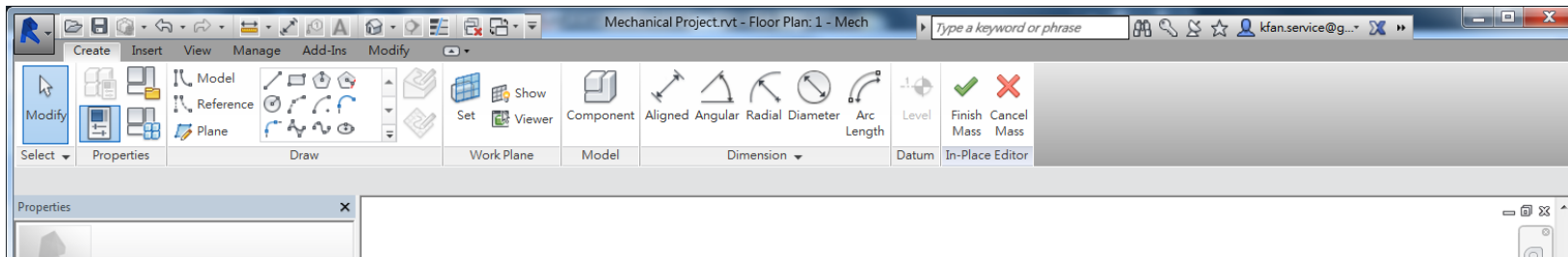
- A conceptual energy analysis



CEII MEP (REVIT)

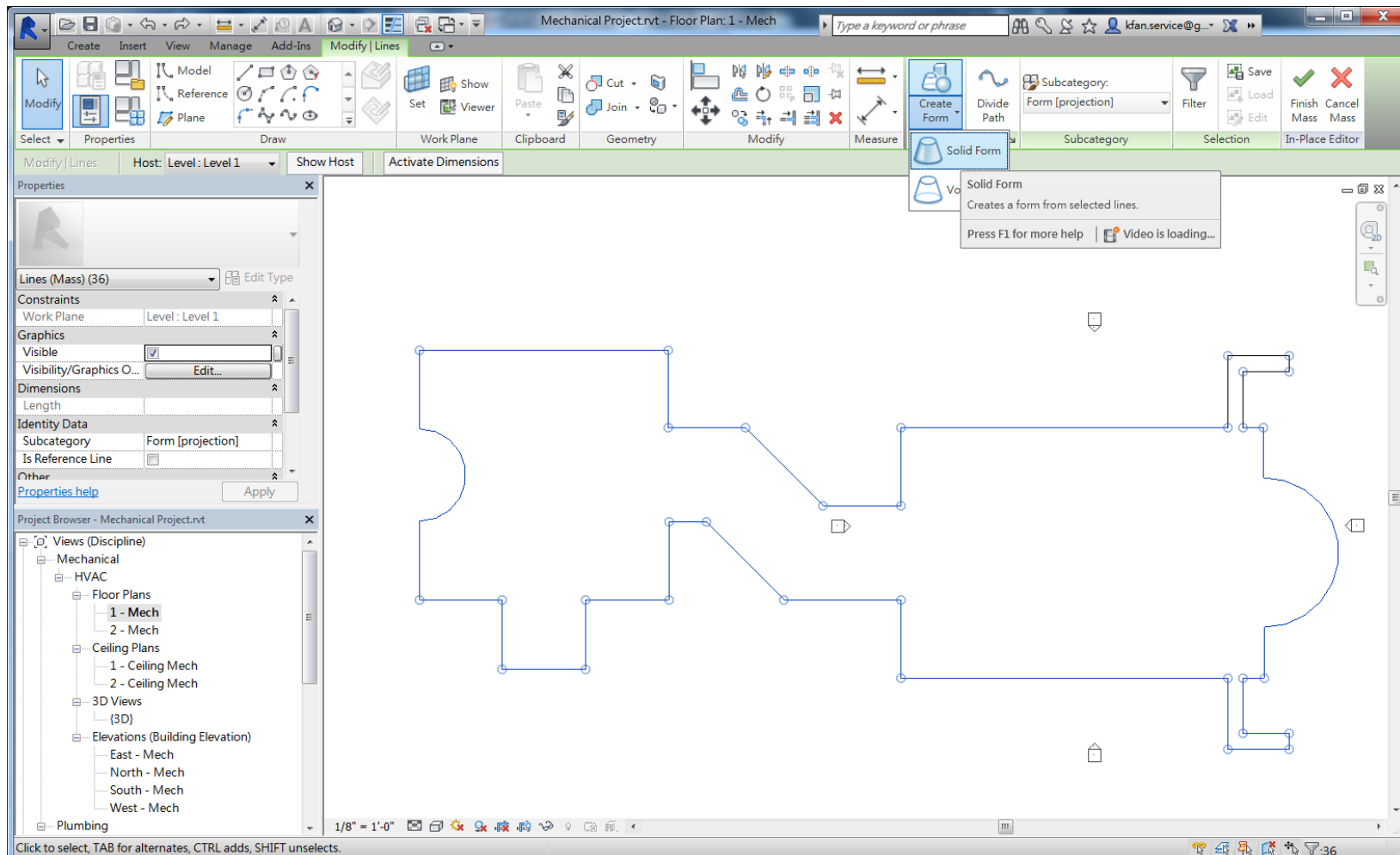
REVIT Mechanical

- A conceptual energy analysis



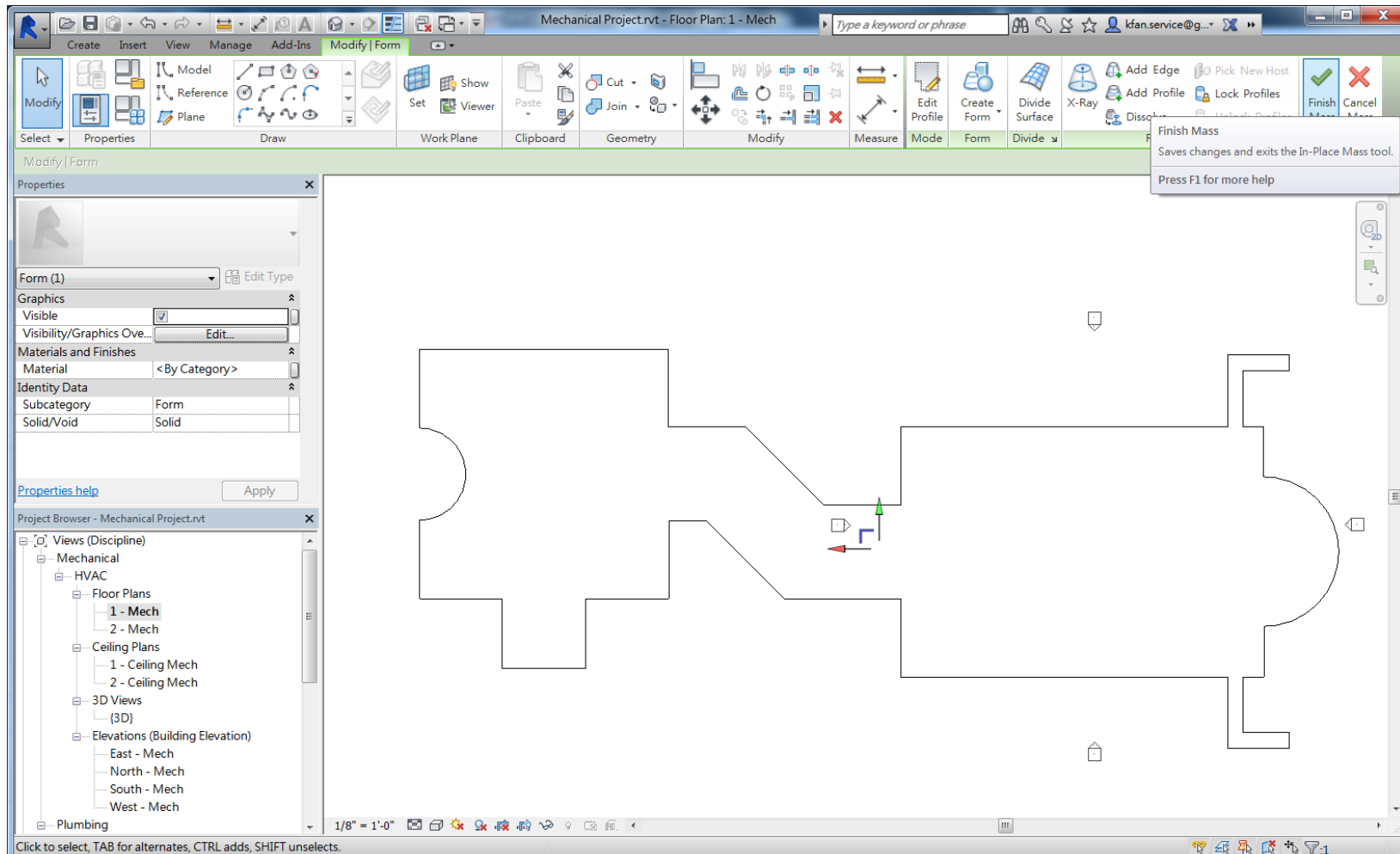
REVIT Mechanical

- A conceptual energy analysis



REVIT Mechanical

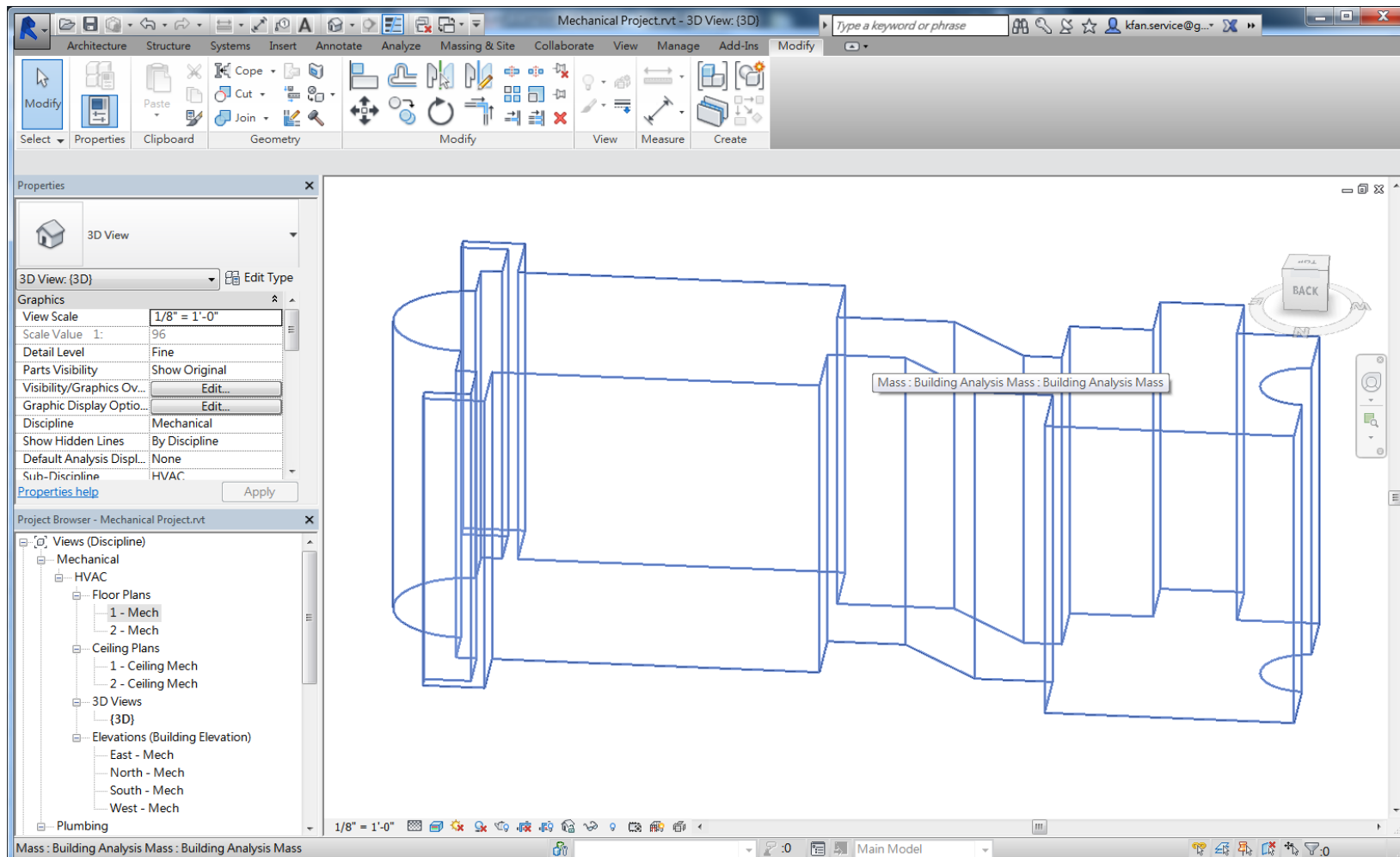
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

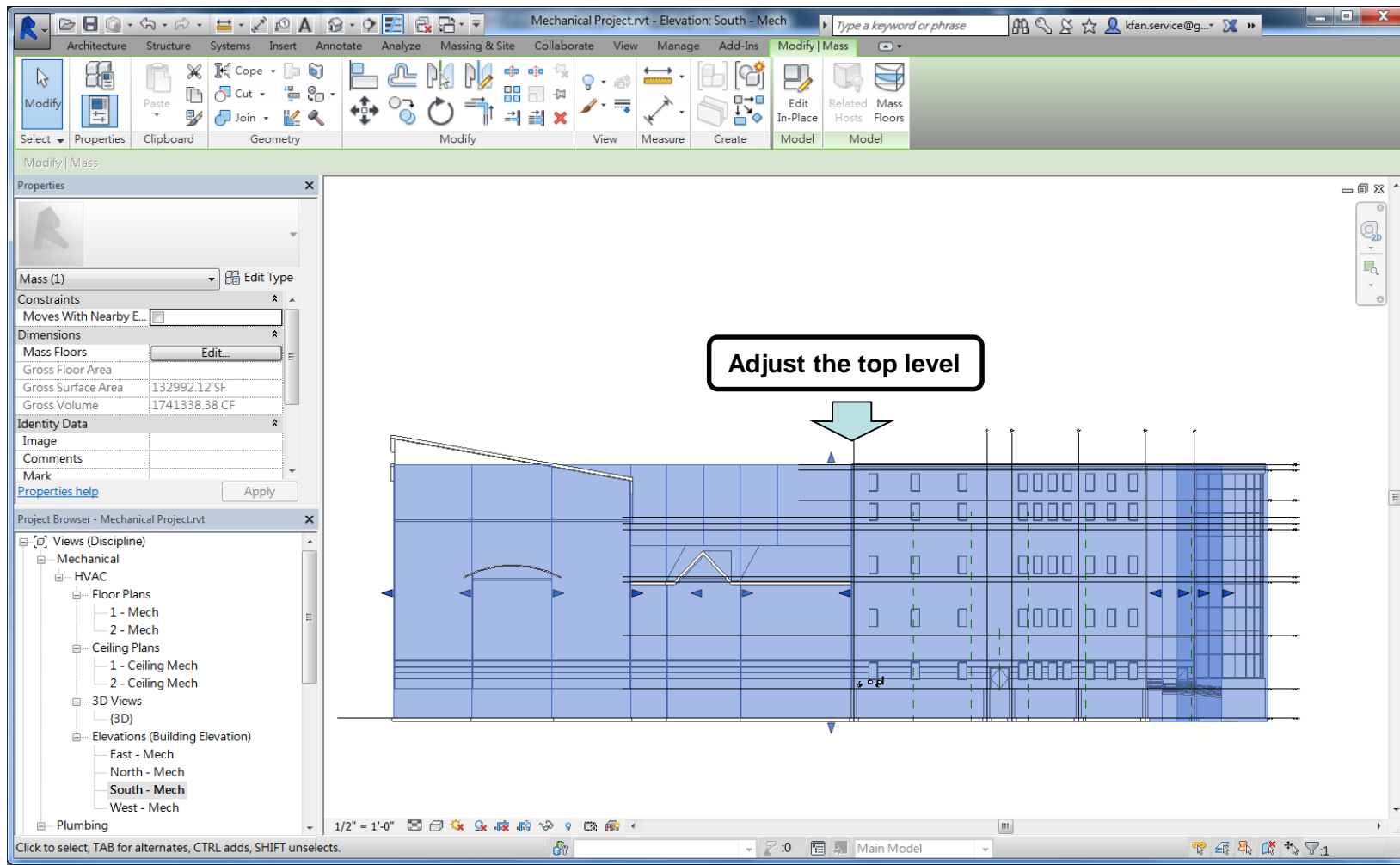
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

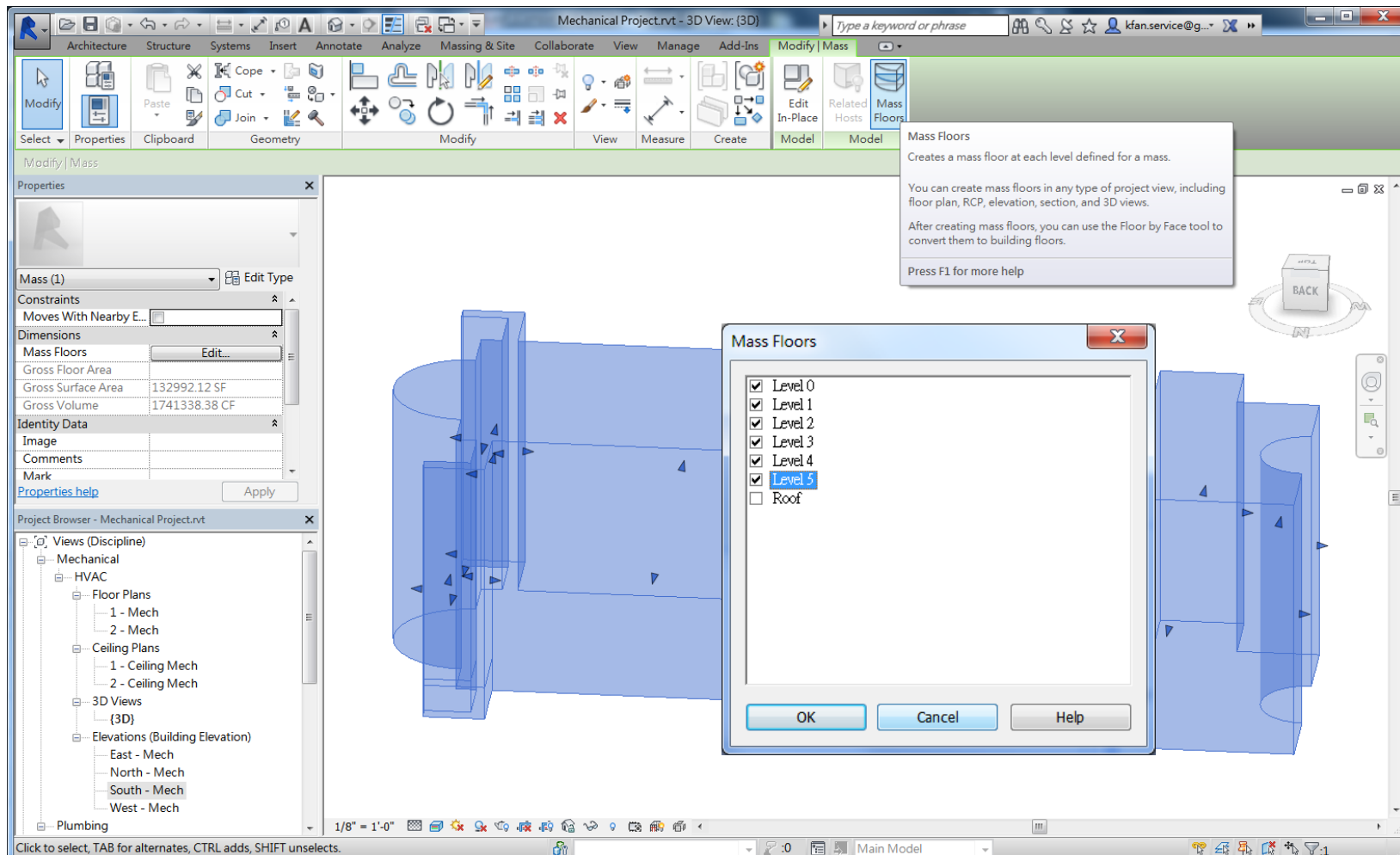
- A conceptual energy analysis



CEI MEP (REVIT)

REVIT Mechanical

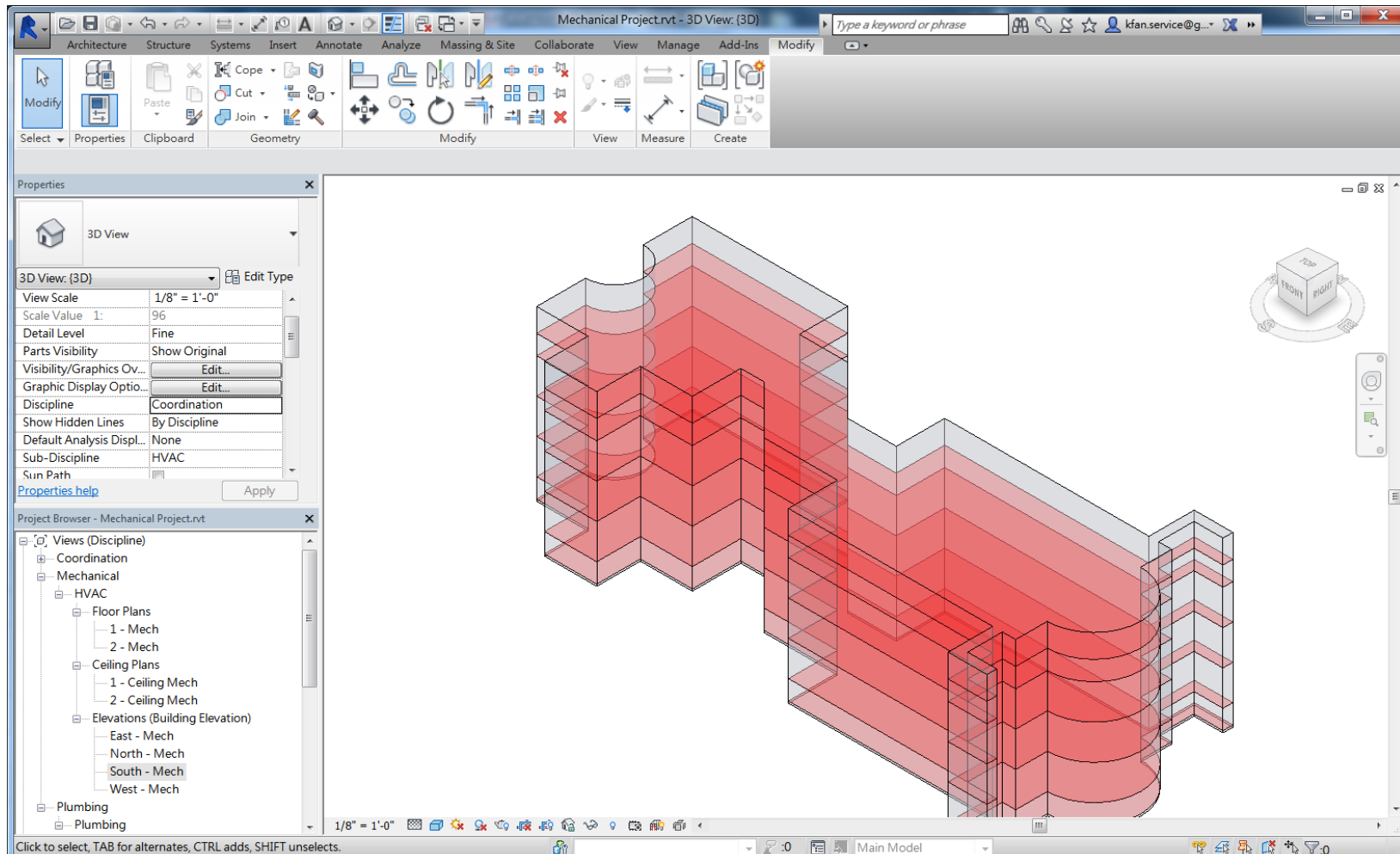
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

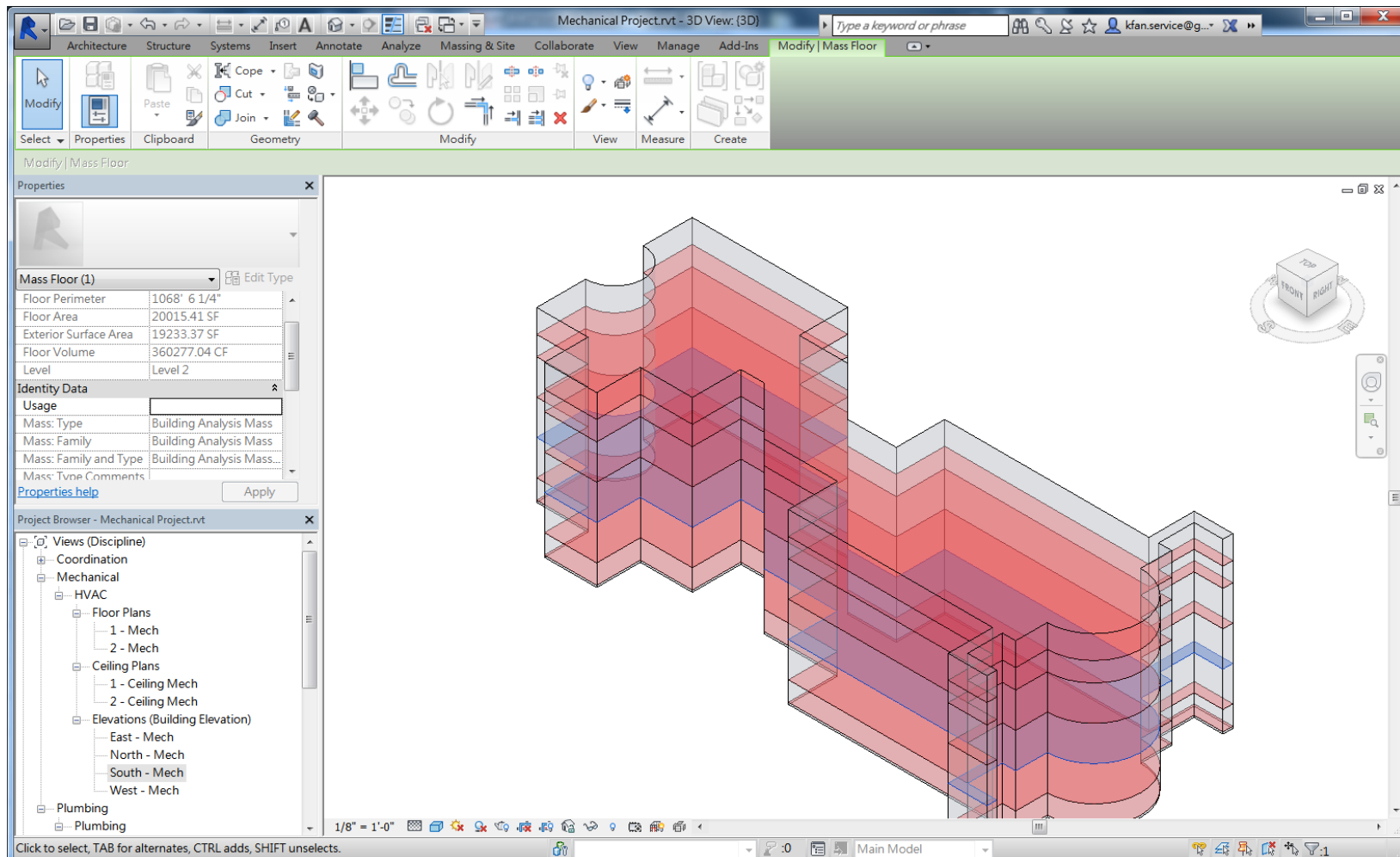
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

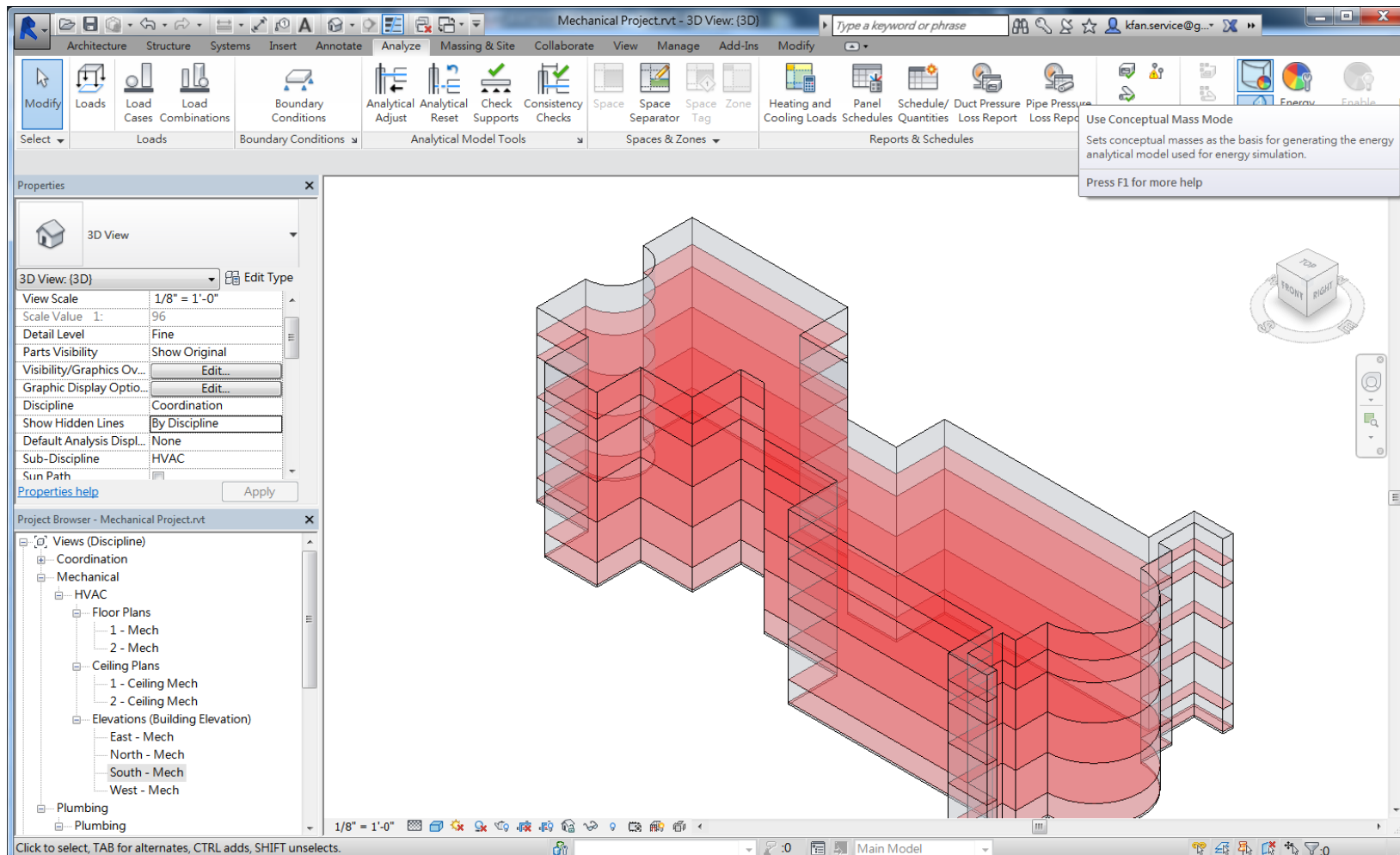
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

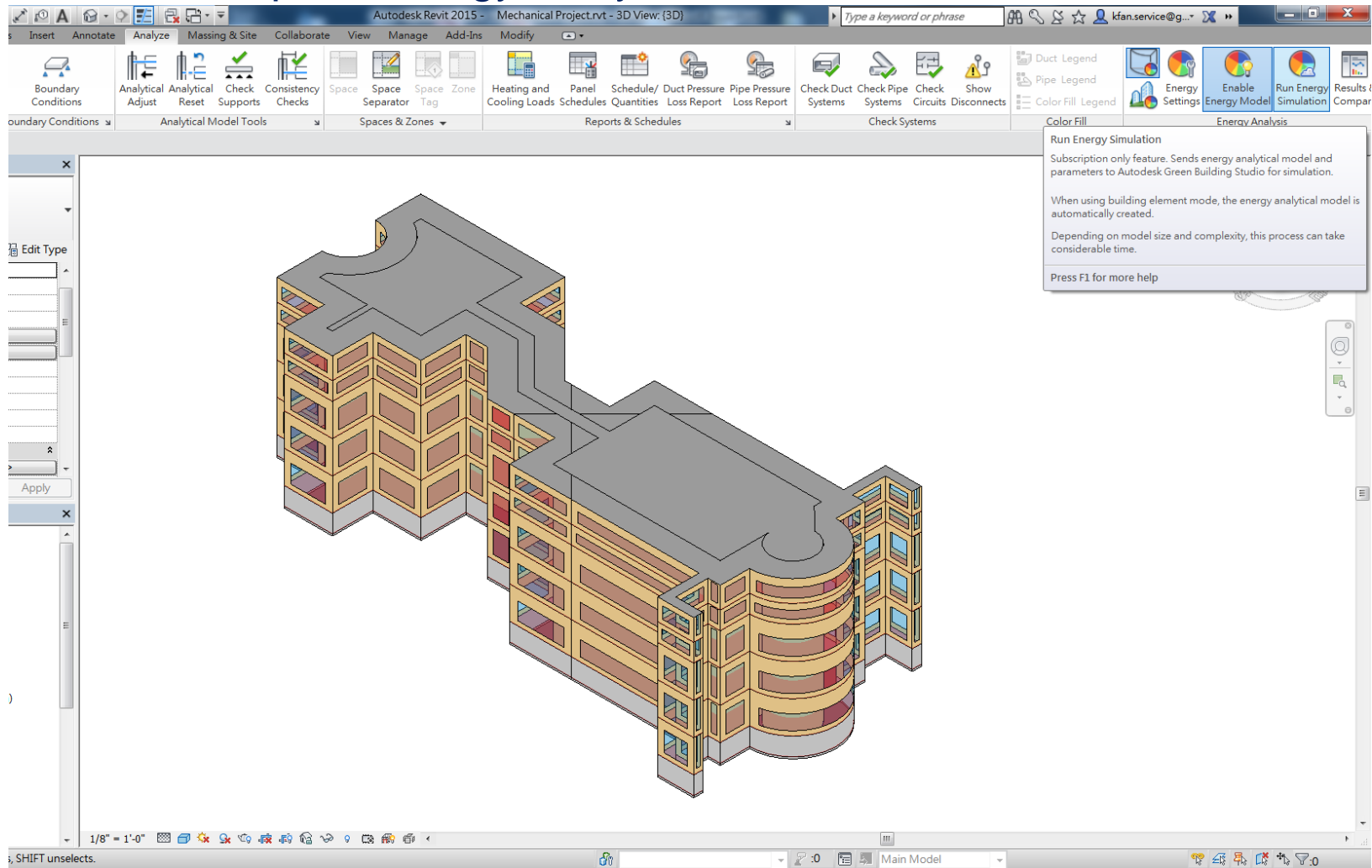
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

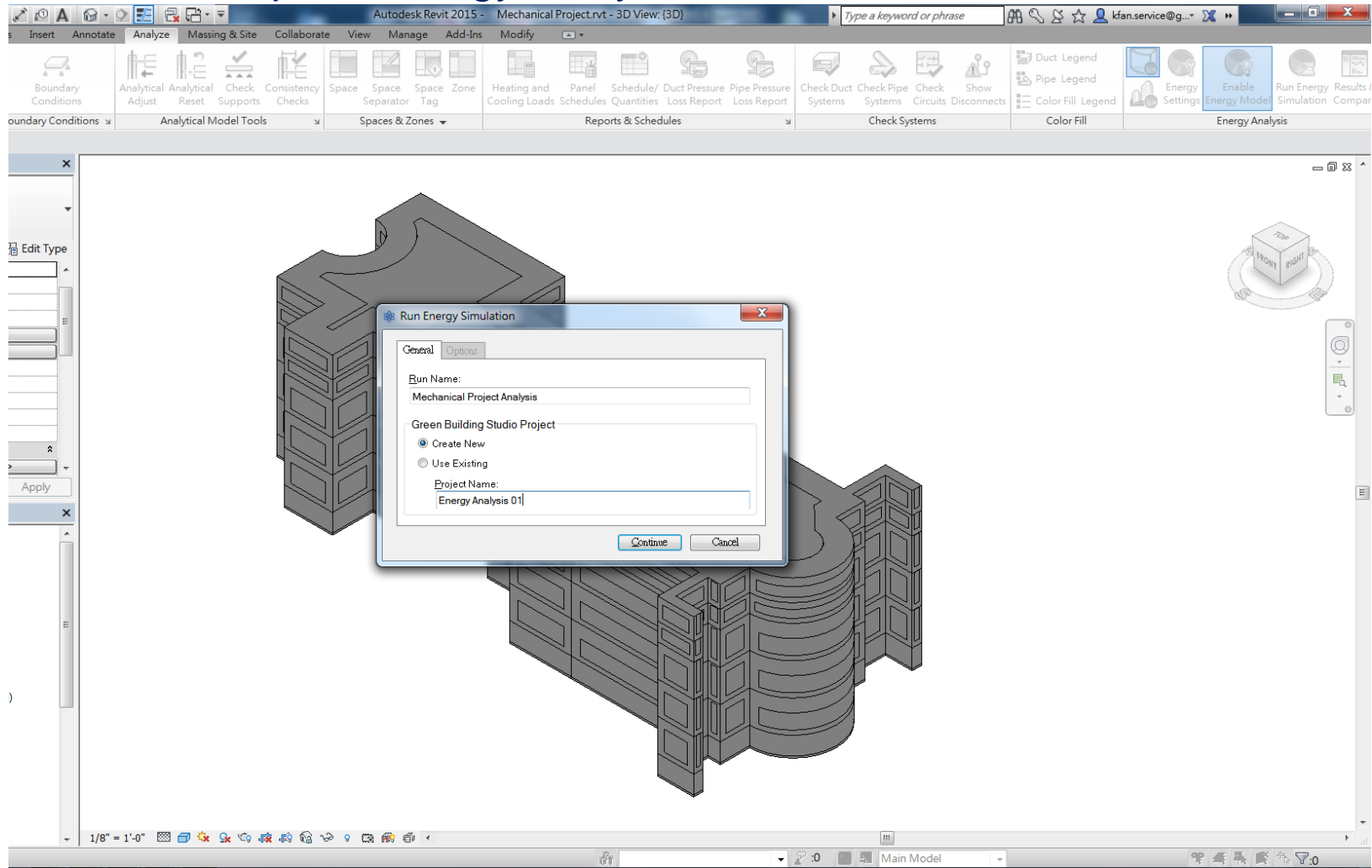
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

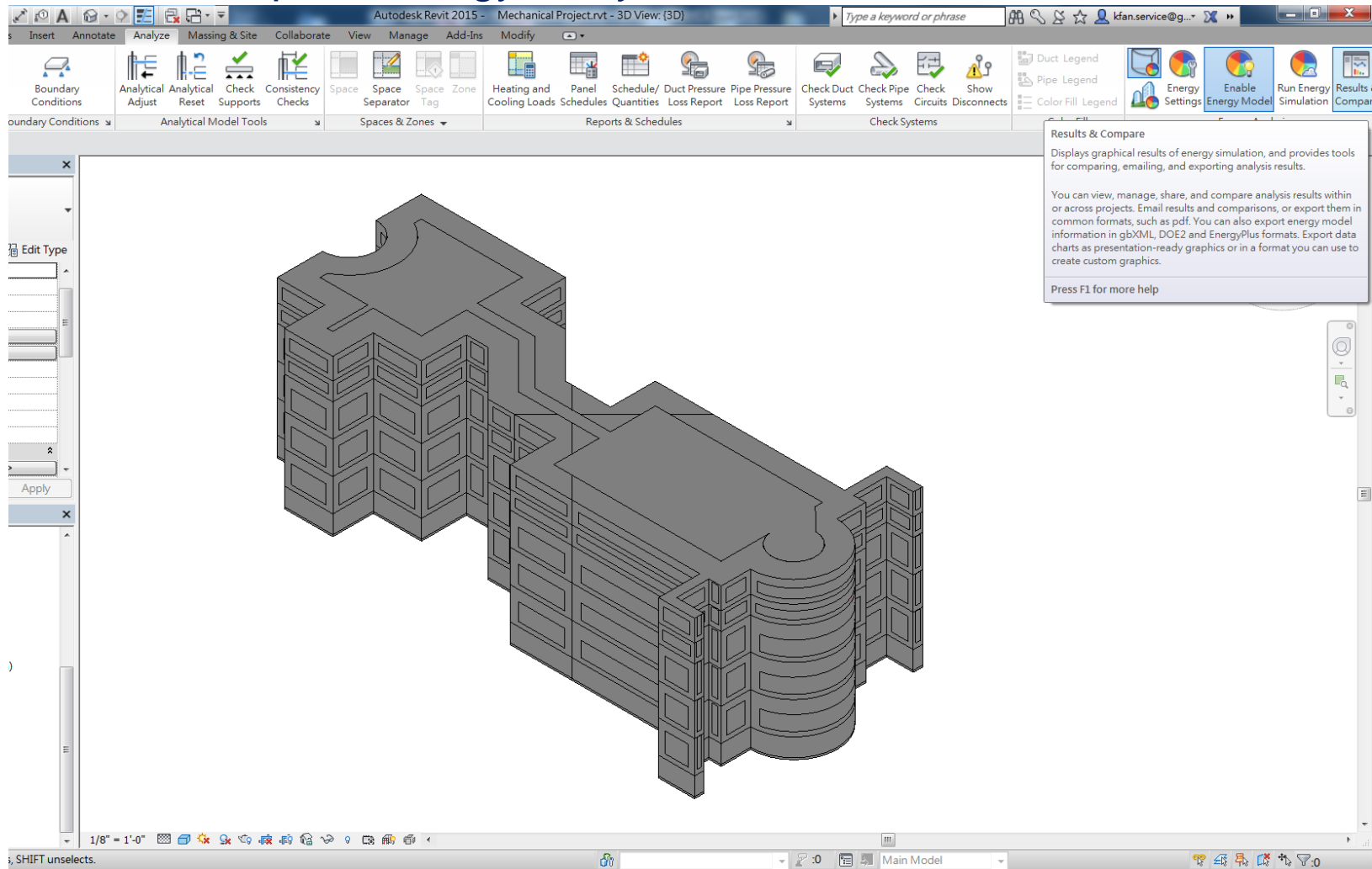
- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

- A conceptual energy analysis



CEII MEP (REVIT)

REVIT Mechanical

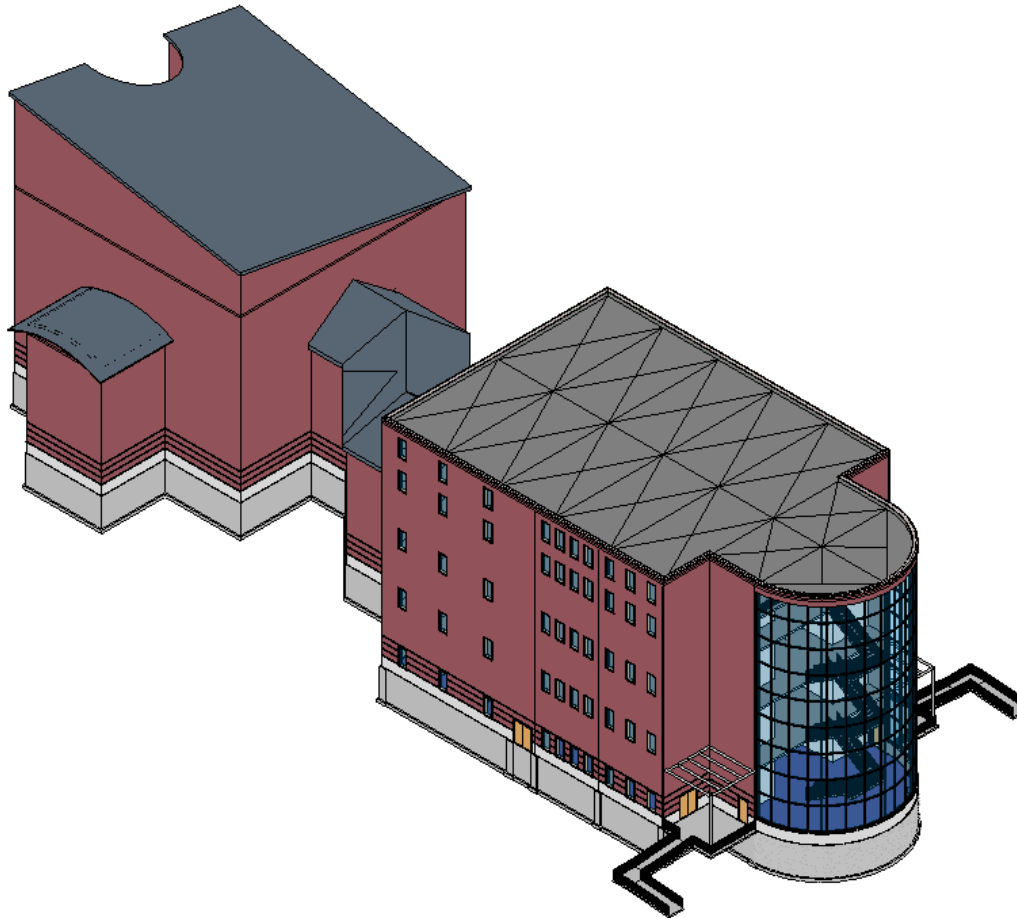
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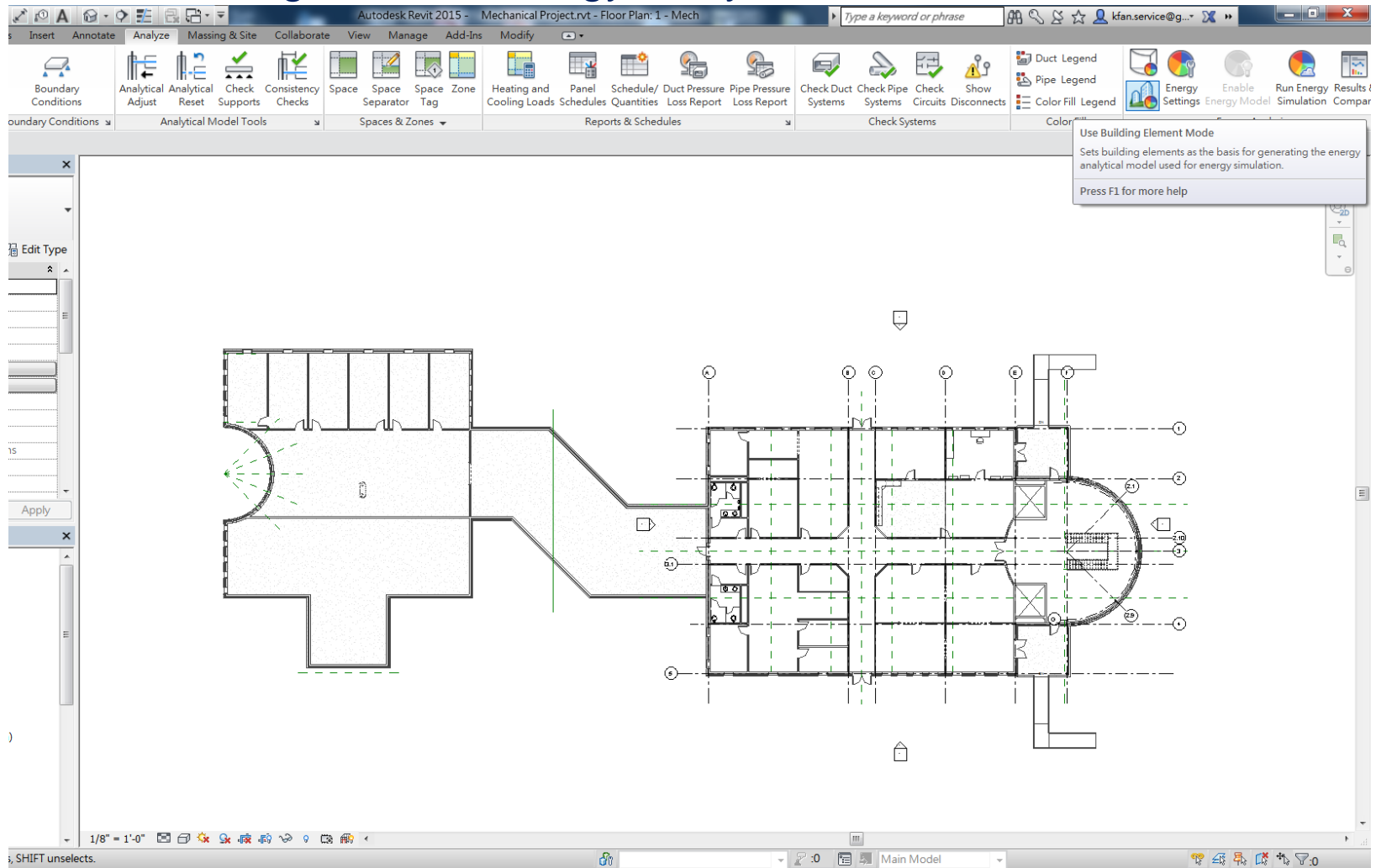
REVIT Mechanical

- A building element energy analysis



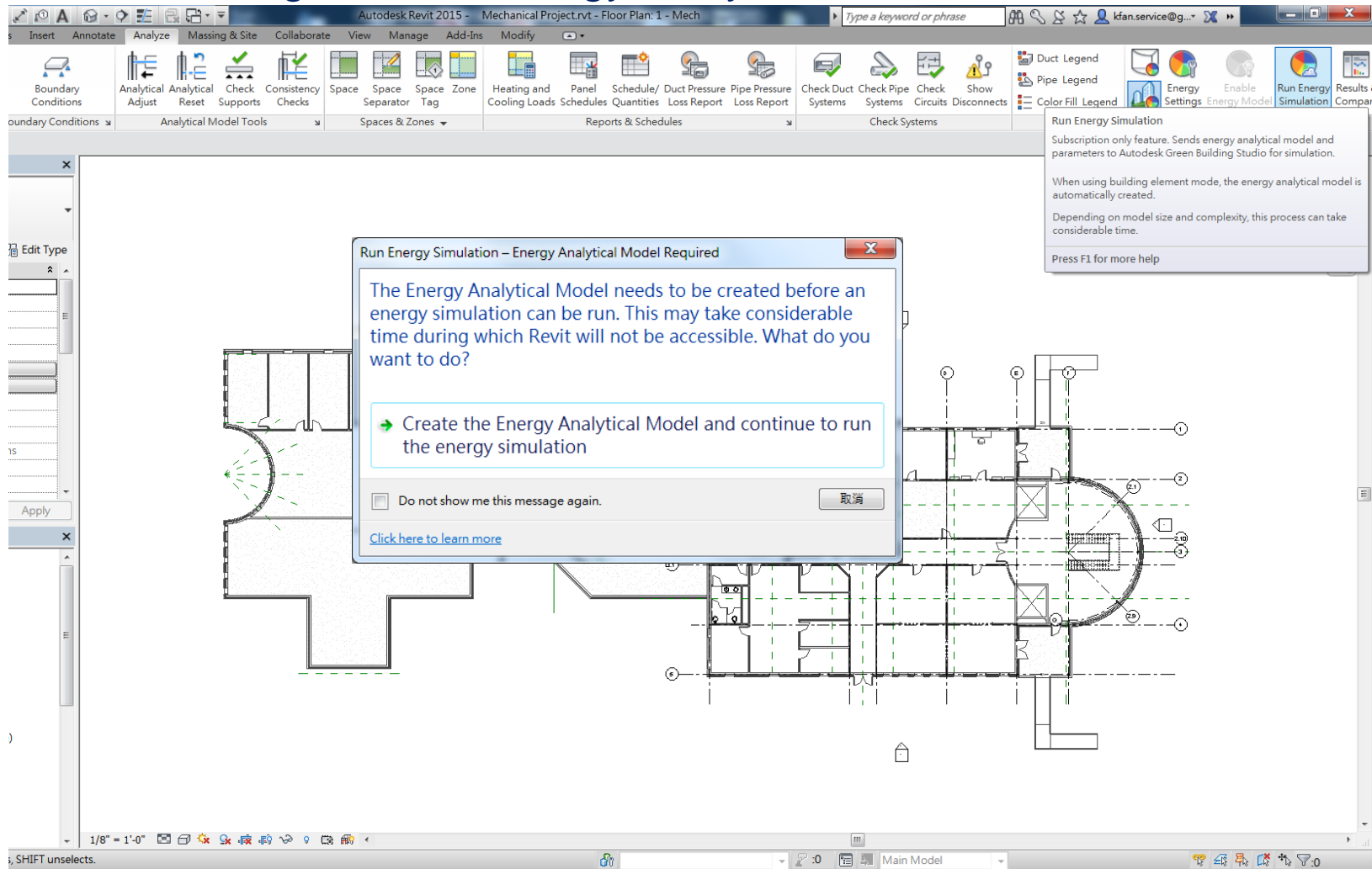
REVIT Mechanical

- A building element energy analysis



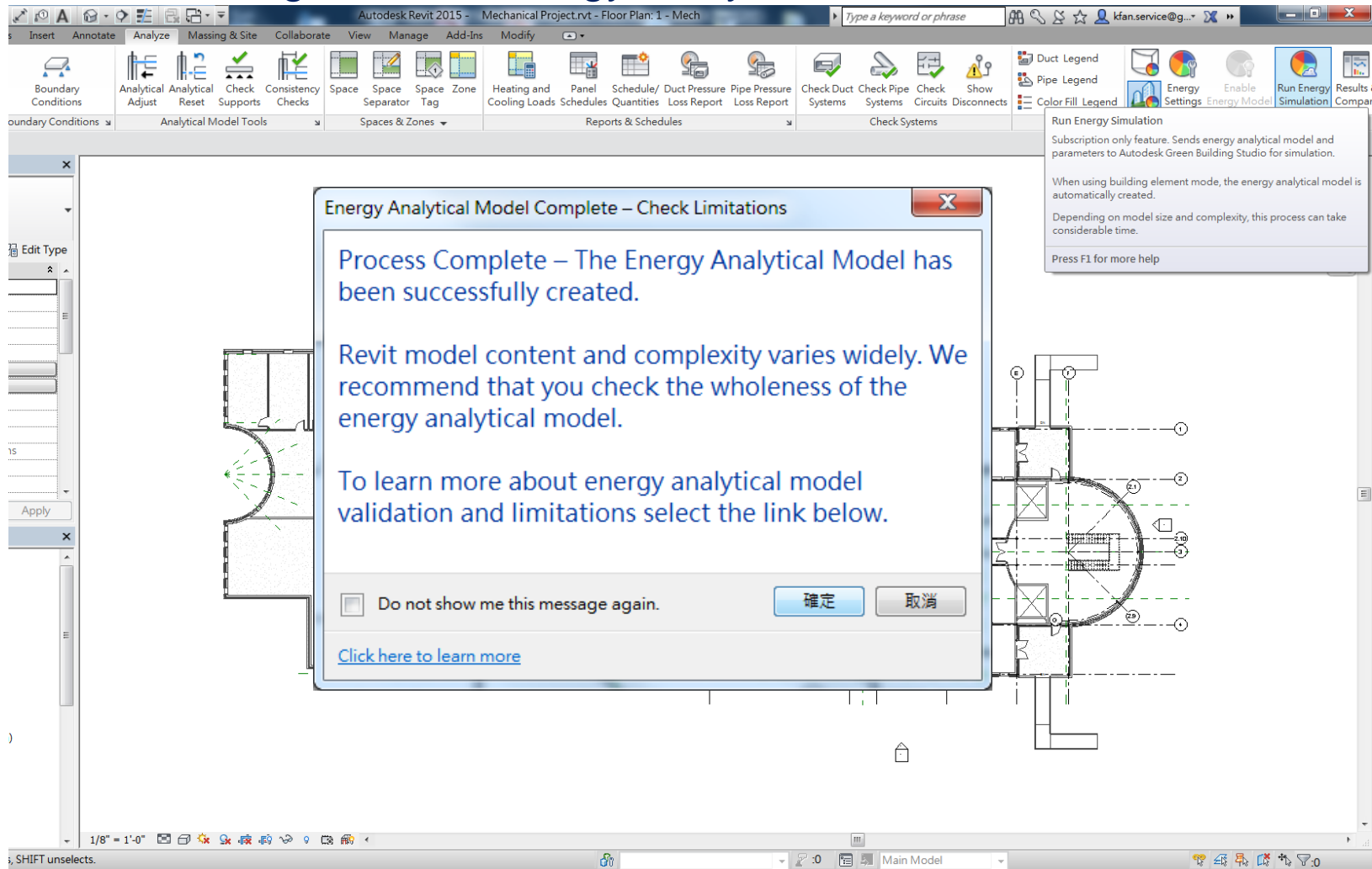
REVIT Mechanical

- A building element energy analysis



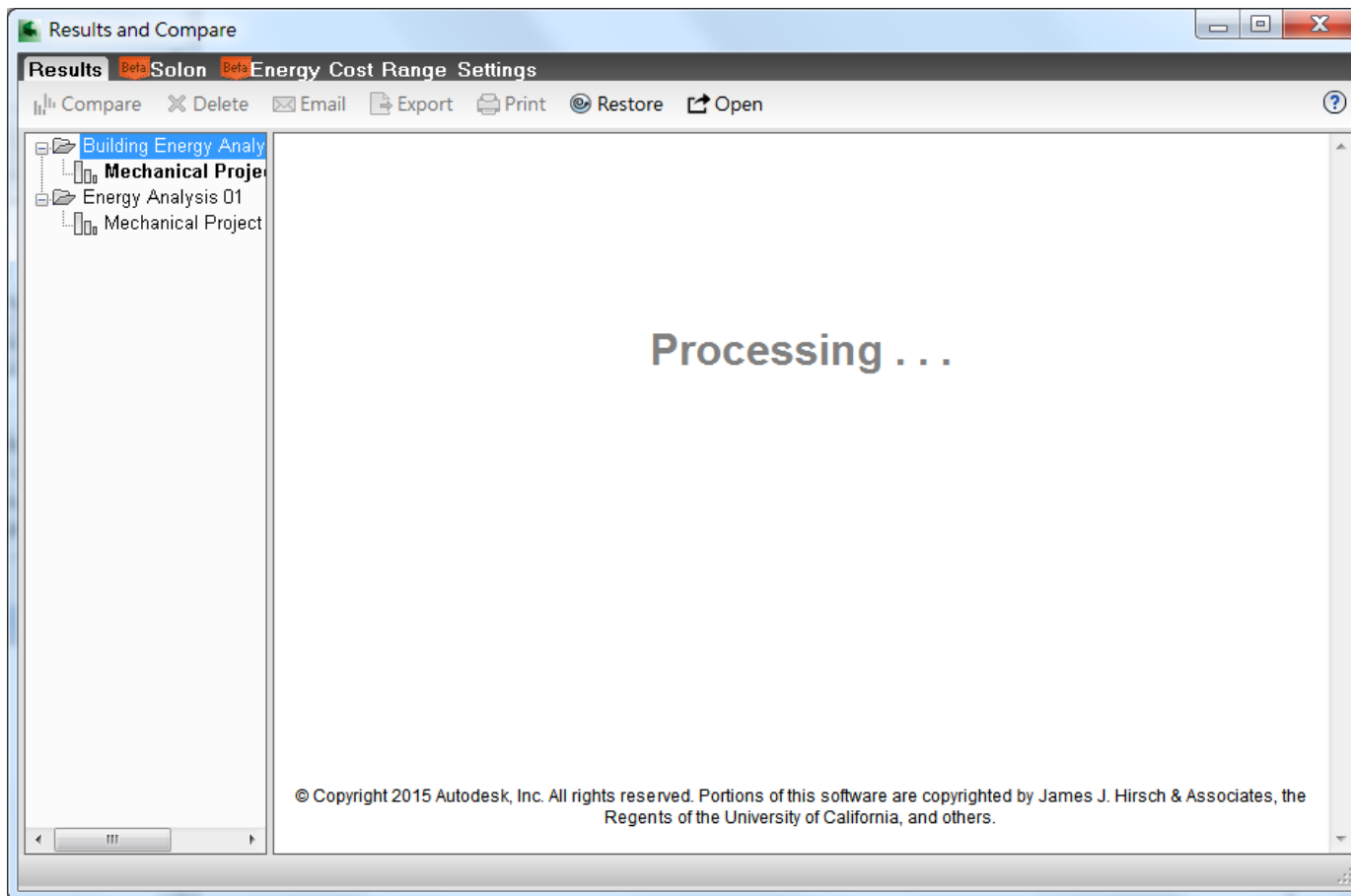
REVIT Mechanical

- A building element energy analysis



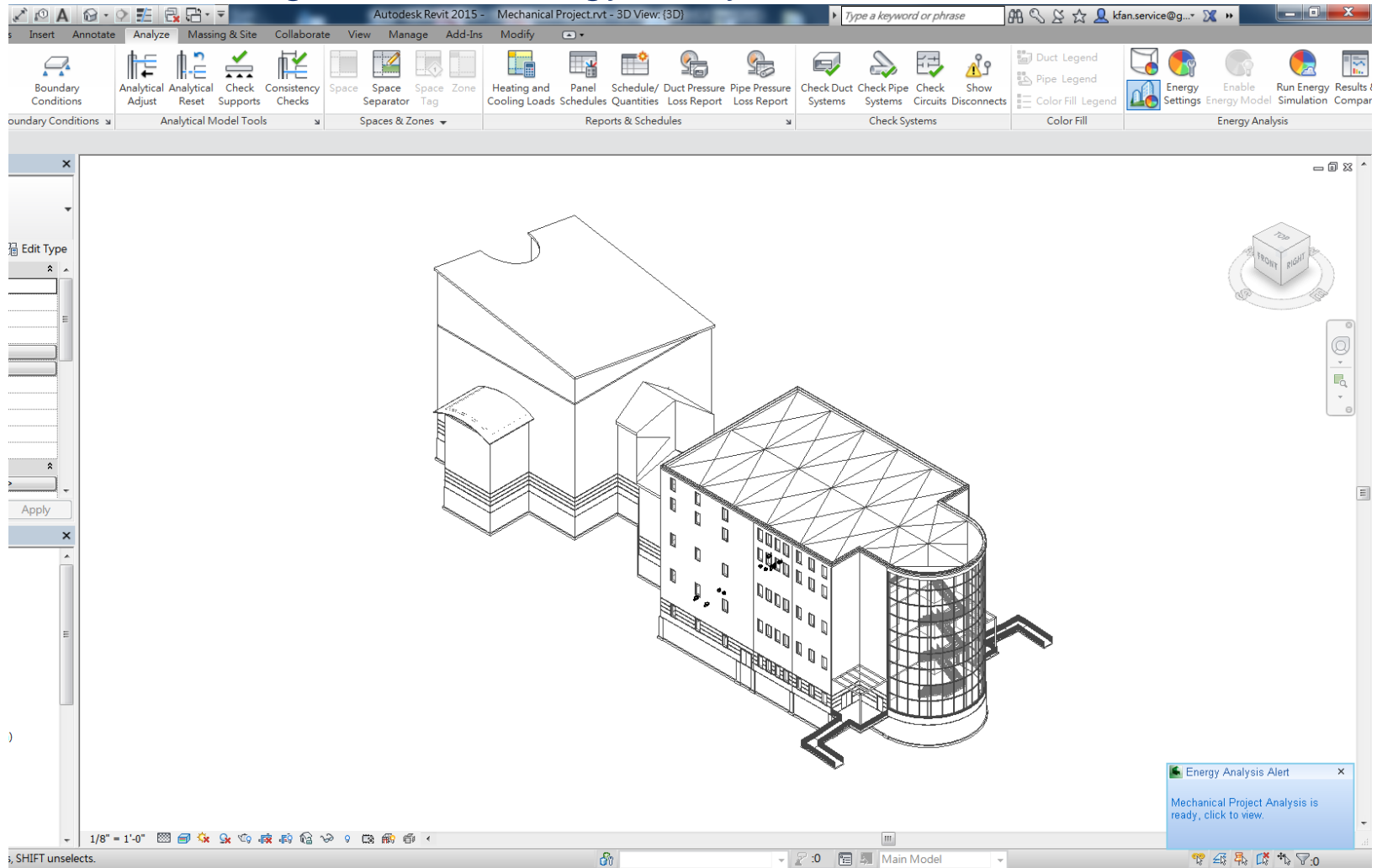
REVIT Mechanical

- A building element energy analysis



REVIT Mechanical

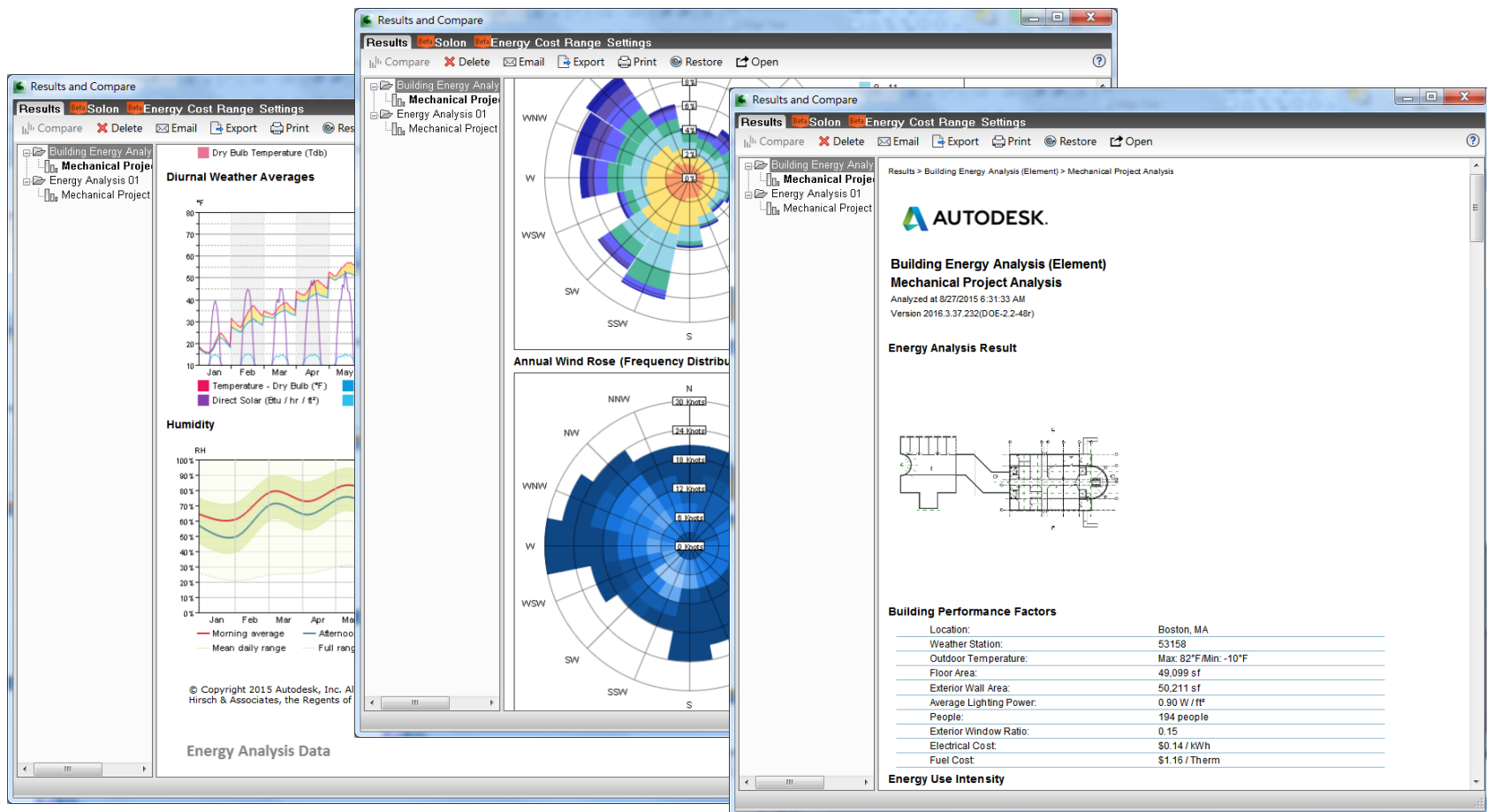
- A building element energy analysis



CEII MEP (REVIT)

REVIT Mechanical

- A building element energy analysis



REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis

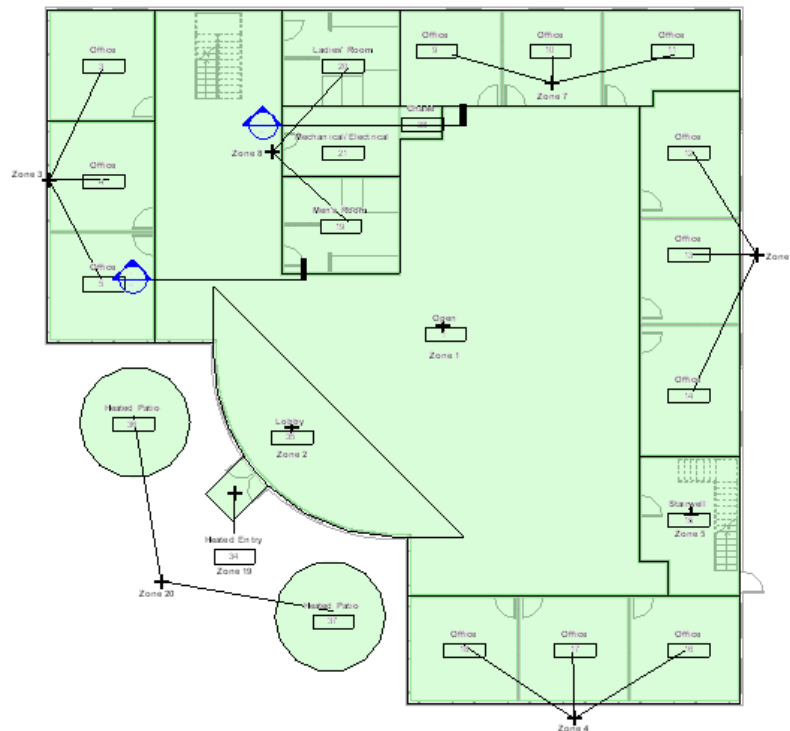
Zone and spaces are independent components that are used together to achieve a common result.

- **Zones:** consist of one or more spaces that are controlled by equipment that maintains a common environment (temperature, humidity, and so on). You create zones to define spaces that have common environmental or design requirements. Spaces in unoccupied areas such as plenums can be added to zones. Spaces that are on different levels can be added to the same zone. You can create zone schedules and use a zone schedule to modify zones.
- **Spaces:** contain information about the areas in which they have been placed. This space information is used to calculate the volume of the area and to help determine a heating and cooling loads. Each zone contains zone information, such as heating and cooling temperatures and outdoor air information. Revit uses both zone and space information during a heating and cooling loads analysis to determine the energy demands of the building

REVIT Mechanical

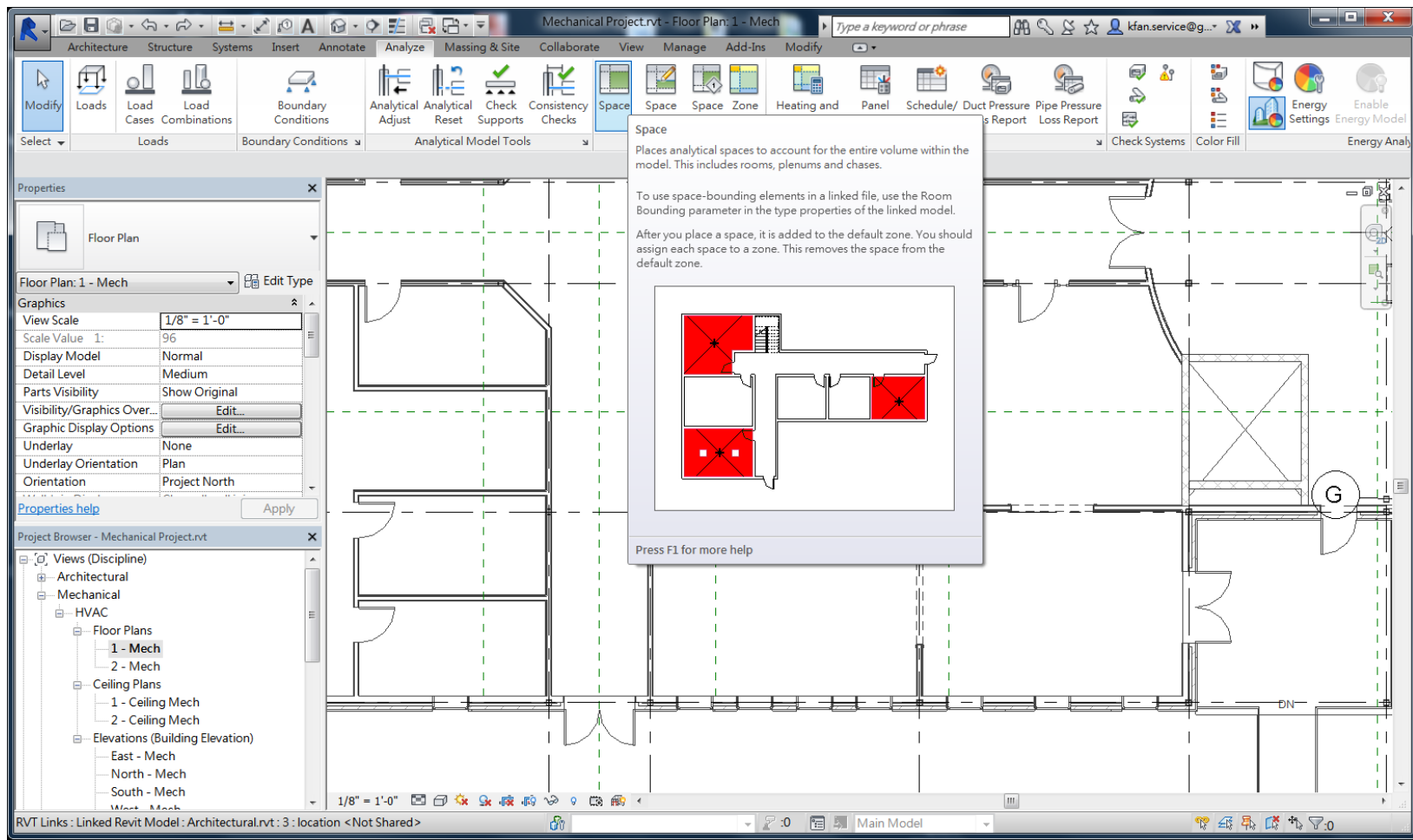
- Adding Zone for Heating & Cooling Analysis

Zone and spaces are independent components that are used together to achieve a common result.



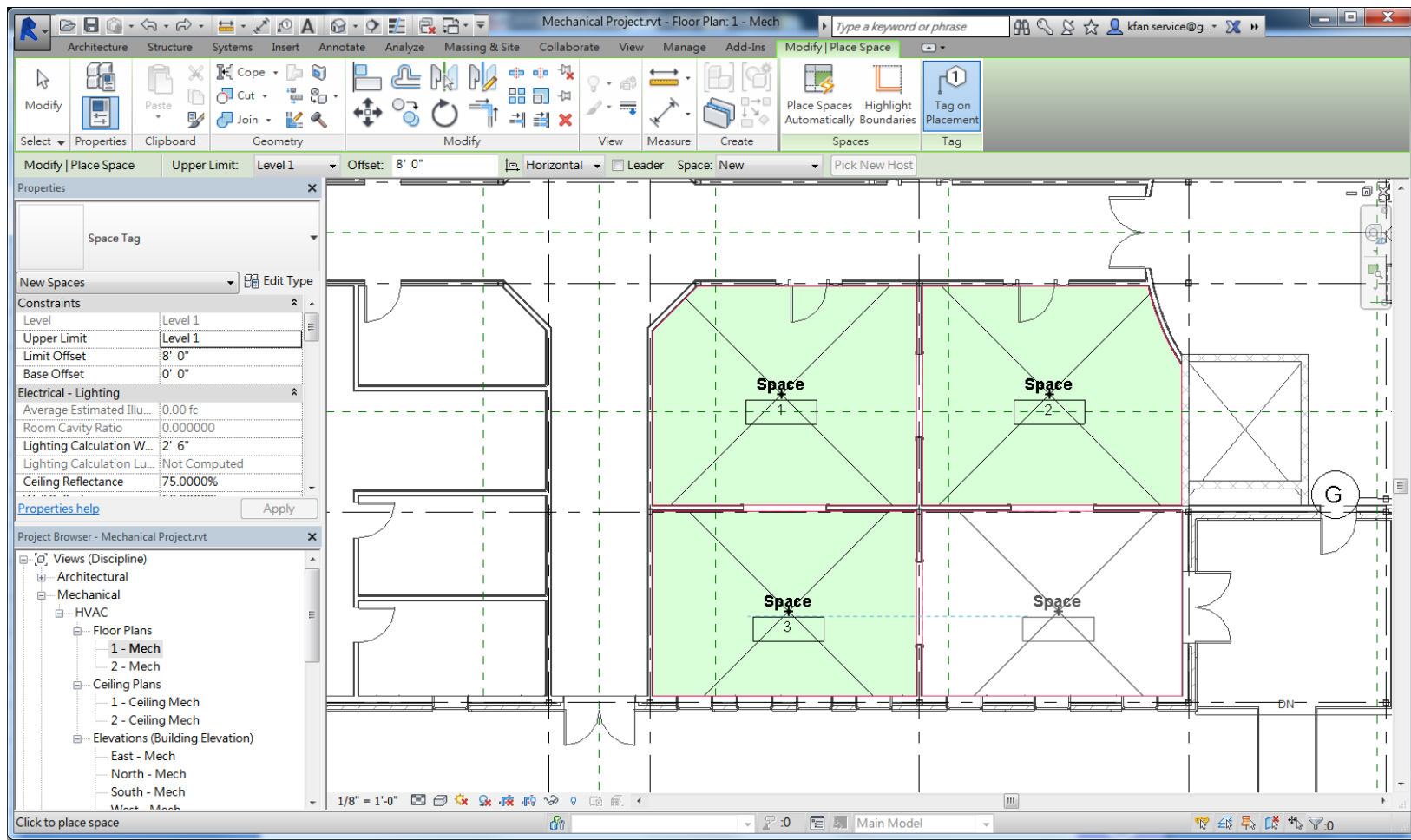
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



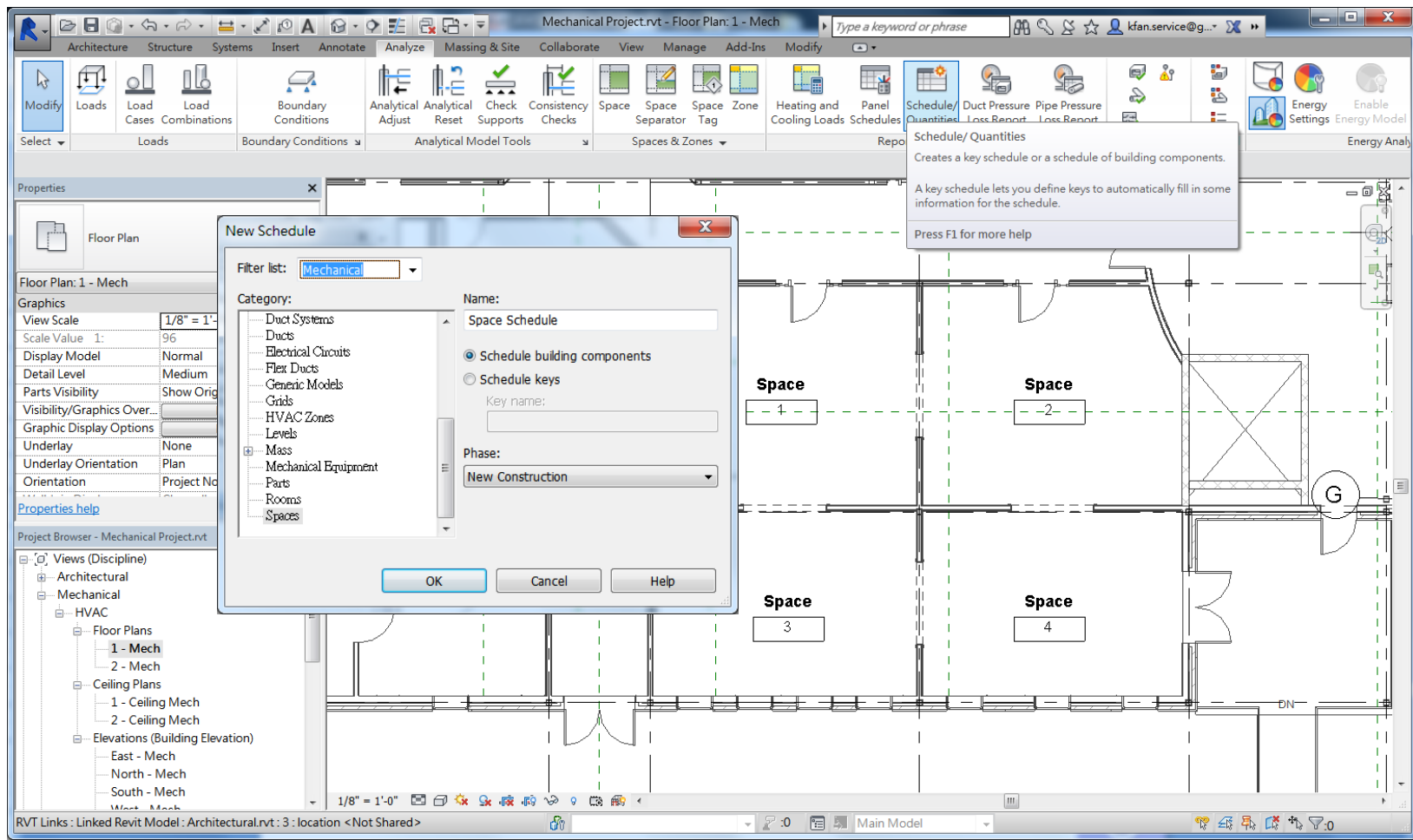
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



REVIT Mechanical

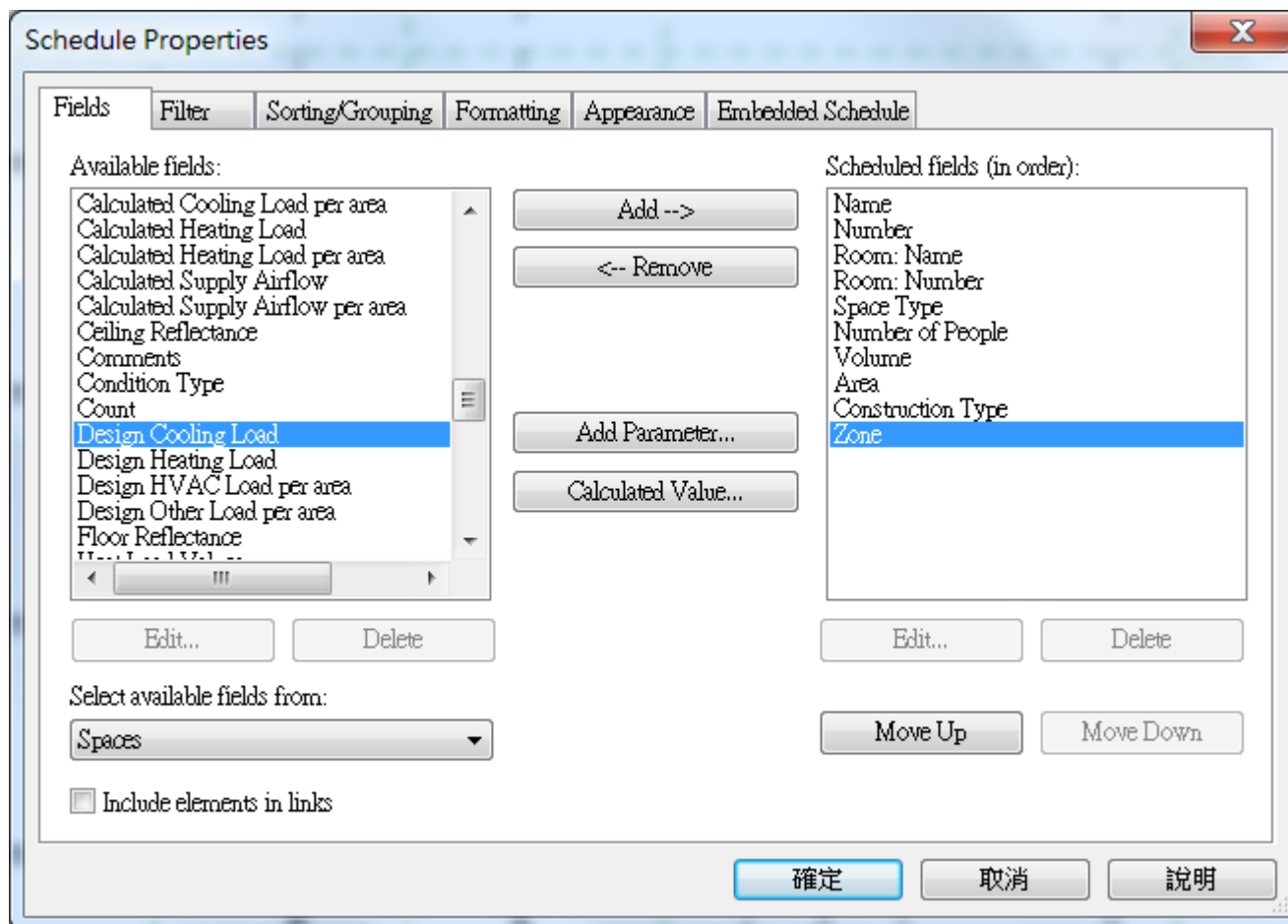
- Adding Zone for Heating & Cooling Analysis

During the initial Space Properties schedule creation, you might find the following fields useful:

- | | |
|---------------------|---|
| ➤ Name | Designate the space name. |
| ➤ Number | Assign each space a number. |
| ➤ Room Name | Designate the room name |
| ➤ Room Number | Assign each room a number |
| ➤ Space Type | Describe how the space will be used. |
| ➤ Number of People | Specify the space occupancy. |
| ➤ Area | List the space area in square feet or meters. |
| ➤ Volume | List the space volume in cubic feet or meters. |
| ➤ Construction Type | Describe the space's physical construction in this field. |
| ➤ Zone | Designate the Zone name |

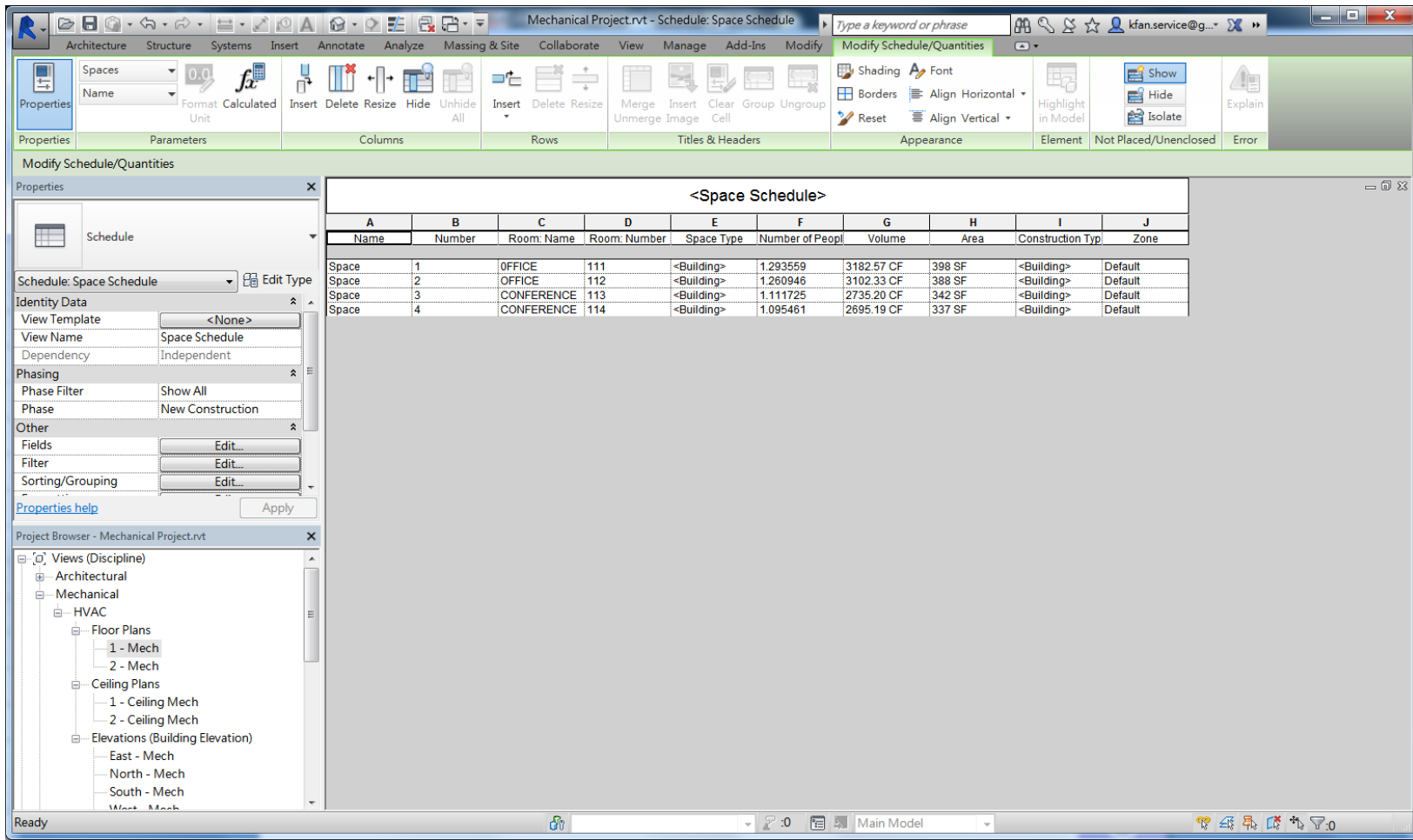
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



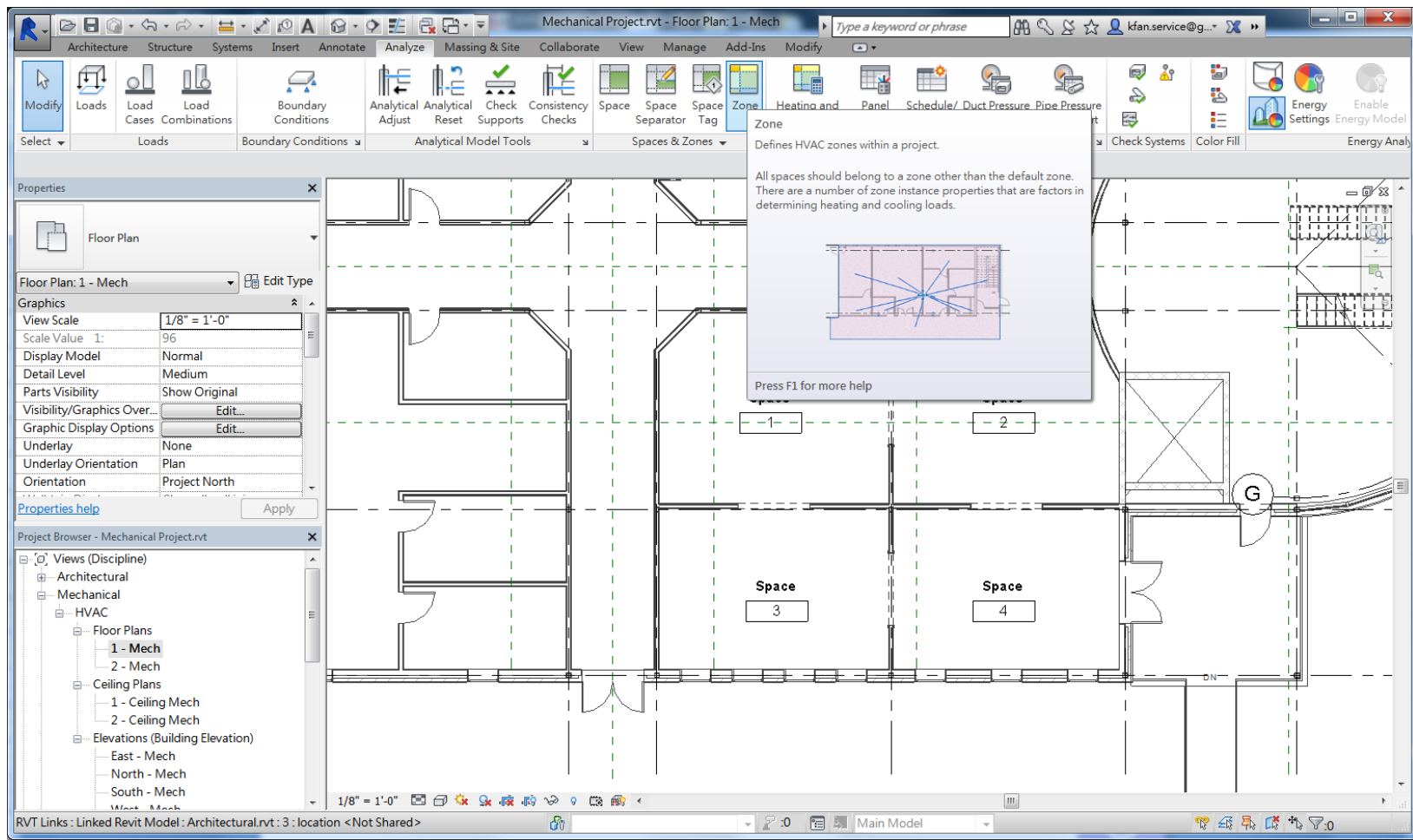
The screenshot displays the Revit Mechanical Space Schedule window. The window title is "Mechanical Project.rvt - Schedule: Space Schedule". The ribbon shows the "Modify Schedule/Quantities" tab. The "Properties" panel on the left shows the "Schedule" section with the "Schedule: Space Schedule" dropdown. The "Identity Data" section shows "View Template" set to "<None>", "View Name" set to "Space Schedule", and "Dependency" set to "Independent". The "Phasing" section shows "Phase Filter" set to "Show All" and "Phase" set to "New Construction". The "Other" section shows "Fields", "Filter", and "Sorting/Grouping" buttons. The "Project Browser" on the left shows the "Views (Discipline)" tree with "Mechanical" expanded, showing "Floor Plans" and "Ceiling Plans".

The main area displays a table titled "<Space Schedule>" with the following data:

A	B	C	D	E	F	G	H	I	J
Name	Number	Room Name	Room Number	Space Type	Number of People	Volume	Area	Construction Typ	Zone
Space	1	OFFICE	111	<Building>	1.293559	3182.57 CF	398 SF	<Building>	Default
Space	2	OFFICE	112	<Building>	1.260946	3102.33 CF	388 SF	<Building>	Default
Space	3	CONFERENCE	113	<Building>	1.111725	2735.20 CF	342 SF	<Building>	Default
Space	4	CONFERENCE	114	<Building>	1.095461	2695.19 CF	337 SF	<Building>	Default

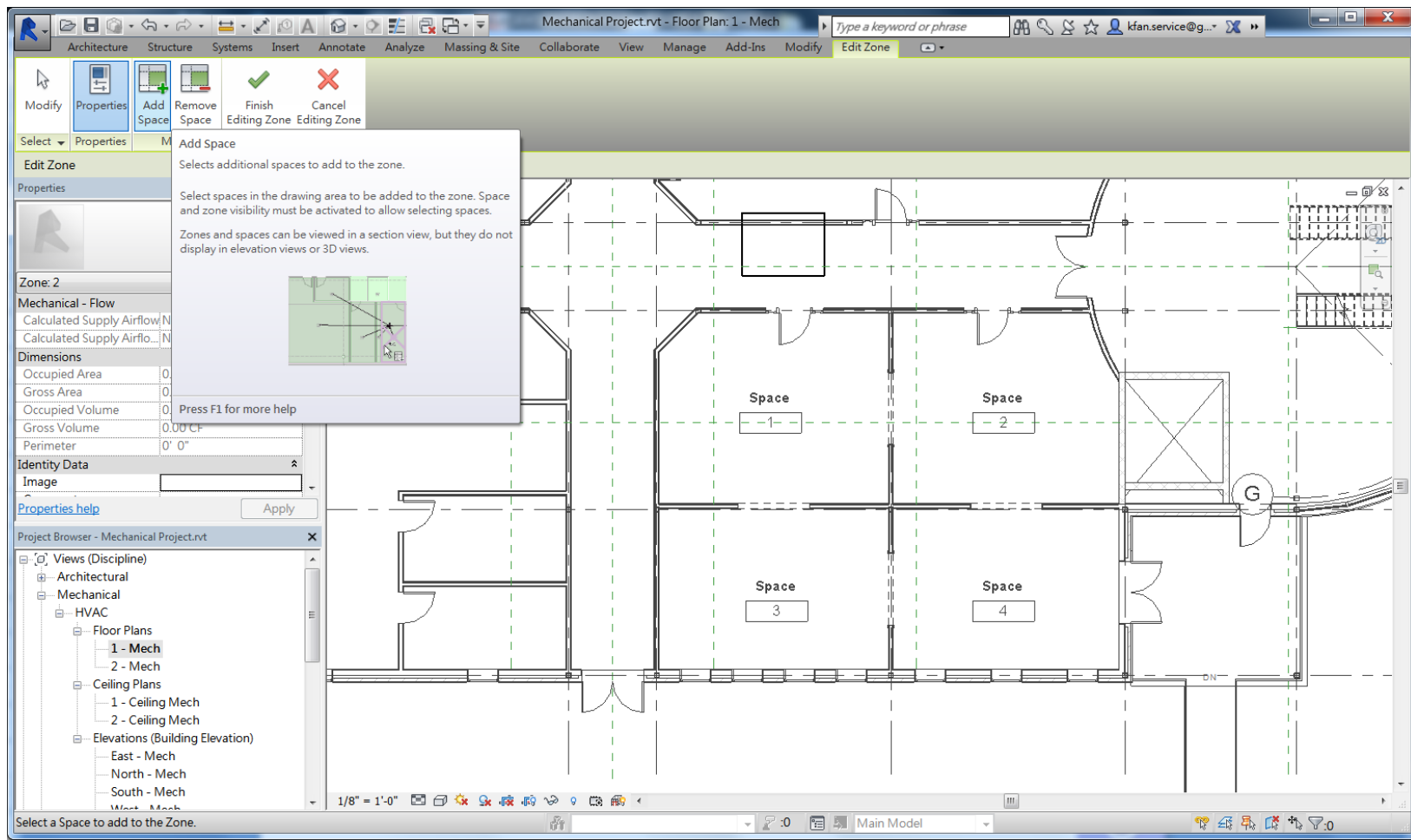
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



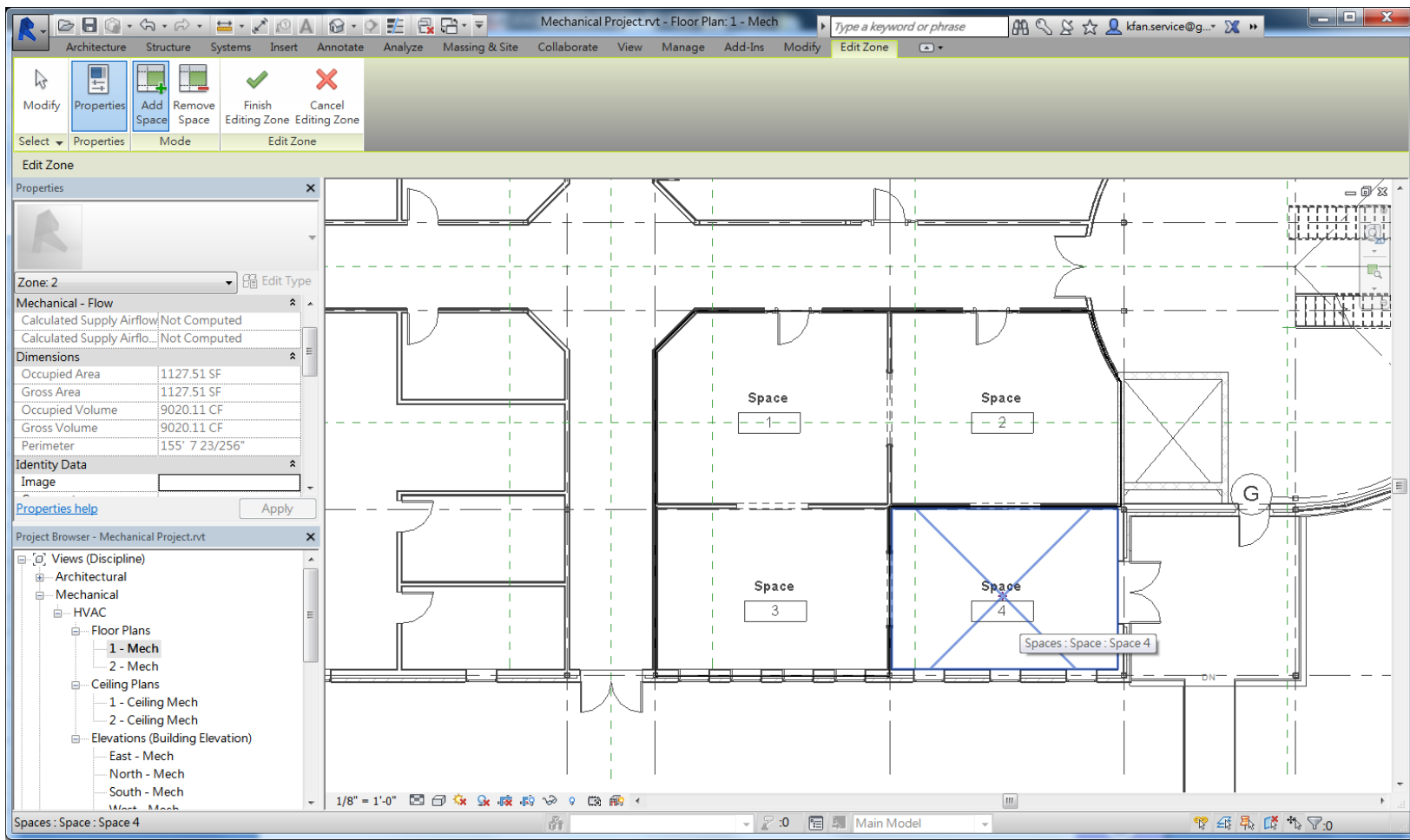
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



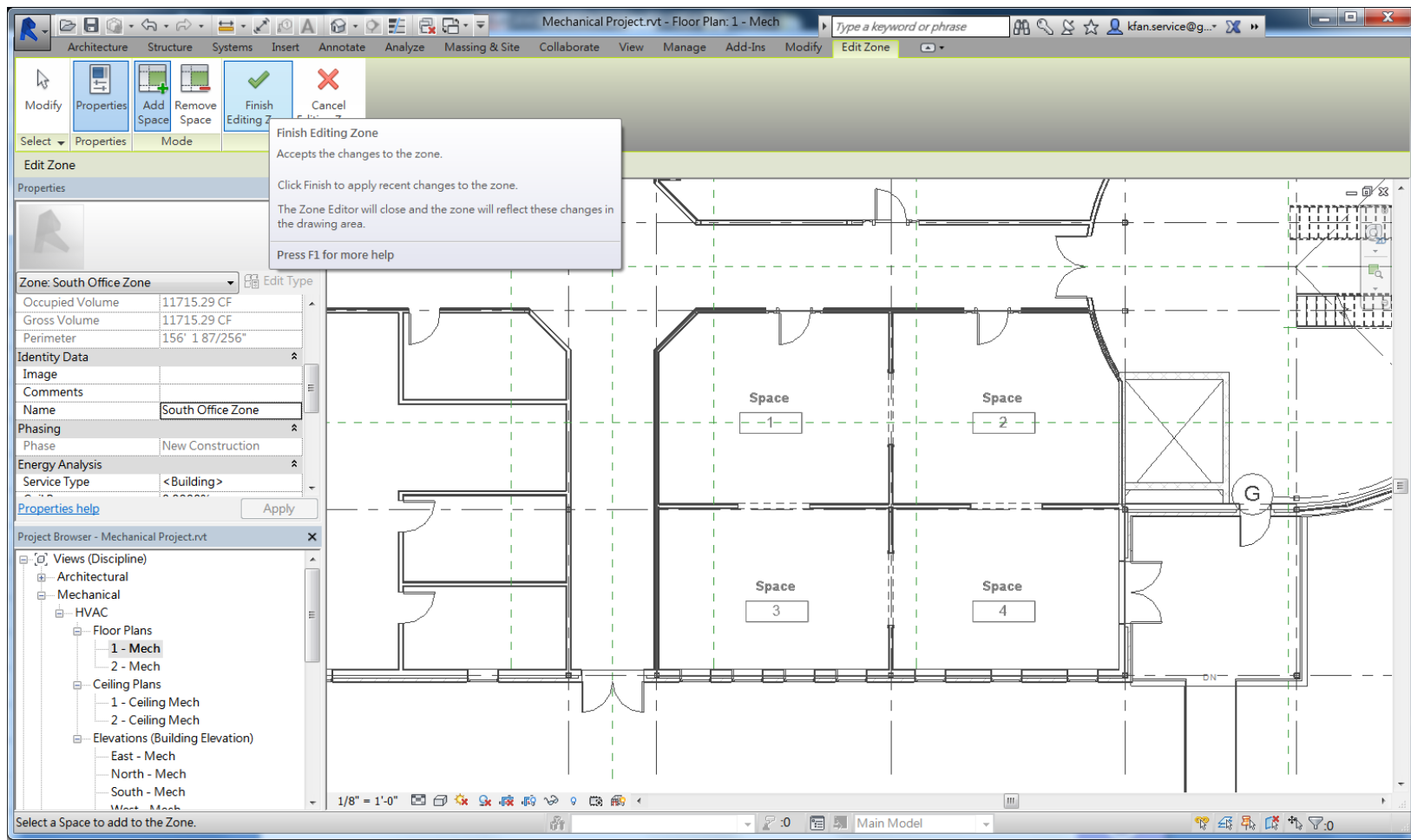
REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis

Modify Schedule/Quantities

Properties

Schedule

Schedule: Space Schedule

View Template: <None>

View Name: Space Schedule

Dependency: Independent

Phasing

Phase Filter: Show All

Phase: New Construction

Other

Fields: Edit...

Filter: Edit...

Sorting/Grouping: Edit...

Formatting: Edit...

Properties help

Apply

Project Browser - Mechanical Project.rvt

2 - Plumbing

3D Views

3D Plumbing

Elevations (Building Elevation)

East - Plumbing

North - Plumbing

South - Plumbing

West - Plumbing

Legends

Schedules/Quantities

Space Schedule

Sheets (all)

Families

Groups

Revisions

A	B	C	D	E	F	G	H	I	J
Name	Number	Room Name	Room Number	Space Type	Number of People	Volume	Area	Construction Type	Zone
Space	1	OFFICE	111	<Building>	1.293559	3182.57 CF	398 SF	<Building>	South Office Zone
Space	2	OFFICE	112	<Building>	1.260946	3102.33 CF	388 SF	<Building>	South Office Zone
Space	3	CONFERENCE	113	<Building>	1.111725	2735.20 CF	342 SF	<Building>	South Office Zone
Space	4	CONFERENCE	114	<Building>	1.095461	2695.19 CF	337 SF	<Building>	South Office Zone

REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis

Modify Schedule/Quantities

Properties

Schedule

Schedule: Space Schedule

View Template: <None>

View Name: Space Schedule

Dependency: Independent

Phasing

Phase Filter: Show All

Phase: New Construction

Other

Fields: Edit...

Filter: Edit...

Sorting/Grouping: Edit...

Formatting: Edit...

Properties help

Apply

Project Browser - Mechanical Project.rvt

2 - Plumbing

3D Views

3D Plumbing

Elevations (Building Elevation)

East - Plumbing

North - Plumbing

South - Plumbing

West - Plumbing

Legends

Schedules/Quantities

Space Schedule

Sheets (all)

Families

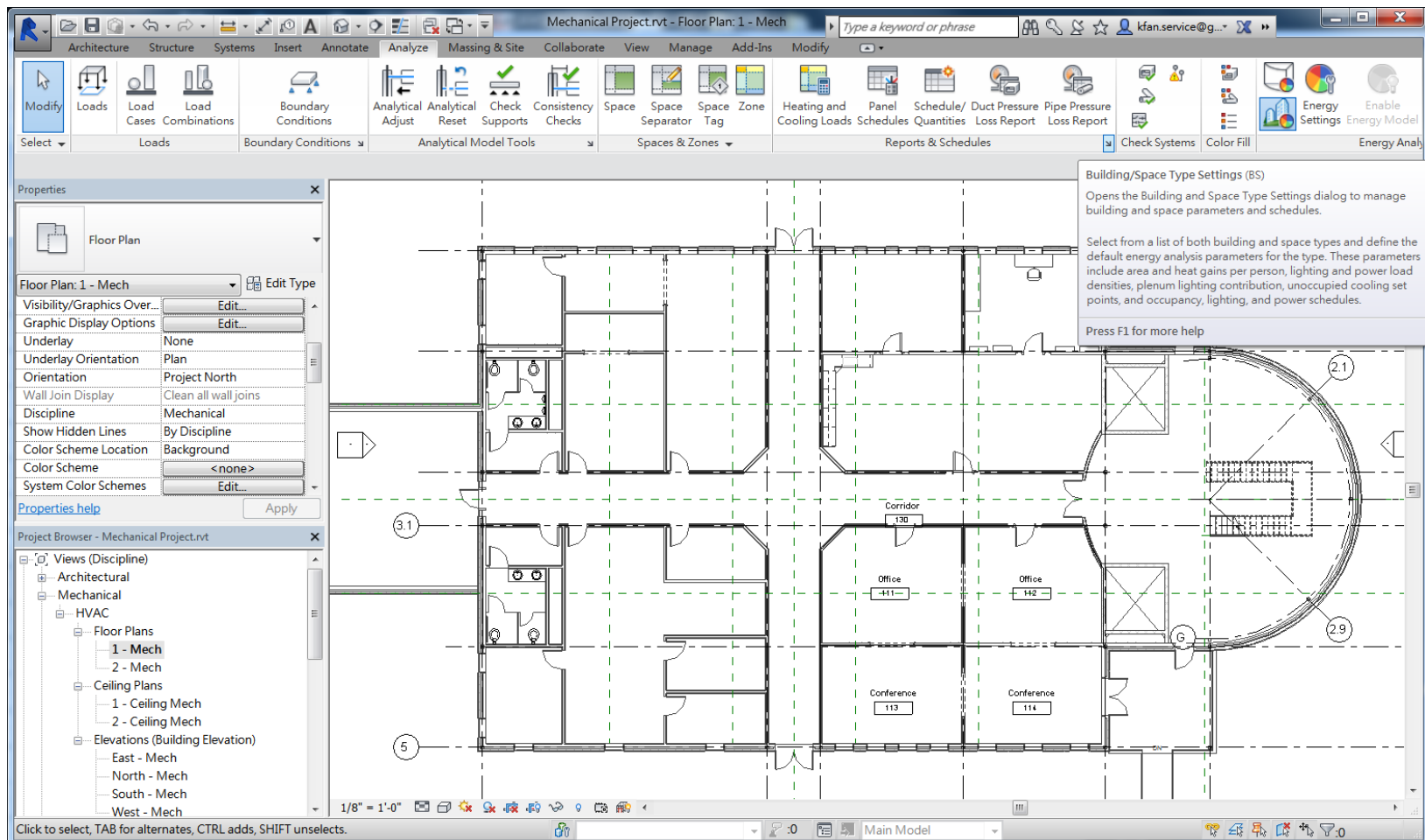
Groups

Revisions

A	B	C	D	E	F	G	H	I	J
Name	Number	Room Name	Room Number	Space Type	Number of People	Volume	Area	Construction Type	Zone
Space	1	OFFICE	111	<Building>	1.293559	3182.57 CF	398 SF	<Building>	South Office Zone
Space	2	OFFICE	112	<Building>	1.260946	3102.33 CF	388 SF	<Building>	South Office Zone
Space	3	CONFERENCE	113	<Building>	1.111725	2735.20 CF	342 SF	<Building>	South Office Zone
Space	4	CONFERENCE	114	<Building>	1.095461	2695.19 CF	337 SF	<Building>	South Office Zone

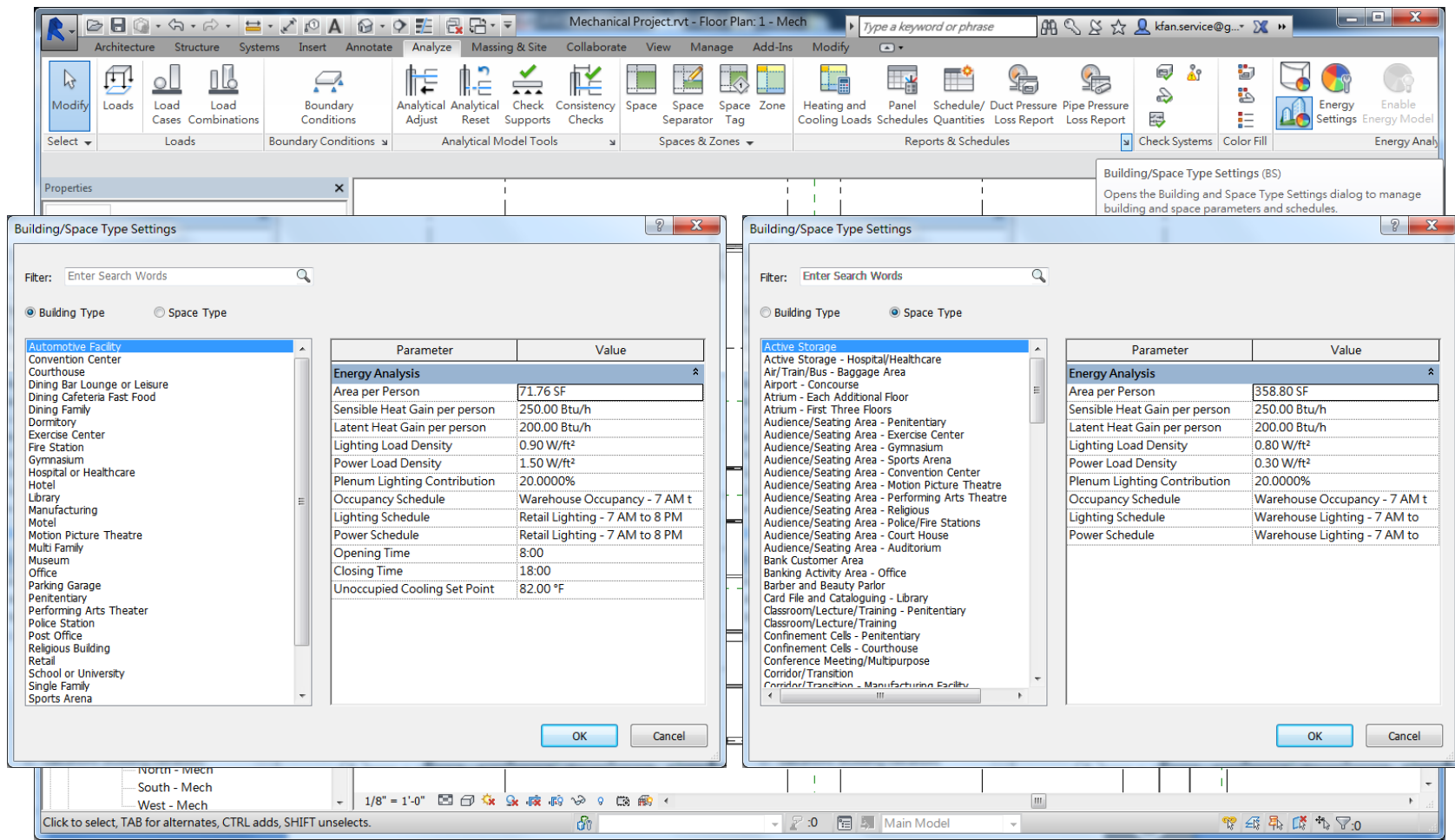
REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis



REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis

Color Scheme

- Apply color schemes to floor plan views and section views based on a specific value or range of values. It could be applied a different color scheme to each view.



REVIT Mechanical

- Adding Zone for Heating & Cooling Analysis

Zone Properties

➤ Service Type

This drop-down allows you to select the type of system that will be serving the spaces within the zone. Revit MEP offers a variety of service type options based on four main groups of systems: Constant Volume, Variable Air Volume (VAV), Hydronic, and Other. Revit MEP automatically defaults to the service type that is selected in the Project Energy Settings window.

➤ Coil Bypass

This is where you input the manufacturer's coil bypass factor for the unit serving the zone. This value indicates the volume of air that passes through the coil, unaffected by the coil temperature.

➤ Cooling Information

This button allows you to set the zone cooling set point, coil-leaving air temperature, and zone humidity control.

➤ Heating Information

This button allows you to set the zone heating set point, coil-leaving air temperature, and zone humidity control during heating.

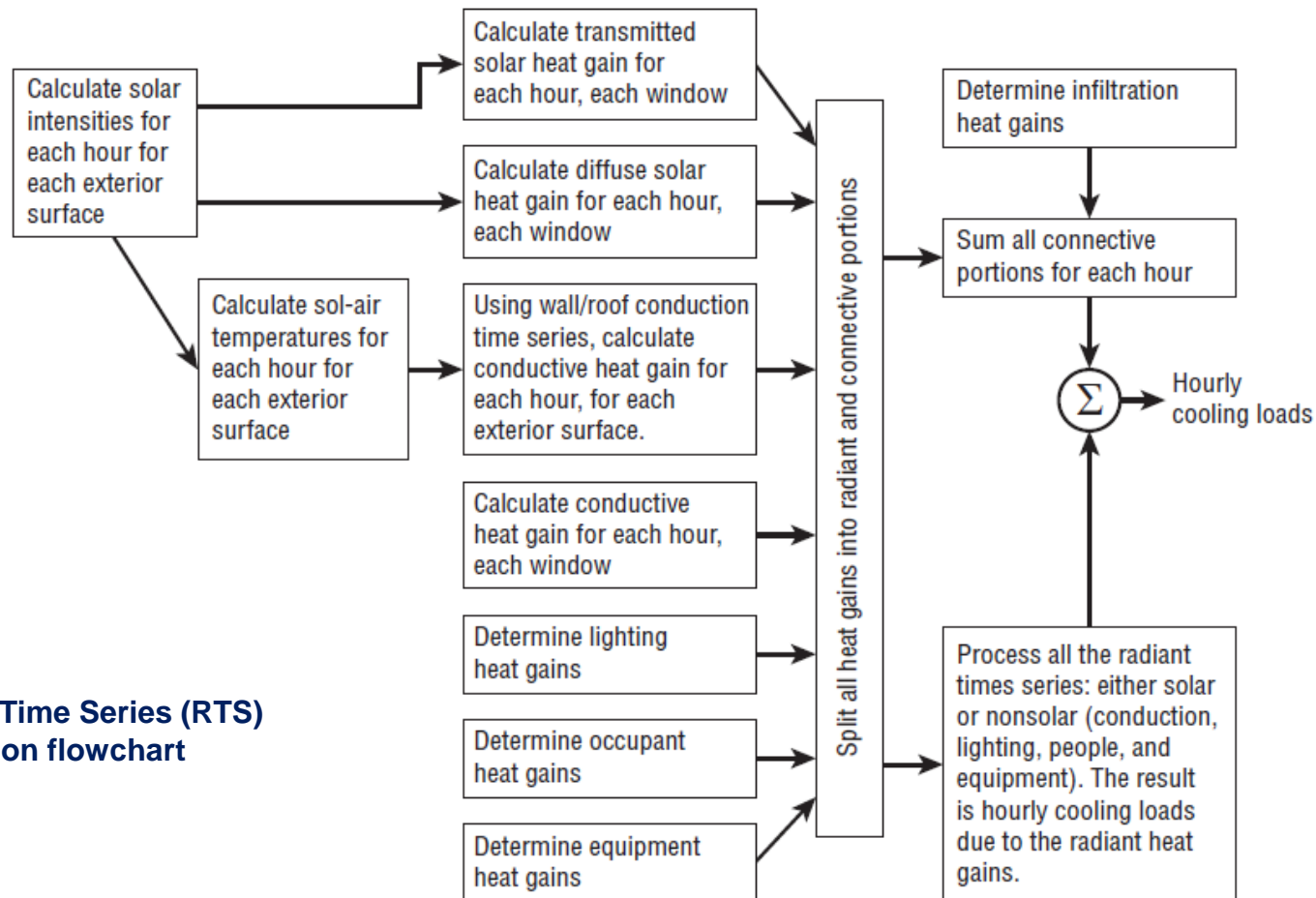
REVIT Mechanical

- Heating & Cooling Analysis

- The engine that performs the heating and cooling load analysis in Revit MEP uses a Radiant Time Series (RTS) method to determine the building and space peak heating or cooling loads. This method takes into account the time-delay effect of heat transfer through building envelopes, from the outside, and into spaces. A brief explanation of this method follows, but the RTS method of calculation is defined in detail in Chapter 30 of the *2005 ASHRAE Handbook: Fundamentals*, as well as in the *Load Calculation Applications Manual*, also published by ASHRAE (visit www.ashrae.org for details).
- The RTS calculation method determines cooling loads based on an assumption of steady periodic conditions, such as occupancy, design-day weather, and cyclical 24-hour heat gain conditions. Two time-delay effects are addressed during cooling load calculations:
 - Delay of conductive heat gain through opaque massive exterior surfaces, such as exterior walls, the building roof, and floor slab on or below grade
 - Delay of radiative heat gain conversion to cooling loads

REVIT Mechanical

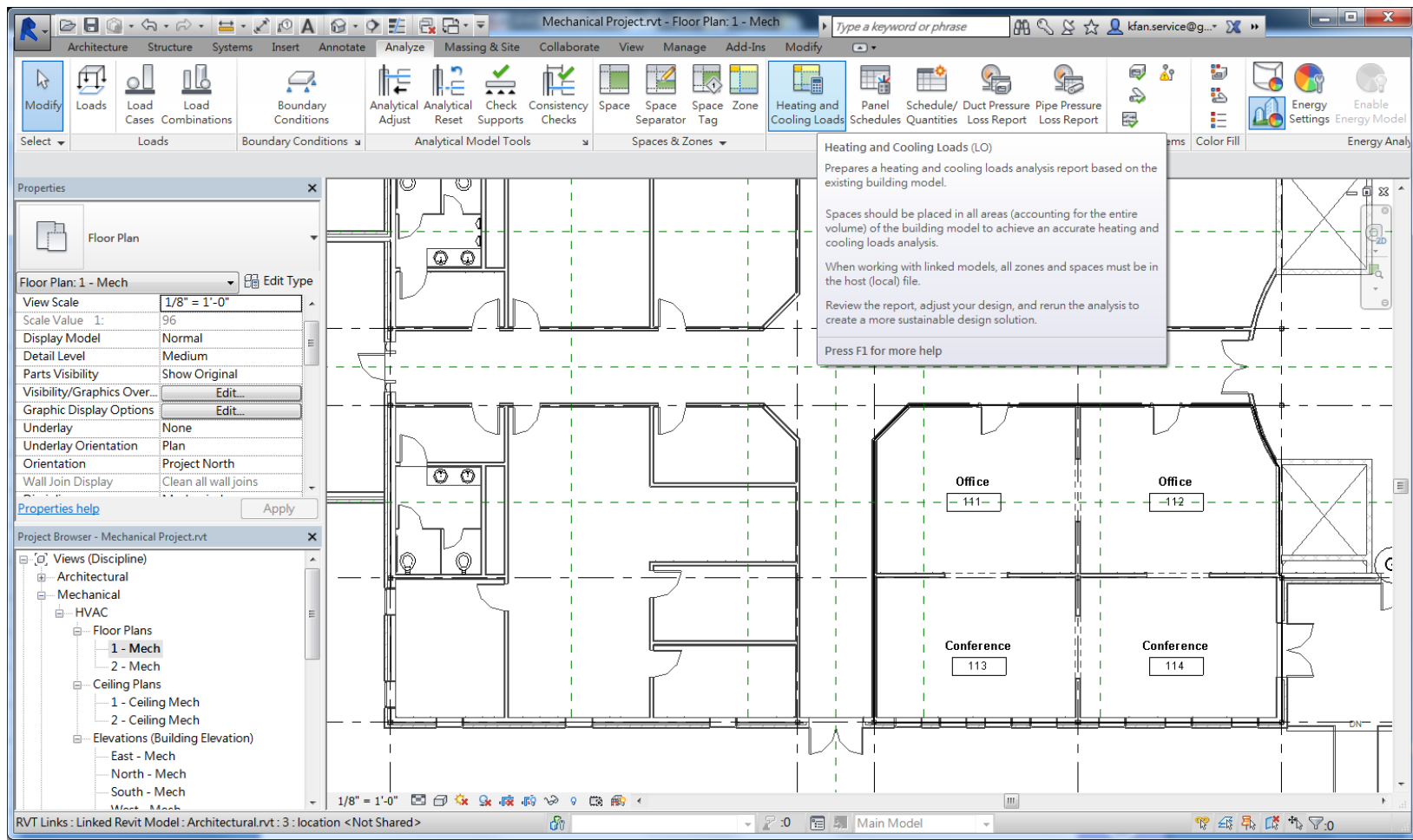
- Heating & Cooling Analysis



**Radiant Time Series (RTS)
calculation flowchart**

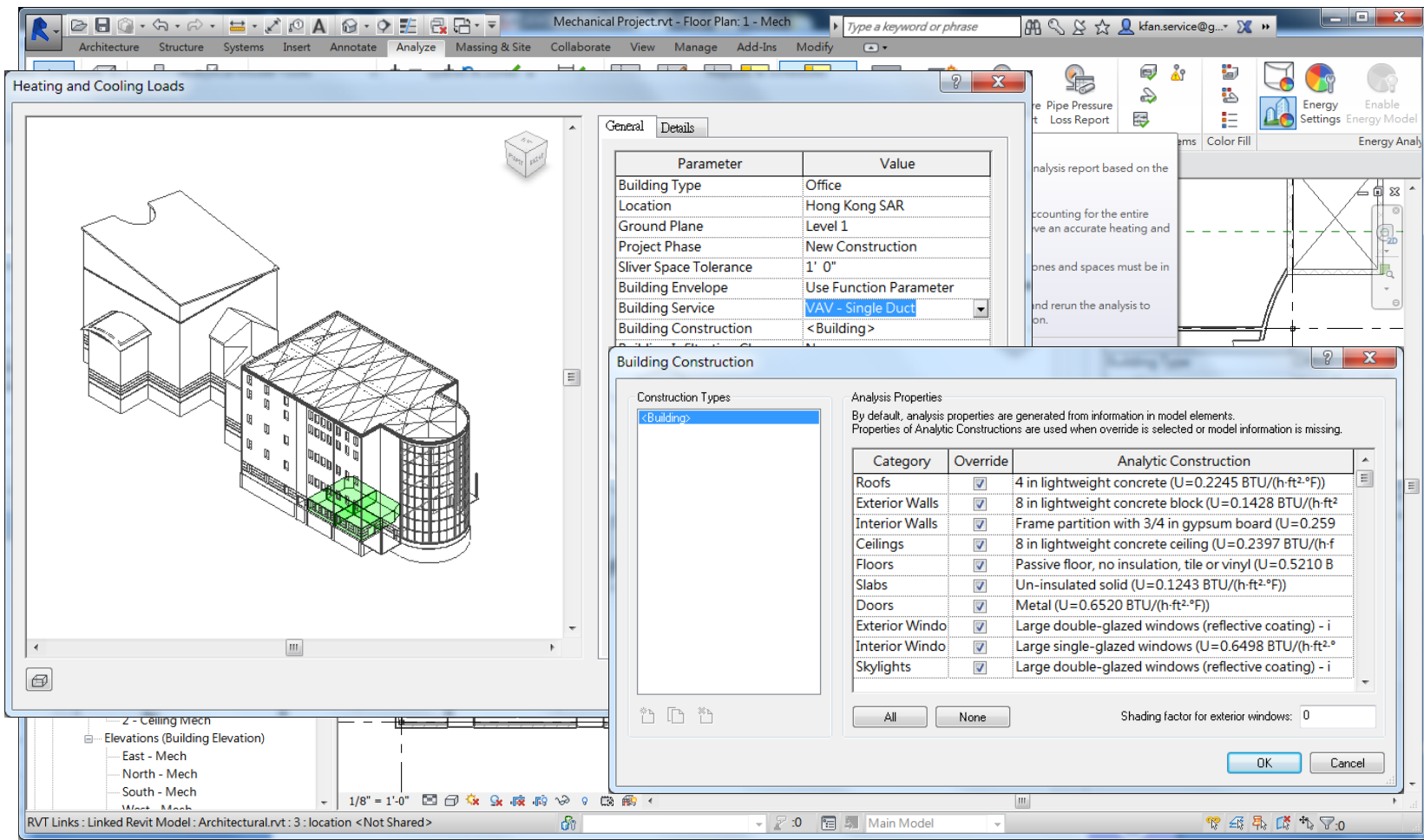
REVIT Mechanical

- Adding Zone and Heating & Cooling Analysis



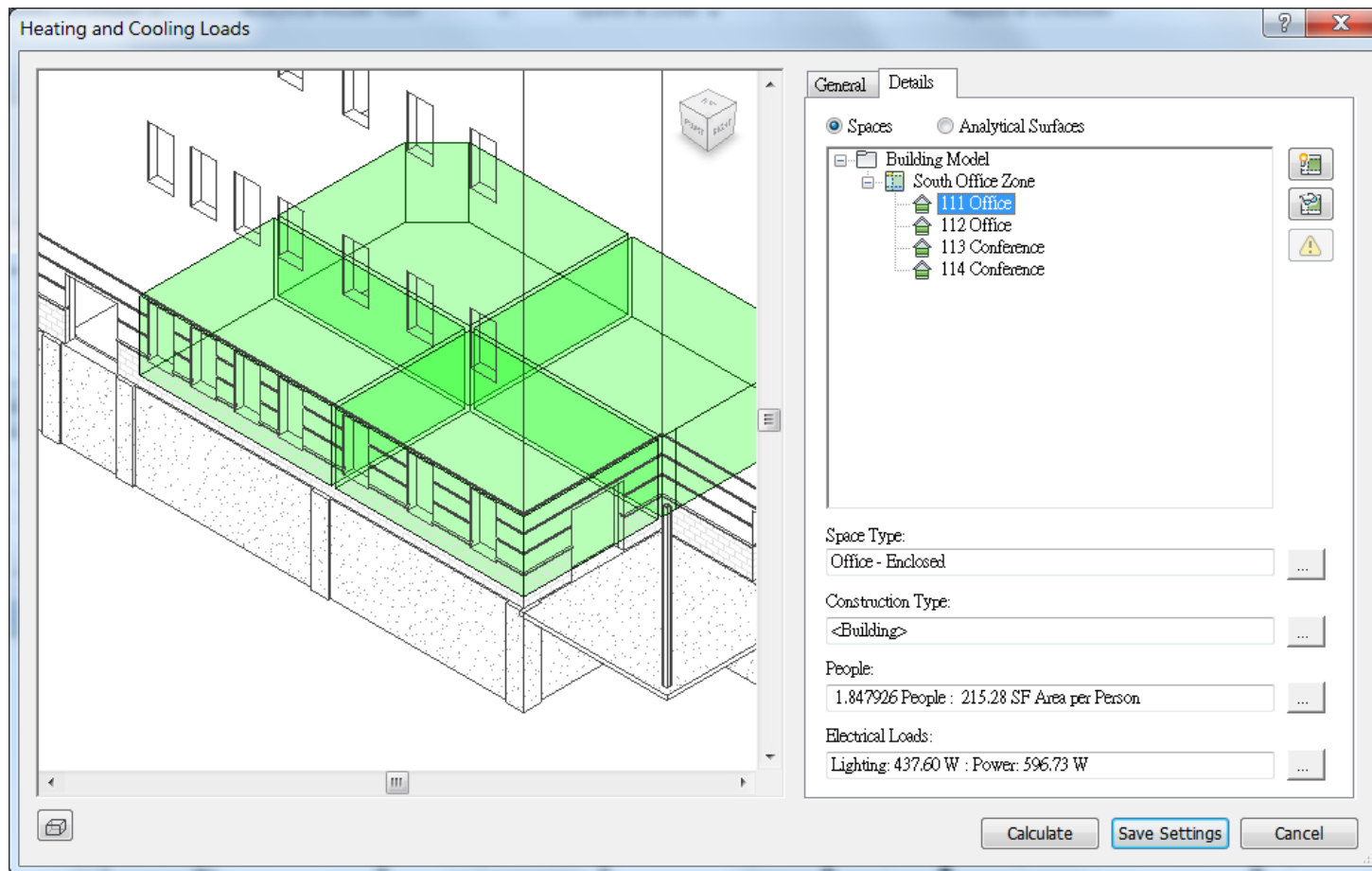
REVIT Mechanical

- Heating & Cooling Analysis



REVIT Mechanical

- Heating & Cooling Analysis



REVIT Mechanical

- Heating & Cooling Analysis

The screenshot displays the Revit Mechanical software interface with the 'Loads Report' window open. The window is titled 'Mechanical Project.rvt - Report: Loads Report (1)'. The ribbon at the top includes tabs for Architecture, Structure, Systems, Insert, Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, and Modify. The 'Analyze' tab is active, showing sub-tabs for Analytical Model Tools, Spaces & Zones, Reports & Schedules, Check Systems, Color Fill, and Energy Analysis. The 'Reports & Schedules' sub-tab is selected, displaying the 'Loads Report'.

The 'Loads Report' window is divided into three main sections: Project Summary, Building Summary, and Zone Summary - South Office Zone.

Project Summary

Location and Weather	
Project	Project Name
Address	
Calculation Time	2015年8月27日 10:36
Report Type	Standard
Latitude	22.34°
Longitude	114.19°
Summer Dry Bulb	91 °F
Summer Wet Bulb	82 °F
Winter Dry Bulb	49 °F
Mean Daily Range	11 °F

Building Summary

Inputs	
Building Type	Office
Area (SF)	1,464
Volume (CF)	11,715.29
Calculated Results	
Peak Cooling Total Load (Btu/h)	59,605.7
Peak Cooling Month and Hour	July 14:00
Peak Cooling Sensible Load (Btu/h)	52,922.0
Peak Cooling Latent Load (Btu/h)	6,683.7
Maximum Cooling Capacity (Btu/h)	59,605.7
Peak Cooling Airflow (CFM)	2,471
Peak Heating Load (Btu/h)	10,163.8
Peak Heating Airflow (CFM)	380
Checksums	
Cooling Load Density (Btu/(h·ft²))	40.70
Cooling Flow Density (CFM/SF)	1.69
Cooling Flow / Load (CFM/ton)	497.42
Cooling Area / Load (SF/ton)	294.82
Heating Load Density (Btu/(h·ft²))	6.94
Heating Flow Density (CFM/SF)	0.26

Zone Summary - South Office Zone

Inputs	
--------	--

REVIT Mechanical

- Heating & Cooling Analysis

Zone Summary - South Office Zone

Inputs				
Area (SF)	1,464			
Volume (CF)	11,715.29			
Cooling Setpoint	74 °F			
Heating Setpoint	70 °F			
Supply Air Temperature	54 °F			
Number of People	36			
Infiltration (CFM)	0			
Air Volume Calculation Type	VAV - Single Duct			
Relative Humidity	46.00% (Calculated)			
Psychrometrics				
Psychrometric Message	None			
Cooling Coil Entering Dry-Bulb Temperature	74 °F			
Cooling Coil Entering Wet-Bulb Temperature	61 °F			
Cooling Coil Leaving Dry-Bulb Temperature	50 °F			
Cooling Coil Leaving Wet-Bulb Temperature	50 °F			
Mixed Air Dry-Bulb Temperature	74 °F			
Calculated Results				
Peak Cooling Load (Btu/h)	59,605.7			
Peak Cooling Month and Hour	July 14:00			
Peak Cooling Sensible Load (Btu/h)	52,922.0			
Peak Cooling Latent Load (Btu/h)	6,683.7			
Peak Cooling Airflow (CFM)	2,471			
Peak Heating Load (Btu/h)	10,163.8			
Peak Heating Airflow (CFM)	380			
Peak Ventilation Airflow (CFM)	0			
Checks				
Cooling Load Density (Btu/(h·ft²))	40.70			
Cooling Flow Density (CFM/SF)	1.69			
Cooling Flow / Load (CFM/ton)	497.42			
Cooling Area / Load (SF/ton)	294.82			
Heating Load Density (Btu/(h·ft²))	6.94			
Heating Flow Density (CFM/SF)	0.26			
Ventilation Density (CFM/SF)	0.00			
Ventilation / Person (CFM)	0			
Components				
	Cooling		Heating	
	Loads (Btu/h)	Percentage of Total	Loads (Btu/h)	Percentage of Total
Wall	1,282.3	2.15%	1,295.3	12.74%
Window	1,270.9	2.13%	1,107.4	10.90%

REVIT Mechanical

- Heating & Cooling Analysis

The screenshot shows the Revit Mechanical software interface with the 'Loads Report (1)' window open. The window displays a table of zone spaces, a detailed space summary for the 111 Office, and a breakdown of cooling and heating loads by component.

South Office Zone Spaces

Space Name	Area (SF)	Volume (CF)	Peak Cooling Load (Btu/h)	Cooling Airflow (CFM)	Peak Heating Load (Btu/h)	Heating Airflow (CFM)
111 Office	398	3,182.57	11,808.9	503	1,924.7	72
112 Office	388	3,102.33	11,905.1	507	2,160.9	81
113 Conference	342	2,735.20	16,756.8	713	2,682.9	100
114 Conference	337	2,695.19	17,581.0	748	3,395.3	127

Space Summary - 111 Office
[Back to summary of spaces](#)

Inputs

Area (SF)	398
Volume (CF)	3,182.57
Wall Area (SF)	0
Roof Area (SF)	418
Door Area (SF)	39
Partition Area (SF)	0
Window Area (SF)	0
Skylight Area (SF)	0
Lighting Load (W)	438
Power Load (W)	597
Number of People	2
Sensible Heat Gain / Person (Btu/h)	250.0
Latent Heat Gain / Person (Btu/h)	200.0
Infiltration Airflow (CFM)	0
Space Type	Office - Enclosed

Calculated Results

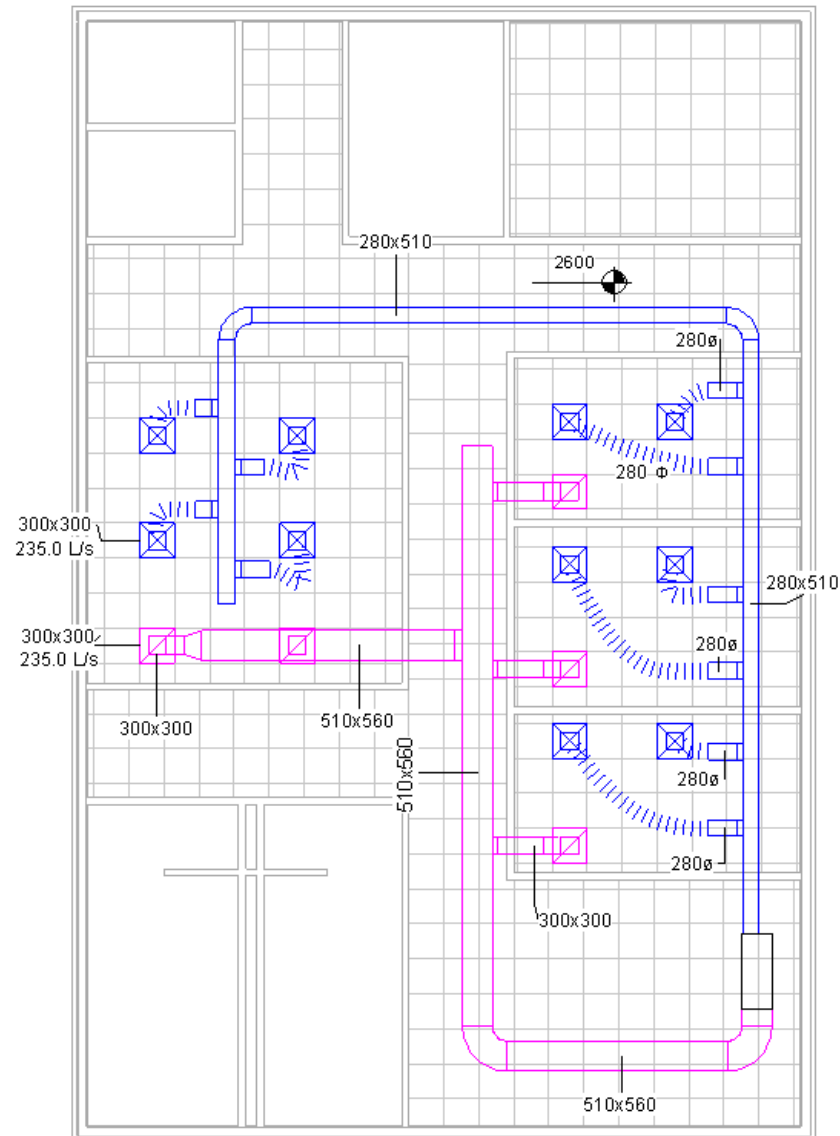
Peak Cooling Load (Btu/h)	11,808.9
Peak Cooling Month and Hour	July 14:00
Peak Cooling Sensible Load (Btu/h)	11,457.8
Peak Cooling Latent Load (Btu/h)	351.1
Peak Cooling Airflow (CFM)	503
Peak Heating Load (Btu/h)	1,924.7
Peak Heating Airflow (CFM)	72

Components

Components	Cooling		Heating	
	Loads (Btu/h)	Percentage of Total	Loads (Btu/h)	Percentage of Total
Wall	0.0	0.00%	0.0	0.00%
Window	0.0	0.00%	0.0	0.00%
Door	0.0	0.00%	0.0	0.00%
Roof	8,006.3	67.80%	1,924.7	100.00%

REVIT Mechanical

- Challenge
- Add MVAC Layout & System
- Create Spaces and named as same as “Room Name” & “Room Number”
- Add zone named “office zone” to include three nos. of office
- Run Auto Duct Sizing
 - Velocity 8m/s
- Run Heating and Cooling Analysis





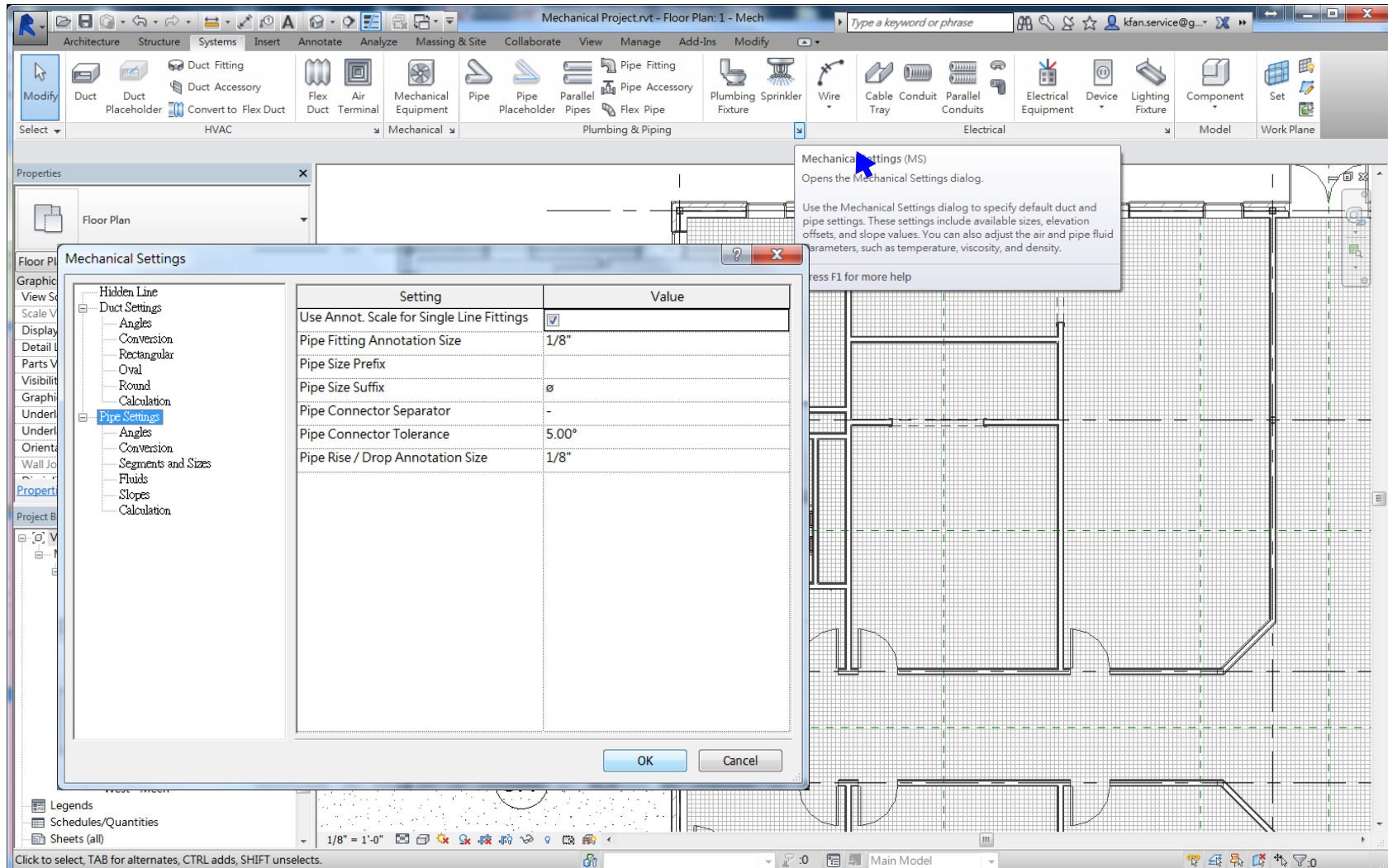
ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

CEII MEP (REVIT)

REVIT Plumbing

- Plumbing & Piping



CEI MEP (REVIT)

REVIT Plumbing

- Create a plumbing view

Global Settings and View-specific Settings

The following list is certainly not comprehensive. It points in the right direction when setting up plumbing sheets:

- For regulatory authorities require single-line plumbing drawings, detail Level set to Coarse.
- View range should be adjusted to display necessary pipe systems.
- Visibility Graphics categories should be set to display the appropriate object categories.

If worksharing is enabled, it is more efficient to turn off other disciplines' objects by using worksets instead of managing every single object. However, good worksharing practices must be in place, and all objects must be associated with the appropriate workset.

- Pipes going under plumbing fixtures will be completely hidden.

To resolve this, plumbing fixtures should be set to Transparent for your model and any linked Revit models containing plumbing fixtures. Note, however, that plumbing fixtures with a high level of detail may start displaying unnecessary lines.

- Wall cut patterns should be turned off.

Architects often assign cut patterns for their walls to display the fire rating. While this is not important for the mechanical or electrical plans, it is crucial for the plumbing plans, where most objects are in the wall.

REVIT Electrical

- Create a plumbing view

Understand View Range

Why:

- Nearly everyone starting out in Revit runs across some form of agitation when it comes to the view range of Floor plan or Reflected ceiling plan. The view range is one of the basic settings in model but has also been known to be one of the more confusing.

Need to Know:

Difference between Floor Plan and Reflected Ceiling Plan:

- It is important to know that the view range acts differently for the floor plan and the reflected ceiling plan.
- The floor plan as your floating in the room, with your back to the ceiling looking down.
- The reflected ceiling plan is more like you are lying on the floor looking up, or sometimes described as putting a mirror on the floor.

REVIT Plumbing

- Create a plumbing view

Understand View Range

Primary Range:

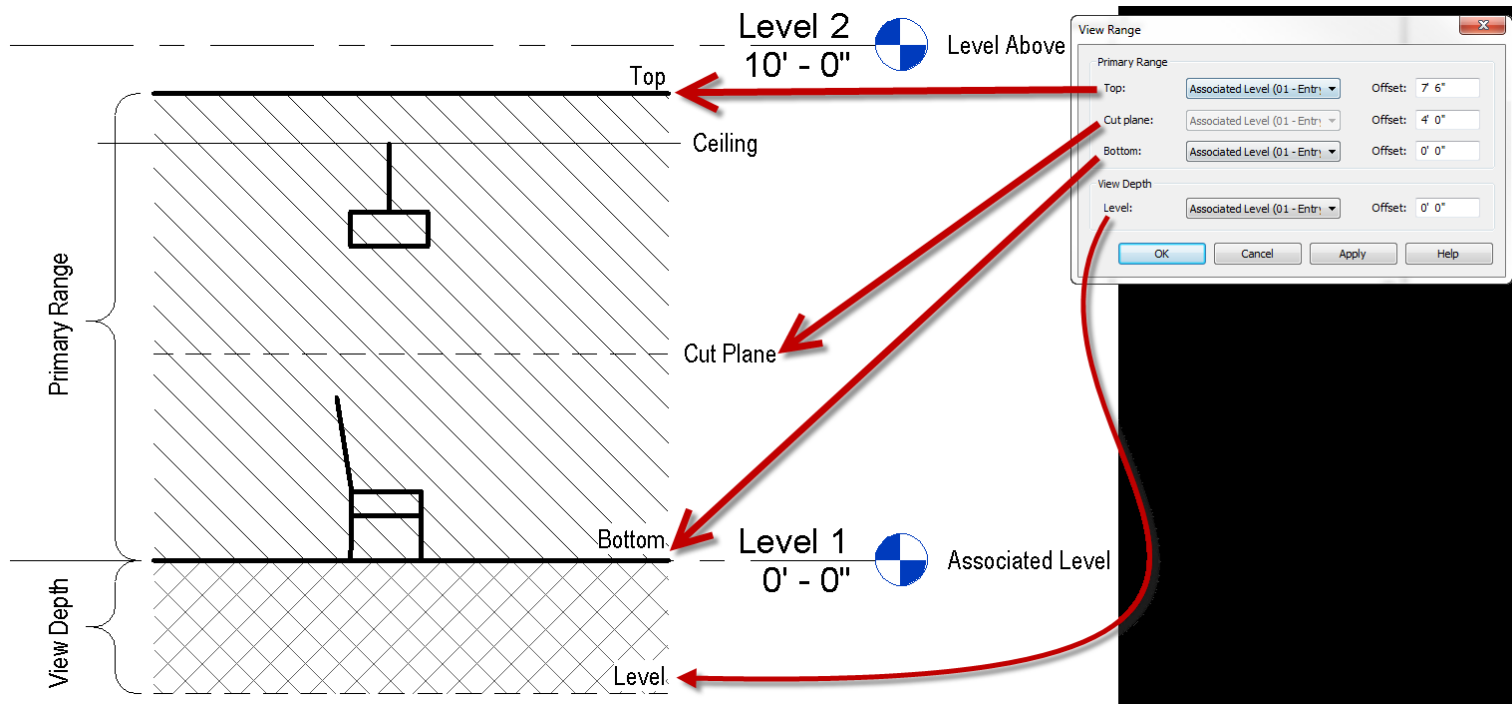
- Everything between the bottom and the top of the primary range is shown in the view. The cut plane is the
- height where the 2D line work slice is created; anything above the cut plane is shown in a dashed line style.

View Depth:

- Everything within the view depth is visible in the view but is drawn in a <Beyond> line style, additionally,
- elements are not included when using box or cross selection and can only be selected individually.
- The following diagrams and descriptions will help you better understand how to use the View Range to your advantage.

REVIT Plumbing

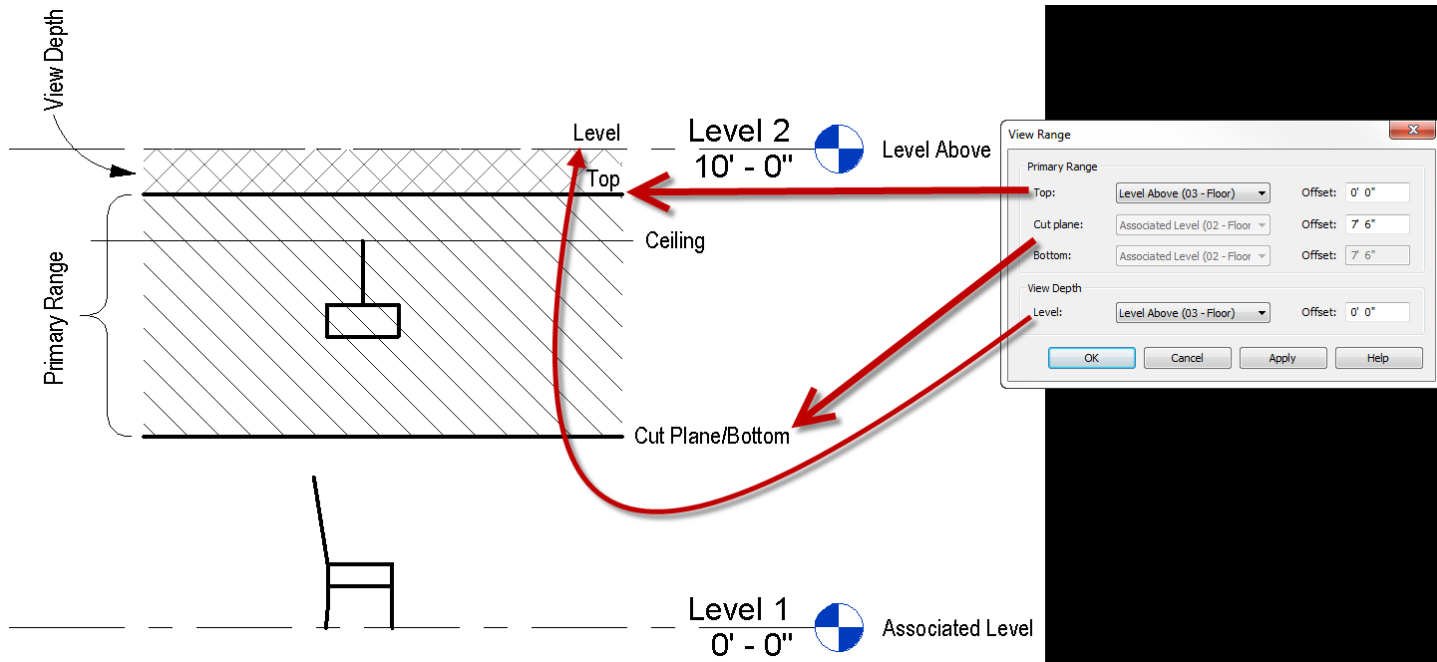
- Create a plumbing view



Floor Plan Diagram

REVIT Plumbing

- Create a plumbing view

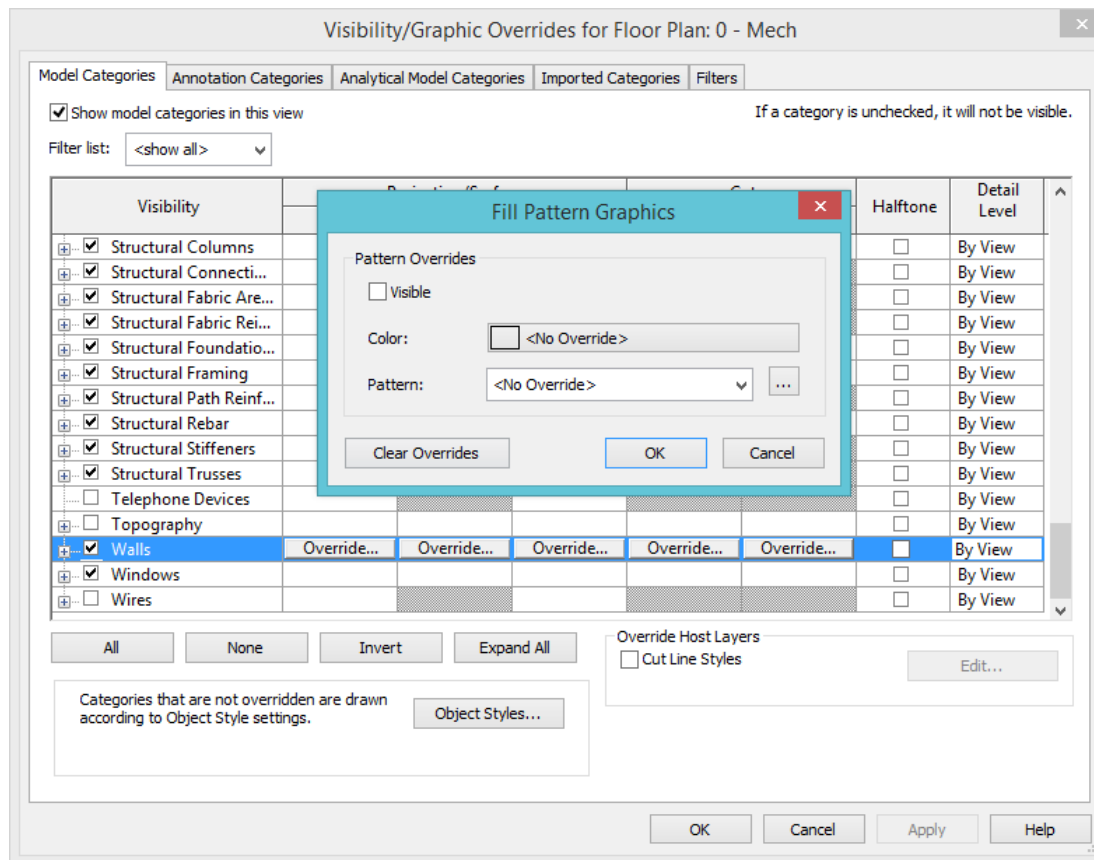


Reflected Ceiling Plan Diagram

REVIT Plumbing

- Create a plumbing view

Global Settings and View-specific Settings



REVIT Plumbing

- Create a plumbing view

Global Settings and View-specific Settings

- Pipe Rise/Drop Annotation Size under Mechanical Settings should be changed to suit. It is recommend 1.5 mm (7/128") is a good starting point.
- For buildings that are not orthogonally oriented, scope boxes should be set up and associated with the views. Another, simpler method is to rotate the crop region so you can lay out your pipes orthogonally to your screen.
- Configure the Single Line gap under Mechanical Settings to match your company standard. It is recommend 0.6 mm (3/128") is a good starting point.

REVIT Plumbing

- Create a plumbing view

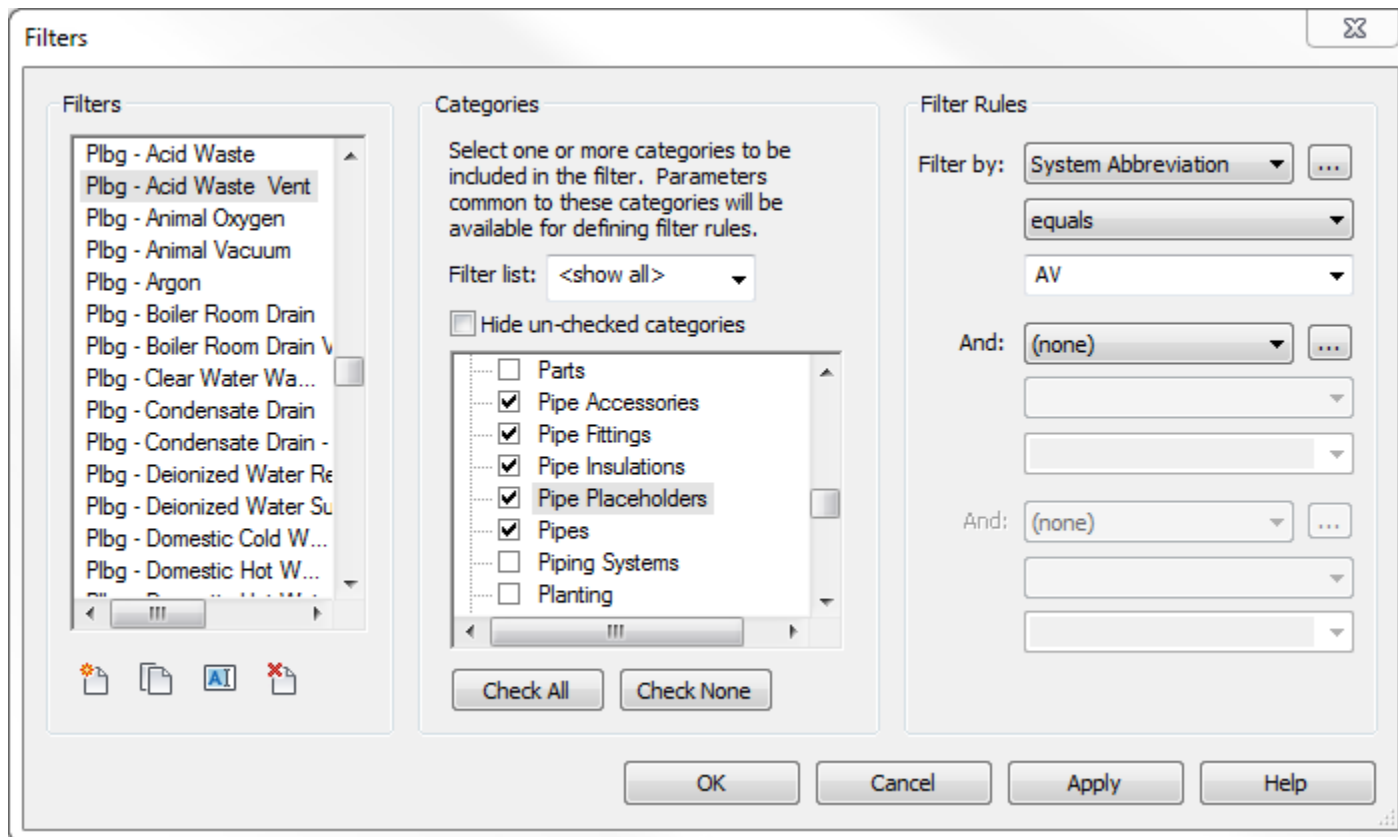
Defining Systems Visibility Through Filters

- The system type can be used to define the line weight, linetype, color, and system abbreviation. The system abbreviation can be used to define what system will appear on what sheet via filters.
- This helps you hide the mechanical pipes in the plumbing views, as well as separate sheets between domestic and sanitary pipe layouts.
- Establishing a good naming convention for the filters is important, because that defines the order in which you see them in Properties palette when drawing pipes.
- Come up with a complete list of systems that your company uses and create them as system types and filters in Revit MEP. Organizing all of them in Excel can be beneficial. Notice that the Filter By setting is set to Equals under the System Abbreviation

REVIT Plumbing

- Create a plumbing view

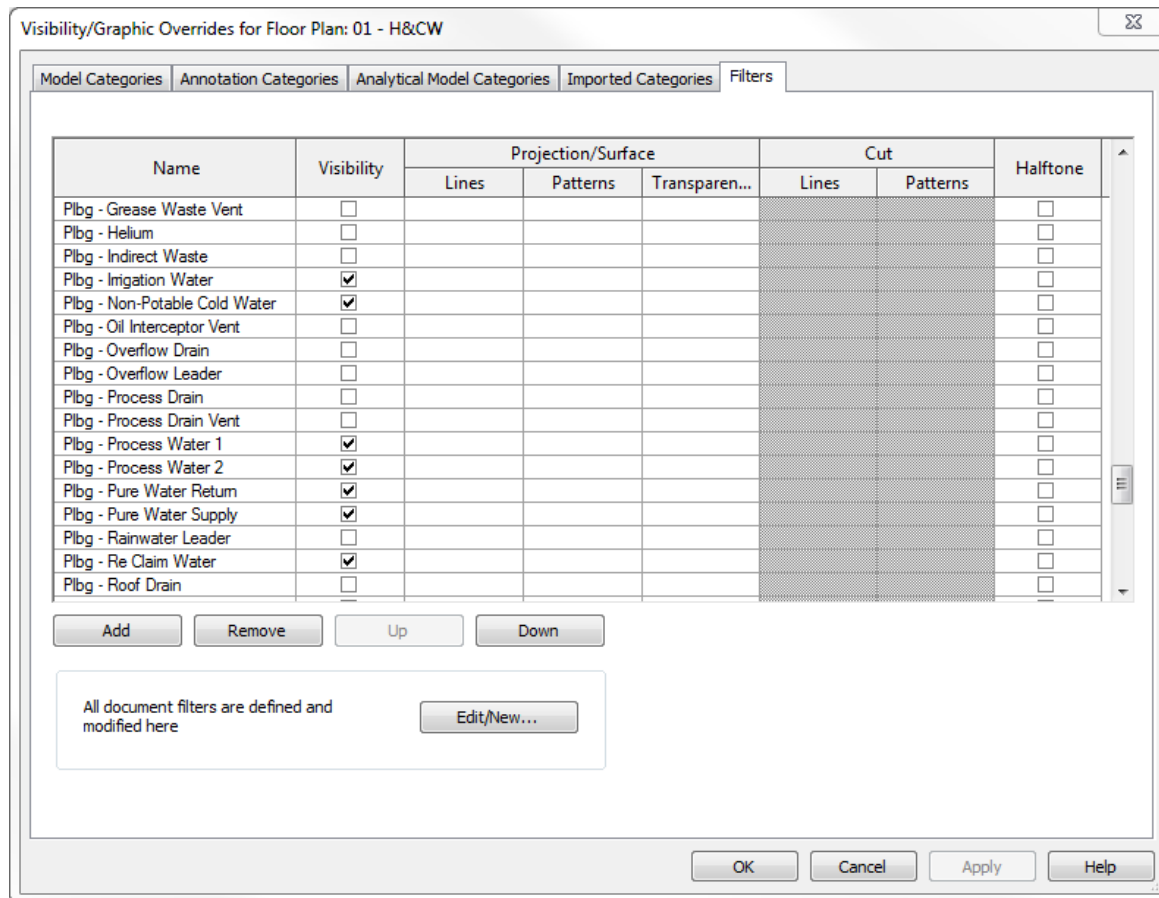
Defining Systems Visibility Through Filters



REVIT Plumbing

- Create a plumbing view

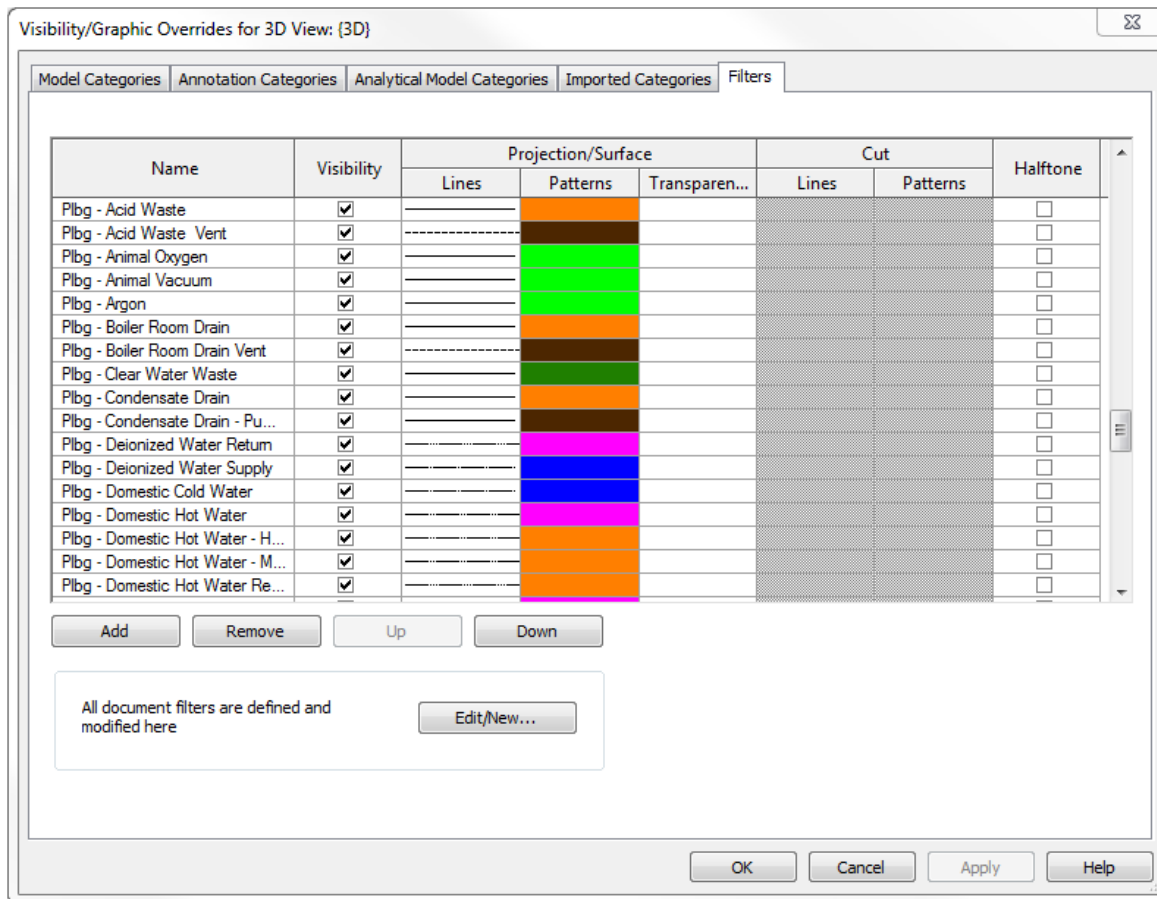
Defining Systems Visibility Through Filters



REVIT Plumbing

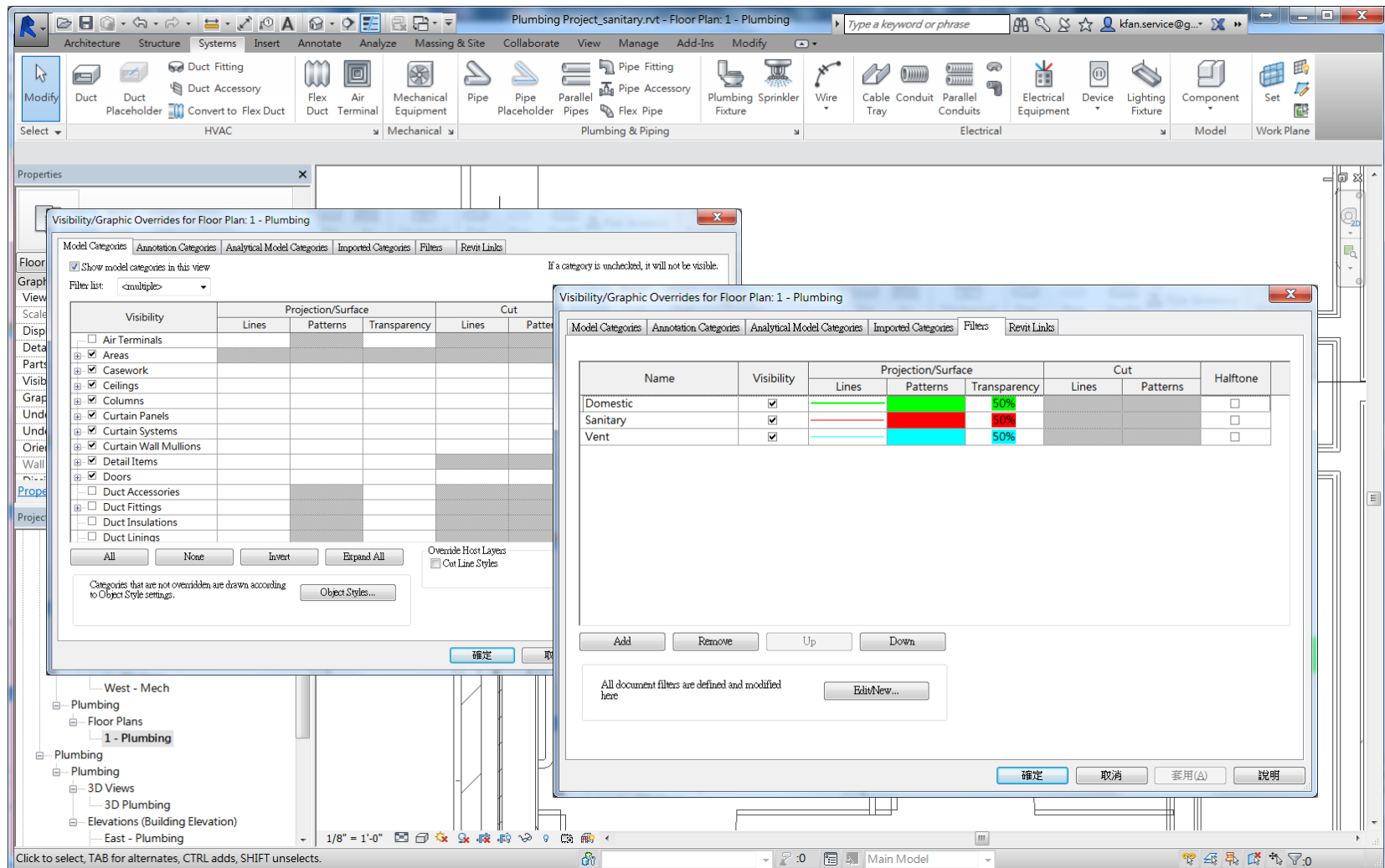
- Create a plumbing view

Defining Systems Visibility Through Filters



REVIT Plumbing

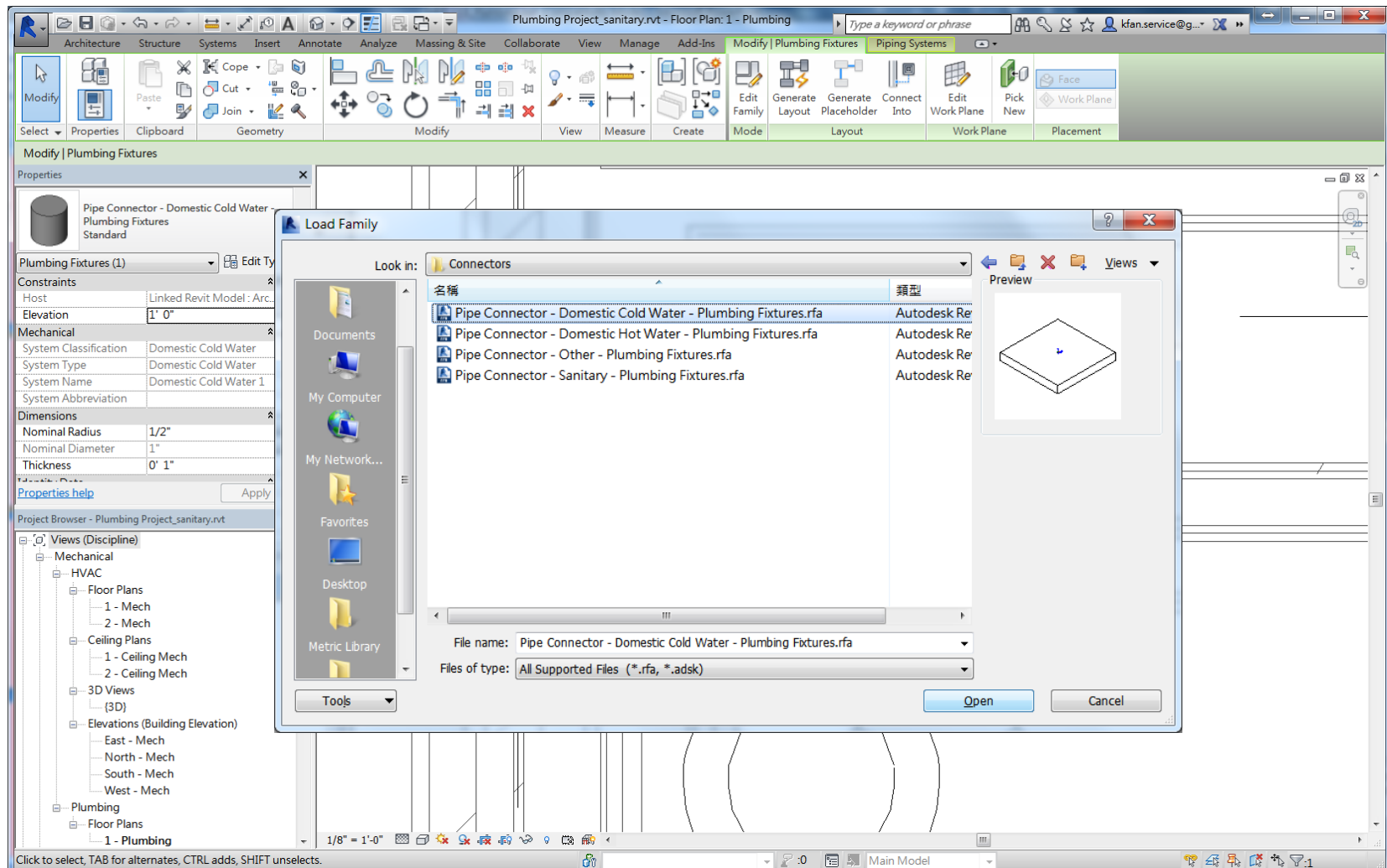
- Adding Fixture and Domestic Supply Pipe



CELL MEP (REVIT)

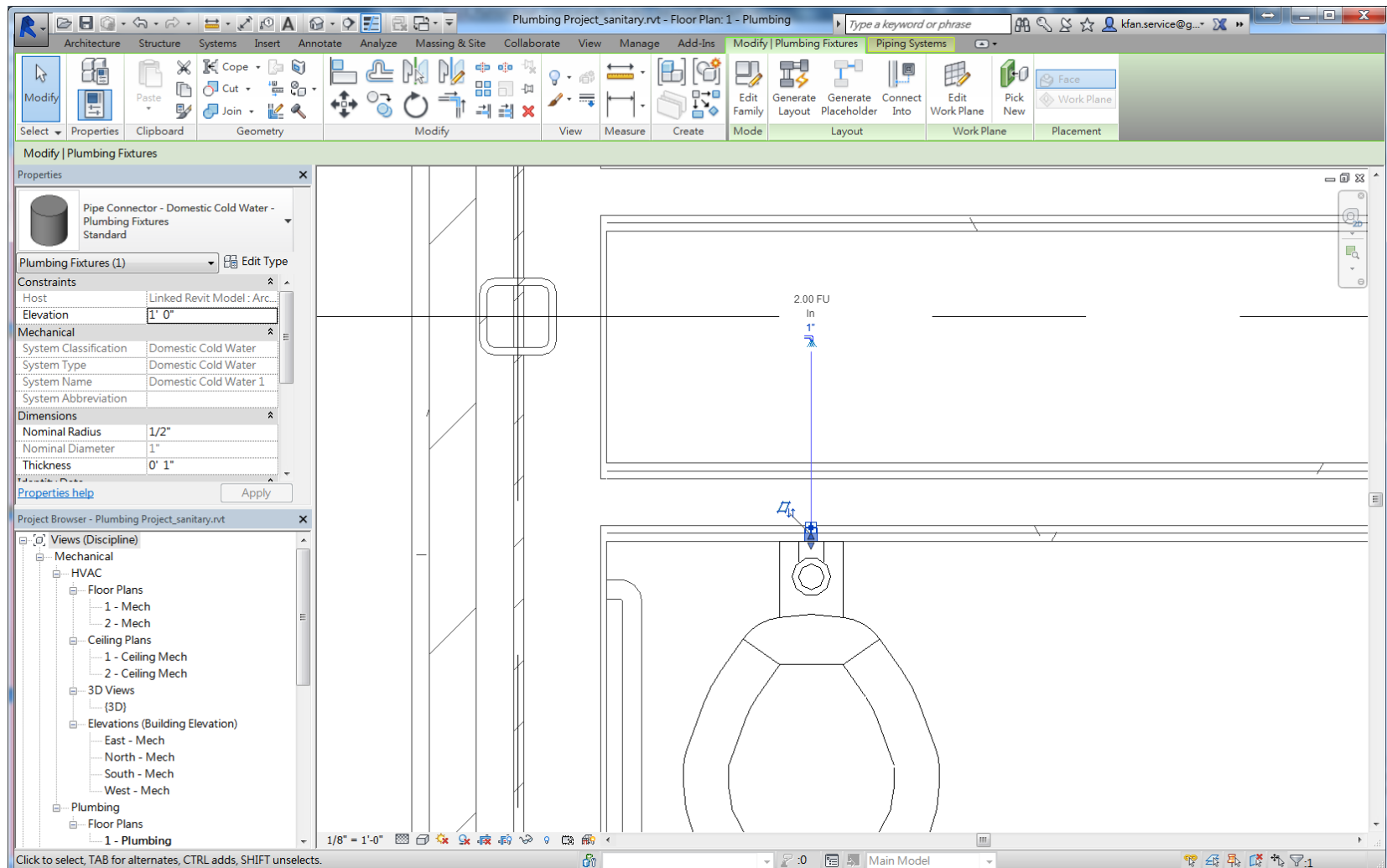
REVIT Plumbing

- Adding Fixture and Domestic Supply Pipe



REVIT Plumbing

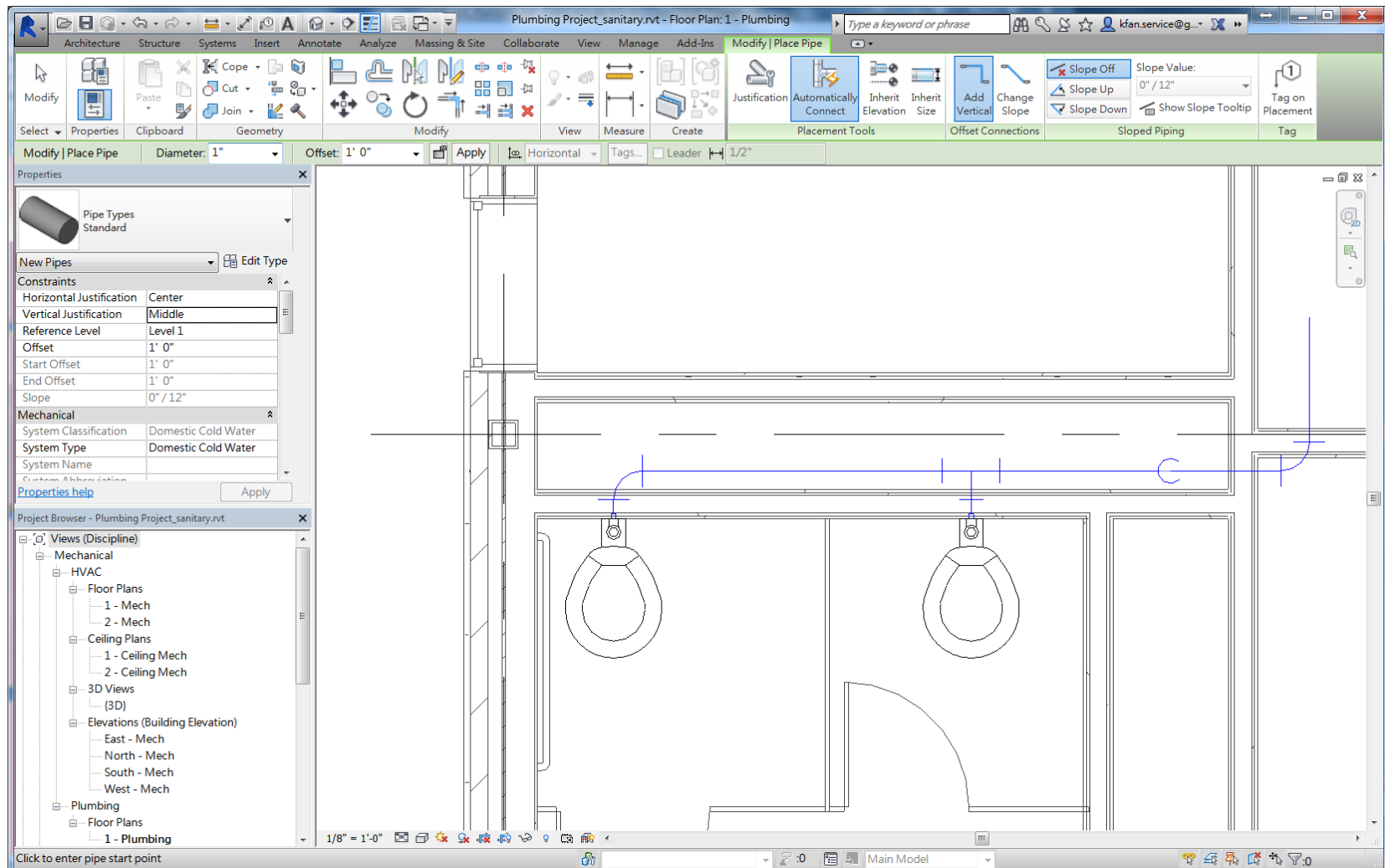
- Adding Fixture and Domestic Supply Pipe



CELL MEP (REVIT)

REVIT Plumbing

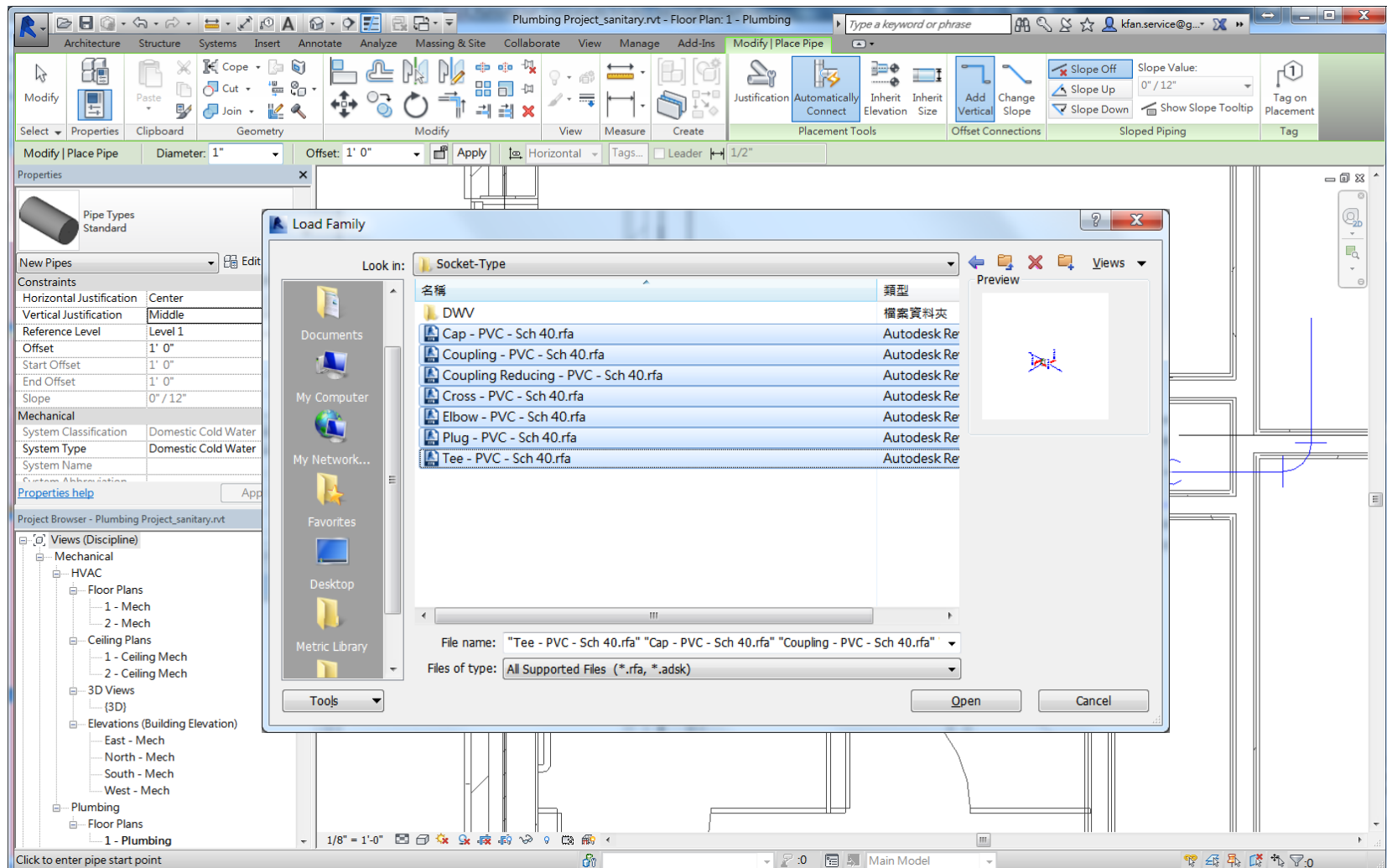
- Adding Fixture and Domestic Supply Pipe



CELL MEP (REVIT)

REVIT Plumbing

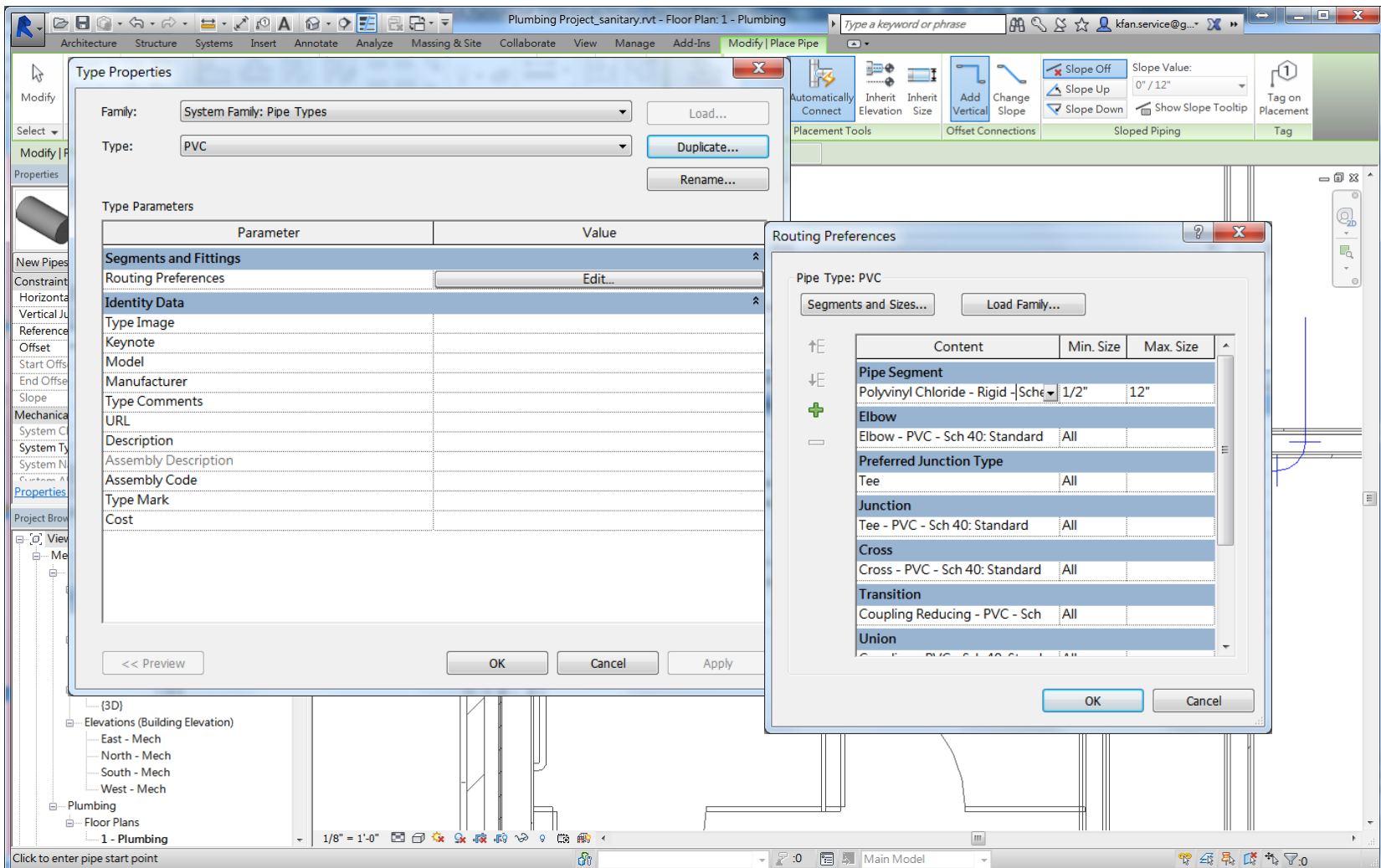
- Adding sanitary sloped piping



CEII MEP (REVIT)

REVIT Plumbing

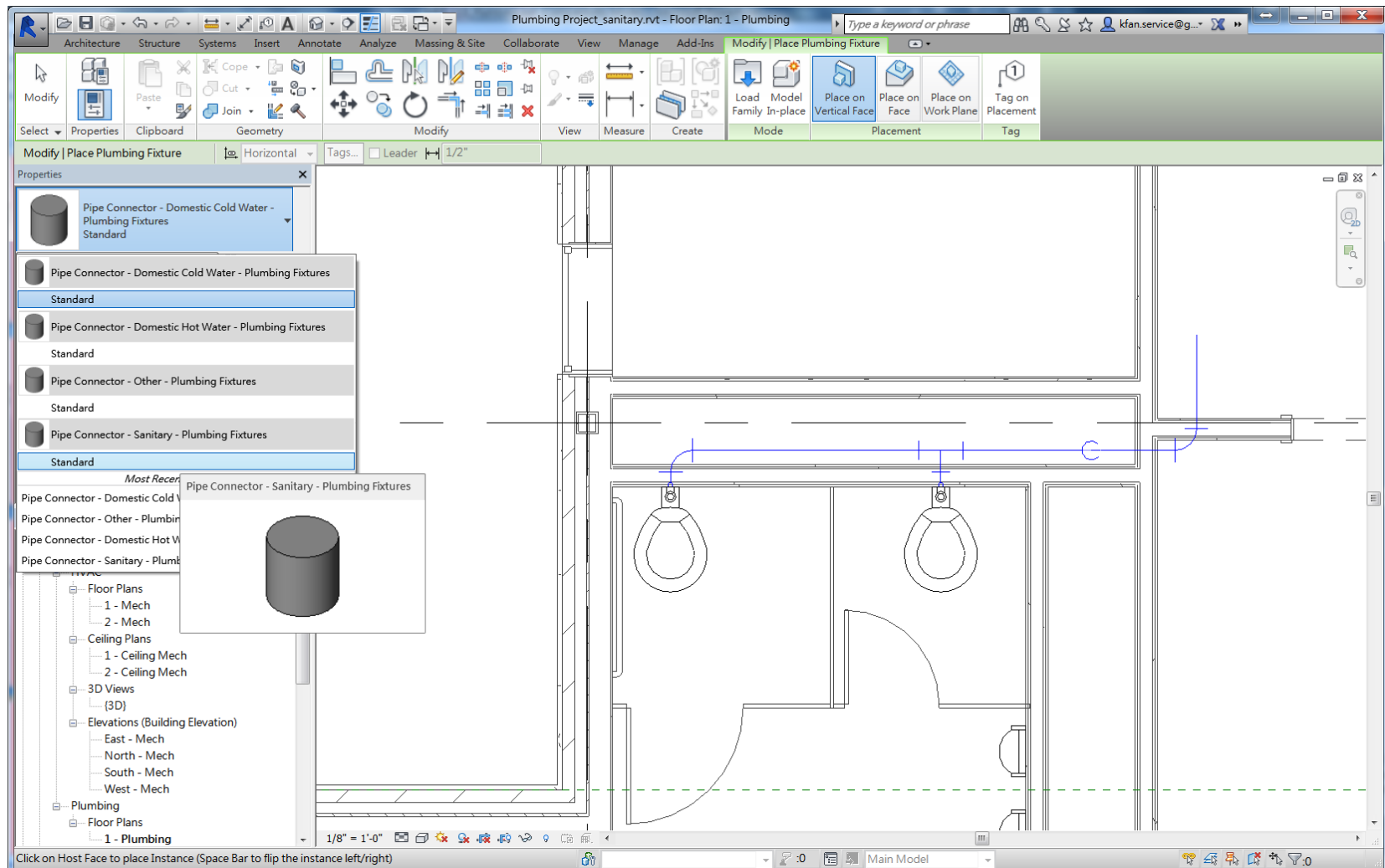
- Adding sanitary sloped piping



CEI MEP (REVIT)

REVIT Plumbing

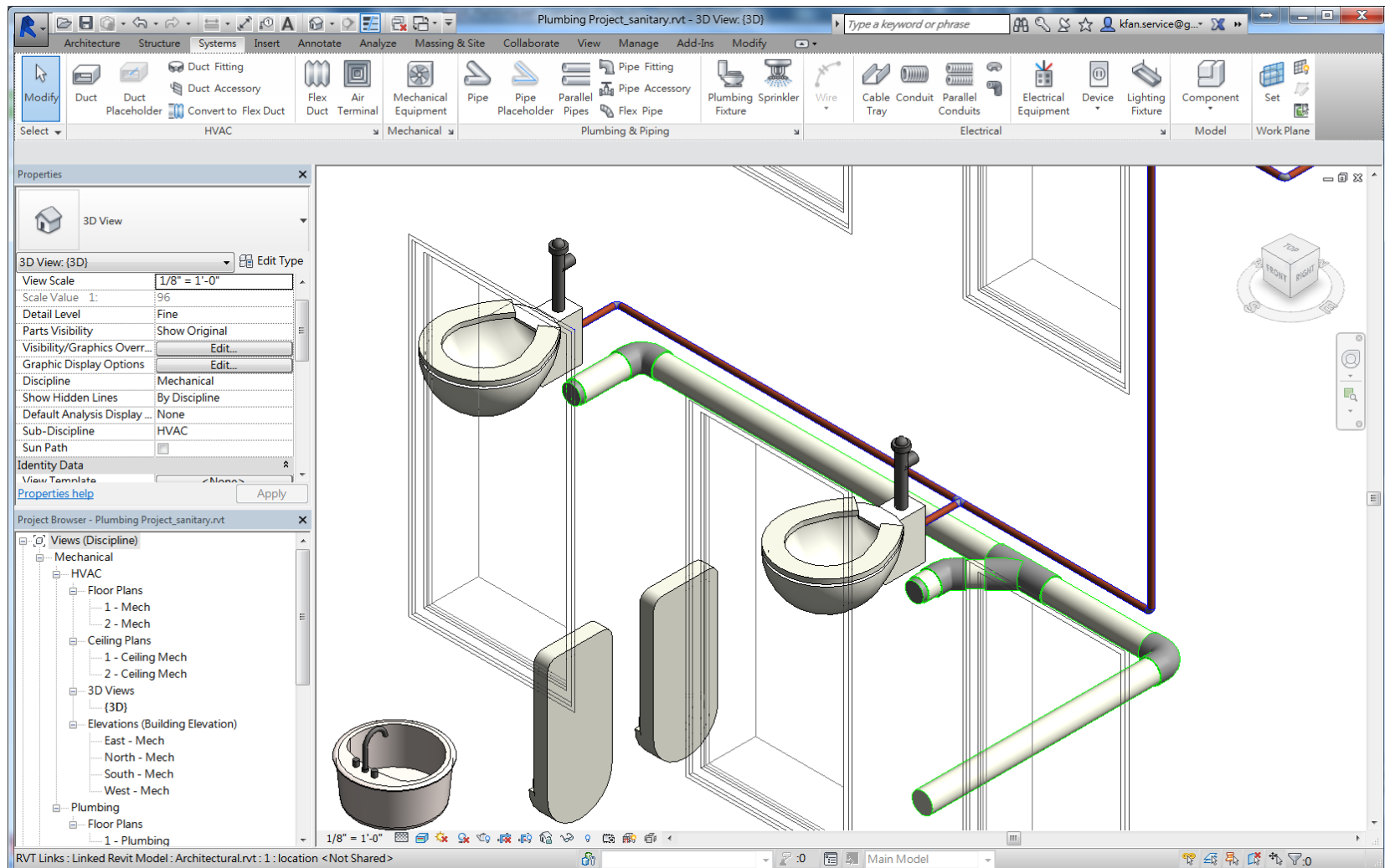
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

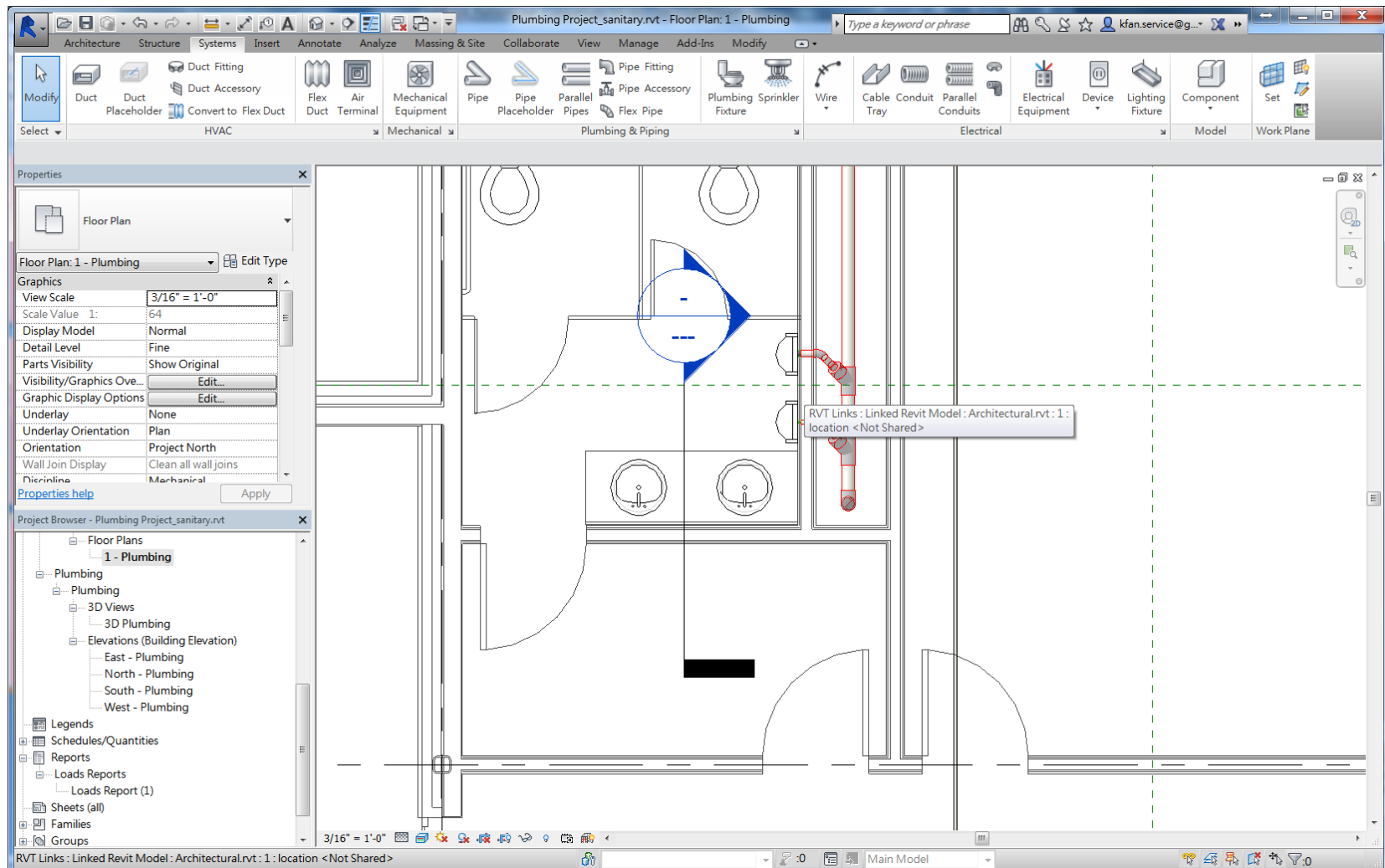
- Adding sanitary sloped piping



CEII MEP (REVIT)

REVIT Plumbing

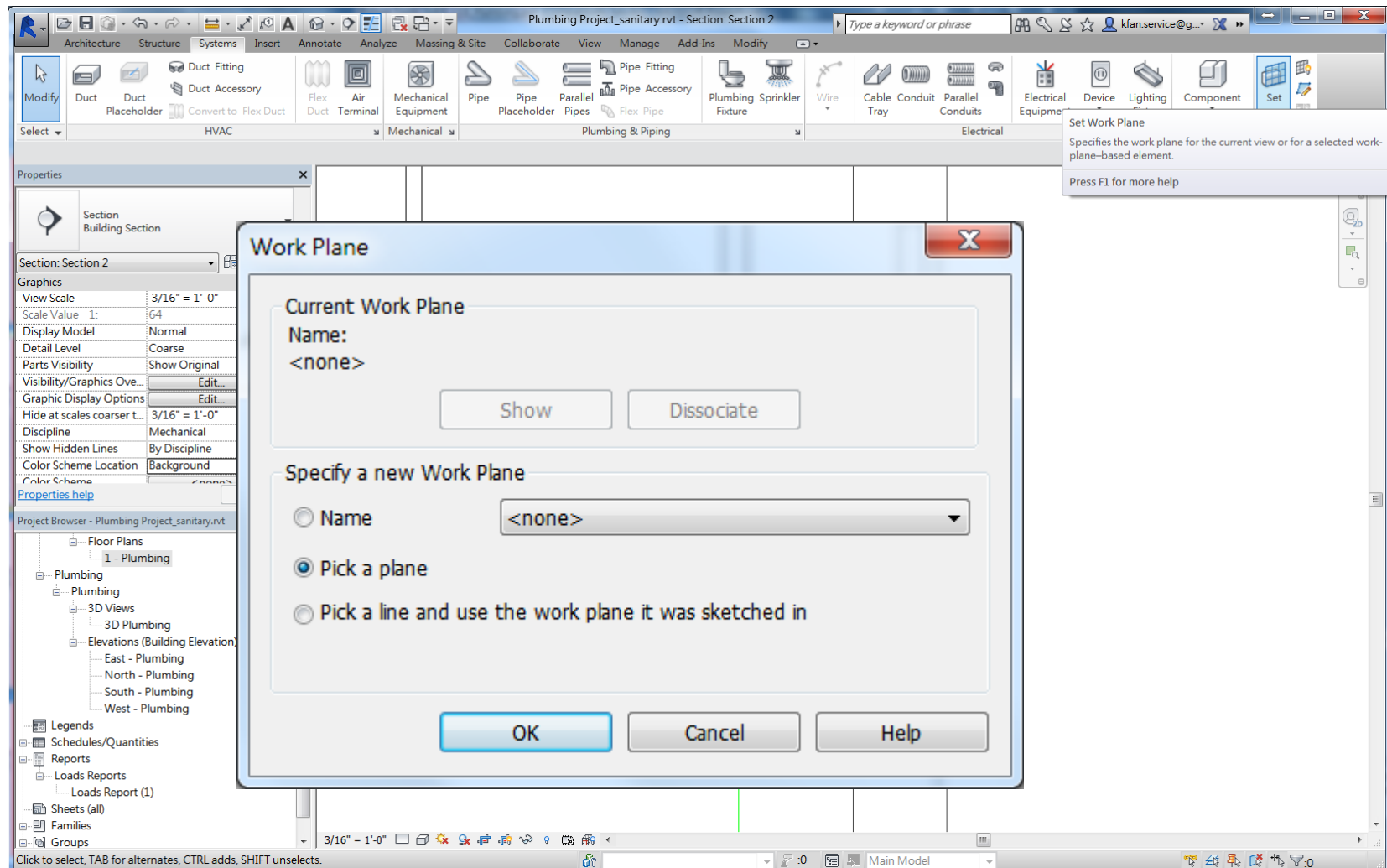
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

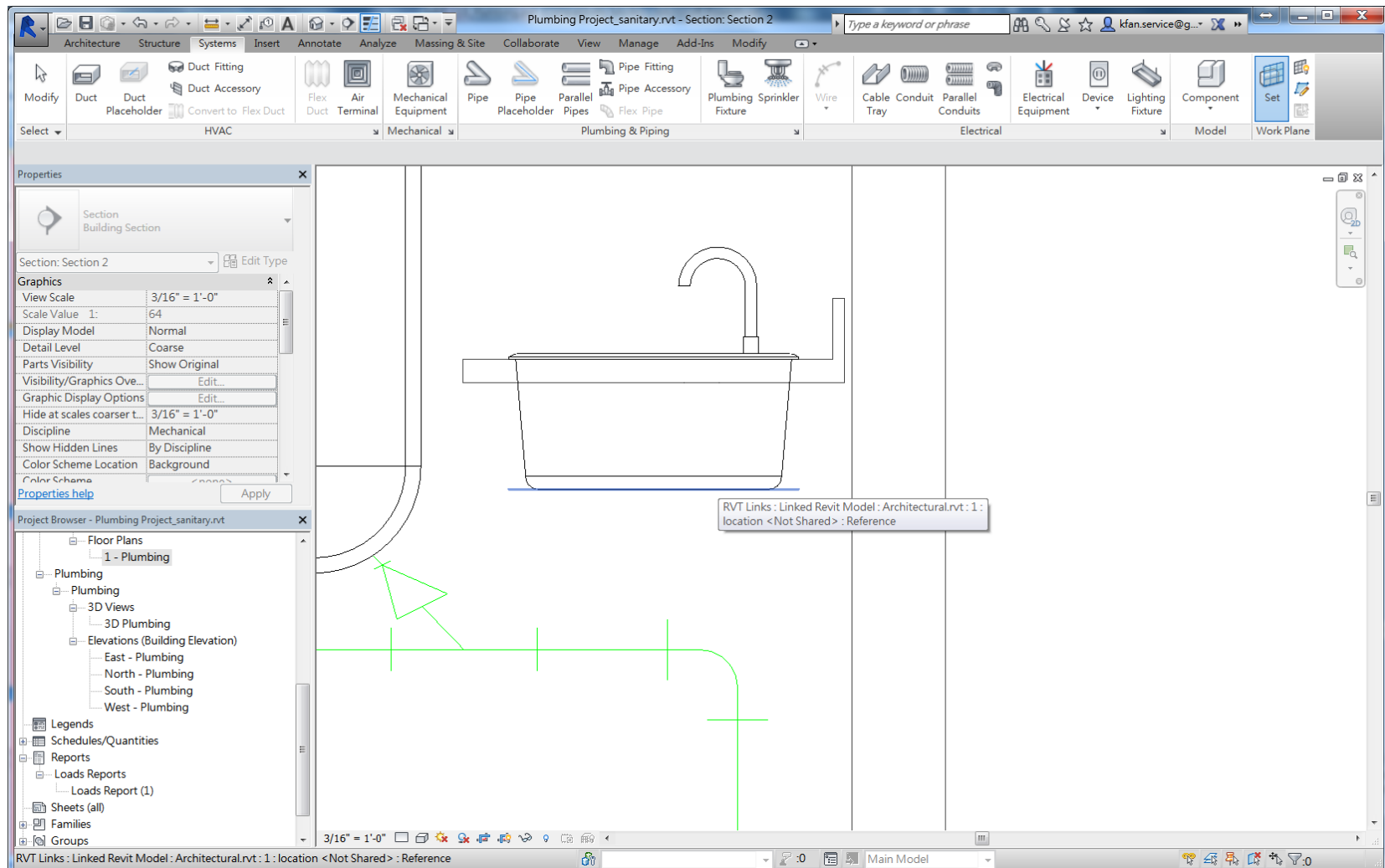
- Adding sanitary sloped piping



CEII MEP (REVIT)

REVIT Plumbing

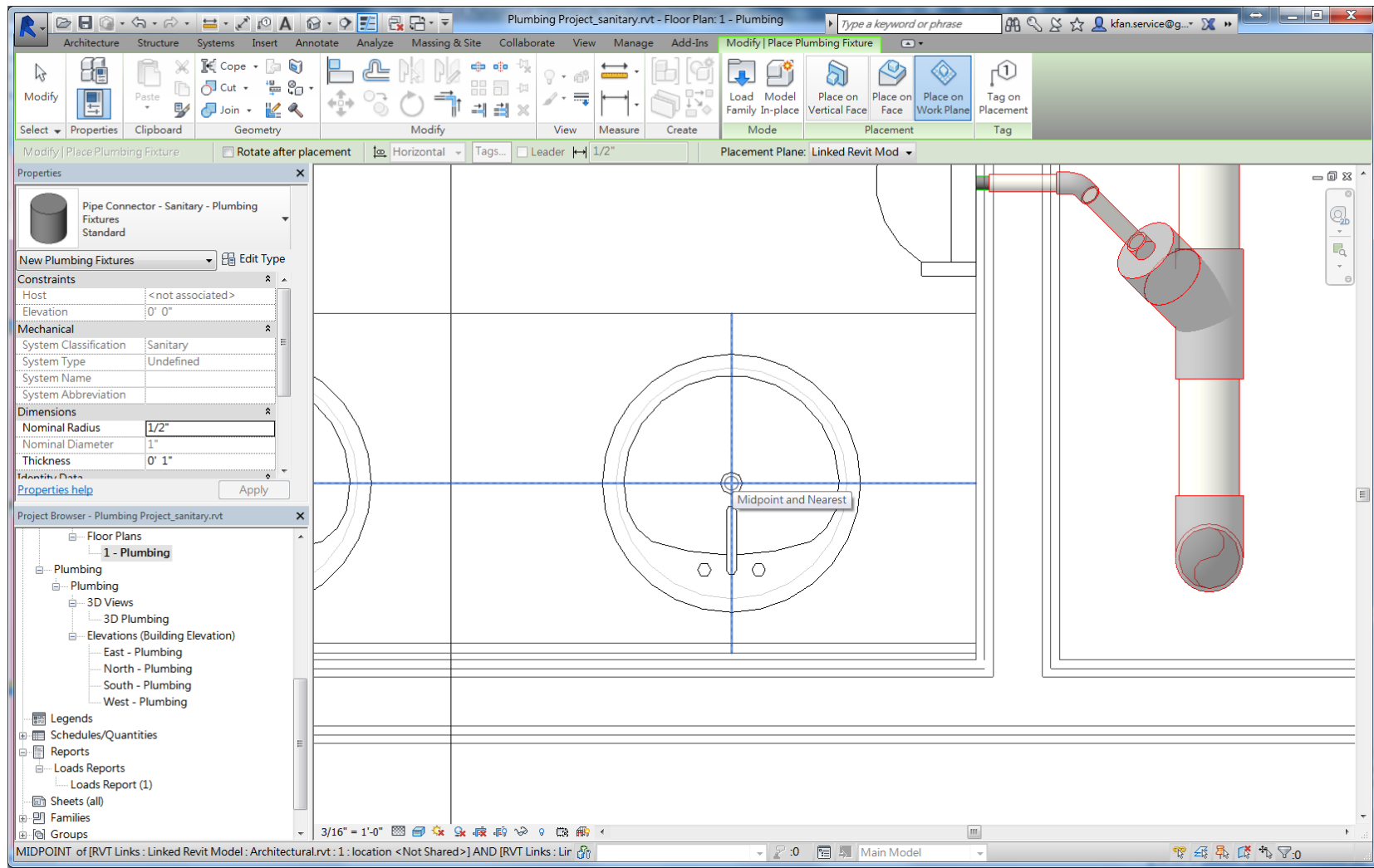
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

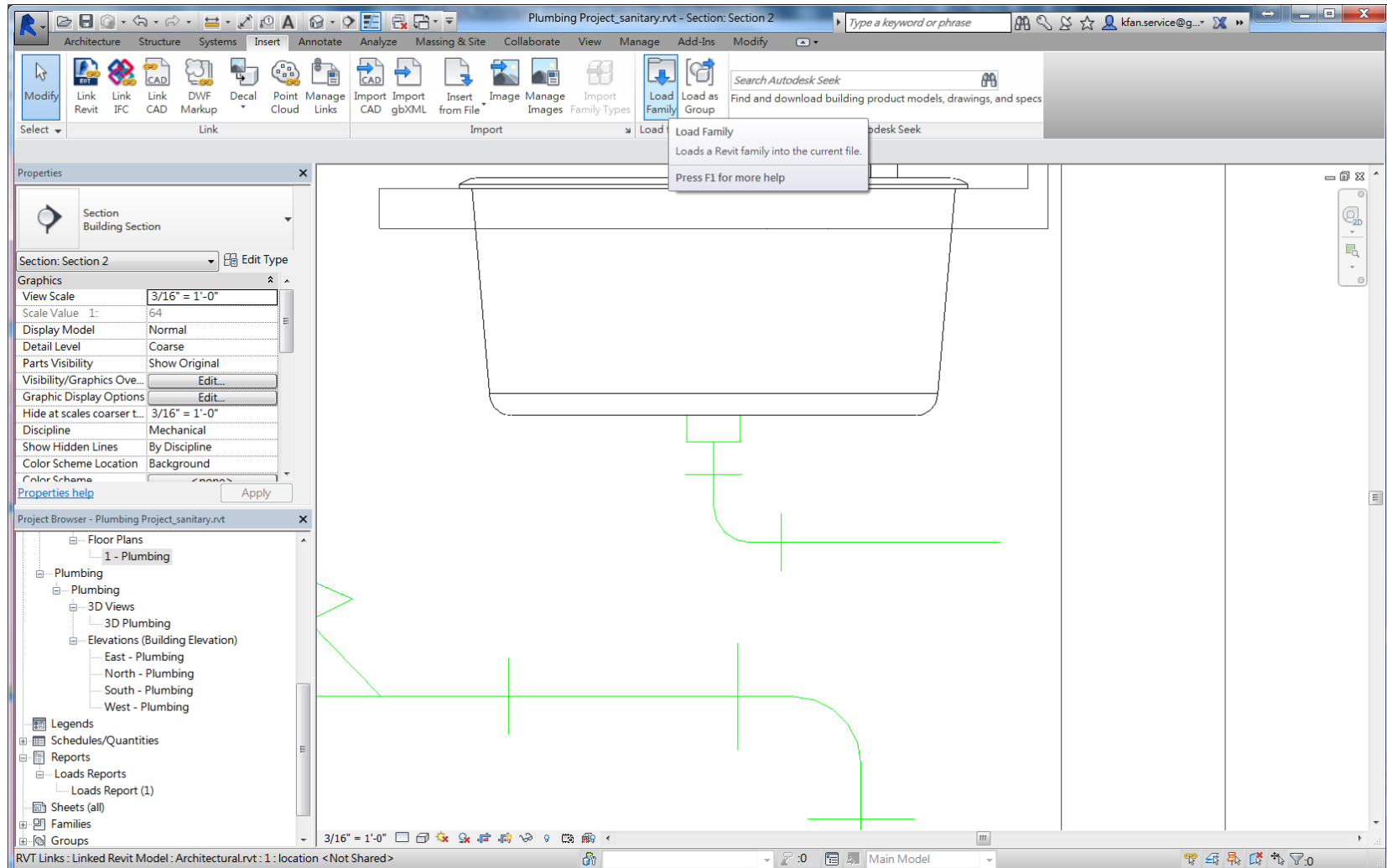
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

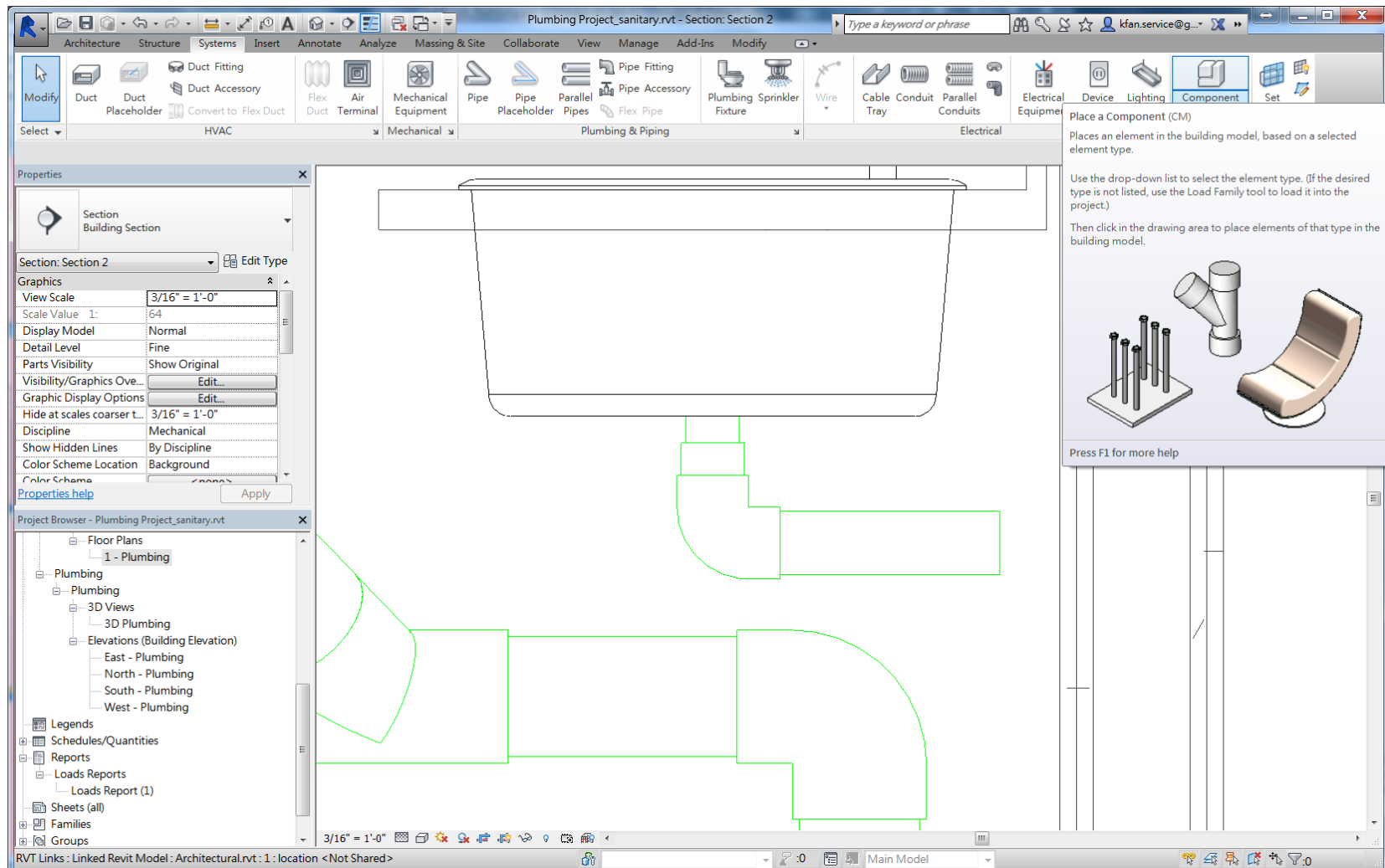
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

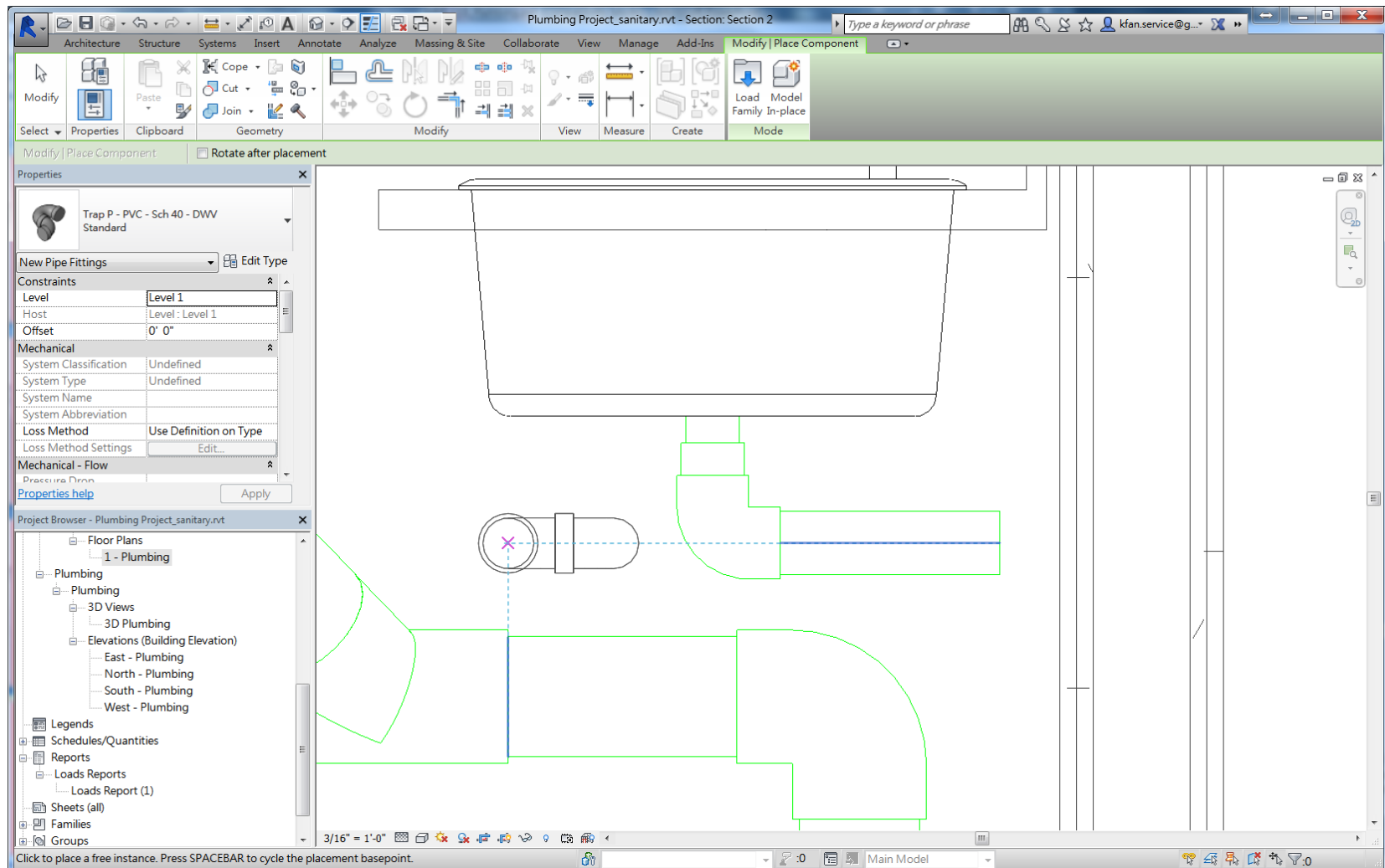
- Adding sanitary sloped piping



CELL MEP (REVIT)

REVIT Plumbing

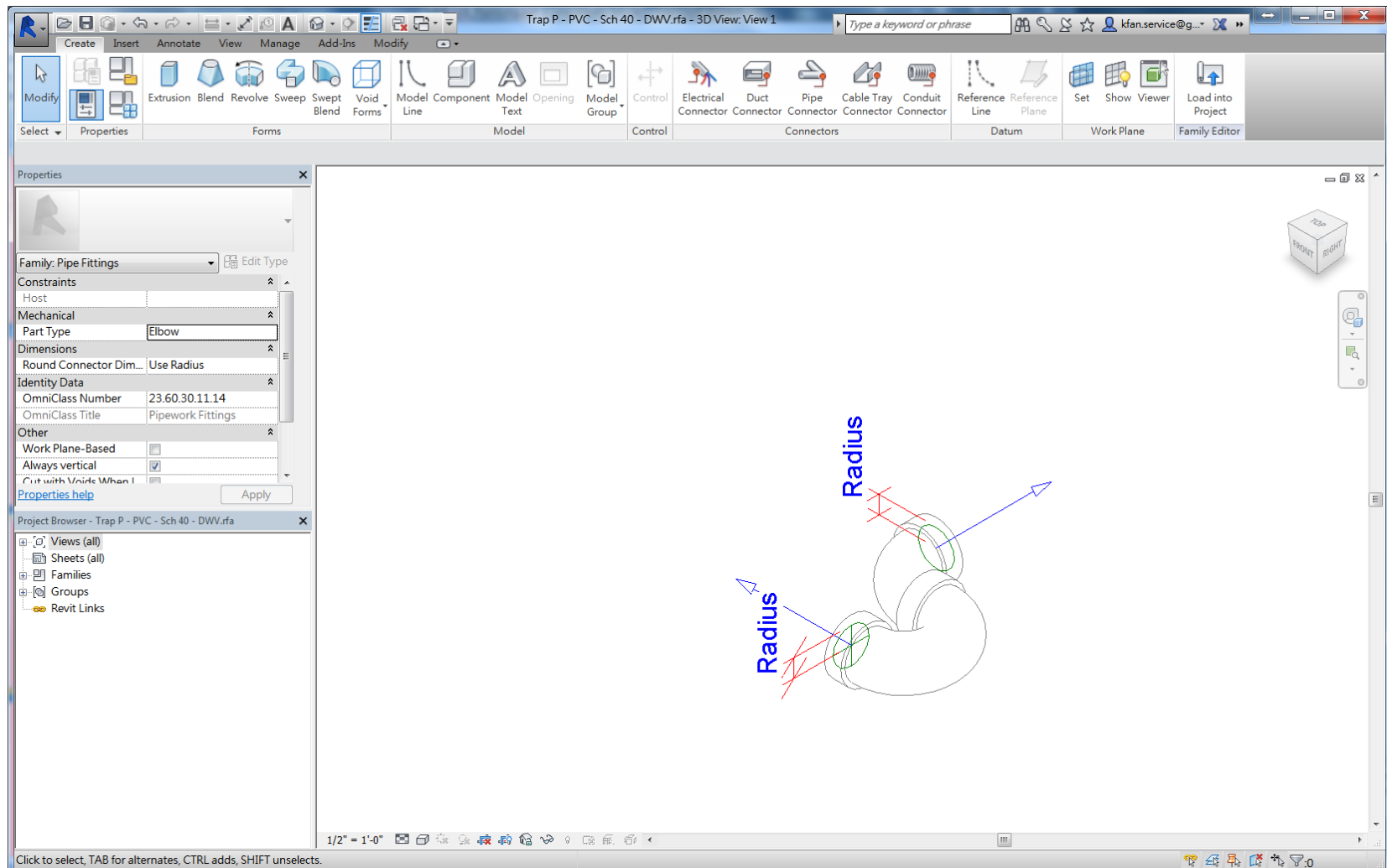
- Adding sanitary sloped piping



CELL MEP (REVIT)

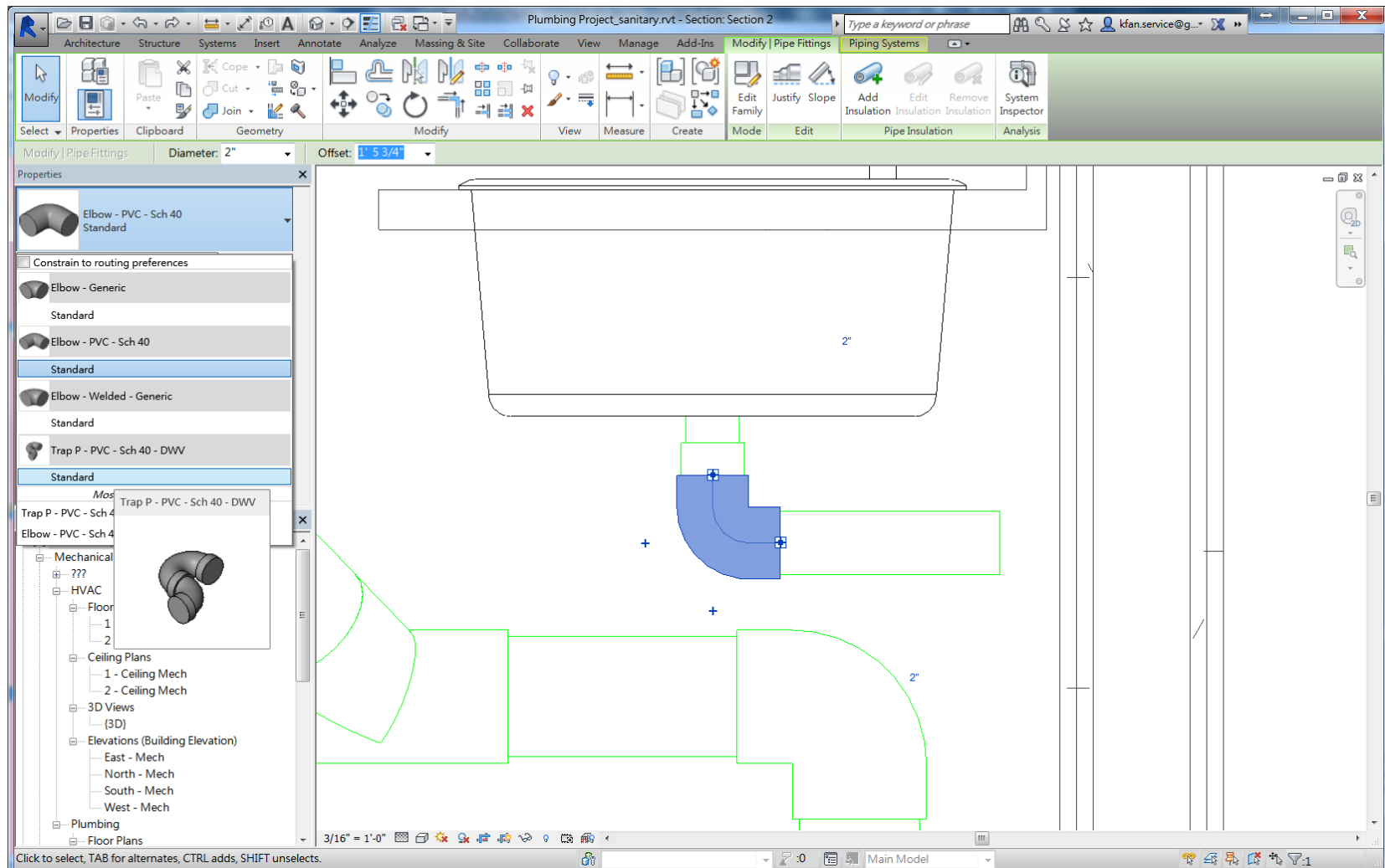
REVIT Plumbing

- Adding sanitary sloped piping



REVIT Plumbing

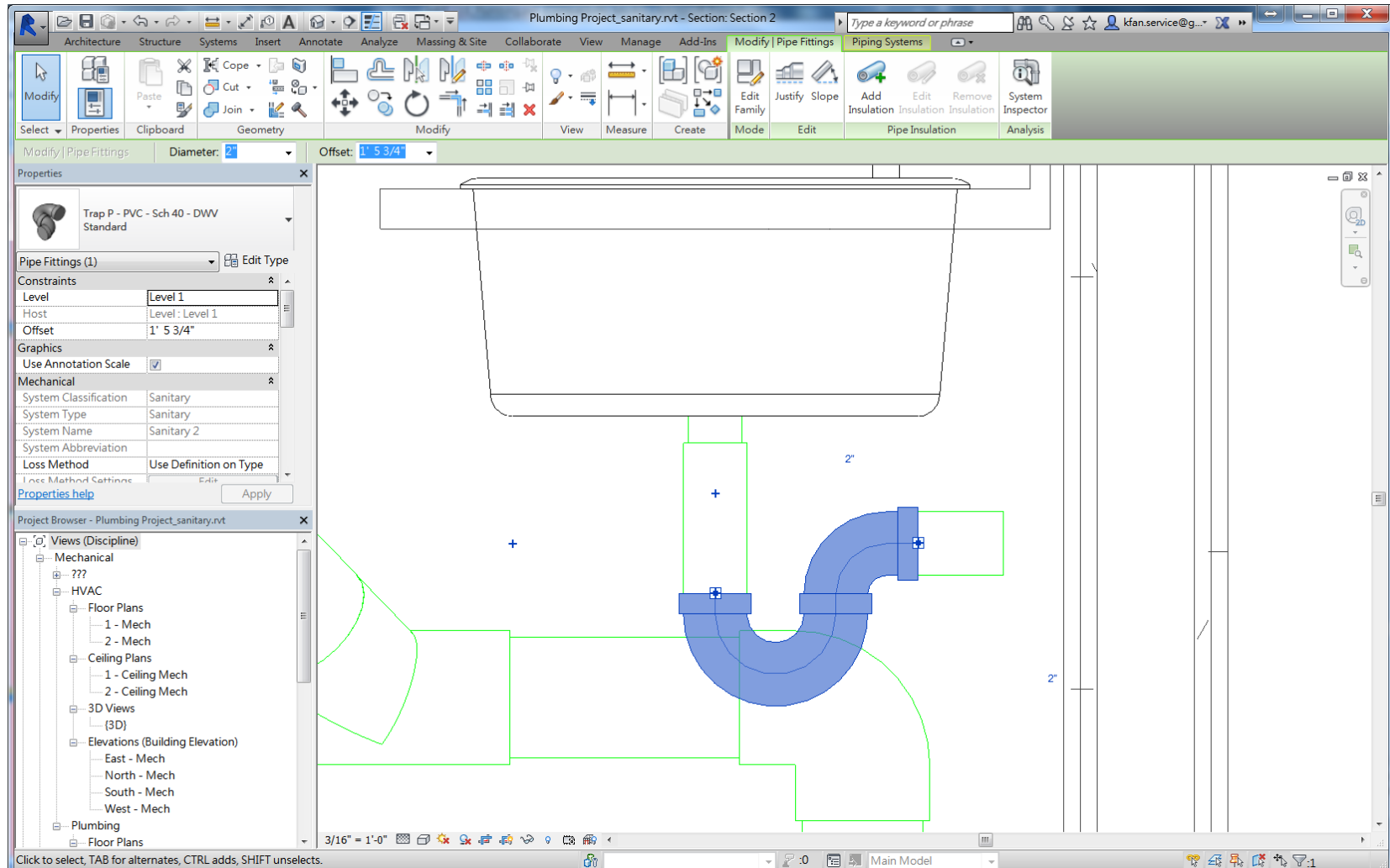
- Adding sanitary sloped piping



CELL MEP (REVIT)

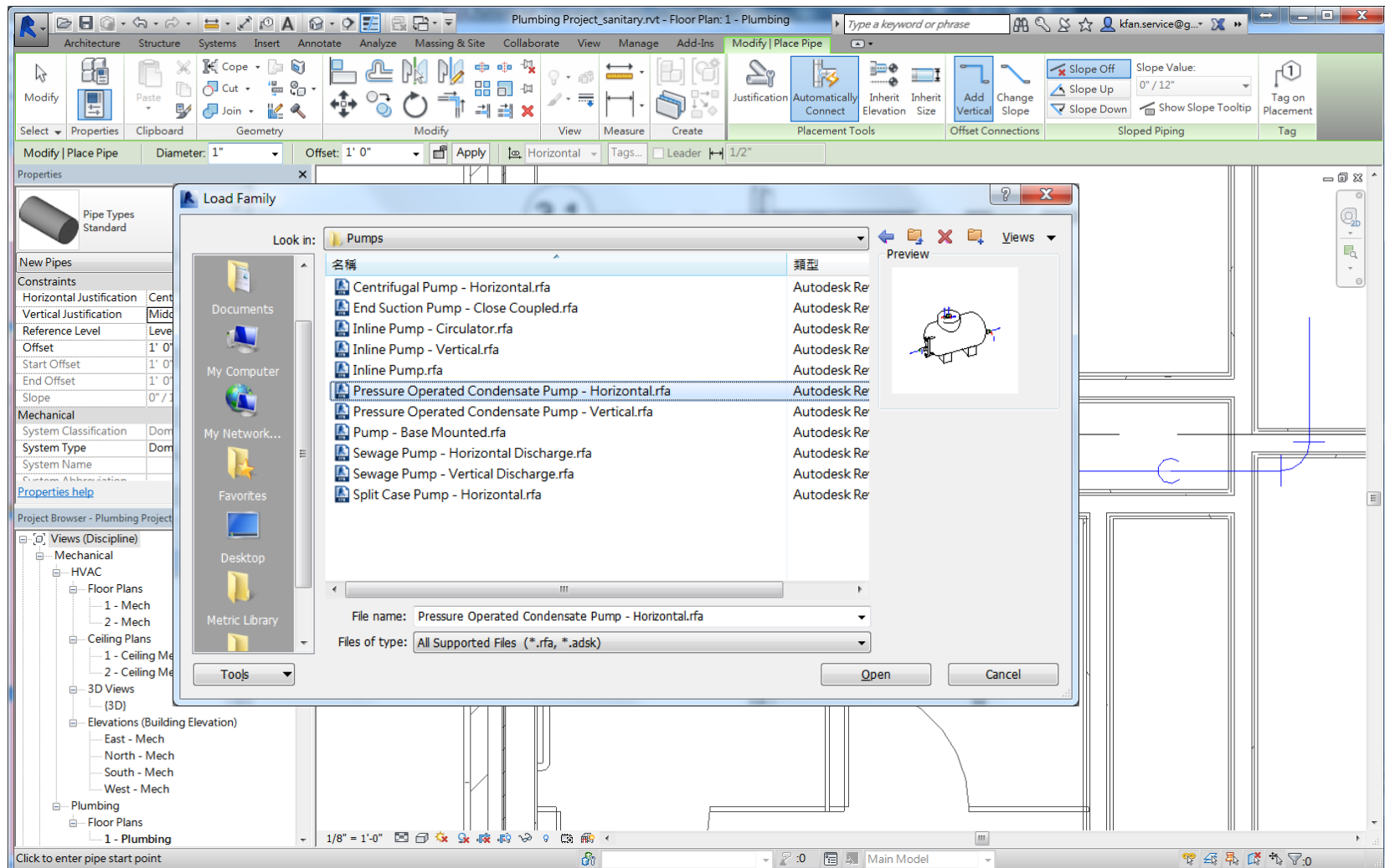
REVIT Plumbing

- Adding sanitary sloped piping



REVIT Plumbing

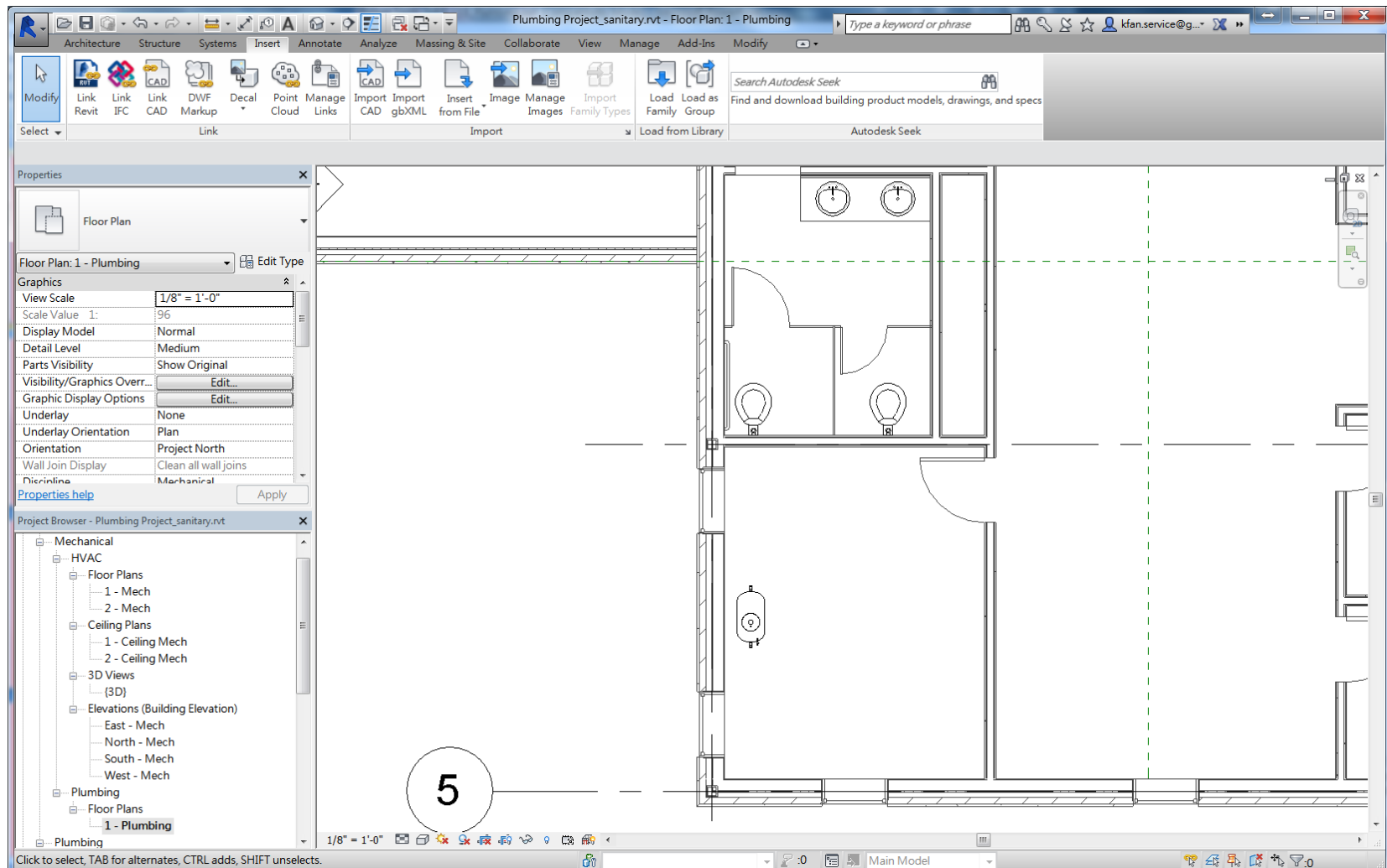
- Adding Equipment



CEI MEP (REVIT)

REVIT Plumbing

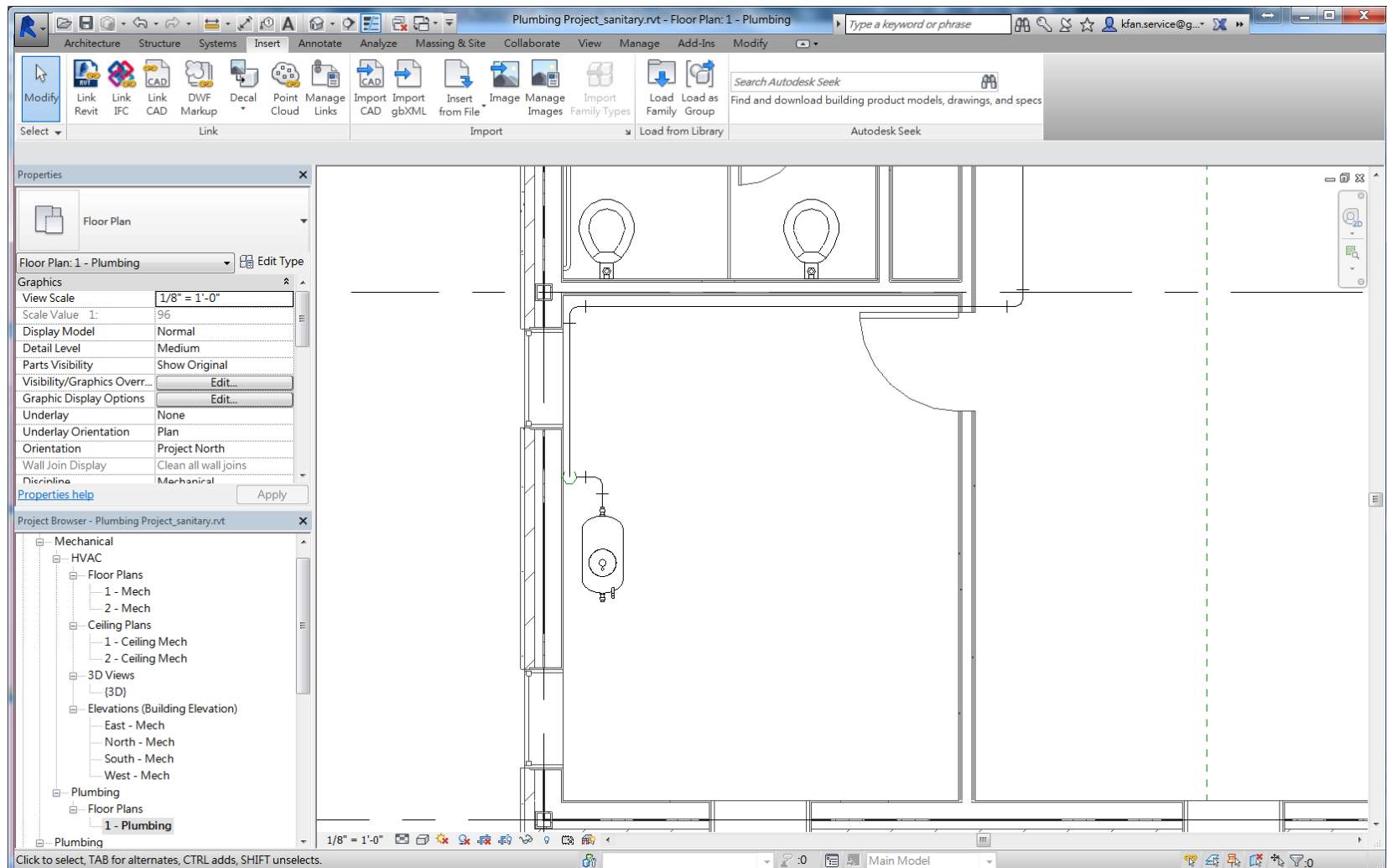
- Adding Equipment and Piping



CELL MEP (REVIT)

REVIT Plumbing

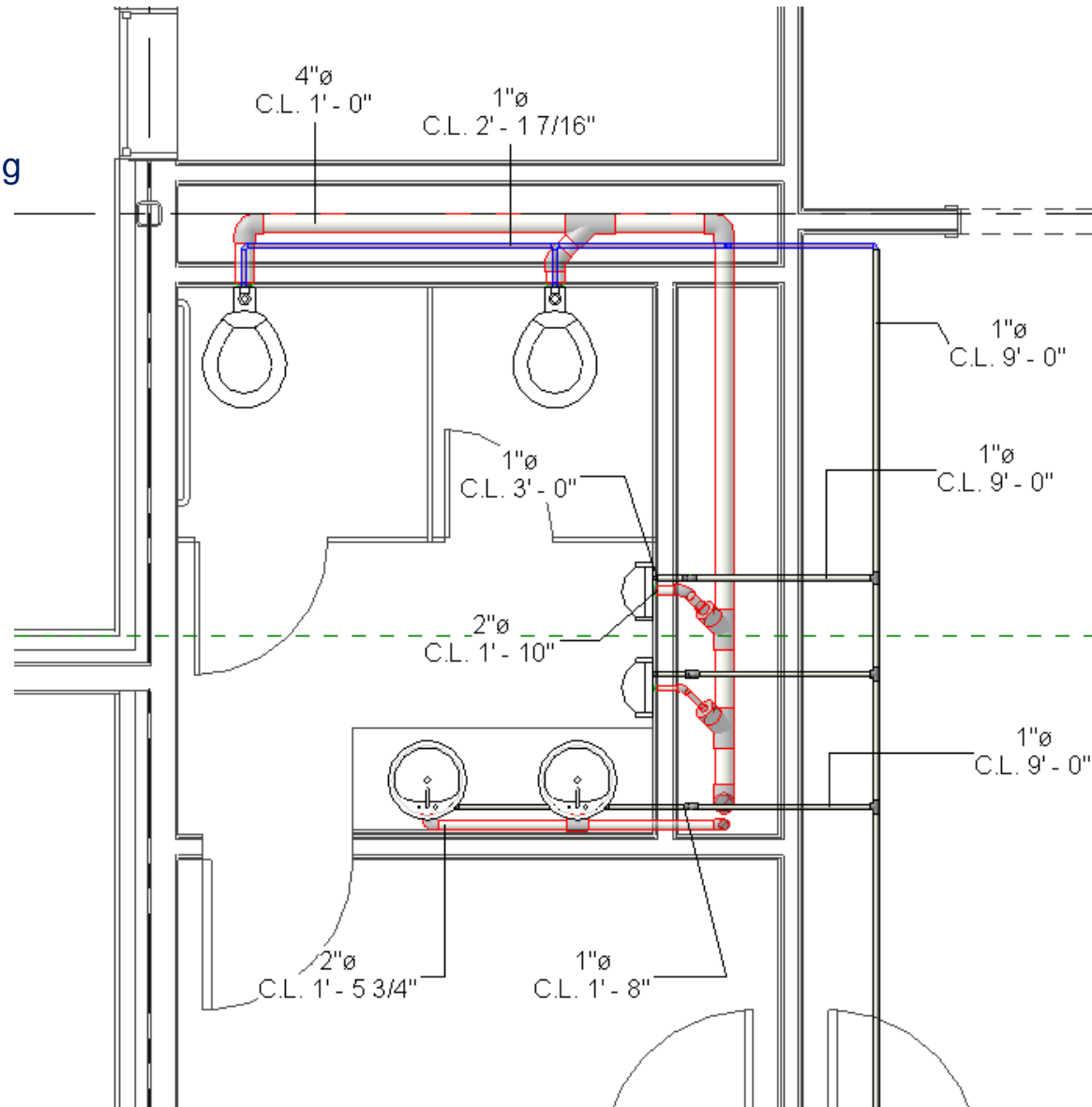
- Adding Equipment and Piping



CELL MEP (REVIT)

REVIT Mechanical

- Challenge
- Complete the Plumbing and Drainage Piping System



CELL MEP (REVIT)



ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

CEII MEP (REVIT)

REVIT Fire Protection

- Fire Protection System

Several default types of fire-protection systems

- **Fire Protection**

This can be used for the building's sprinkler piping, or it can be used for the utility fire protection coming into your building to connect the base of your fire-protection riser.

- **Wet Fire Protection**

This pipe system type is normally used for the layout of the piping from the riser to the sprinkler head when freezing is not expected.

- **Dry Fire Protection**

This pipe system type is normally used for the layout of the piping from the riser to the sprinkler head when there is potential for damage from freezing.

- **Preaction**

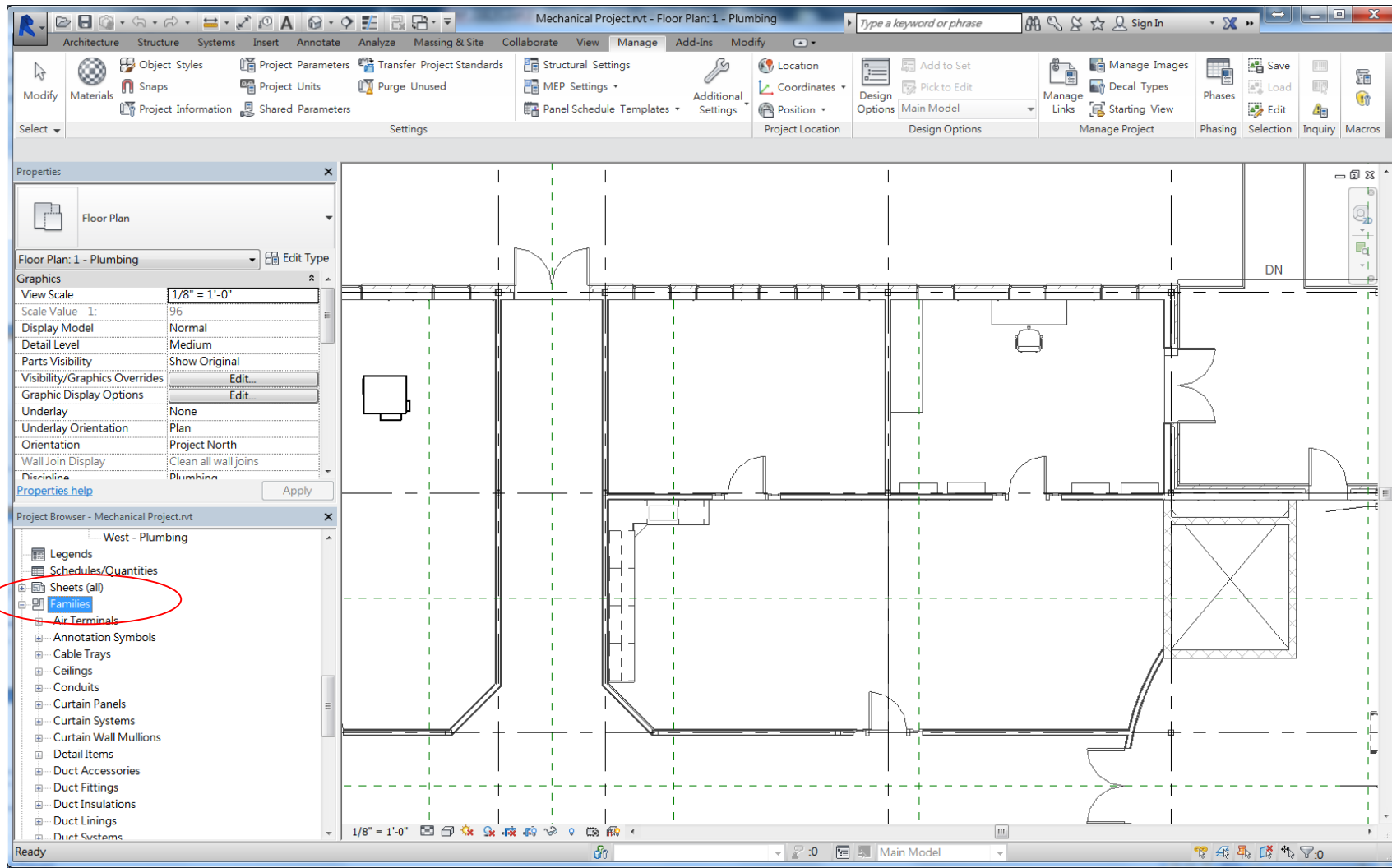
This pipe system can also be used for a deluge system.

- **Fire Protection Other**

This pipe system can be used for a glycol antifreeze system, and it can also be used for a chemical suppression system.

REVIT Fire Protection

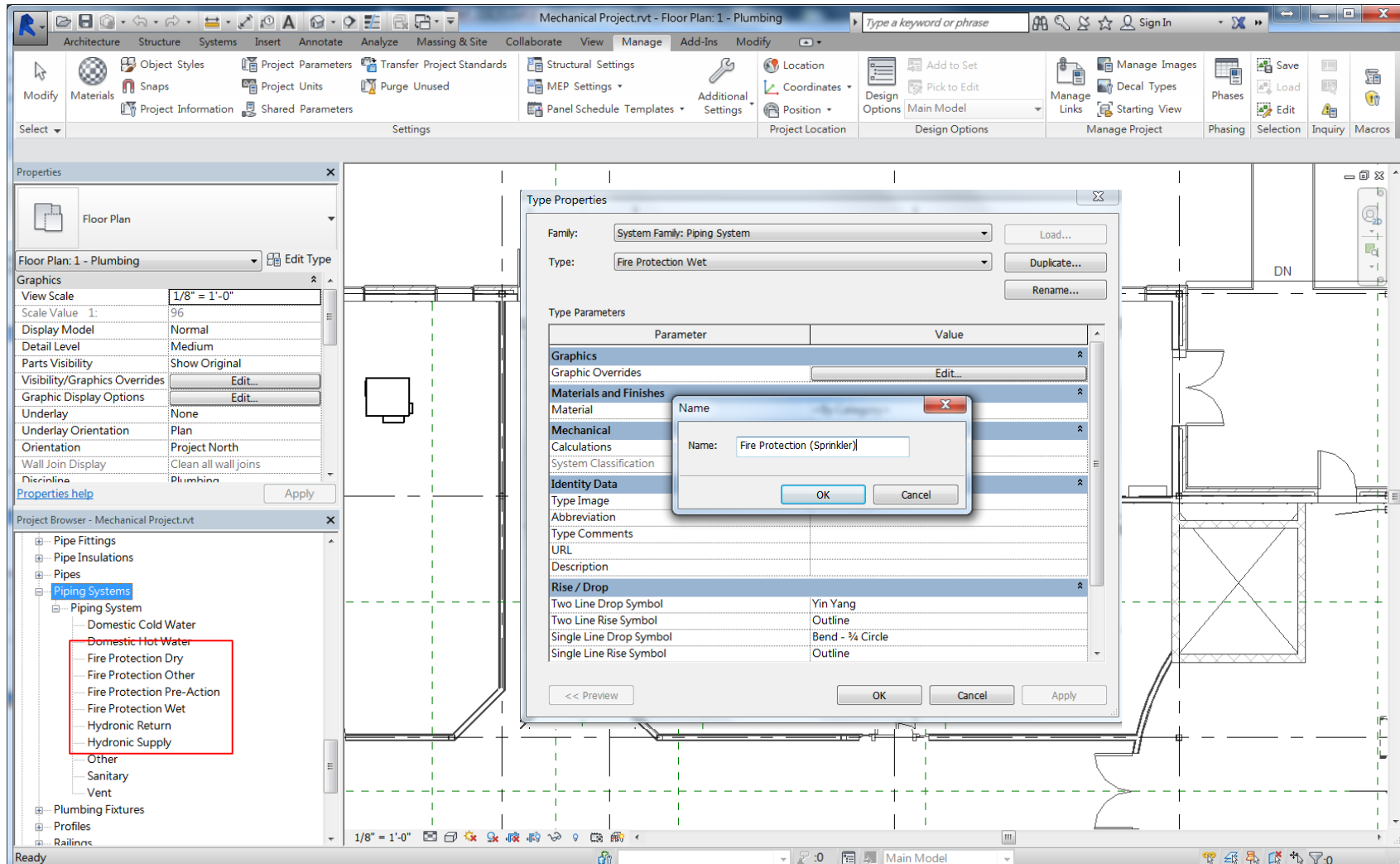
- Customized Fire Protection System



CELL MEP (REVIT)

REVIT Fire Protection

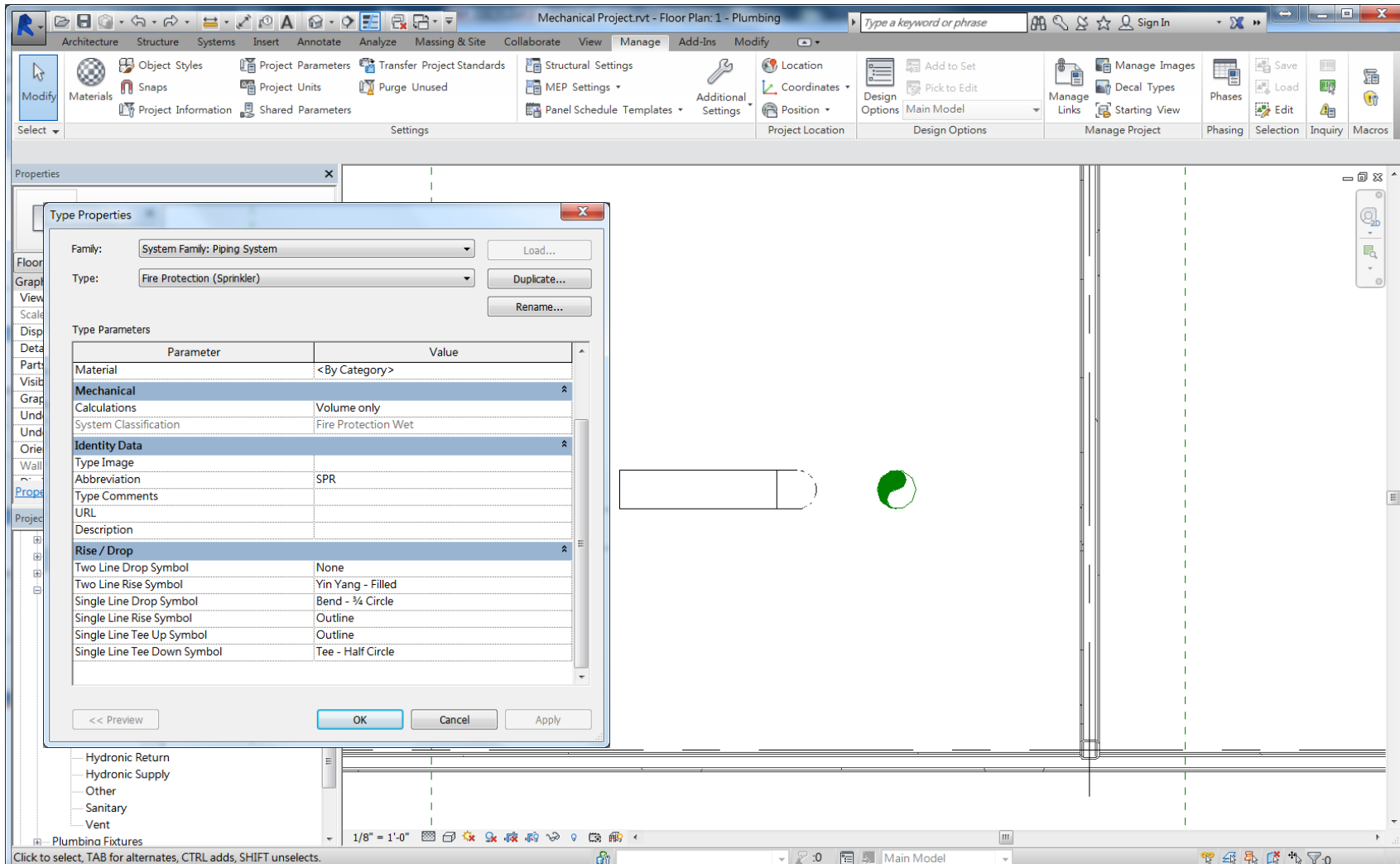
- Customized Fire Protection System



CEI MEP (REVIT)

REVIT Fire Protection

- Fire Service



CEII MEP (REVIT)

REVIT Fire Protection

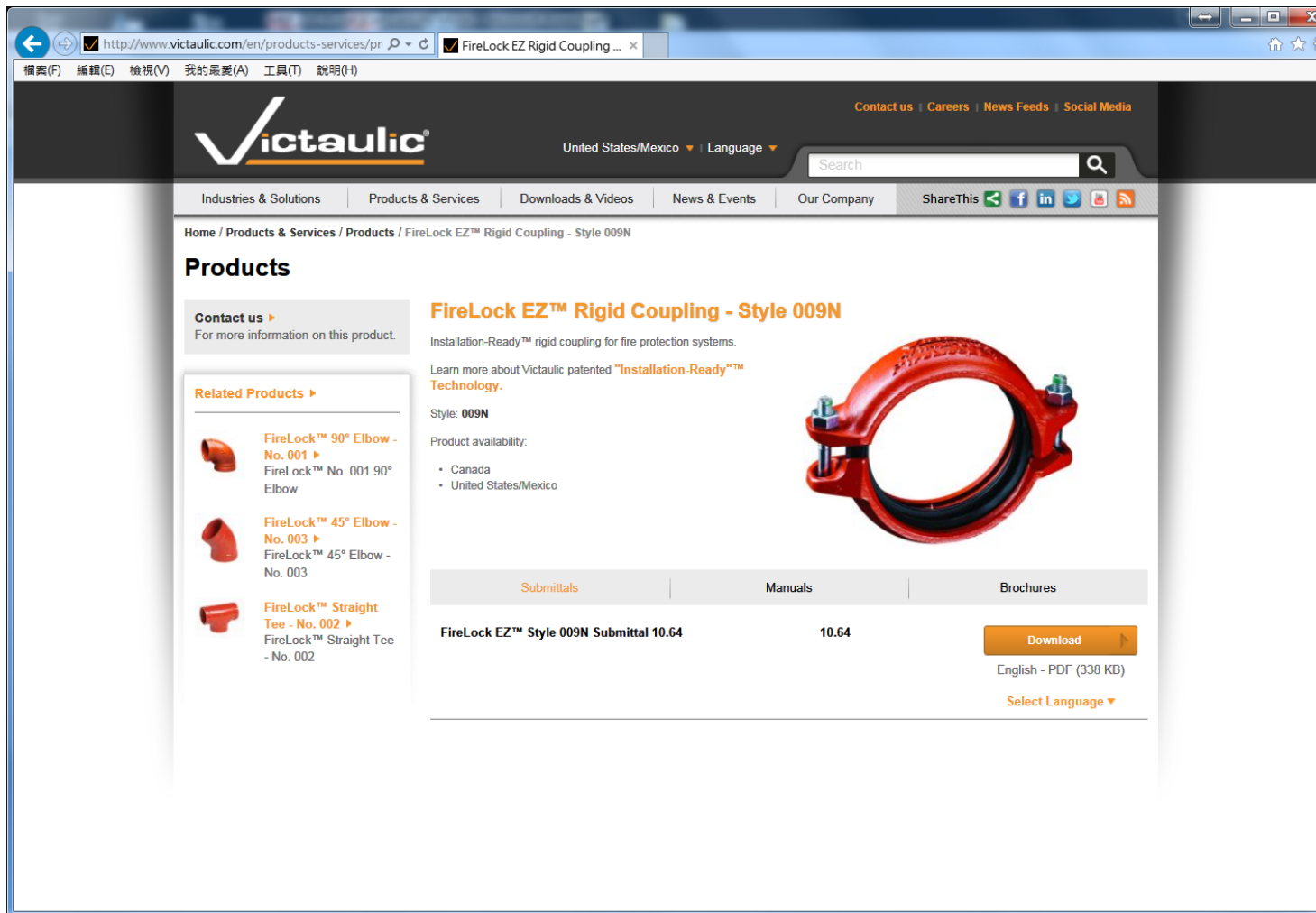
- Using Mechanical Joint Fittings

It is quite common to use mechanical joints required on fire-protection systems. Because they do not exist in the out-of-box content of Revit MEP

- Use regular fittings and then copy and rename them to the type of fittings you need, as was demonstrated for the fire pump. Then you can use schedules to count the number and make of the fittings.
- Create your own custom fittings. This requires that you have enough time and money to create every fitting you need
- Find a manufacturer that has already developed their content.

REVIT Fire Protection

- Using Mechanical Joint Fittings

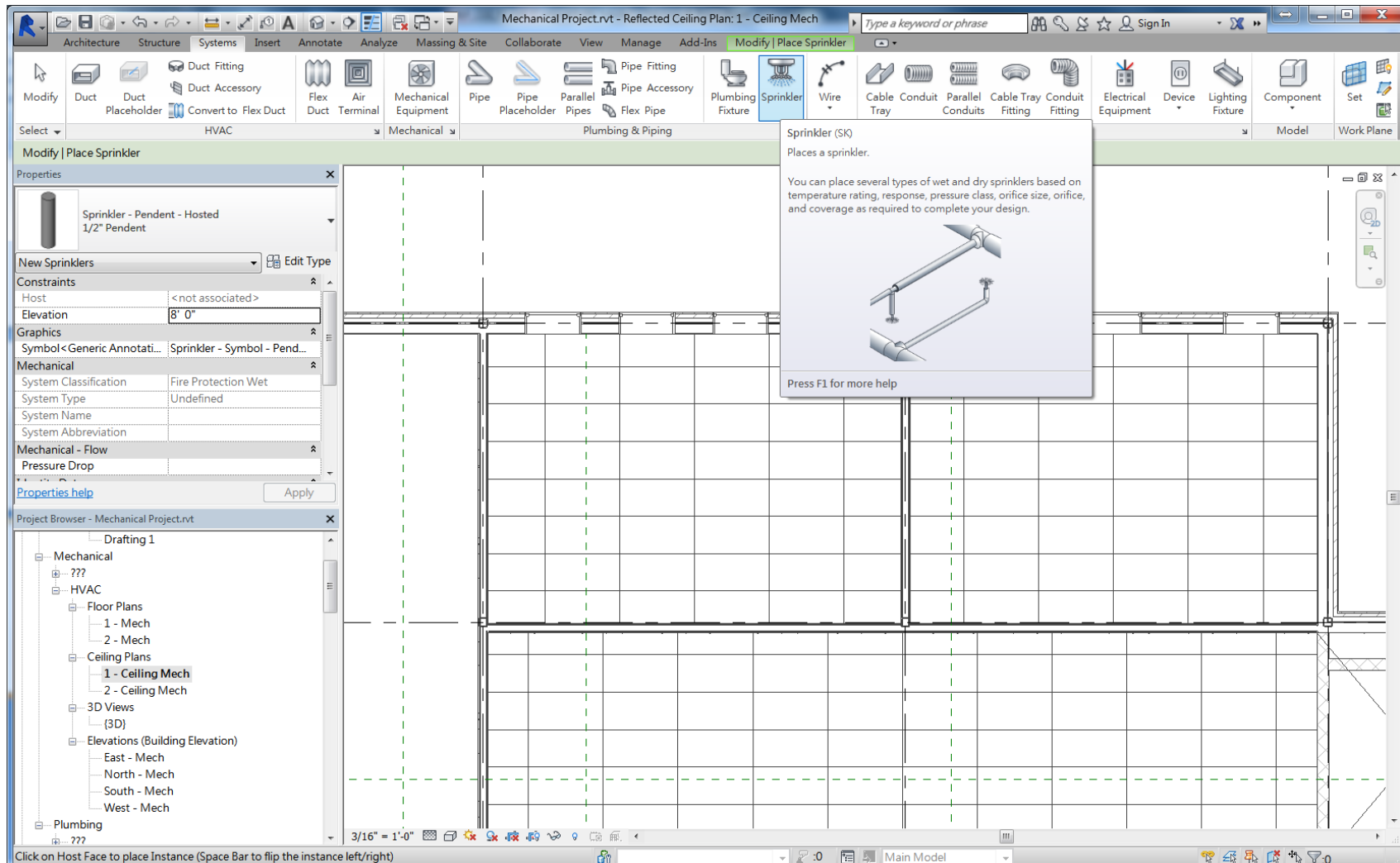


CEII MEP (REVIT)

REVIT Fire Protection

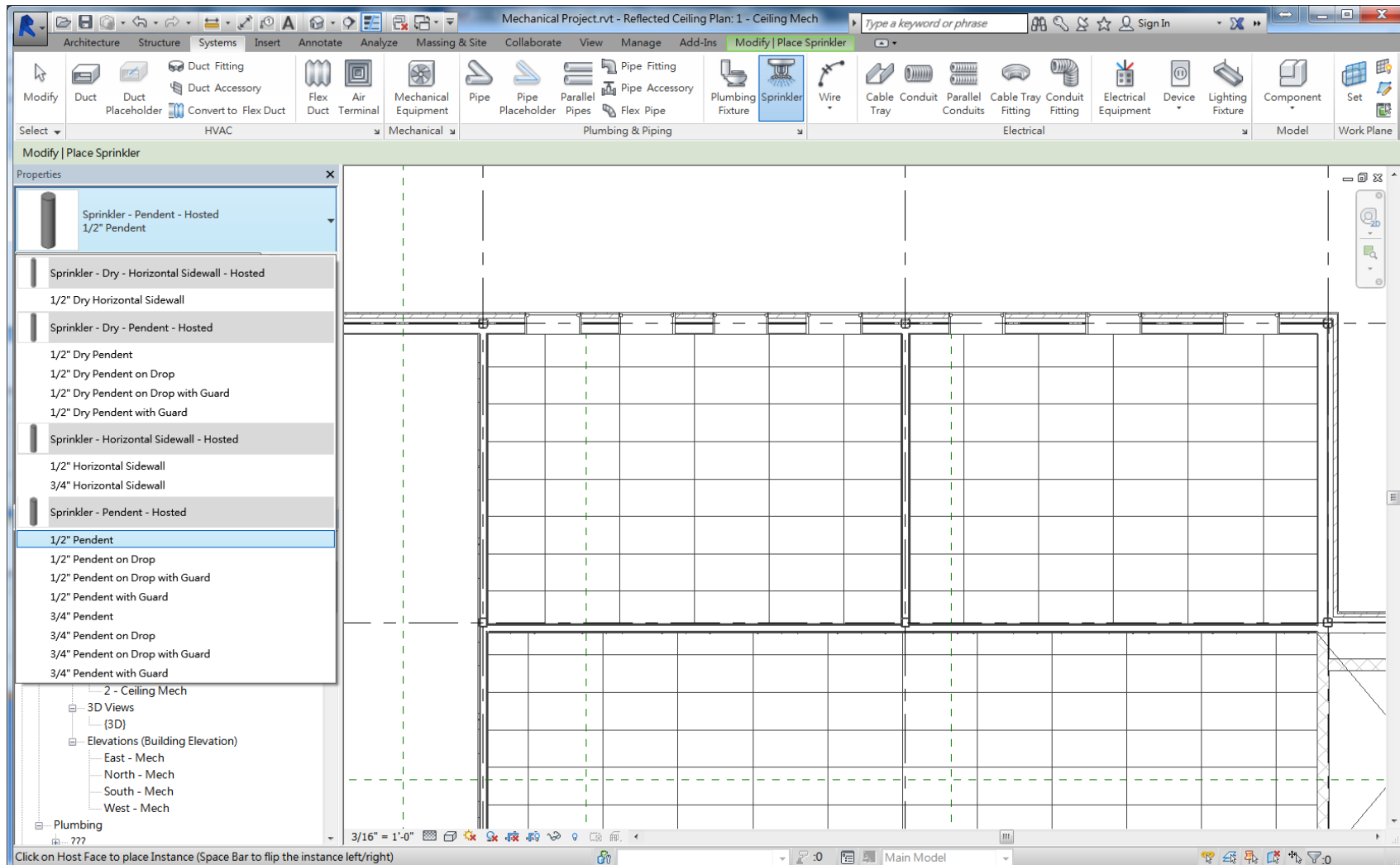
- Fire Protection View
- Sprinkler Layout – Ceiling Plan
- FS Layout – Floor Plan
FS Water Supply, FH / HR pipe etc.
- Fire Alarm System Layout – Ceiling Plan / Floor Plan
Heat / Smoke Detector, FS device(s)
- FM2000 – Floor Plan

- Create Sprinkler System



REVIT Fire Protection

- Create Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

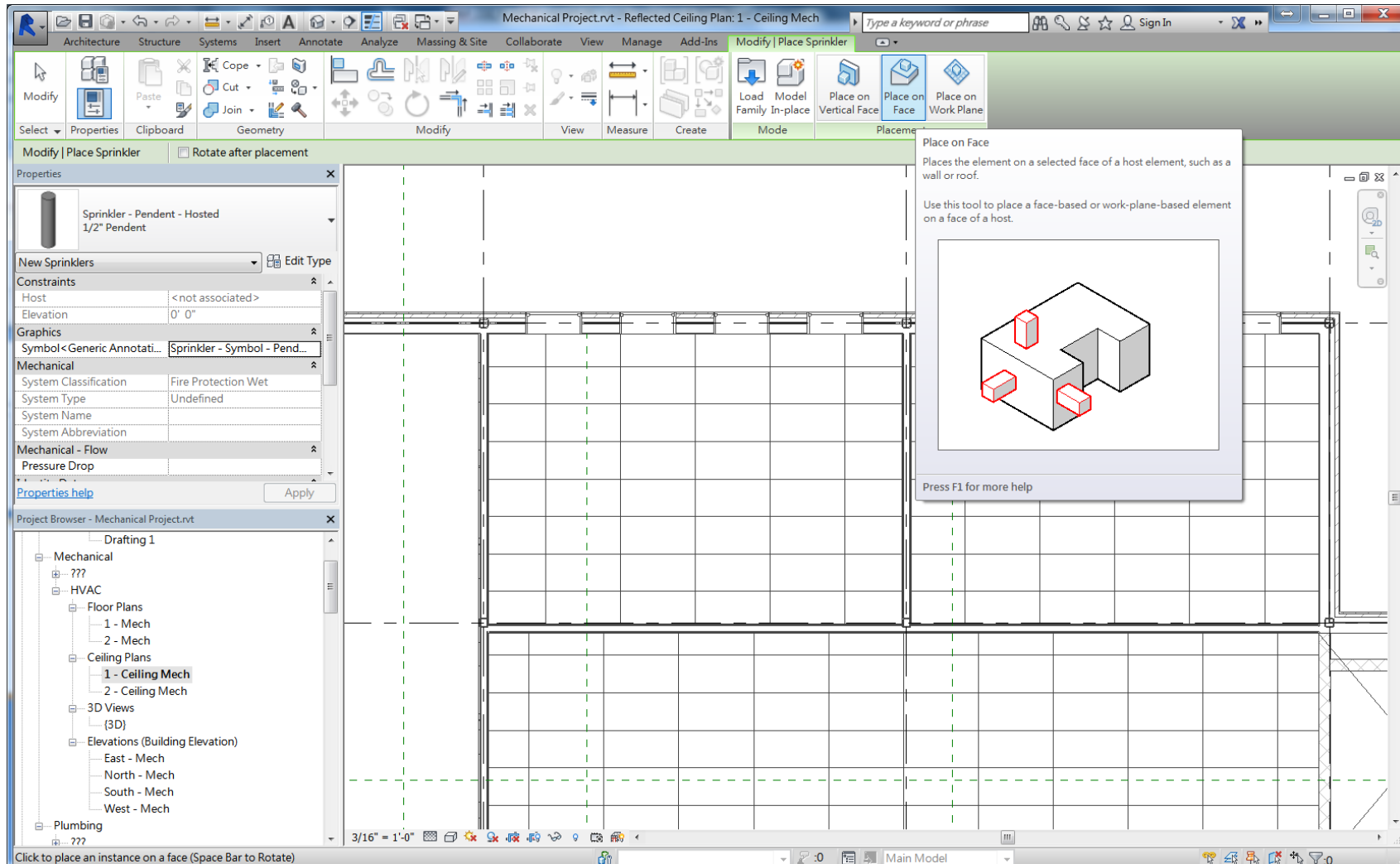
- Fire Protection View

- **Hosted Type**

Face-hosted type move with their associated hosts. This keeps sprinkler at the correct elevations when ceiling heights change. sprinkler mounted to vertical host faces, such as walls, also move with changes to the vertical host locations. It can also be hosted by reference planes within the project. In an area with no ceiling, a reference plane or level can be created to host lighting fixtures at a specific elevation.

REVIT Fire Protection

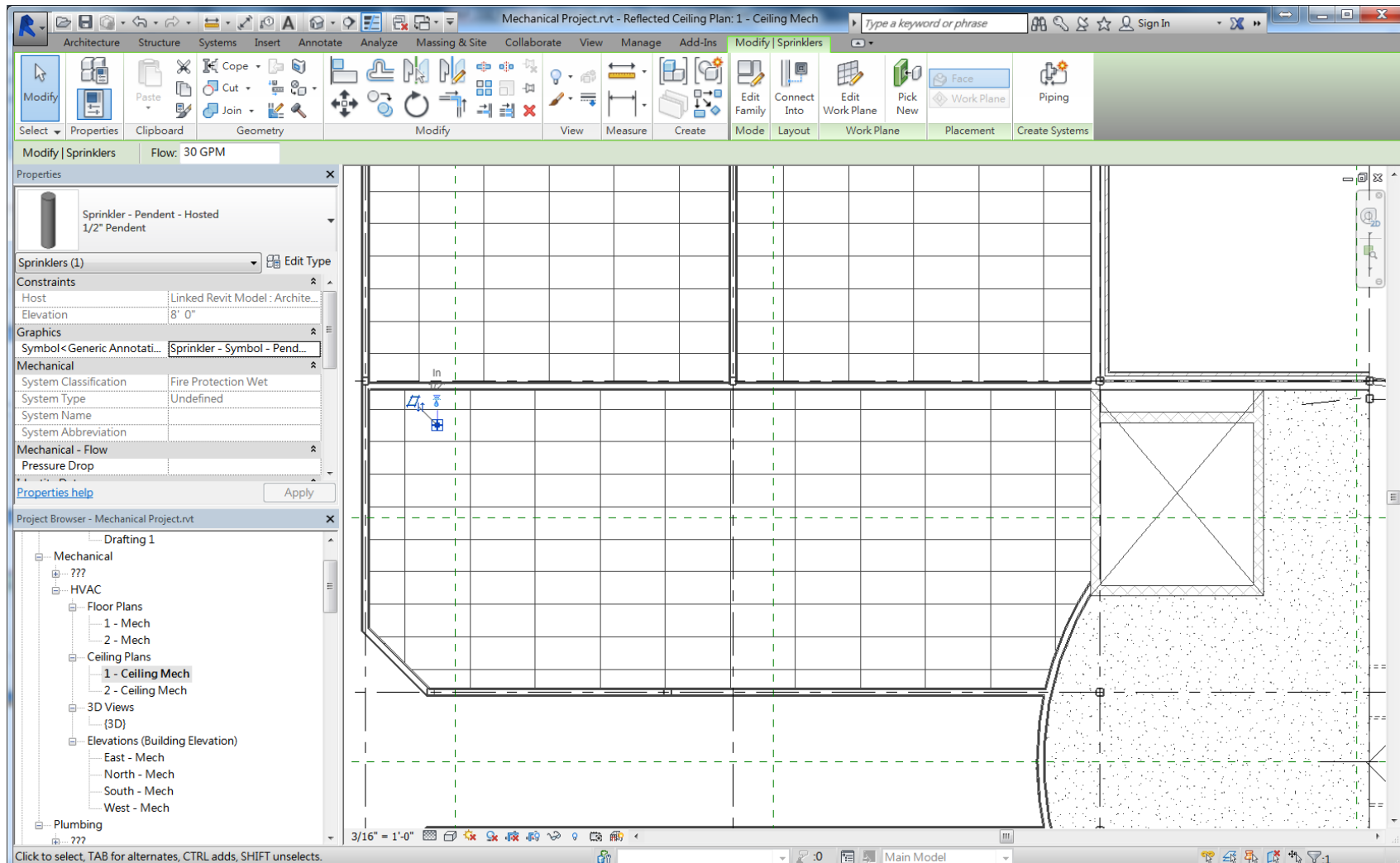
- Create Sprinkler System



CEII MEP (REVIT)

REVIT Fire Protection

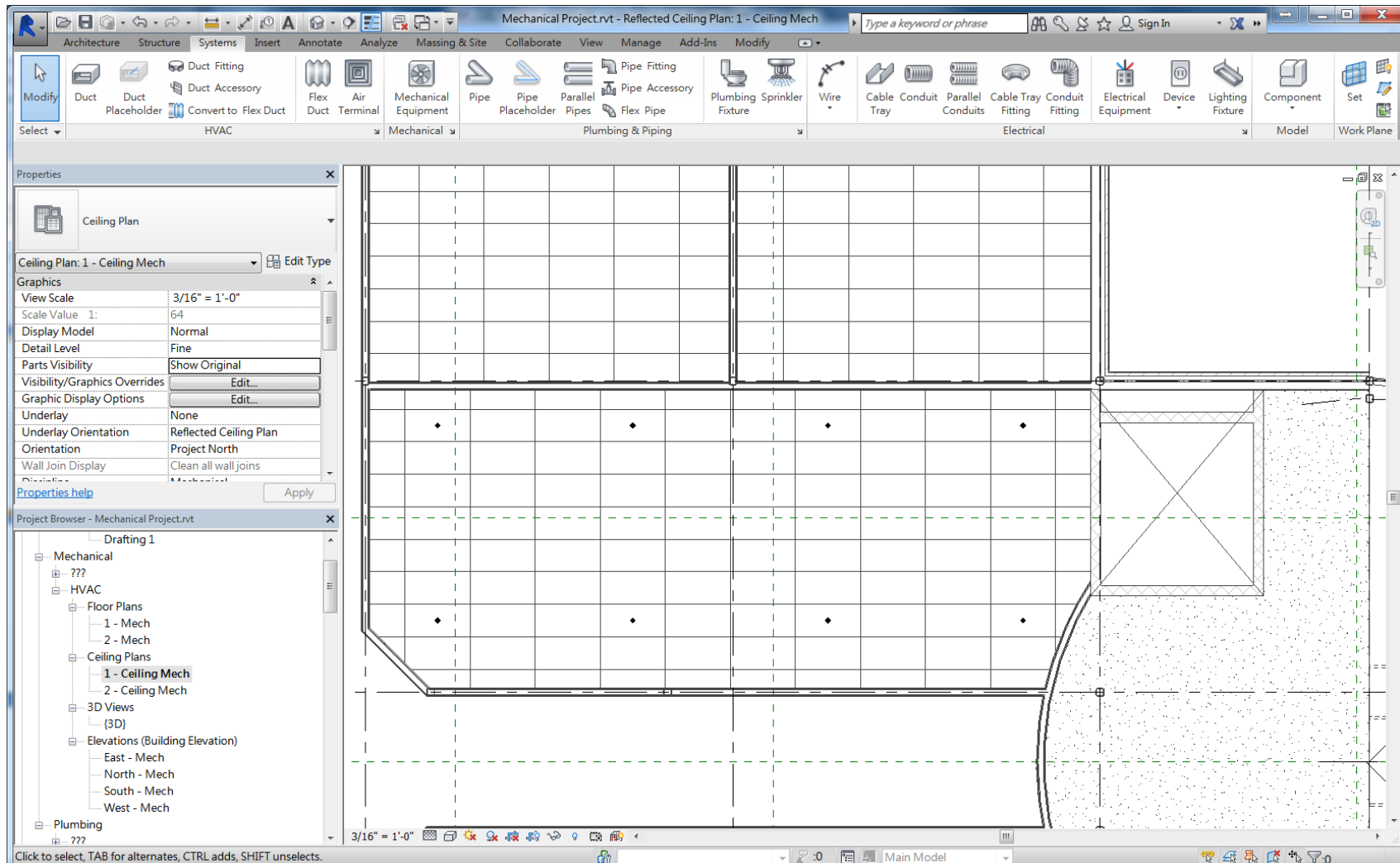
- Create Sprinkler System



CEII MEP (REVIT)

REVIT Fire Protection

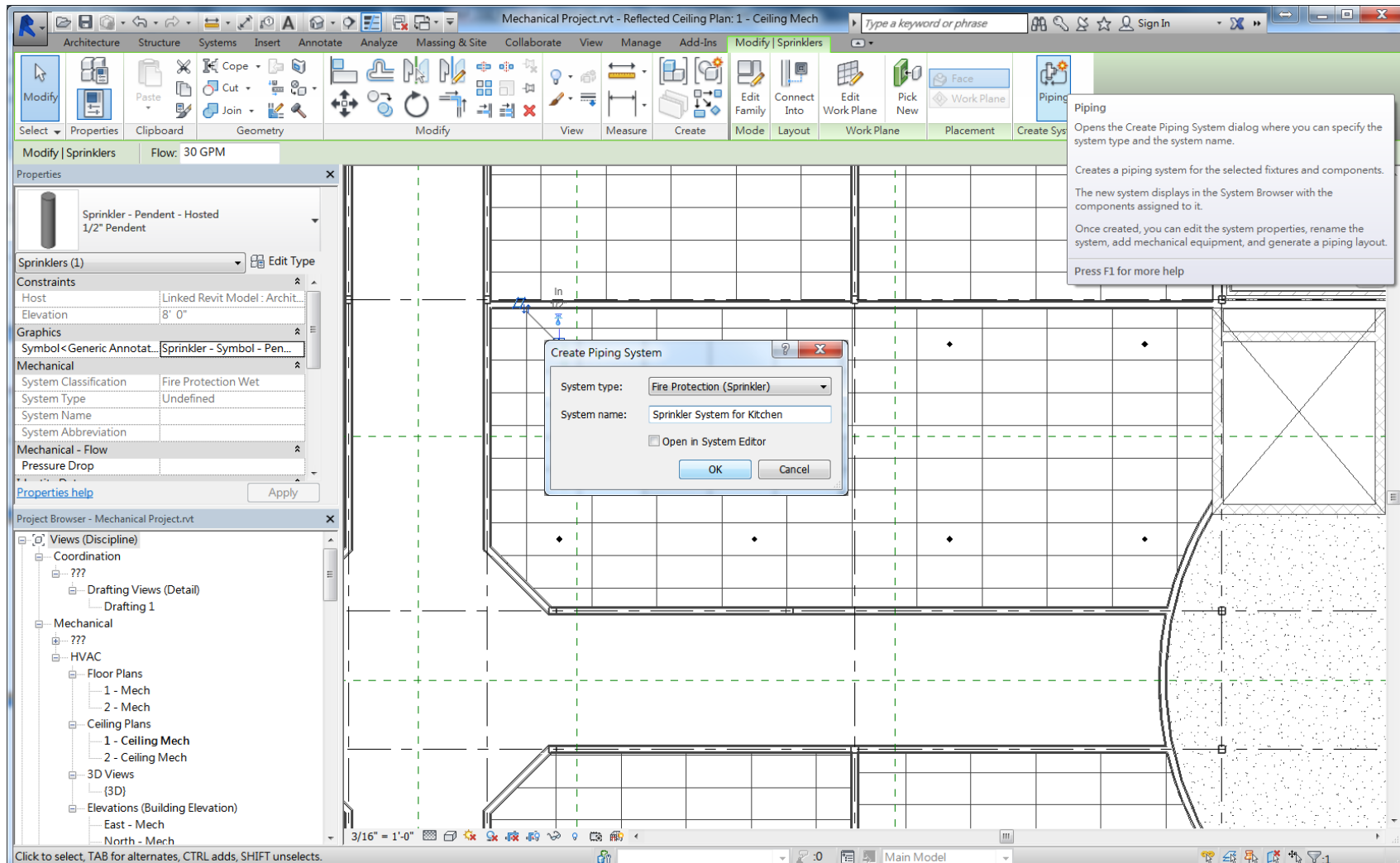
- Create Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

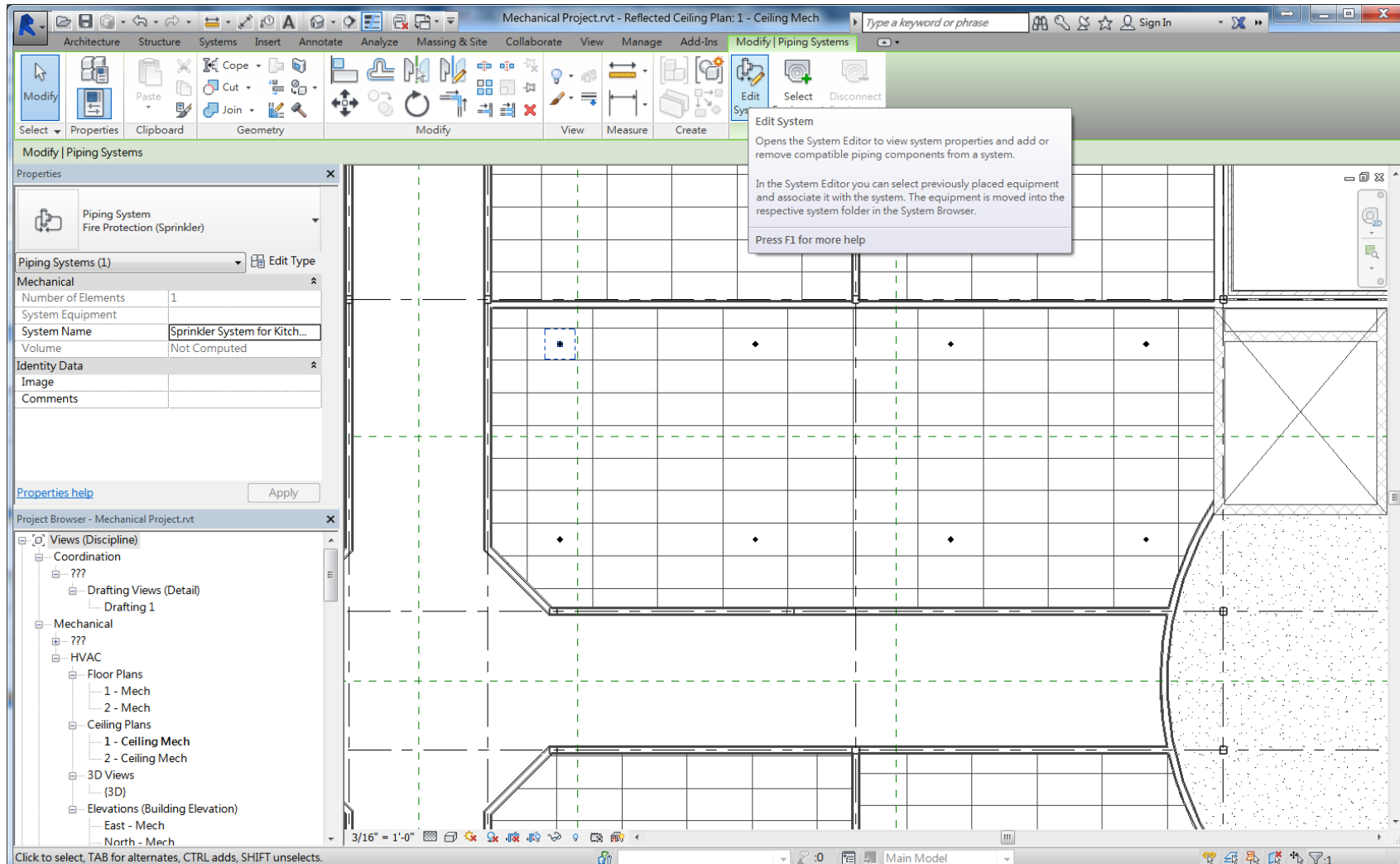
- Create Sprinkler System



CEII MEP (REVIT)

REVIT Fire Protection

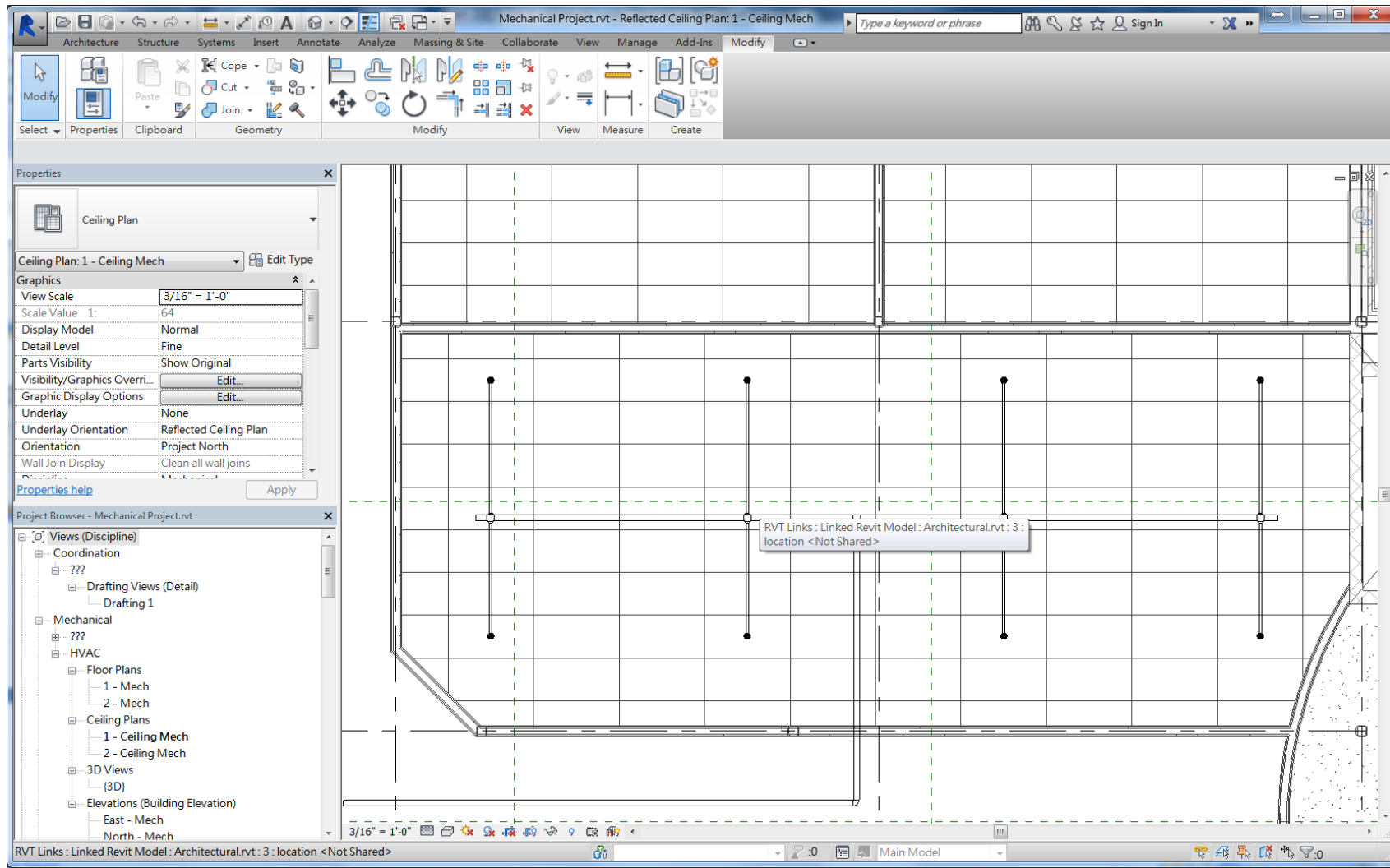
- Create Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

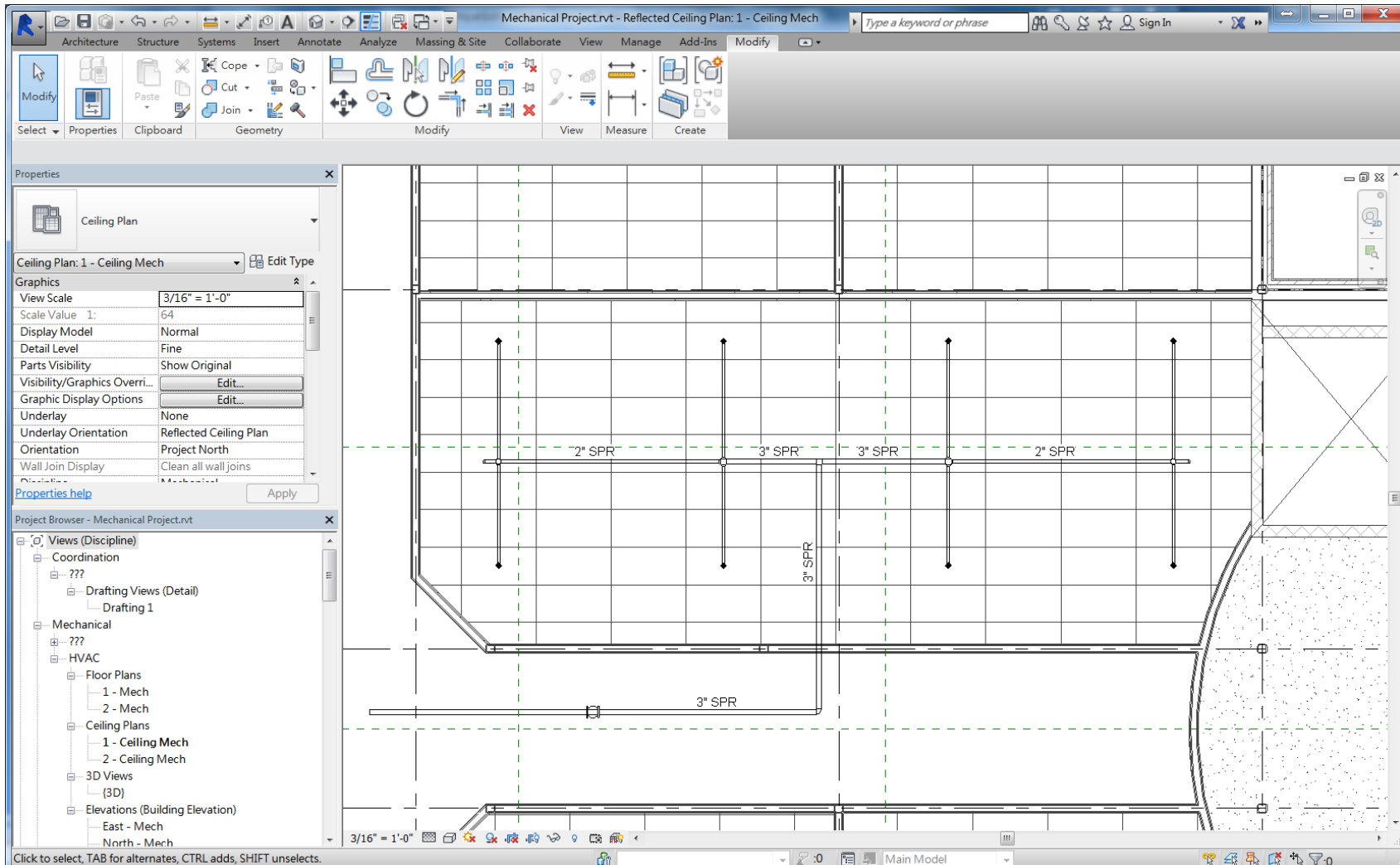
- Create Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

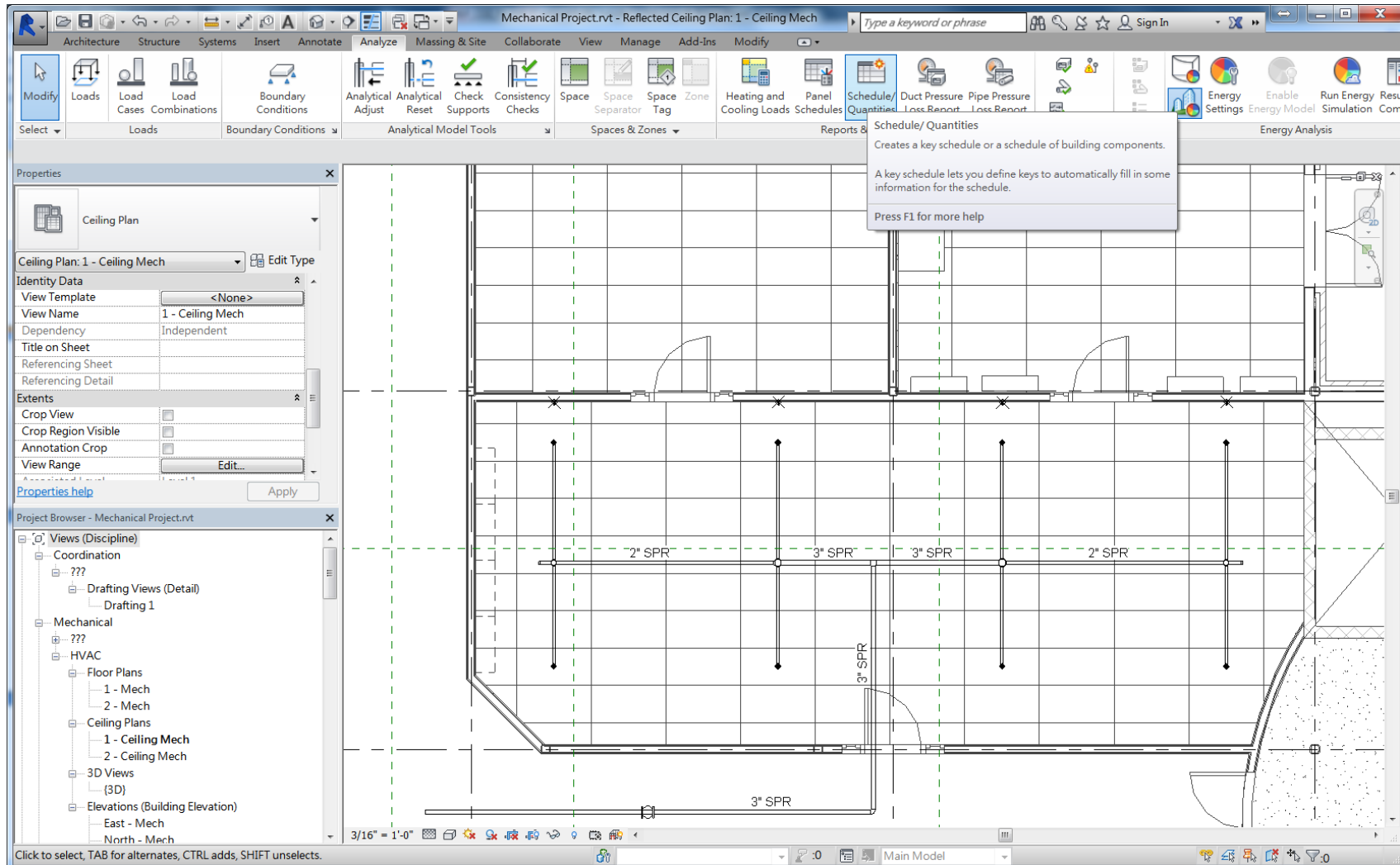
- Create Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

- Adding Schedule for Sprinkler System



CEILING MEP (REVIT)

REVIT Fire Protection

- Adding Schedule for Sprinkler System

The screenshot displays the Revit MEP interface with the 'Mechanical Project.rvt - Schedule: Sprinkler Schedule' window open. The 'Modify Schedule/Quantities' ribbon is active, showing various tools for editing the schedule. The 'Properties' panel on the left shows the 'Schedule: Sprinkler Schedule' with a 'View Template' of '<None>' and a 'View Name' of 'Sprinkler Schedule'. The 'Schedule Properties' dialog box is open, showing the 'Fields' tab with 'Type' selected for sorting. The 'Schedule' table in the center lists 12 items, all with a 'Type' of '1/2" Pendant' and a 'Comments' field. The 'Project Browser' on the left shows the project structure, including 'Views (Discipline)', 'Coordination', 'Drafting Views (Detail)', 'Drafting 1', 'Mechanical', 'HVAC', 'Floor Plans', 'Ceiling Plans', '3D Views', and 'Elevations (Building Elevation)'. The 'Schedule Properties' dialog box has the following settings: 'Sort by: Type' (Ascending), 'Then by: (none)' (Ascending), 'Grand totals: Title, count, and totals' (Custom grand total title: Grand total), and 'Itemize every instance' (unchecked).

A	B	C
Count	Type	Type Comments
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant	
1	1/2" Pendant on Drop with Guard	
1	1/2" Pendant on Drop with Guard	
1	1/2" Pendant on Drop with Guard	
1	1/2" Pendant on Drop with Guard	

REVIT Fire Protection

- Adding Schedule for Sprinkler System

The screenshot shows the Revit MEP software interface with the 'Sprinkler Schedule' window open. The window displays a table with columns A, B, and C, and rows for Count, Type, and Type Comments. The table lists 8 items: 1/2\"/>

A	B	C
Count	Type	Type Comments
8	1/2" Pendant	
4	1/2" Pendant on Drop with Guard	
4	1/2" Pendant on Drop with Guard	
Grand total: 12		

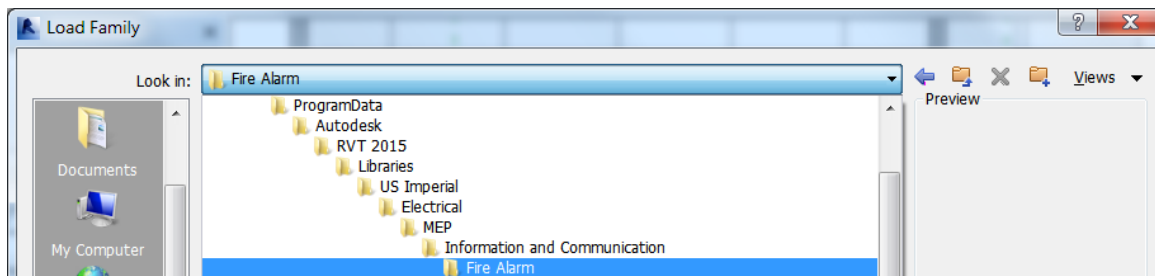
The Project Browser on the left shows the hierarchy: Views (Discipline) > Coordination > ??? > Drafting Views (Detail) > Drafting 1 > Mechanical > ??? > HVAC > Floor Plans > 1 - Mech > 2 - Mech > Ceiling Plans > 1 - Ceiling Mech > 2 - Ceiling Mech > 3D Views > (3D) > Elevations (Building Elevation) > East - Mech > North - Mech.

CELL MEP (REVIT)

REVIT Fire Protection

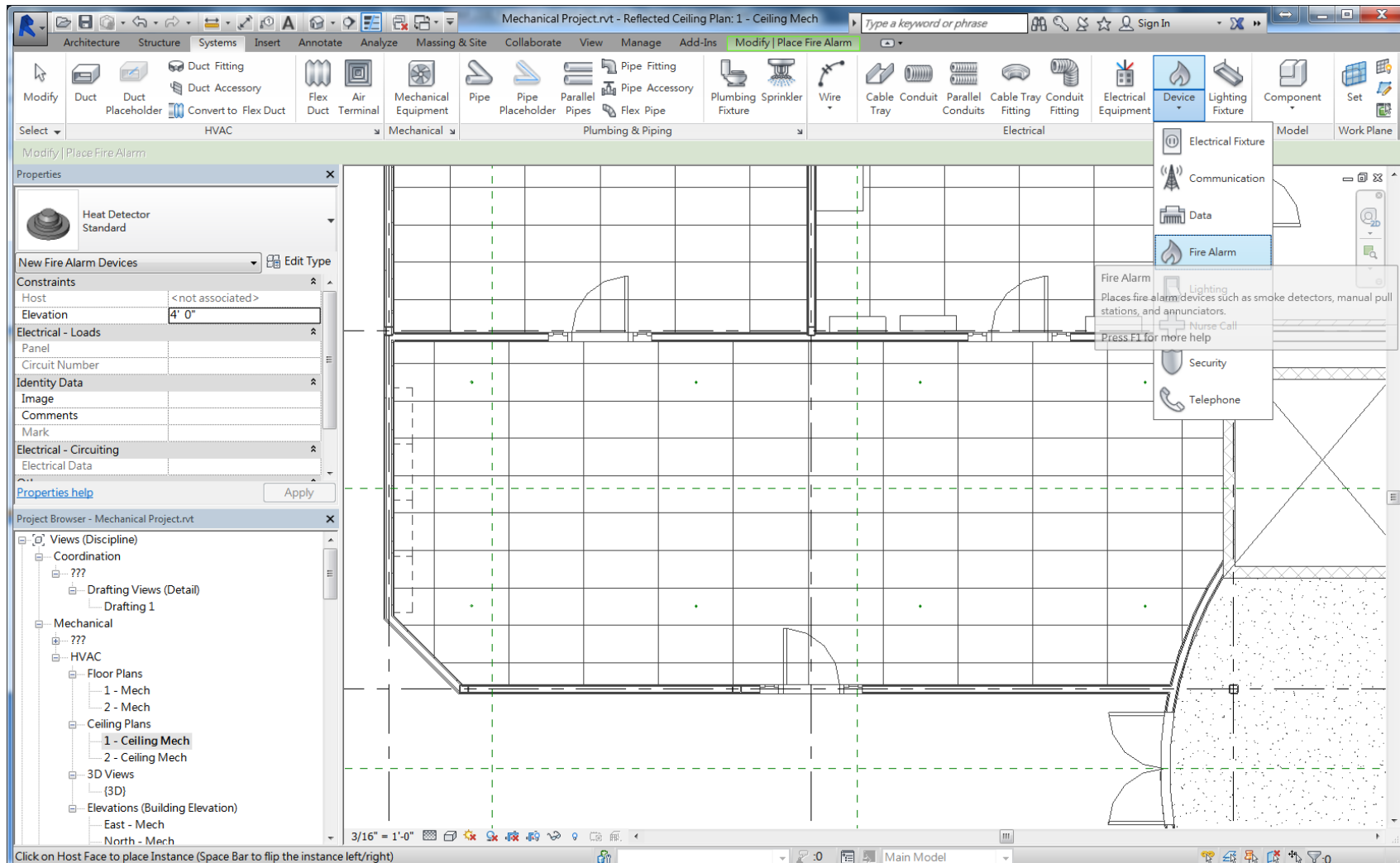
- Create Fire Alarm System
- Wall Mounted Device
Alarm Bell, Break Glass, AFA Panel etc.
- Ceiling Mounted Device
Heat / Smoke Detector, Remote Indication Light etc.
- Other Electrical System Item
Cable Tray, Conduit etc.

Note: Most default AFA related families are placed not in “Fire Protection” folder, which are under ..\Electrical\MEP\Information and Communication\Fire Alarm



REVIT Fire Protection

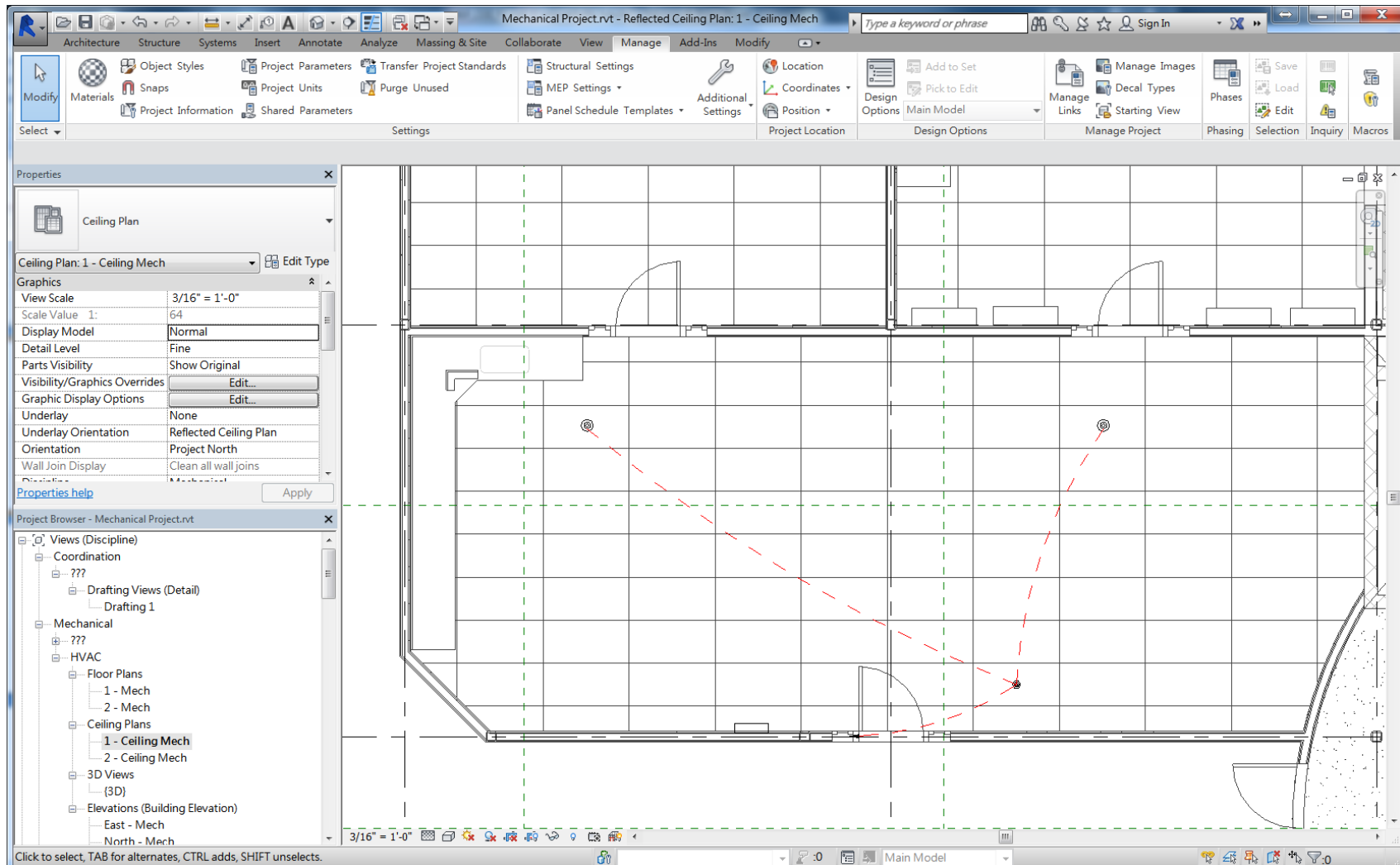
- Create Fire Alarm System



CEII MEP (REVIT)

REVIT Fire Protection

- Create Fire Alarm System



CEII MEP (REVIT)

REVIT Fire Protection

- Create Fire Alarm System

REVIT Fire Protection

- Create Fire Alarm System

REVIT Fire Protection

- Create Sprinkler System



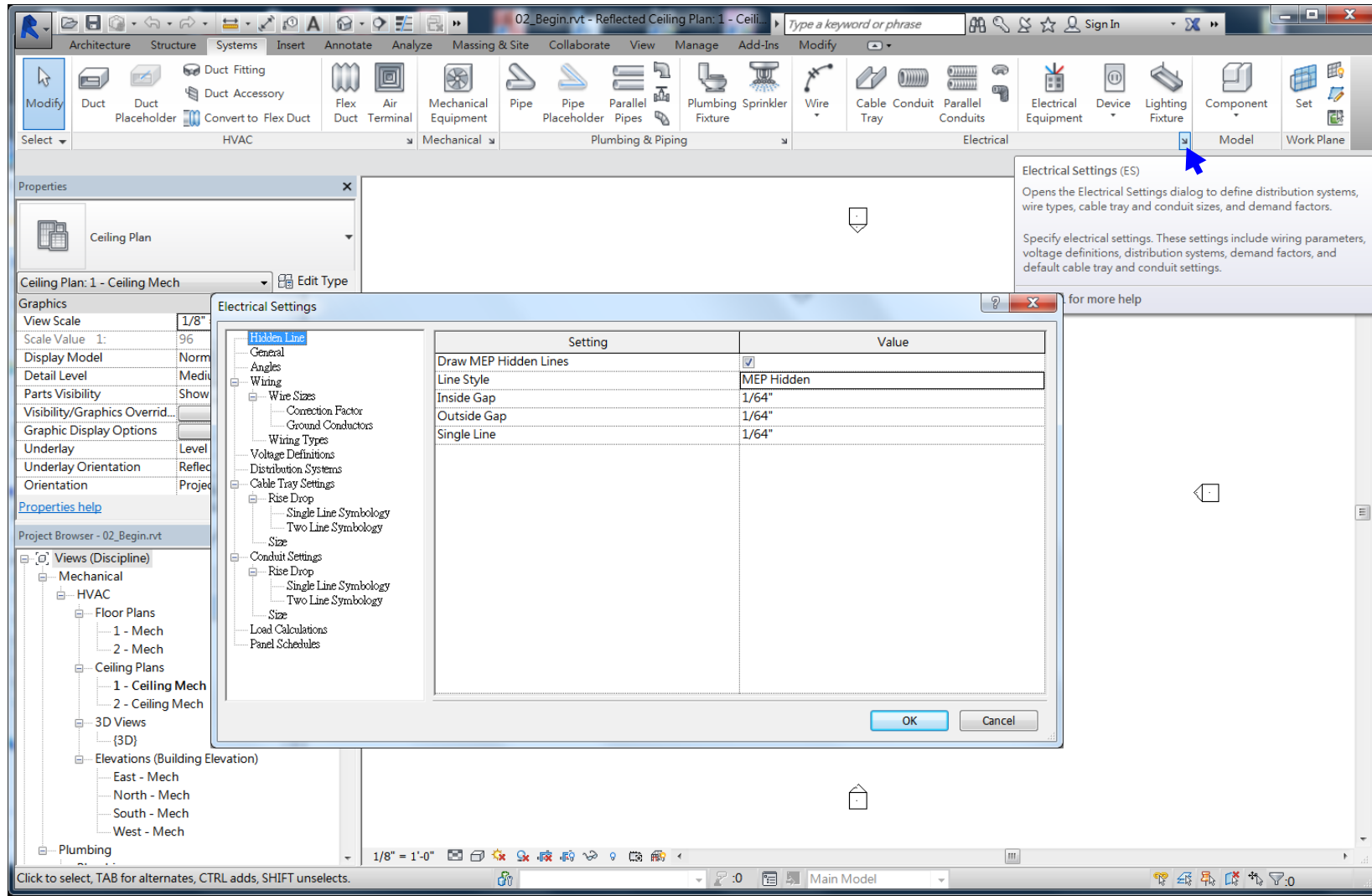
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CEII MEP (REVIT)

REVIT Electrical

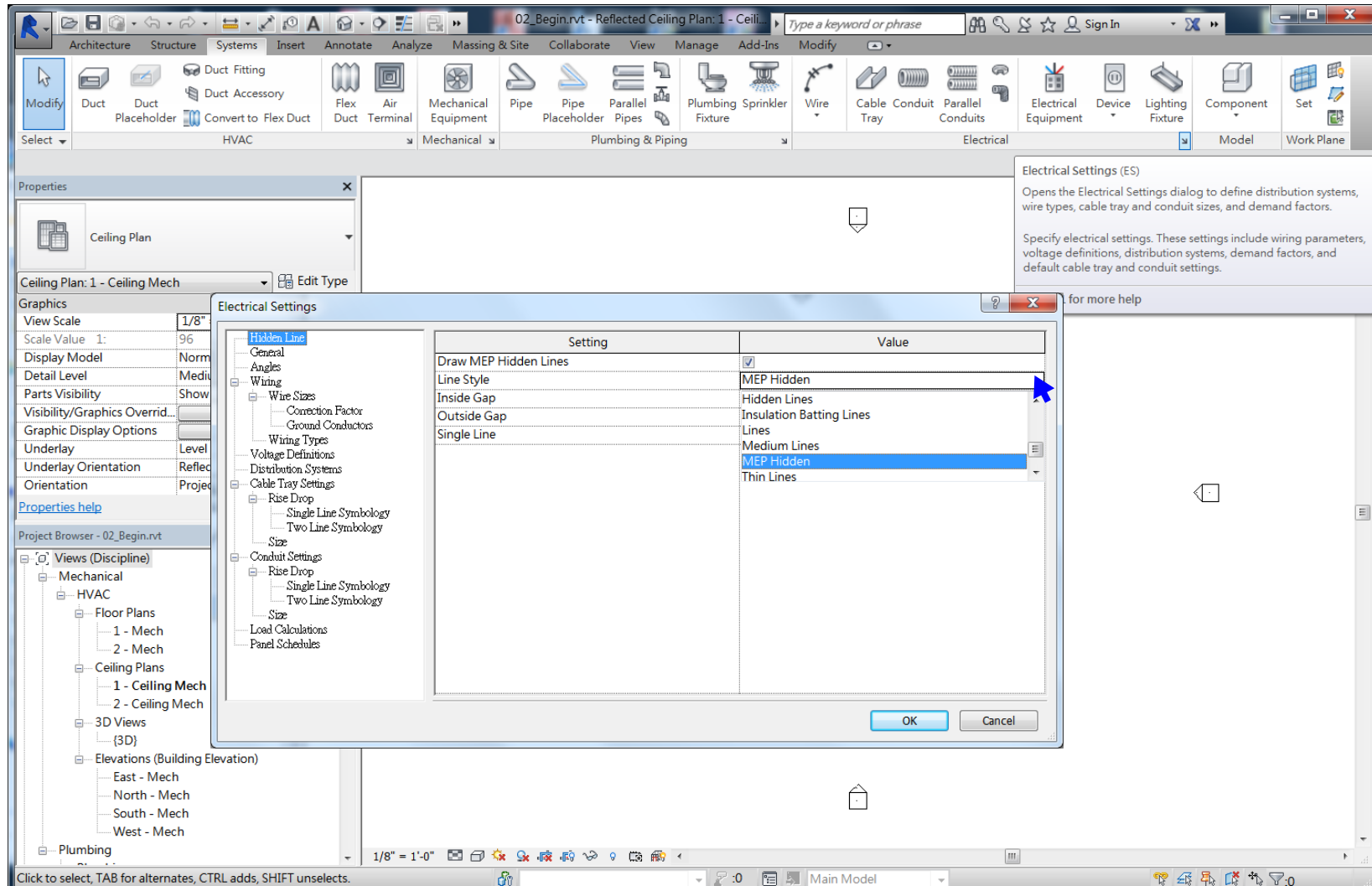
- Electrical Settings (ES)



CEII MEP (REVIT)

REVIT Electrical

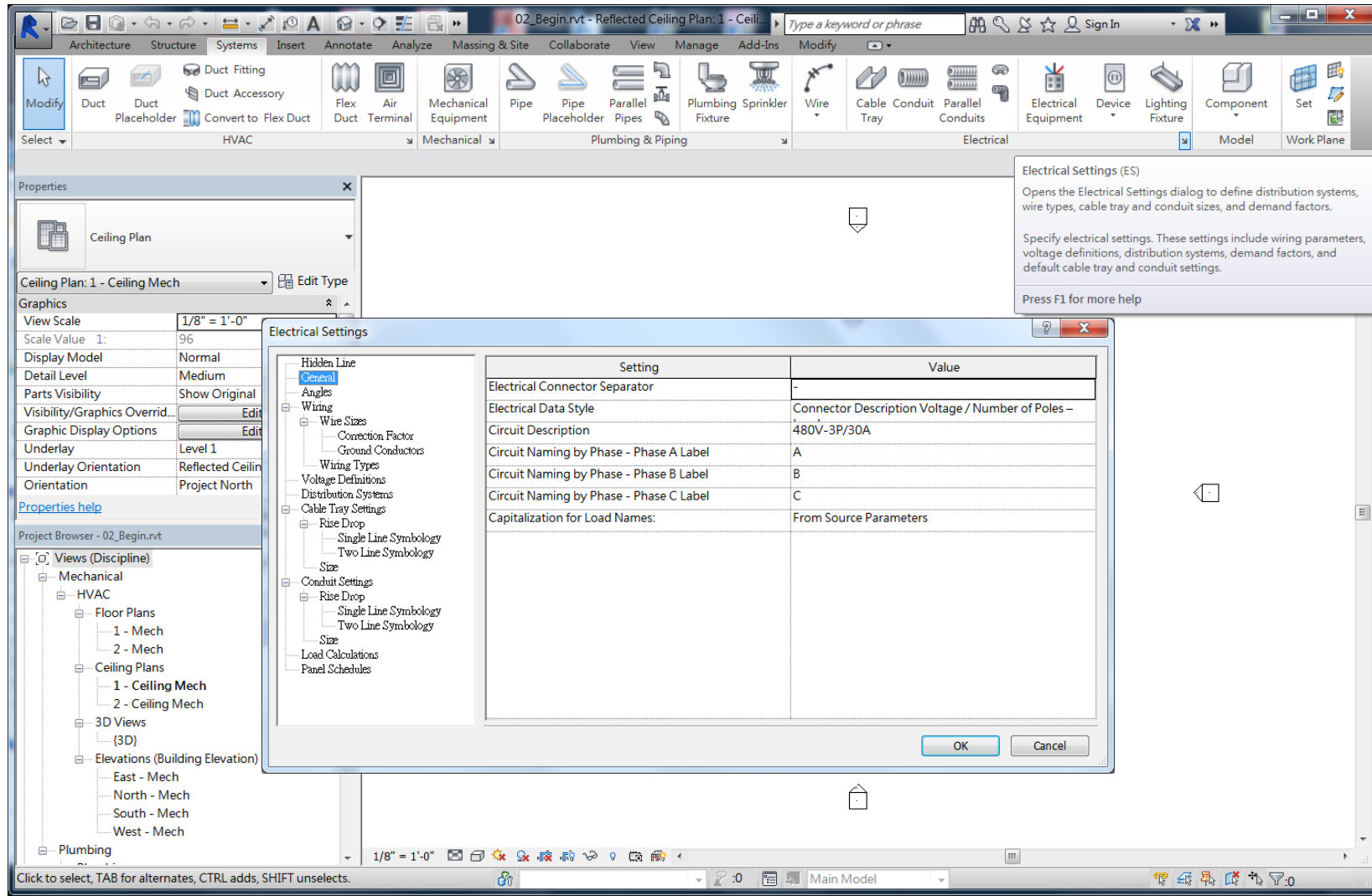
- Electrical Settings (ES)



CEII MEP (REVIT)

REVIT Electrical

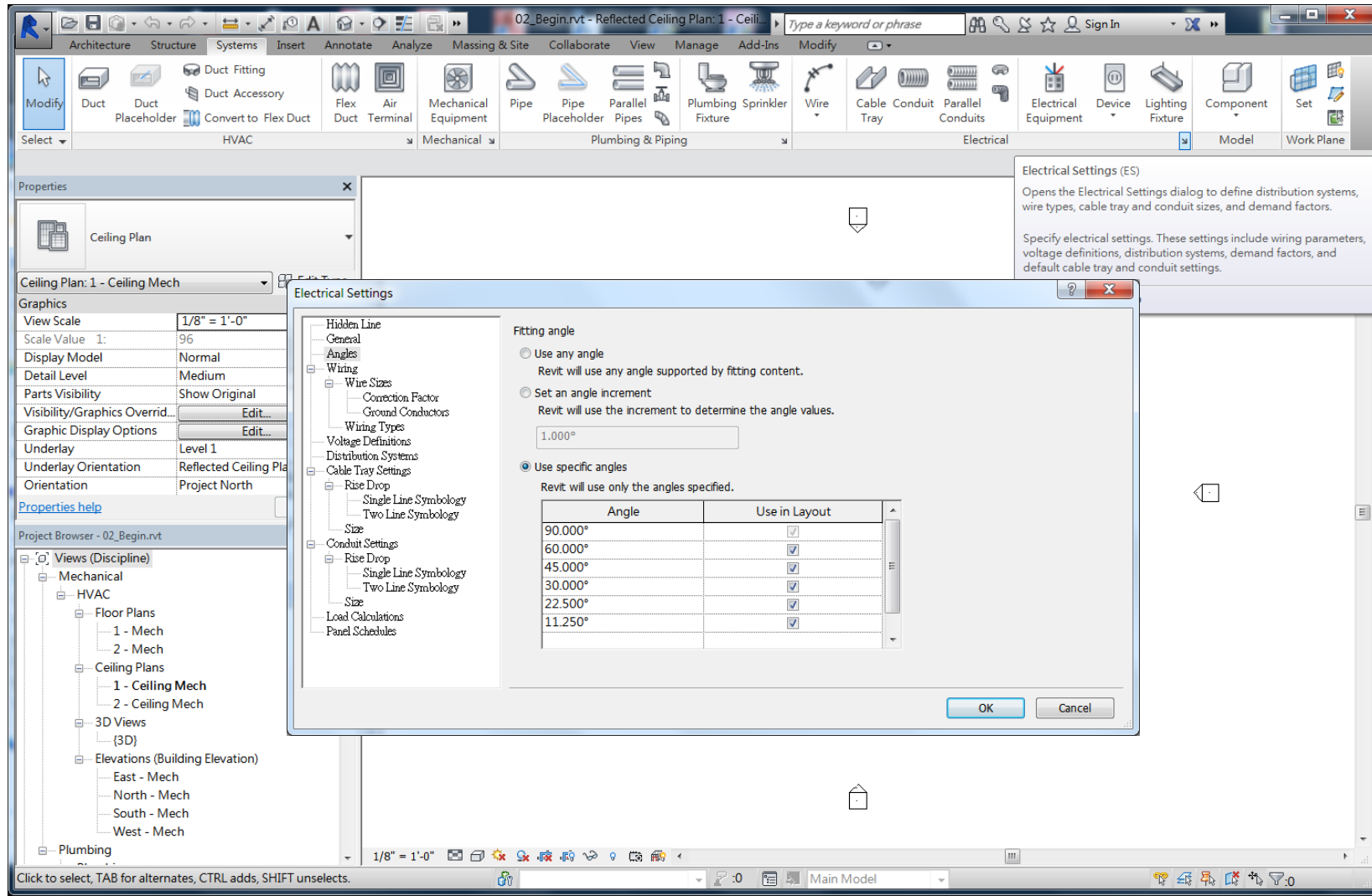
- Electrical Settings (ES)



CEI MEP (REVIT)

REVIT Electrical

- Electrical Settings (ES)

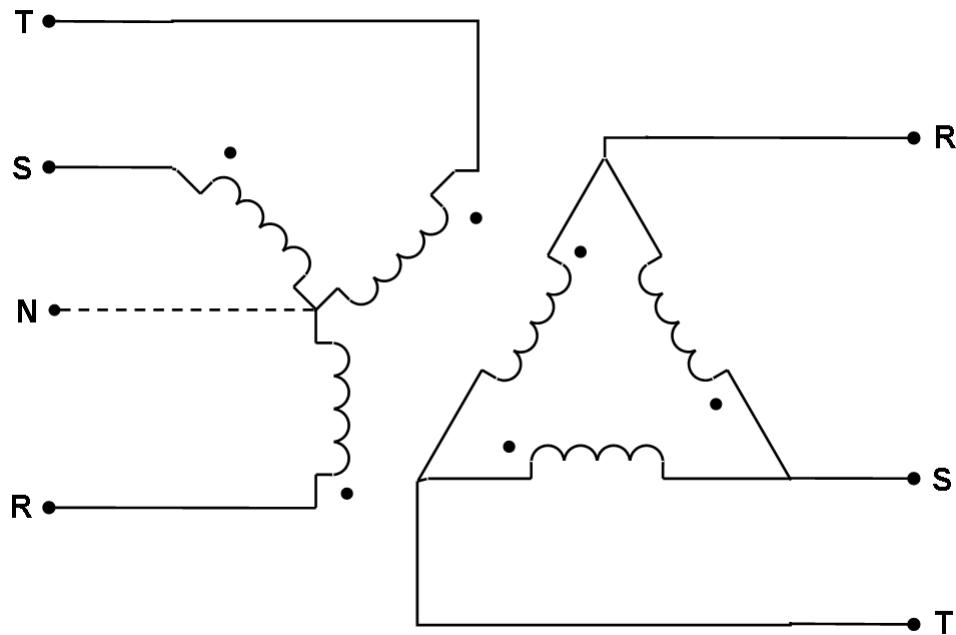


CEI MEP (REVIT)

REVIT Electrical

- Electrical Settings (ES)

Wye – Delta



REVIT Electrical

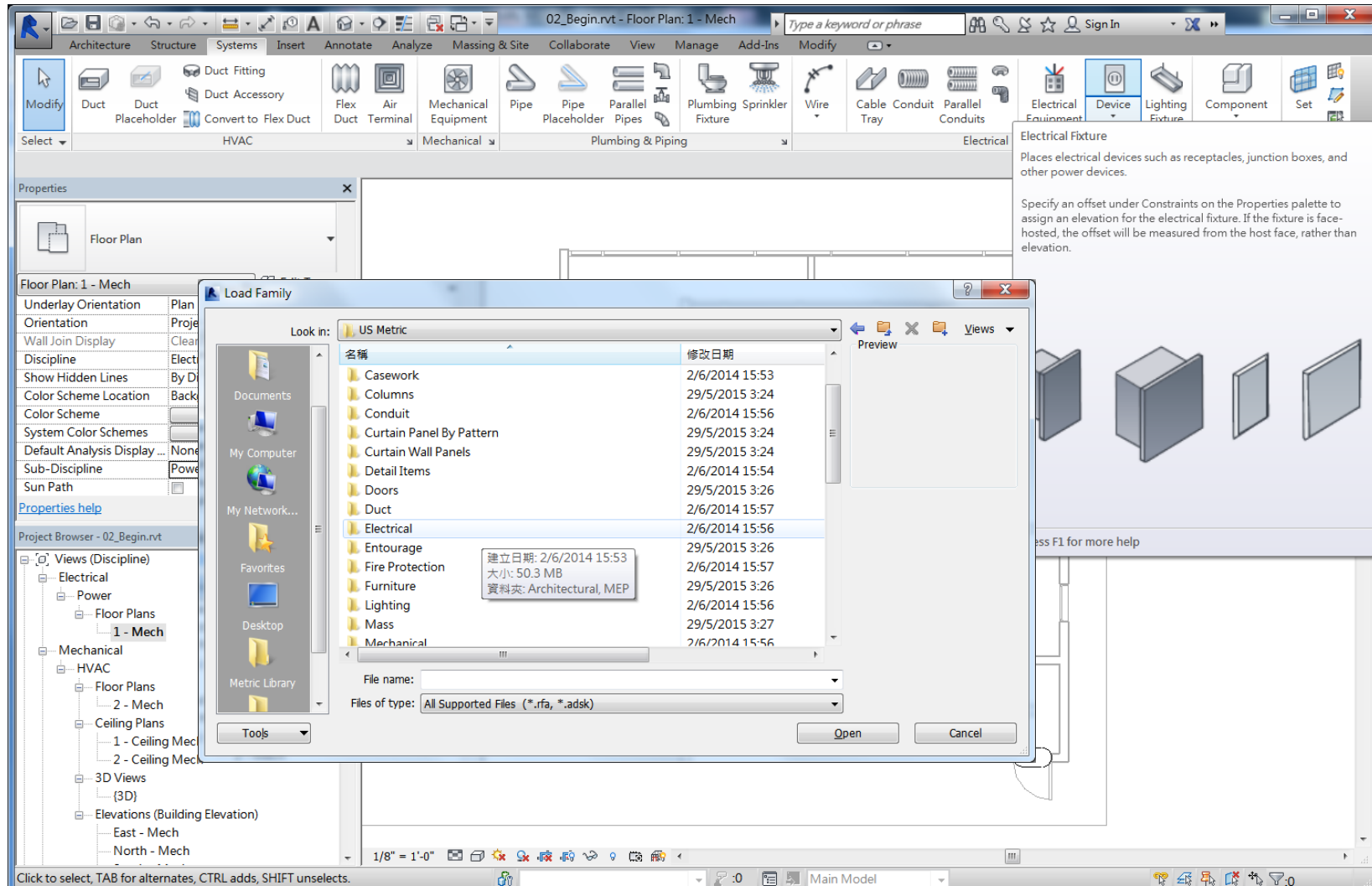
- Electrical Settings (ES)

Conduit Type

- Rigid metal conduit (RMC) is a thick-walled threaded tubing, usually made of coated steel, stainless steel or aluminum.
- Galvanized rigid conduit (GRC) is galvanized steel tubing, with a tubing wall that is thick enough to allow it to be threaded. Its common applications are in commercial and industrial construction.
- Intermediate metal conduit (IMC) is a steel tubing heavier than EMT but lighter than RMC. It may be threaded.
- Electrical metallic tubing (EMT), sometimes called thin-wall, is commonly used instead of galvanized rigid conduit (GRC), as it is less costly and lighter than GRC. EMT itself is not threaded, but can be used with threaded fittings that clamp to it. Lengths of conduit are connected to each other and to equipment with clamp-type fittings. Like GRC, EMT is more common in commercial and industrial buildings than in residential applications. EMT is generally made of coated steel, though it may be aluminum.

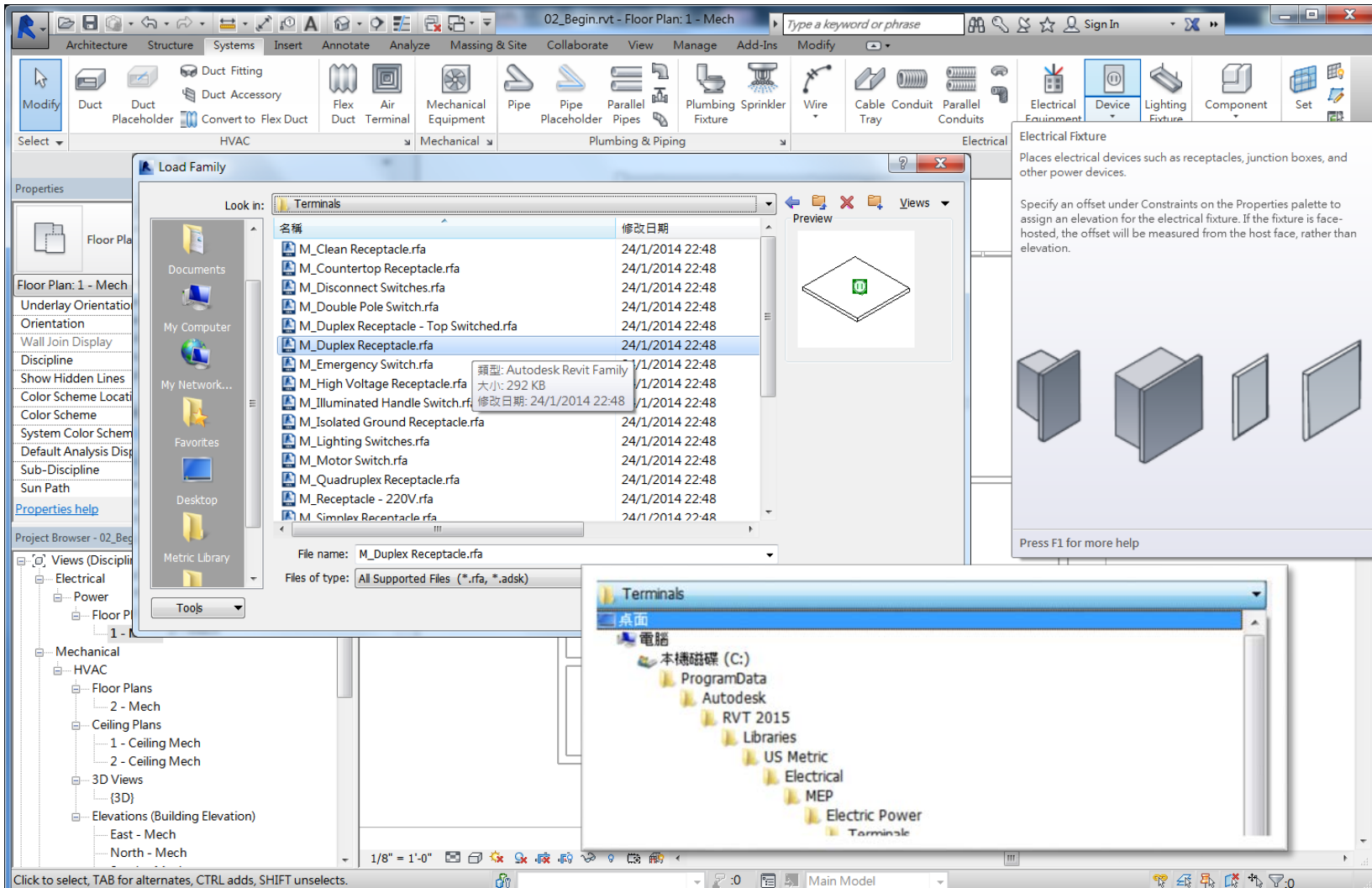
REVIT Electrical

- Adding Receptacles



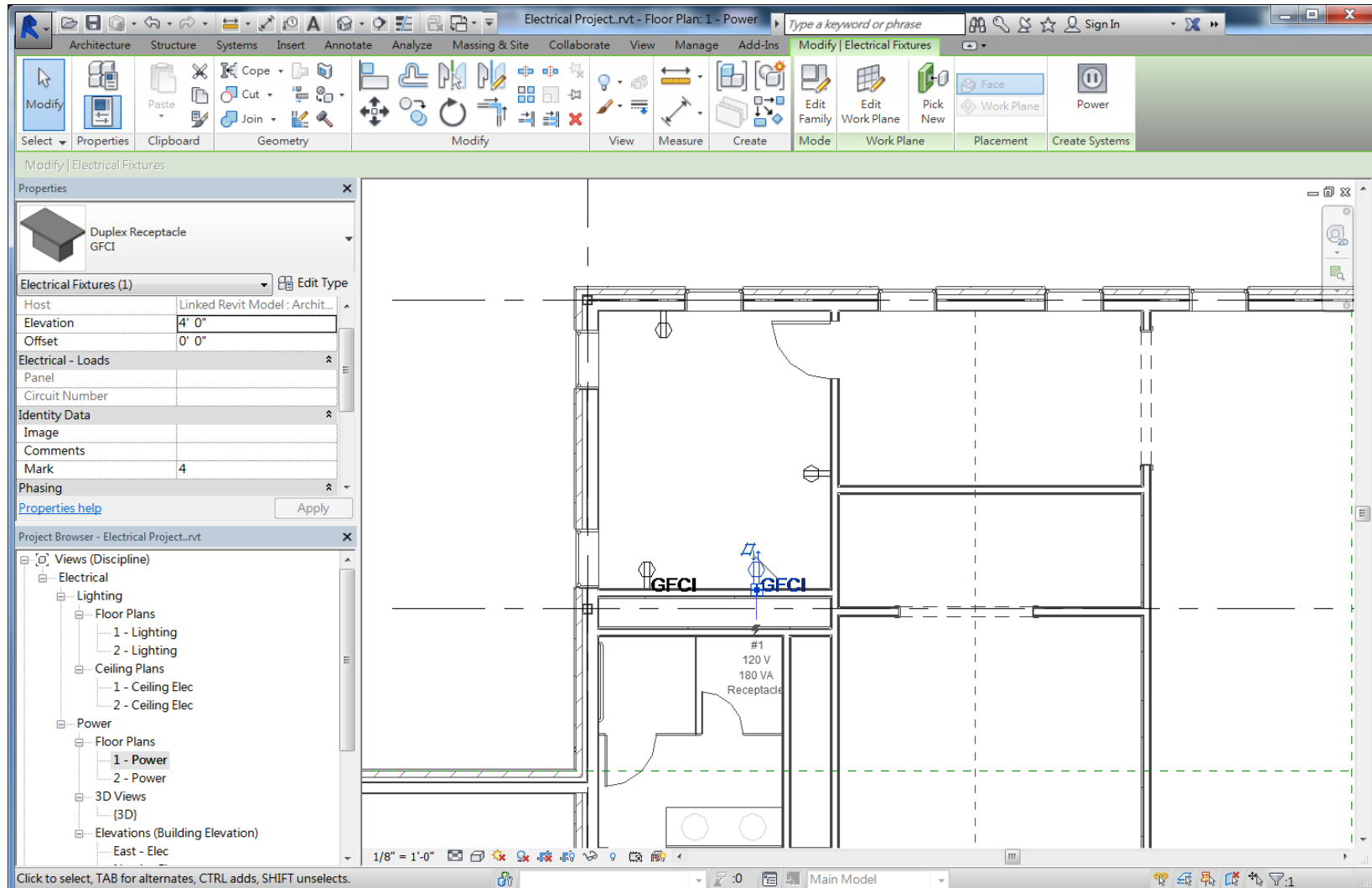
REVIT Electrical

- Adding Receptacles



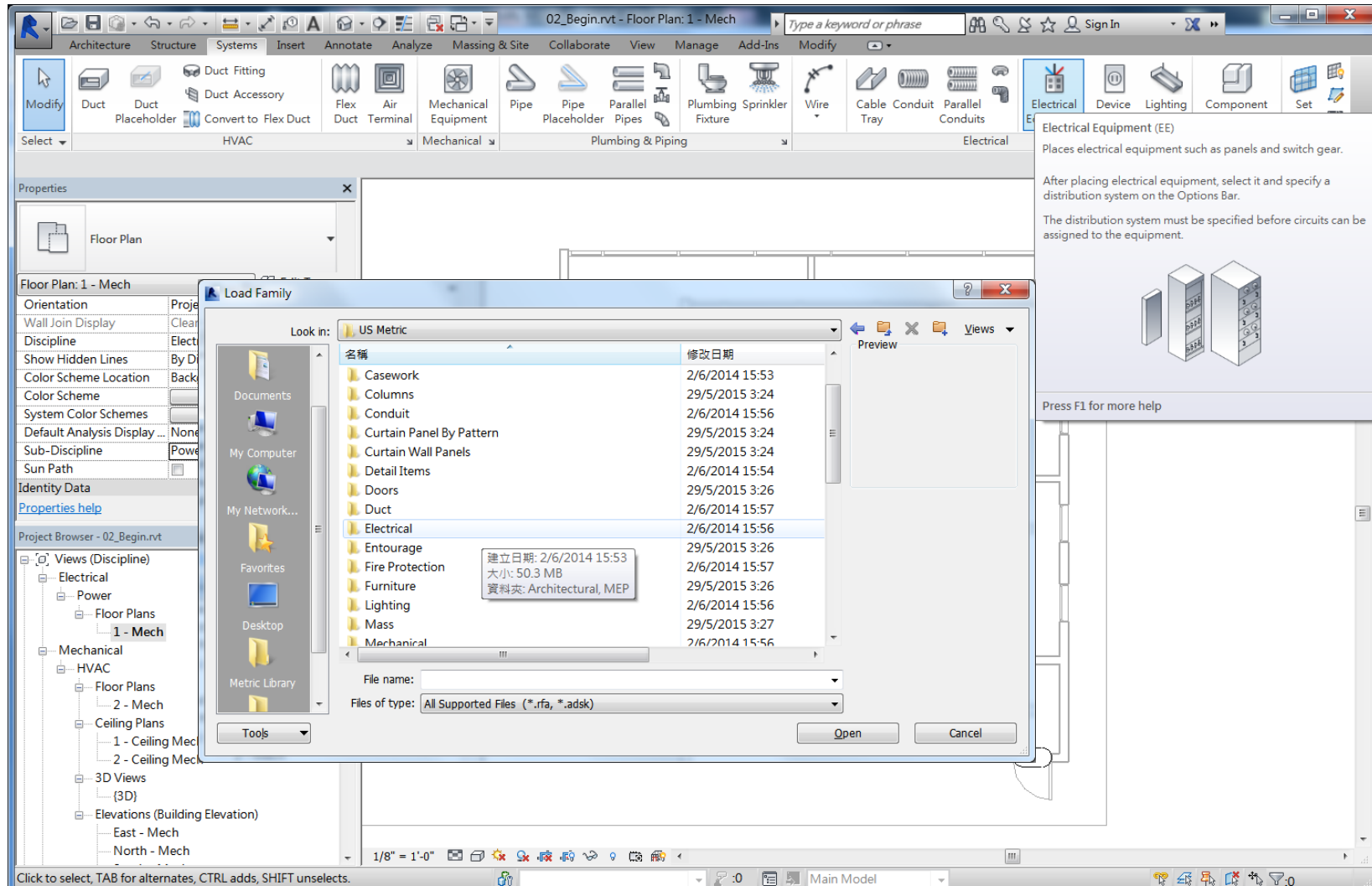
REVIT Electrical

- Adding Receptacles



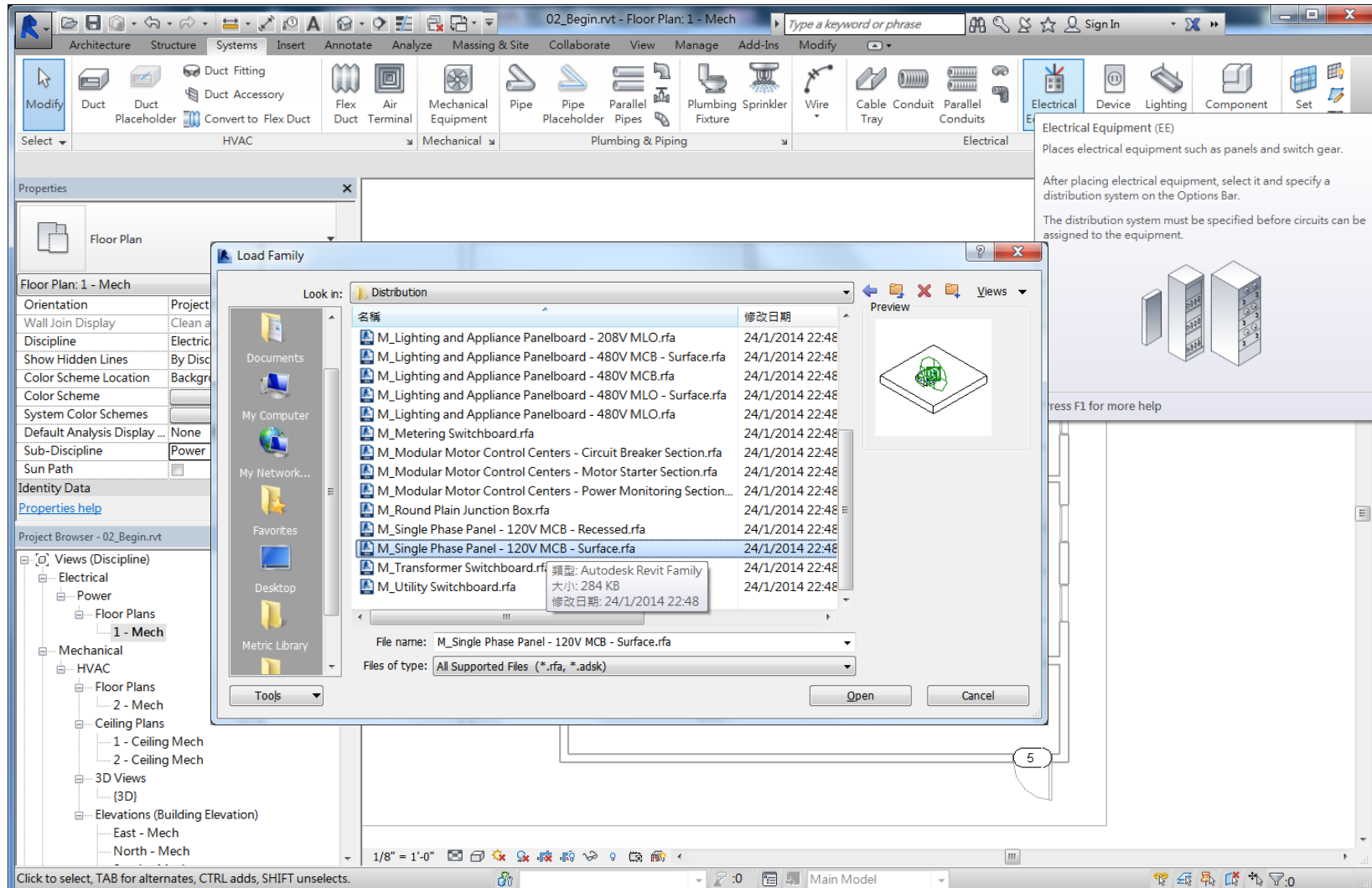
REVIT Electrical

- Adding Panels



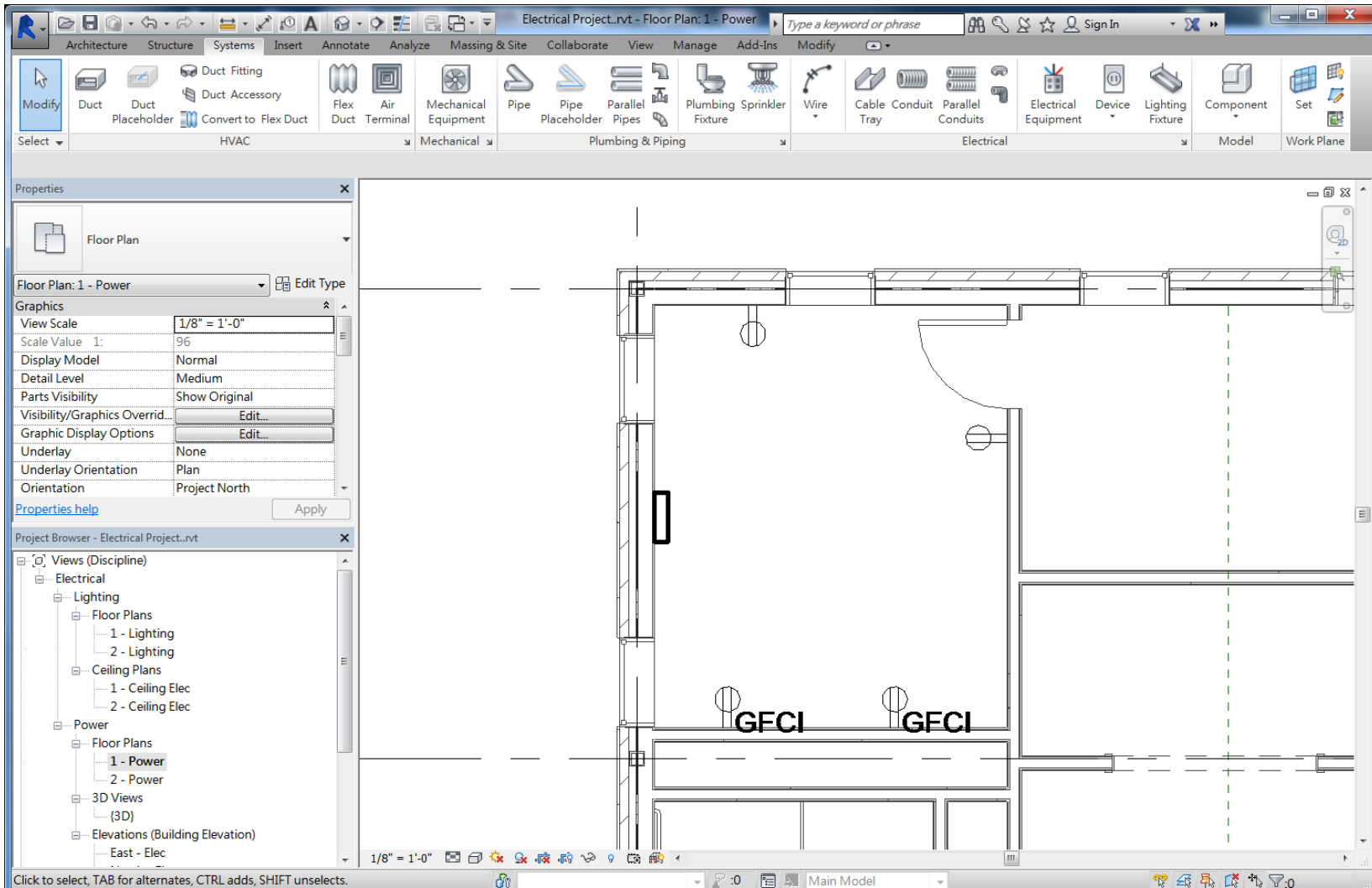
REVIT Electrical

- Adding Panels



REVIT Electrical

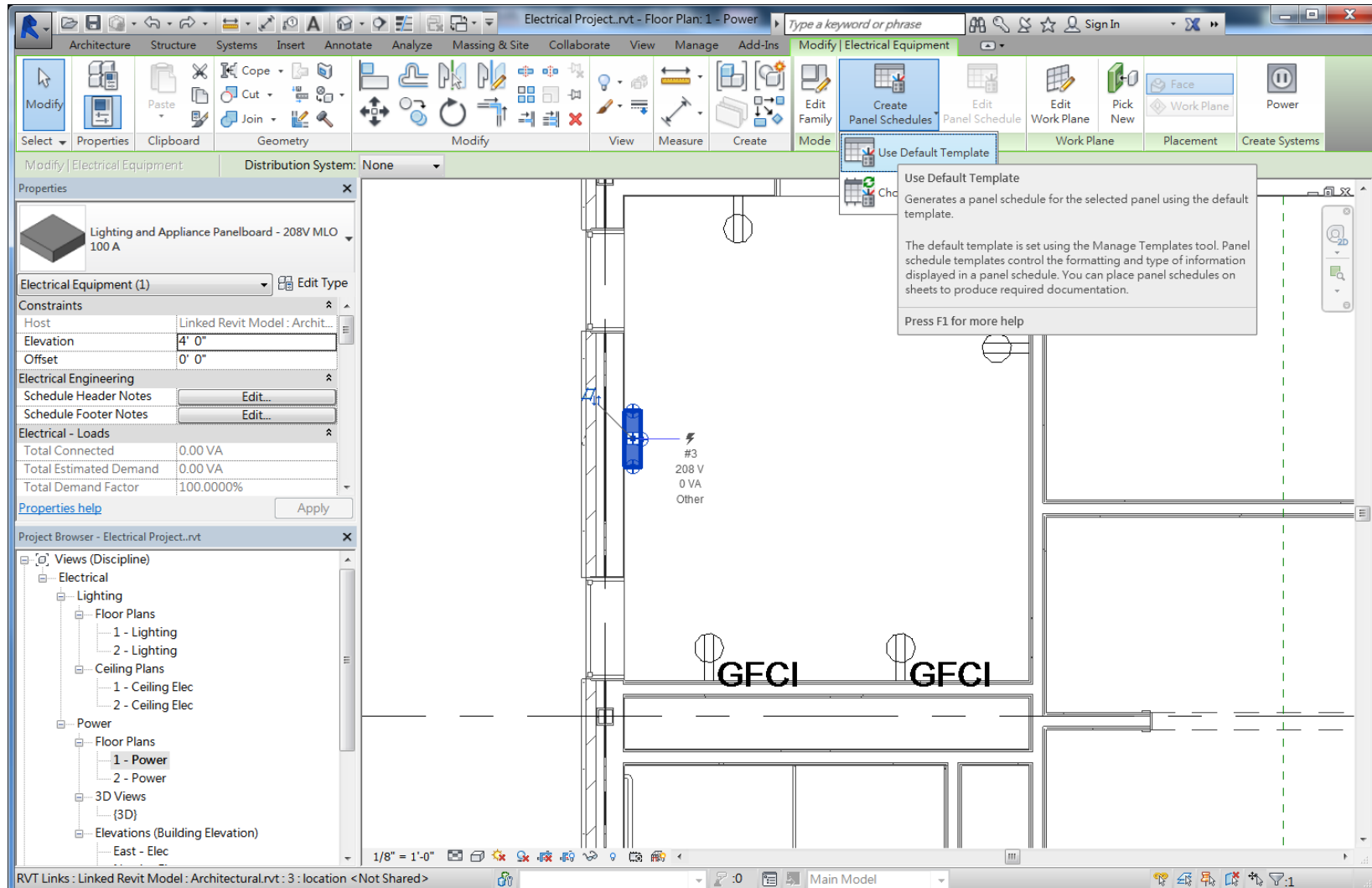
- Adding Panels



CEI MEP (REVIT)

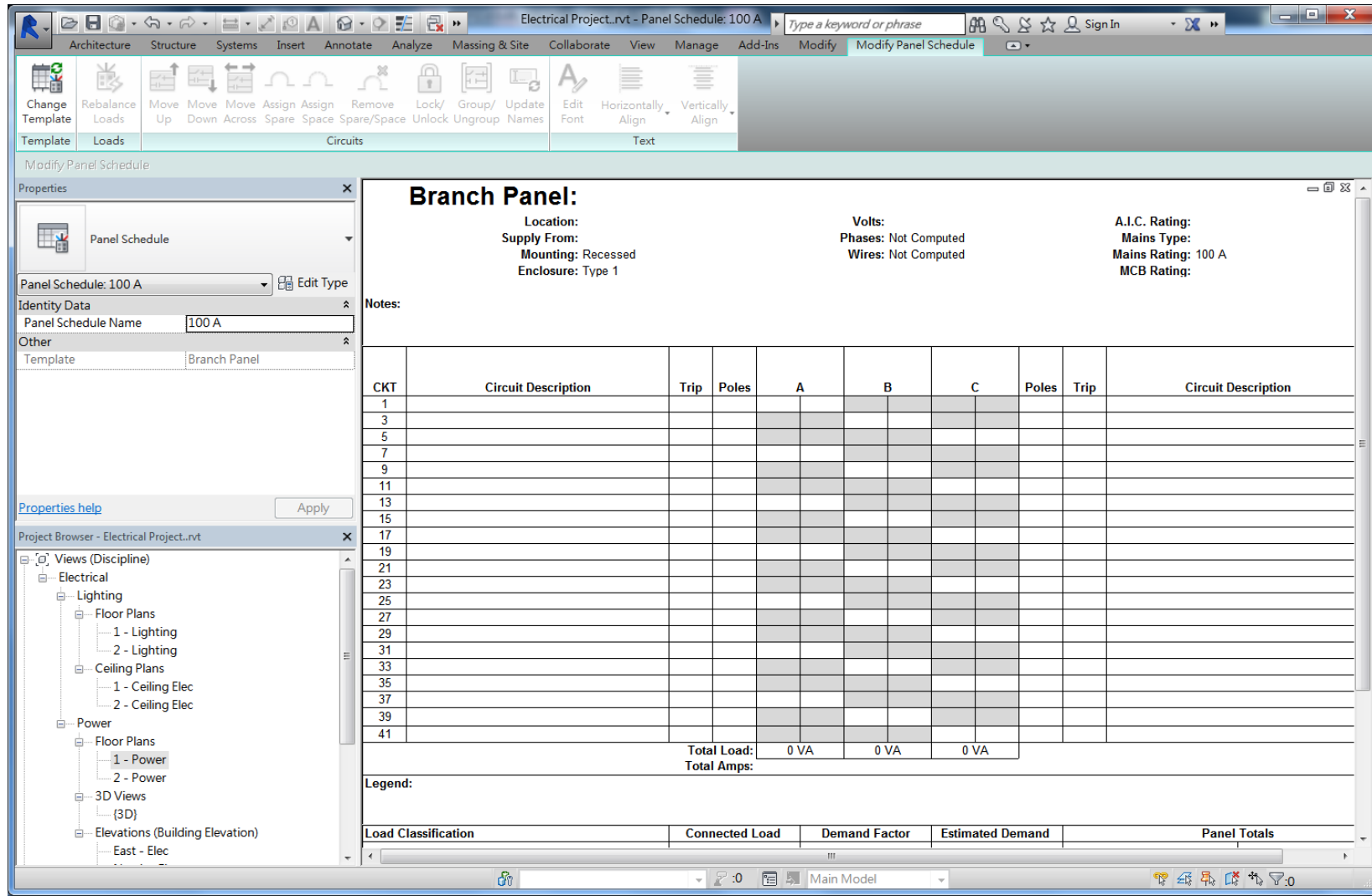
REVIT Electrical

- Adding Panels



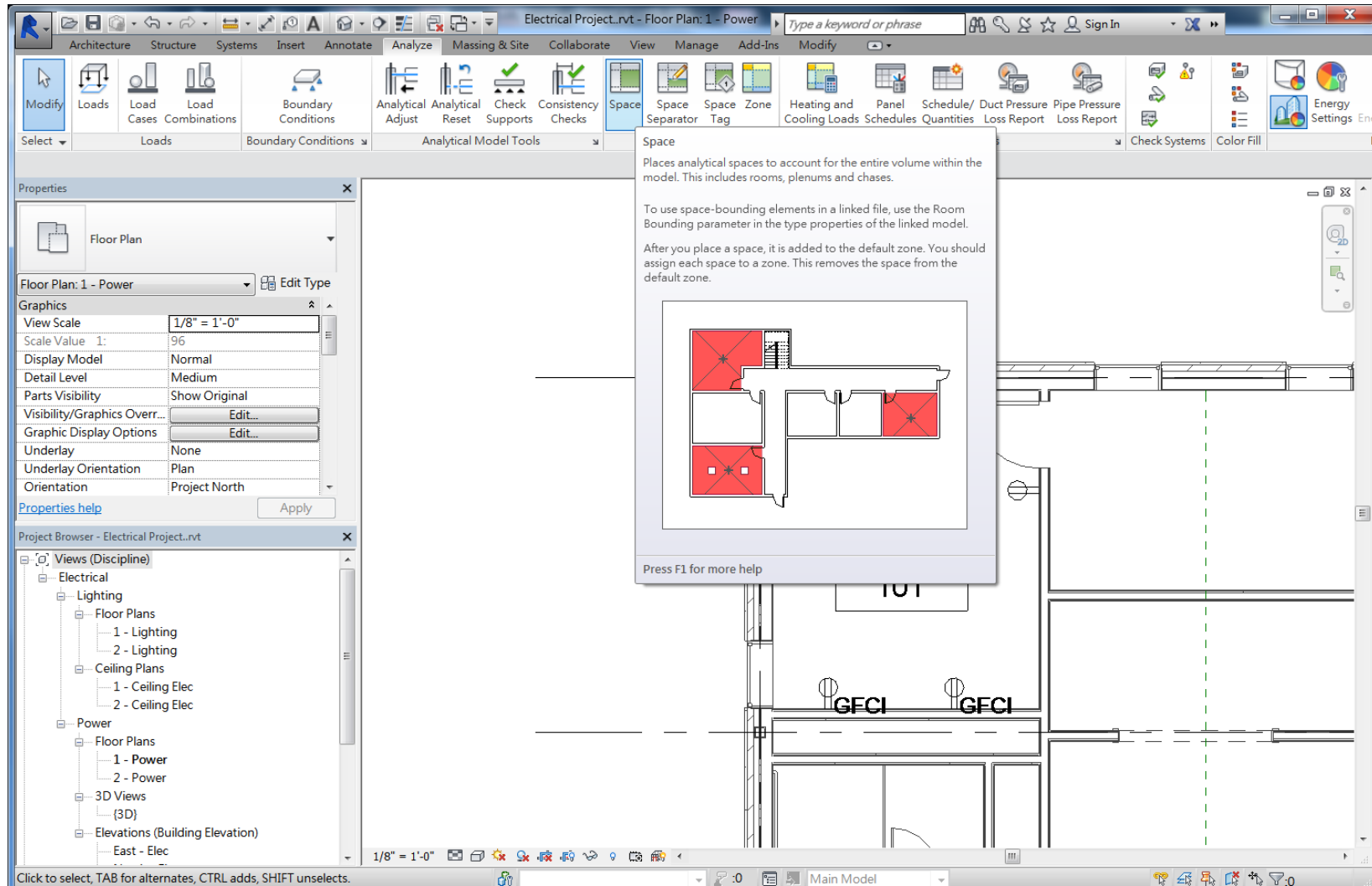
REVIT Electrical

- Adding Panels



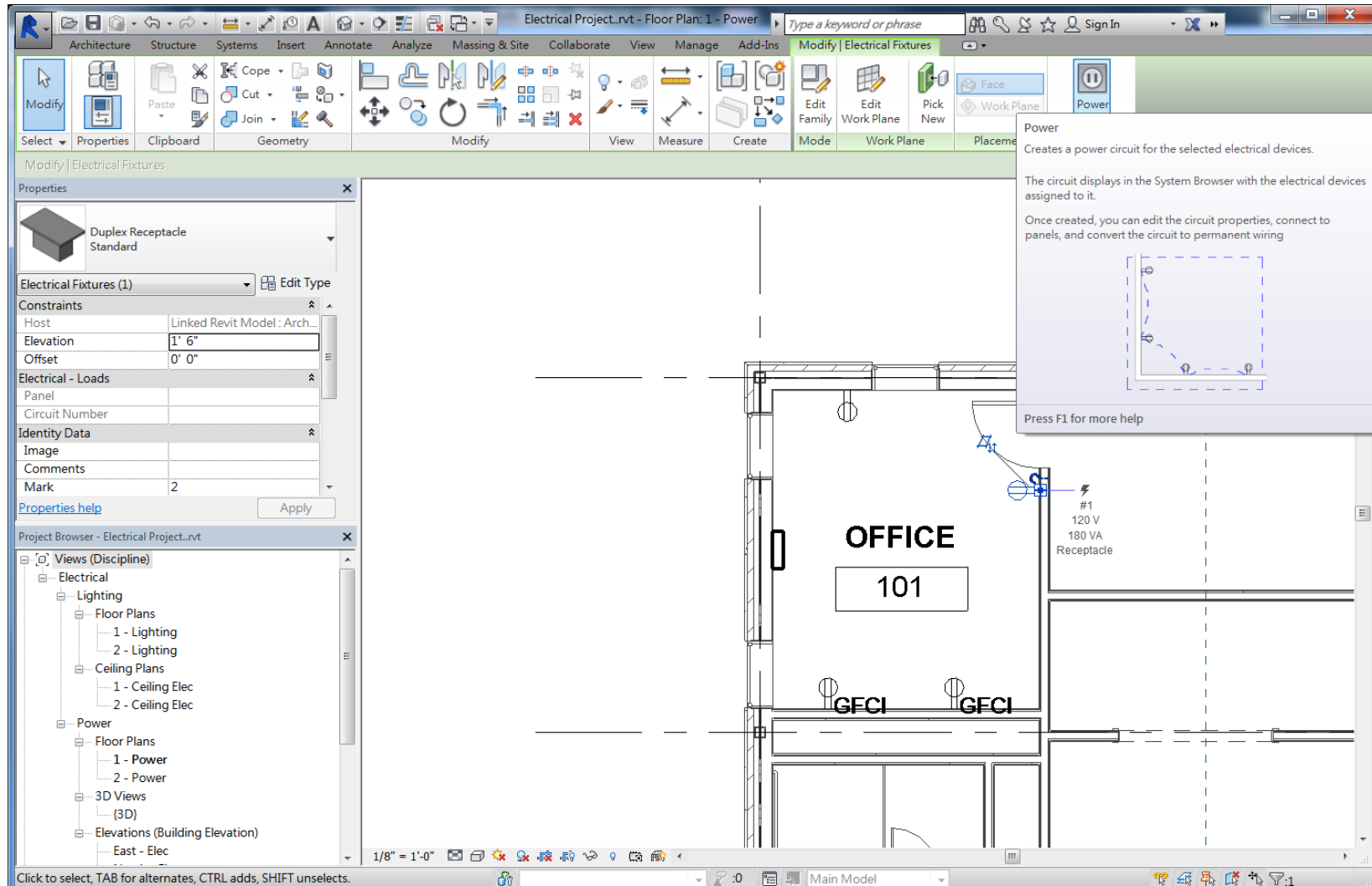
REVIT Electrical

- Creating Spaces



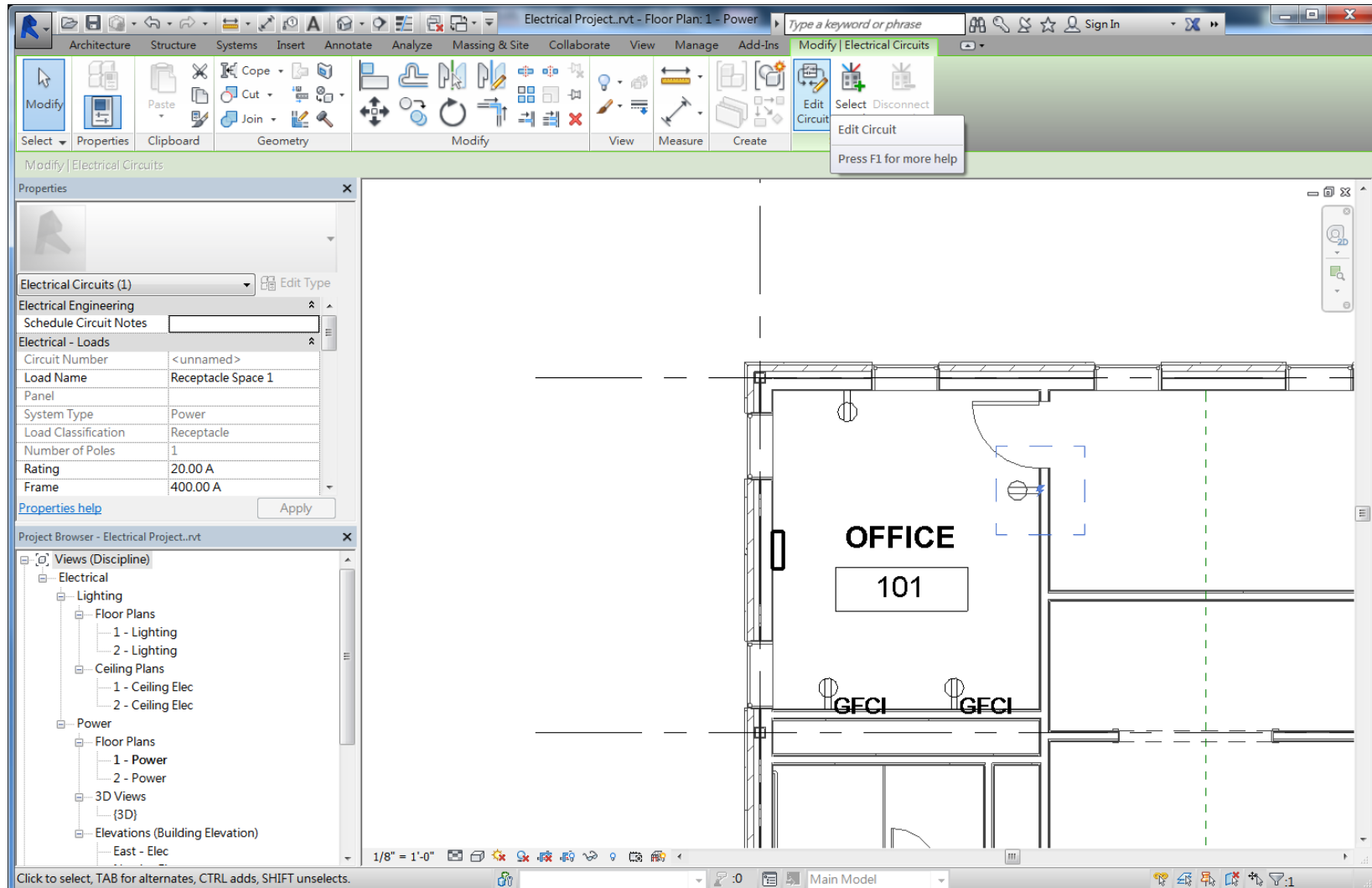
REVIT Electrical

- Creating a circuit



REVIT Electrical

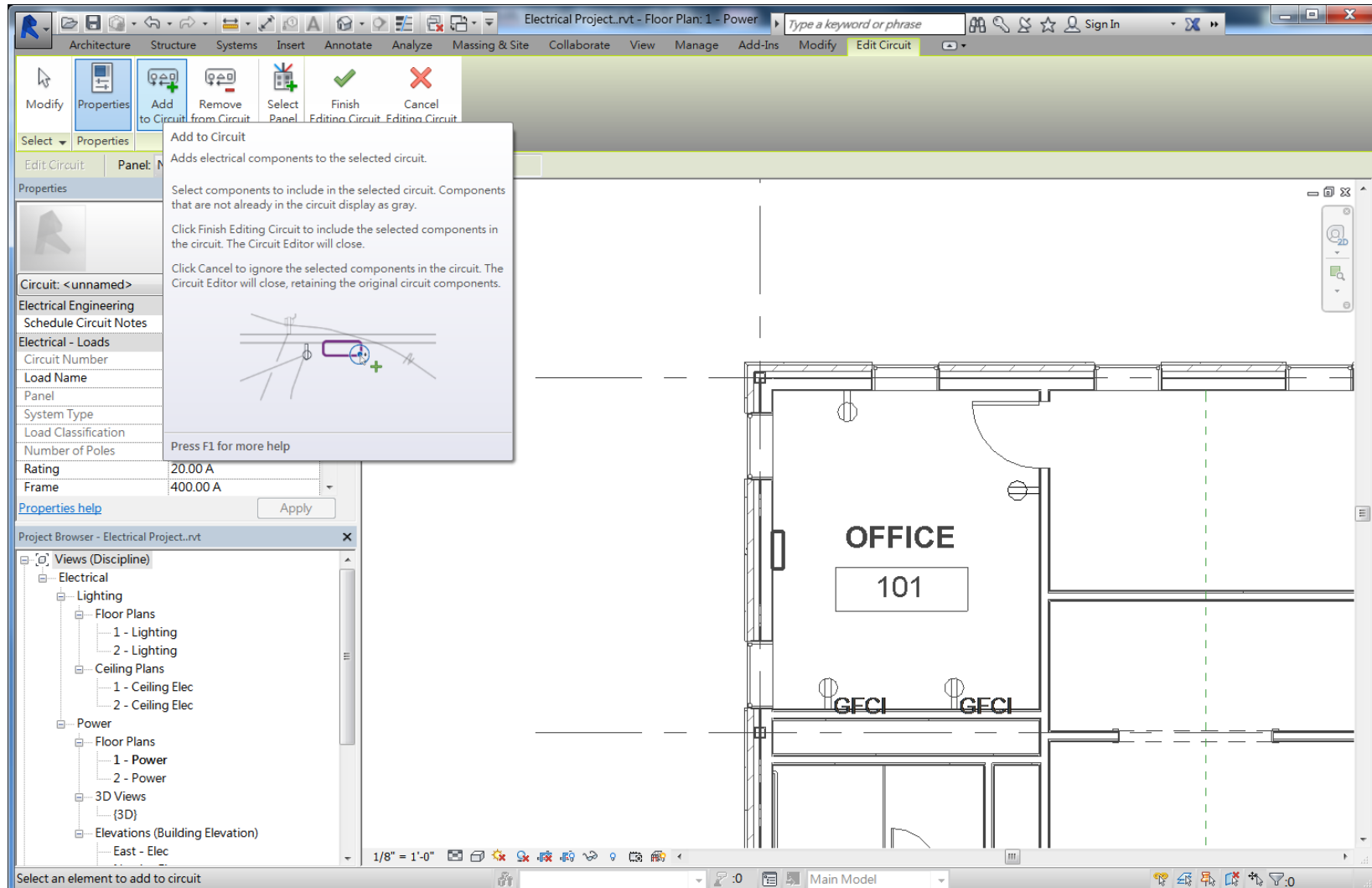
- Creating a circuit



CEI MEP (REVIT)

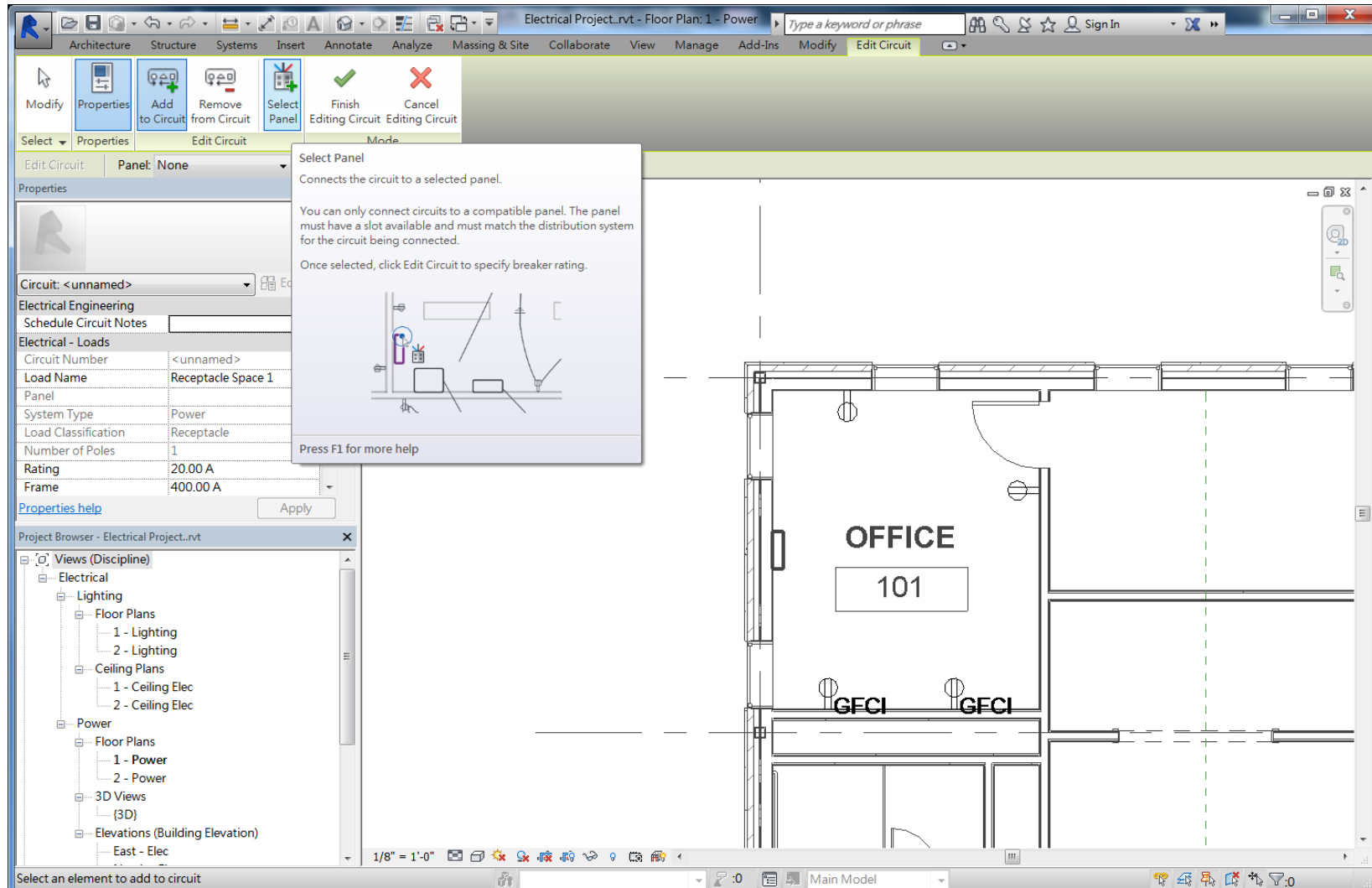
REVIT Electrical

- Creating a circuit



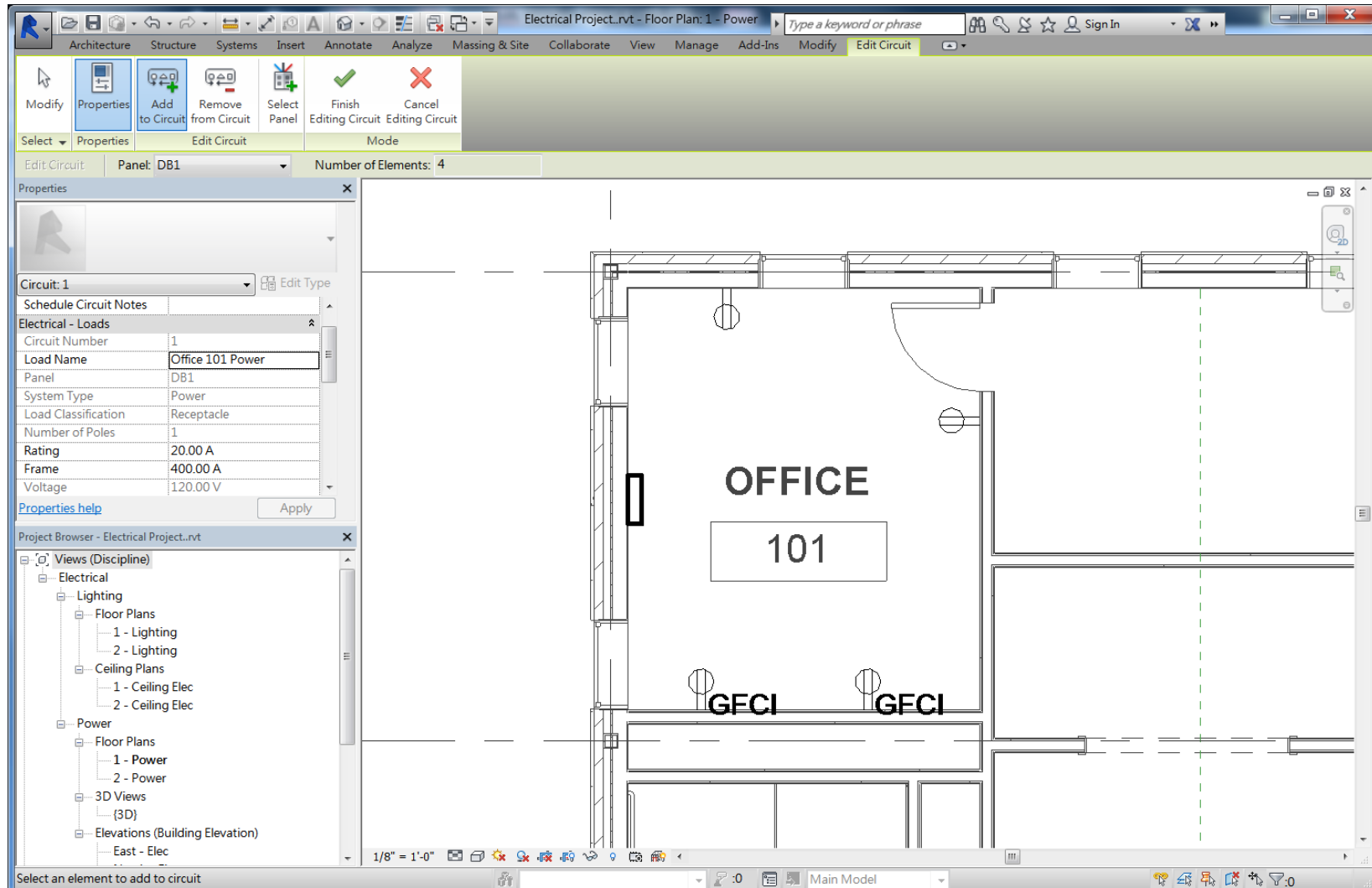
REVIT Electrical

- Creating a circuit



REVIT Electrical

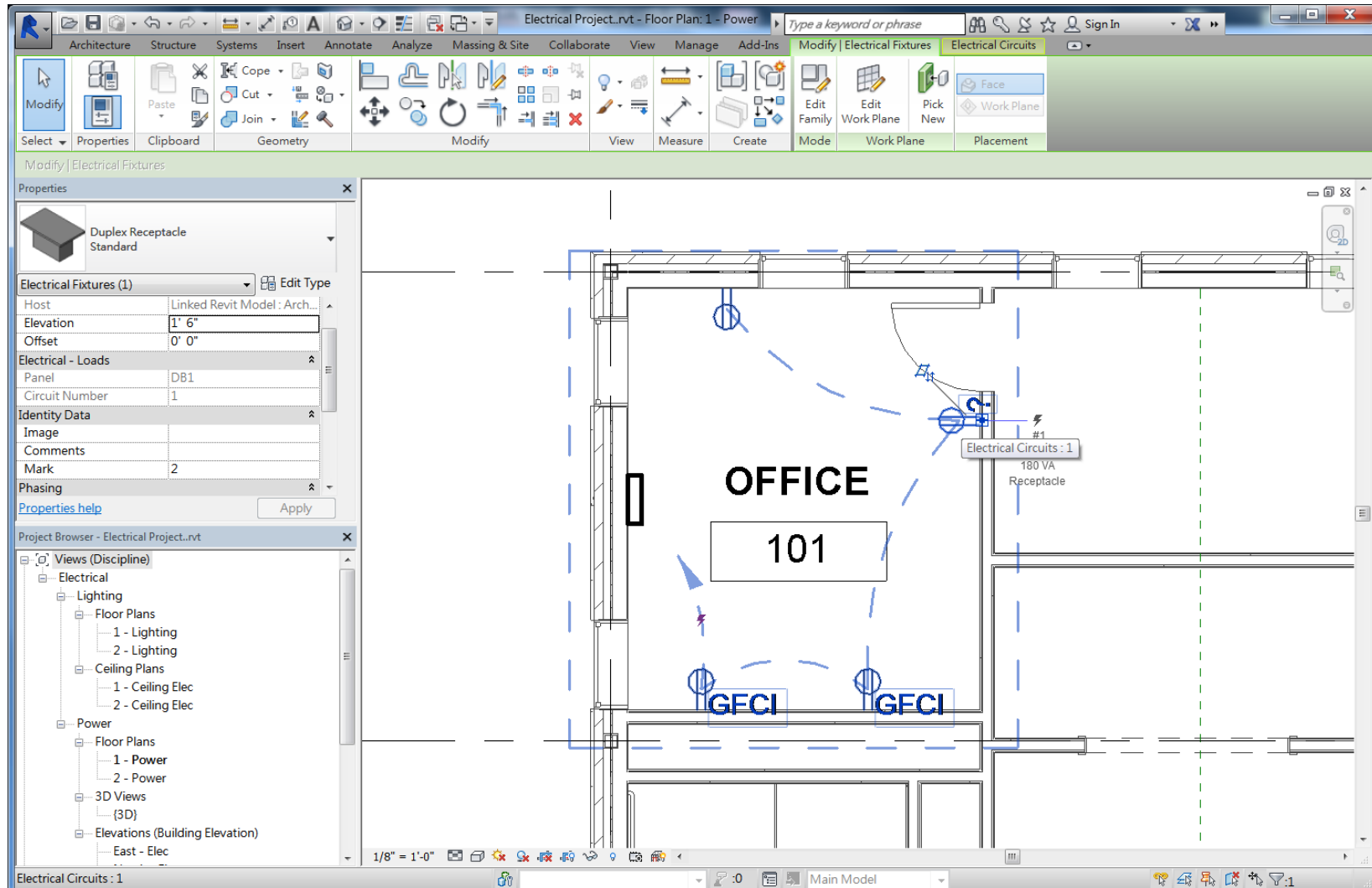
- Creating a circuit



CEI MEP (REVIT)

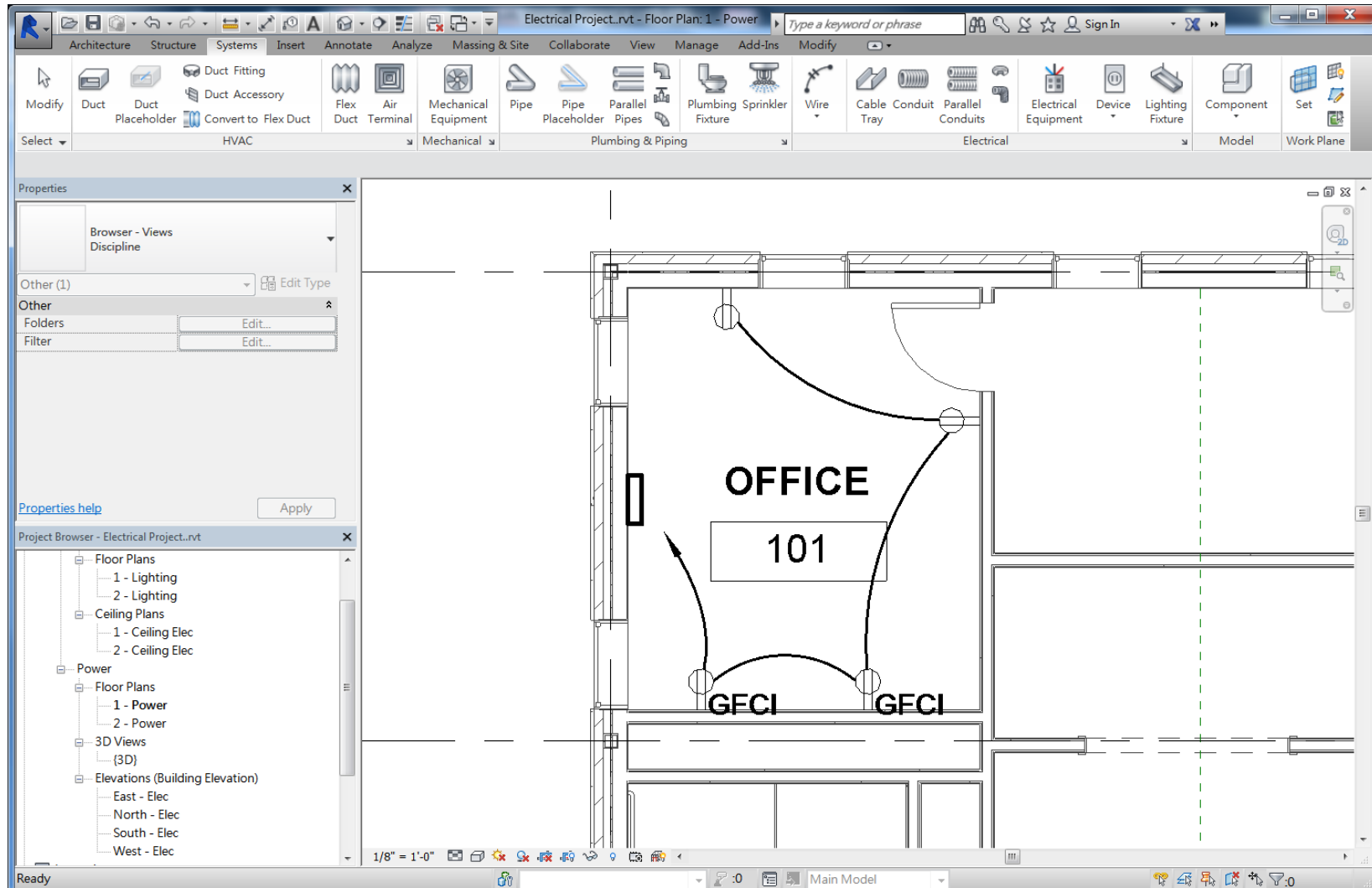
REVIT Electrical

- Creating a circuit



REVIT Electrical

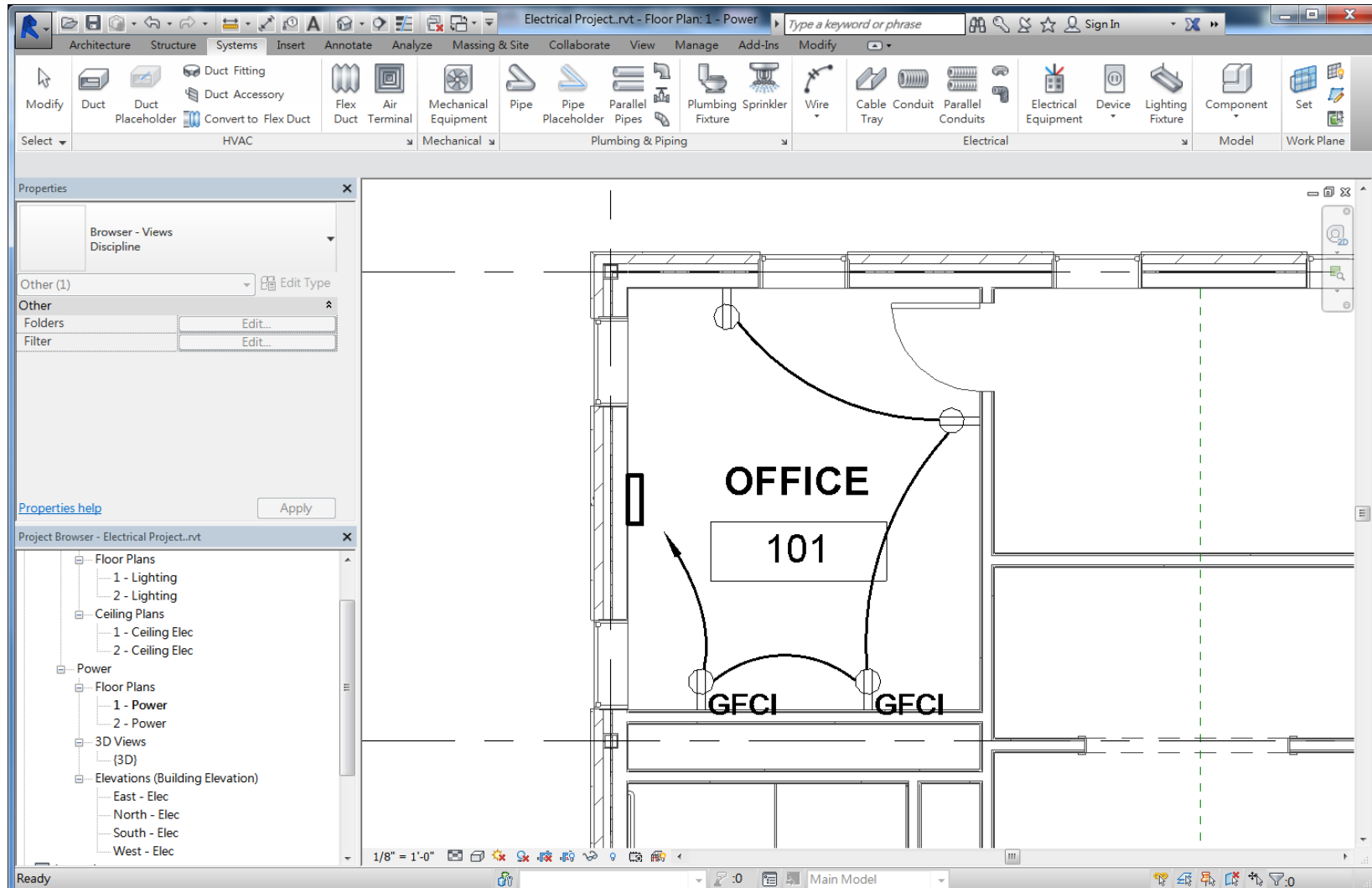
- Creating a circuit



CEI MEP (REVIT)

REVIT Electrical

- Creating a circuit



CEI MEP (REVIT)

REVIT Electrical

- Creating a circuit

The screenshot displays the Revit Electrical software interface. The top ribbon shows various toolsets including Architecture, Structure, Systems, Insert, Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, and Modify. The 'Electrical' toolset is active, showing options for Duct, Duct Placeholder, Duct Accessory, Flex Duct, Air Terminal, Mechanical Equipment, Pipe, Pipe Placeholder, Parallel Pipes, Plumbing Fixture, Sprinkler, Wire, Cable Tray, Conduit, Parallel Conduits, Electrical Equipment, Device, Lighting Fixture, Component, and Set.

The 'Properties' panel on the left shows the 'Panel Schedule' for 'DB1'. The 'Identity Data' section includes 'Panel Schedule Name: DB1' and 'Template: Branch Panel'. The 'Project Browser' on the bottom left shows the project structure, including 'Power', 'Floor Plans', '3D Views', 'Elevations (Building Elevation)', 'Legends', 'Schedules/Quantities', 'Panel Schedules', 'DB1', 'Sheets (all)', and 'Families'.

The main area displays the 'Branch Panel: DB1' properties. The 'Location' is 'Office 101 Power'. The 'Supply From' is 'Mounting: Recessed' and 'Enclosure: Type 1'. The 'Volts' are '120/208 Wye', 'Phases' are '3', and 'Wires' are '4'. The 'A.I.C. Rating' is 'Mains Type: 100 A' and 'MCB Rating:'. The 'Notes' section is empty.

The 'Circuit Schedule' table is shown below the notes. It has columns for 'CKT', 'Circuit Description', 'Trip', 'Poles', 'A', 'B', 'C', 'Poles', 'Trip', and 'Circuit Description'. The table lists 41 circuits, with the first circuit being 'Office 101 Power' with a trip of 20 A and 1 pole. The 'Total Load' is 720 VA and the 'Total Amps' are 6 A.

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description
1	Office 101 Power	20 A	1	720 VA					
3									
5									
7									
9									
11									
13									
15									
17									
19									
21									
23									
25									
27									
29									
31									
33									
35									
37									
39									
41									
Total Load:				720 VA	0 VA	0 VA			
Total Amps:				6 A	0 A	0 A			

The 'Legend' section is empty. The 'Load Classification' table is also empty.

REVIT Electrical

- Creating a circuit

Electrical Project.rvt - Panel Schedule: DB1

Architecture Structure Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify Modify Panel Schedule

Change Template Rebalance Loads Move Up Move Down Move Across Assign Spare Assign Space Remove Spare/Space Lock/Unlock Group/Unlink Update Names Edit Font Horizontally Align Vertically Align

Modify Panel Schedule

Properties

Panel Schedule

Panel Schedule: DB1 Edit Type

Identity Data

Panel Schedule Name DB1

Other

Template Branch Panel 1

Properties help Apply

Project Browser - Electrical Project.rvt

- Floor Plans
 - 1 - Power
 - 2 - Power
- 3D Views
 - (3D)
- Elevations (Building Elevation)
 - East - Elec
 - North - Elec
 - South - Elec
 - West - Elec
- Legends
- Schedules/Quantities
- Panel Schedules
 - DB1
- Sheets (all)
- Families
- Groups

Notes:

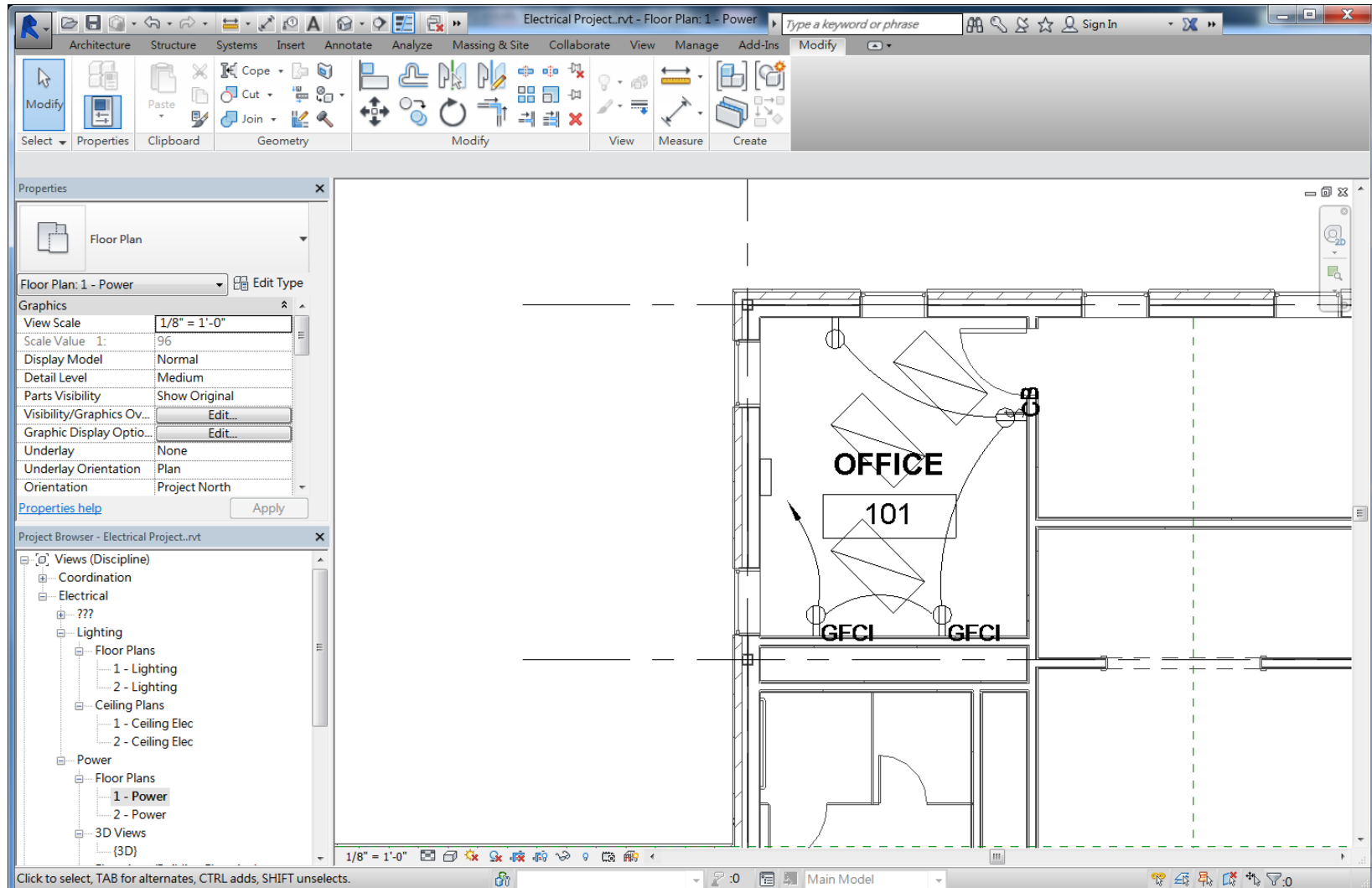
CKT	Circuit Description	Trip	Poles	A	B	C
1	Office 101 Power	20 A	1	720 VA		
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
Total Load:				720 VA	0 VA	0 VA
Total Amps:				6 A	0 A	0 A

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Receptacle	720 VA	100.00%	720 VA	
				Total Conn. Load: 720 VA
				Total Est. Demand: 720 VA
				Total Conn. Current: 2 A
				Total Est. Demand Current: 2 A

REVIT Electrical

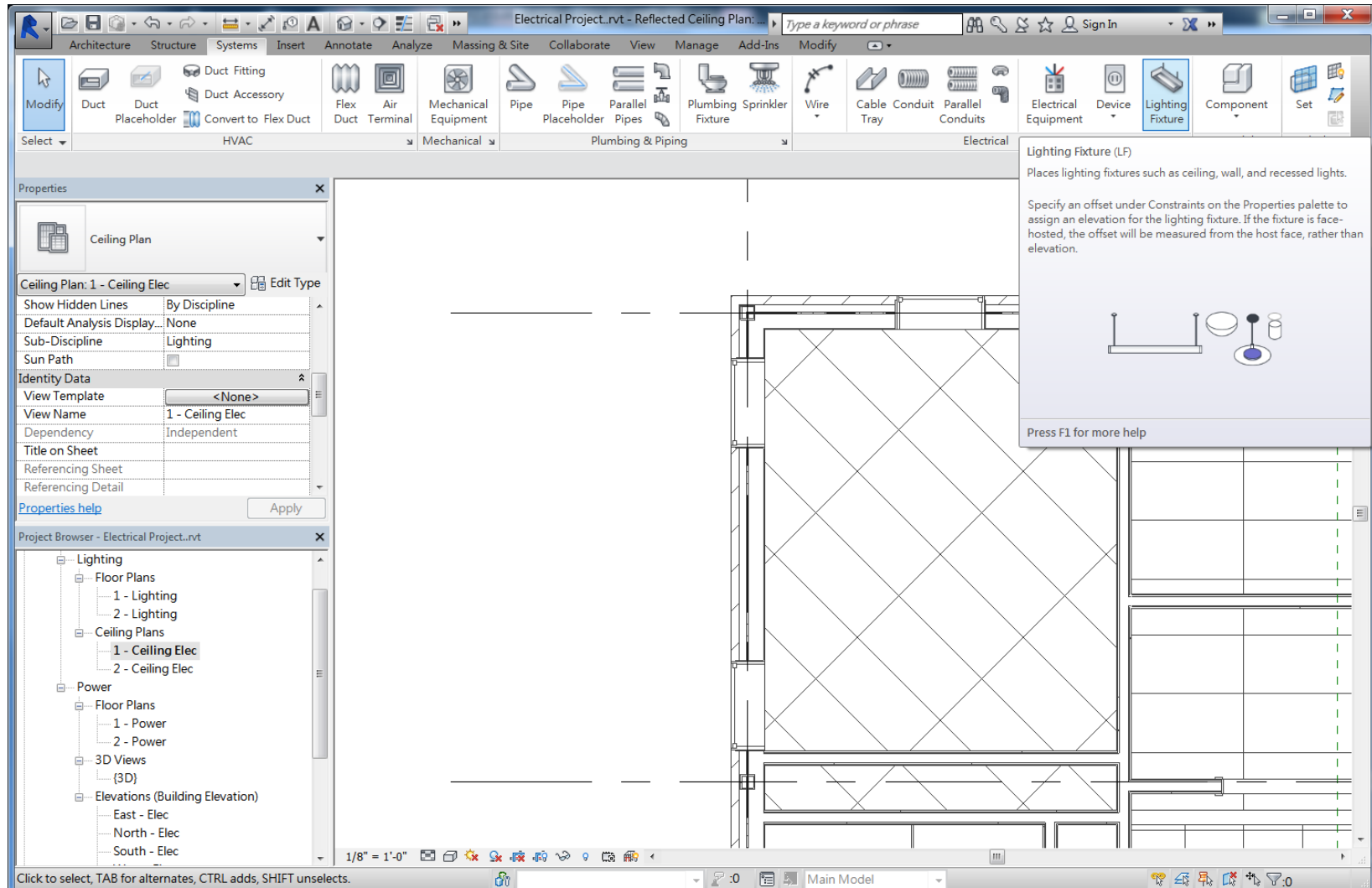
- Creating a circuit



CEII MEP (REVIT)

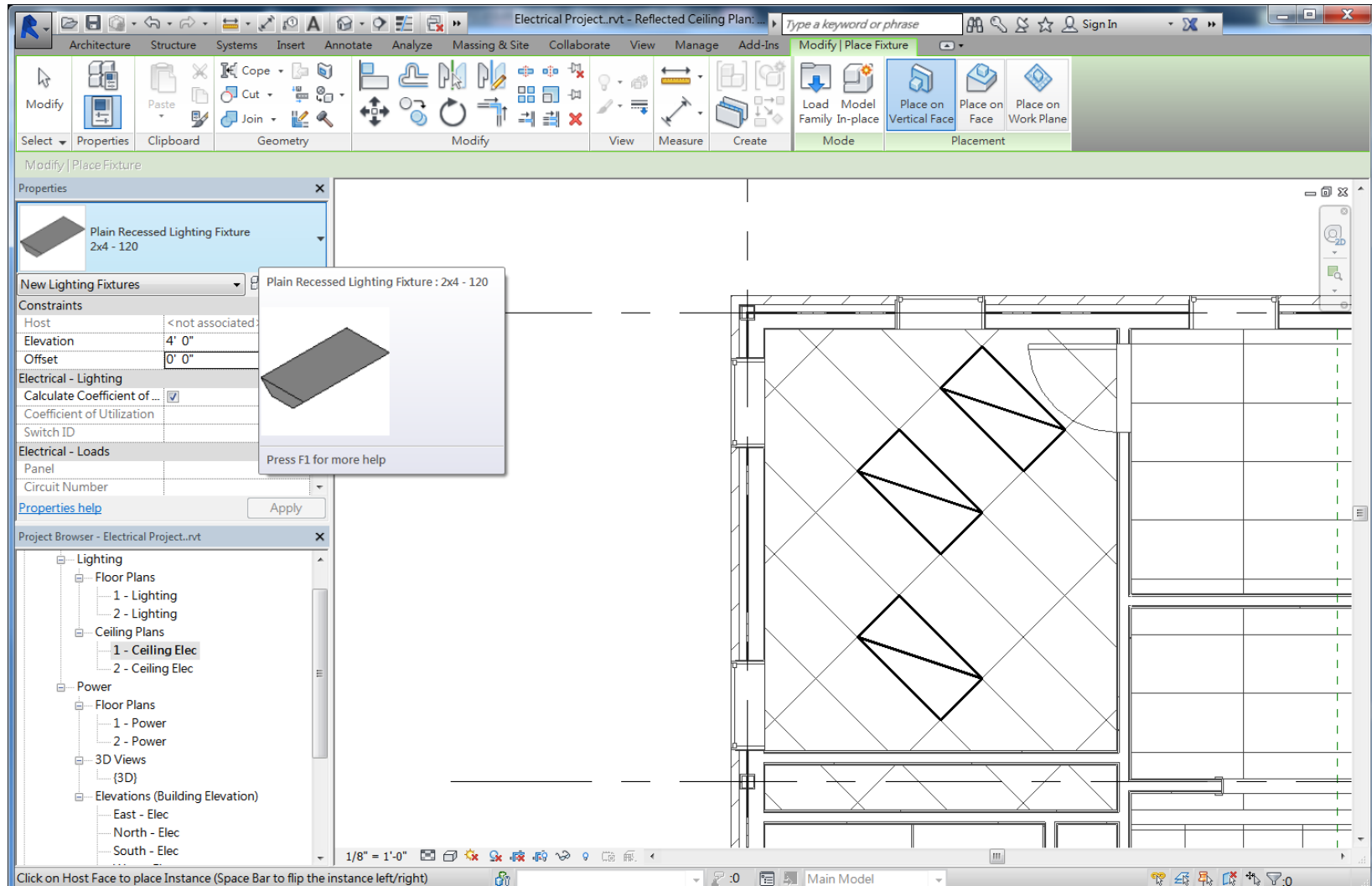
REVIT Electrical

- Adding Lighting Fixtures



REVIT Electrical

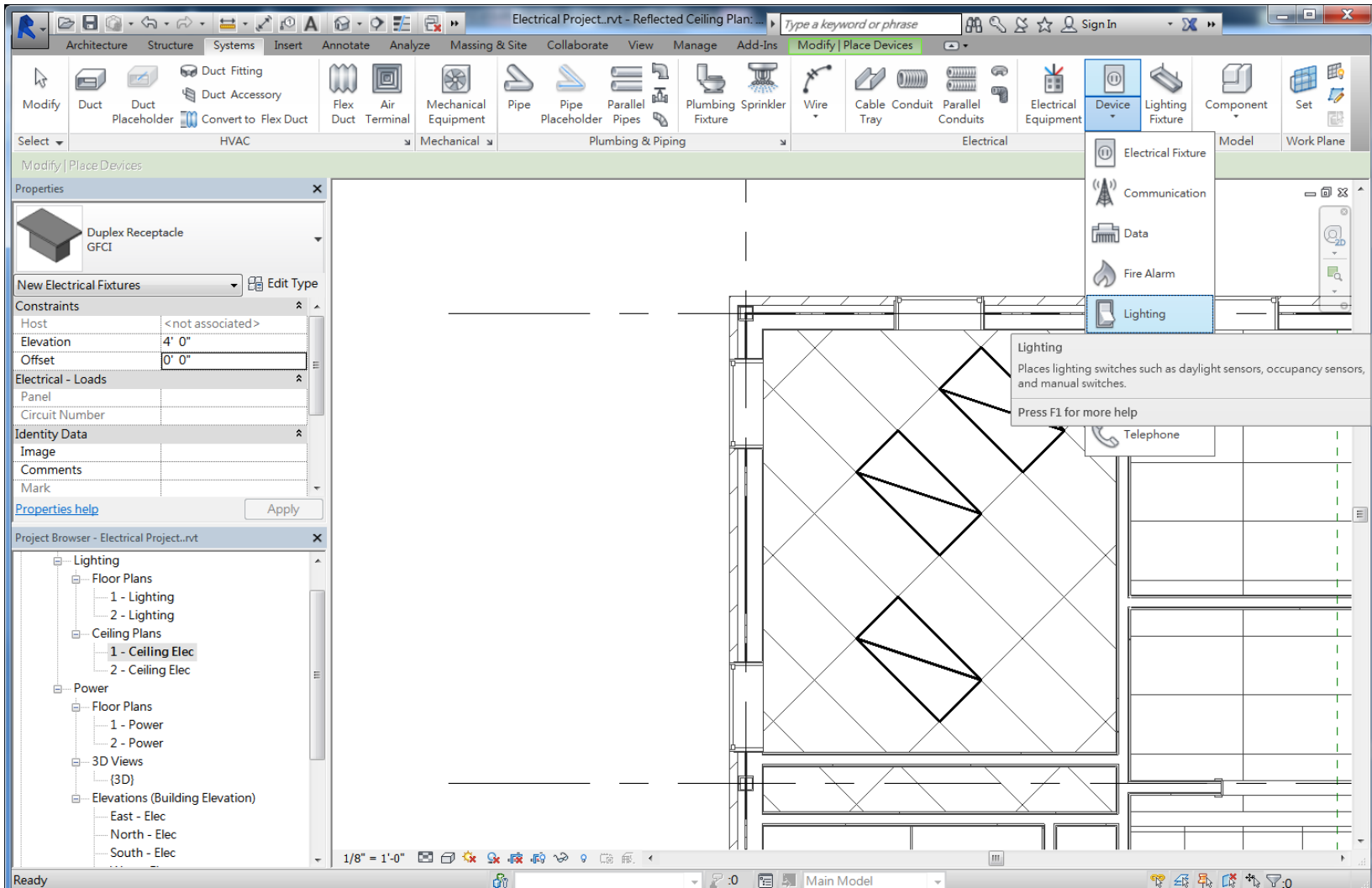
- Adding Lighting Fixtures



CEI MEP (REVIT)

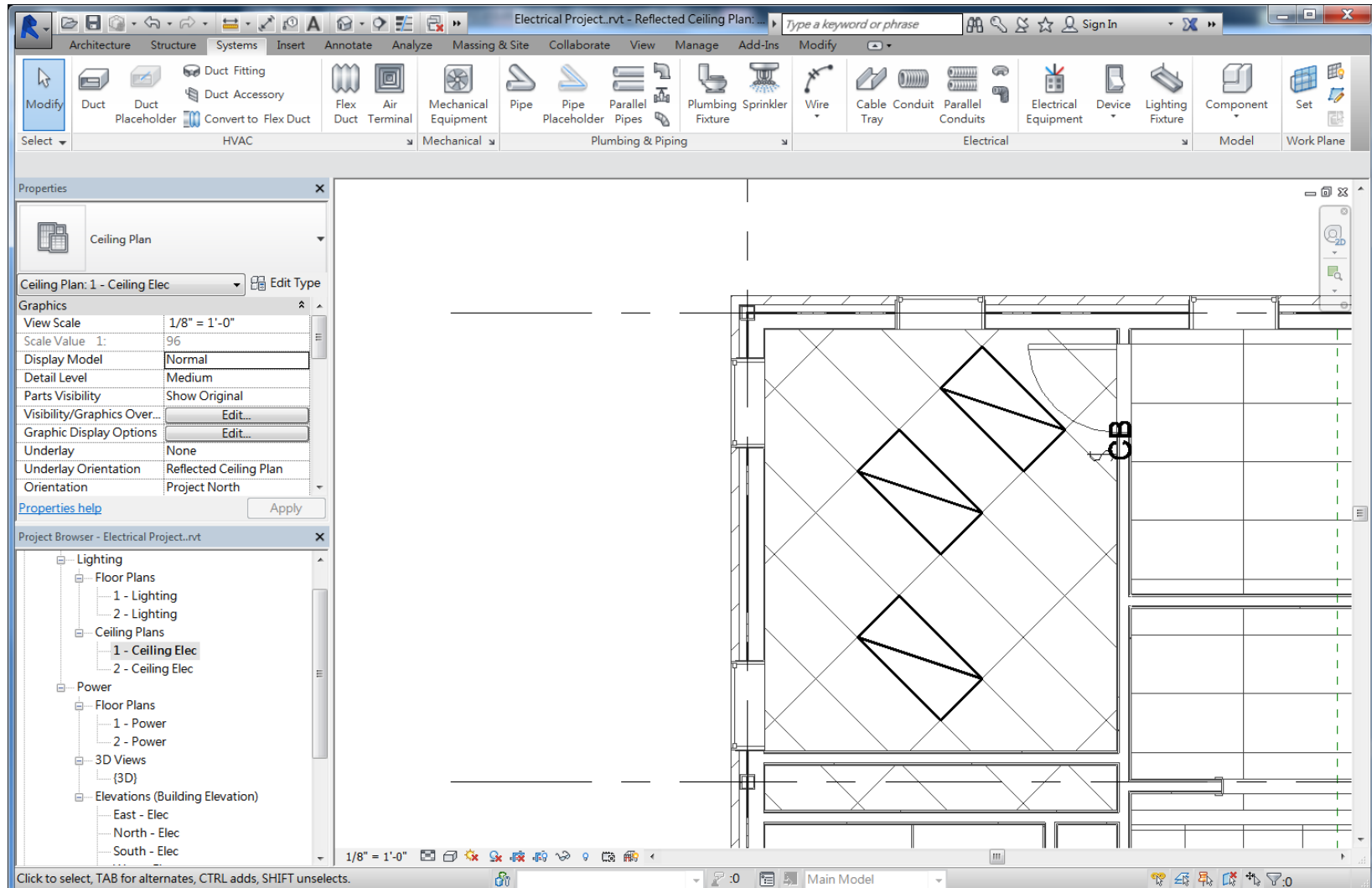
REVIT Electrical

- Adding Switches



REVIT Electrical

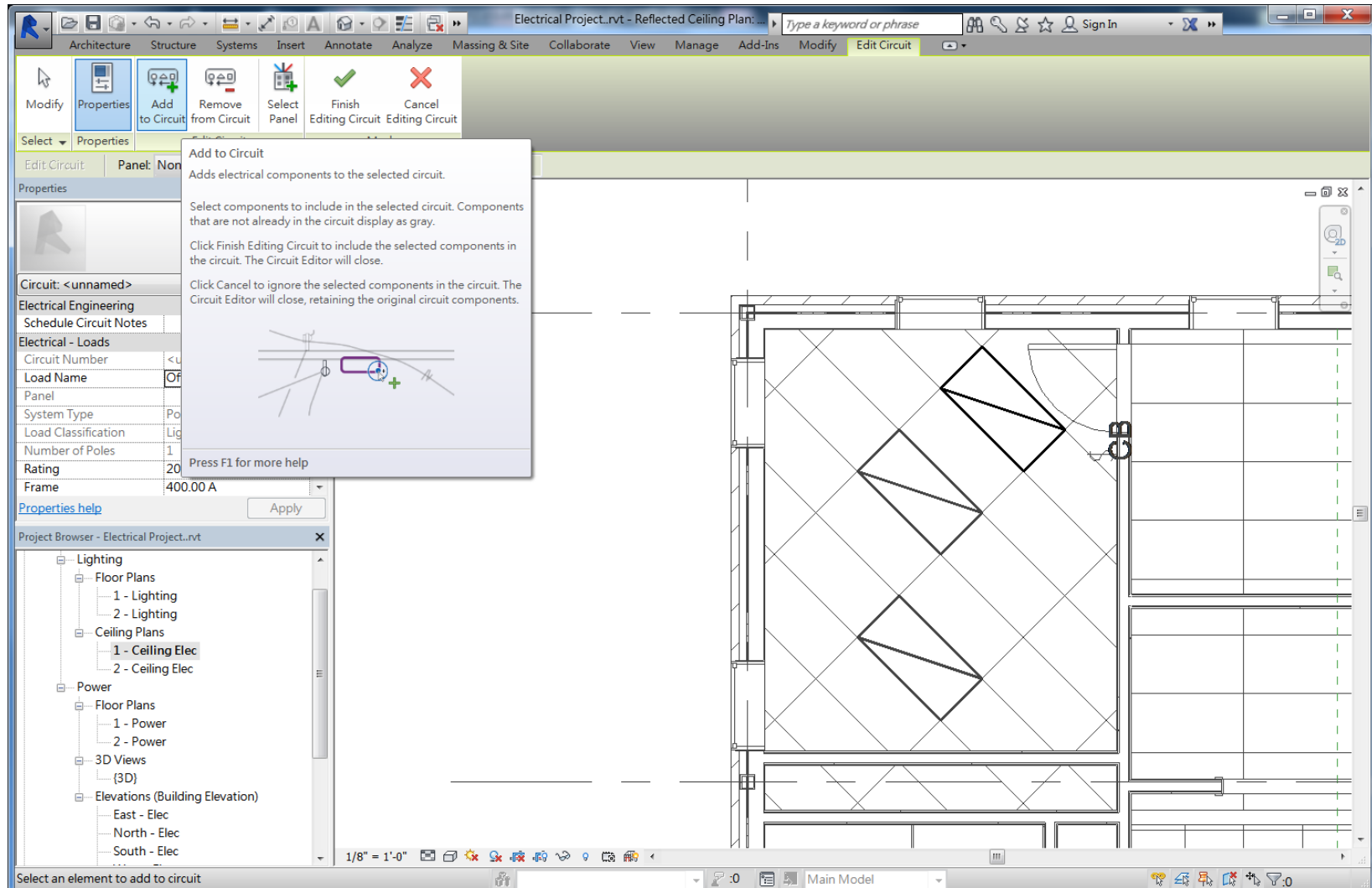
- Adding Switches



CEI MEP (REVIT)

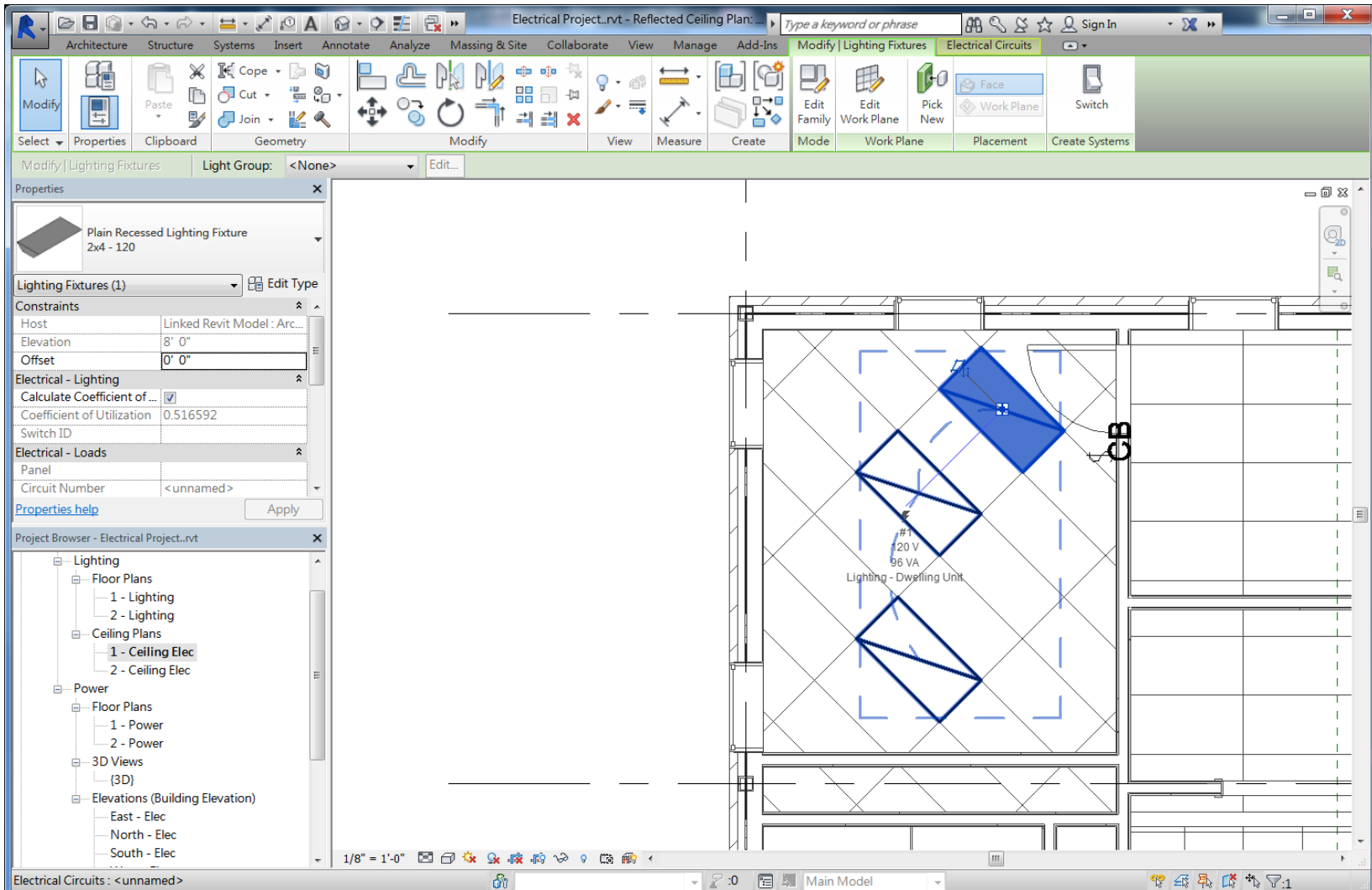
REVIT Electrical

- Adding Switches



REVIT Electrical

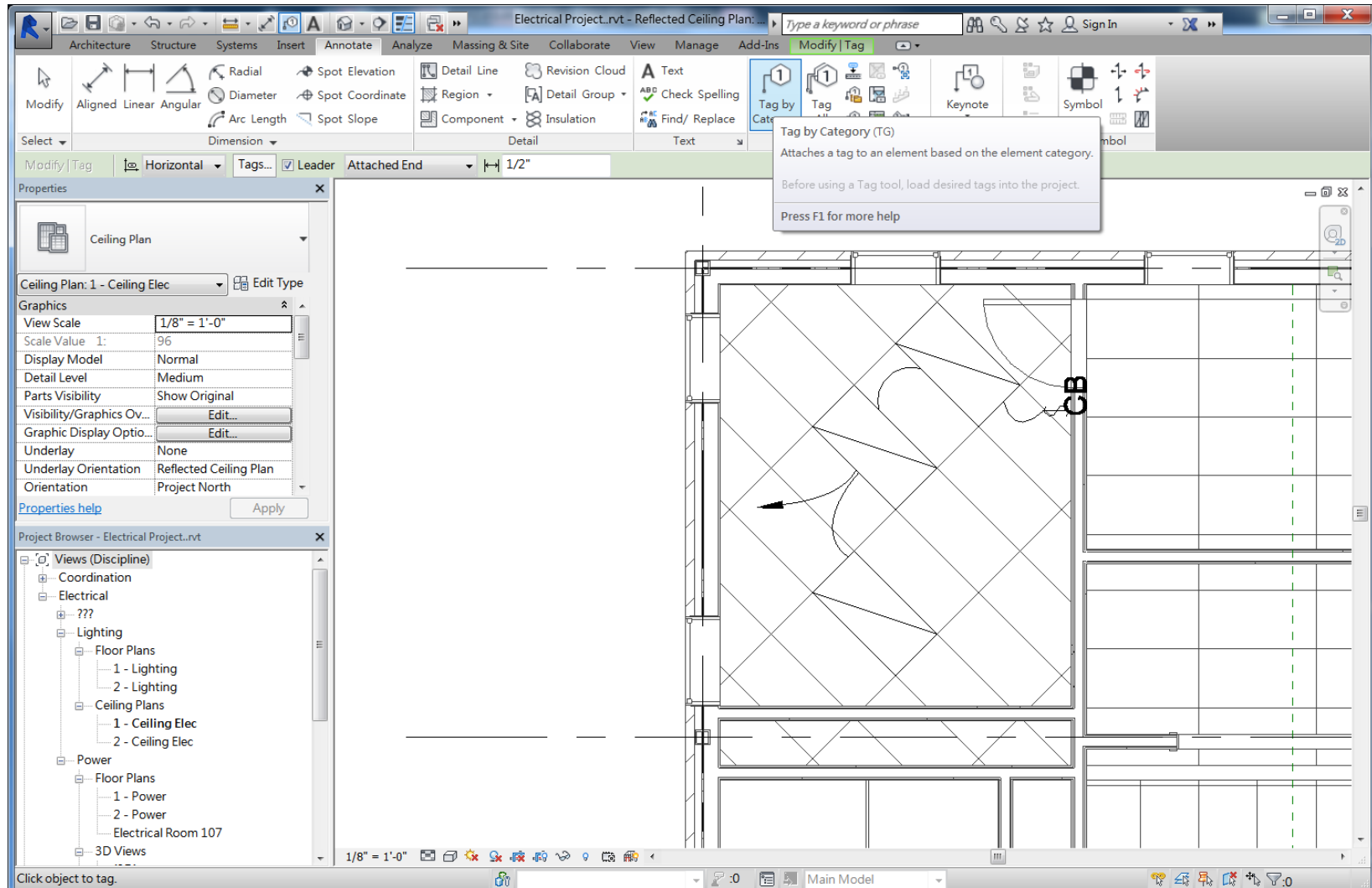
- Adding Switches



CEI MEP (REVIT)

REVIT Electrical

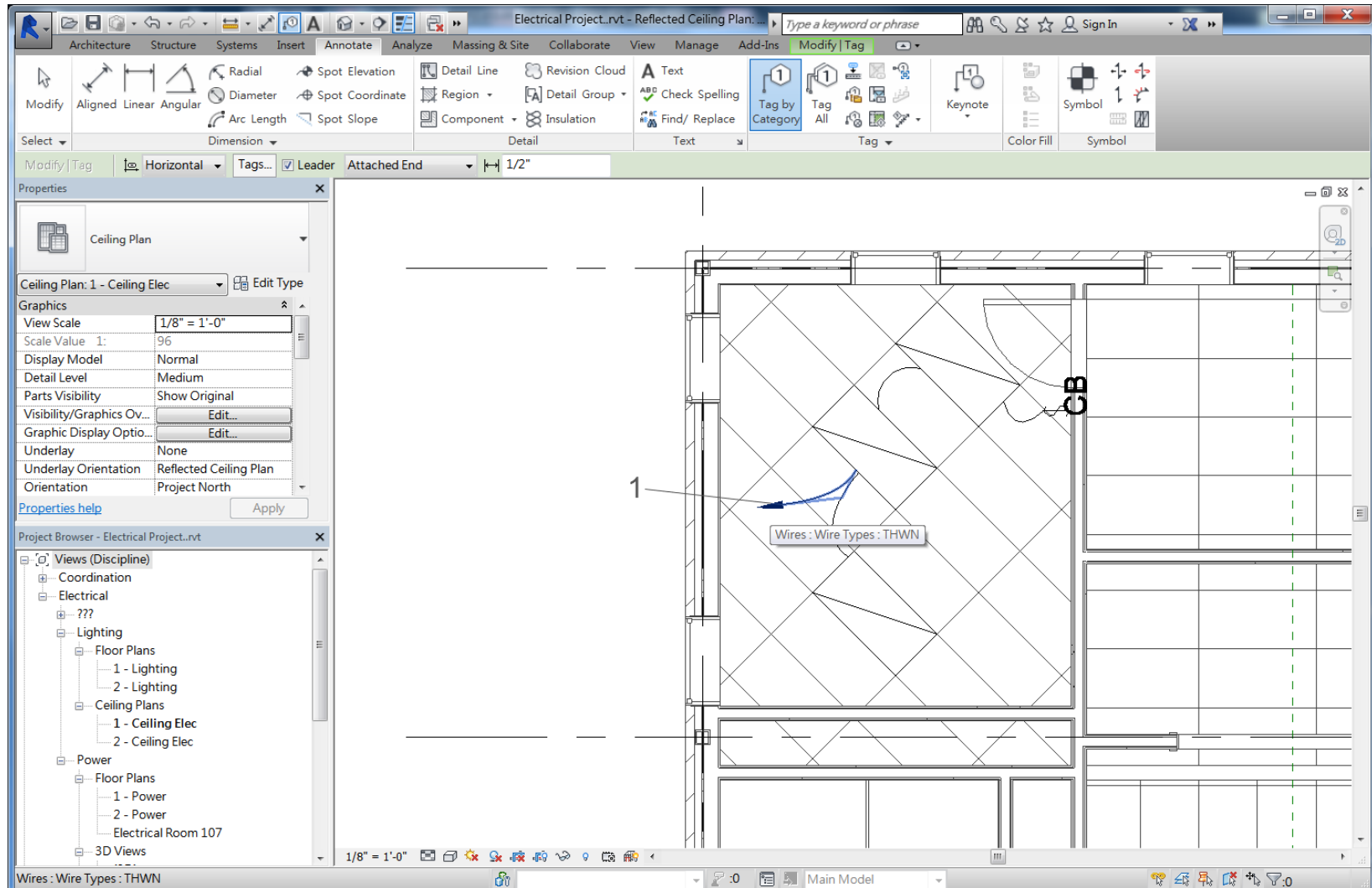
- Creating and Labeling a wiring



CEII MEP (REVIT)

REVIT Electrical

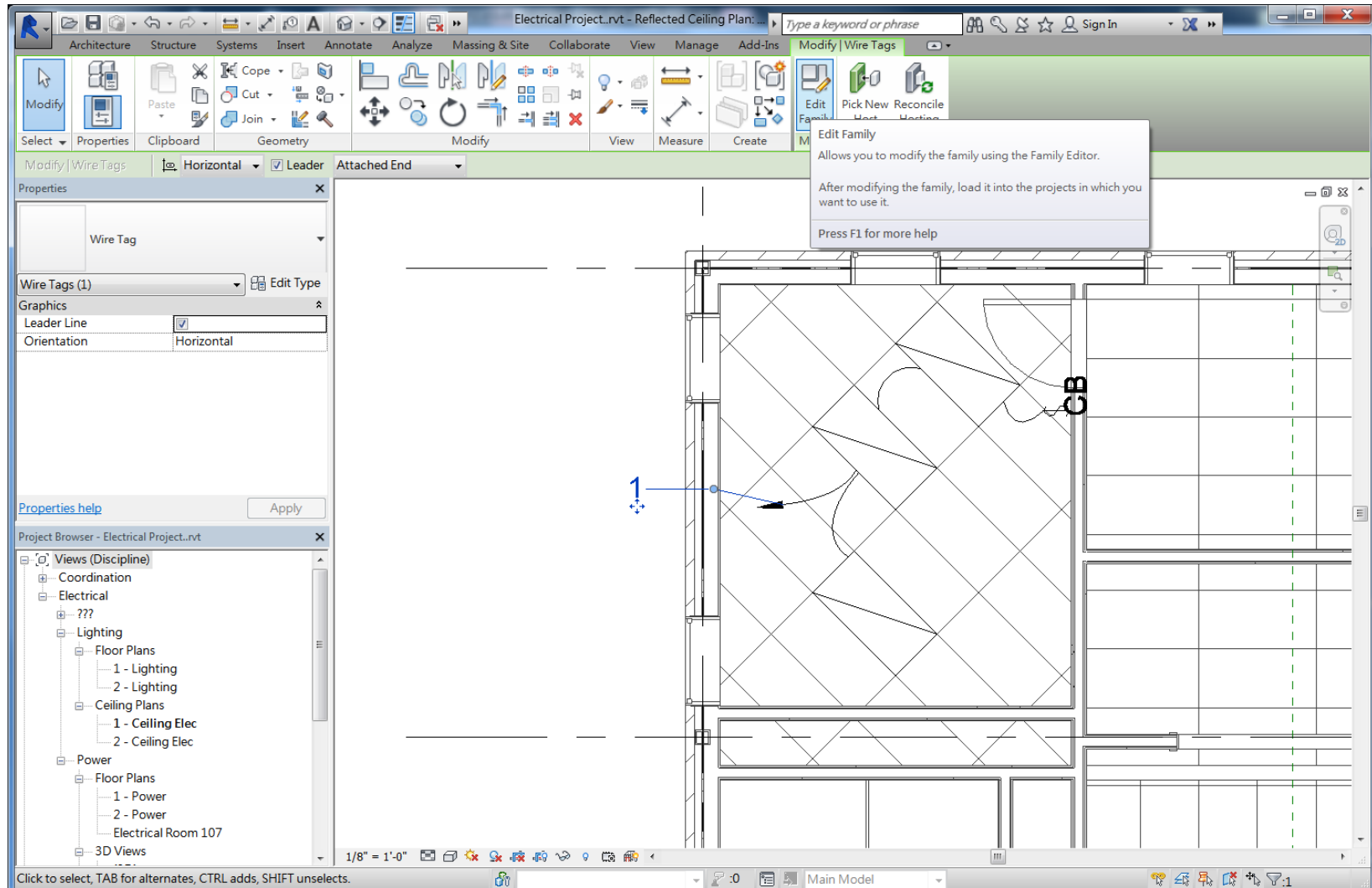
- Creating and Labeling a wiring



CEI MEP (REVIT)

REVIT Electrical

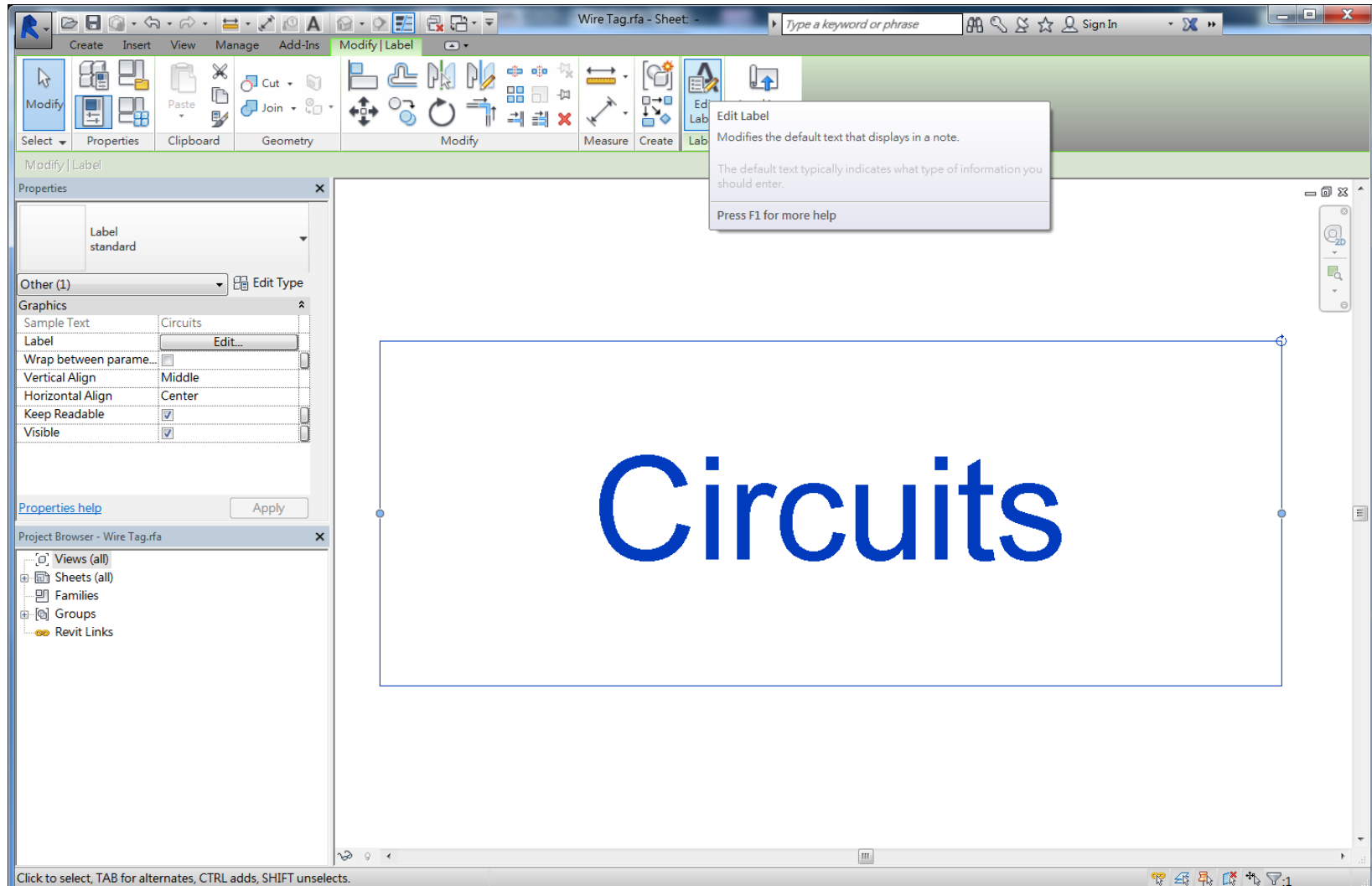
- Creating and Labeling a wiring



CEII MEP (REVIT)

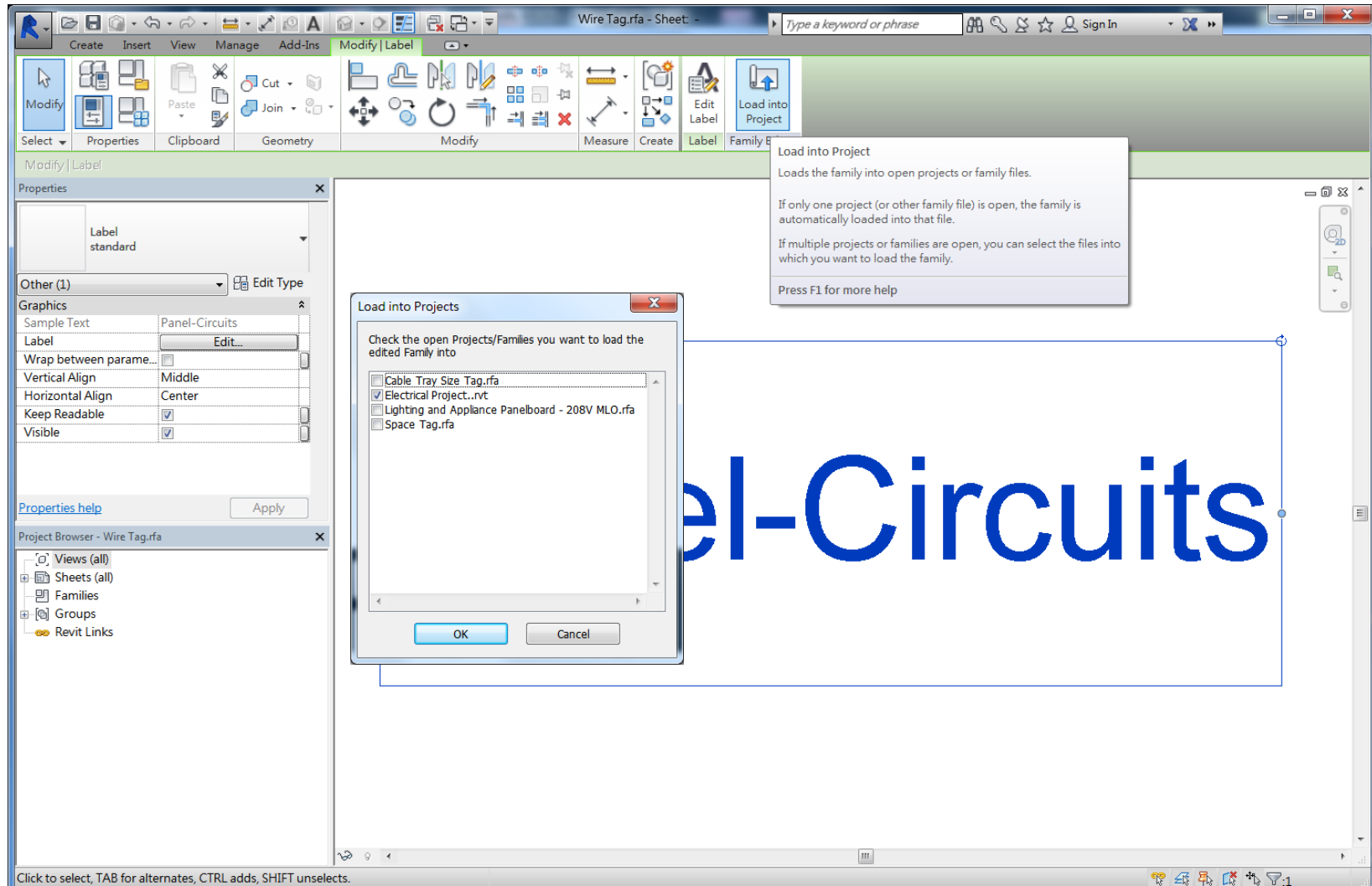
REVIT Electrical

- Creating and Labeling a wiring



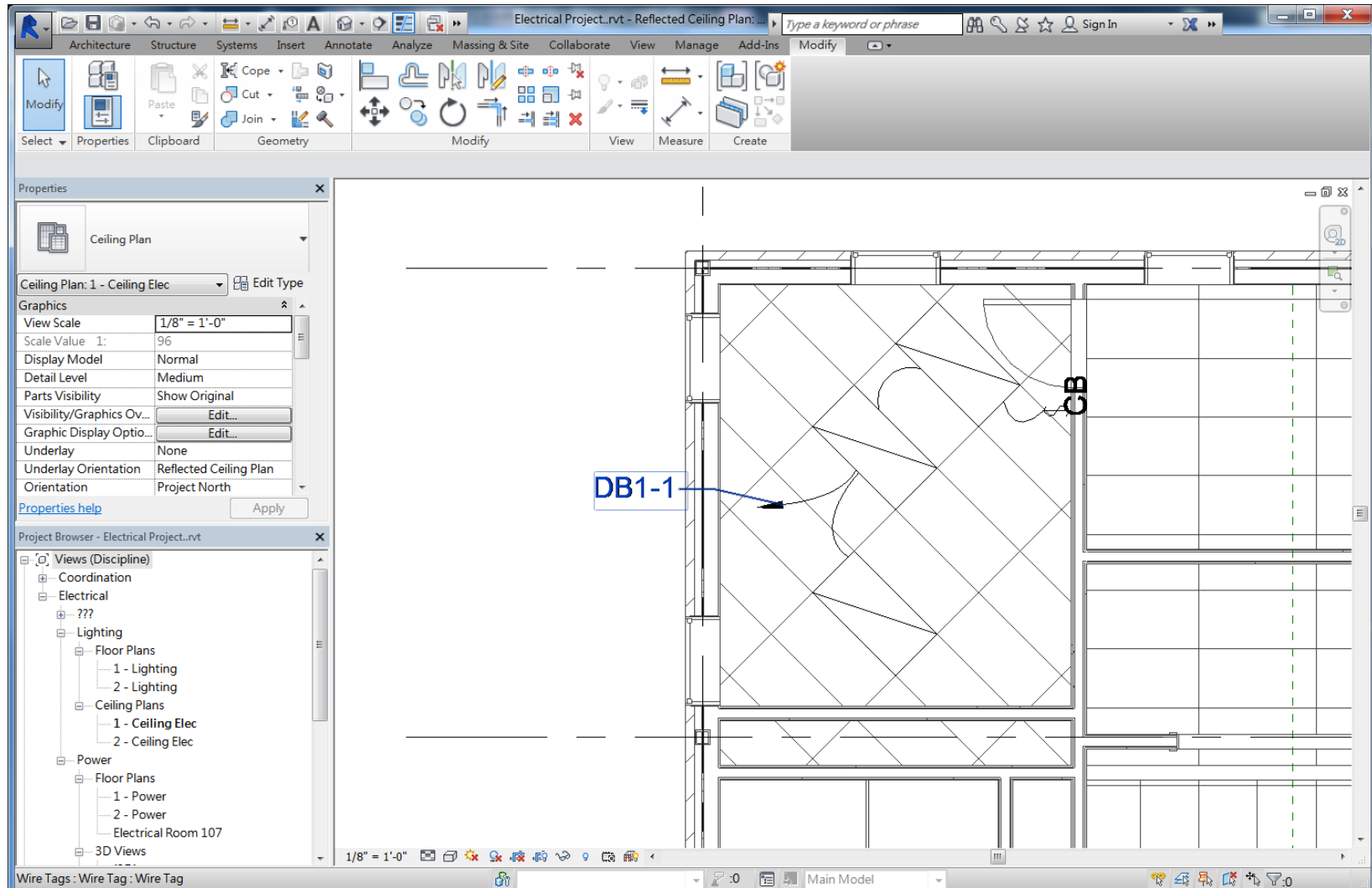
REVIT Electrical

- Creating and Labeling a wiring



REVIT Electrical

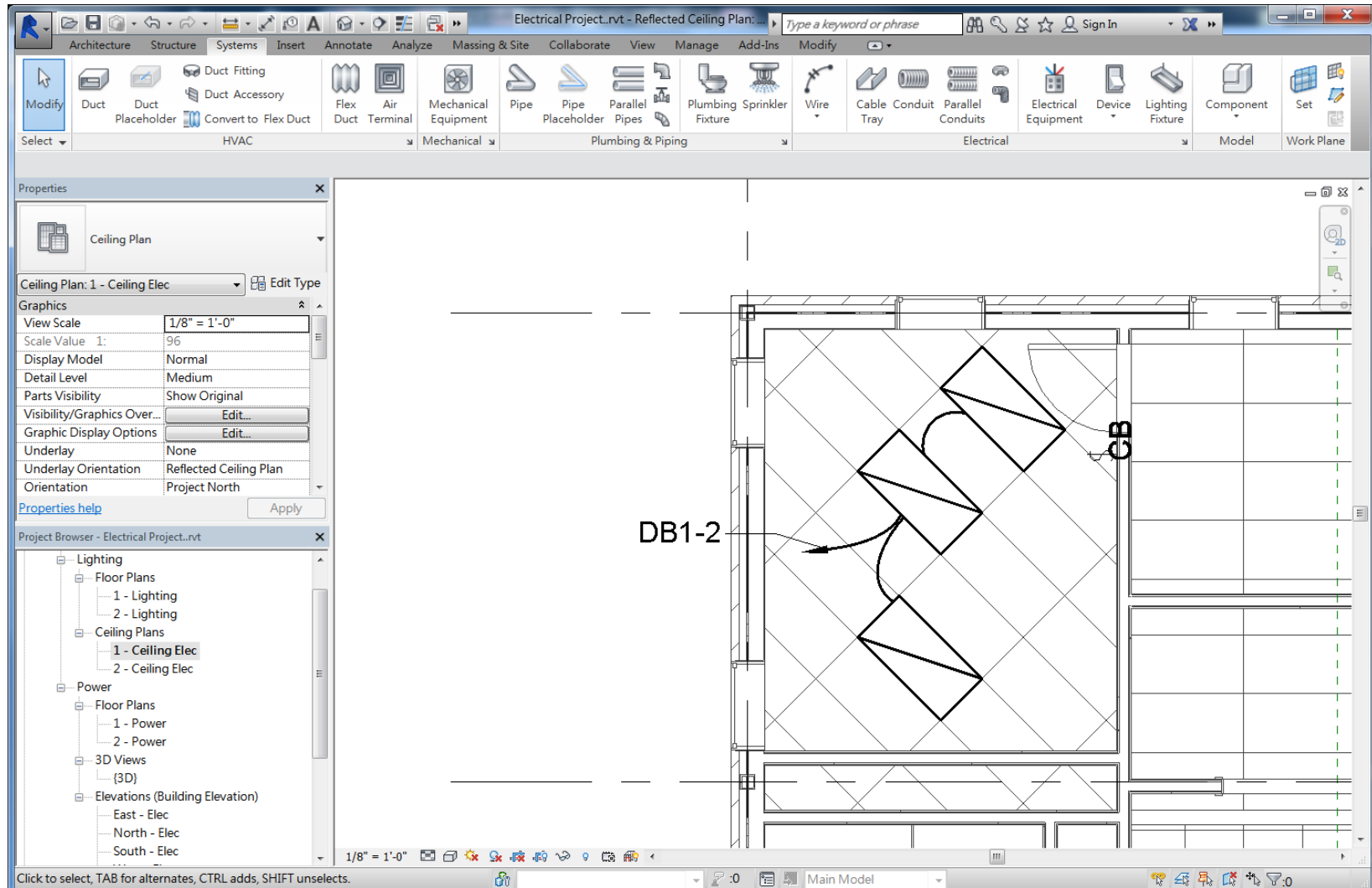
- Creating and Labeling a wiring



CEII MEP (REVIT)

REVIT Electrical

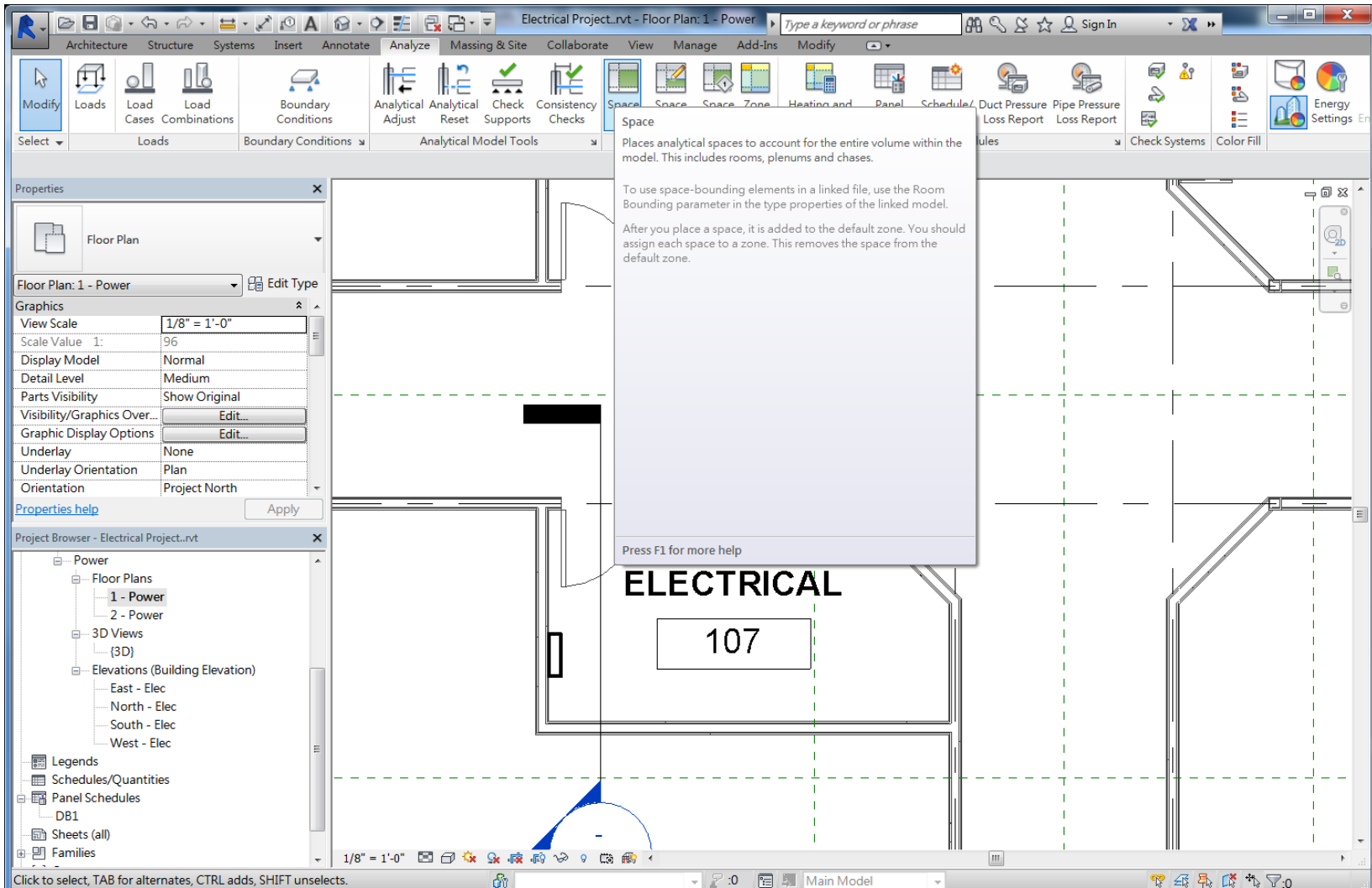
- Creating and Labeling a wiring



CEI MEP (REVIT)

REVIT Electrical

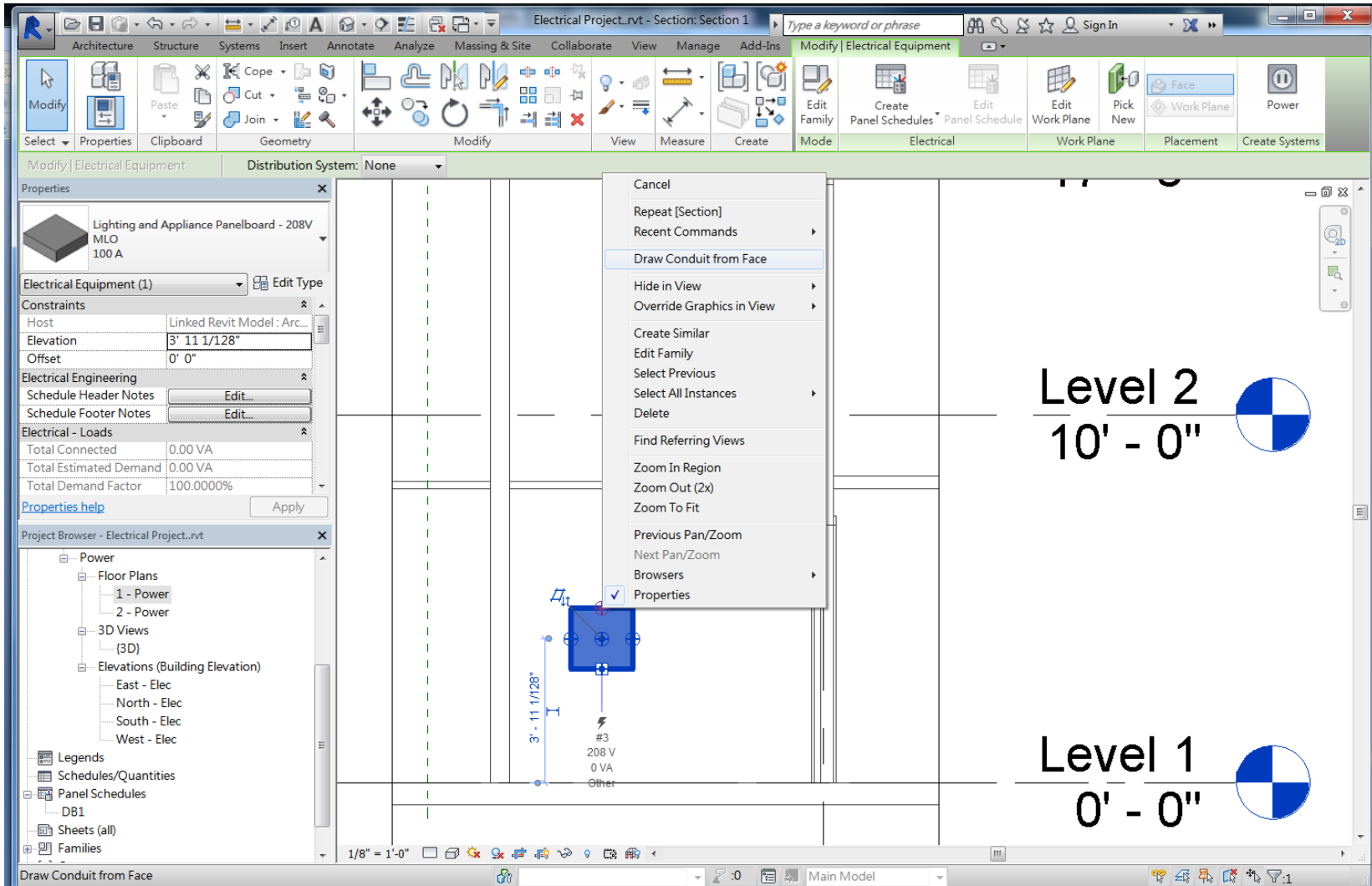
- Adding Conduit



CEI MEP (REVIT)

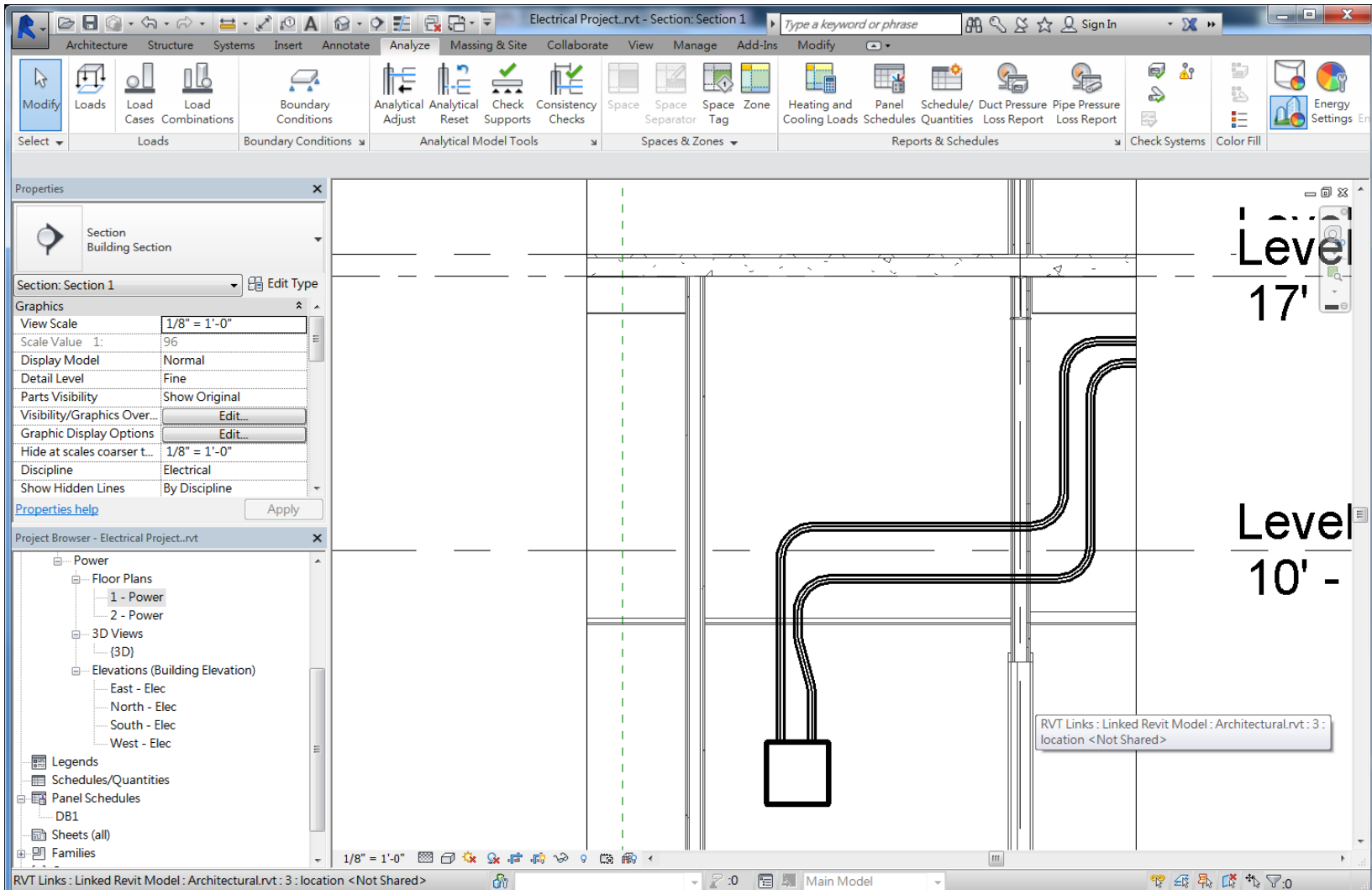
REVIT Electrical

- Adding Conduit



REVIT Electrical

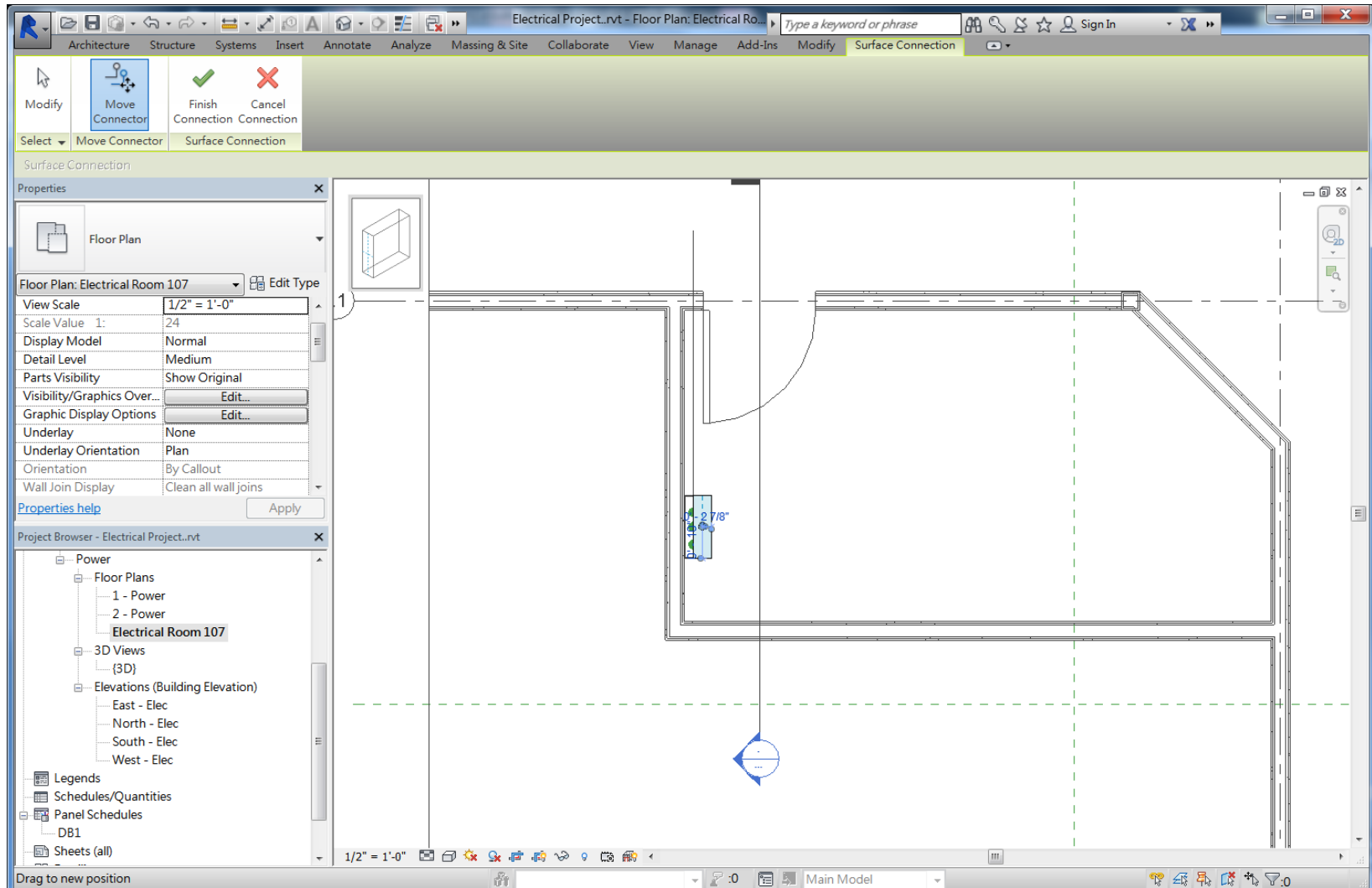
- Adding Conduit



CEI MEP (REVIT)

REVIT Electrical

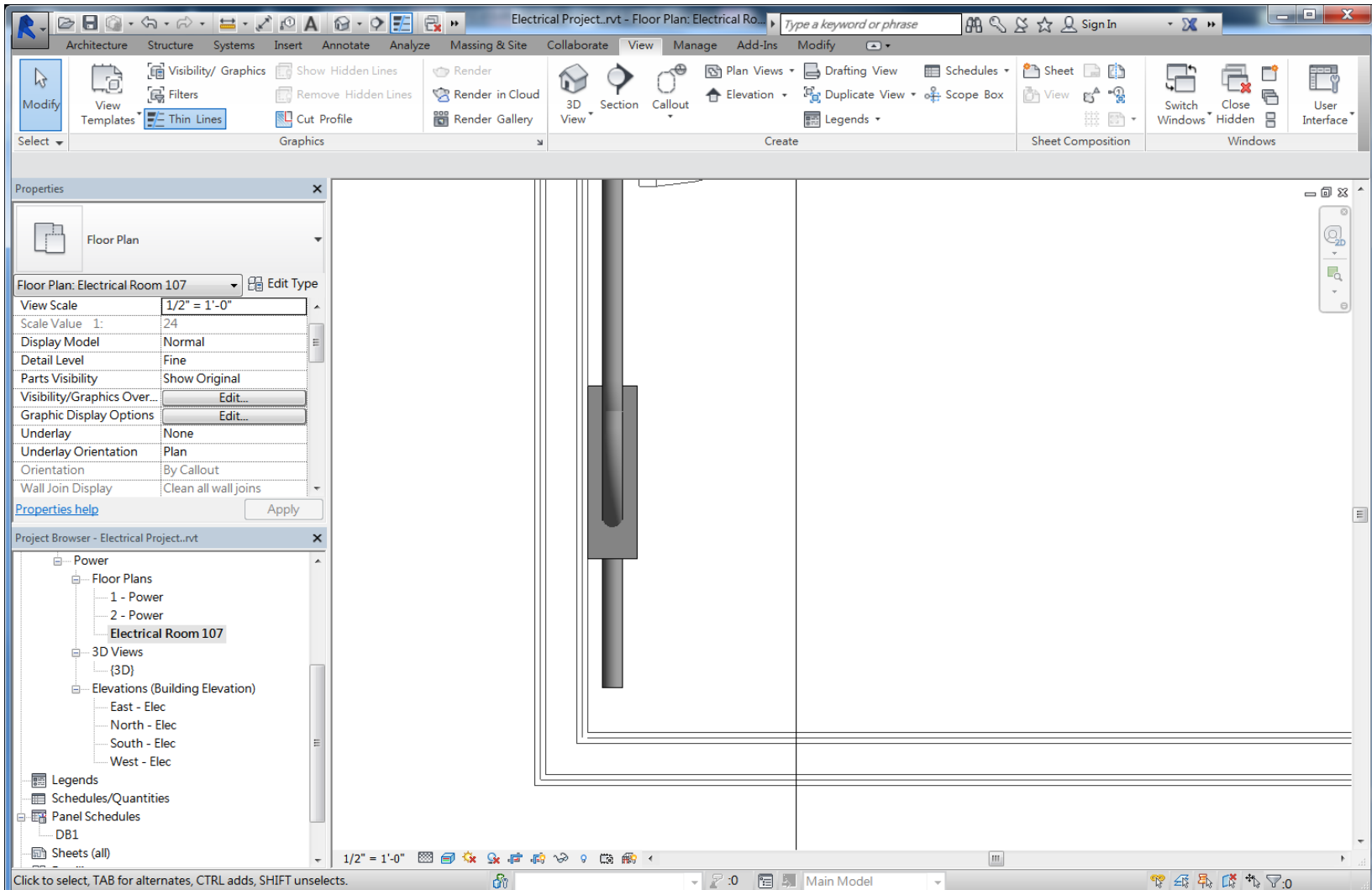
- Apply Difference Conduit Type



CEI MEP (REVIT)

REVIT Electrical

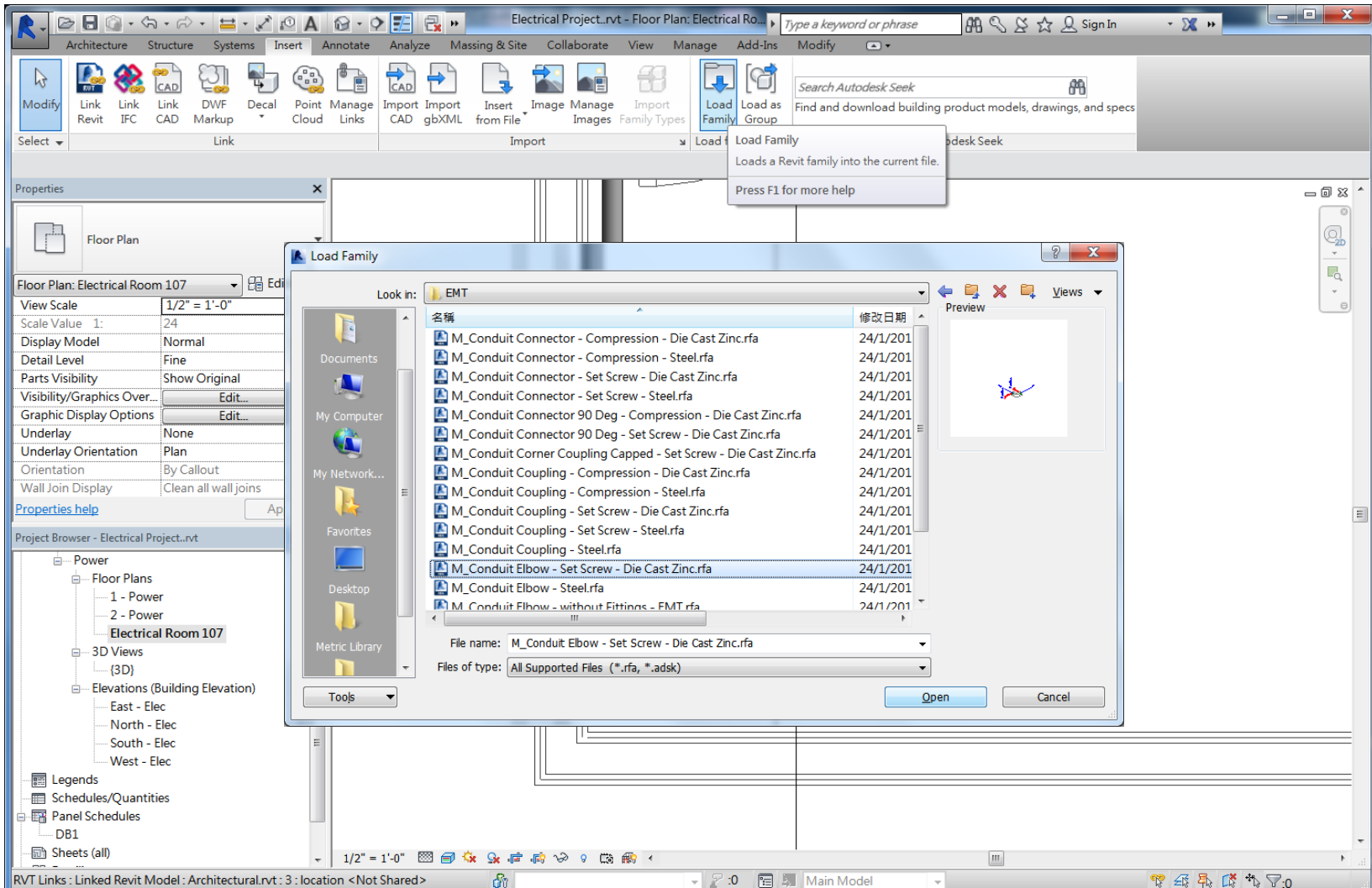
- Apply Difference Conduit Type



CEI MEP (REVIT)

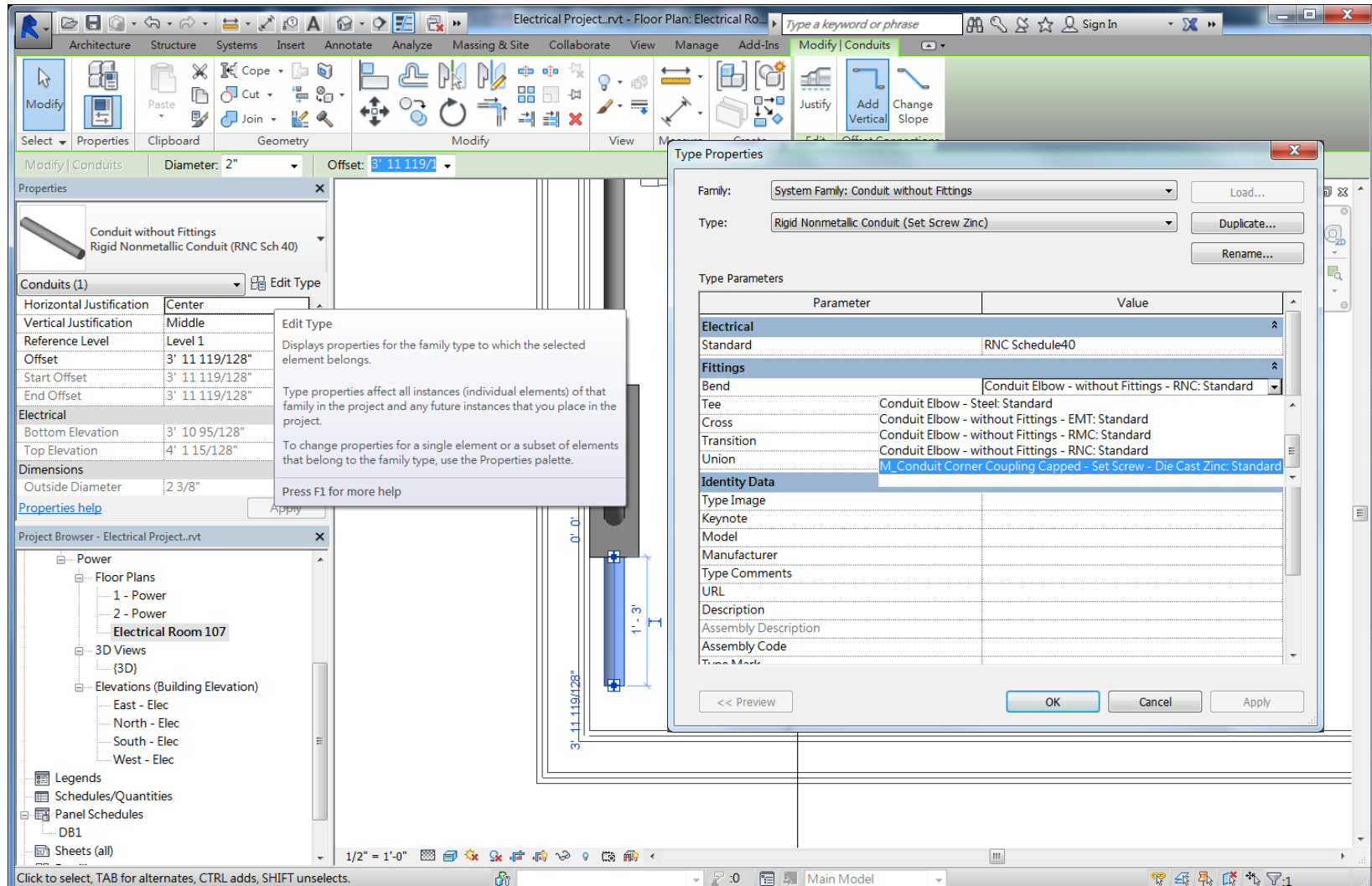
REVIT Electrical

- Apply Difference Conduit Type



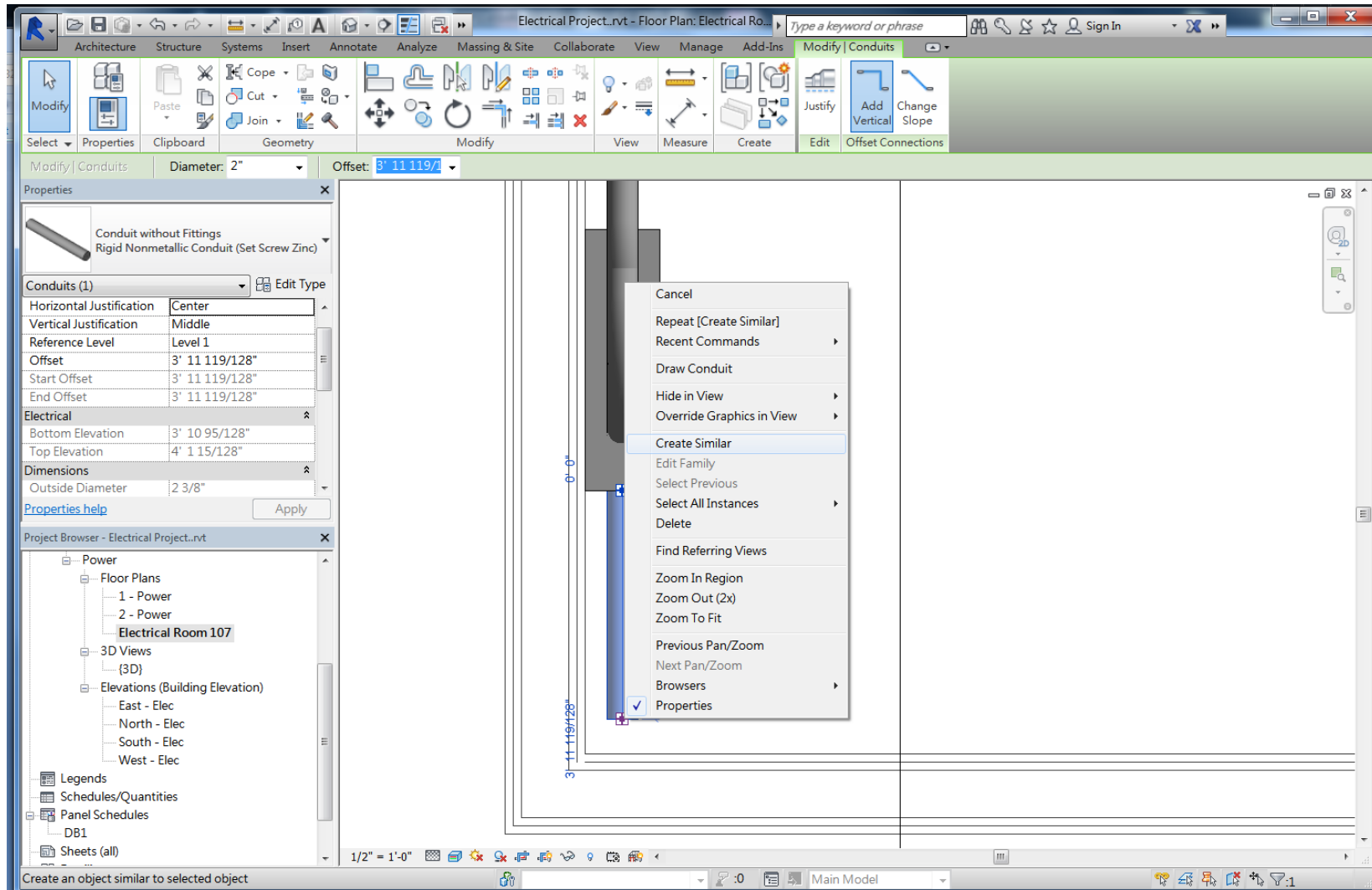
REVIT Electrical

- Apply Difference Conduit Type



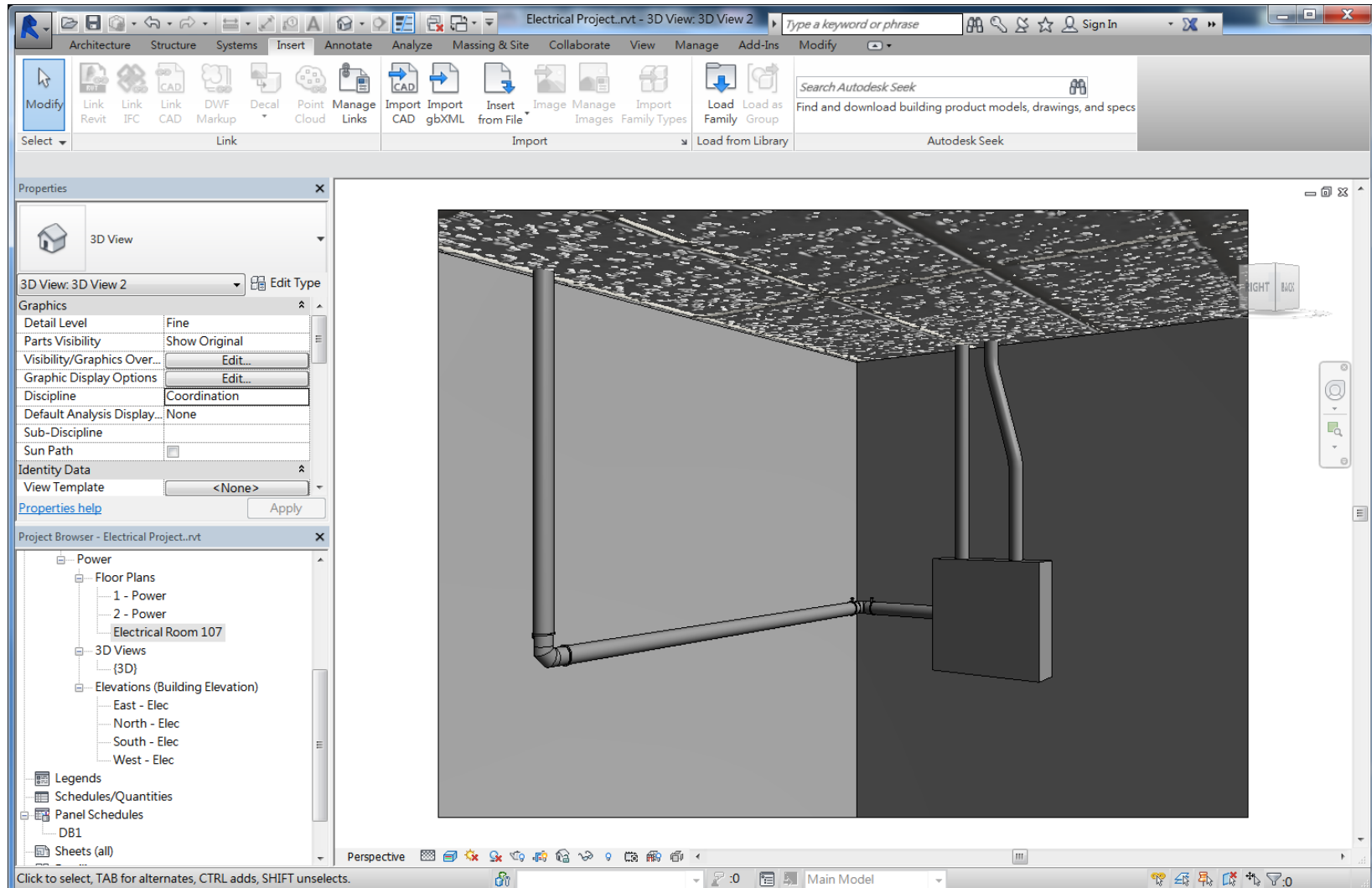
REVIT Electrical

- Apply Difference Conduit Type



REVIT Electrical

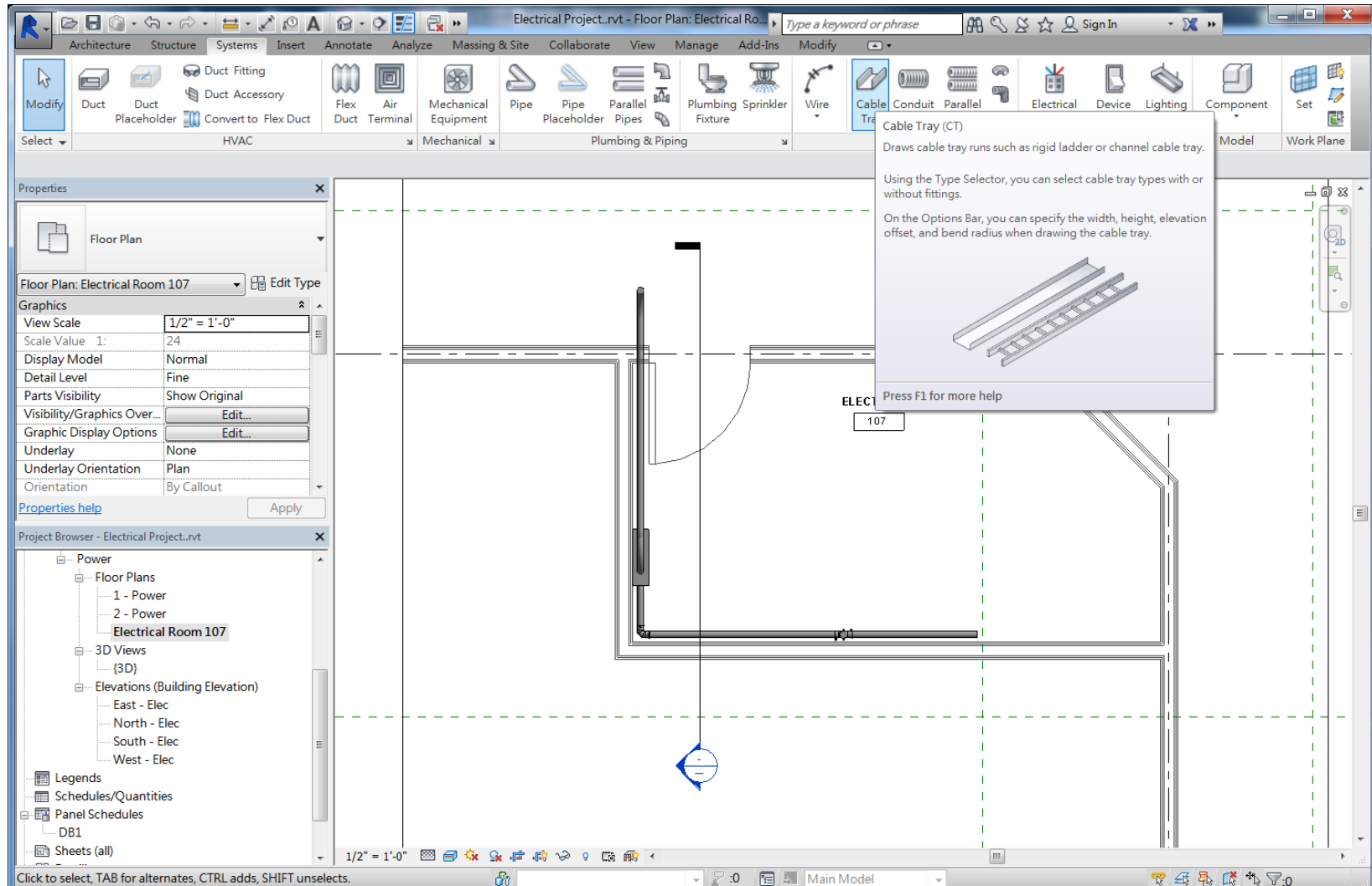
- Apply Difference Conduit Type



CEII MEP (REVIT)

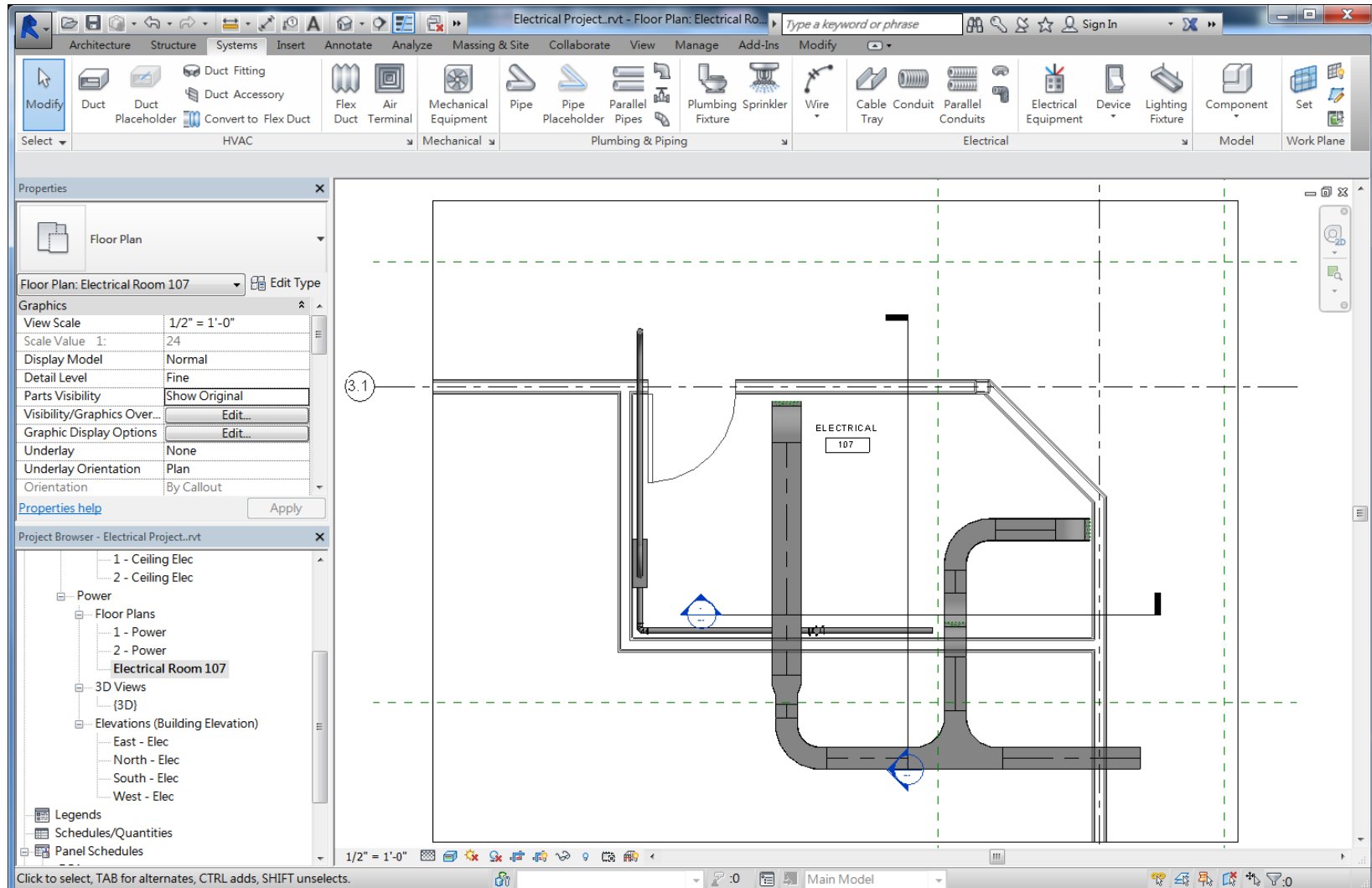
REVIT Electrical

- Adding Cable Tray



REVIT Electrical

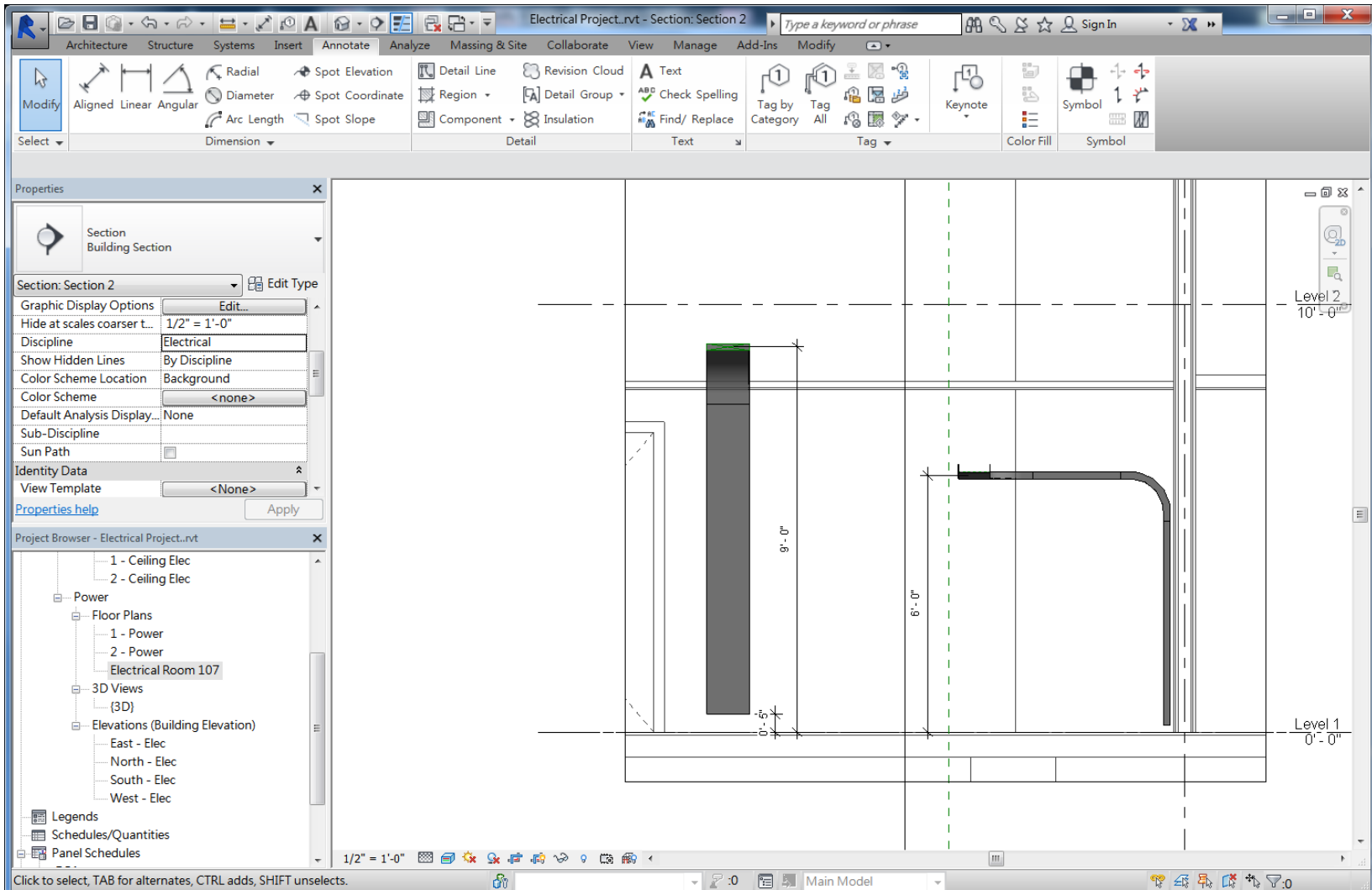
- Adding Cable Tray



CEII MEP (REVIT)

REVIT Electrical

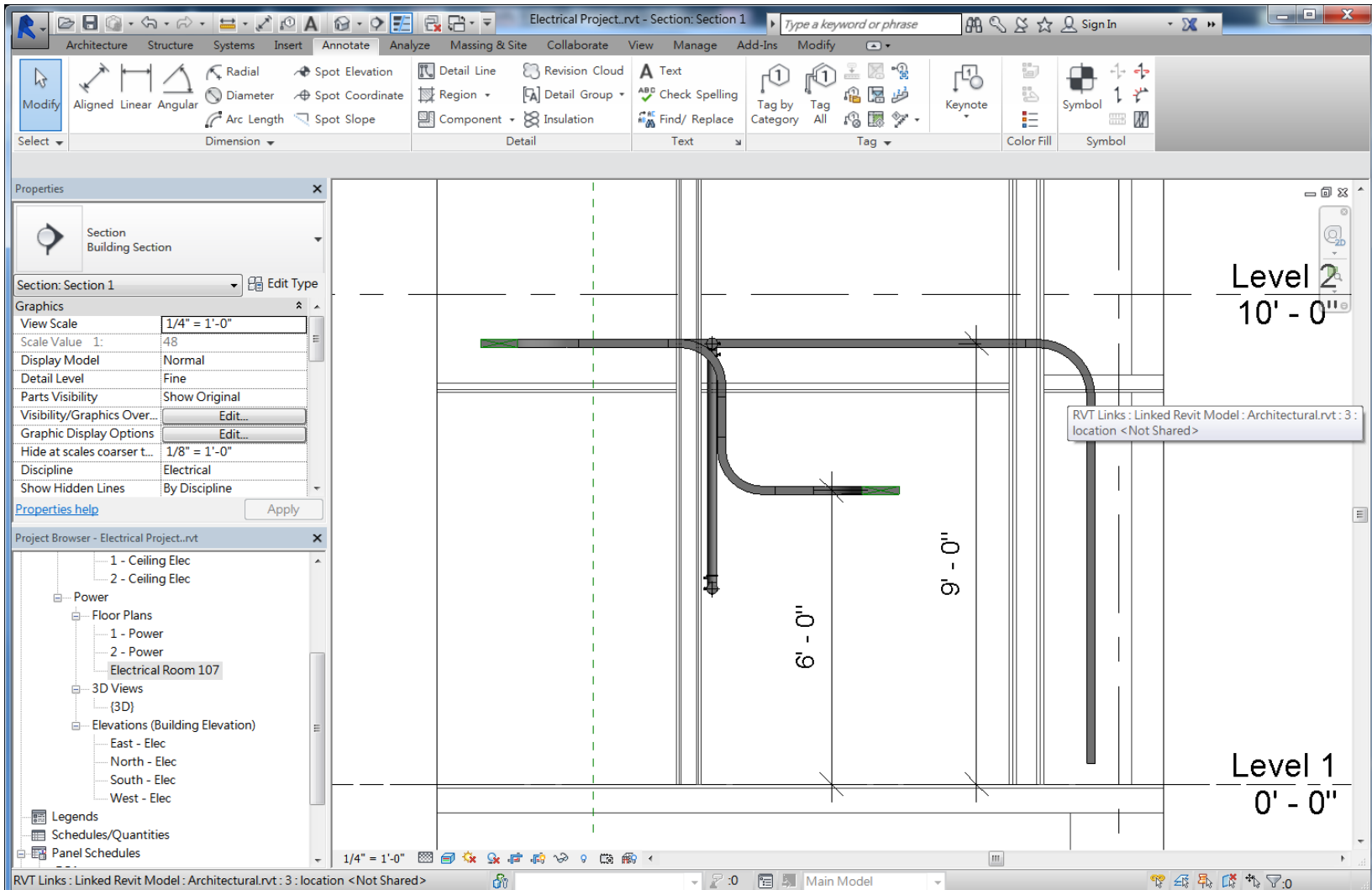
- Adding Cable Tray



CEII MEP (REVIT)

REVIT Electrical

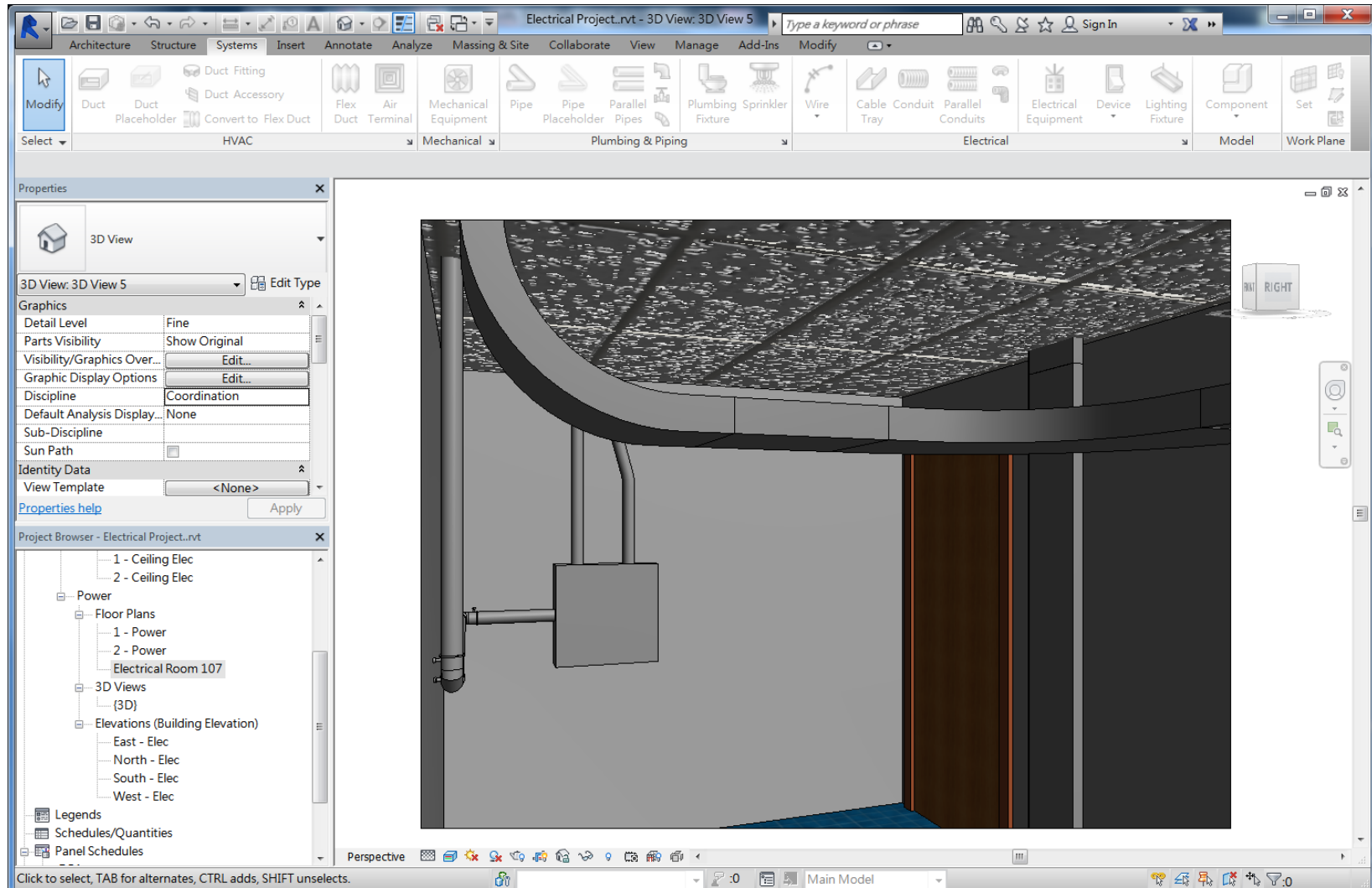
- Adding Cable Tray



CELL MEP (REVIT)

REVIT Electrical

- Adding Cable Tray



CEII MEP (REVIT)

REVIT Electrical

- Challenge
- Find Kitchen area by looking at the spaces in the model

On 1 - Power

- Add 2 receptacles above the counter at 4'-0"
- Add 2 receptacles each at 0'-6" on wall (any)
- Add 1 panel (named DB-K) at 6'-0" on wall (any)
- Creating a circuit connected to all receptacles
- Creating panel schedule

On 1 - Lighting

- Add 12 nos. of Lighting Fixture 2x4 (by 4 columns x 3 rows)
- Add 1 no. of Switch at 4'-0" near door (any)
- Creating a Lighting Circuit connected to all Lighting Fixtures
- Creating a Switching Circuit connected to all Lighting Fixtures
- Label the Lighting Circuit (e.g. DB-K-1)



ADVANCED CONSTRUCTION INFORMATION DEVELOPMENT

David Fung / T.W. Kwok

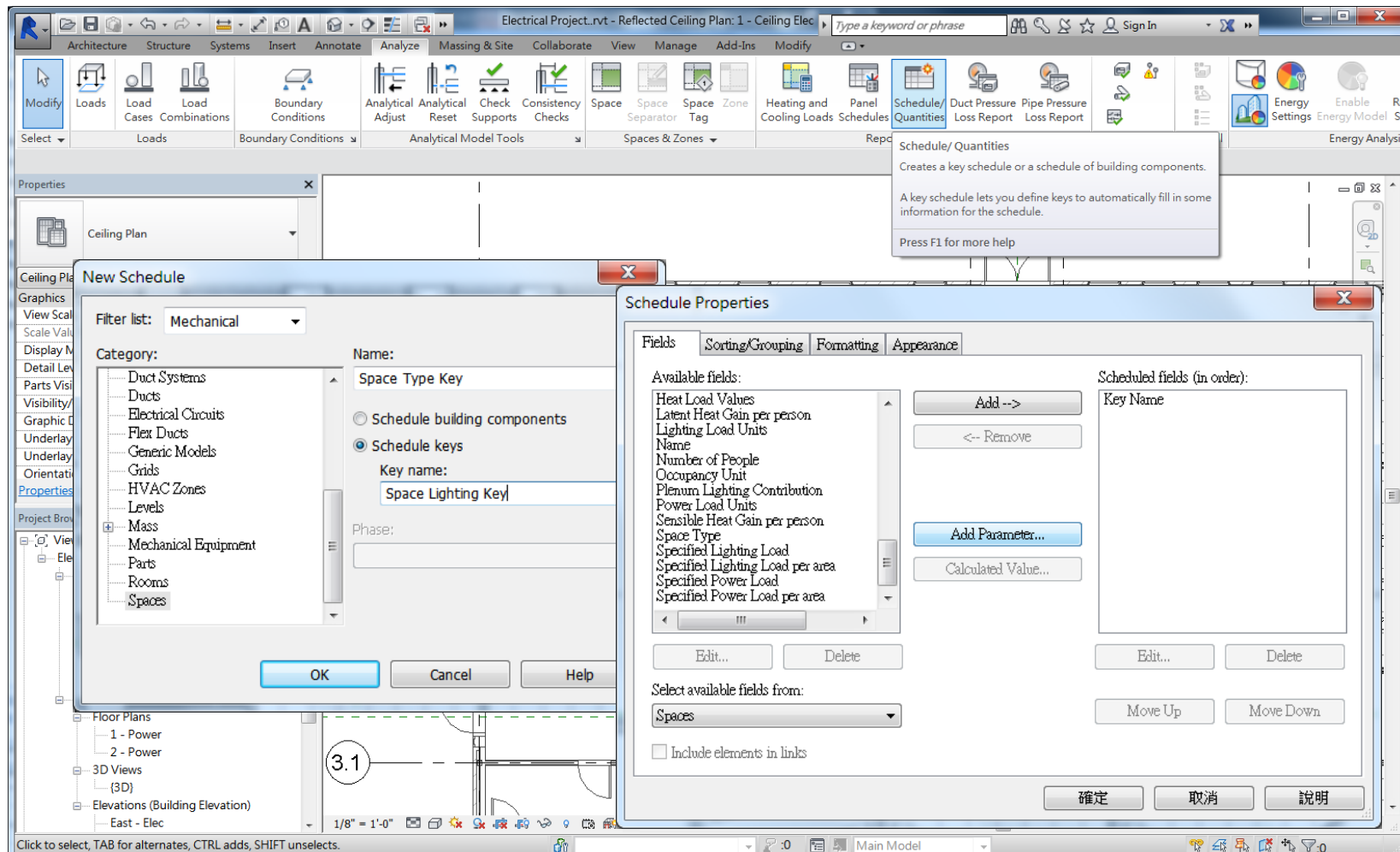
CEII MEP (REVIT)

REVIT Electrical

- Lighting Level Analysis
 - ✓ Using a “Schedule” and “Schedule Key” to analysis Lighting Level
 - ✓ Modelled Lighting Level vs Required Lighting Level

REVIT Electrical

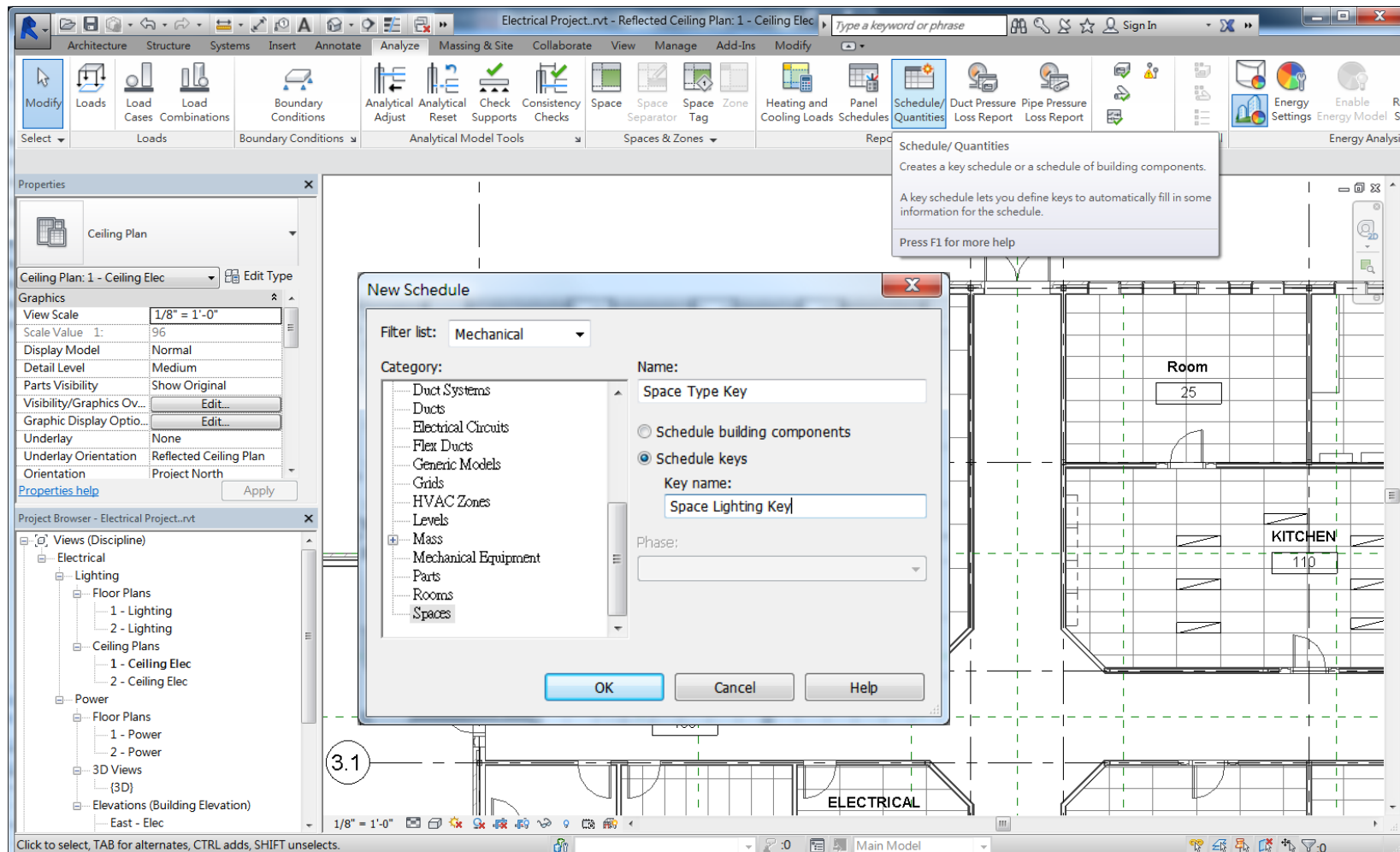
- Lighting Level Analysis



CEI MEP (REVIT)

REVIT Electrical

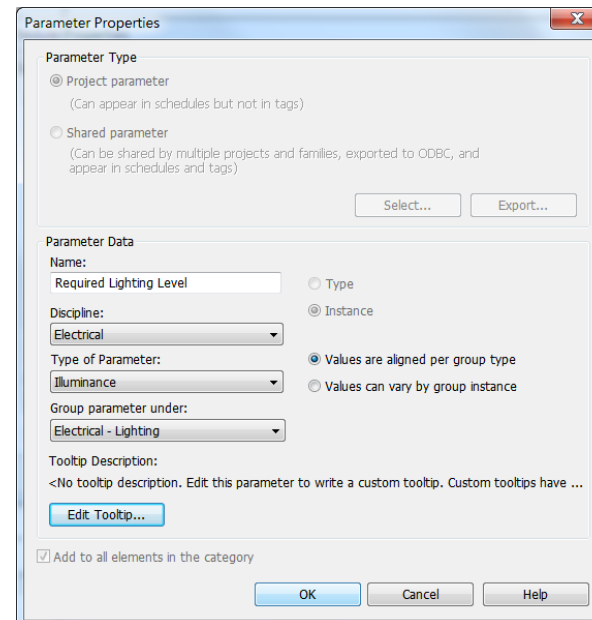
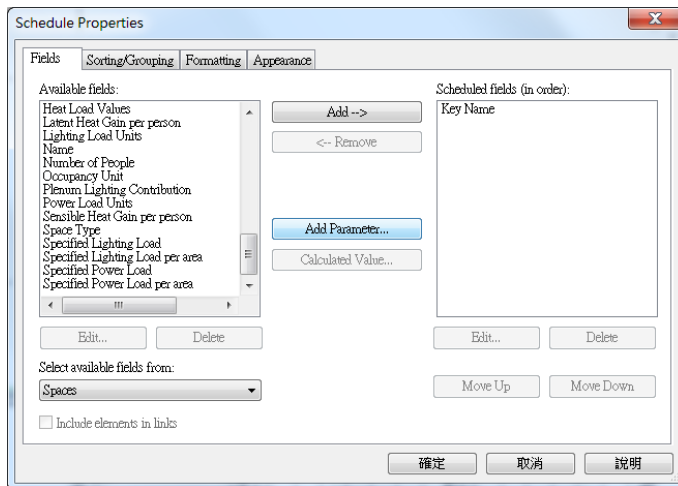
- Lighting Level Analysis



CEI MEP (REVIT)

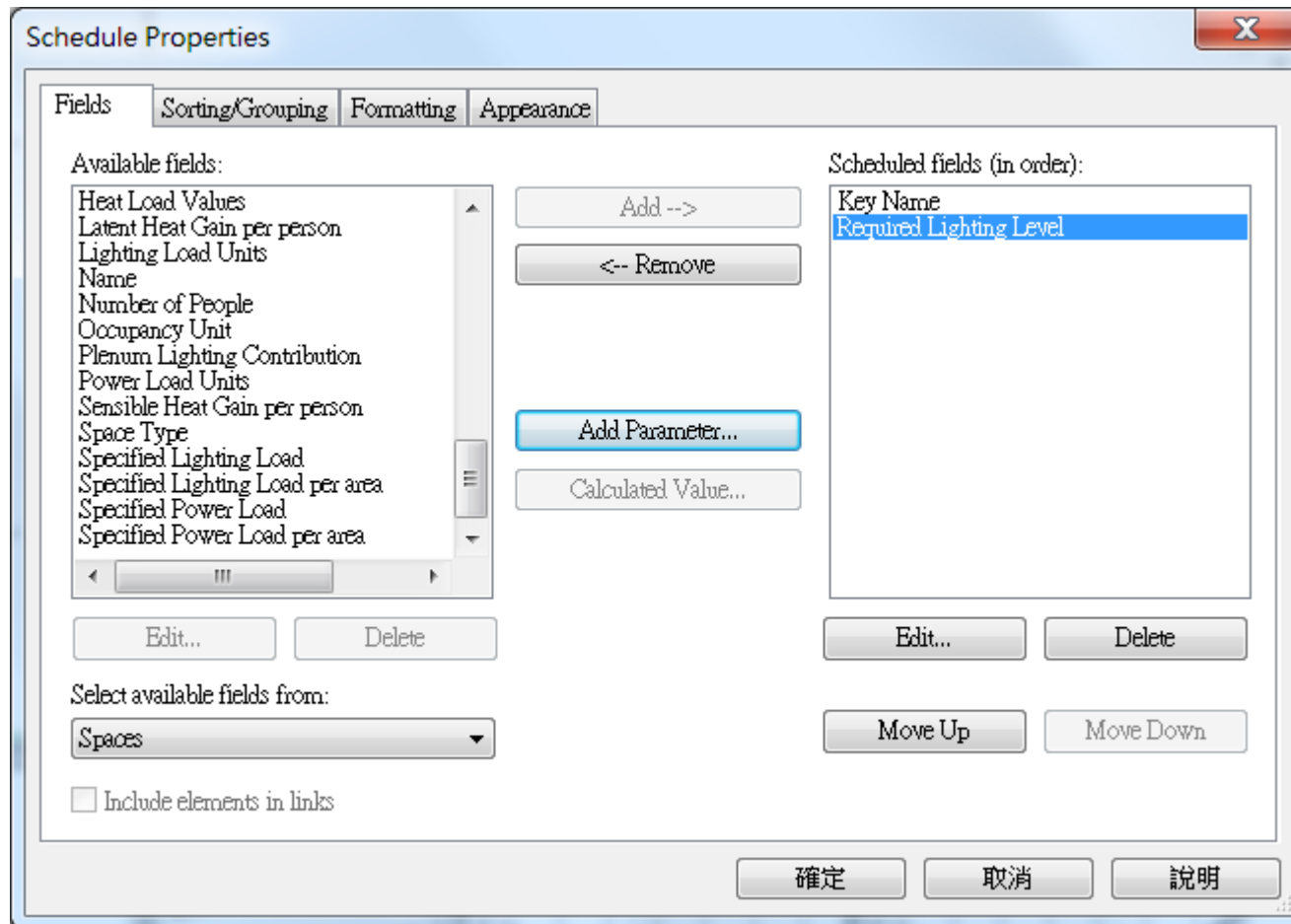
REVIT Electrical

- Lighting Level Analysis
 - Create a New Schedule Key
 - Name “Space Type Key”
 - Add a Project Parameter name “Required Lighting Level”
 - Discipline in “Electrical”
 - Type of Parameter in “Illuminance”
 - Group parameter under “Electrical – Lighting”



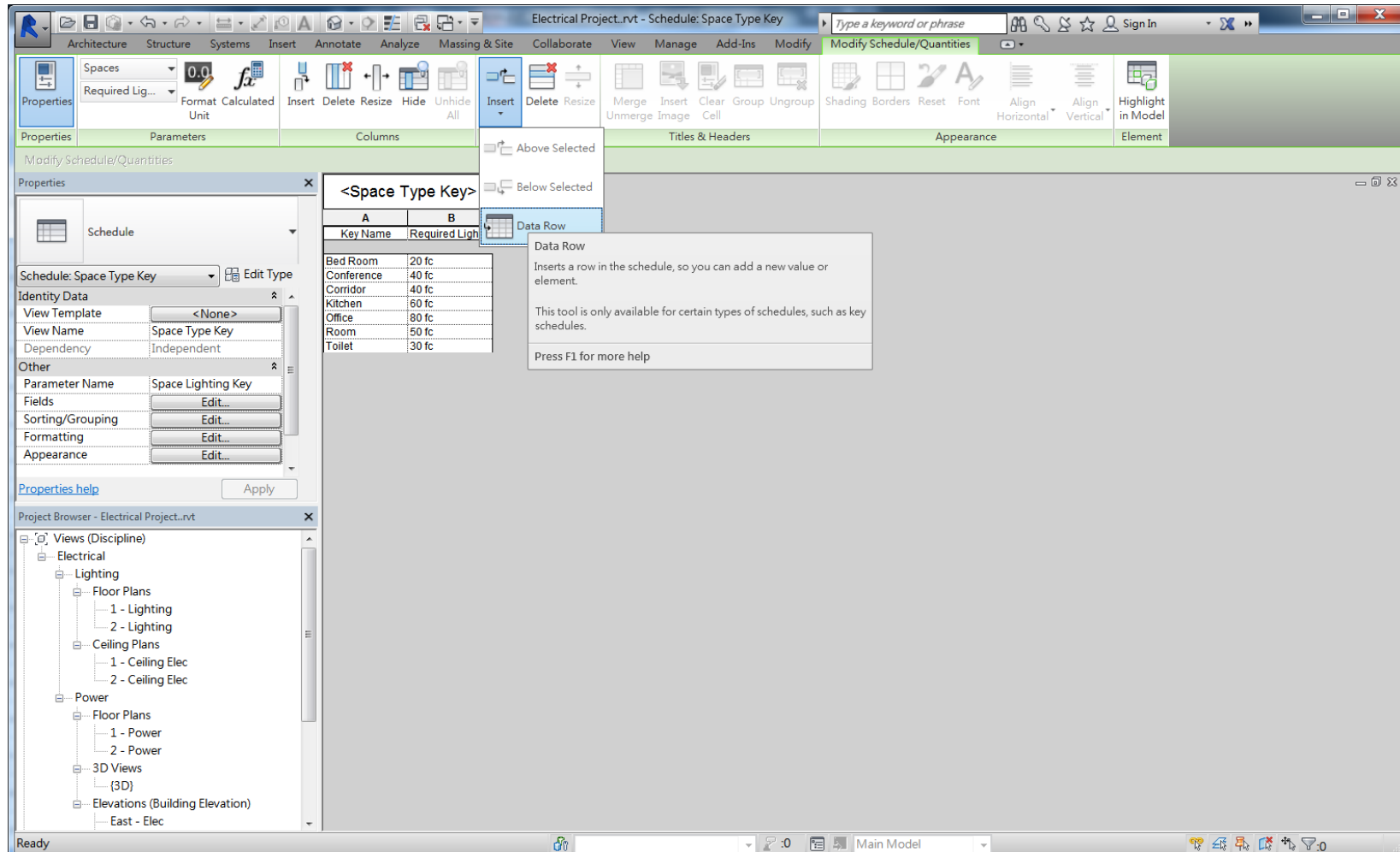
REVIT Electrical

- Lighting Level Analysis



REVIT Electrical

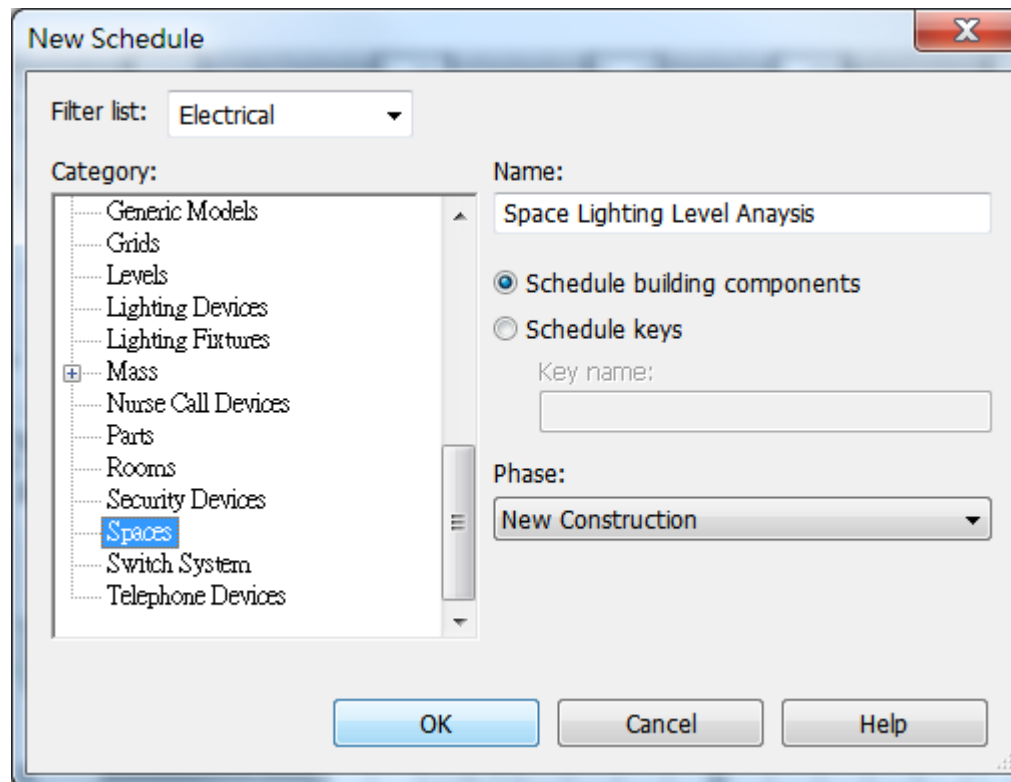
- Lighting Level Analysis



CELL MEP (REVIT)

REVIT Electrical

- Lighting Level Analysis
 - Create New Schedule named “Space Lighting Level Analysis”

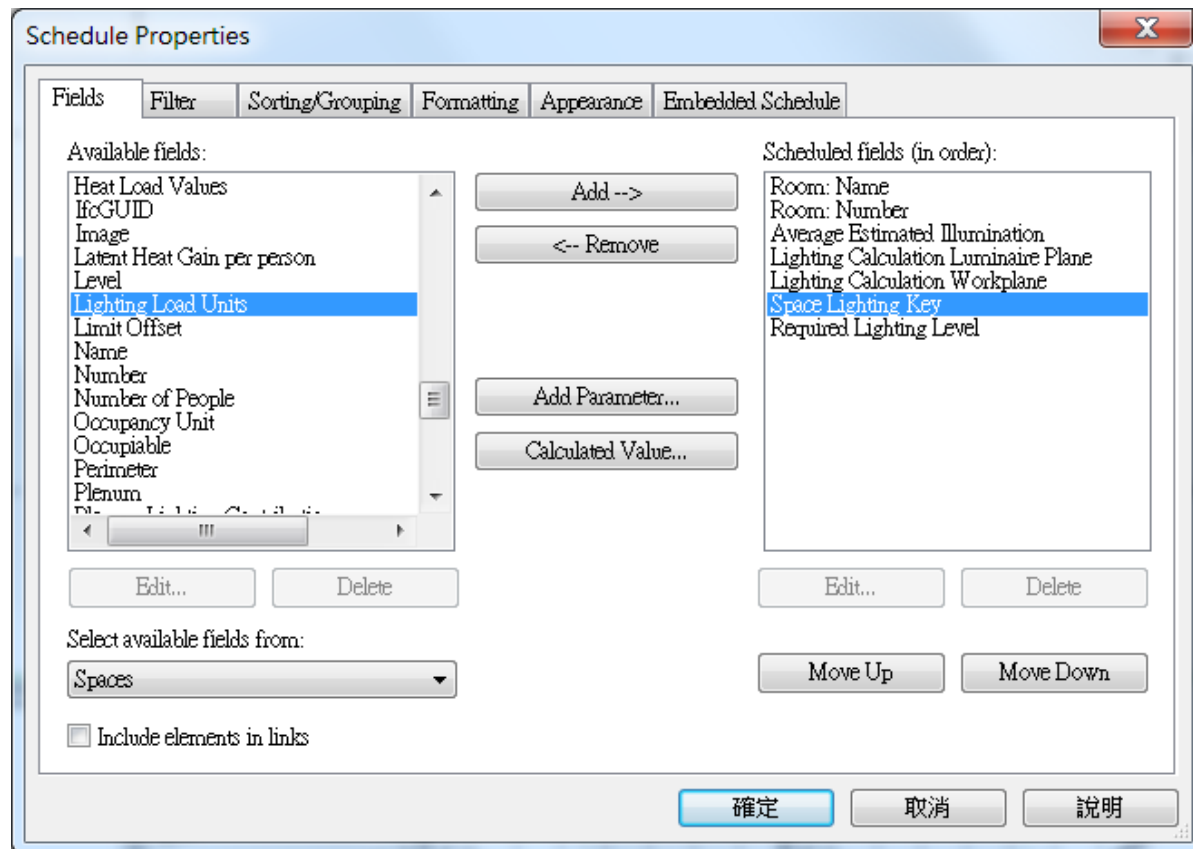


REVIT Electrical

- Lighting Level Analysis

- Select Schedule fields

included Space Lighting Key & Required Lighting Level



REVIT Electrical

- Lighting Level Analysis

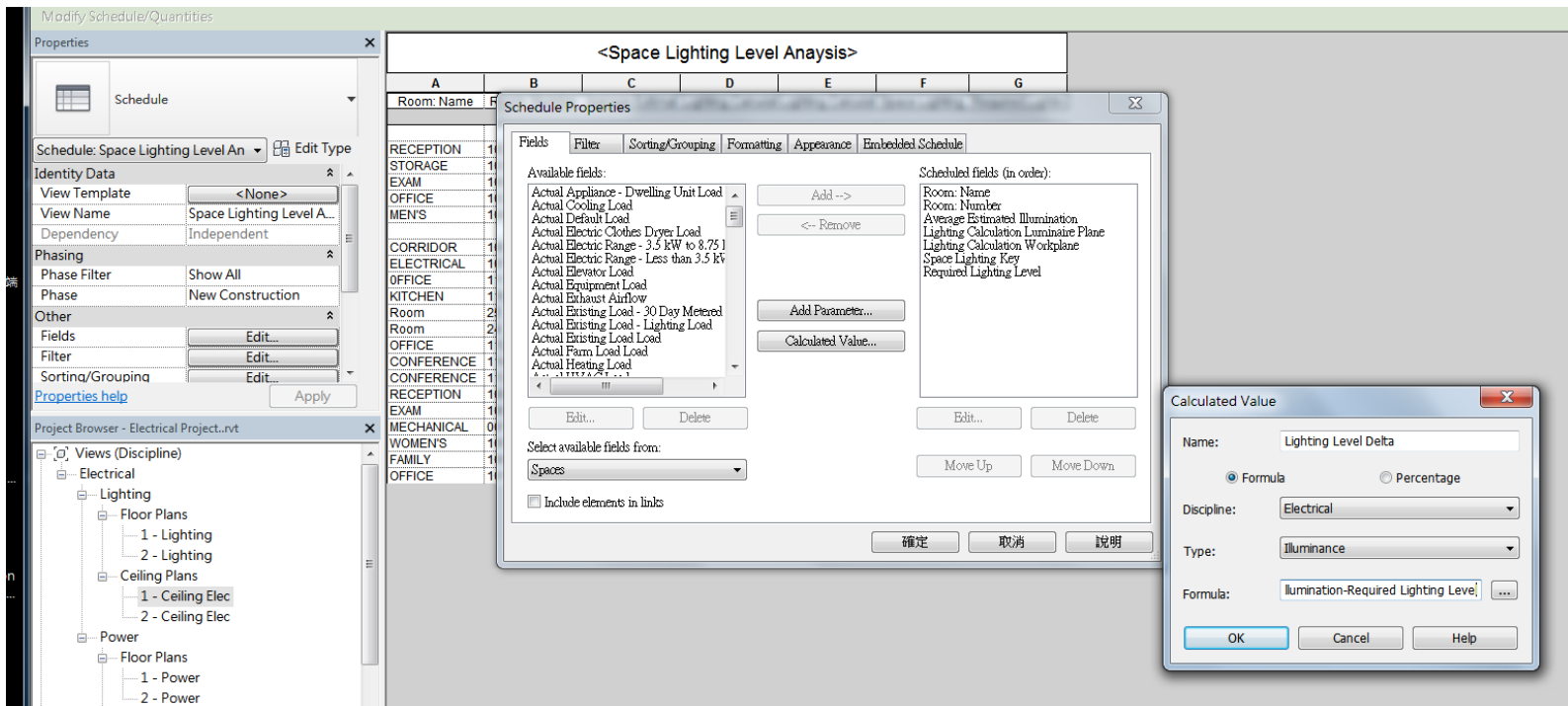
- Select the “Space Type Key” and corresponding “Required Lighting Level” will be automatic fill-in

A	B	C	D	E	F	G
Room: Name	Room: Number	Average Estimated Lighting Calculated	Lighting Calculated	Lighting Calculated	Space Lighting	Required Lighting
RECEPTION	102	0 fc	Not Computed	2' - 6"	(none)	
STORAGE	103A	0 fc	Not Computed	2' - 6"	(none)	
EXAM	1003	0 fc	Not Computed	2' - 6"	(none)	
OFFICE	103	0 fc	Not Computed	2' - 6"	Office	80 fc
MEN'S	104	0 fc	Not Computed	2' - 6"	Toilet	30 fc
		0 fc	Not Computed	2' - 6"	(none)	
CORRIDOR	100	0 fc	Not Computed	2' - 6"	Corridor	40 fc
ELECTRICAL	107	0 fc	Not Computed	2' - 6"	(none)	
OFFICE	111	0 fc	Not Computed	2' - 6"	Office	80 fc
KITCHEN	110	24 fc	8' - 0"	2' - 6"	Kitchen	60 fc
Room	25	0 fc	Not Computed	2' - 6"	Room	50 fc
Room	24	0 fc	Not Computed	2' - 6"	Room	50 fc
OFFICE	112	0 fc	Not Computed	2' - 6"	Office	80 fc
CONFERENCE	114	0 fc	Not Computed	2' - 6"	Conference	40 fc
CONFERENCE	113	0 fc	Not Computed	2' - 6"	Conference	40 fc
RECEPTION	108	0 fc	Not Computed	2' - 6"	(none)	
EXAM	106	0 fc	Not Computed	2' - 6"	(none)	
MECHANICAL	001	0 fc	Not Computed	2' - 6"	(none)	
WOMEN'S	105	0 fc	Not Computed	2' - 6"	Toilet	30 fc
FAMILY	109	0 fc	Not Computed	2' - 6"	Room	50 fc
OFFICE	101	49 fc	8' - 0"	2' - 6"	Office	80 fc

REVIT Electrical

- Lighting Level Analysis

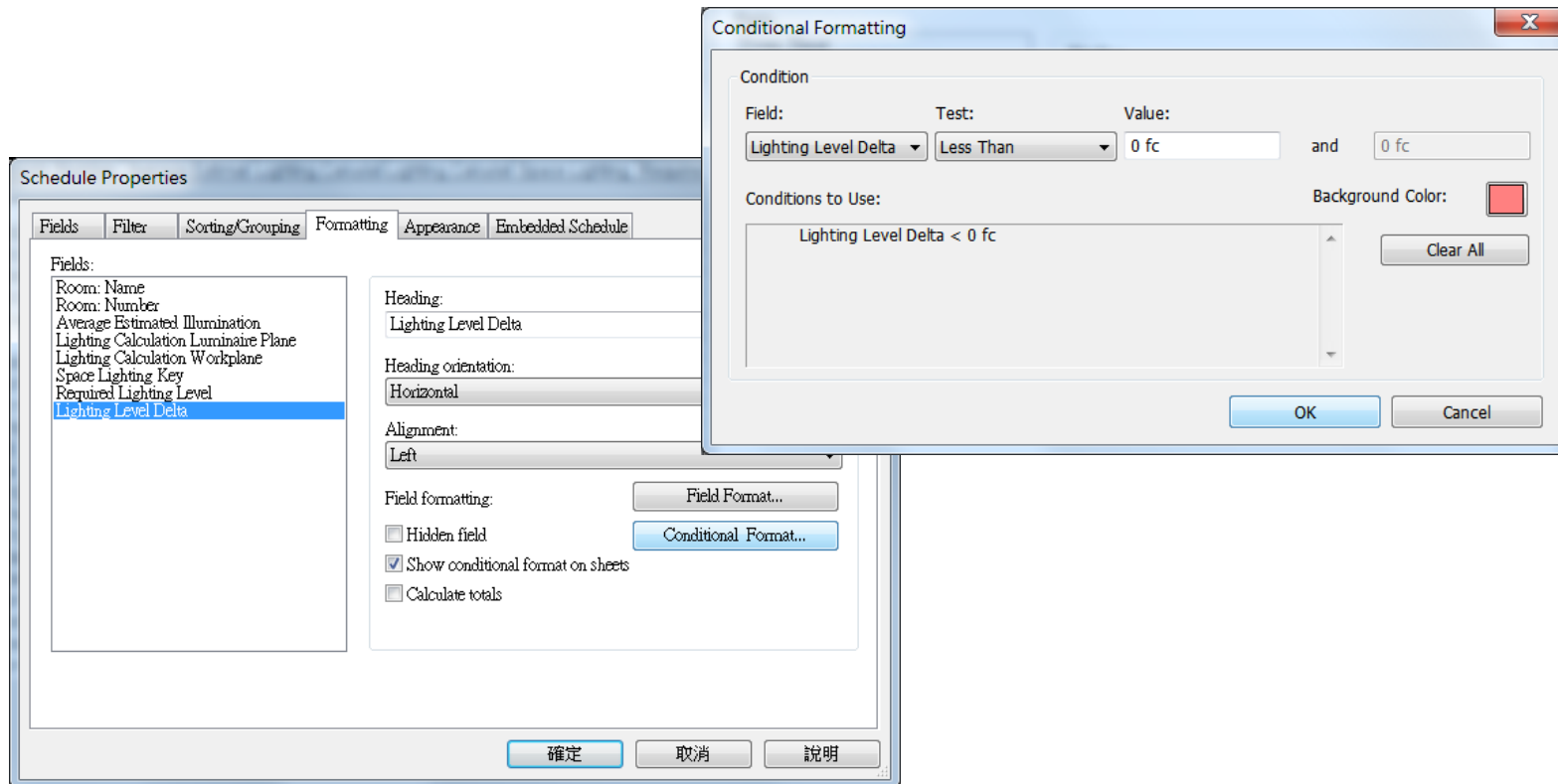
- Add a new column to show the “Delta of Lighting Level”
- Format it to automatic show in RED if any “Modelled Lighting Level” is below “Required Lighting Level”



REVIT Electrical

- Lighting Level Analysis

- Add a new column to show the “Delta of Lighting Level”
- Format it to automatic show in RED if any “Modelled Lighting Level” is below “Required Lighting Level”



REVIT Electrical

- Lighting Level Analysis

Electrical Project.rvt - Schedule: Space Lighting Level Analysis

Modify Schedule/Quantities

Properties

Schedule

Schedule: Space Lighting Level An Edit Type

Identity Data

View Template <None>

View Name Space Lighting Level A...

Dependency Independent

Phasing

Phase Filter Show All

Phase New Construction

Other

Fields Edit...

Filter Edit...

Sorting/Grouping Edit...

Properties help

Apply

Project Browser - Electrical Project.rvt

Views (Discipline)

Electrical

Lighting

Floor Plans

1 - Lighting

2 - Lighting

Ceiling Plans

1 - Ceiling Elec

2 - Ceiling Elec

Power

Floor Plans

1 - Power

2 - Power

3D Views

(3D)

Elevations (Building Elevation)

East - Elec

<Space Lighting Level Analysis>							
A	B	C	D	E	F	G	H
Room Name	Room Number	Average Estimat	Lighting Calculat	Lighting Calculat	Space Lighting	Required Lightin	Lighting Level D
RECEPTION	102	0 fc	Not Computed	2' - 6"	(none)		
STORAGE	103A	0 fc	Not Computed	2' - 6"	(none)		
EXAM	1003	0 fc	Not Computed	2' - 6"	(none)		
OFFICE	103	0 fc	Not Computed	2' - 6"	Office	80 fc	-80 fc
MEN'S	104	0 fc	Not Computed	2' - 6"	Toilet	30 fc	-30 fc
		0 fc	Not Computed	2' - 6"	(none)		
CORRIDOR	100	0 fc	Not Computed	2' - 6"	Corridor	40 fc	-40 fc
ELECTRICAL	107	0 fc	Not Computed	2' - 6"	(none)		
OFFICE	111	0 fc	Not Computed	2' - 6"	Office	80 fc	-80 fc
KITCHEN	110	24 fc	8' - 0"	2' - 6"	Kitchen	60 fc	-36 fc
Room	25	0 fc	Not Computed	2' - 6"	Room	50 fc	-50 fc
Room	24	0 fc	Not Computed	2' - 6"	Room	50 fc	-50 fc
OFFICE	112	0 fc	Not Computed	2' - 6"	Office	80 fc	-80 fc
CONFERENCE	114	0 fc	Not Computed	2' - 6"	Conference	40 fc	-40 fc
CONFERENCE	113	0 fc	Not Computed	2' - 6"	Conference	40 fc	-40 fc
RECEPTION	108	0 fc	Not Computed	2' - 6"	(none)		
EXAM	106	0 fc	Not Computed	2' - 6"	(none)		
MECHANICAL	001	0 fc	Not Computed	2' - 6"	(none)		
WOMEN'S	105	0 fc	Not Computed	2' - 6"	Toilet	30 fc	-30 fc
FAMILY	109	0 fc	Not Computed	2' - 6"	Room	50 fc	-50 fc
OFFICE	101	49 fc	8' - 0"	2' - 6"	Office	80 fc	-31 fc

CEII MEP (REVIT)