

IT in Construction

Lecture #9

Building Information Modeling

Introduction to Autodesk Revit Part 2

Amin Alvanchi, PhD

Construction Engineering and Management

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Outline

2

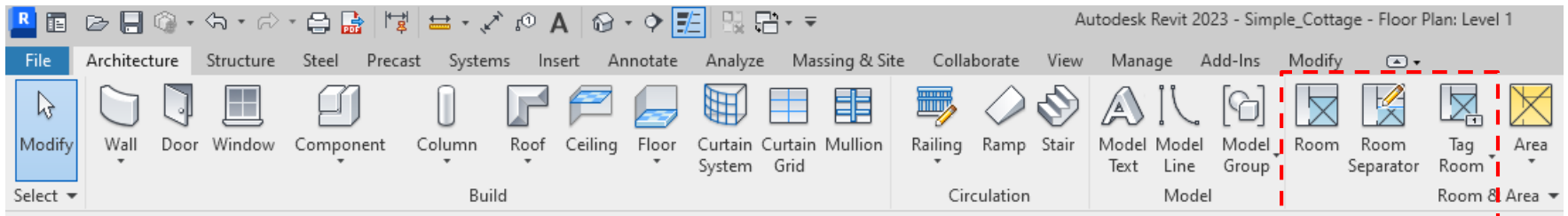
- Room and spaces
- Annotations
- Schedules
- Parameters

Rooms

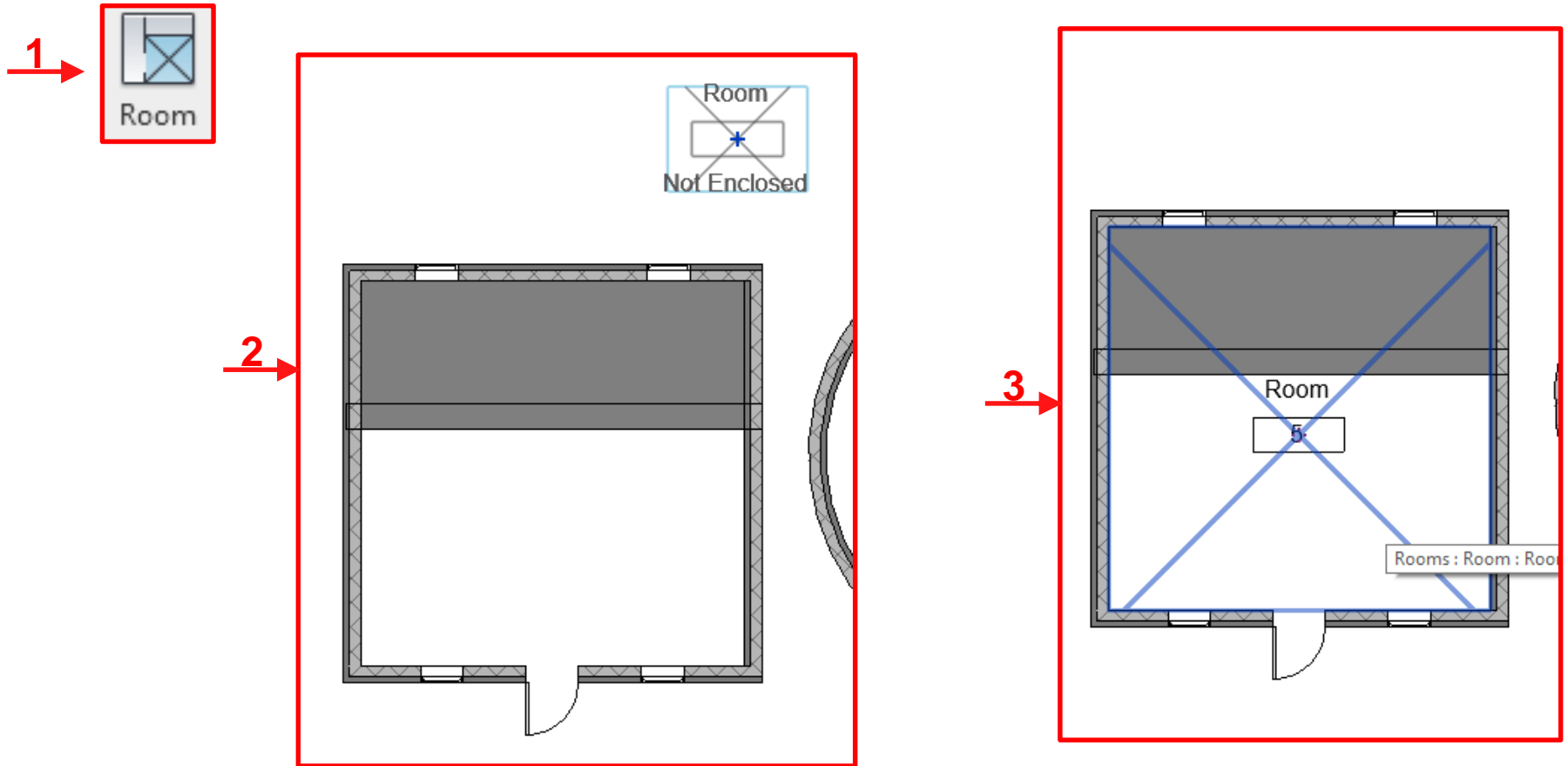
Introduction

4

- Rooms are subdivisions of buildings defined by elements such as walls, floors, roofs and ceilings.



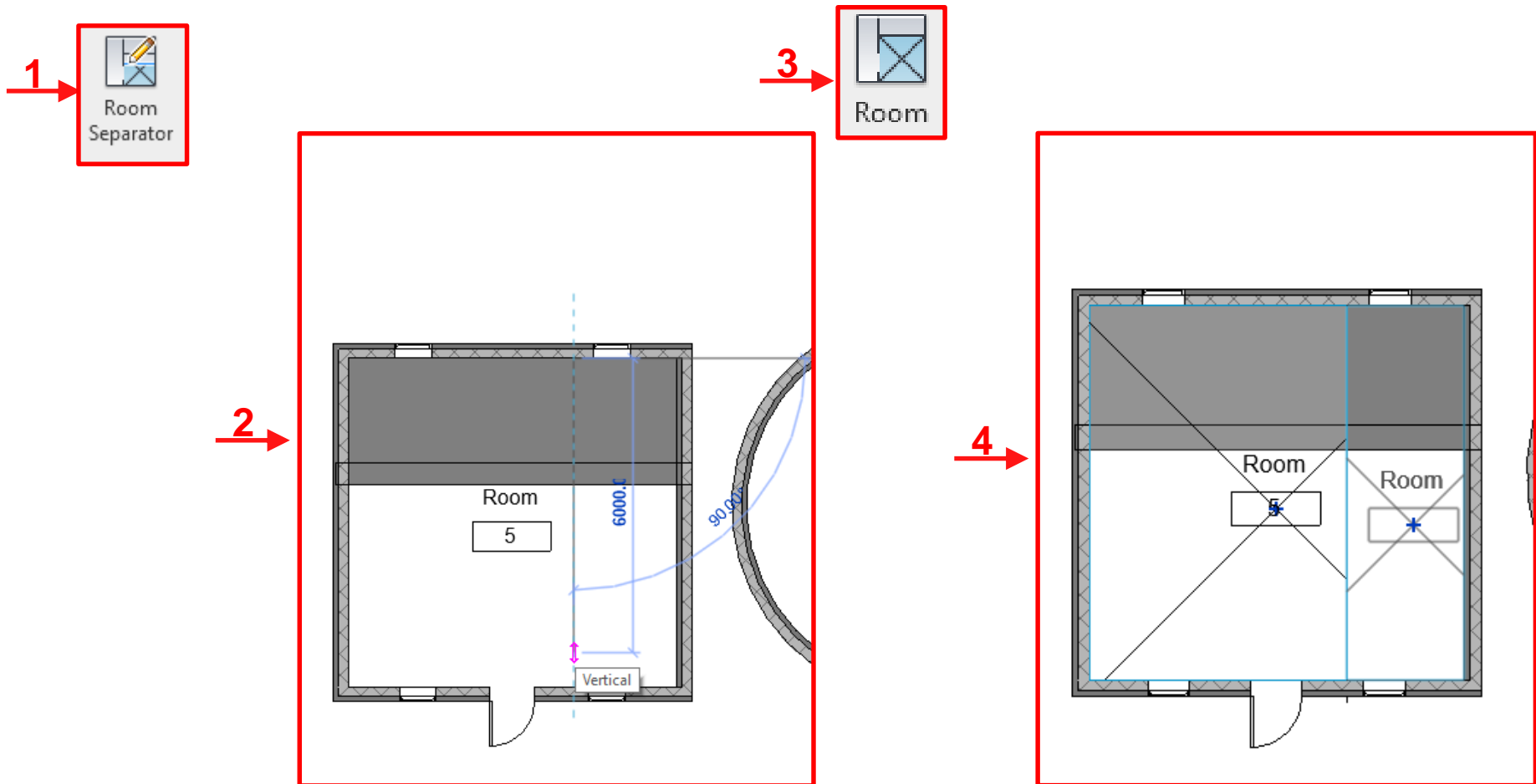
Defining rooms



Defining room separator

6

- Use room separators for separating on room into more room spaces.



Visibility/ Graphic override-Room

7

Properties

Floor Plan

Floor Plan: Level 1

Detail Level	Medium
Parts Visibility	Show Original
Detail Number	1
Rotation on Sheet	None
Visibility/Graphics Over...	Edit...
Graphic Display Options	Edit...
Orientation	Project North
Wall Join Display	Clean all wall joins
Discipline	Architectural
Show Hidden Lines	By Discipline

Visibility/Graphic Overrides for Floor Plan: Level 1

Model Categories Annotation Categories Analytical Model Categories Imported Categories Filters

Show model categories in this view

Category name search:

Filter list: Architecture

Visibility	Projection/Surface			Cut		Halftone	Detail Level
	Lines	Patterns	Transparency	Lines	Patterns		
<input checked="" type="checkbox"/> Roads						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Roofs						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Rooms						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Color Fill							
<input checked="" type="checkbox"/> Interior Fill							
<input checked="" type="checkbox"/> Reference							
<input checked="" type="checkbox"/> Shaft Openings						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Signage						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Site						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Specialty Equipment						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Stairs						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Structural Beam Syst...						<input type="checkbox"/>	By View
<input checked="" type="checkbox"/> Structural Columns						<input type="checkbox"/>	By View

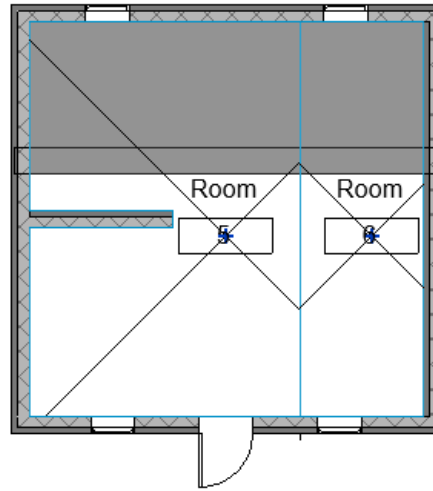
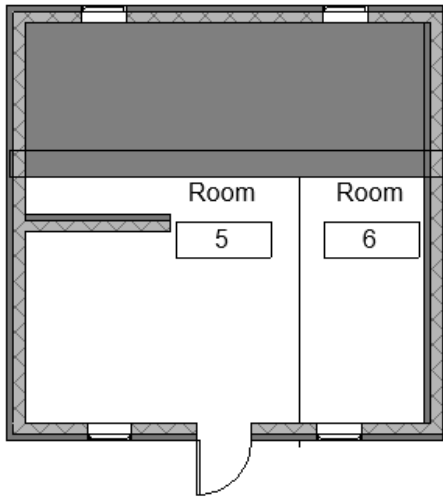
Expand All

Override Host Layers

Cut Line Styles

Object Styles...

OK Cancel Apply Help



Room tag properties

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The diagram illustrates the process of configuring room tag properties. It consists of three main parts:

- Floor Plan (Left):** Shows a room layout with two room tags. A red arrow labeled '1' points to the first tag.
- Properties Panel (Middle):** Shows the 'M_Room Tag' family with the 'Room Tag' type selected. The 'Edit Type' button is highlighted with a red arrow labeled '2'. The 'Graphics' section shows 'Leader Line' (unchecked), 'Orientation' (Horizontal), and 'Angle' (0.00°).
- Type Properties Dialog (Right):** Shows the 'Type Parameters' section with a table of parameters. The 'Show Area' parameter is checked, highlighted with a red arrow labeled '3'. Other parameters include 'Show Volume' (unchecked) and 'Leader Arrowhead' (None).

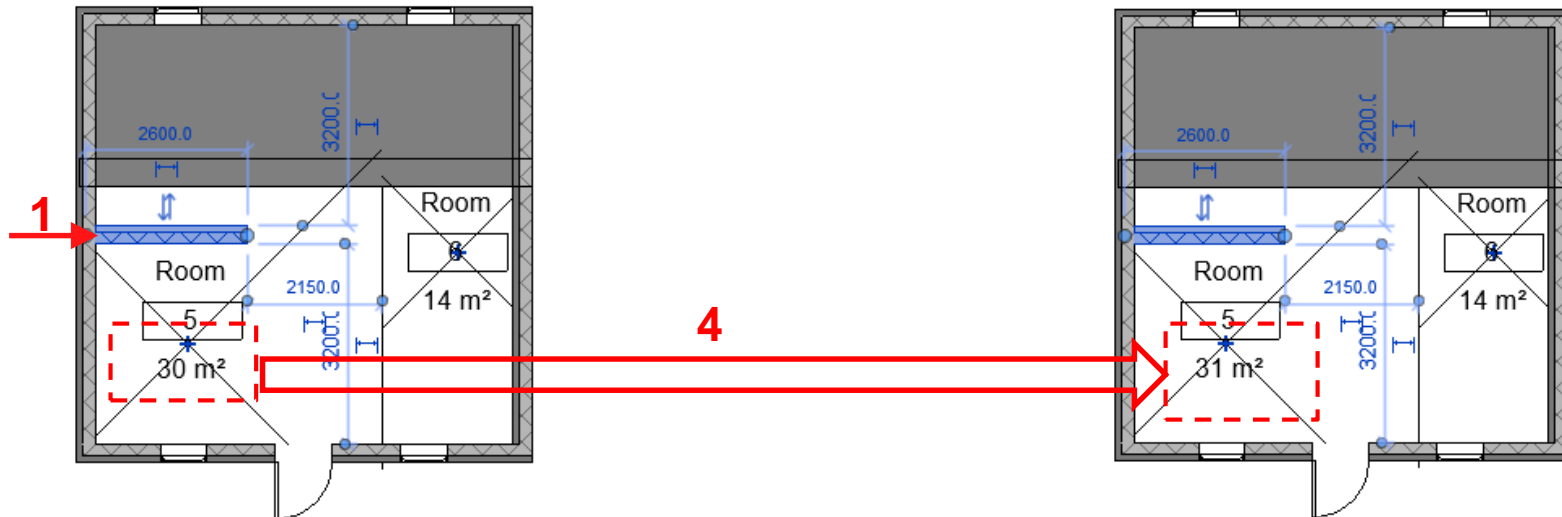
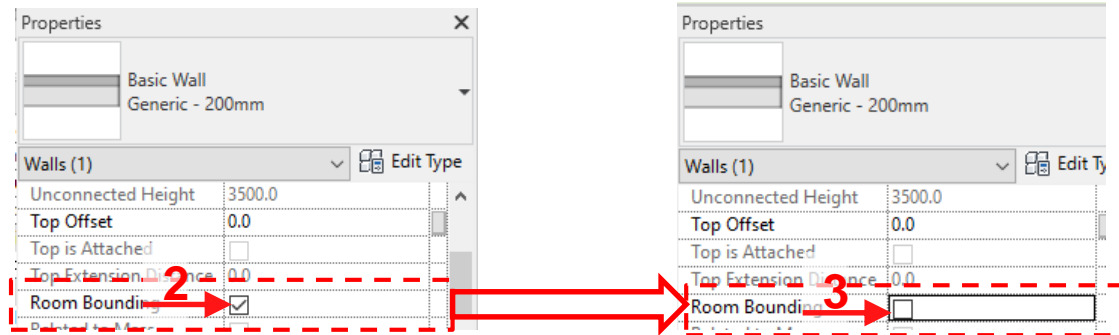
The final floor plan (bottom right) shows the result of these settings: the room tags now display area values of 30 m² and 14 m². A red arrow labeled '4' indicates the transition from the initial state to the final state.

Parameter	Value
Graphics	
Show Volume	<input type="checkbox"/>
Show Room Number	<input checked="" type="checkbox"/>
Show Area	<input checked="" type="checkbox"/>
Leader Arrowhead	None

Room bounding walls/ elements

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- Area of Room-bounding elements are deducted from the the room area!



Room color scheme

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- Room colors are used to distinguish one room from the other!

The image illustrates the process of applying a room color scheme in a software application. It consists of several key components:

- Properties Panel:** Located on the left, it shows the 'Color Scheme' dropdown menu set to '<none>' (indicated by red arrow 1).
- Spaces List:** A central list box shows 'Spaces' selected (indicated by red arrow 2). Below it, a table lists 'Name' and 'Department'.
- Schema Definition Dialog:** A dialog box on the right titled 'Schema Definition' contains a table with the following data:

Value	Visible	Color	Fill Pattern	Preview	In Use
1 Room	<input checked="" type="checkbox"/>	RGB 240-111	<Solid fill>		Yes
2 Room1	<input checked="" type="checkbox"/>	RGB 250-240	<Solid fill>		Yes
3 Room2	<input checked="" type="checkbox"/>	RGB 230-219	<Solid fill>		Yes

The dialog also includes 'Options' with an unchecked checkbox 'Include elements from links' and buttons for 'OK' (indicated by red arrow 4), 'Cancel', 'Apply', and 'Help'.
- Room Color Application:** At the bottom, two floor plan diagrams are shown. The left diagram (indicated by red arrow 5) shows a room labeled 'Room' with area '31 m²' and 'Room2' with area '14 m²'. The right diagram shows the same room with the 'Room' area filled with orange and 'Room2' filled with yellow, corresponding to the schema definition.

Annotations

Introduction

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- Annotations are combination of graphics and texts used for explaining or “annotating” different parts of the Revit models,

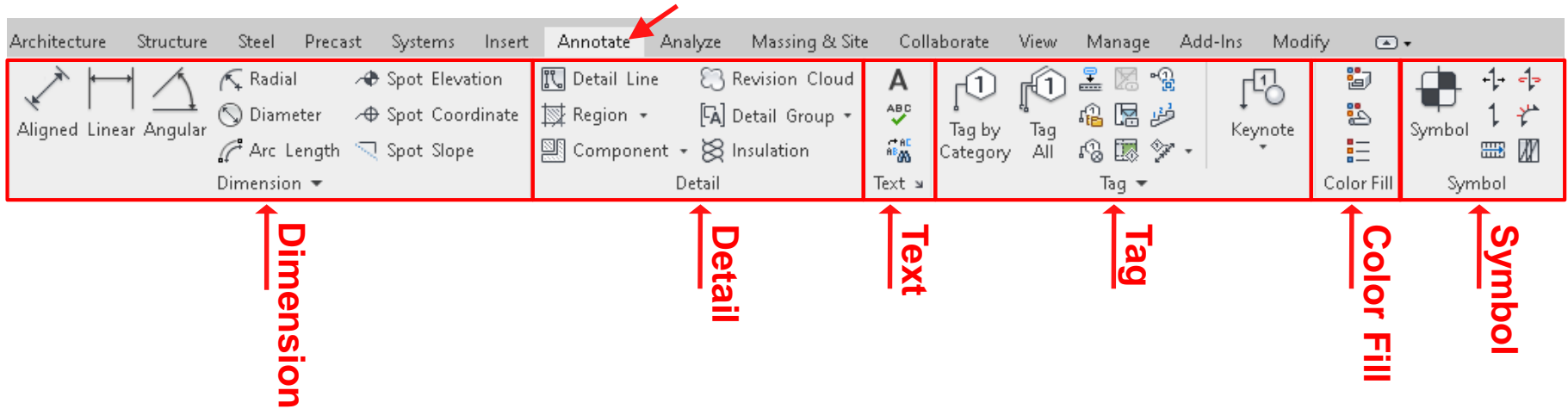


Name several types of explanations that we might need to use in our models!

- Dimensions, areas, volumes, element type names, materials, colors, room numbers, comments

Annotation Toolbar

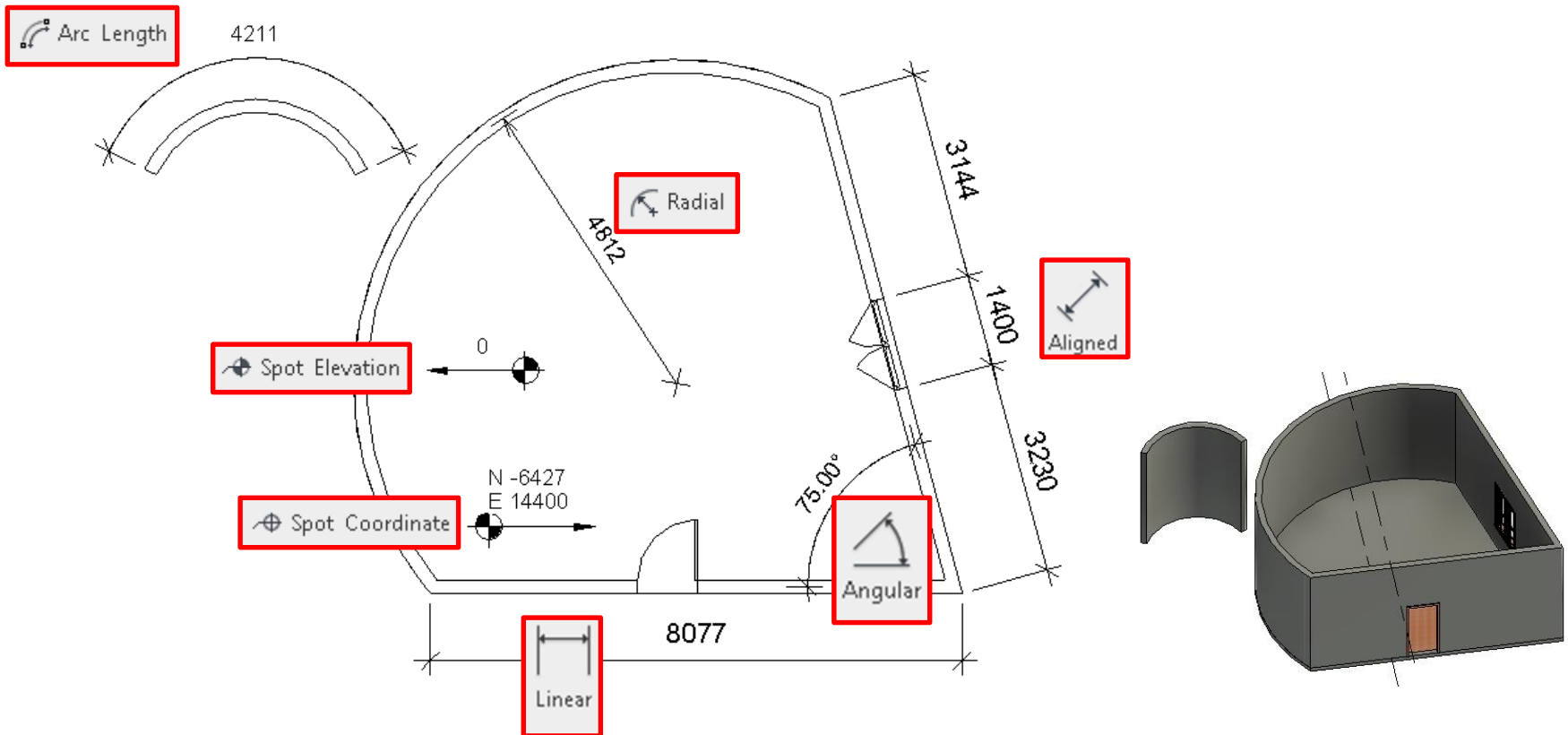
13



Annotation Toolbar-Dimension

14

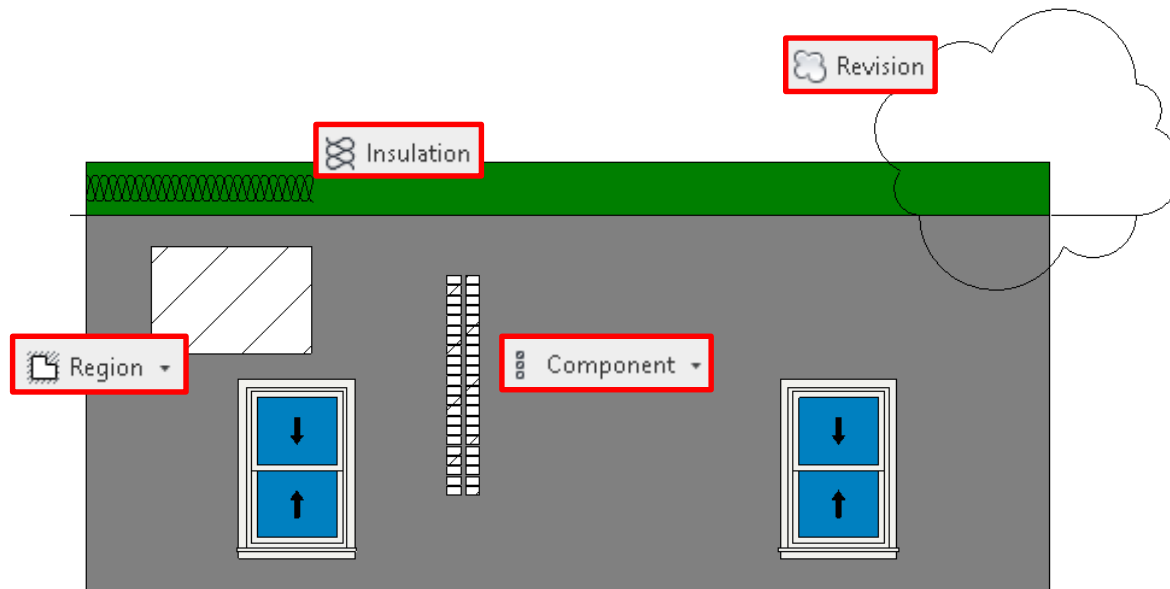
- Dimension keys are used for adding dimension of different parts of the model in each view!



Annotation Toolbar-Detail

15

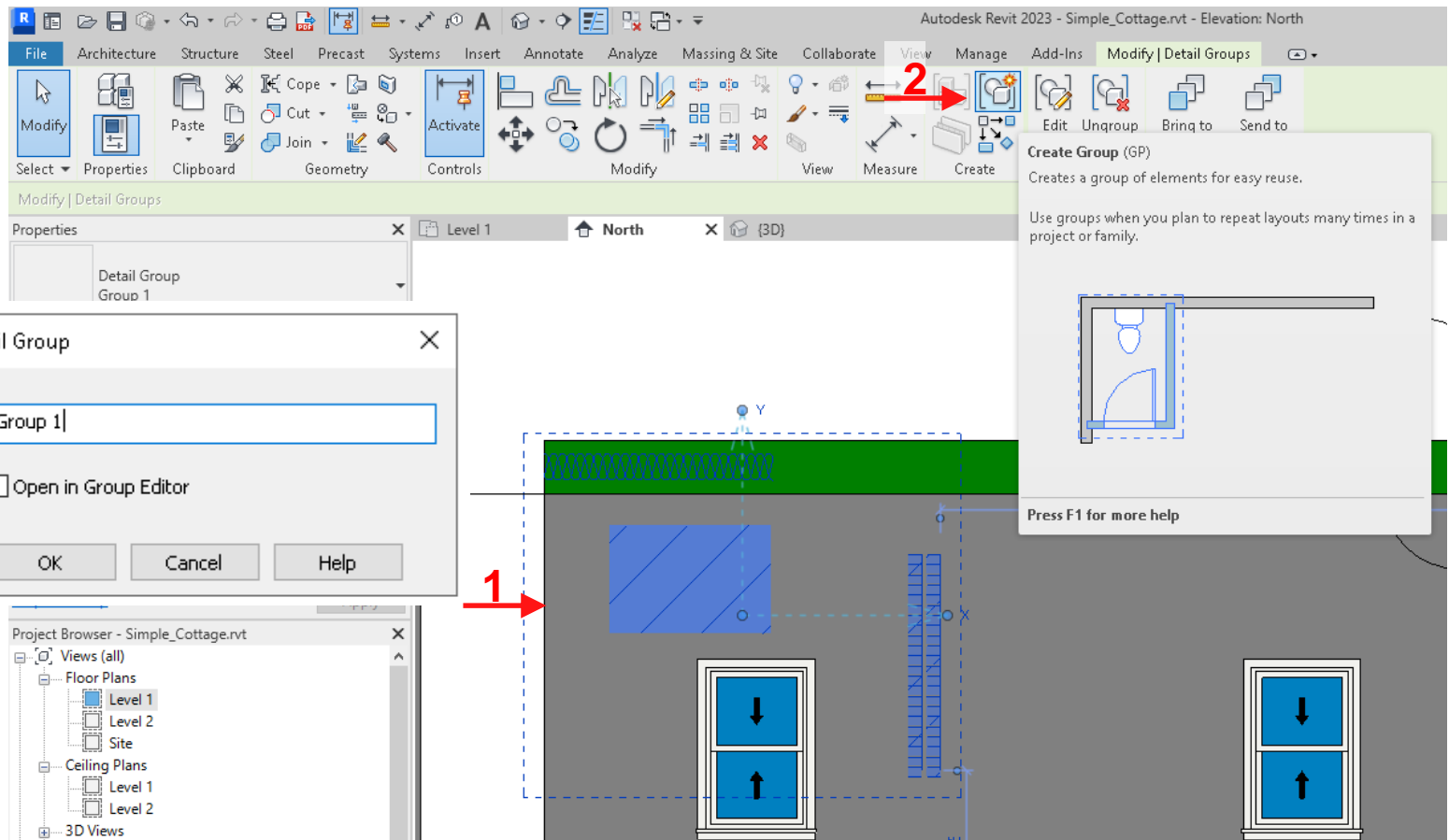
- Use the detail part for adding 2D graphical detail, e.g., highlighting, removing, clouding, elaborating, on different parts!



Annotation Toolbar-Detail

16

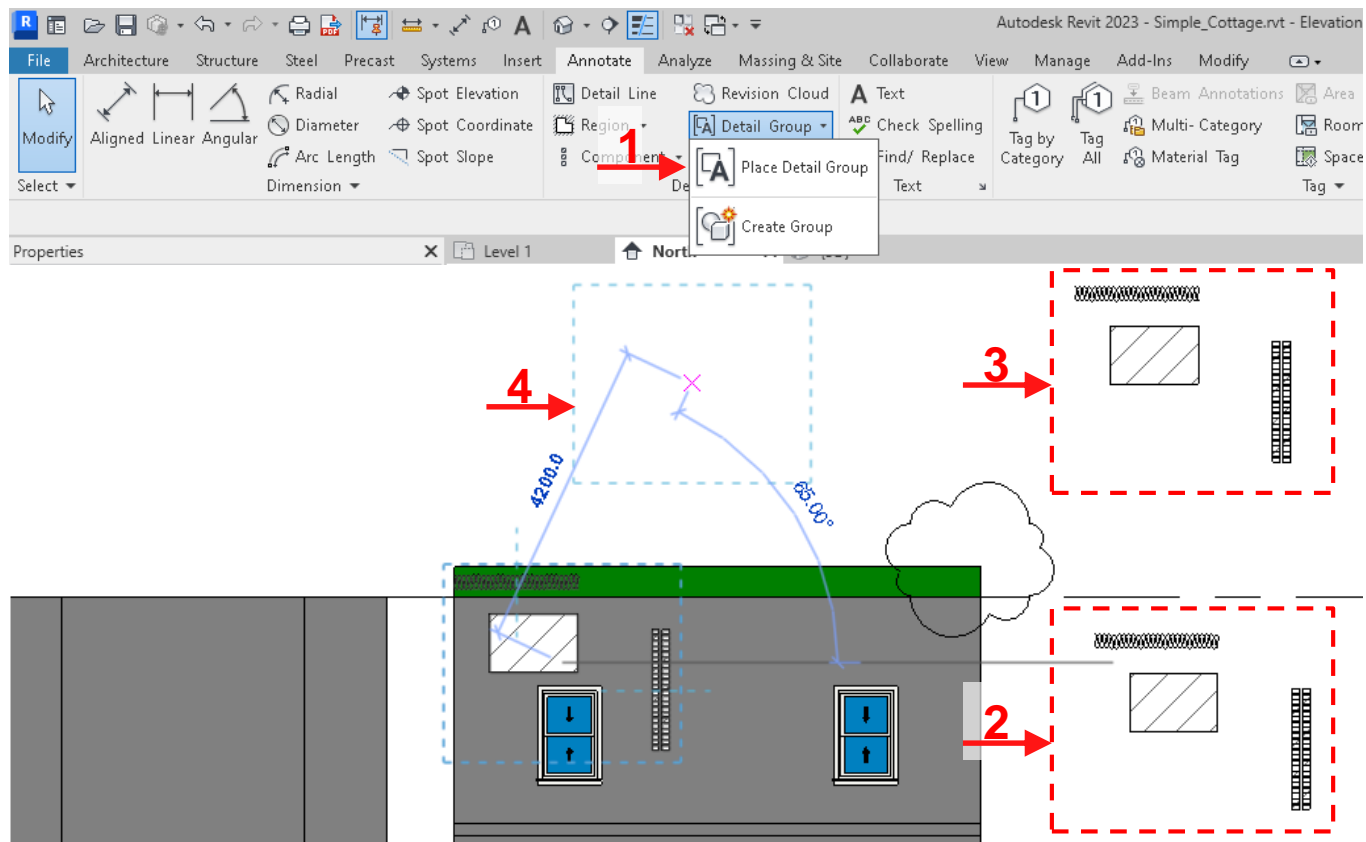
- Select multiple detail elements and create group,



Annotation Toolbar-Detail

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- Select multiple detail elements and create group,
- Then you can place them in different areas!



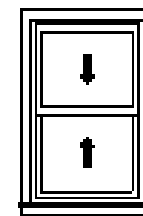
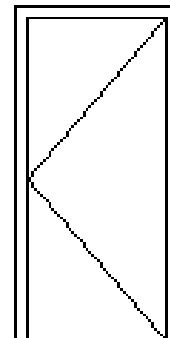
Annotation Toolbar-Text

18

- Use the Text part for adding comments and explanations on different parts of the model!

A Text

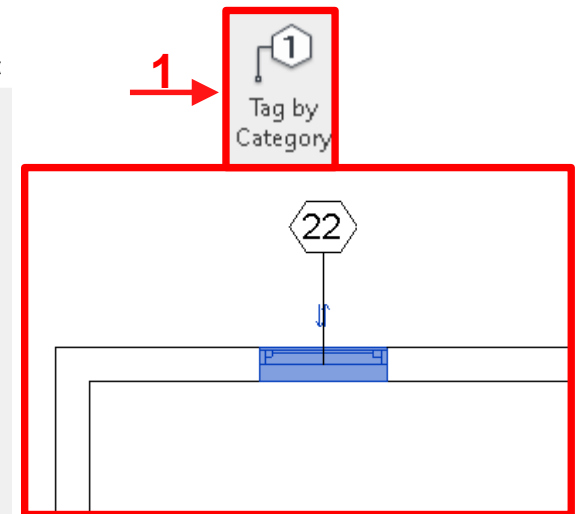
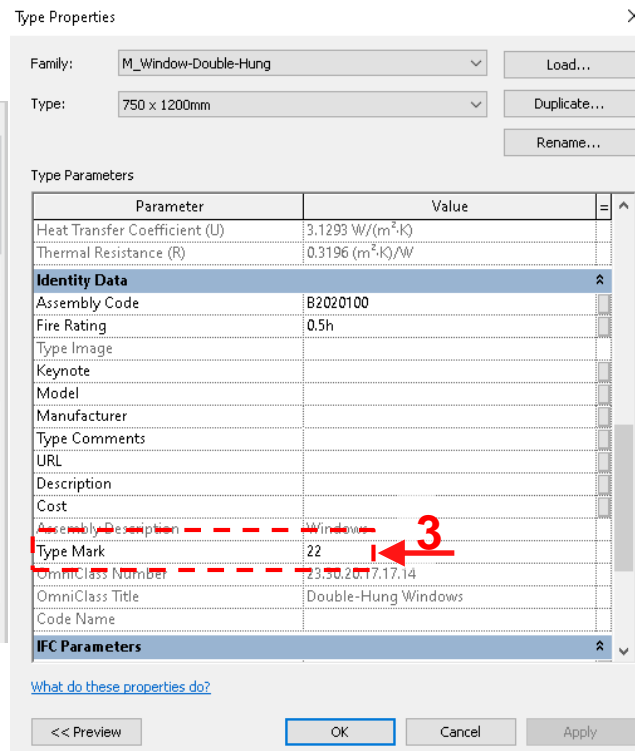
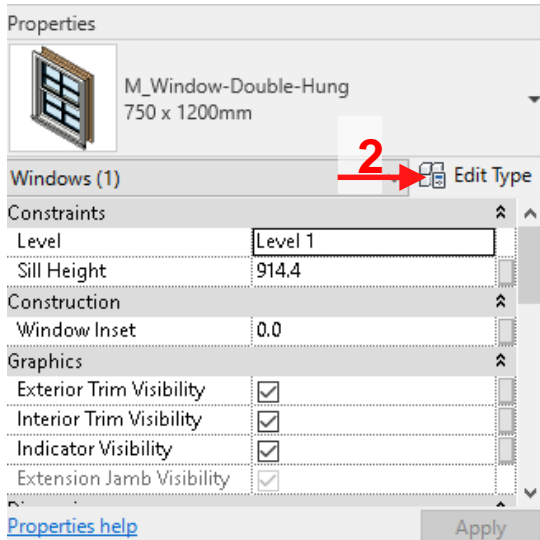
This is the curvy house



Annotation Toolbar-Tag

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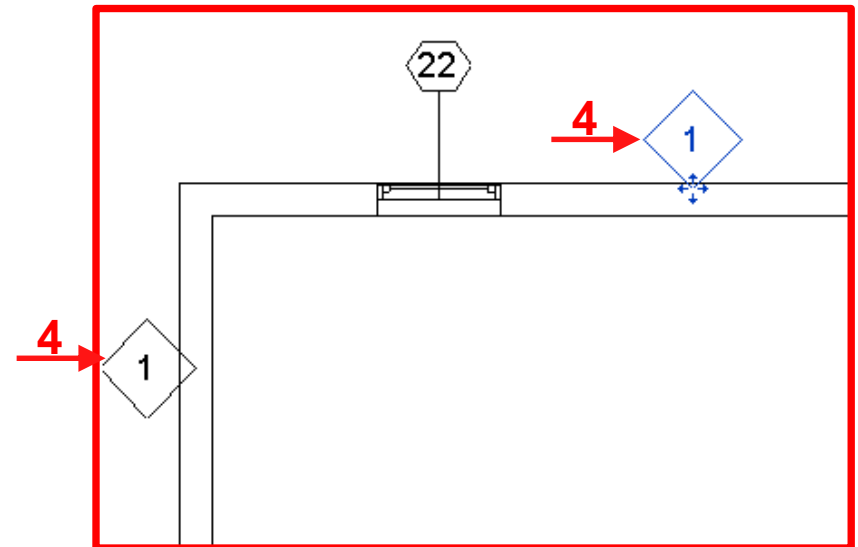
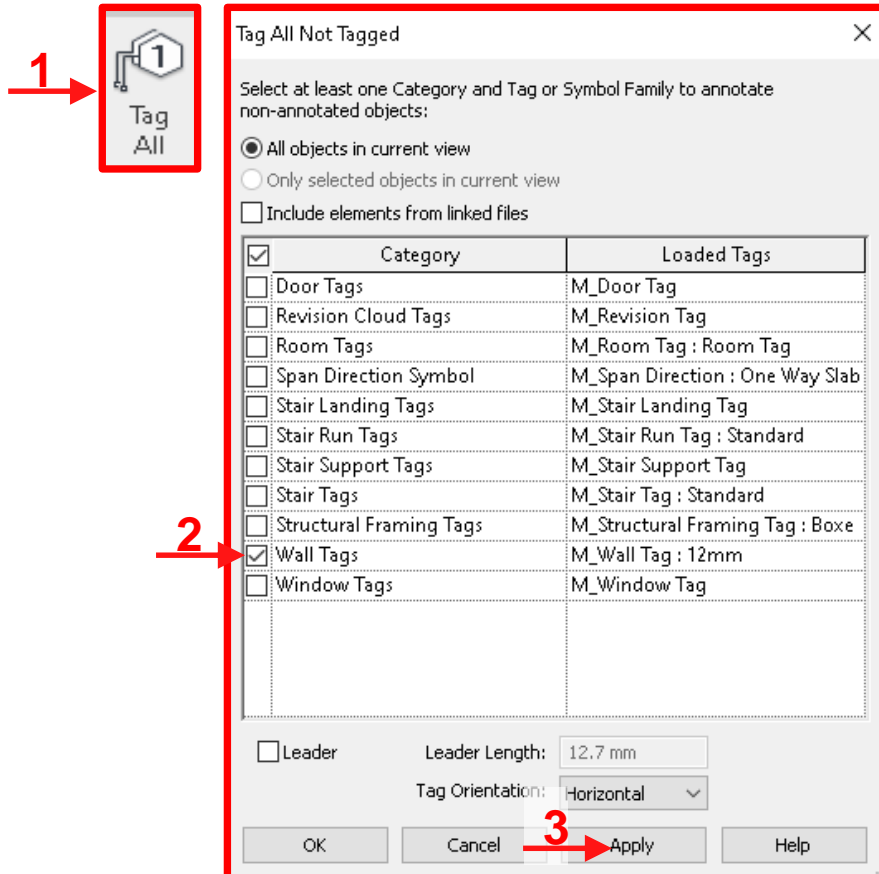
- A tag is an annotation for identifying different model elements and spaces in a drawing!
- Tag by Category:



Annotation Toolbar-Tag

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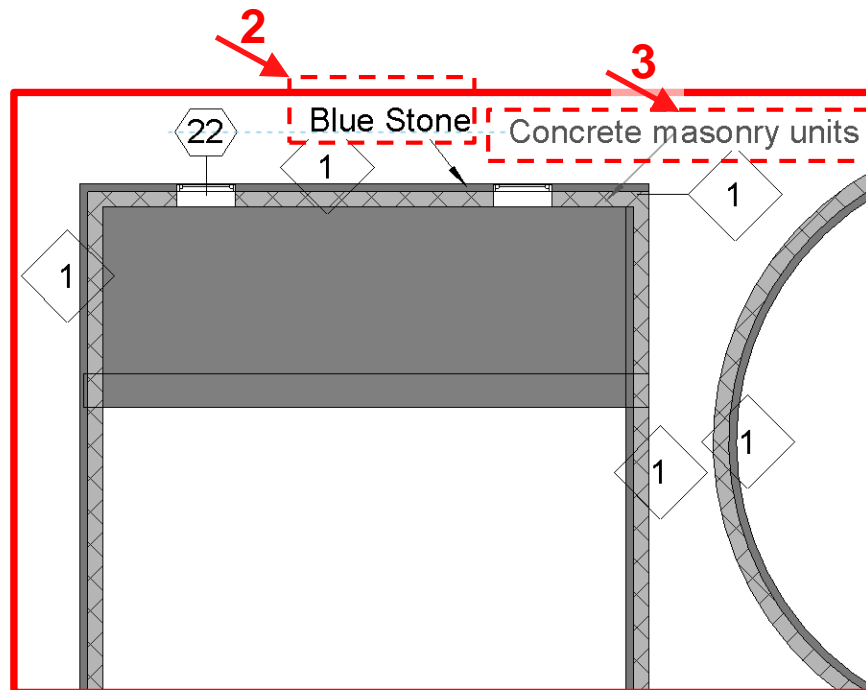
□ Tag all:



Annotation Toolbar-Tag

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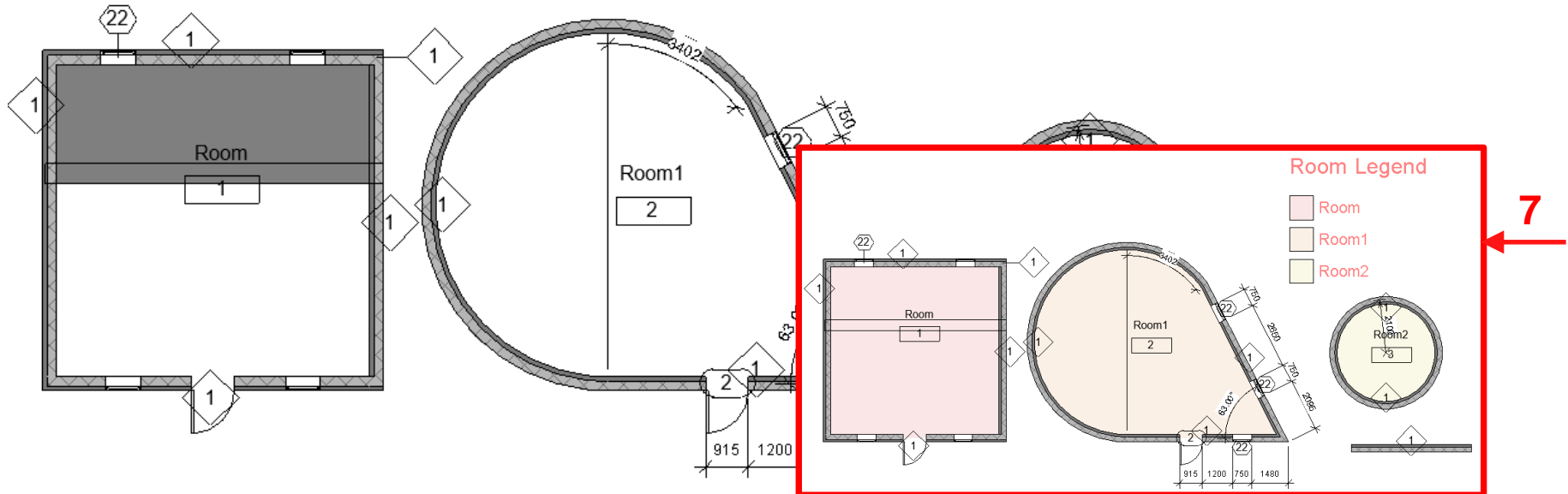
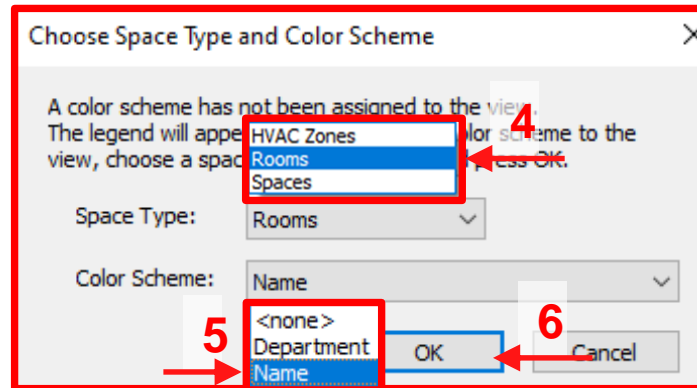
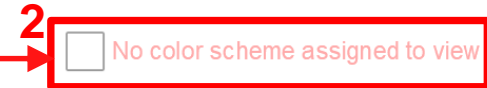
□ Material Tag:



Annotation Toolbar-Color Fill

22

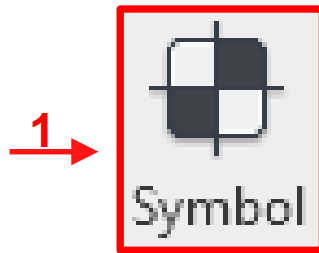
- Create color fill legend for room and space area,



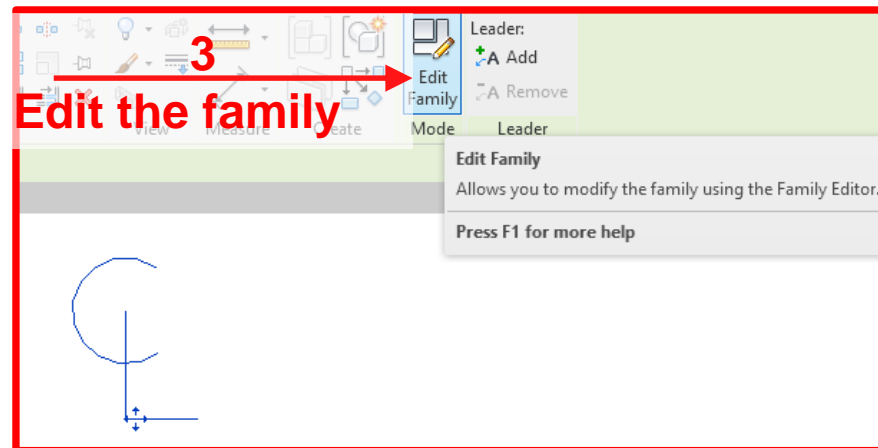
Annotation Toolbar-Symbol

23

- Different types of symbols including directions are places in this section,



2 →

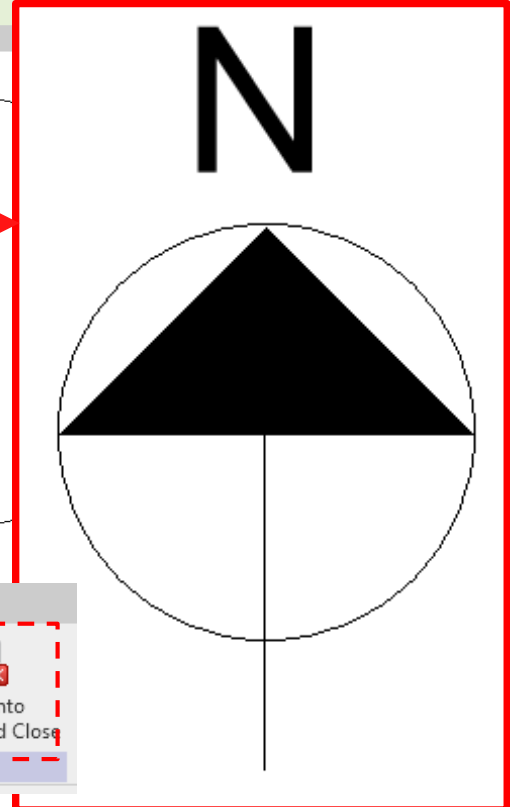
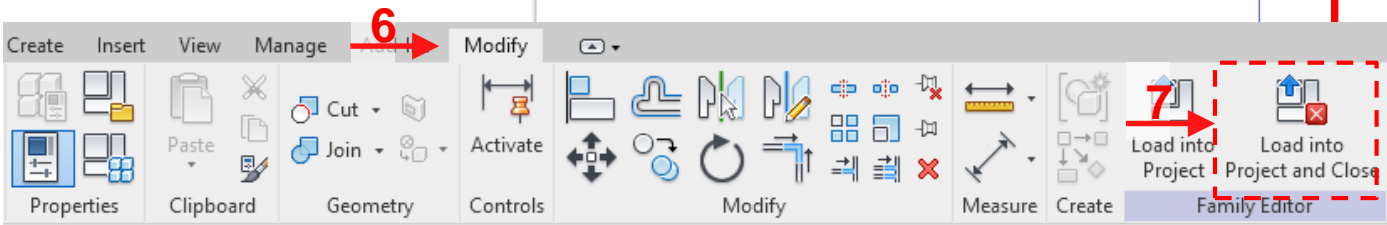
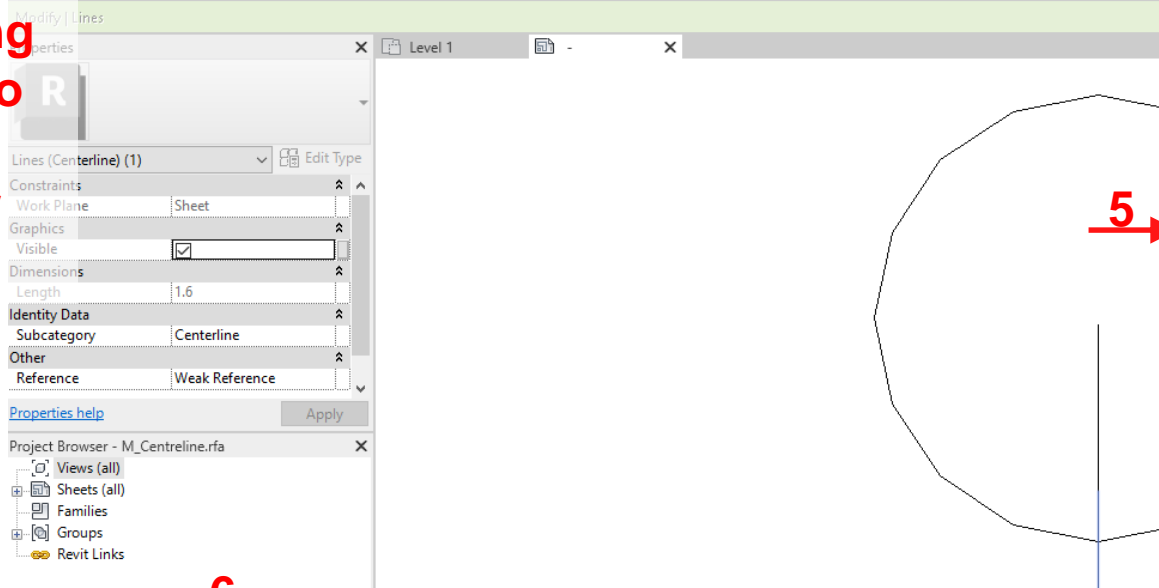
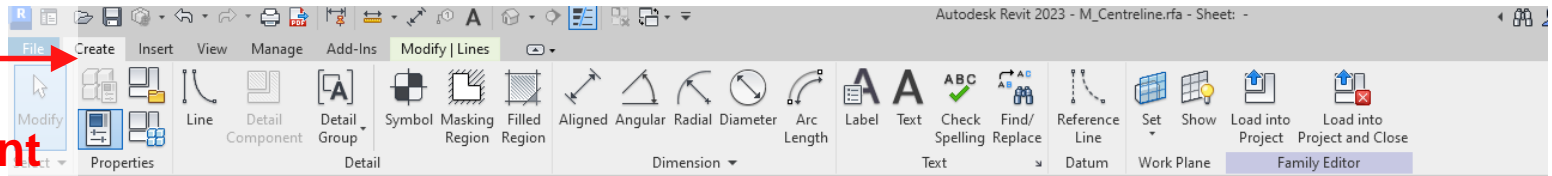


Annotation Toolbar-Symbol

24

- Different types of symbols including directions are places in this section,

4
Use different drawing tools to Create proper look!



Revit Schedules

Revit Schedules

- Revit schedules are your tools for aggregating/ collecting information embedded in different parts of the model!



Name some of the information embedded underneath the Revit Models?

- Total volume of a component type, e.g., wall, column
- Total area of a component type, e.g., wall, window, floor
- Total weight of a component type, e.g., steel beam, hss, plate
- Number of a component type, e.g., door, electrical outlet
- Total Volume of a material type, e.g., concrete, gypsum

Revit Schedules



What BIM applications can benefit from this feature the most?

- ▣ Revit schedules are used for reporting project specifications.
- ▣ Revit schedules are the Revit tool for quantity takeoff.
- ▣ They help us to create tables of quantities, similar to MS Access tables or Excel spreadsheets!
- ▣ Properly define the column-headings, table rows are automatically filled based on the model component information,
- ▣ Formulas and parameters can also be defined for calculating new values based on the existing information.
- ▣ The achieved schedule results can be exported to Excel spreadsheets for the complementary processing, formatting, presentation and assessment!

Creating Schedules-Components

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The screenshot displays the Autodesk Revit 2022 interface for creating a schedule. The 'Schedules' menu is open, showing options like 'Schedule/Quantities', 'Graphical Column Schedule', 'Material Takeoff', 'Sheet List', 'Note Block', and 'View List'. A red arrow labeled '2' points to the 'Schedule/Quantities' option. The 'New Schedule' dialog box is open, showing the 'Filter list' set to '<multiple>', the 'Category' list with 'Walls' selected (indicated by a red arrow labeled '3'), and the 'Name' field set to 'Wall Schedule 2'. The 'Schedule building components' radio button is selected. The 'Phase' is set to 'New Construction'. A red arrow labeled '4' points to the 'OK' button. A circled '2' is also visible on the right side of the image, pointing to the 'Schedule/Quantities' menu item.

Autodesk Revit 2022 - CPMS_Simple_Example.rvt - Floor Plan: Level 1

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify

Modify View Templates Visibility/ Graphics Thin Lines Show Hidden Lines Remove Hidden Lines Cut Profile Render Render in Cloud 3D View Section Callout Plan Views Drafting View Schedules Sheet Title Block Elevation Duplicate View Legends

Properties Level 1

Floor Plan

Floor Plan: Level 1

Graphics

View Scale	1 : 100
Scale Value	100
Display Model	Normal
Detail Level	Coarse
Parts Visibility	Show Original
Visibility/Graphics Ov...	Edit...
Graphic Display Optio...	Edit...
Orientation	Project North
Wall Join Display	Clean all wall j...
Discipline	Architectural
Show Hidden Lines	By Discipline
Color Scheme Location	Background
Color Scheme	
System Color Schemes	
Default Analysis Displ...	None
Sun Path	<input type="checkbox"/>
Underlay	
Range: Base Level	None
Range: Top Level	Unbounded
Underlay Orientation	Look down
Extents	
Crop View	<input type="checkbox"/>
Crop Region Visible	<input type="checkbox"/>
Annotation Crop	<input type="checkbox"/>
View Range	Edit...
Associated Level	Level 1
Scene Box	None

New Schedule

Filter list: <multiple>

Category:

- Structural Stiffeners
- Structural Trusses
- Switch System
- System-Zones
- Telephone Devices
- Temporary Structures
- Topography
- Vertical Circulation
- Walls
- Water Loops
- Windows
- Zone Equipment

Name: Wall Schedule 2

Schedule building components

Schedule keys

Key name:

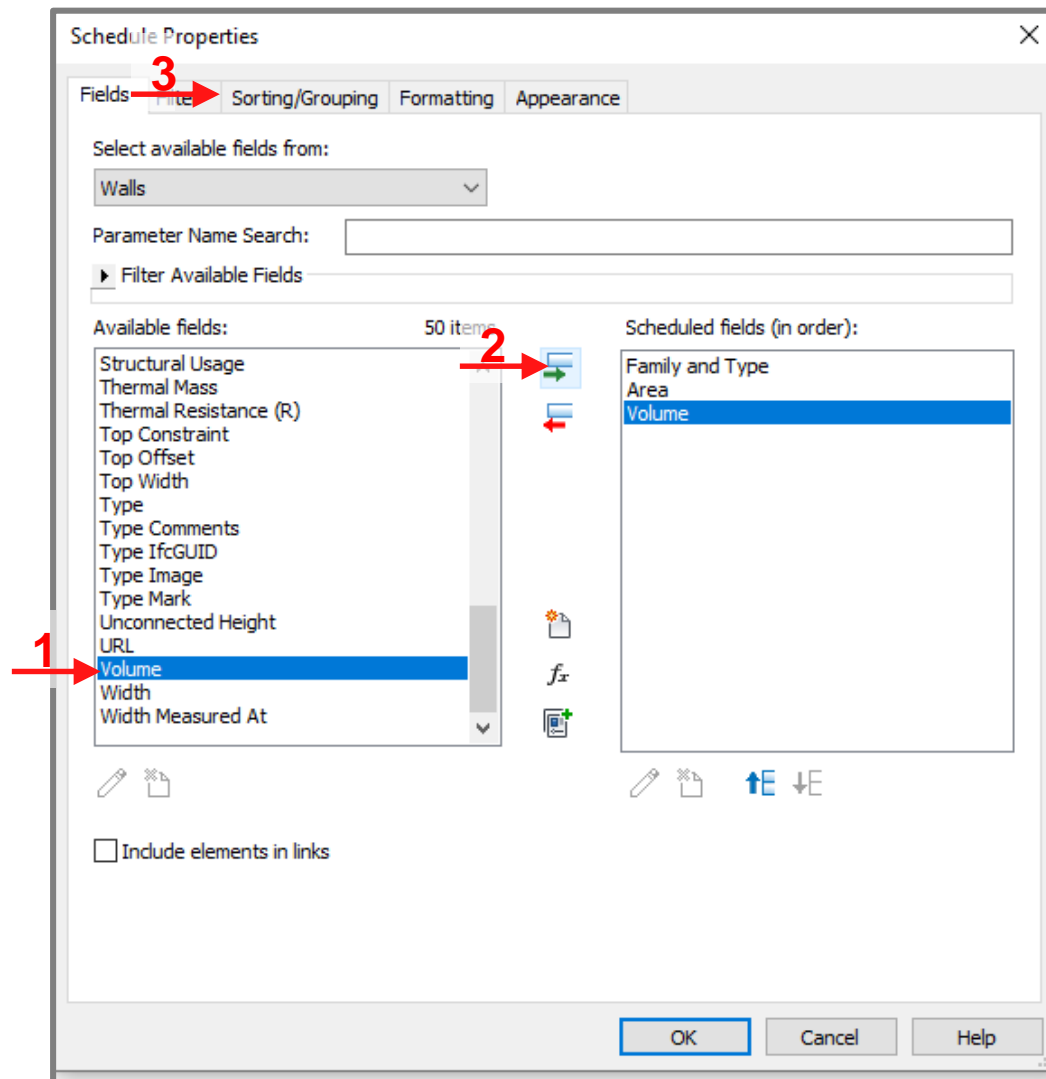
Phase: New Construction

OK Cancel Help

2

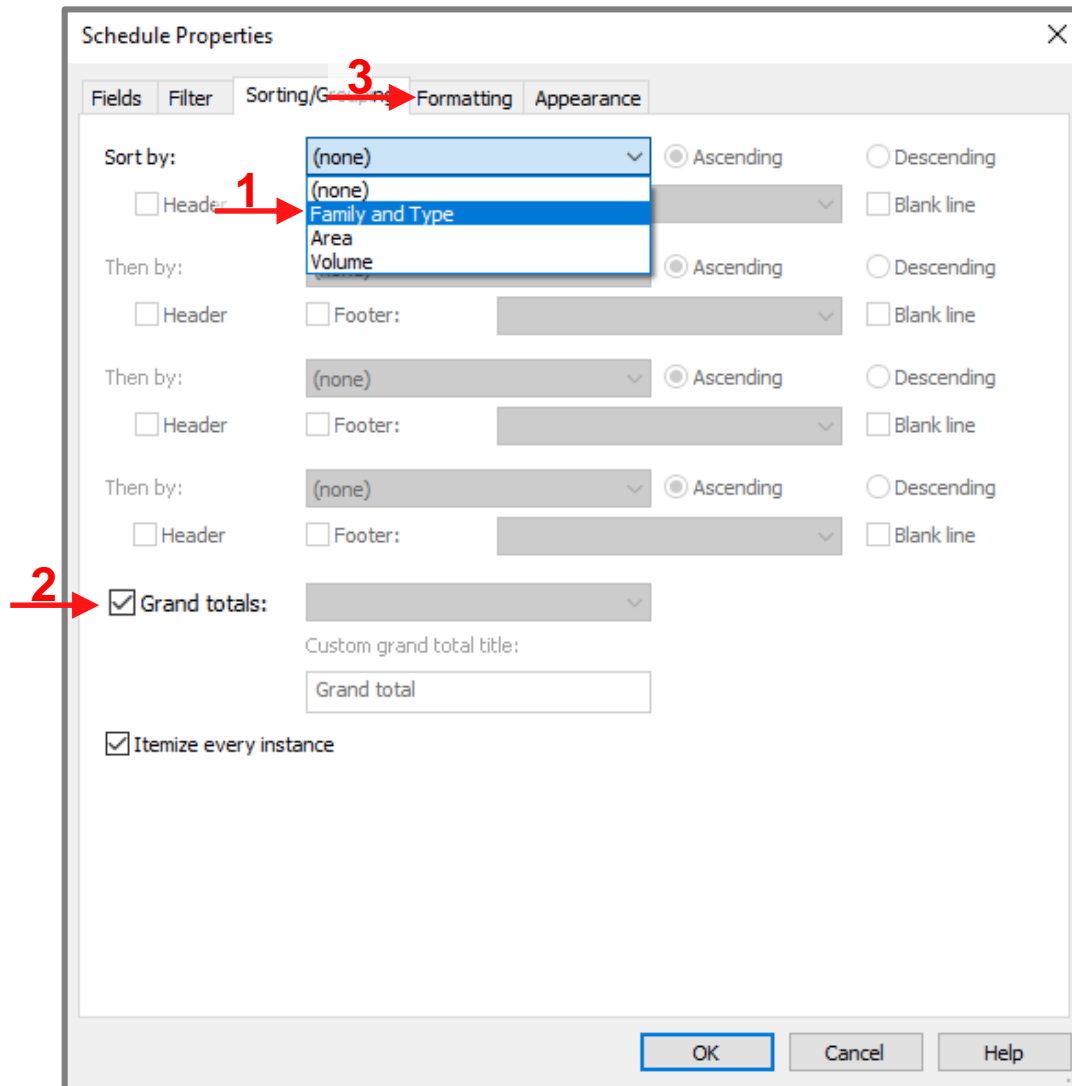
Creating Schedules-Components

29



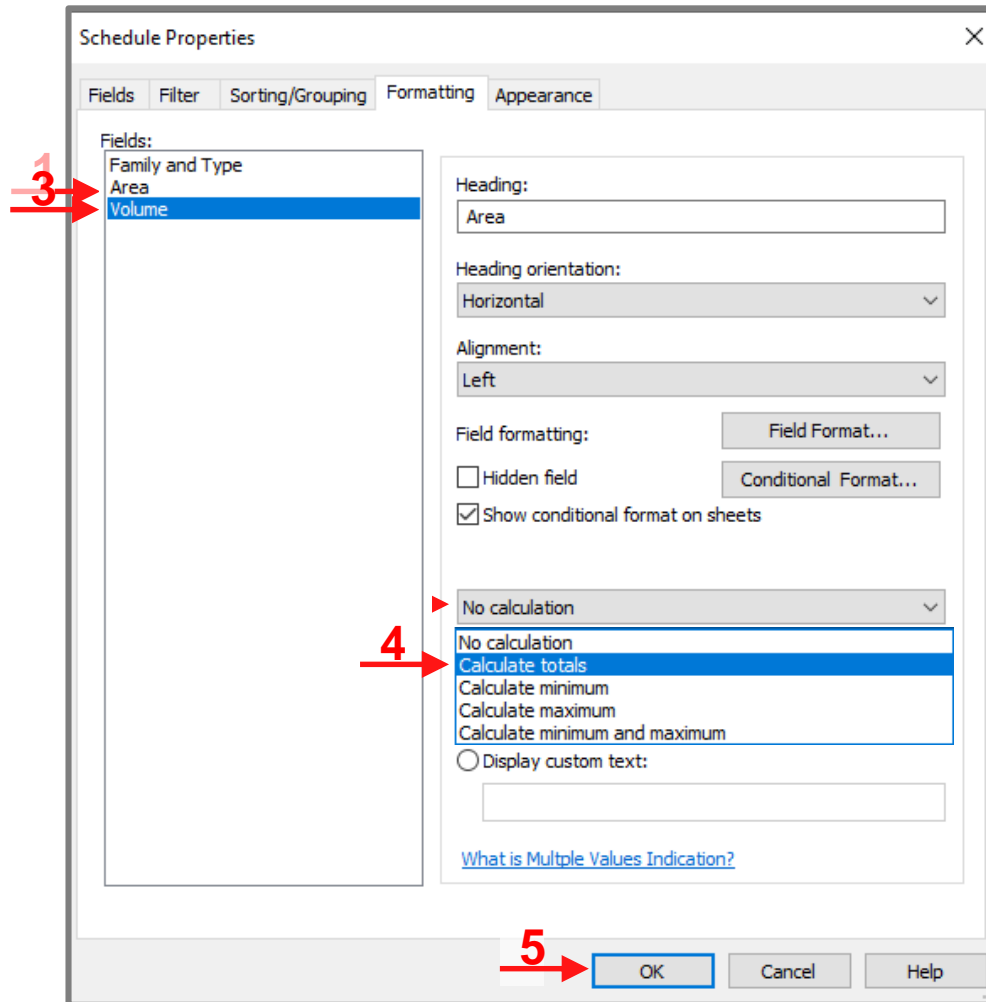
Creating Schedules-Components

30



Creating Schedules-Components

31



Creating Schedules-Components

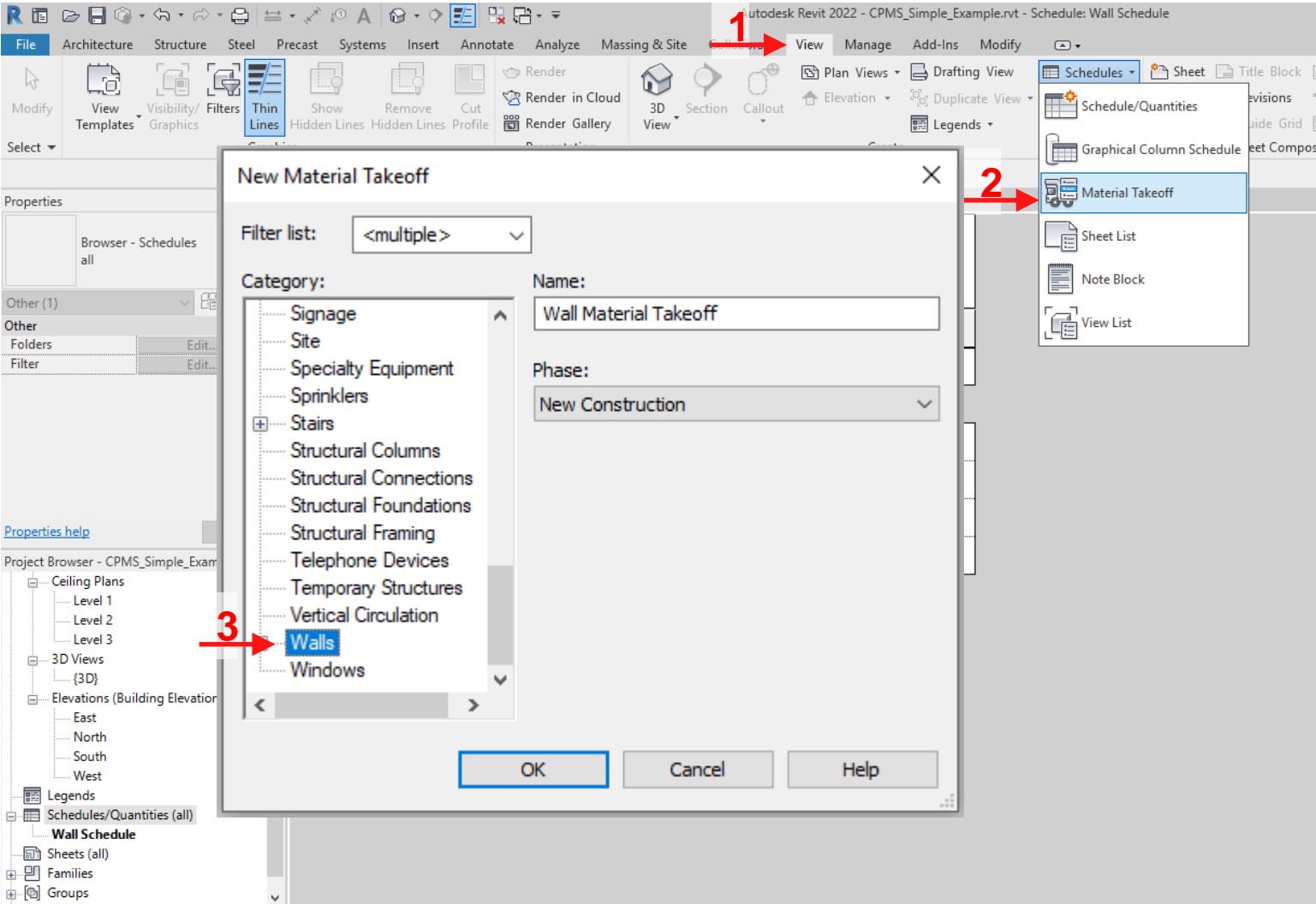
32

The screenshot displays the Autodesk Revit 2022 interface with the 'Wall Schedule' window open. The window title is 'Autodesk Revit 2022 - CPMS_Simple_Example.rvt - Schedule: Wall Schedule'. The ribbon is set to 'Modify Schedule/Quantities'. The 'Properties' panel on the left shows the 'Schedule' type and various settings. The main area shows a table with the following data:

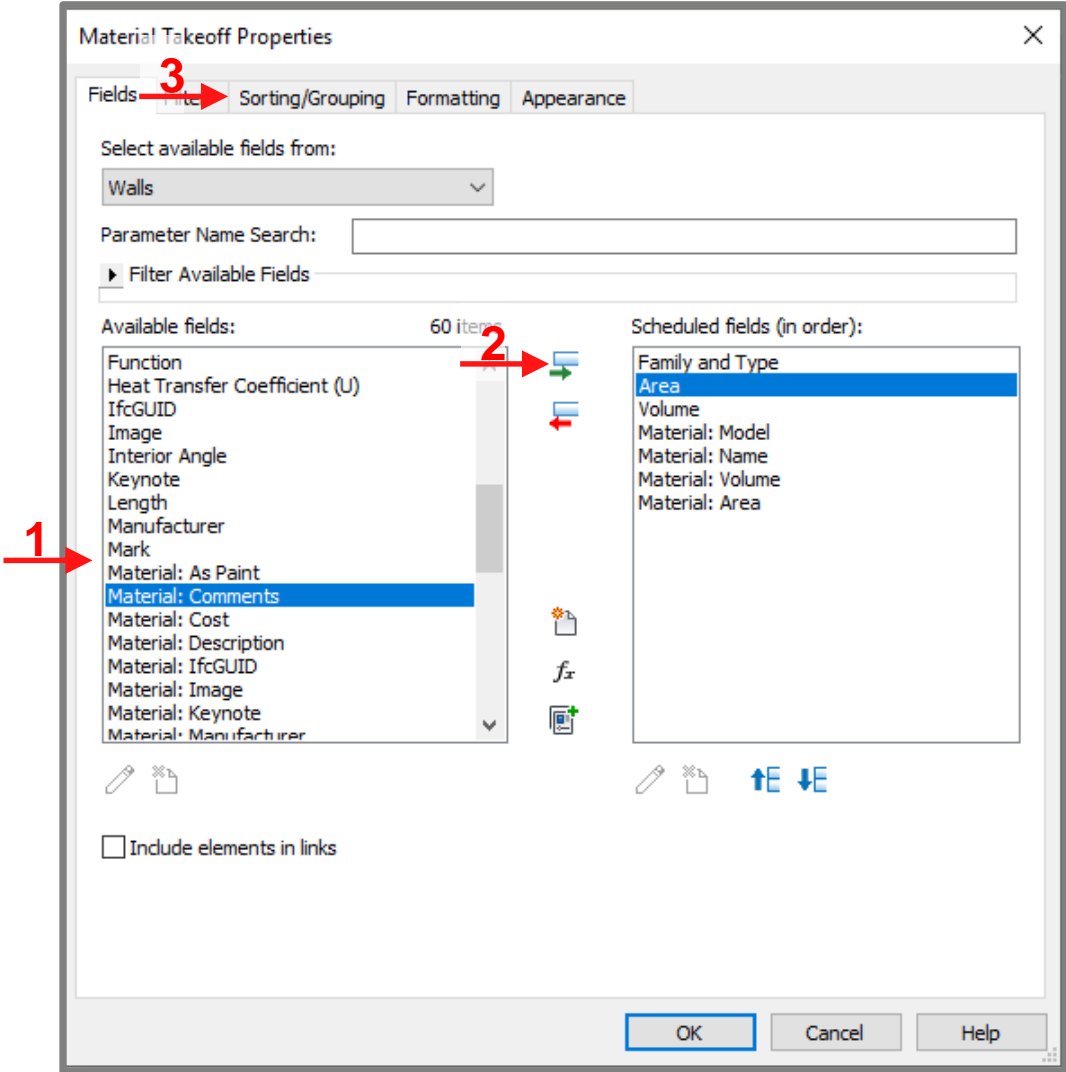
<Wall Schedule>		
A	B	C
Family and Type	Area	Volume
Basic Wall: SharifCl	24 m ²	6.34 m ³
Basic Wall: SharifCl	25 m ²	6.60 m ³
Basic Wall: SharifCl	12 m ²	3.02 m ³
Basic Wall: SharifCl	11 m ²	2.92 m ³
Grand total: 4	73 m ²	18.88 m ³

A red bracket is drawn under the 'Grand total' row, and the text 'Wall Quantity Takeoff' is written in red below it.

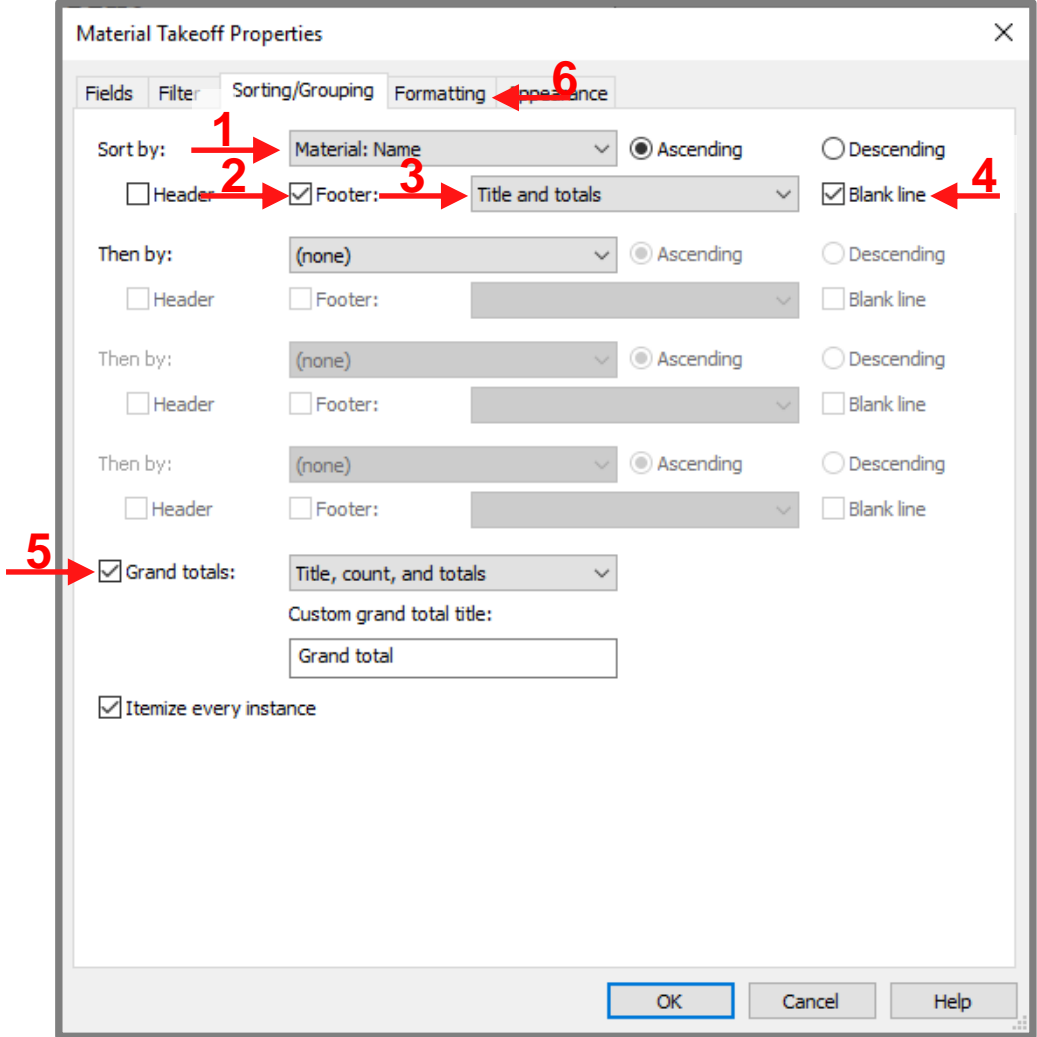
Creating Schedules-Materials



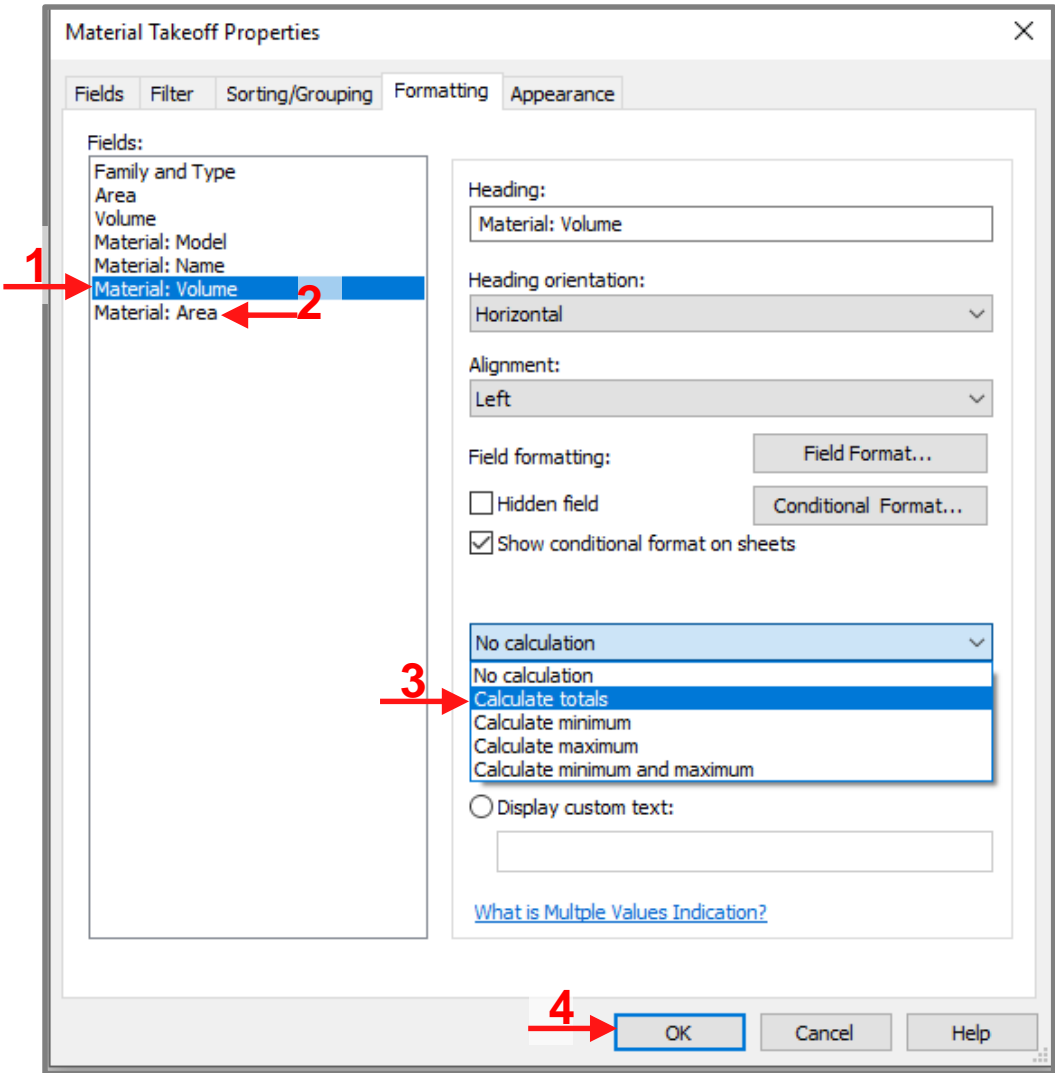
Creating Schedules-Materials



Creating Schedules-Materials



Creating Schedules-Materials



Creating Schedules-Materials

Autodesk Revit 2022 - CPMS_Simple_Example.rvt - Schedule: Wall Material Takeoff

Modify Schedule/Quantities

Level 1 (3D) Wall Schedule Wall Material Takeoff

<Wall Material Takeoff>

A	B	C	D	E	F
Family and Type	Area	Volume	Material: Name	Material: Volume	Material: Area
Basic Wall: SharifC	24 m ²	6.34 m ³	Ceramic Tile	0.73 m ³	24 m ²
Basic Wall: SharifC	25 m ²	6.60 m ³	Ceramic Tile	0.76 m ³	25 m ²
Basic Wall: SharifC	12 m ²	3.02 m ³	Ceramic Tile	0.35 m ³	12 m ²
Basic Wall: SharifC	11 m ²	2.92 m ³	Ceramic Tile	0.34 m ³	11 m ²
Ceramic Tile: 4				2.18 m ³	73 m ²
Basic Wall: SharifC	24 m ²	6.34 m ³	Concrete Masonry	3.66 m ³	24 m ²
Basic Wall: SharifC	25 m ²	6.60 m ³	Concrete Masonry	3.81 m ³	25 m ²
Basic Wall: SharifC	12 m ²	3.02 m ³	Concrete Masonry	1.74 m ³	12 m ²
Basic Wall: SharifC	11 m ²	2.92 m ³	Concrete Masonry	1.68 m ³	11 m ²
Concrete Masonry Units: 4				10.89 m ³	73 m ²
Basic Wall: SharifC	24 m ²	6.34 m ³	Concrete, Sand/Ce	1.22 m ³	24 m ²
Basic Wall: SharifC	25 m ²	6.60 m ³	Concrete, Sand/Ce	1.27 m ³	25 m ²
Basic Wall: SharifC	12 m ²	3.02 m ³	Concrete, Sand/Ce	0.58 m ³	12 m ²
Basic Wall: SharifC	11 m ²	2.92 m ³	Concrete, Sand/Ce	0.56 m ³	11 m ²
Concrete, Sand/Cement Screed: 4				3.63 m ³	73 m ²
Basic Wall: SharifC	24 m ²	6.34 m ³	Gypsum Wall Board	0.73 m ³	49 m ²
Basic Wall: SharifC	25 m ²	6.60 m ³	Gypsum Wall Board	0.76 m ³	51 m ²
Basic Wall: SharifC	12 m ²	3.02 m ³	Gypsum Wall Board	0.35 m ³	23 m ²
Basic Wall: SharifC	11 m ²	2.92 m ³	Gypsum Wall Board	0.34 m ³	22 m ²
Gypsum Wall Board: 4				2.18 m ³	145 m ²
Grand total: 16				18.88 m ³	363 m ²

Wall
Material
Quantity
Takeoff

Creating Schedules-Excel Export

Autodesk Revit 2022 - CP

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Ma

Creates exchange files and sets options.

- gbXML Saves the model as a gbXML file.
- IFC Saves an IFC file.
- ODBC Database Saves model data to an ODBC database.
- Images and Animations Saves animations or image files.
- Reports Saves a schedule or Room/Area report.
- Options Sets export options for CAD and IFC.

Export Reports Schedule Room/Area Report

<Wall Material Takeoff>			
B	C	D	
Area	Volume	Material: Name	M
1.2	6.34 m³	Ceramic Tile	0.7
1.2	6.60 m³	Ceramic Tile	0.7
1.2	3.02 m³	Ceramic Tile	0.3
1.2	2.92 m³	Ceramic Tile	0.3
2.1			
1.2	6.34 m³	Concrete Masonry	3.6
1.2	6.60 m³	Concrete Masonry	3.8
1.2	3.02 m³	Concrete Masonry	1.7
1.2	2.92 m³	Concrete Masonry	1.6
Concrete Masonry Units: 4			10.

Creating Schedules-Excel Export

Autodesk Revit 2022 - CP

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Ma

Export Schedule

Save in: 9_CPMS_Revit_Fil

Name

Schedule appearance

- Export title
- Export column headers
 - Include grouped column headers
- Export group headers, footers, and blank lines

Output options

Field delimiter: ,

Text qualifier: (none)

2 → OK Cancel

File name: Wall Material Takeoff

Files of type: CSV (delimited) (*.csv)

1 → Save Cancel

Name	Material Takeoff
e	0.7
e	0.7
e	0.3
e	0.3
	2.1
masonry	3.6
masonry	3.8
masonry	1.7
masonry	1.6
Level 2	
Level 3	
Concrete masonry units. 4	10.

Creating Schedules-Excel Export

Wall Material Takeoff.csv - Excel (Product Activation Failed)

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER LOAD TEST TEAM

Clipboard Font Alignment Number Styles

Clipboard Font Alignment Number Styles

Normal Bad Good Neutral

	A	B	C	D	E	F	G	H	I	J	K
1	Wall Material Takeoff										
2	Family and Type	Area	Volume	Material: Name	Material: Volume	Material: Area					
3											
4	Basic Wall: SharifClassWall	24 m ²	6.34 m ³	Ceramic Tile	0.73 m ³	24 m ²					
5	Basic Wall: SharifClassWall	25 m ²	6.60 m ³	Ceramic Tile	0.76 m ³	25 m ²					
6	Basic Wall: SharifClassWall	12 m ²	3.02 m ³	Ceramic Tile	0.35 m ³	12 m ²					
7	Basic Wall: SharifClassWall	11 m ²	2.92 m ³	Ceramic Tile	0.34 m ³	11 m ²					
8	Ceramic Tile: 4				2.18 m ³	73 m ²					
9											
10	Basic Wall: SharifClassWall	24 m ²	6.34 m ³	Concrete Masonry Units	3.66 m ³	24 m ²					
11	Basic Wall: SharifClassWall	25 m ²	6.60 m ³	Concrete Masonry Units	3.81 m ³	25 m ²					
12	Basic Wall: SharifClassWall	12 m ²	3.02 m ³	Concrete Masonry Units	1.74 m ³	12 m ²					
13	Basic Wall: SharifClassWall	11 m ²	2.92 m ³	Concrete Masonry Units	1.68 m ³	11 m ²					
14	Concrete Masonry Units: 4				10.89 m ³	73 m ²					
15											
16	Basic Wall: SharifClassWall	24 m ²	6.34 m ³	Concrete	Sand/Cement Screed	1.22 m ³	24 m ²				
17	Basic Wall: SharifClassWall	25 m ²	6.60 m ³	Concrete	Sand/Cement Screed	1.27 m ³	25 m ²				
18	Basic Wall: SharifClassWall	12 m ²	3.02 m ³	Concrete	Sand/Cement Screed	0.58 m ³	12 m ²				
19	Basic Wall: SharifClassWall	11 m ²	2.92 m ³	Concrete	Sand/Cement Screed	0.56 m ³	11 m ²				
20	Concrete	Sand/Cement Screed: 4				3.63 m ³	73 m ²				
21											
22	Basic Wall: SharifClassWall	24 m ²	6.34 m ³	Gypsum Wall Board	0.73 m ³	49 m ²					
23	Basic Wall: SharifClassWall	25 m ²	6.60 m ³	Gypsum Wall Board	0.76 m ³	51 m ²					
24	Basic Wall: SharifClassWall	12 m ²	3.02 m ³	Gypsum Wall Board	0.35 m ³	23 m ²					
25	Basic Wall: SharifClassWall	11 m ²	2.92 m ³	Gypsum Wall Board	0.34 m ³	22 m ²					
26	Gypsum Wall Board: 4				2.18 m ³	145 m ²					
27	Grand total: 16				18.88 m ³	363 m ²					



In Class Practice

41

- 1) Cost-wise, do you recommend using BIM for building material quantity takeoff or you prefer the manual calculations?

Revit Parameters

Introduction

43

- Revit parameters form the information aspect of the BIM in the Revit model!
- Make sure that you have a proper plan, e.g., as a part of your project information system, before starting creating and using parameters in your file.
- An ad hoc approach for creating and using project parameters is going to create a long list of useless parameters, just complicating the your project management!!!

Different Types of Revit Parameters

44

- System Parameters
- Family Parameters
- Project Parameters
- Shared Parameters
- Global Parameters

System Parameters

45

- System parameters include the embedded System parameters, or properties, of different objects.
- All object properties, including Instance parameters and Type parameters, are system parameters!
- Revit system parameters can not be modified or removed, if permitted, only their values can be changed!

System Parameters

46

The screenshot displays the Autodesk Revit 2023 interface. The ribbon is set to 'Modify' under the 'Walls' panel. The 'Properties' panel is open, showing the following settings:

Modify | Walls

Properties

- Basic Wall
- SIP 202mm Wall - conc clad

Walls (1) Edit Type

Constraints

Location Line	Wall Centerline
Base Constraint	Level 2
Base Offset	-500.0
Base is Attached	<input type="checkbox"/>
Base Extension Distance	0.0
Top Constraint	Up to level: Roof Line
Unconnected Height	3500.0
Top Offset	0.0

[Properties help](#) Apply

The background shows a 3D architectural rendering of a building with a red roof and a tree in the foreground.

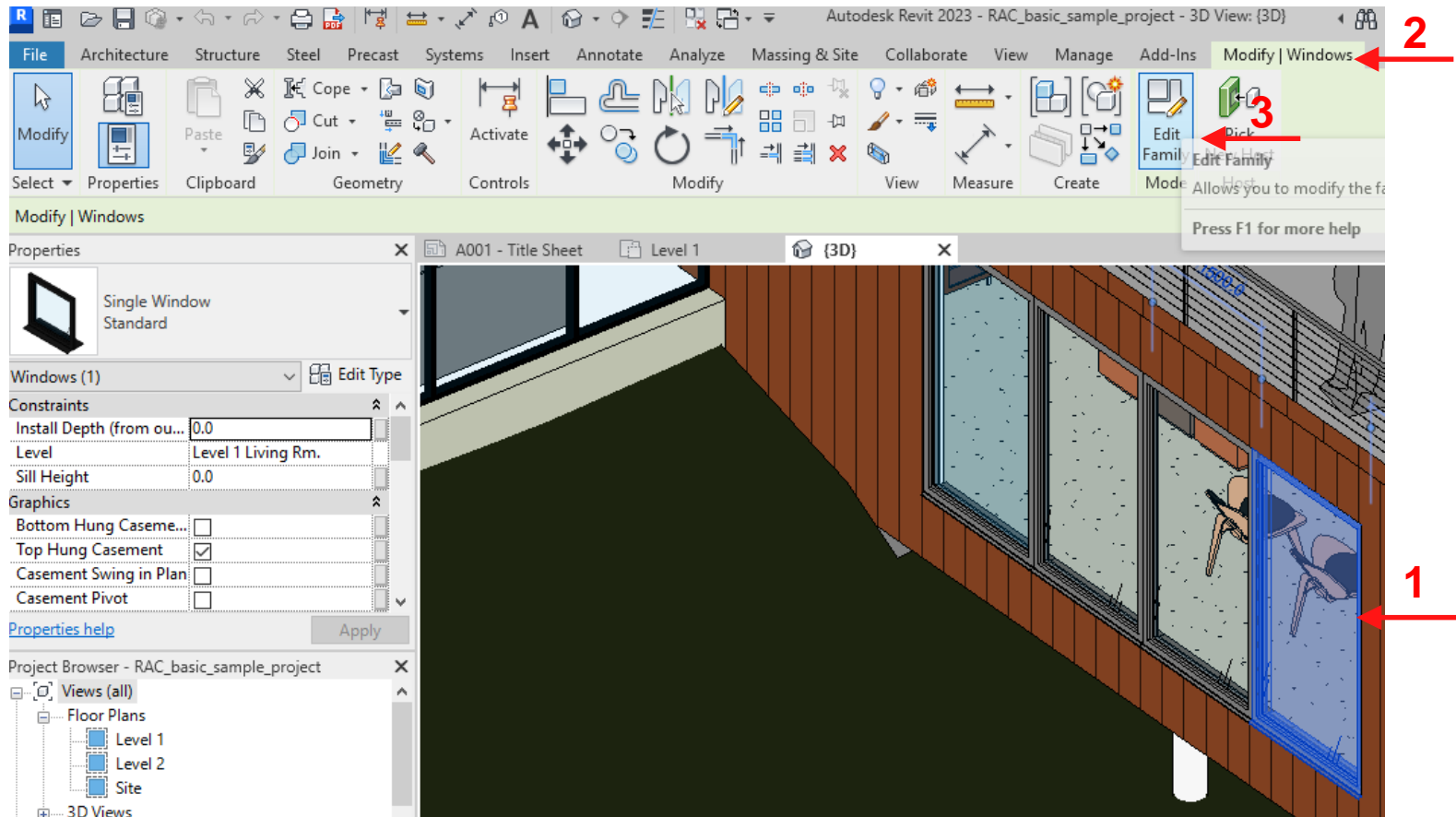
Family Parameters

47

- Family parameters are defined to control family specifications,
- They control variable values of the family and nested families, such as dimensions (Width, Height, and Depth) or materials.
- They are specific to the family and can not be used in project schedules and tags.

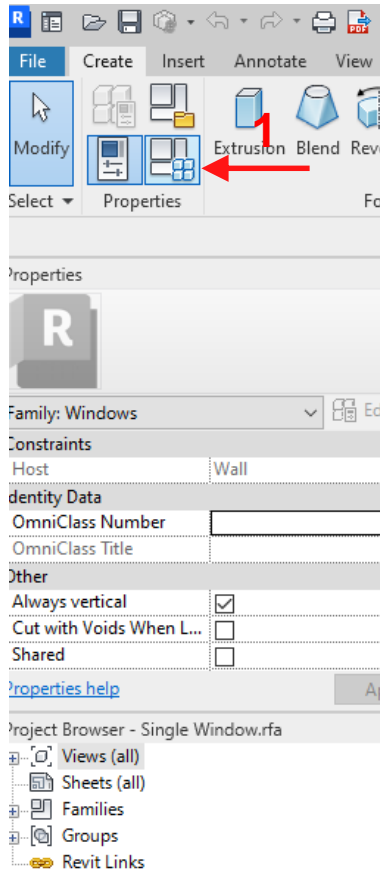
Family Parameters

48



Family Parameters

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Family Types

Type name: Standard

Search parameters

Parameter	Value	Formula	Lock
Constraints			
Install Depth (from outside)	80.0	=	<input checked="" type="checkbox"/>
Construction			
Frame Depth	60.0	=	<input checked="" type="checkbox"/>
Frame Depth under	80.0	=	<input checked="" type="checkbox"/>
Frame Depth over	80.0	=	<input checked="" type="checkbox"/>
Frame Width	60.0	=	<input checked="" type="checkbox"/>
Casement Depth	60.0	=	<input checked="" type="checkbox"/>
Casement Width	60.0	=	<input checked="" type="checkbox"/>
Wall Closure	By host	=	
Construction Type		=	
Graphics			
Bottom Hung Casement (default)	<input type="checkbox"/>	=	
Top Hung Casement (default)	<input checked="" type="checkbox"/>	=	
Casement Swing in Plan (default)	<input type="checkbox"/>	=	
Casement Pivot (default)	<input type="checkbox"/>	=	
Materials and Finishes			
Frame (default)	Aluminum_Black	=	

Manage Lookup Tables

[How do I manage family types?](#)

OK Cancel Apply

Family Parameters

50

Parameter Properties

Parameter Type

Family parameter
(Cannot appear in schedules or tags)

Shared parameter
(Can be shared by multiple projects and families, exported to ODBC, and appear in schedules and tags)

Select... Export...

Parameter Data

Name:

Discipline:

- Common
- Electrical
- Energy
- HVAC
- Infrastructure
- Piping
- Structural

Tooltip description:
<No tooltip description. Edit this parameter to write a custom tooltip. Custom

Edit Tooltip...

Type

Instance

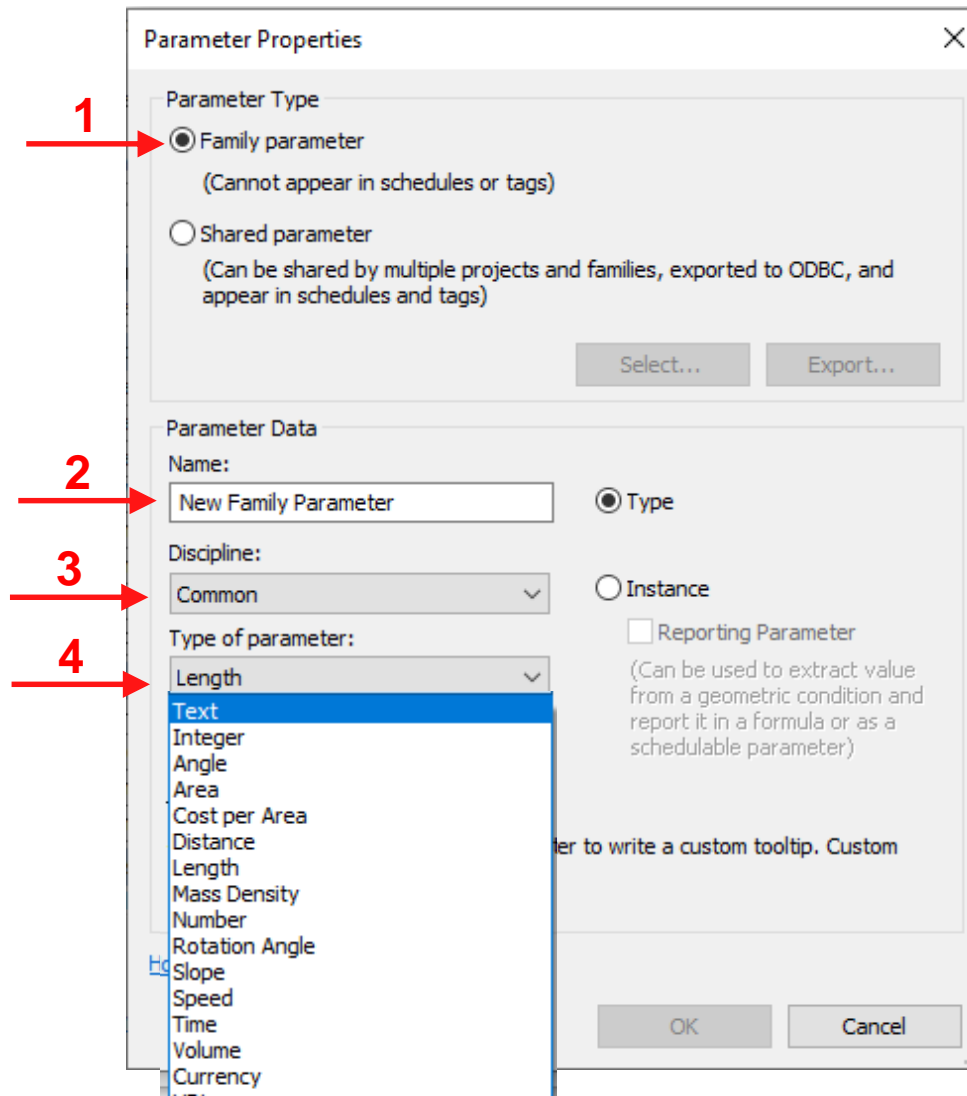
Reporting Parameter
(Can be used to extract value from a geometric condition and report it in a formula or as a schedulable parameter)

[How do I create family parameters?](#)

OK Cancel

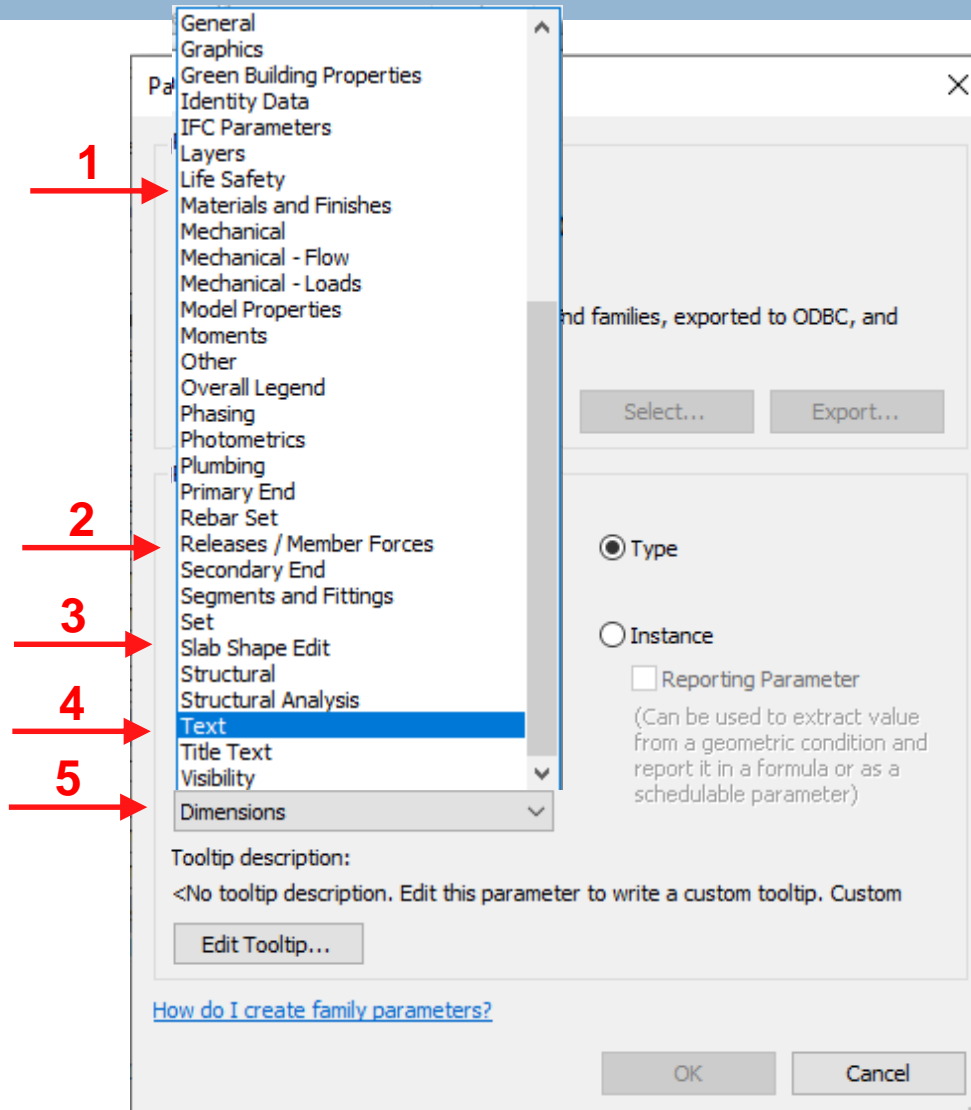
Family Parameters

51



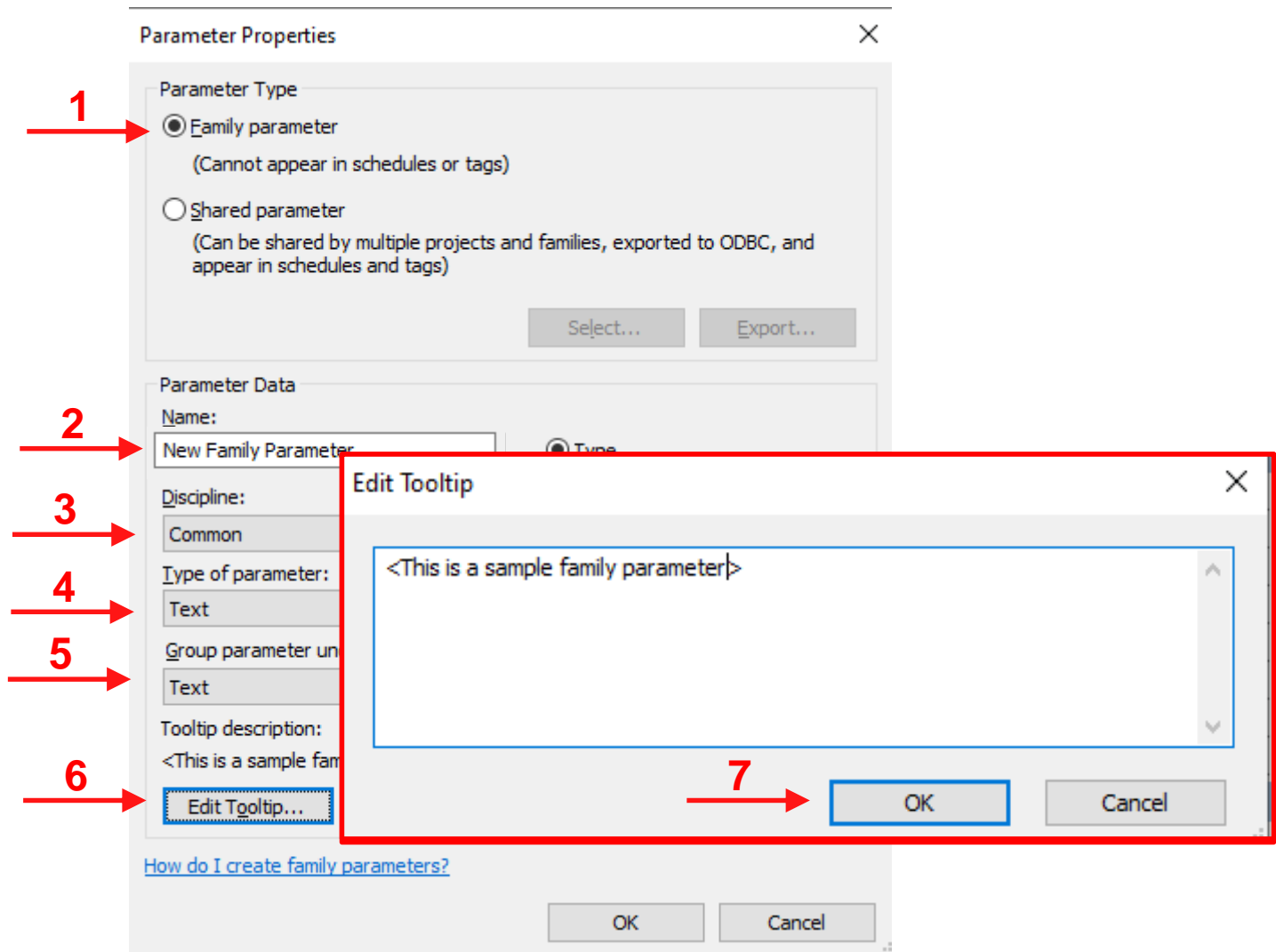
Family Parameters

52



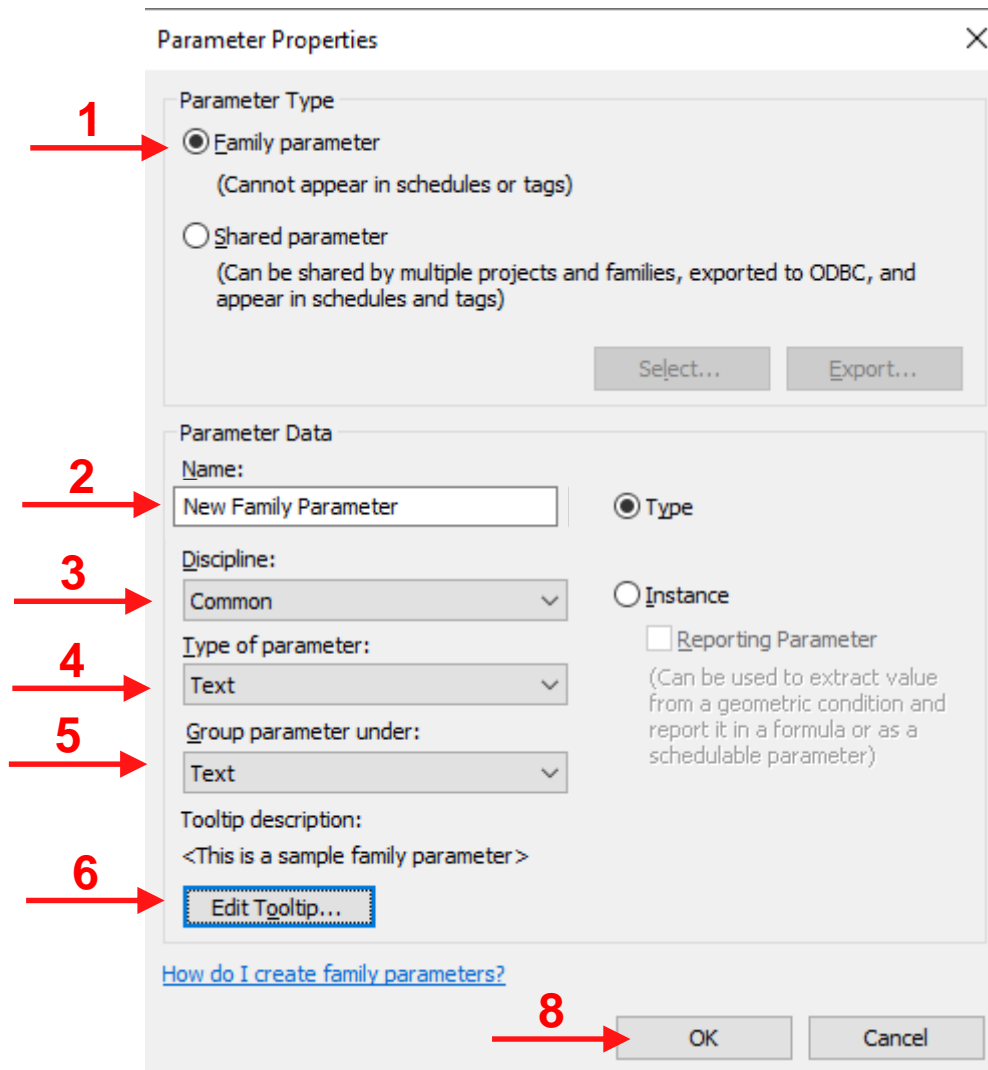
Family Parameters

53



Family Parameters

54



Family Parameters

55

Family Types

Type name: Standard

Search parameters

Parameter	Value	Formula	Lock
Install Depth (from outside)	80.0	=	<input checked="" type="checkbox"/>
Construction			
Frame Depth	60.0	=	<input checked="" type="checkbox"/>
Frame Depth under	80.0	=	<input checked="" type="checkbox"/>
Frame Depth over	80.0	=	<input checked="" type="checkbox"/>
Frame Width	60.0	=	<input checked="" type="checkbox"/>
Casement Depth	60.0	=	<input checked="" type="checkbox"/>
Casement Width	60.0	=	<input checked="" type="checkbox"/>
Wall Closure	By host	=	
Construction Type		=	
Graphics			
Bottom Hung Casement (default)	<input type="checkbox"/>	=	
Top Hung Casement (default)	<input checked="" type="checkbox"/>	=	
Casement Swing in Plan (default)	<input type="checkbox"/>	=	
Casement Pivot (default)	<input type="checkbox"/>	=	
Text			
New Family Parameter		=	
Materials and Finishes			

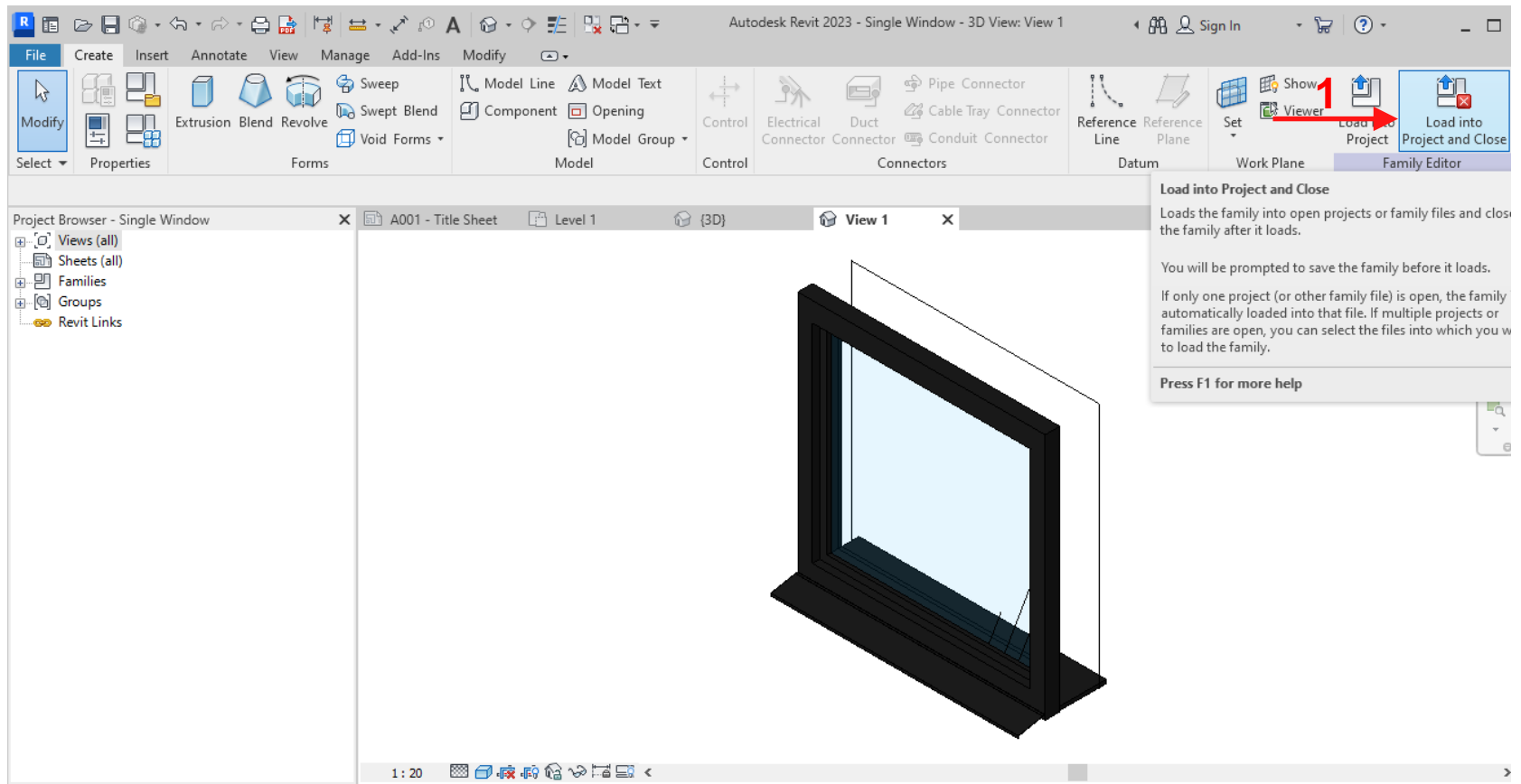
Manage Lookup Tables

[How do I manage family types?](#)

OK Cancel Apply

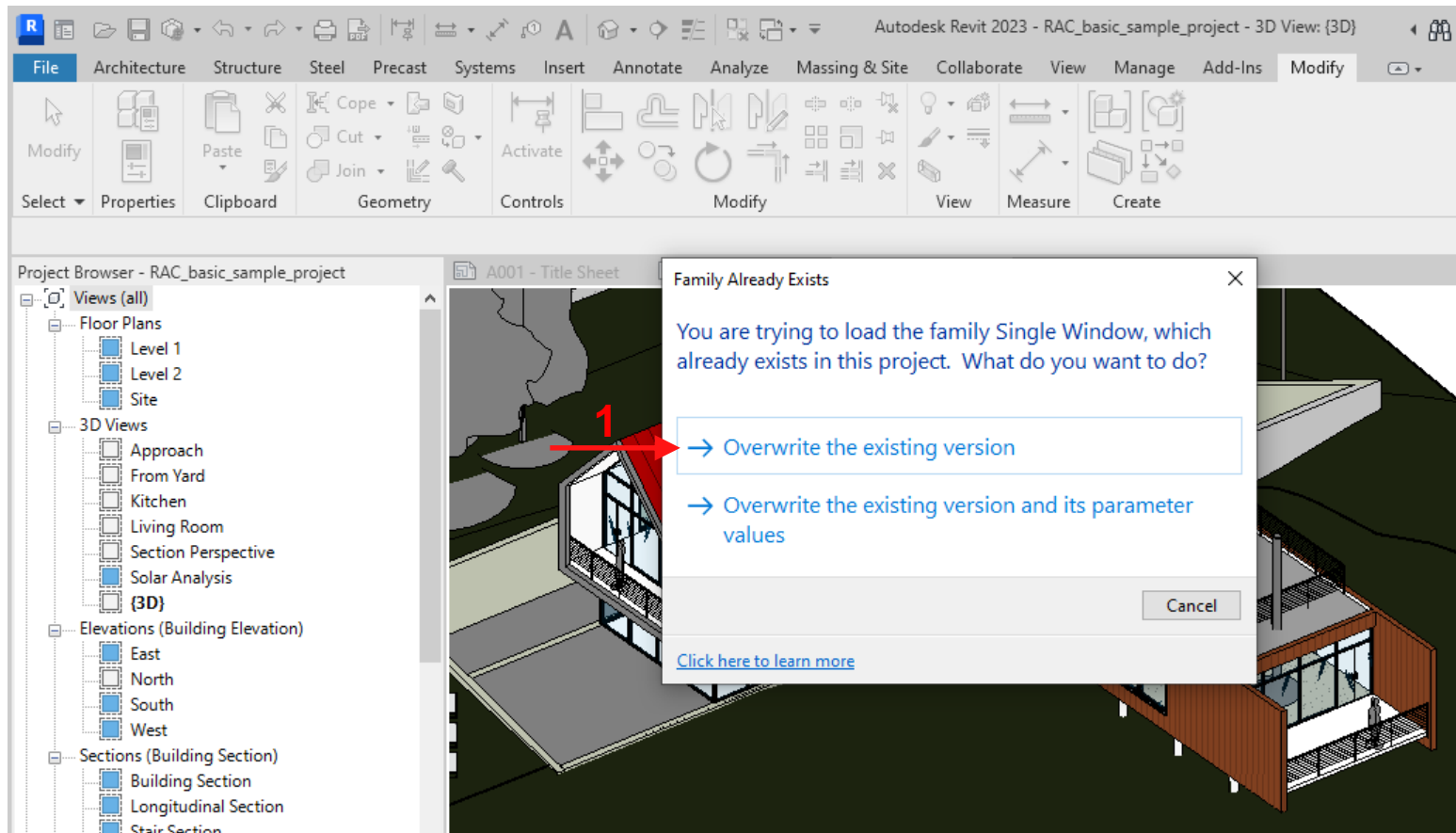
Family Parameters

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Family Parameters

57



Family Parameters

58

The image shows the Revit software interface with the 'Type Properties' dialog box open. The dialog is titled 'Type Properties' and has a close button (X) in the top right corner. It is divided into several sections:

- Family:** Single Window (dropdown menu)
- Type:** Standard (dropdown menu)
- Buttons:** Load..., Duplicate..., Rename...
- Type Parameters:** A table with two columns: Parameter and Value.
- Text:** A section containing a 'New Family Parameter' button.
- Analytical Properties:** A section with various analytical parameters.
- Identity Data:** A section for identifying the family.

The 'Type Parameters' table is as follows:

Parameter	Value
Construction	
Frame Depth	60.0
Frame Depth under	80.0
Frame Depth over	80.0
Frame Width	60.0
Casement Depth	60.0
Casement Width	60.0
Wall Closure	By host
Construction Type	
Text	
New Family Parameter	
Analytical Properties	
Analytic Construction	<None>
Define Thermal Properties by	Building Type
Visual Light Transmittance	
Solar Heat Gain Coefficient	
Thermal Resistance (R)	
Heat Transfer Coefficient (U)	
Identity Data	

Red arrows indicate key actions: Arrow 1 points to the 'Edit Type' button in the Properties panel, and Arrow 2 points to the 'New Family Parameter' button in the Text section of the dialog.

Project Parameters

59

- Project parameters are used for scheduling, sorting, and filtering in a Revit project, however, they are not used in tags!
- They can be assigned to multiple families used in the project at once, and they are easy to use
- But, they are Not transferable to other Revit projects,

Project Parameters

60

Autodesk Revit 2023 - RAC_basic_sample_project - 3D View: (3D)

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate Manage Add-Ins Modify | Windows

Modify | Windows

Properties

Single Window Standard

Windows (1)

Top Hung Casement	<input checked="" type="checkbox"/>
Casement Swing in Plan	<input type="checkbox"/>
Casement Pivot	<input type="checkbox"/>

Materials and Finishes

Frame	SH_Aluminum
Glass	<By Category
Casement	SH_Aluminum
Window Cill Interior	Wood_Walnut
Window Cill Exterior	SH_Aluminum

Dimensions

Rough Width	1500.0
Rough Height	2700.0
Height	2700.0
Width	1500.0

Project Parameters

Parameter Name Search:

Filter

Parameters available to elements in this project: 2 items

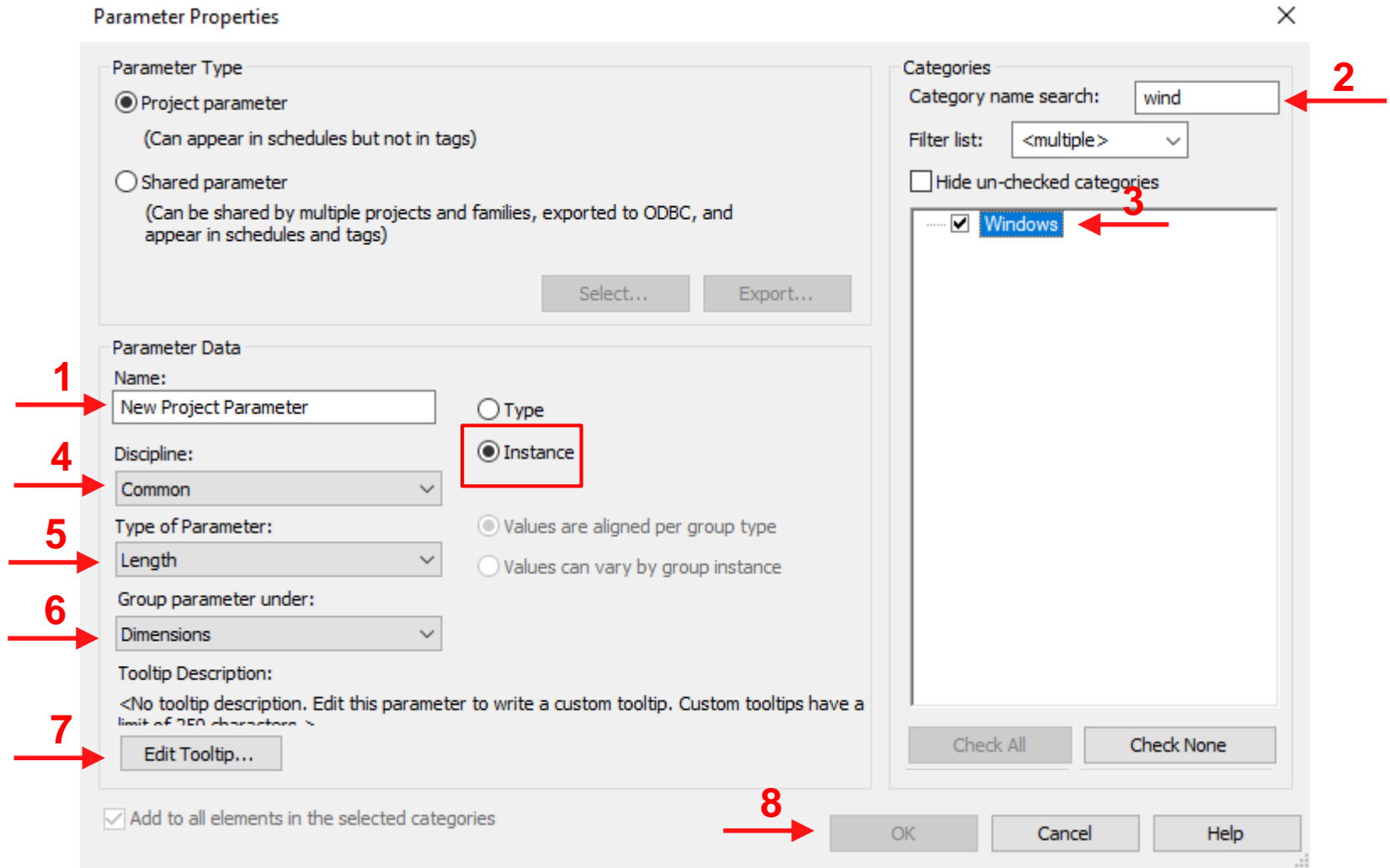
- Occupant
- Recycled Content

How do I...

1 2 3 4

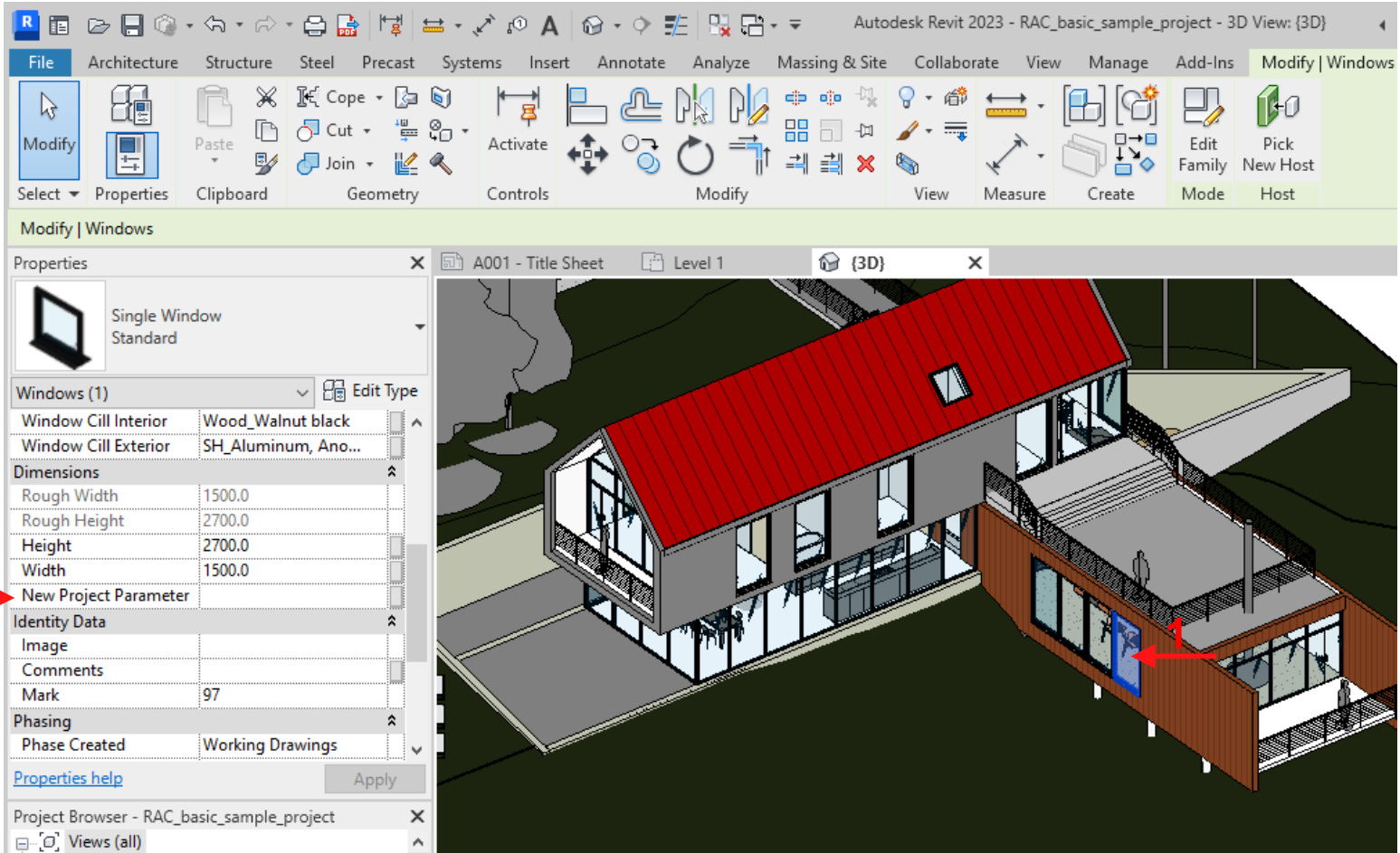
Project Parameters

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Project Parameters

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Shared Parameters

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- Shared parameters are stored in a text file independent from Revit families or projects,
- As a result, they can be referenced by multiple families and projects,
- They can be used in project schedules and tags,
- Use shared parameters when you need to use them in multiple families or projects!

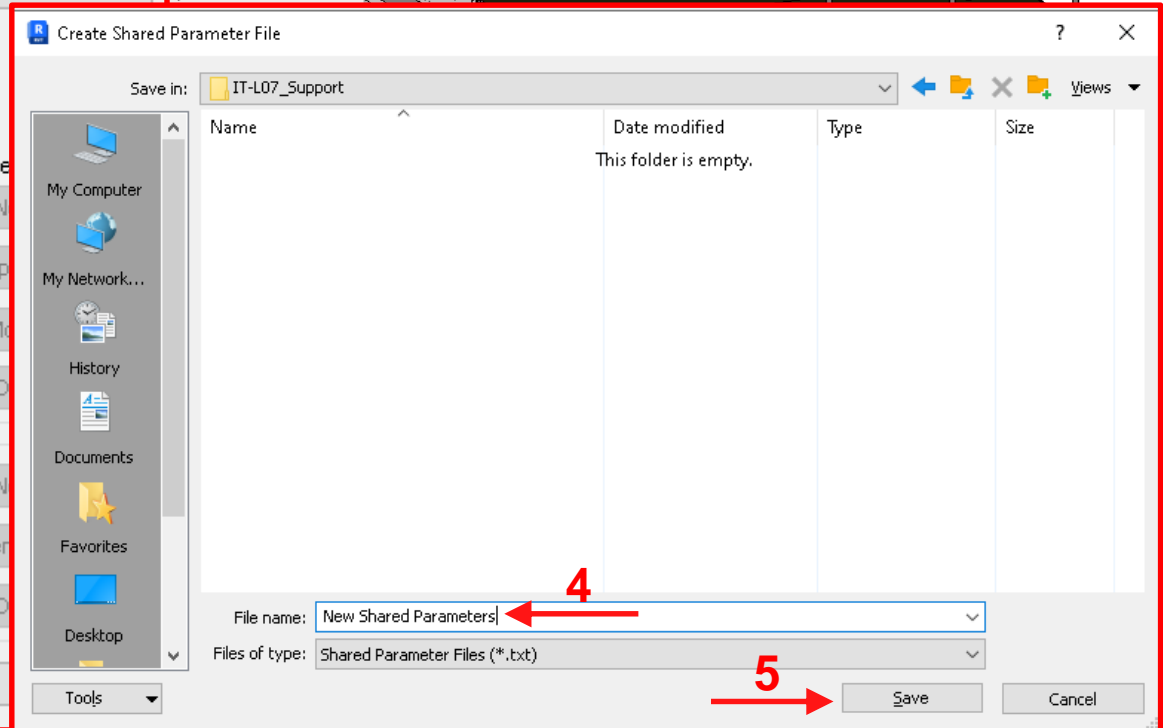
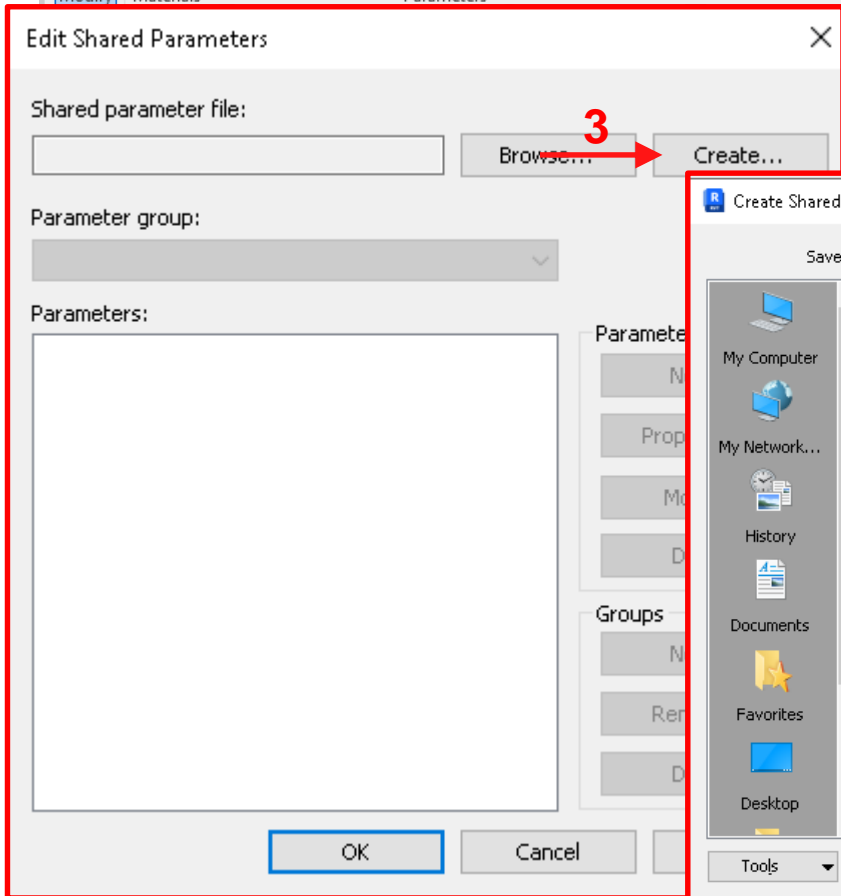
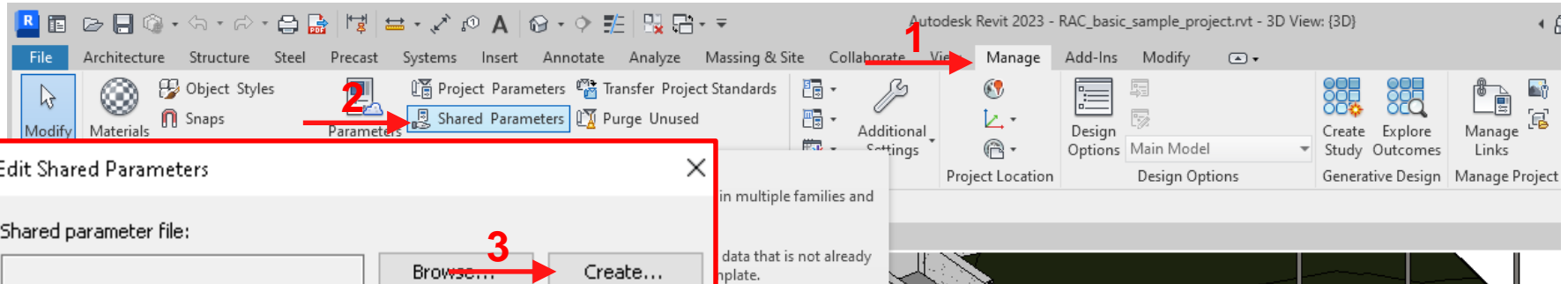


When do you recommend use shared parameters?

- ▣ Use of shared parameters are specially recommended when organizations have set parameters to be implemented in their different families and projects as a part of their MIS!

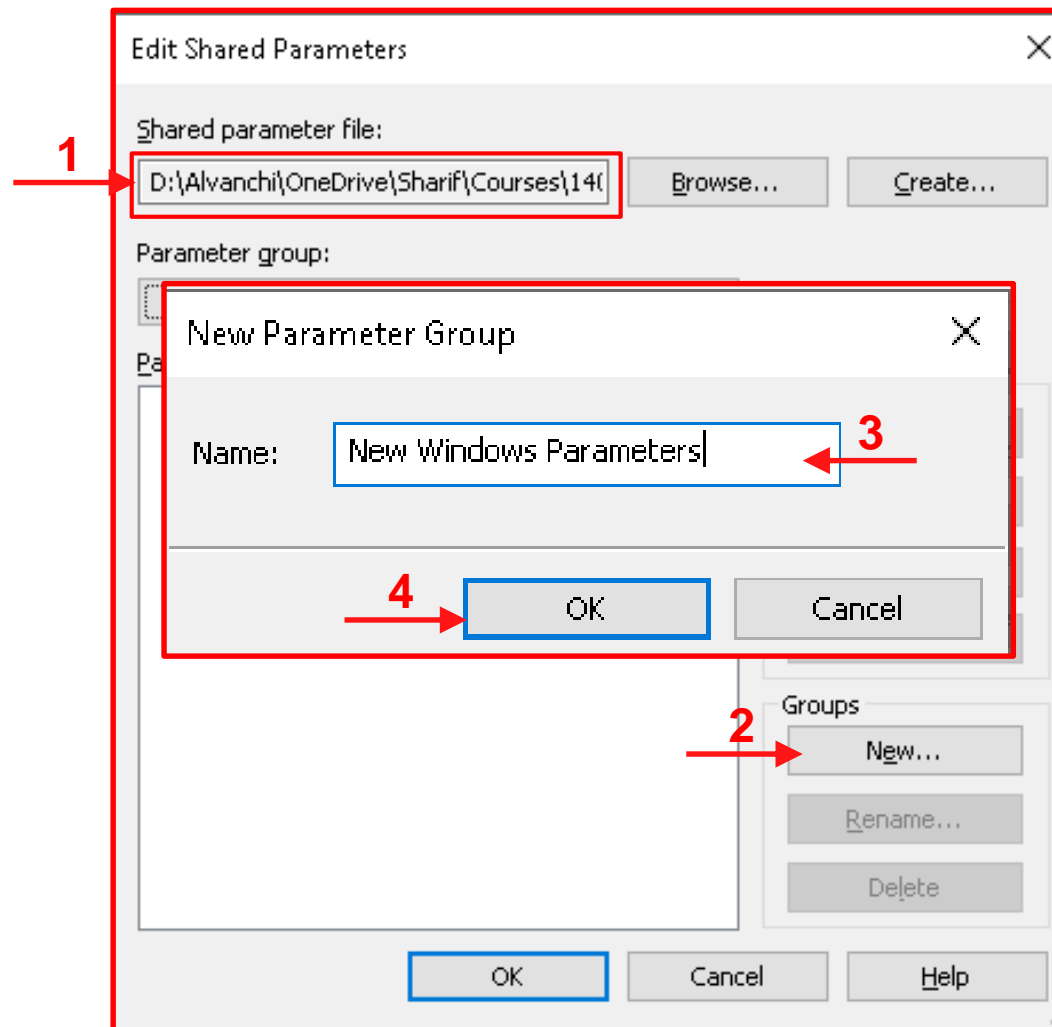
Defining Shared Parameters

64



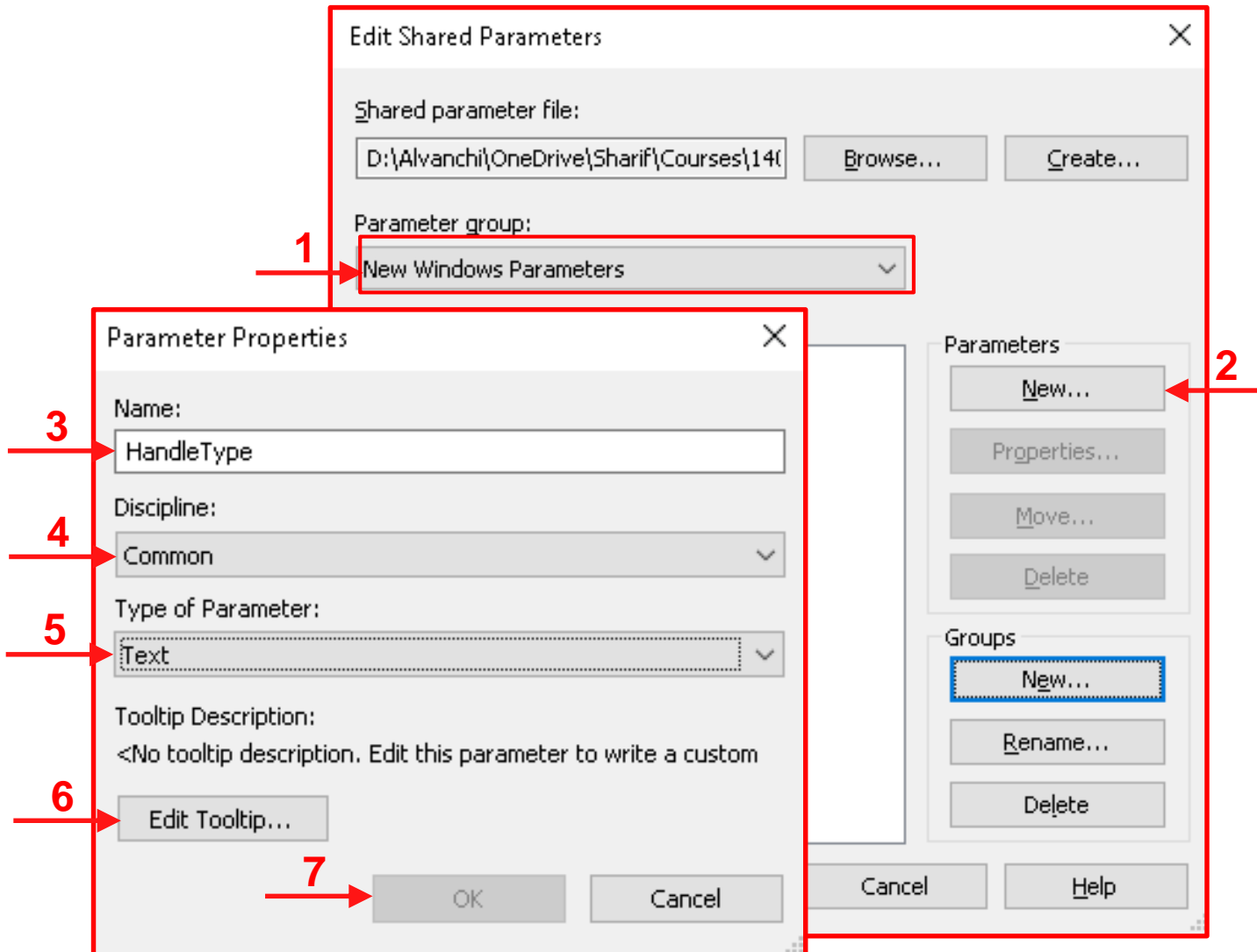
Defining Shared Parameters

65



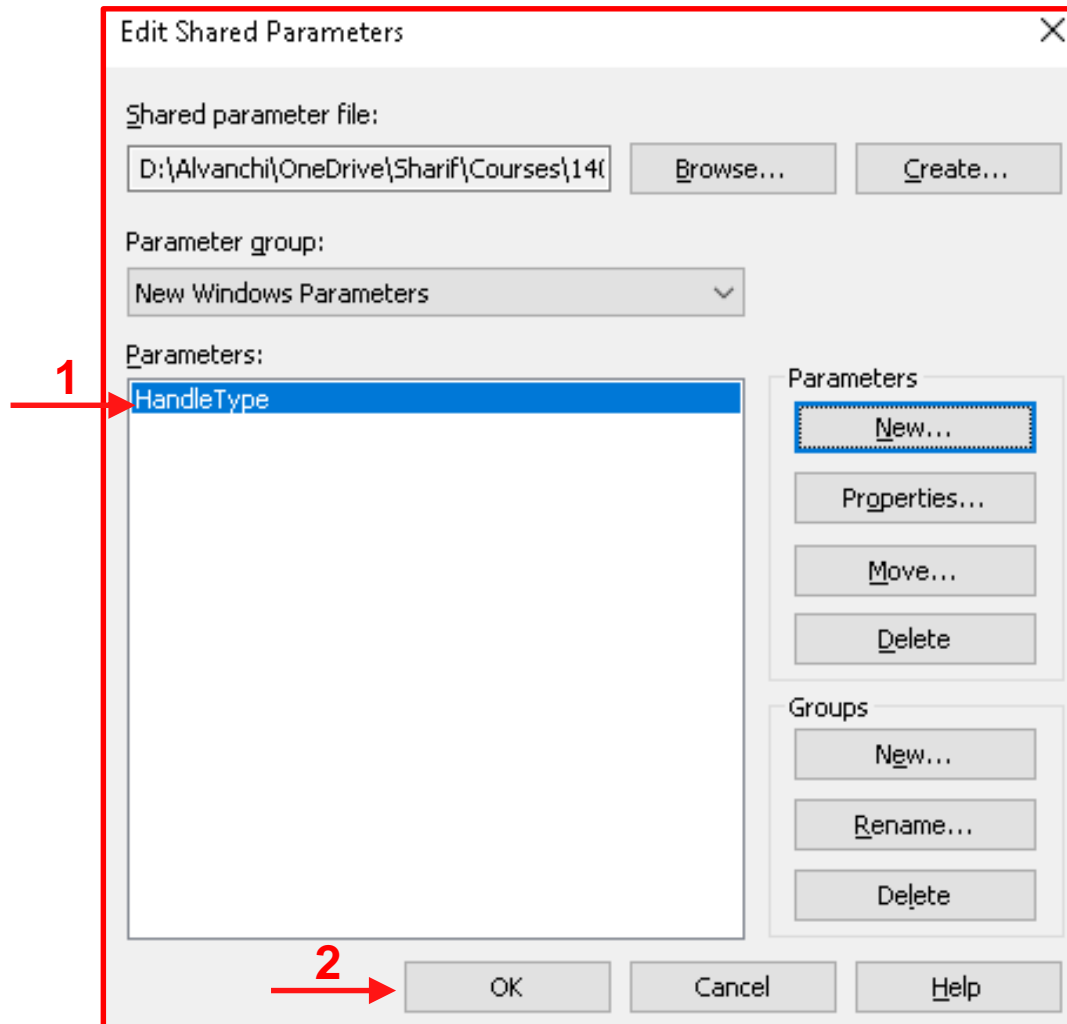
Defining Shared Parameters

66



Defining Shared Parameters

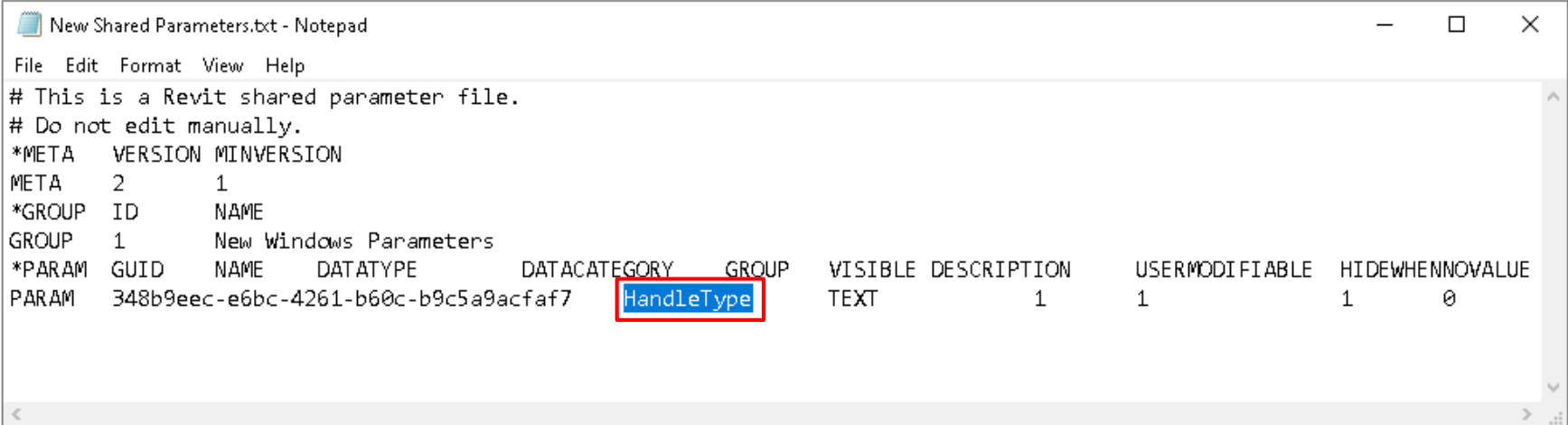
67



Defining Shared Parameters

68

- When shared parameters are defined the text file is updated based on the predefined format in Revit:



```
File Edit Format View Help
# This is a Revit shared parameter file.
# Do not edit manually.
*META VERSION MINVERSION
META 2 1
*GROUP ID NAME
GROUP 1 New Windows Parameters
*PARAM GUID NAME DATATYPE DATACATEGORY GROUP VISIBLE DESCRIPTION USERMODIFIABLE HIDEWHENNOVALUE
PARAM 348b9eec-e6bc-4261-b60c-b9c5a9acfaf7 HandleType TEXT 1 1 1 0
```

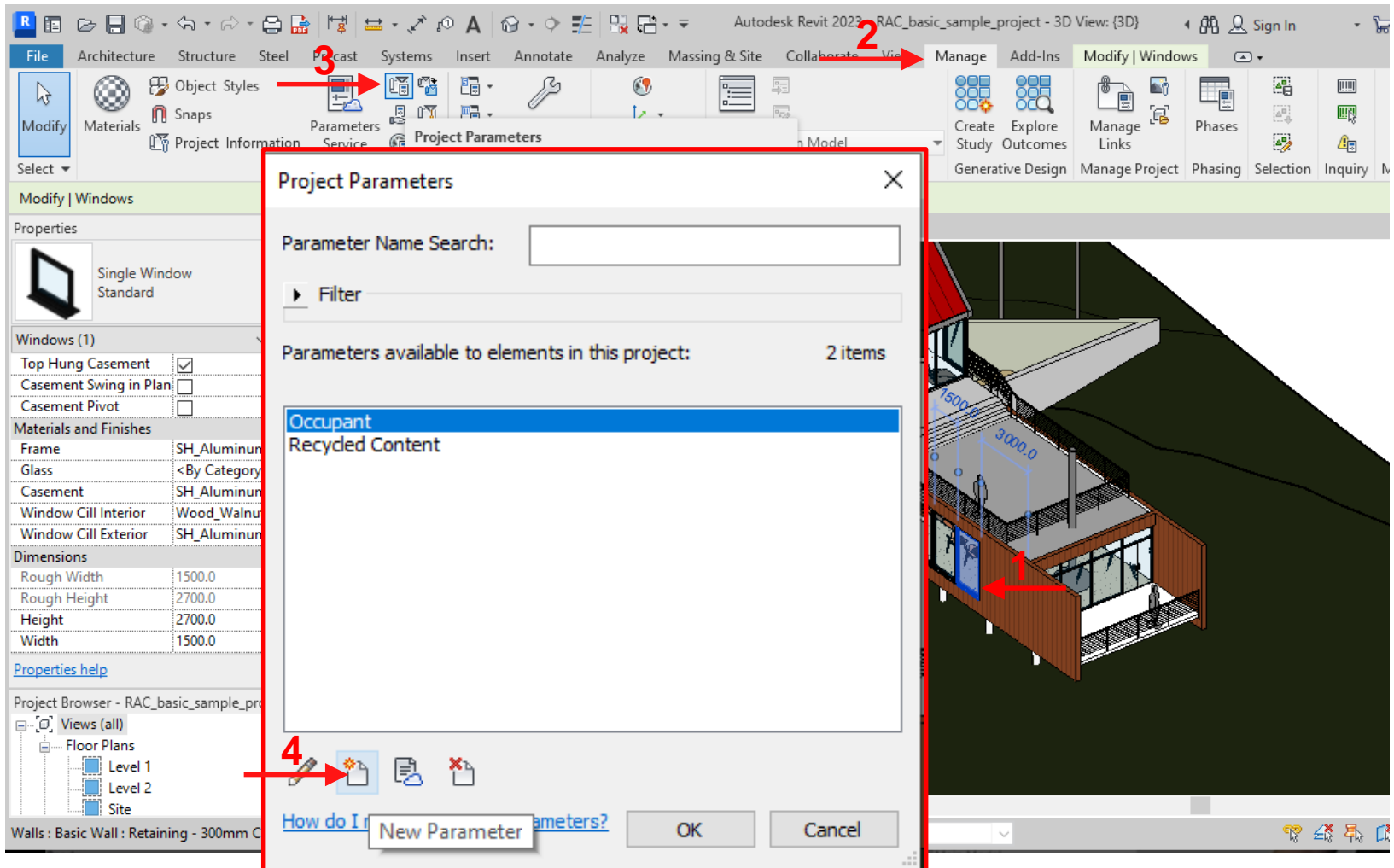
Assigning Shared Parameters

69

- The defined shared parameter can be assigned to different project families using Family parameter or Project parameter features!

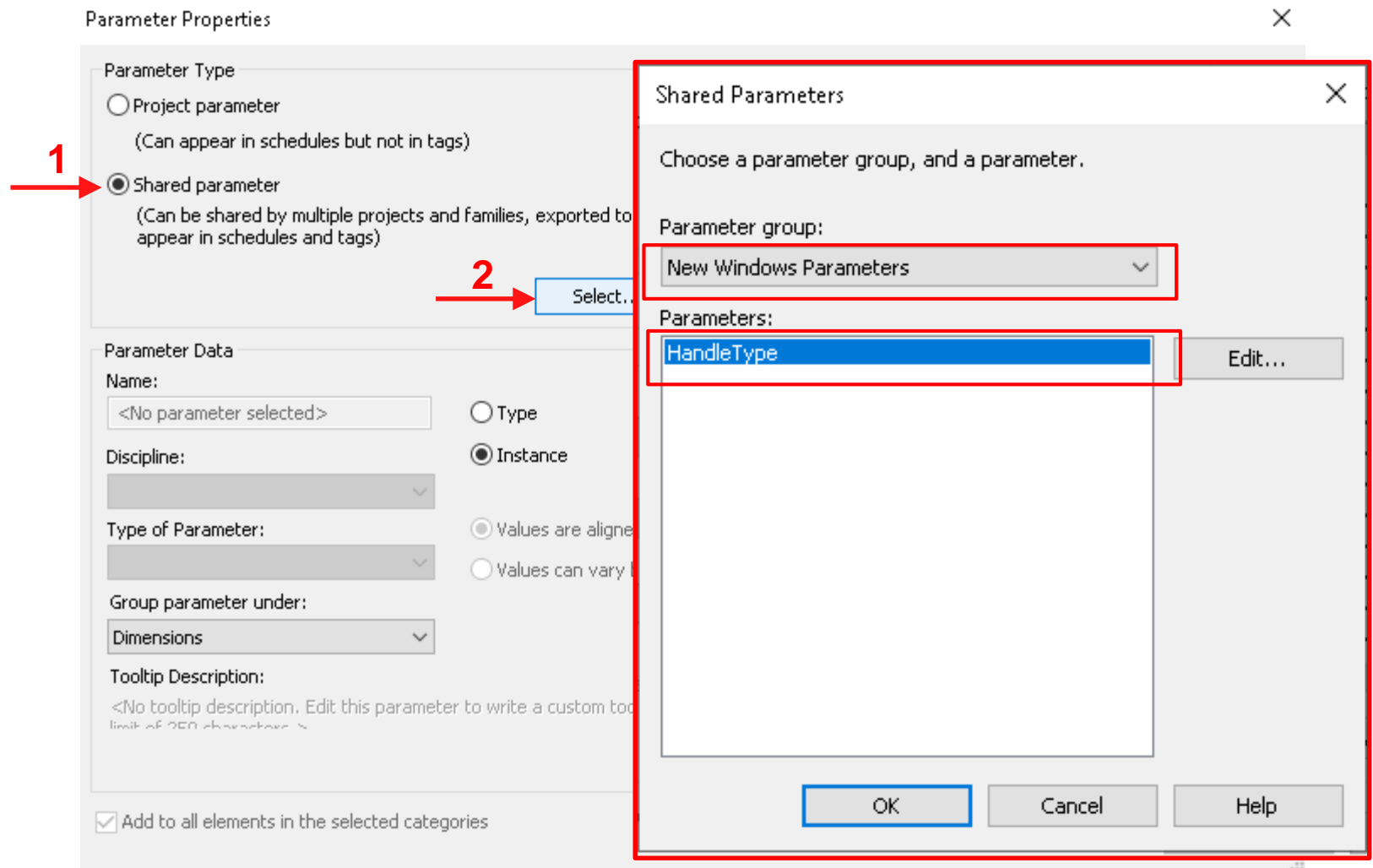
Assigning Shared Parameters

70



Assigning Shared Parameters

71



Assigning Shared Parameters

72

Parameter Properties

Parameter Type

Project parameter
(Can appear in schedules but not in tags)

Shared parameter
(Can be shared by multiple projects and families, exported to ODBC, and appear in schedules and tags)

Select... Export...

Parameter Data

Name:

Discipline:

Type of Parameter:

Group parameter under:

Tooltip Description:
<No tooltip description. Edit this parameter to write a custom tooltip. Custom tooltips have a limit of 250 characters.>

Type

Instance

Values are aligned per group type

Values can vary by group instance

Categories

Category name search:

Filter list:

Hide un-checked categories

- Structural Path Reinforcement
- Structural Rebar
- Structural Rebar Couplers
- Structural Stiffeners
- Structural Trusses
- Switch System
- System-Zones
- Telephone Devices
- Temporary Structures
- Topography
- Vertical Circulation
- Views
- Walls
- Water Loops
- Windows
- Wires
- Zone Equipment

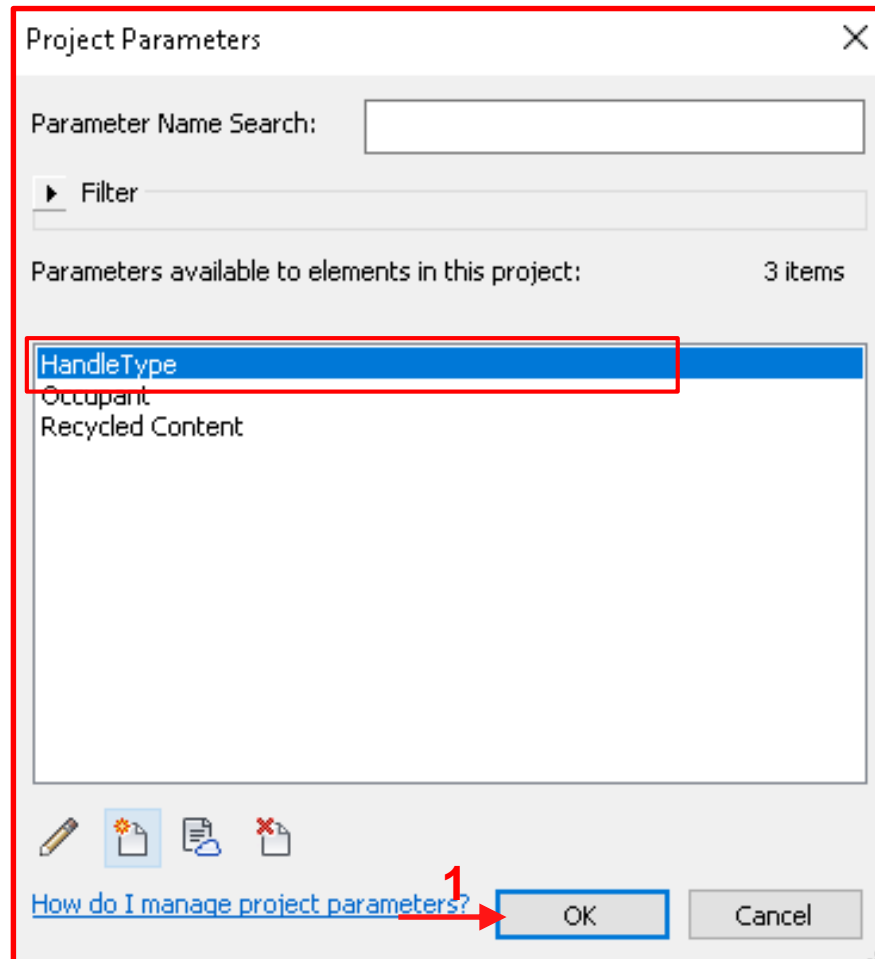
Check All Check None

Add to all elements in the selected categories

OK Cancel Help

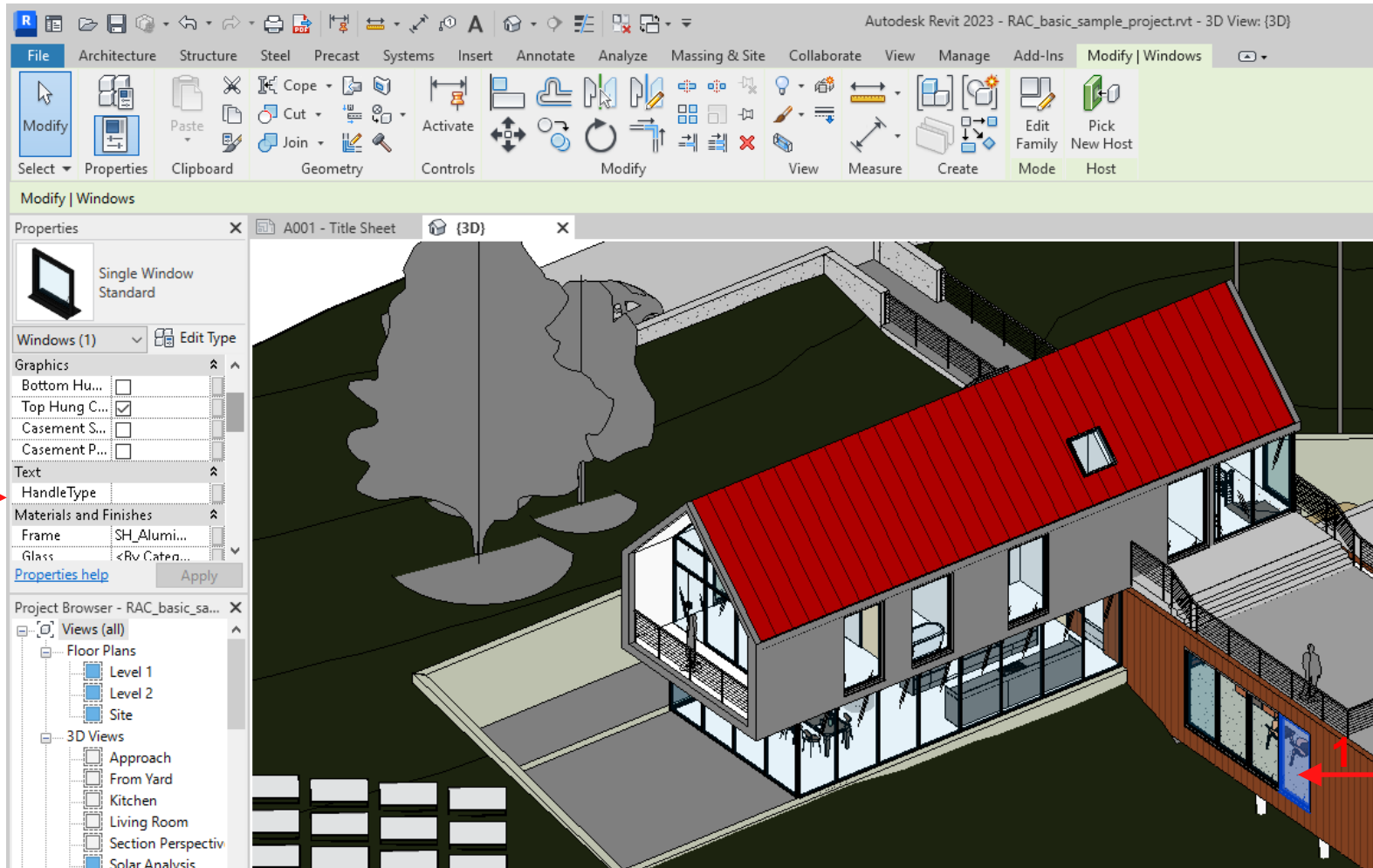
Assigning Shared Parameters

73



Assigning Shared Parameters

74



Global Parameters

75

- Global parameters are user-defined parameters that can be used to control object properties in a project,
- Global parameters are not assigned to project object as properties,
- They are accessible from different objects in the model, including object instances and tags and can control values of object properties for multiple objects!

Defining Global Parameters

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The screenshot illustrates the steps to define a global parameter in Autodesk Revit 2023. The interface shows the ribbon, Properties panel, and Project Browser. Two dialog boxes are open: 'Global Parameters' and 'Global Parameter Properties'.

Global Parameters Dialog:

Parameter	Value
-----------	-------

Global Parameter Properties Dialog:

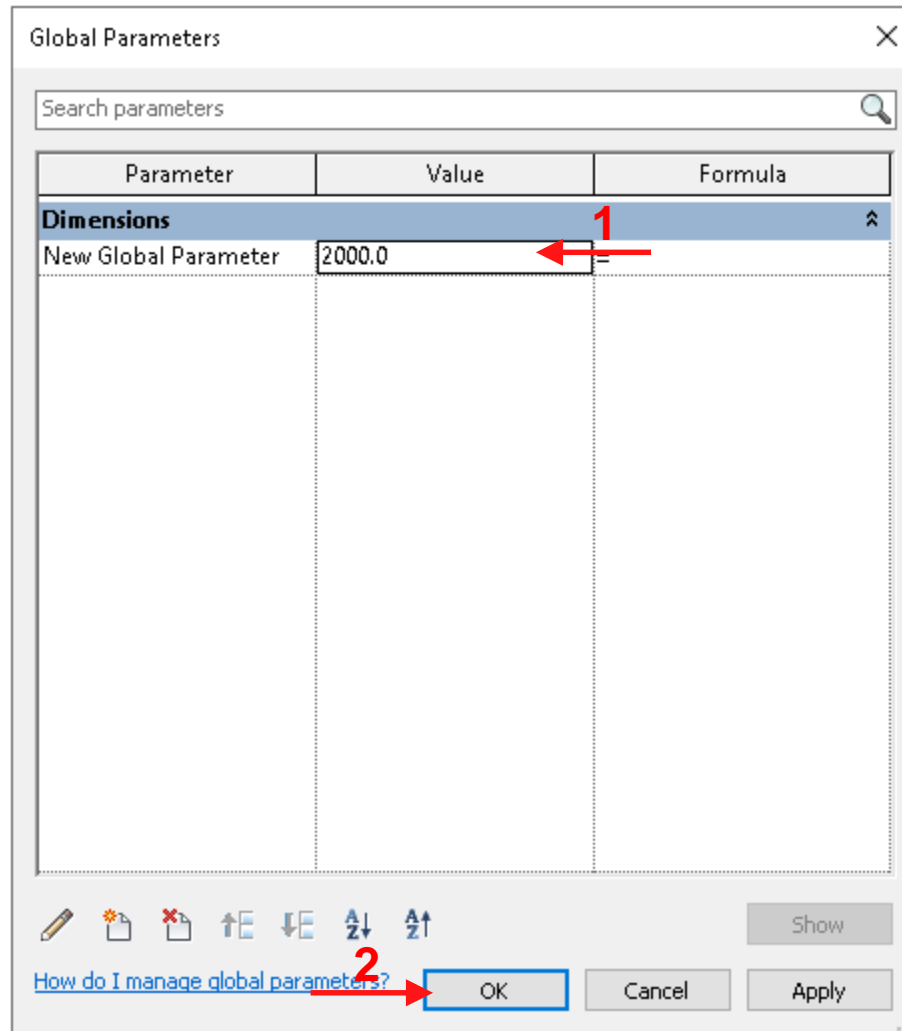
- Name: (Arrow 4)
- Discipline:
- Type of parameter:
- Group parameter under:
- Reporting Parameter:
- Tooltip description:
- Buttons: , (Arrow 5),

Numbered Annotations:

- 1: Clicking the Manage tab in the ribbon.
- 2: Clicking the Global Parameters icon in the ribbon.
- 3: Clicking the New Parameter icon in the Global Parameters dialog.
- 4: Clicking the Name field in the Global Parameter Properties dialog.
- 5: Clicking the OK button in the Global Parameter Properties dialog.

Defining Global Parameters

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Using Global Parameters

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Autodesk Revit 2023 - Global_Parameter_Example.0001.rvt - Floor Plan: Level 1

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify | Dimensions

Modify | Dimensions Leader Prefer: Wall centerlines

Properties Level 1

Linear Dimension Style
Diagonal - 2.5mm Arial

Dimensions (1) Edit Type

Graphics

Leader

Baseline Offset 0.0000 mm

Text

Value 6000.0

Other

Label <None>

Project Browser - Global_Parameter...

Views (all)

- Floor Plans
 - Level 1
 - Level 2
 - Site
- Ceiling Plans
 - Level 1
 - Level 2
- Elevations (Building Elevation)
 - East
 - North
 - South
 - West

8000

2000

8000

2000

4-Dimension sets to Global parameter

2-Unlock the Dimension

1-Select the Dimension

3

New Global Parameter



Thanks