IT in Construction

Lecture #9
Building Information Modeling

Introduction to Autodesk Revit
Part 2

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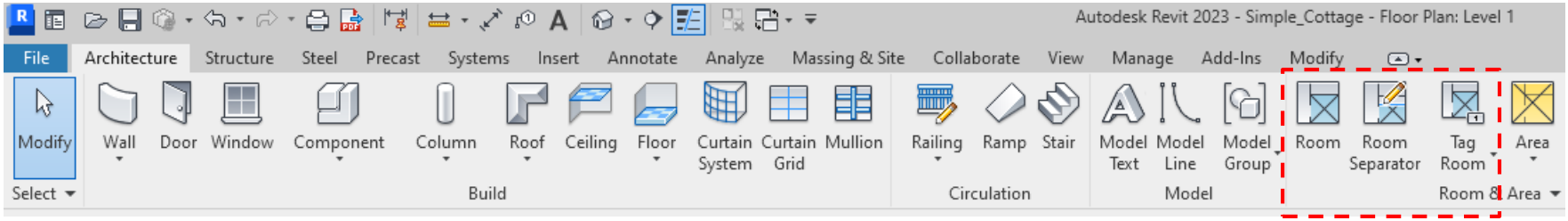
Outline

- Room and spaces
- Annotations
- Schedules
- Parameters

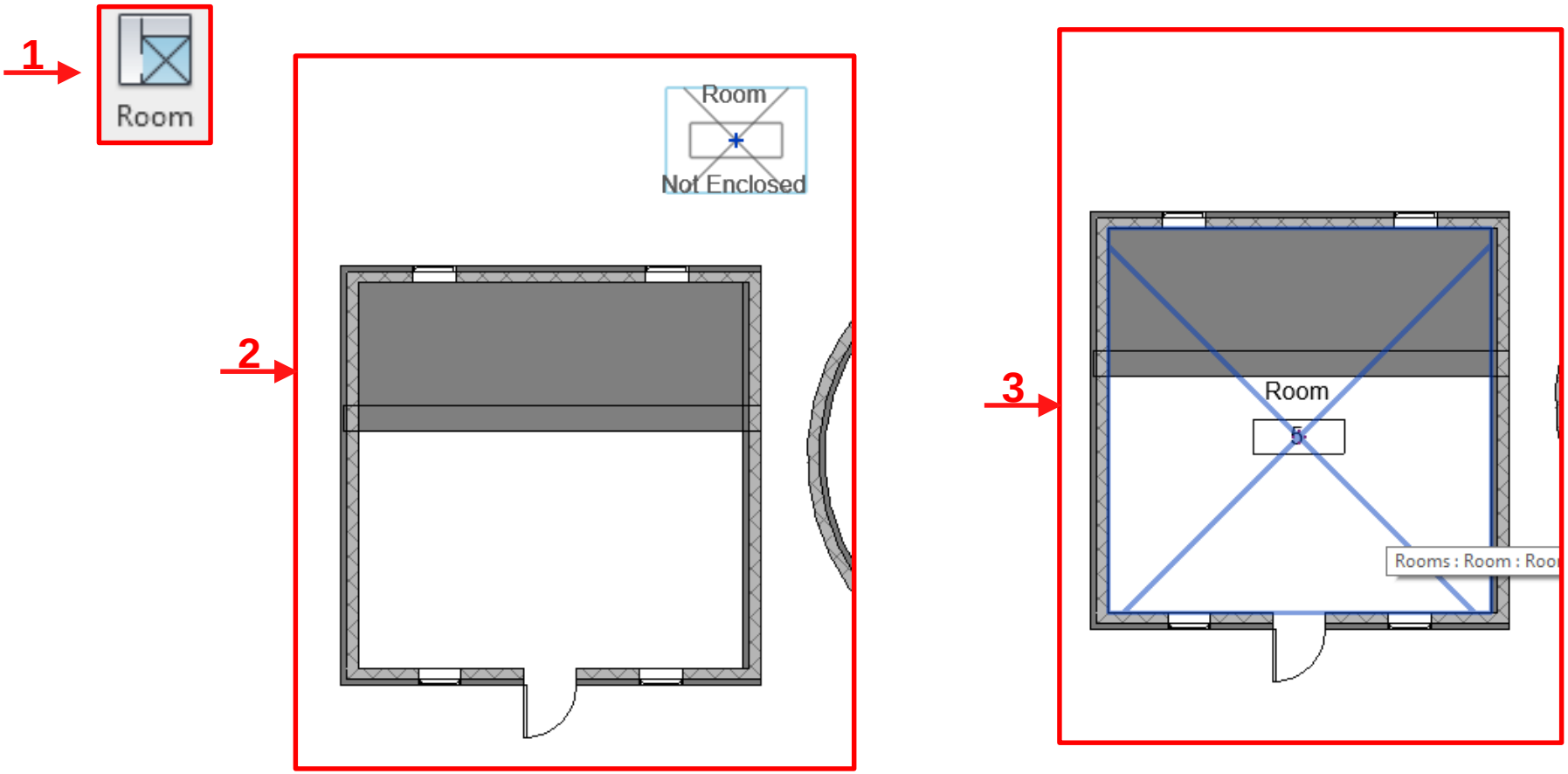
Rooms

Introduction

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

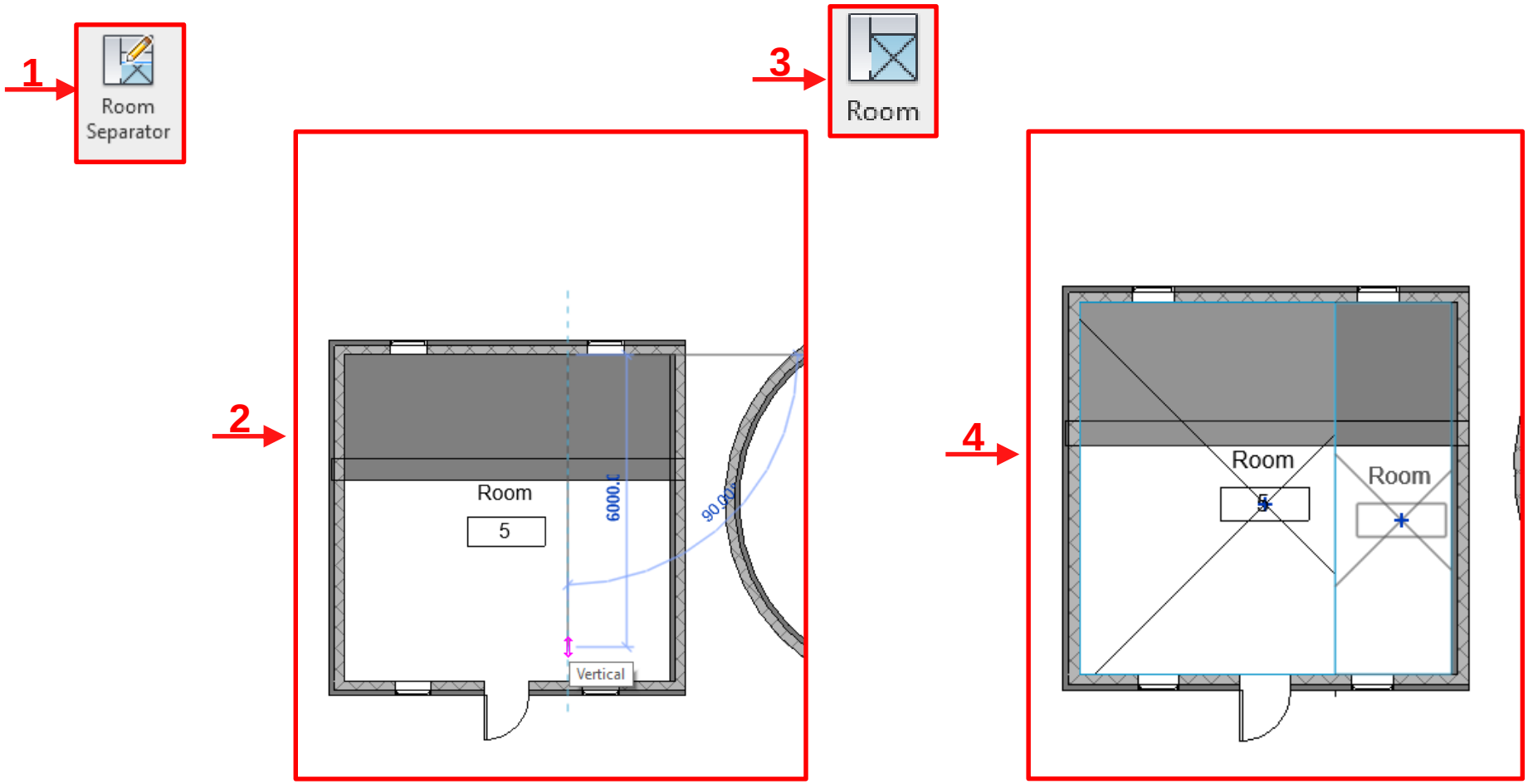


Defining rooms

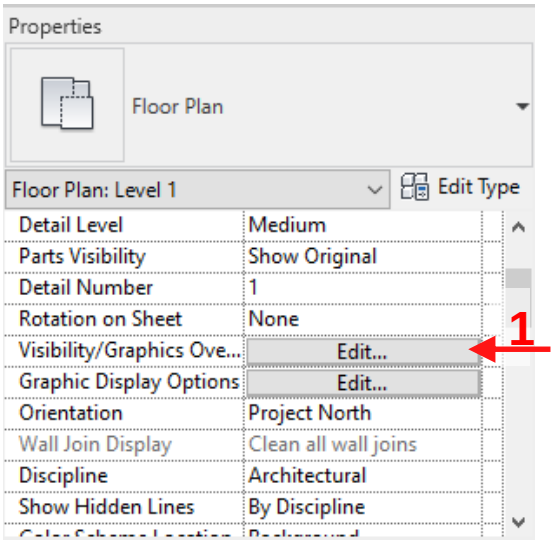


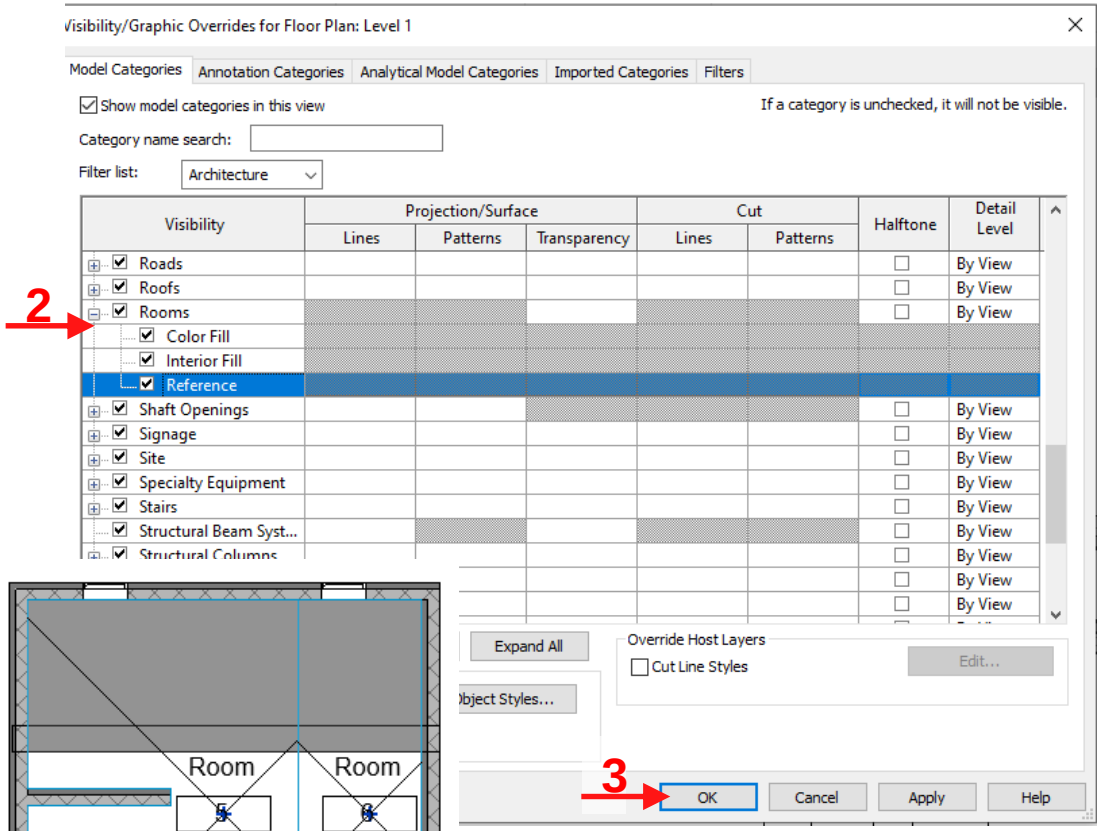
Defining room separator

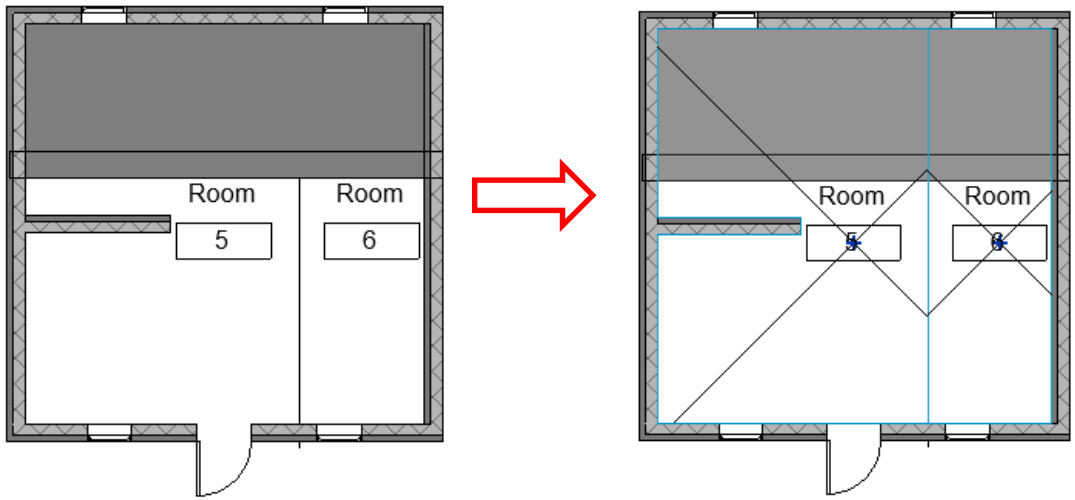
- Use room separators for separating on room into more room spaces.



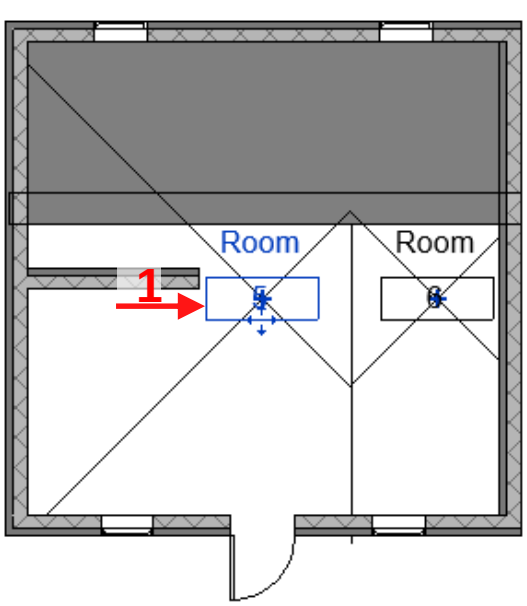
Visibility/ Graphic override-Room

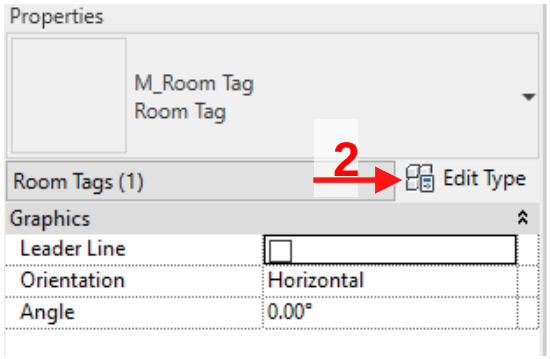


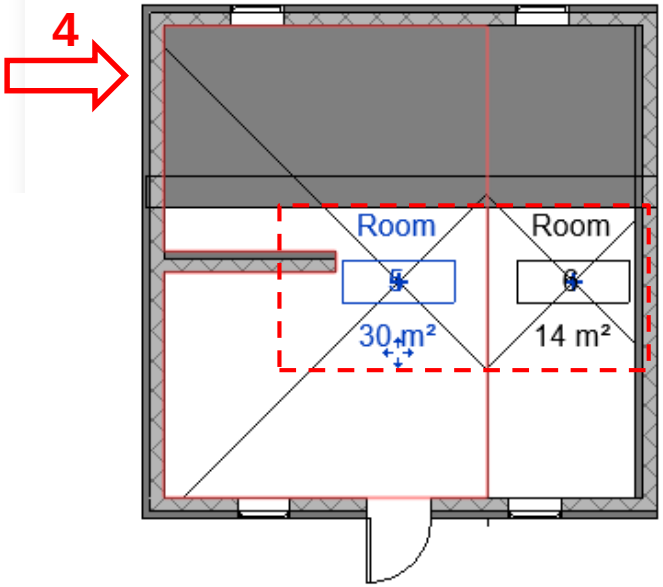


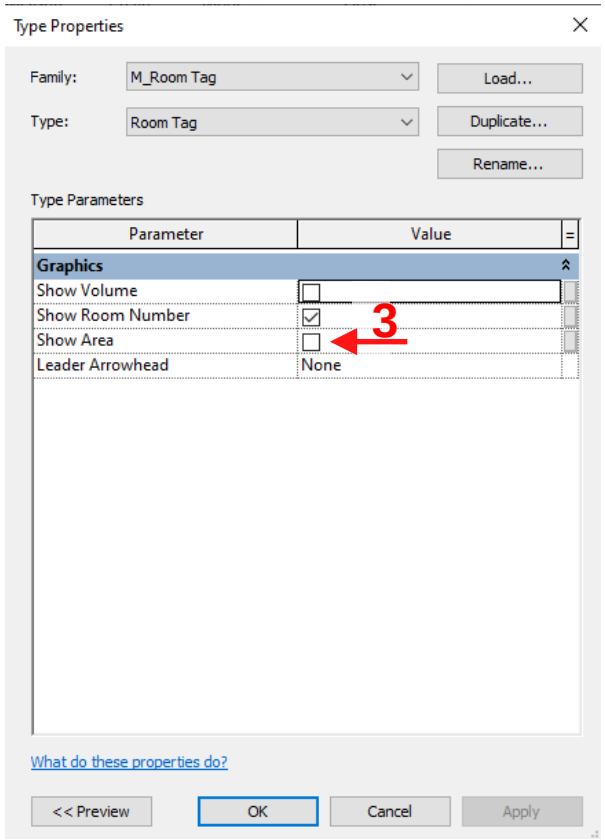


Room tag properties



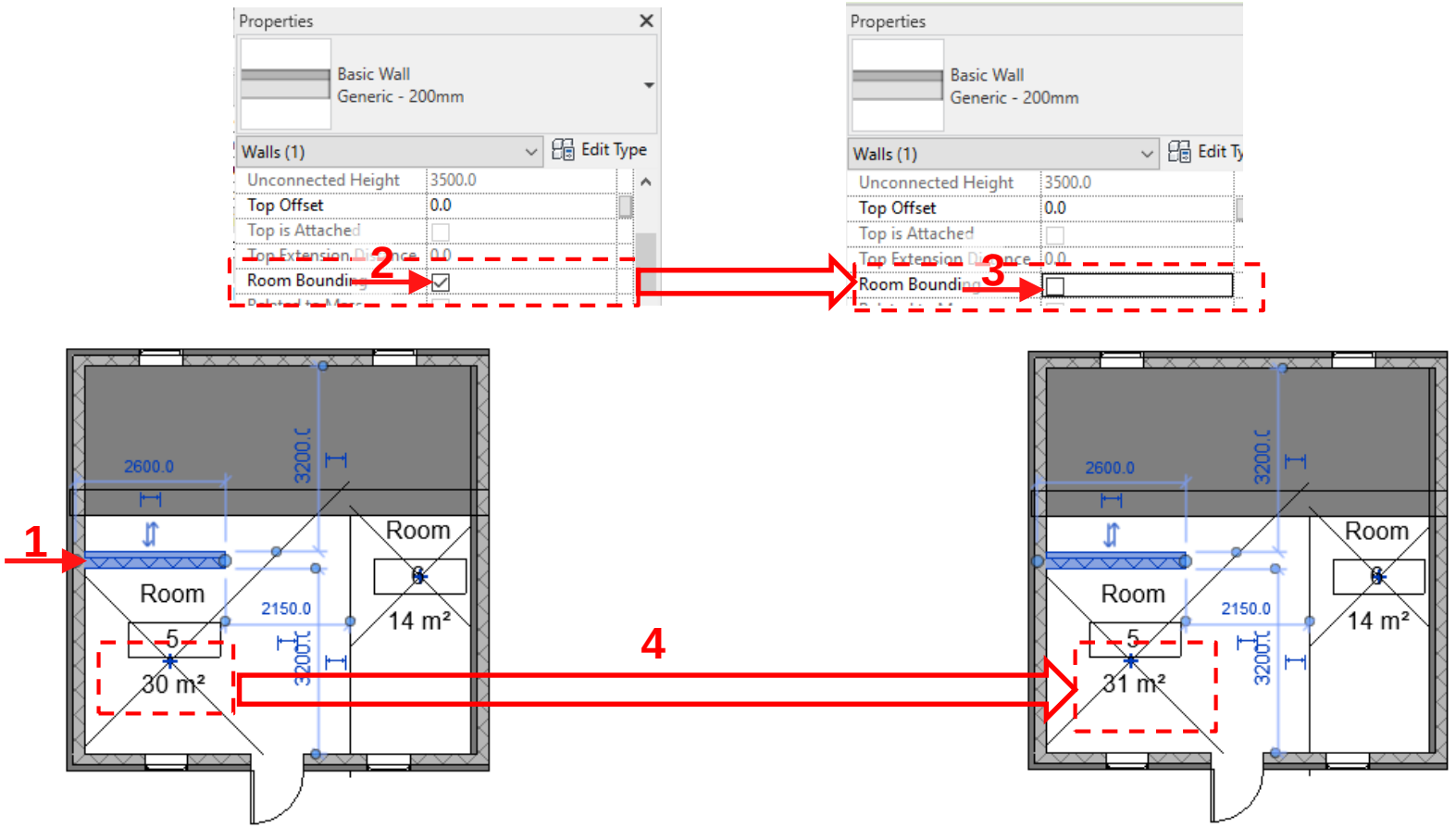






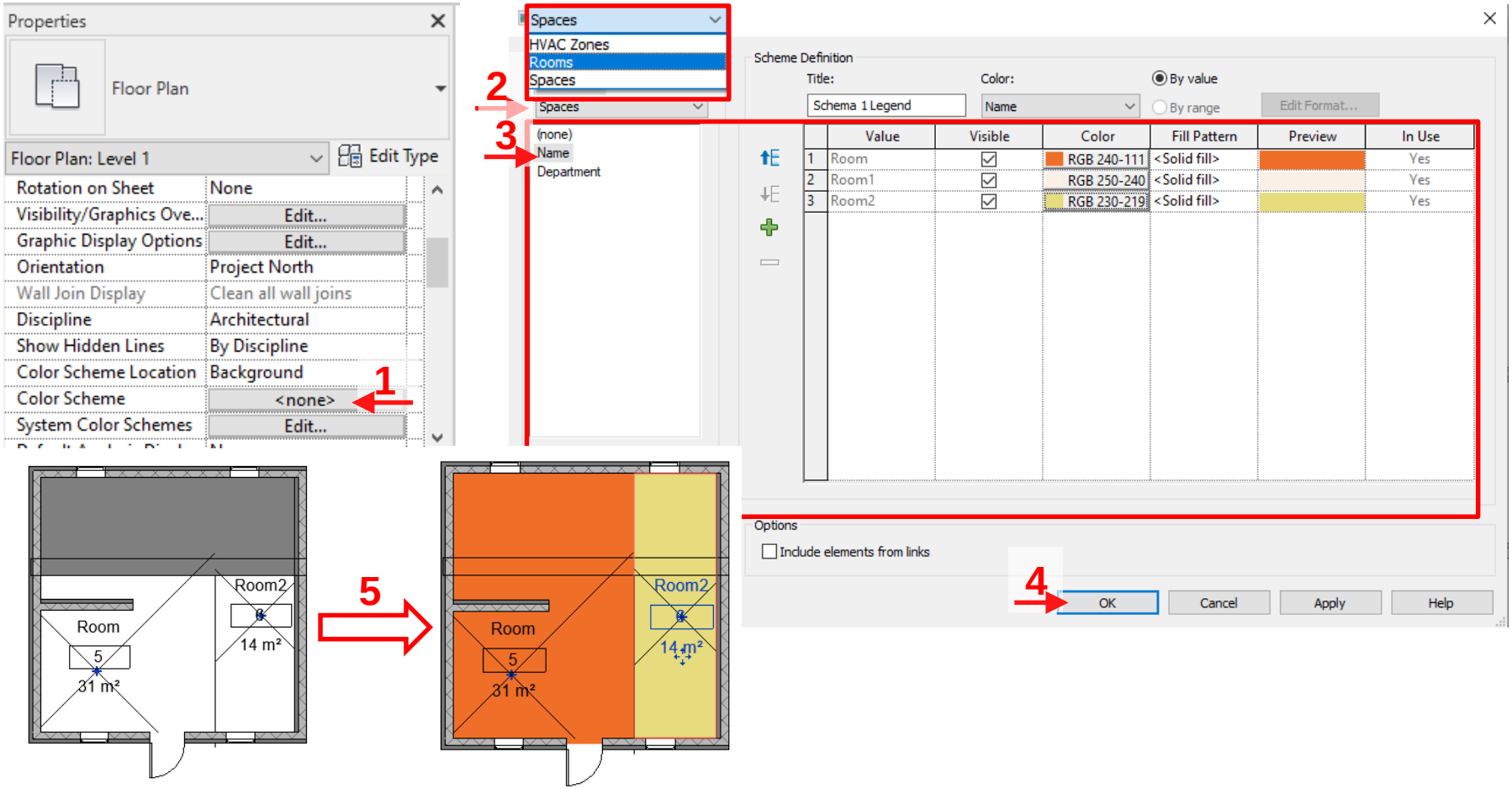
Room bounding walls/ elements

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



Room color scheme

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



Annotations

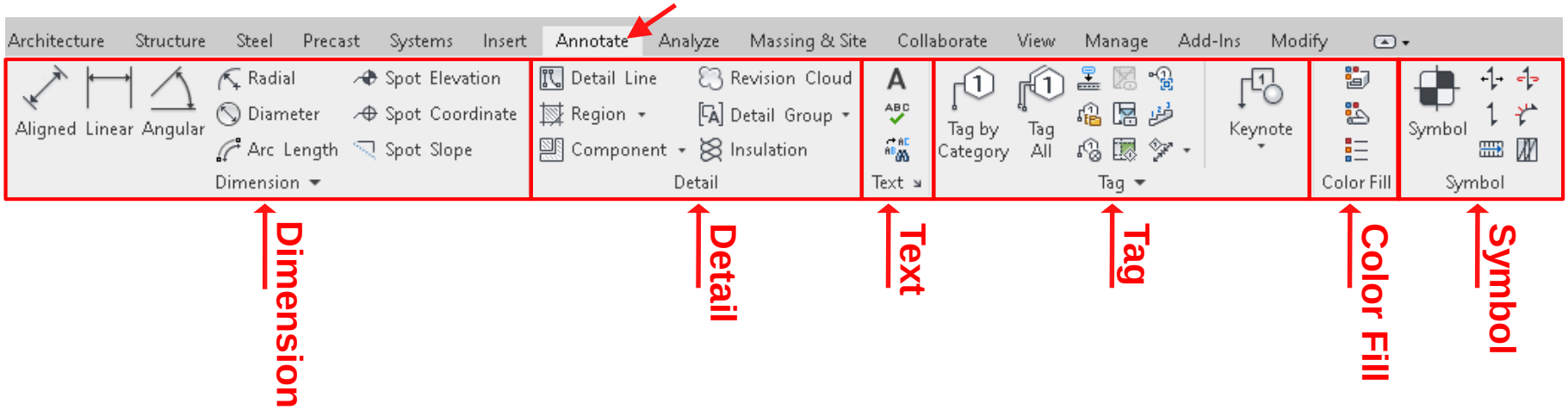
Introduction

- 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!

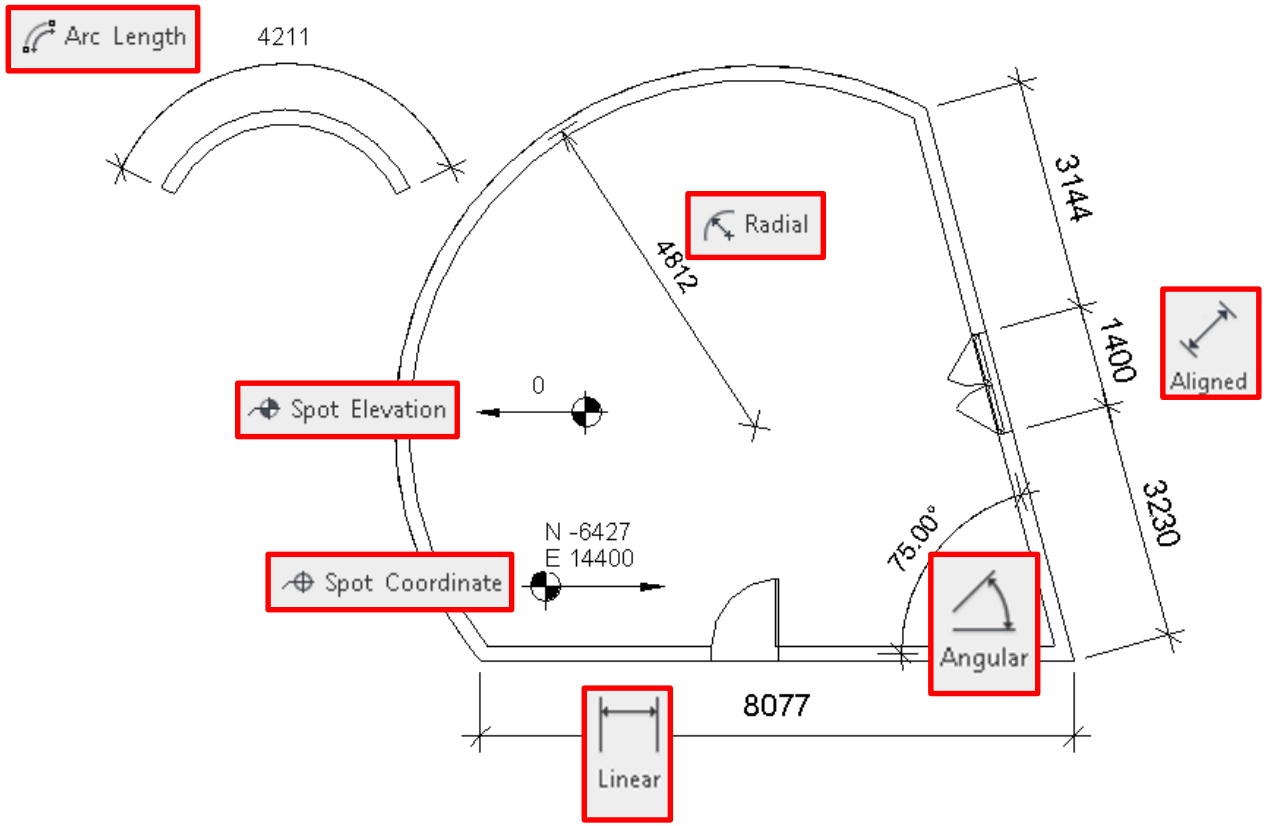
  - Dimensions, areas, volumes, element type names, materials, colors, room numbers, comments

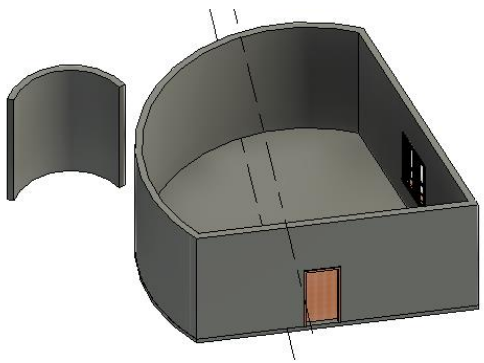
Annotation Toolbar



Annotation Toolbar-Dimension

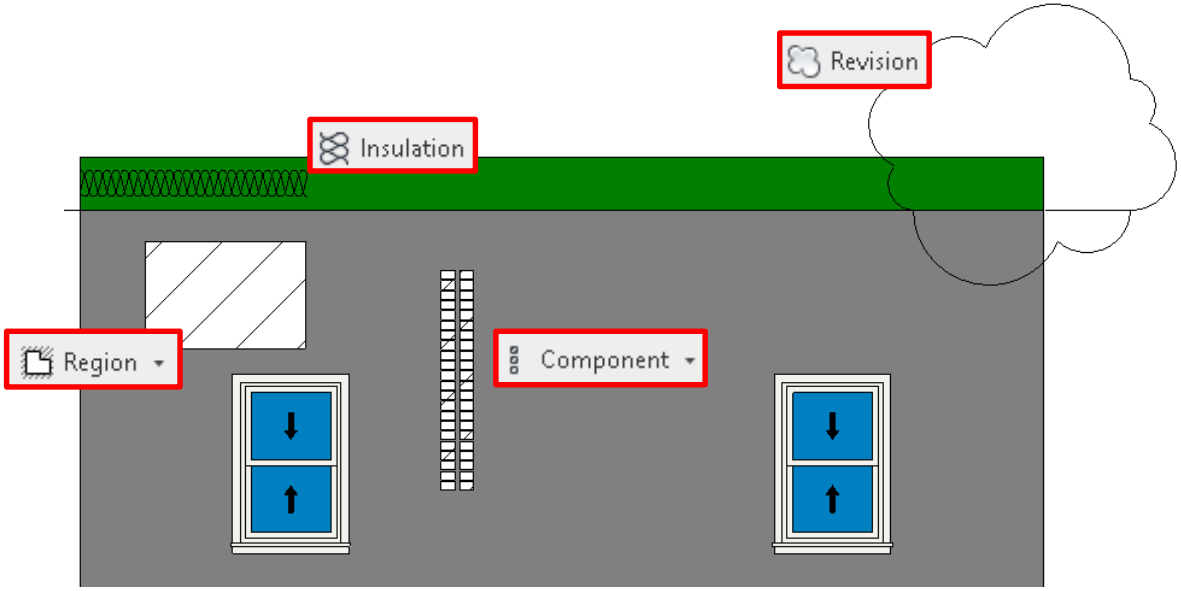
- Dimension keys are used for adding dimension of different parts of the model in each view!





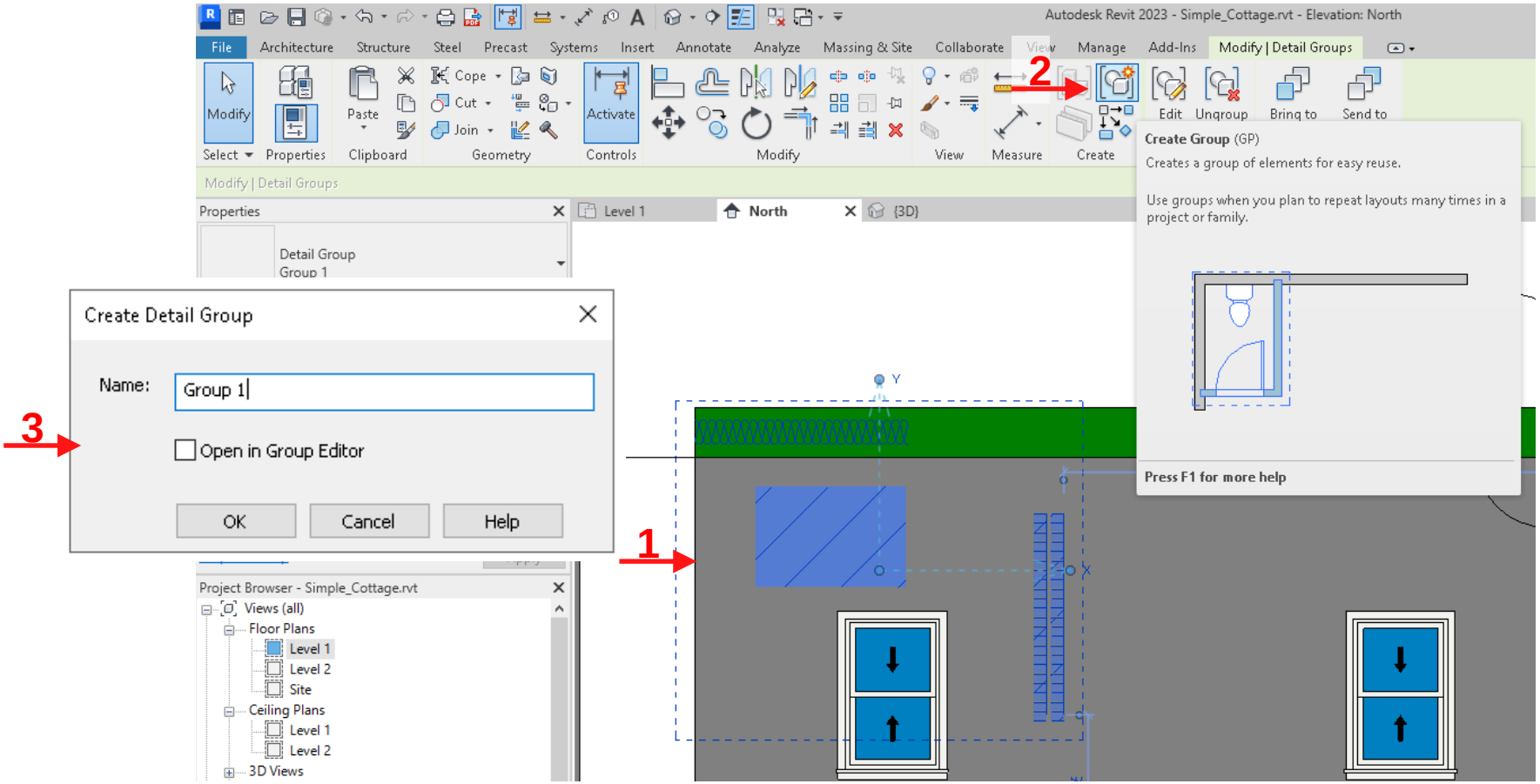
Annotation Toolbar-Detail

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



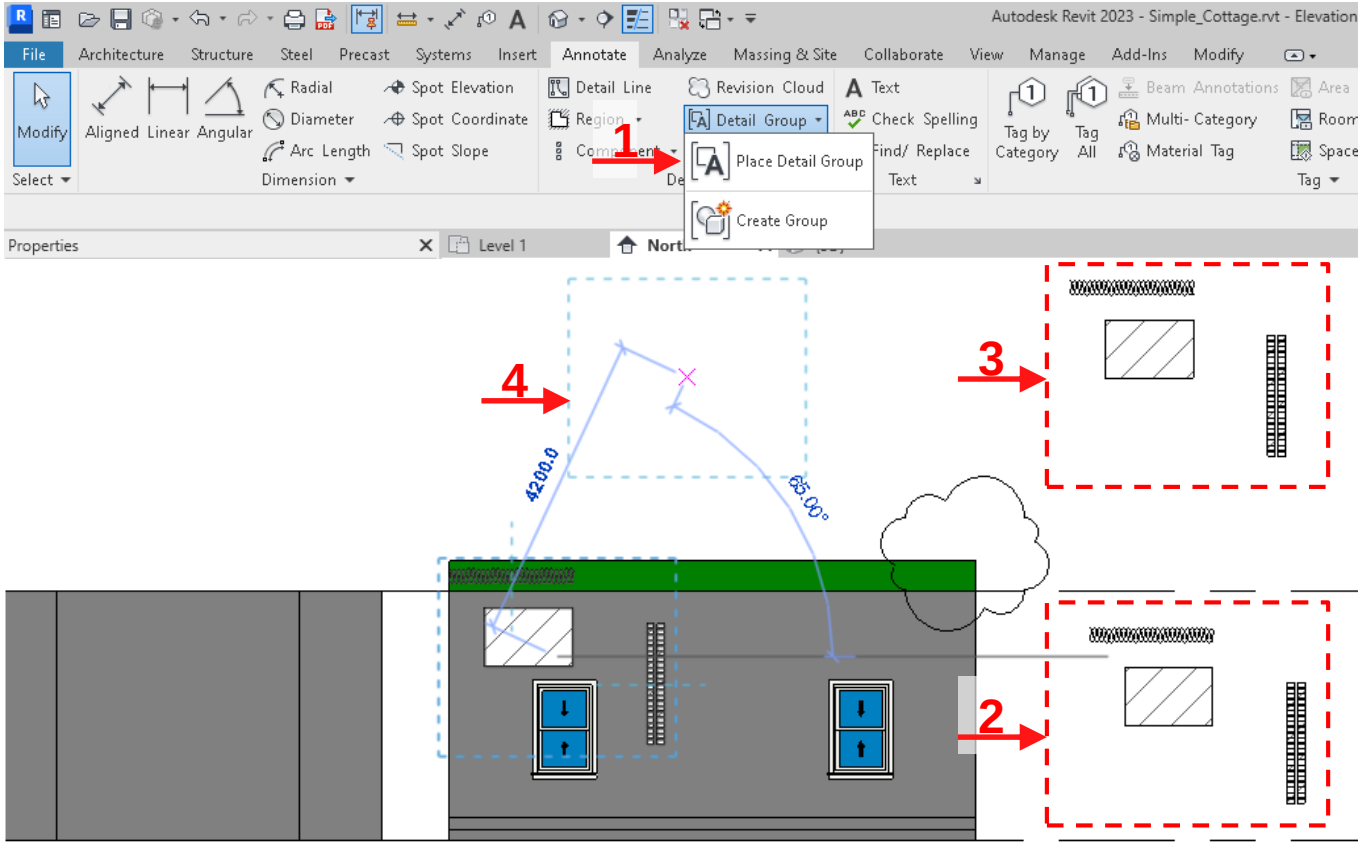
Annotation Toolbar-Detail

- Select multiple detail elements and create group,



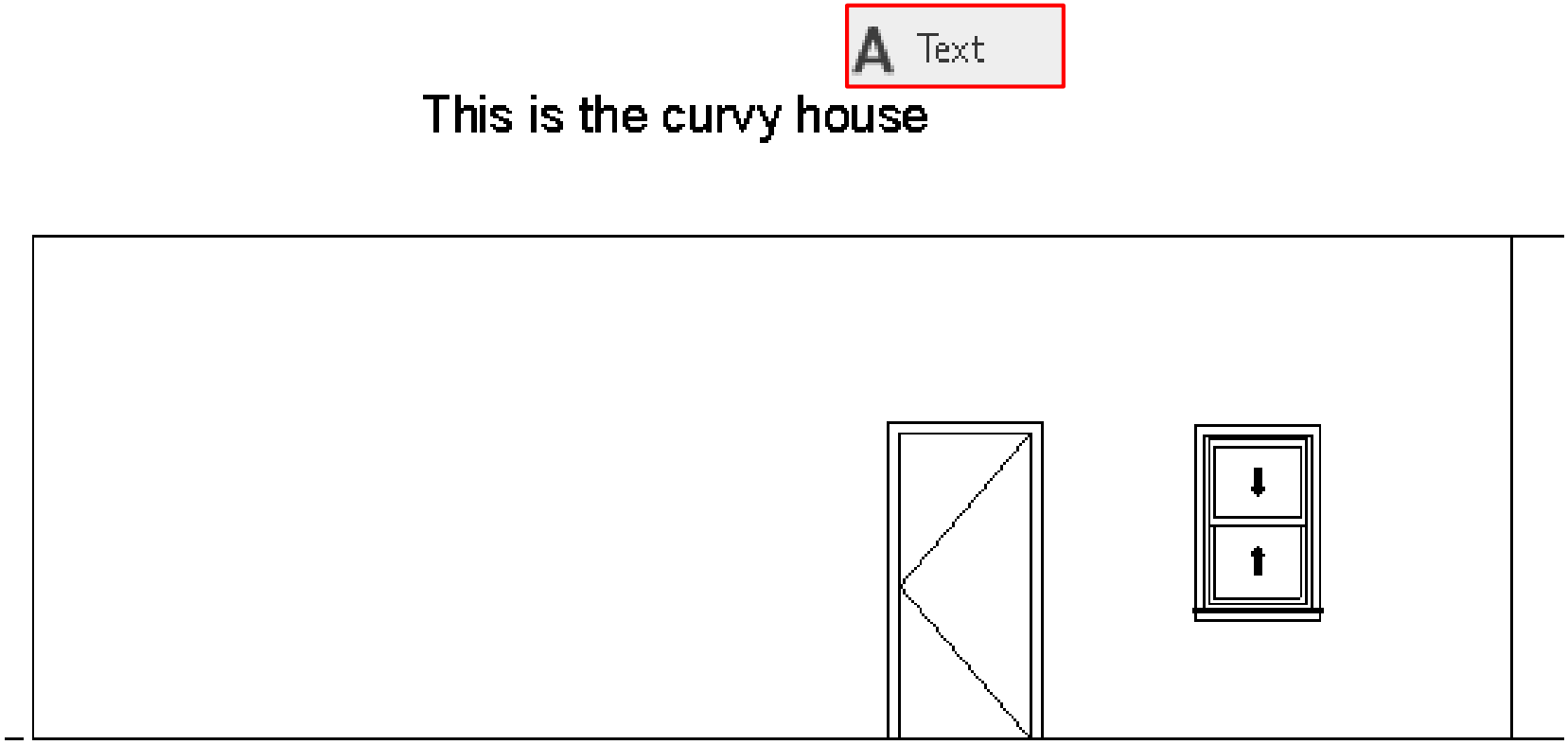
Annotation Toolbar-Detail

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



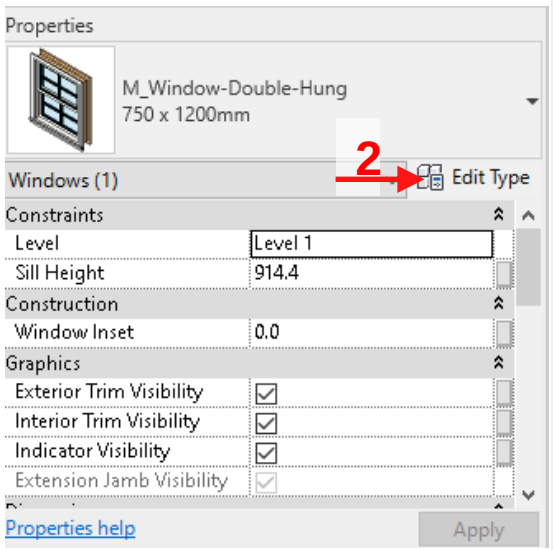
Annotation Toolbar-Text

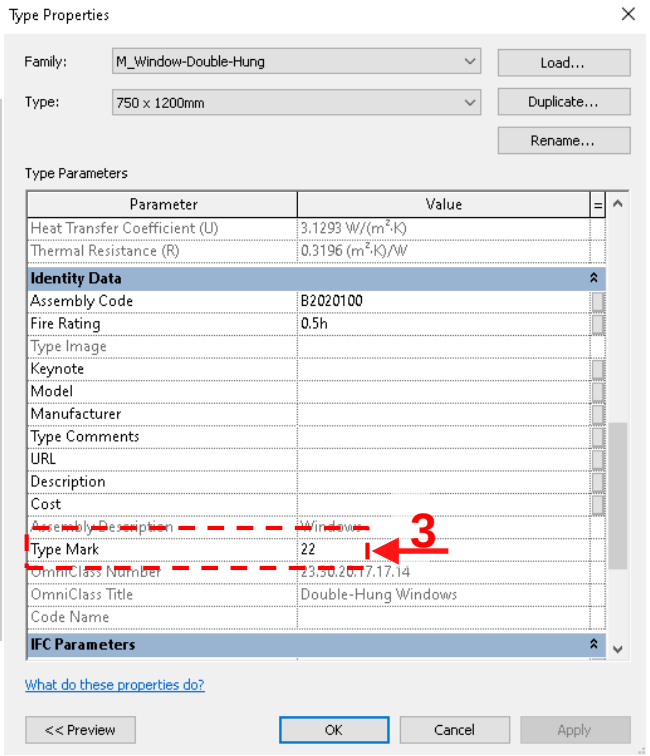
- Use the Text part for adding comments and explanaitions on different parts of the model!

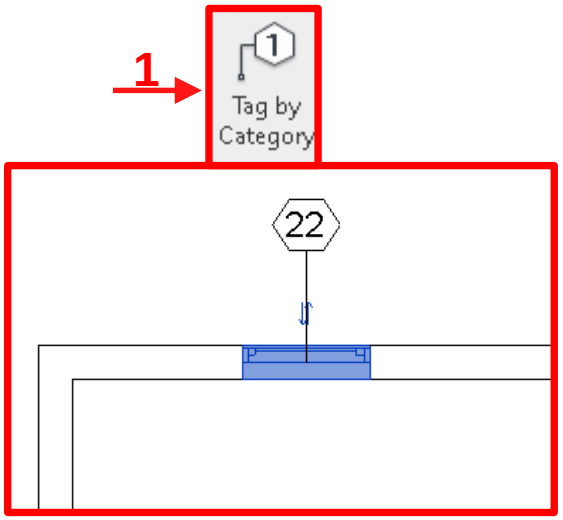


Annotation Toolbar-Tag

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

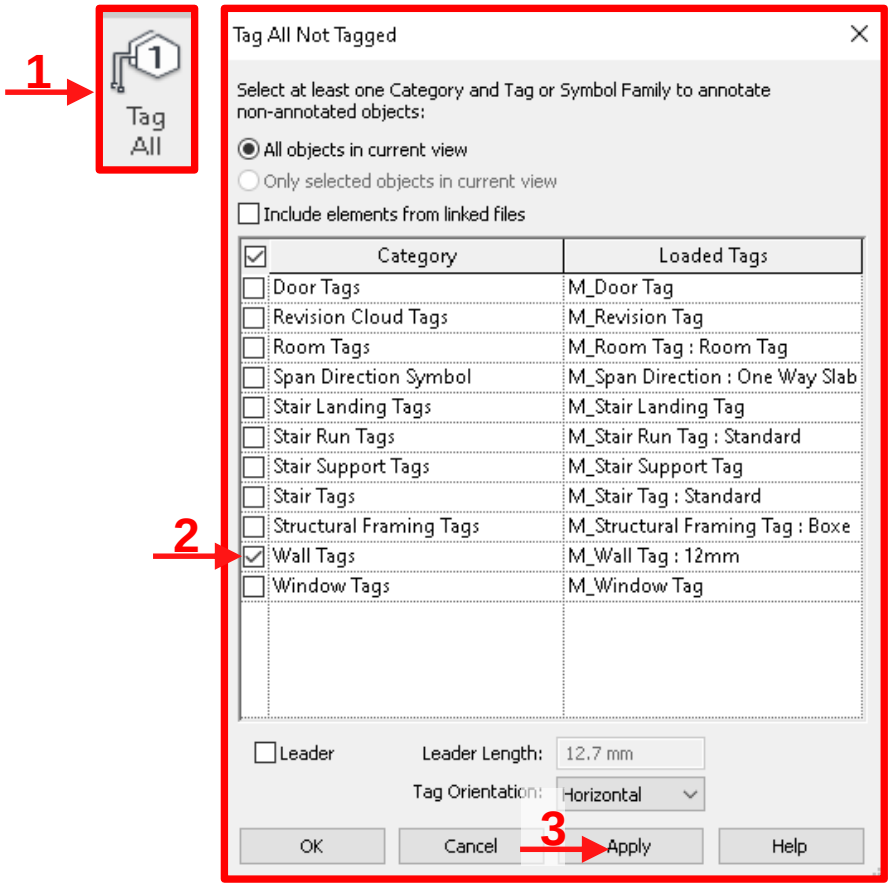


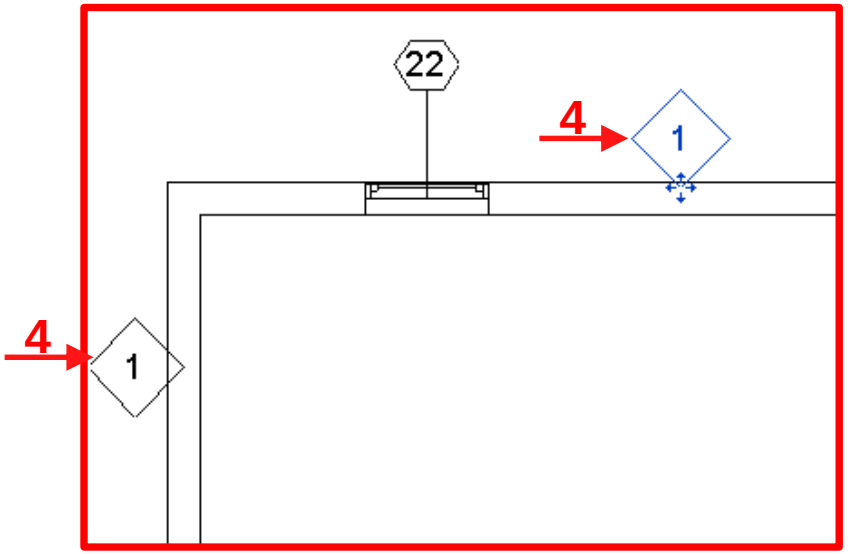




Annotation Toolbar-Tag

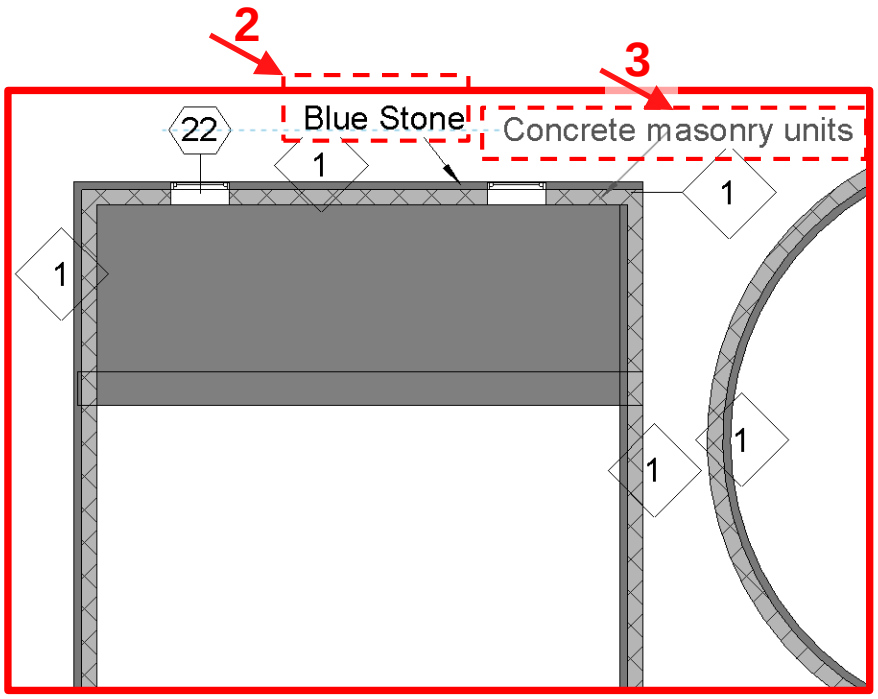
- Tag all:





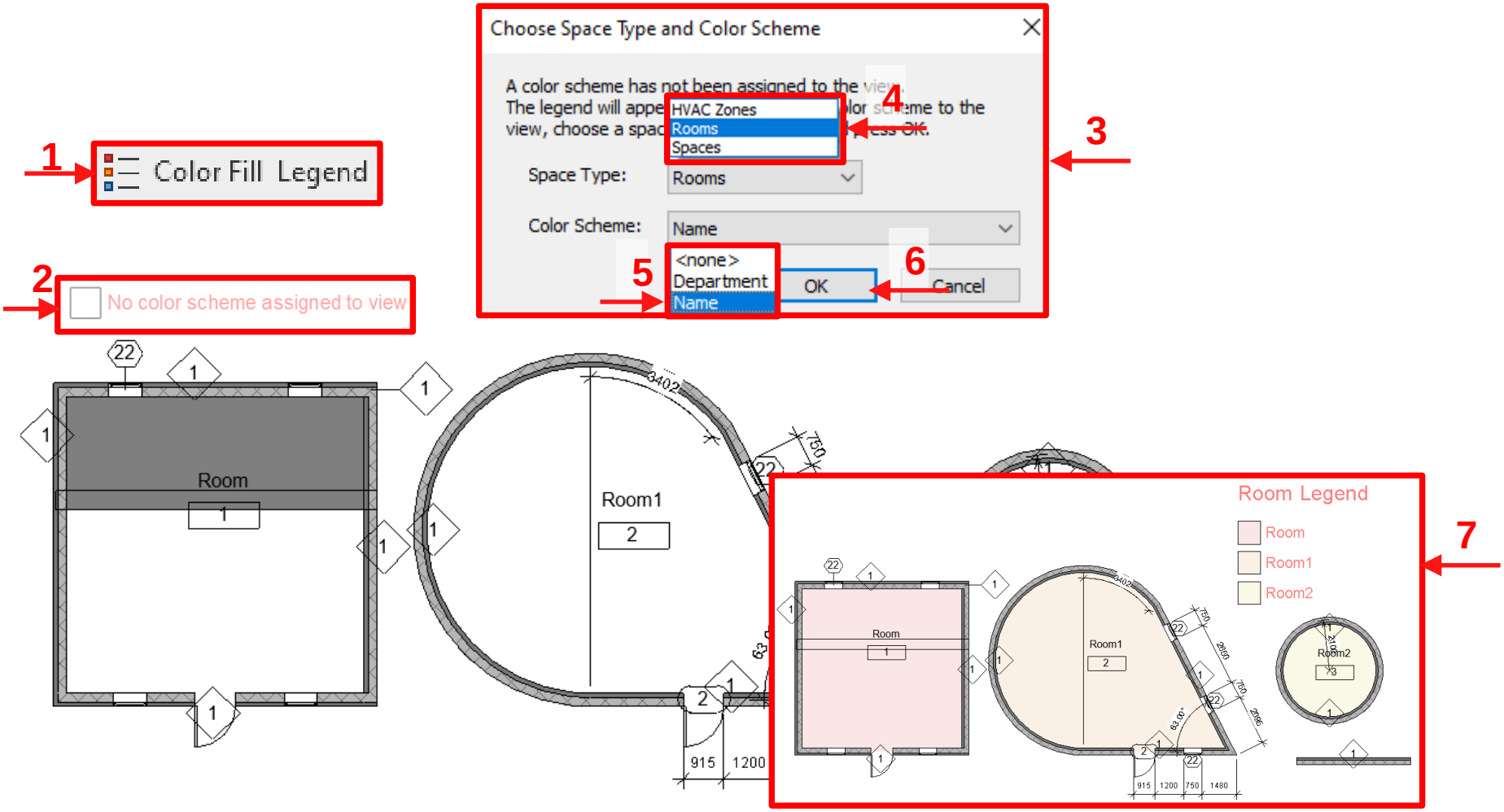
Annotation Toolbar-Tag

- Material Tag:



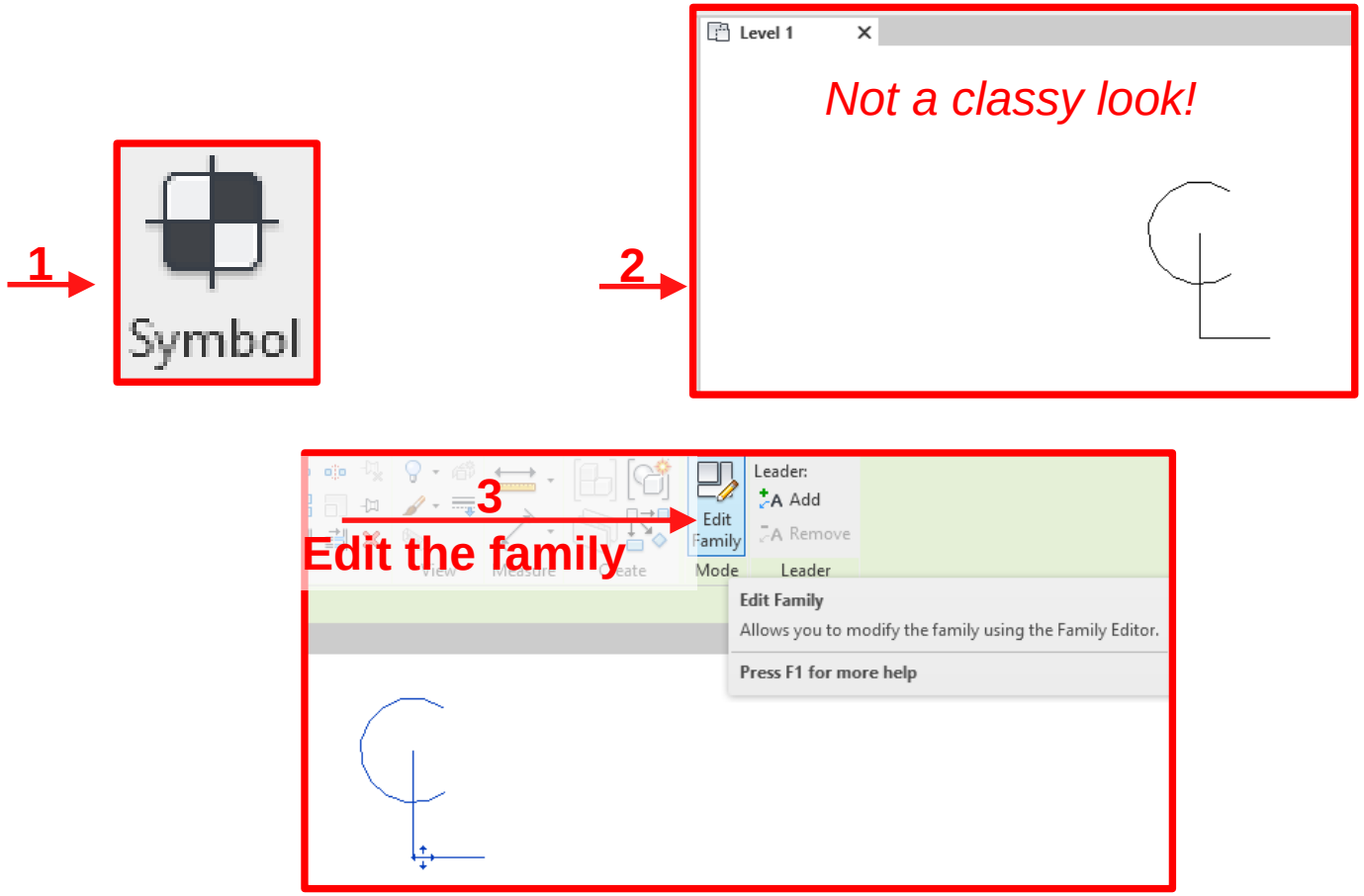
Annotation Toolbar-Color Fill

- Create color fill legend for room and space area,



Annotation Toolbar-Symbol

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



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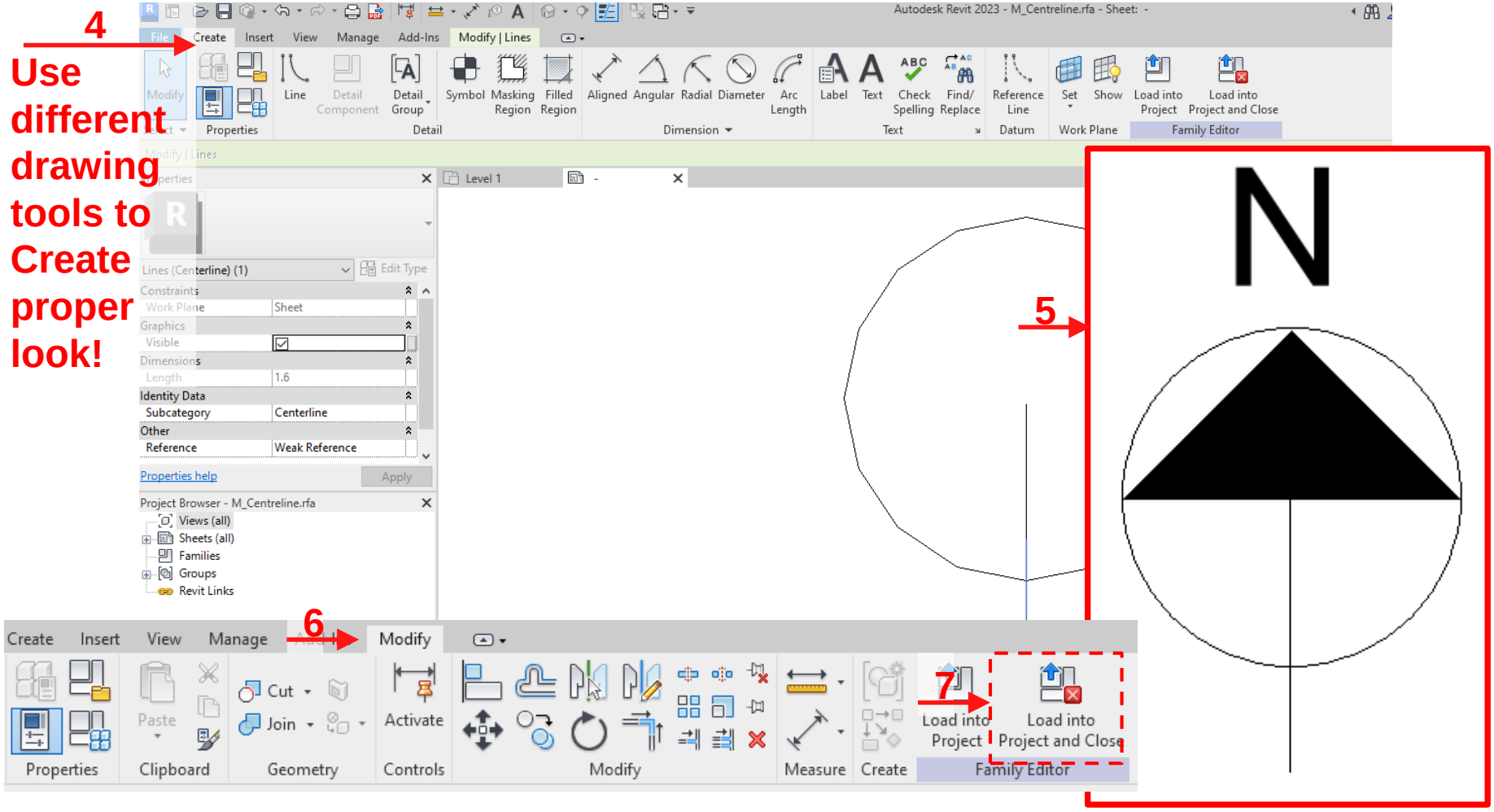


Revit Schedules

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

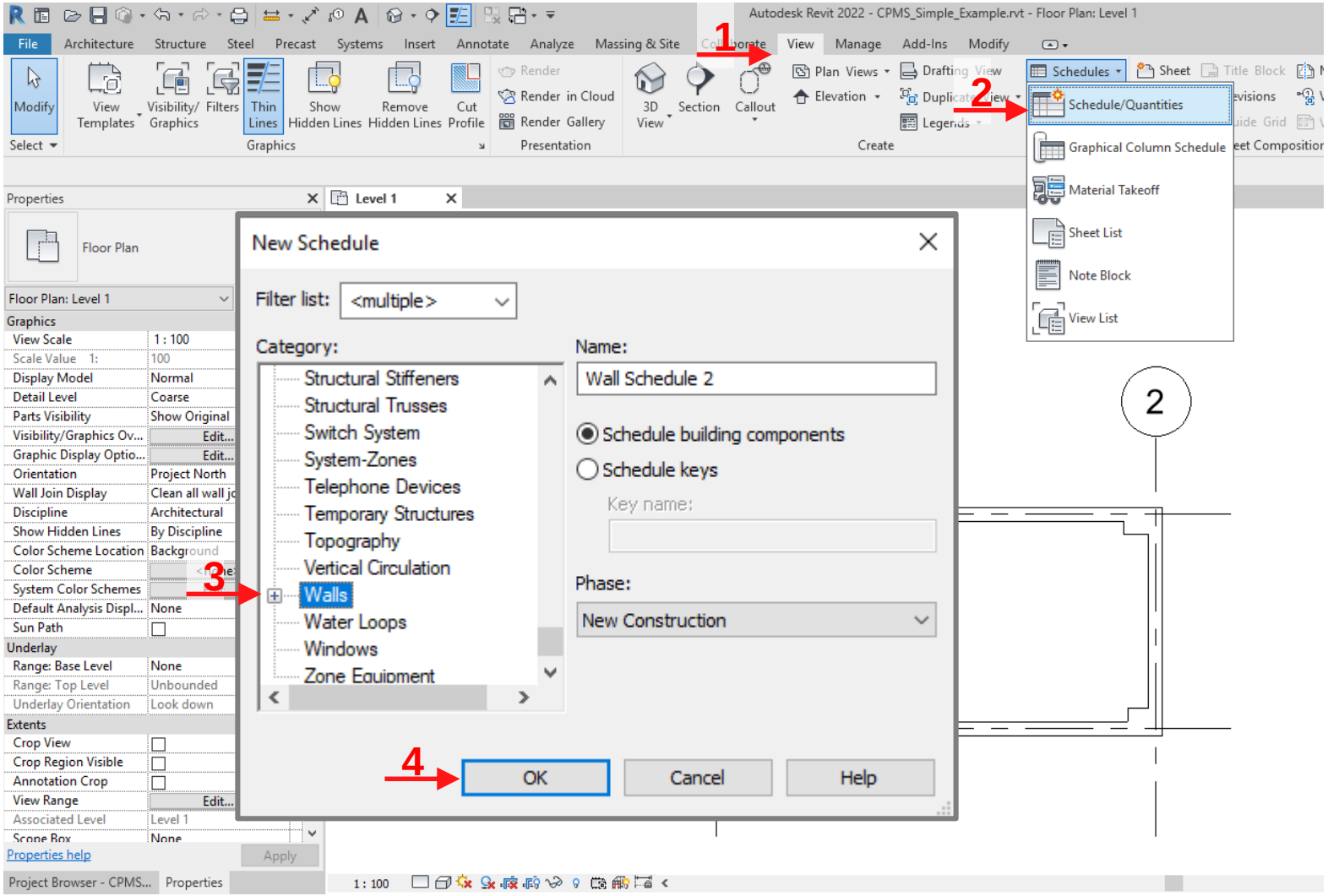
Revit Schedules

What BIM applications can benefit from this feature the most?

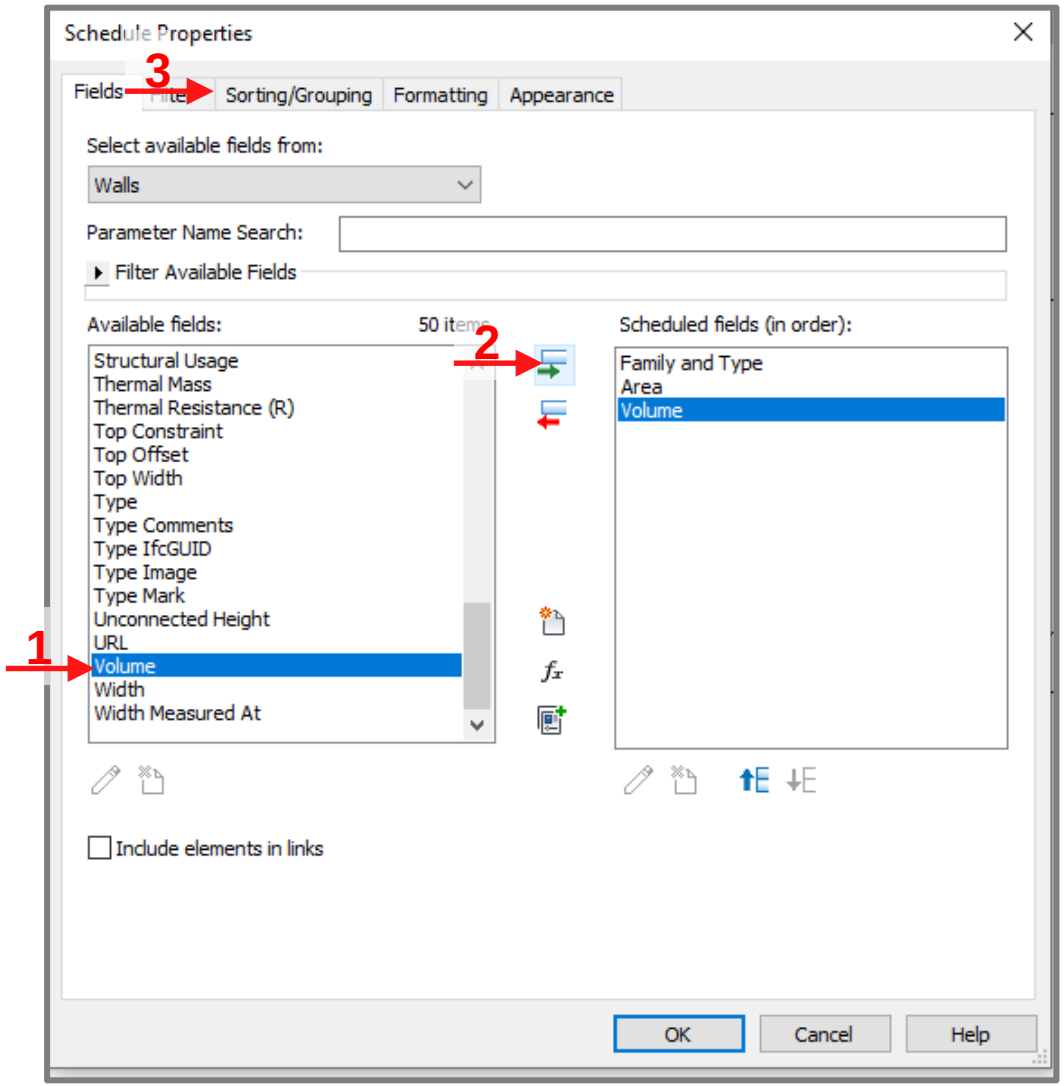
- Revit schedules are used for reporting project specifications.
- Revit schedules are the Revit tool for quantity takeoff.
- They help us to create tables of quantities, similar to MS Access tables or Excel spreadsheets!

- 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!

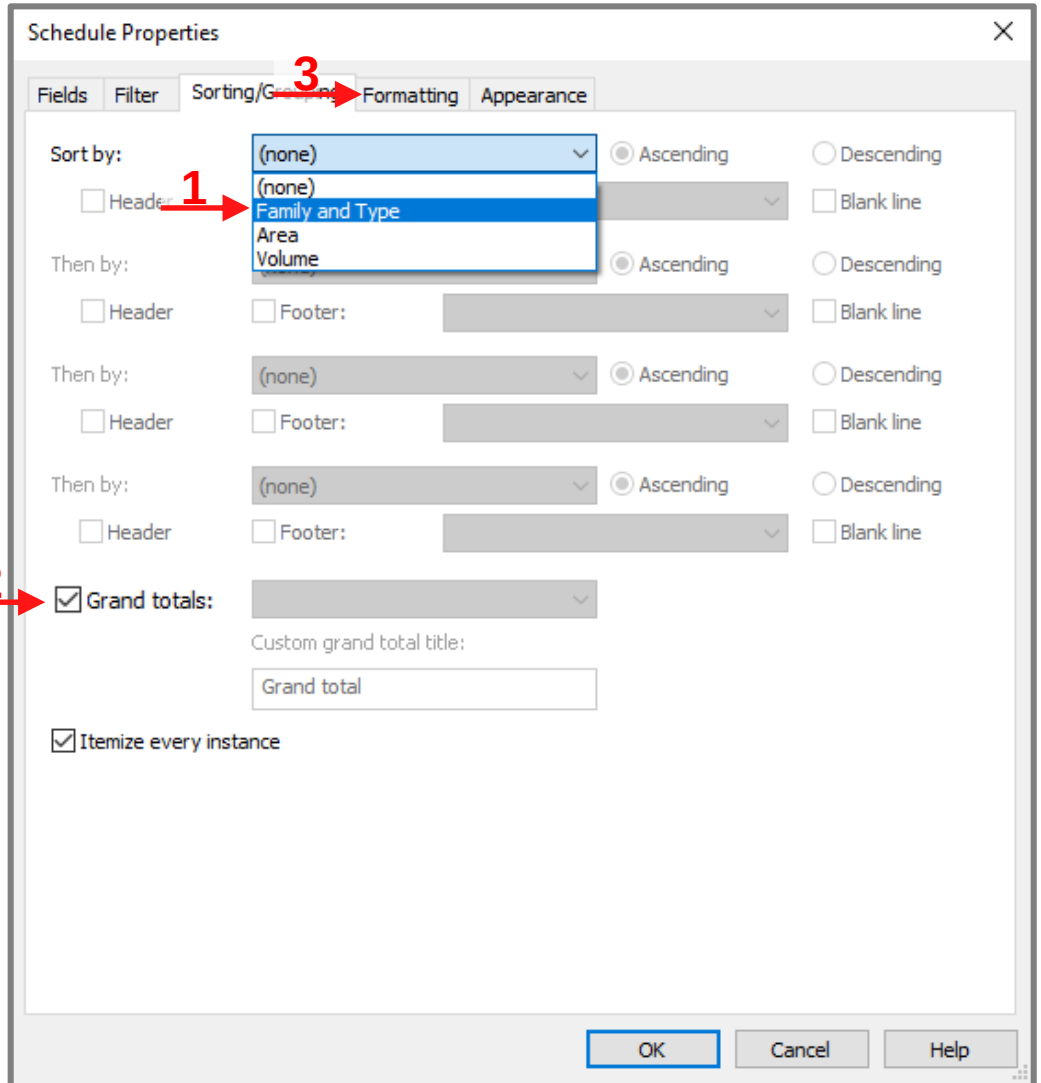
Creating Schedules-Components



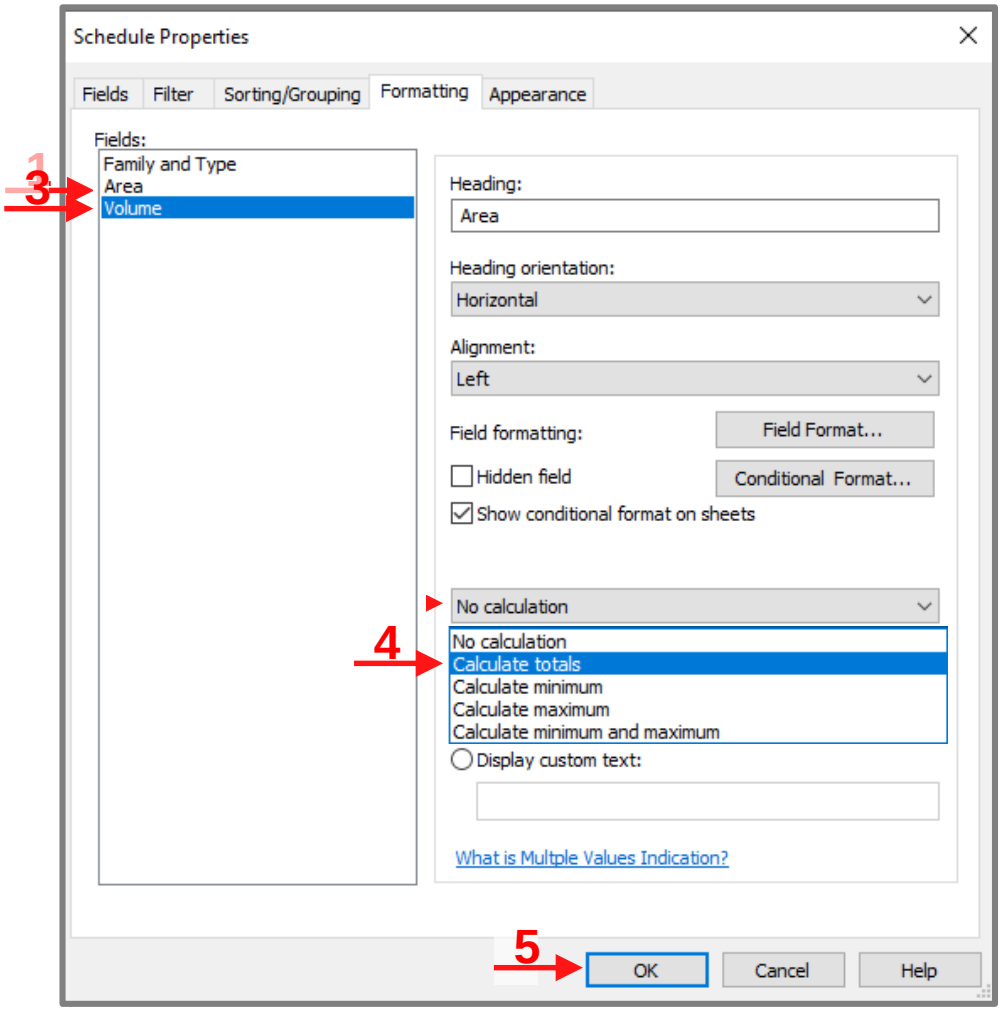
Creating Schedules-Components



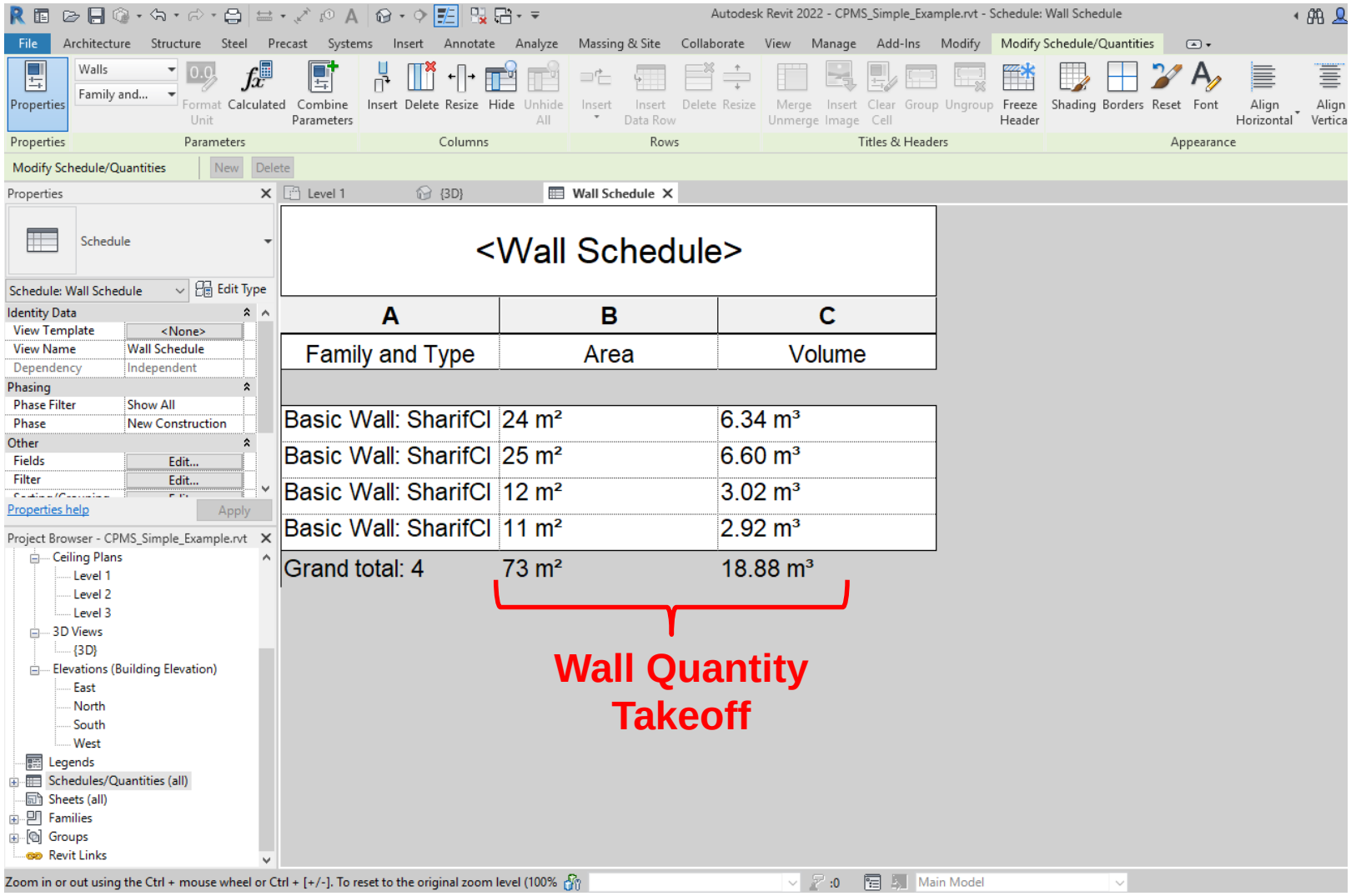
Creating Schedules-Components



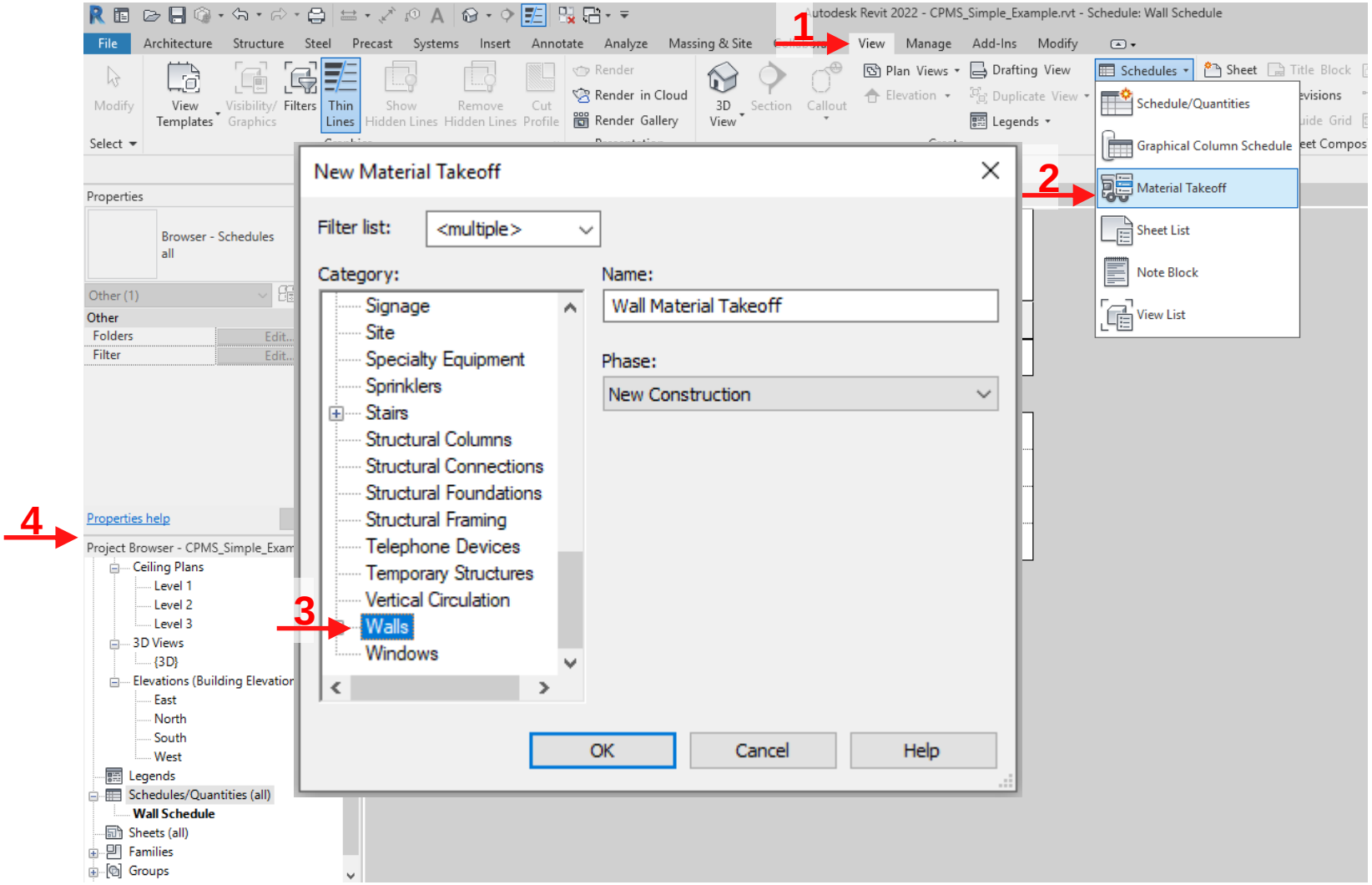
Creating Schedules-Components



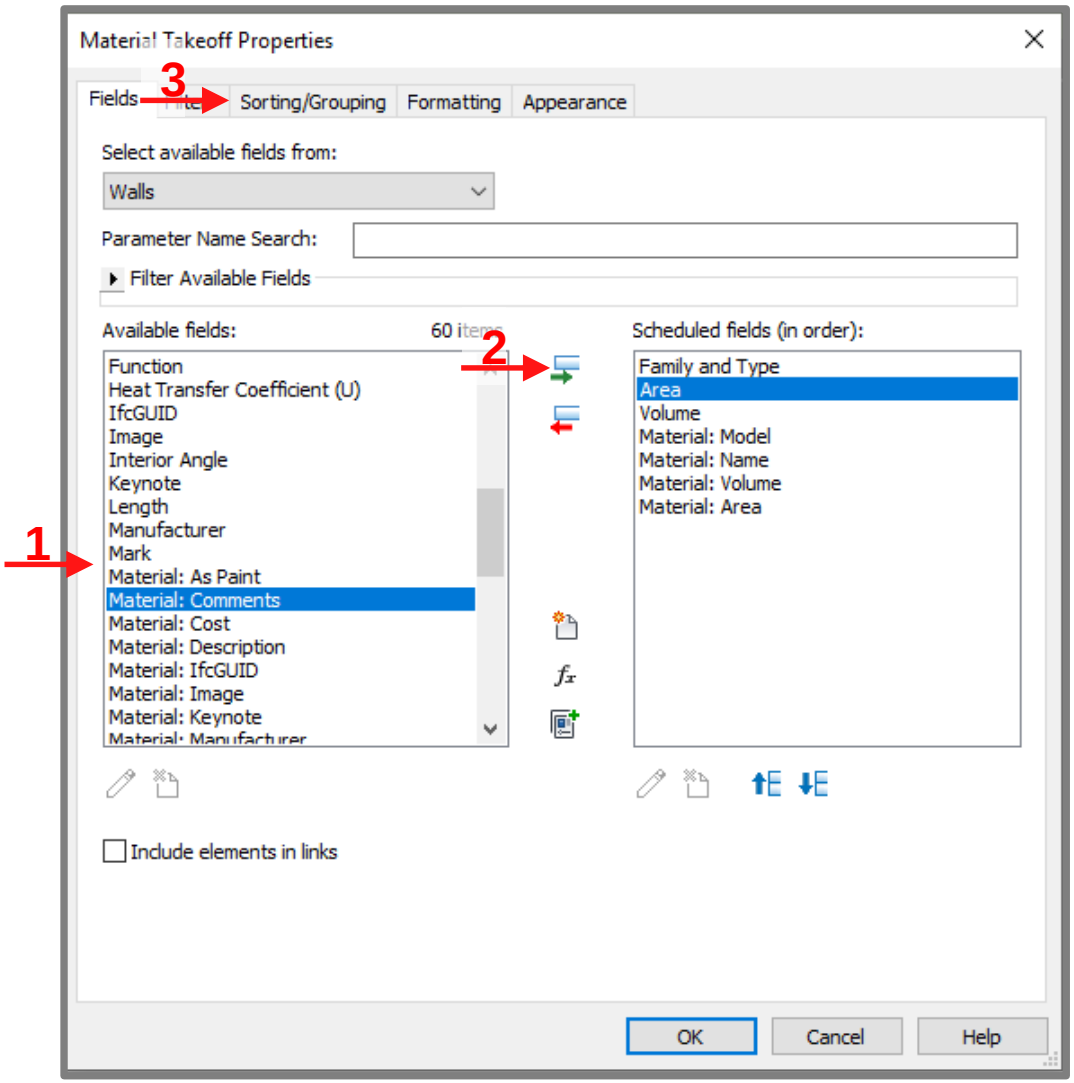
Creating Schedules-Components



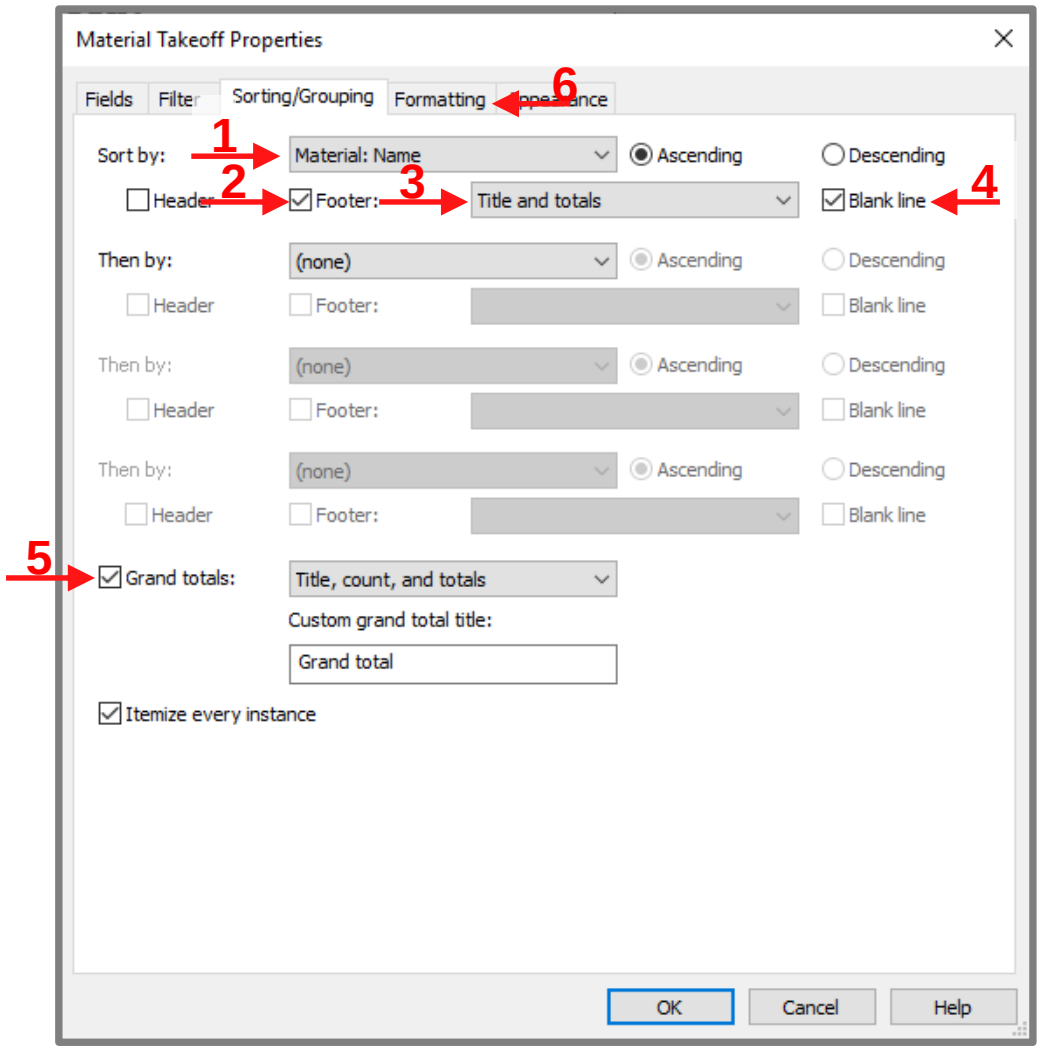
Creating Schedules-Materials



Creating Schedules-Materials



Creating Schedules-Materials



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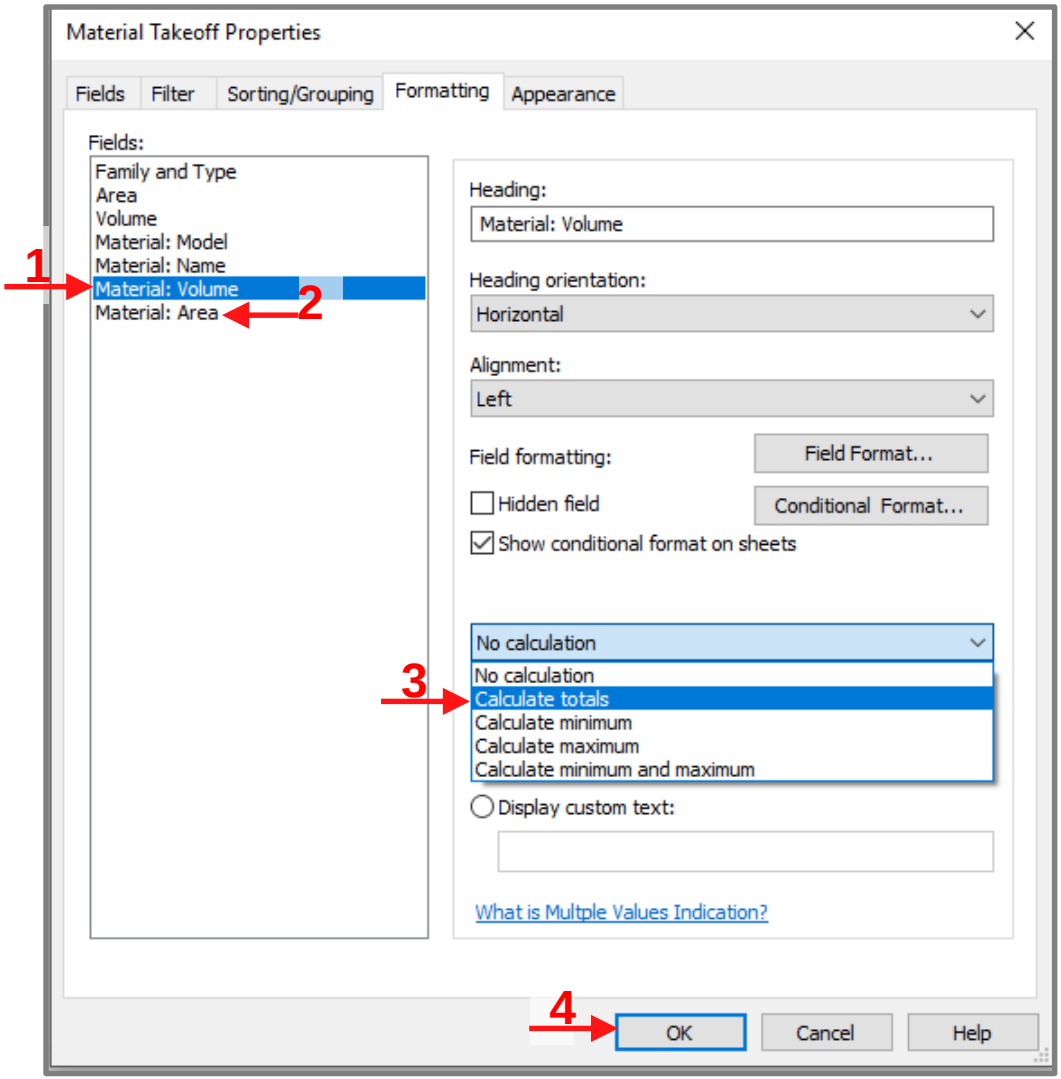
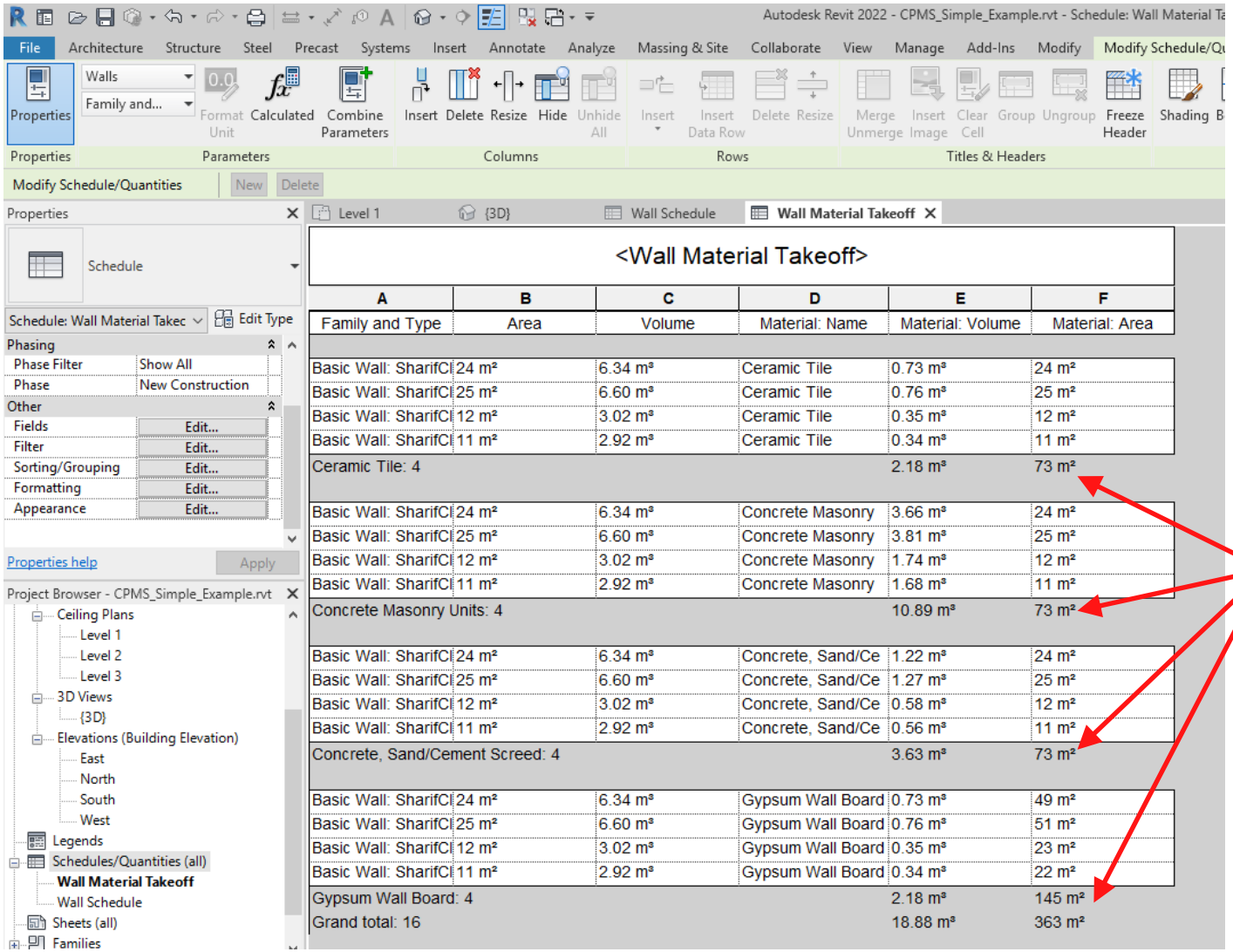
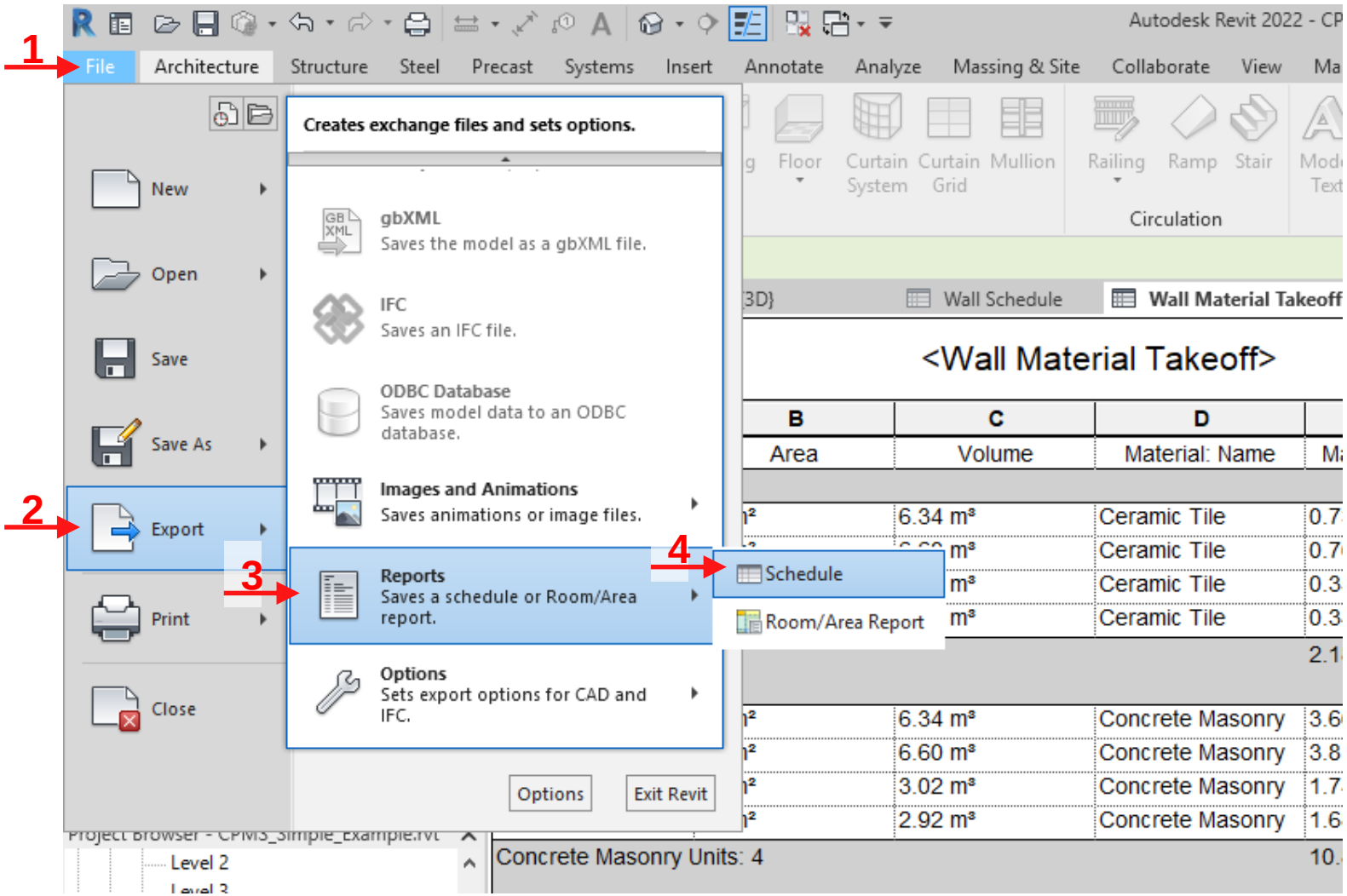


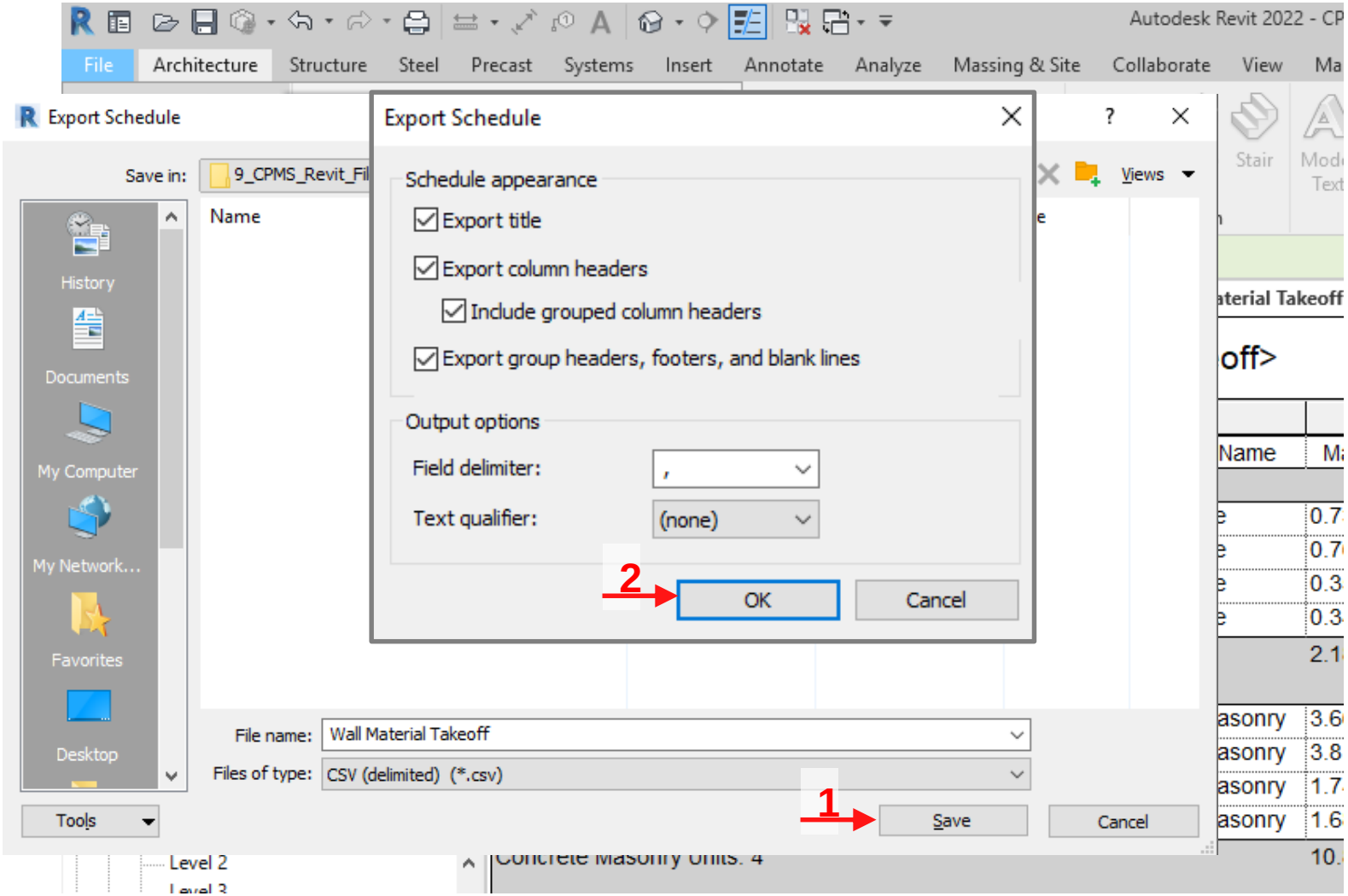
Creating Schedules-Materials



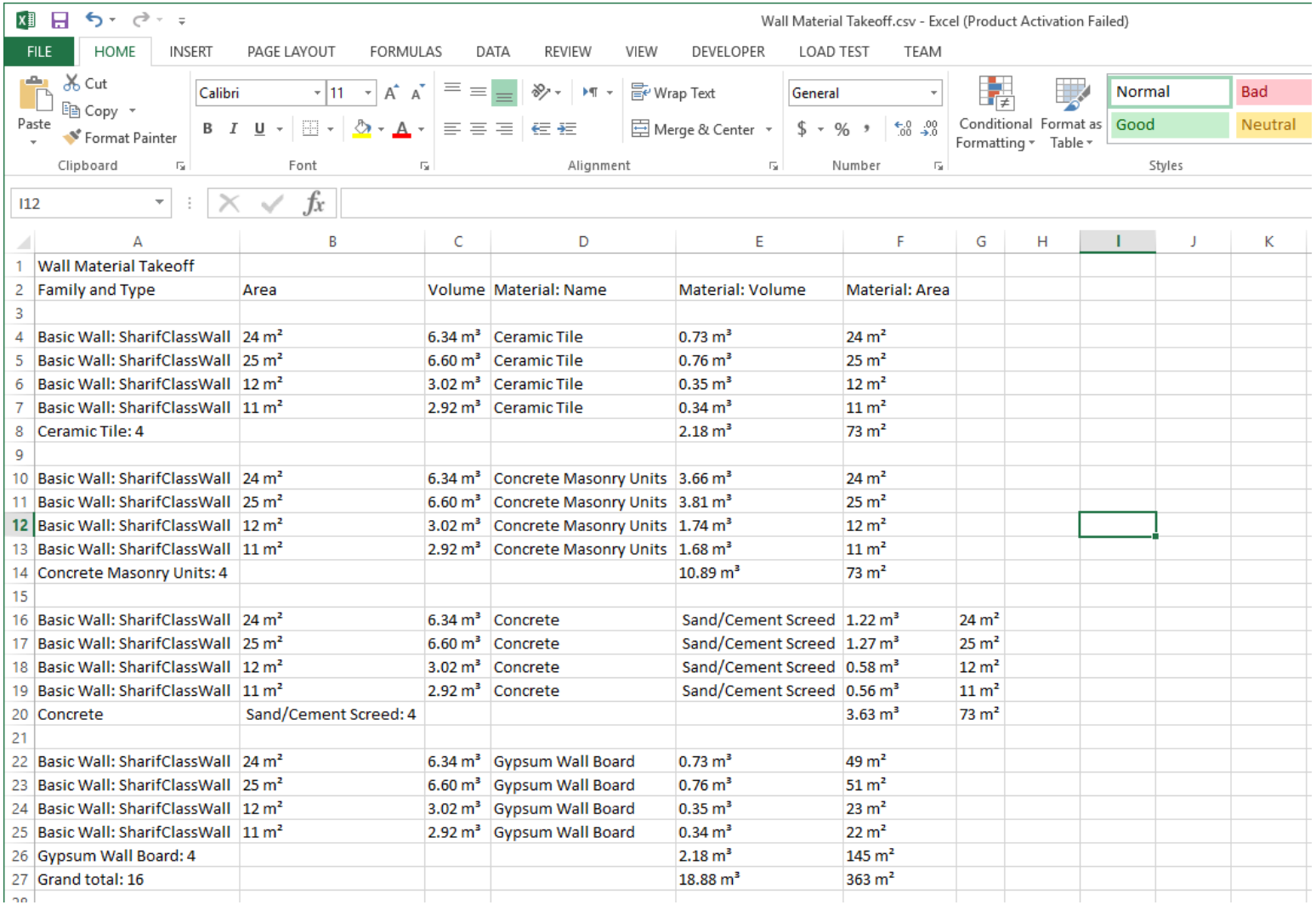
Creating Schedules-Excel Export



Creating Schedules-Excel Export



Creating Schedules-Excel Export



	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 m²	6.34 m³	Ceramic Tile	0.73 m³	24 m²					
5	Basic Wall: SharifClassWall	25 m²	6.60 m³	Ceramic Tile	0.76 m³	25 m²					
6	Basic Wall: SharifClassWall	12 m²	3.02 m³	Ceramic Tile	0.35 m³	12 m²					
7	Basic Wall: SharifClassWall	11 m²	2.92 m³	Ceramic Tile	0.34 m³	11 m²					
8	Ceramic Tile: 4				2.18 m³	73 m²					
9											
10	Basic Wall: SharifClassWall	24 m²	6.34 m³	Concrete Masonry Units	3.66 m³	24 m²					
11	Basic Wall: SharifClassWall	25 m²	6.60 m³	Concrete Masonry Units	3.81 m³	25 m²					
12	Basic Wall: SharifClassWall	12 m²	3.02 m³	Concrete Masonry Units	1.74 m³	12 m²					
13	Basic Wall: SharifClassWall	11 m²	2.92 m³	Concrete Masonry Units	1.68 m³	11 m²					
14	Concrete Masonry Units: 4				10.89 m³	73 m²					
15											
16	Basic Wall: SharifClassWall	24 m²	6.34 m³	Concrete	Sand/Cement Screed	1.22 m³	24 m²				
17	Basic Wall: SharifClassWall	25 m²	6.60 m³	Concrete	Sand/Cement Screed	1.27 m³	25 m²				
18	Basic Wall: SharifClassWall	12 m²	3.02 m³	Concrete	Sand/Cement Screed	0.58 m³	12 m²				
19	Basic Wall: SharifClassWall	11 m²	2.92 m³	Concrete	Sand/Cement Screed	0.56 m³	11 m²				
20	Concrete	Sand/Cement Screed: 4				3.63 m³	73 m²				
21											
22	Basic Wall: SharifClassWall	24 m²	6.34 m³	Gypsum Wall Board	0.73 m³	49 m²					
23	Basic Wall: SharifClassWall	25 m²	6.60 m³	Gypsum Wall Board	0.76 m³	51 m²					
24	Basic Wall: SharifClassWall	12 m²	3.02 m³	Gypsum Wall Board	0.35 m³	23 m²					
25	Basic Wall: SharifClassWall	11 m²	2.92 m³	Gypsum Wall Board	0.34 m³	22 m²					
26	Gypsum Wall Board: 4				2.18 m³	145 m²					
27	Grand total: 16				18.88 m³	363 m²					

In Class Practice

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

Revit Parameters

Introduction

- 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!!!

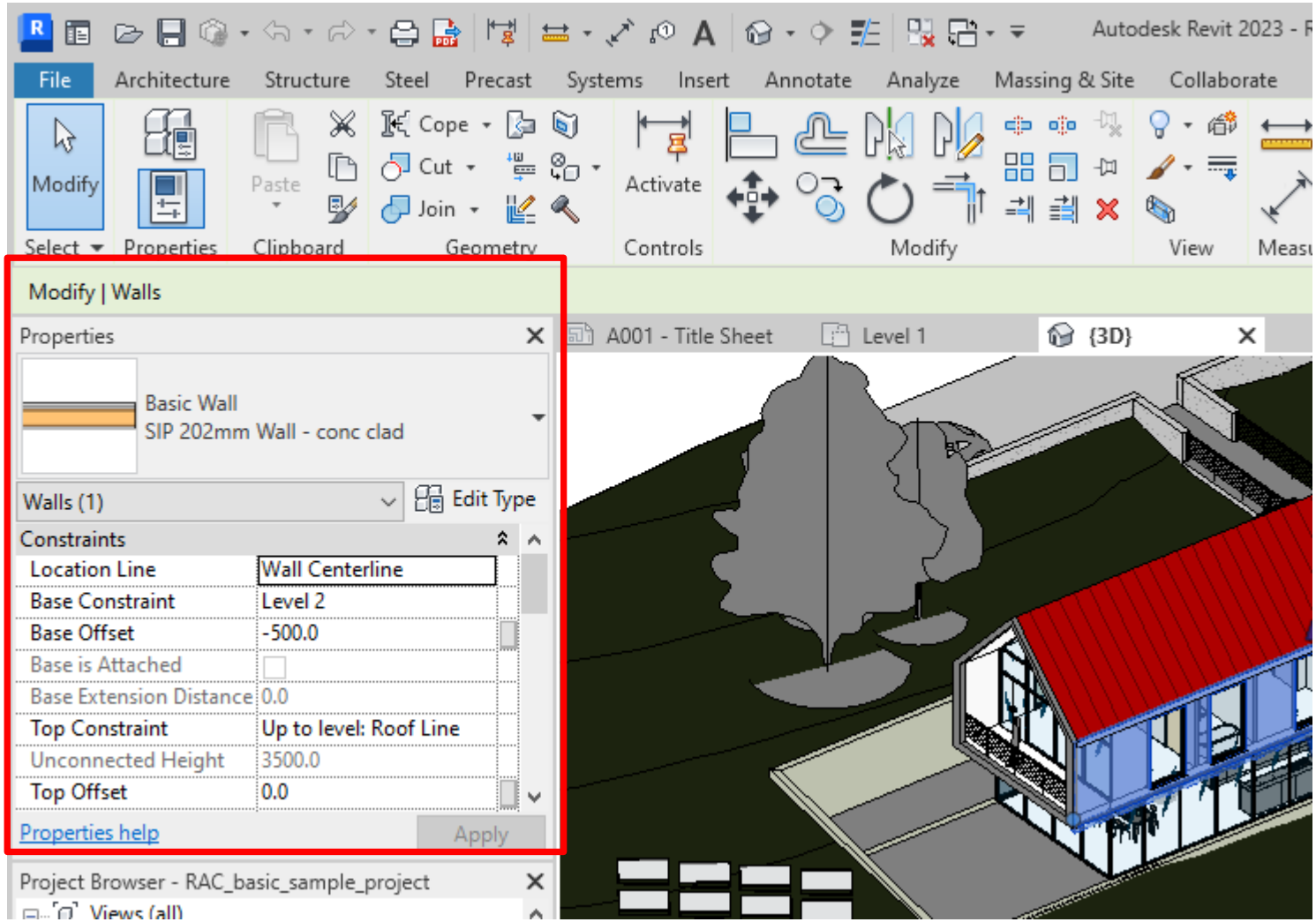
Different Types of Revit Parameters

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

System Parameters

- 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!

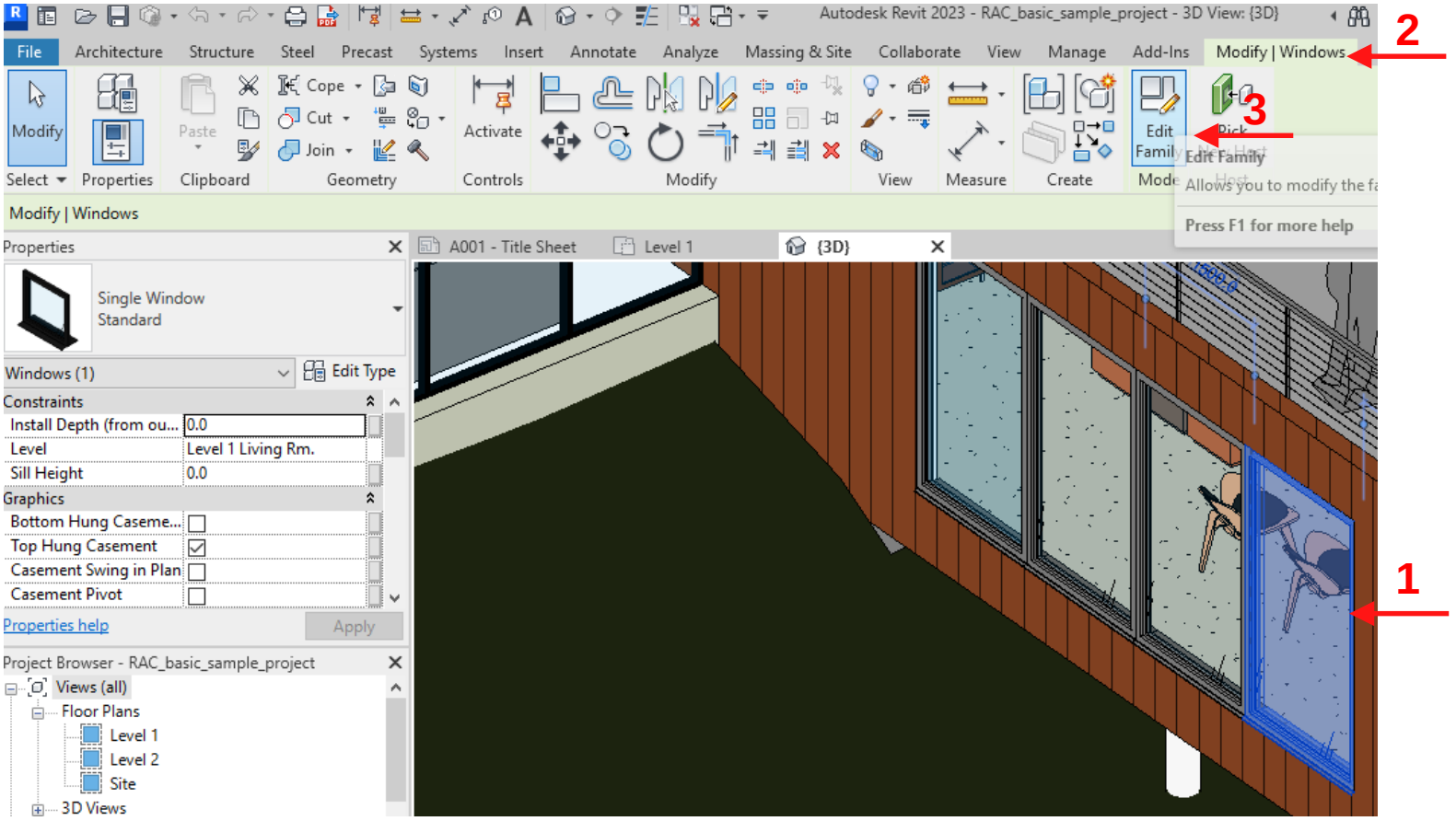
System Parameters



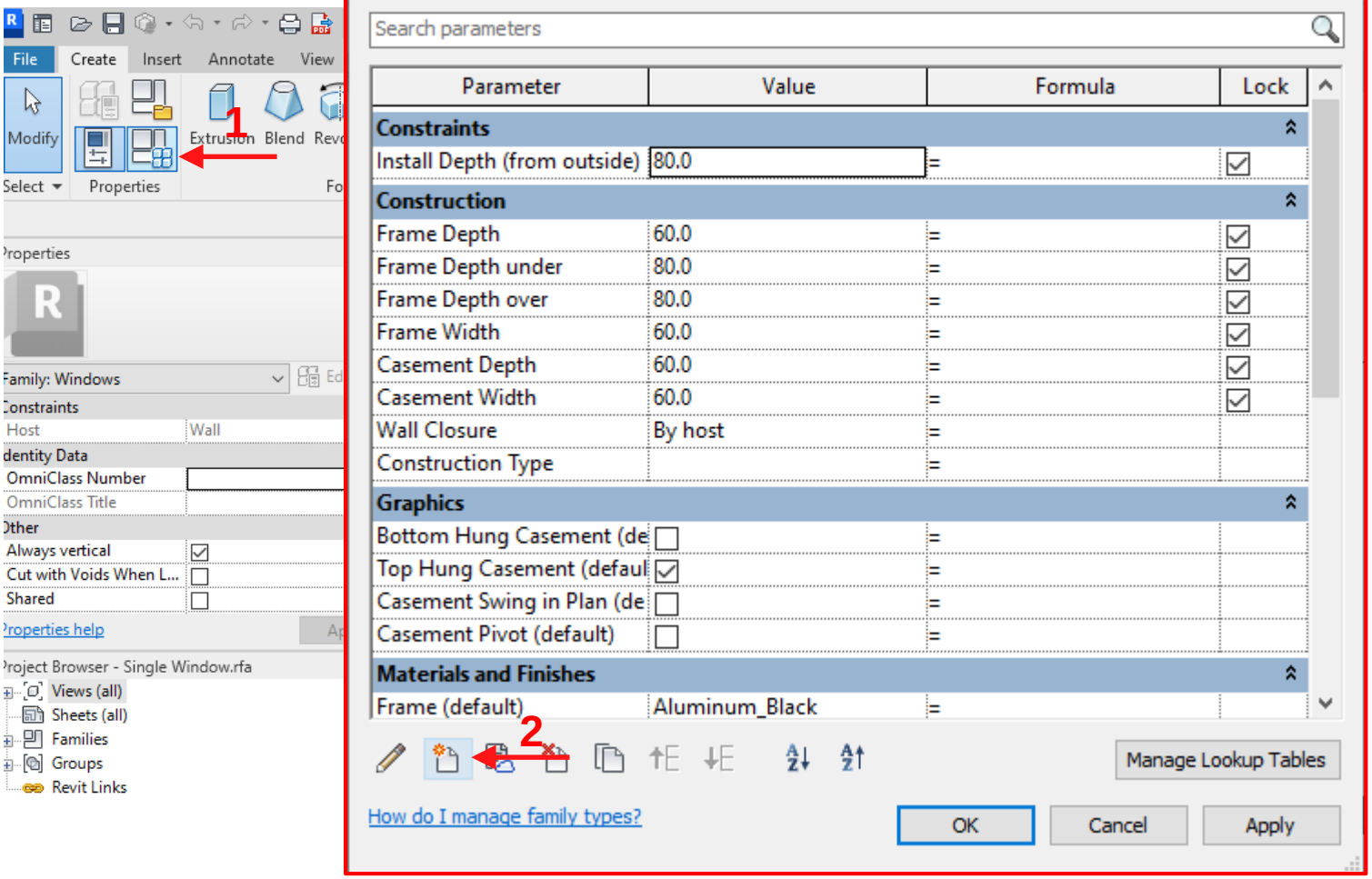
Family Parameters

- 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.

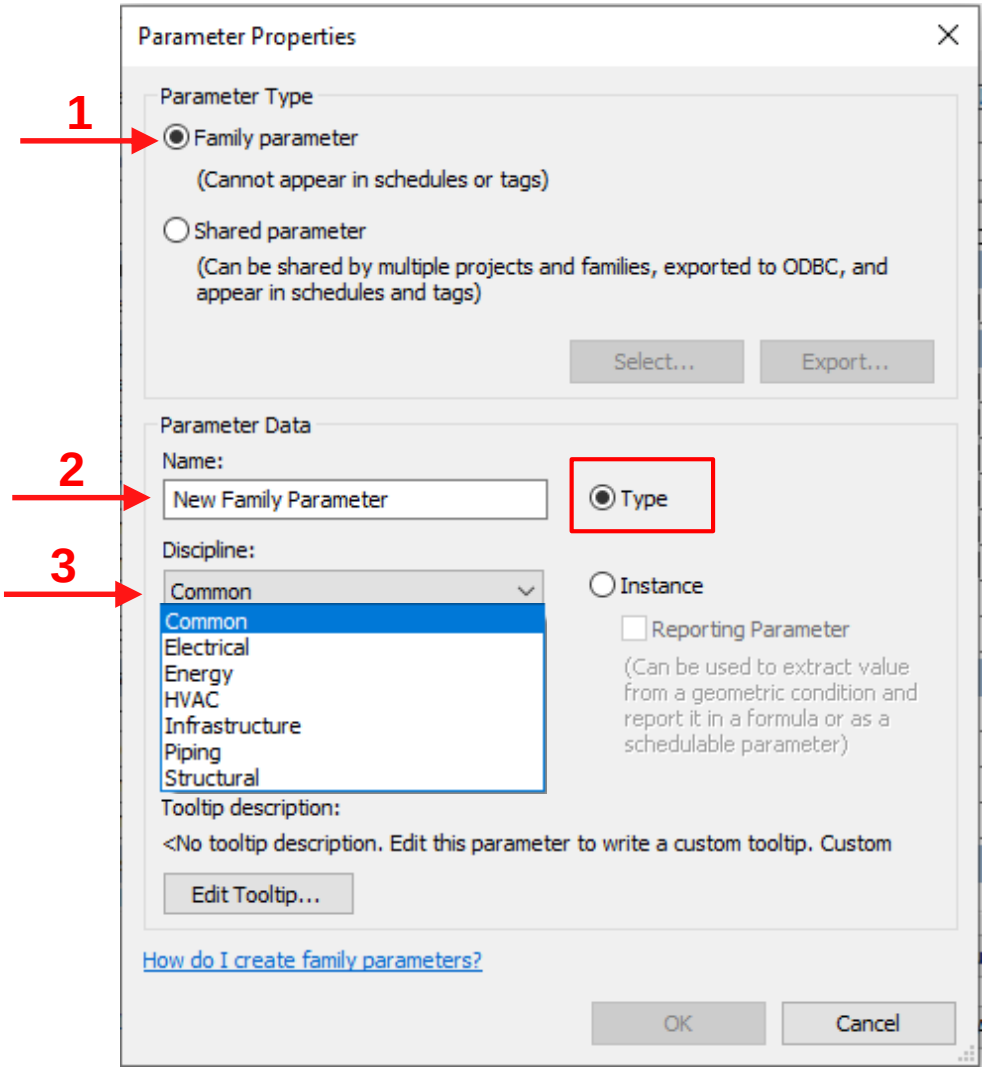
Family Parameters



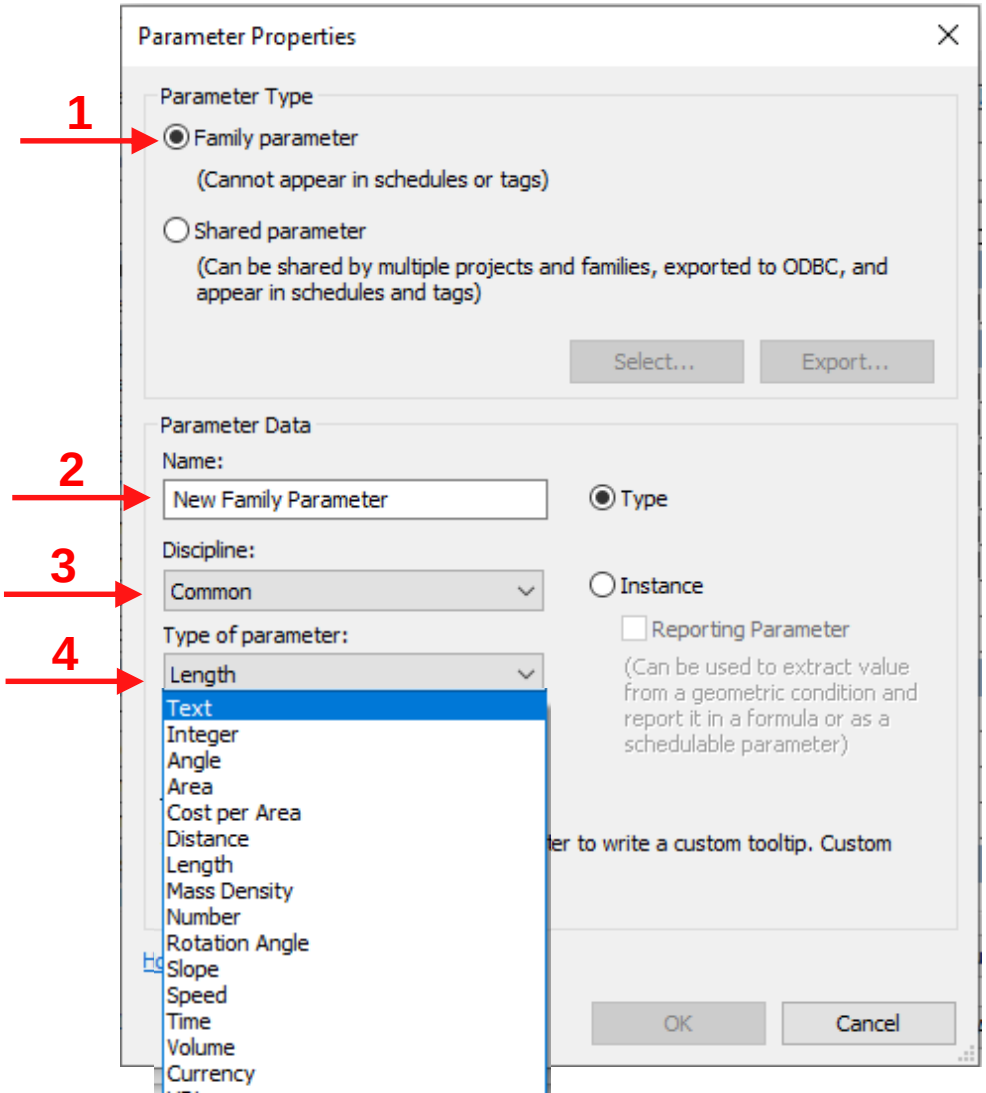
Family Parameters



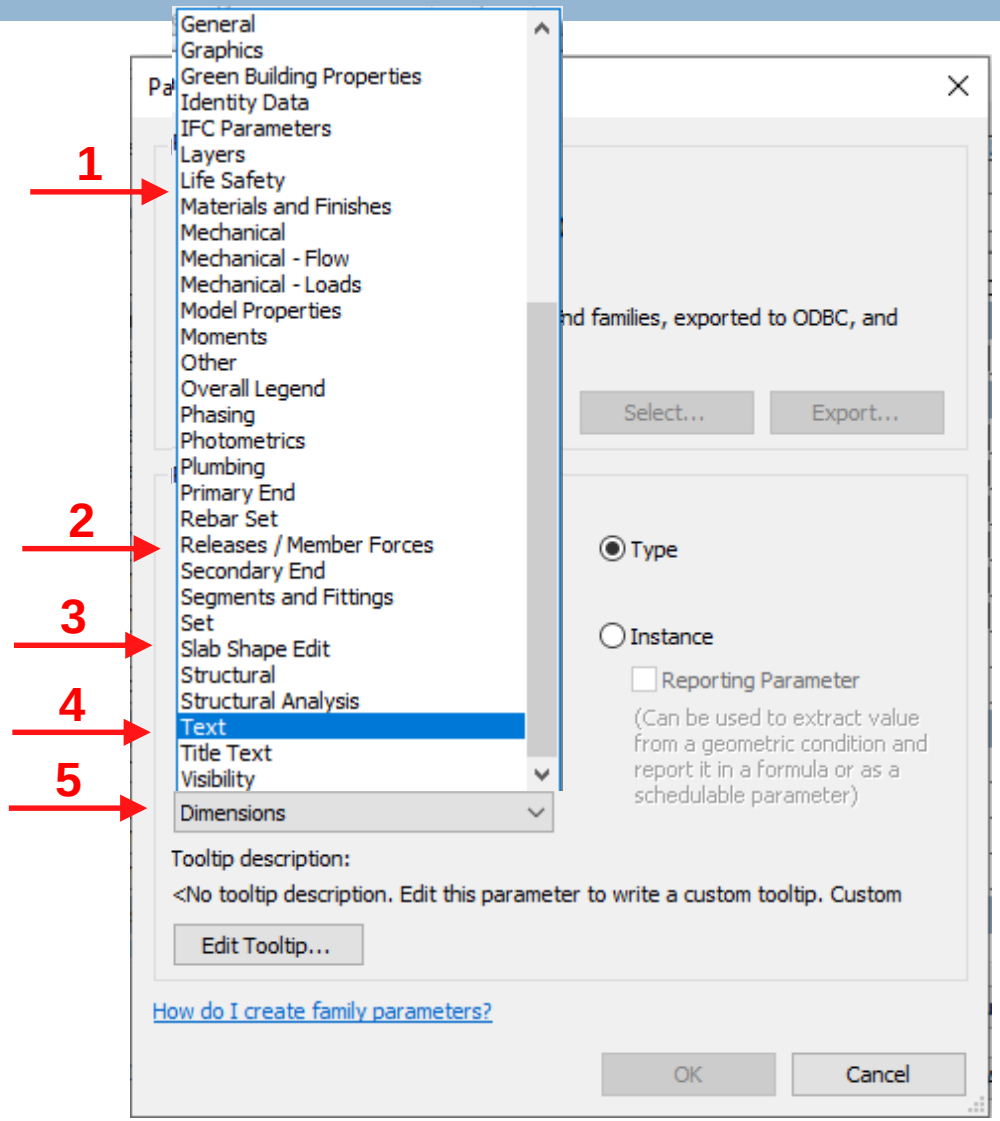
Family Parameters



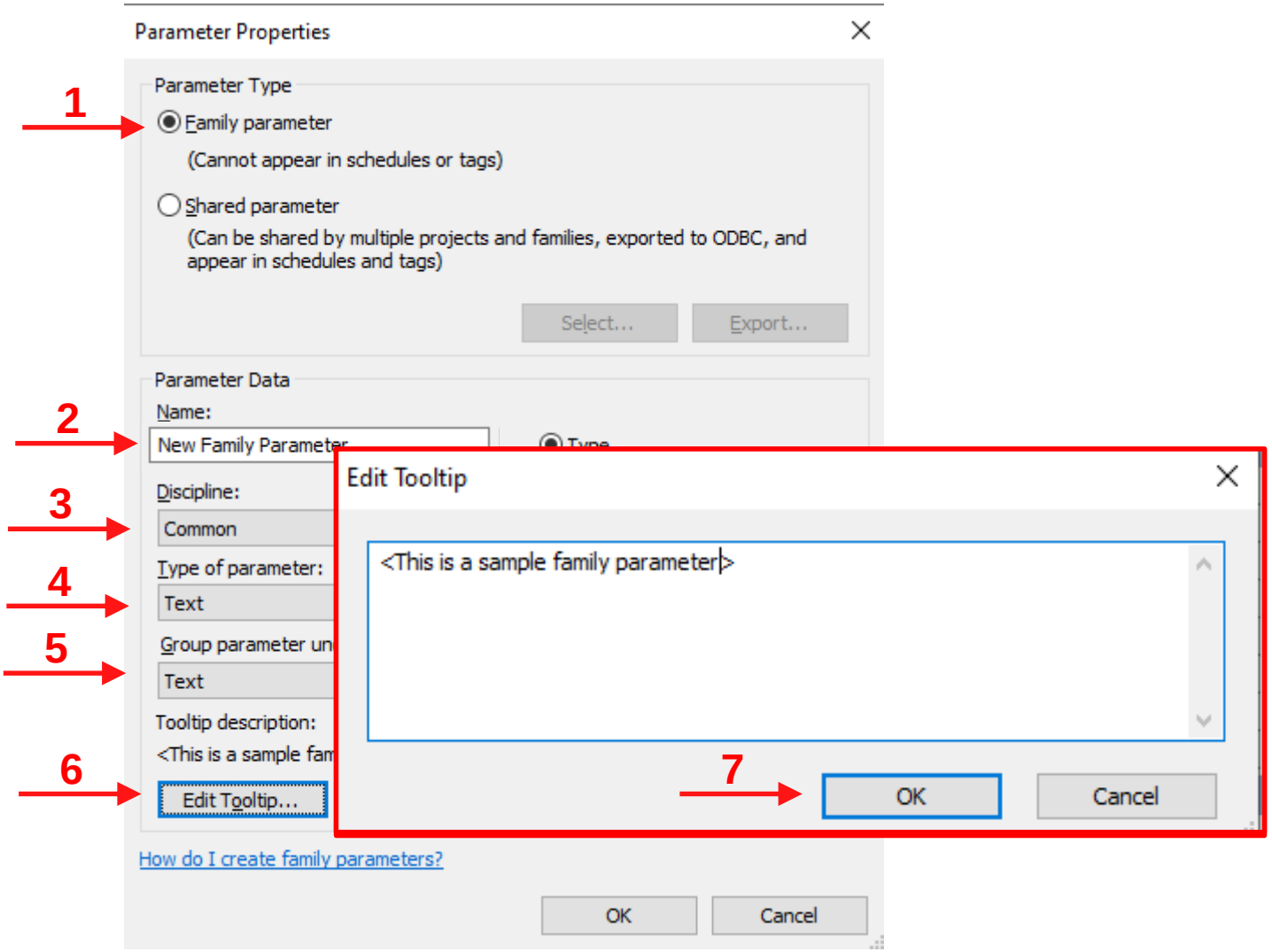
Family Parameters



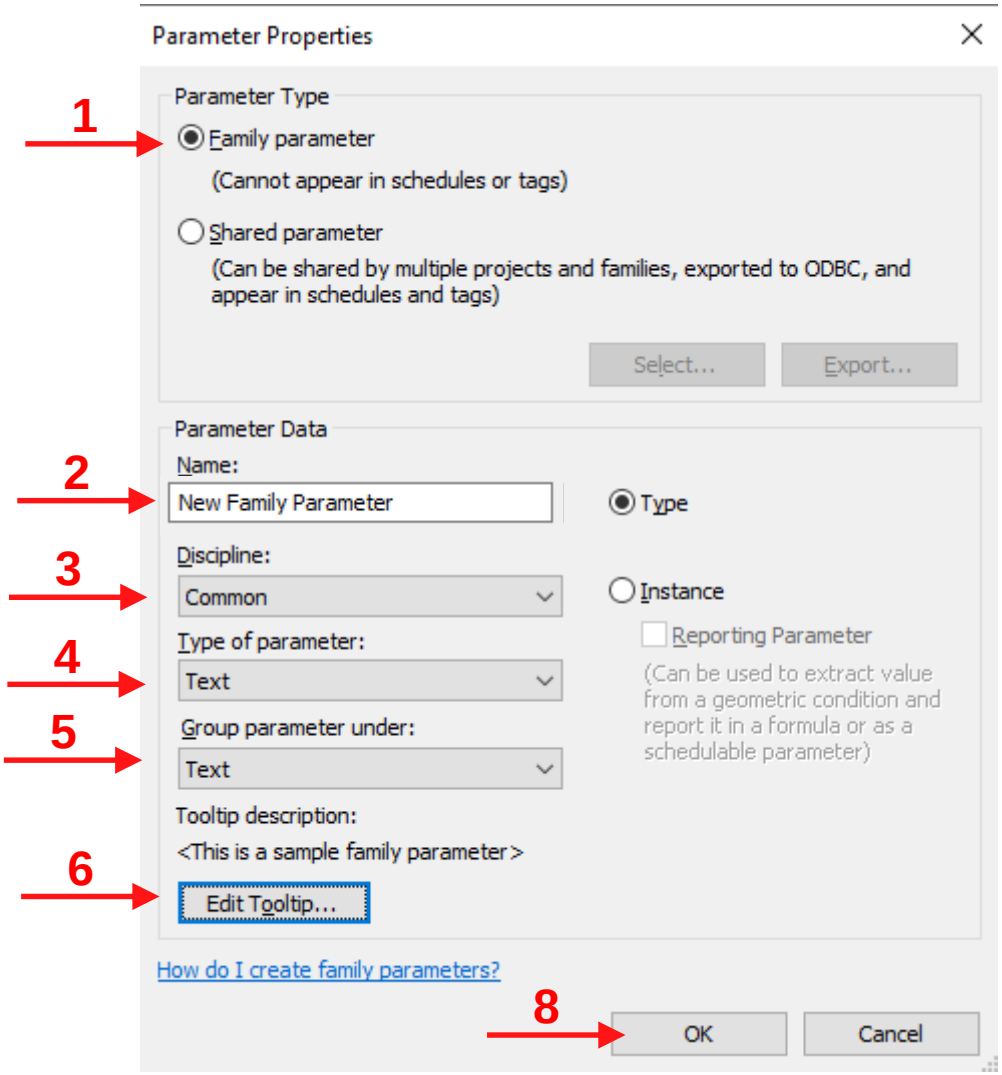
Family Parameters



Family Parameters



Family Parameters



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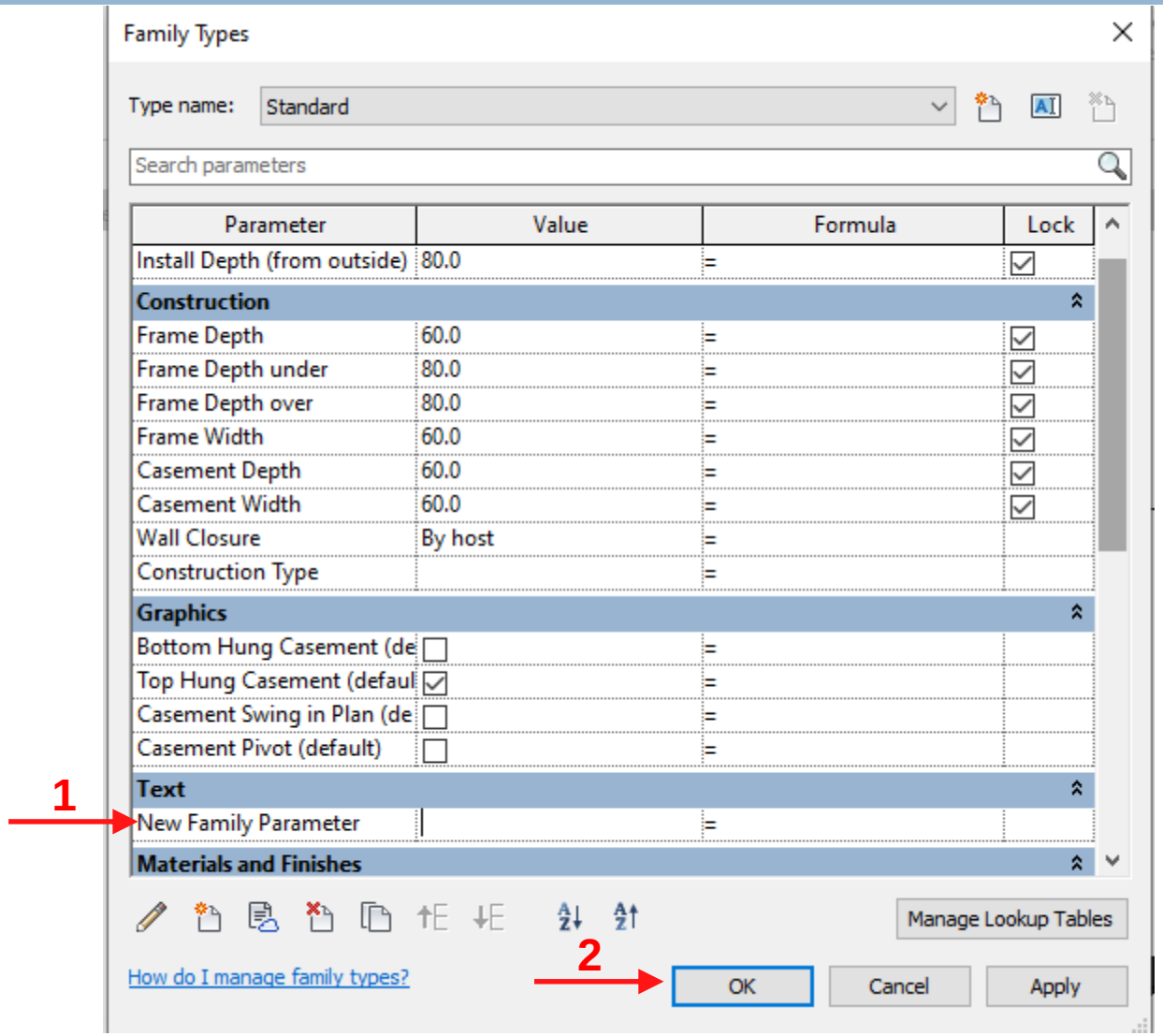
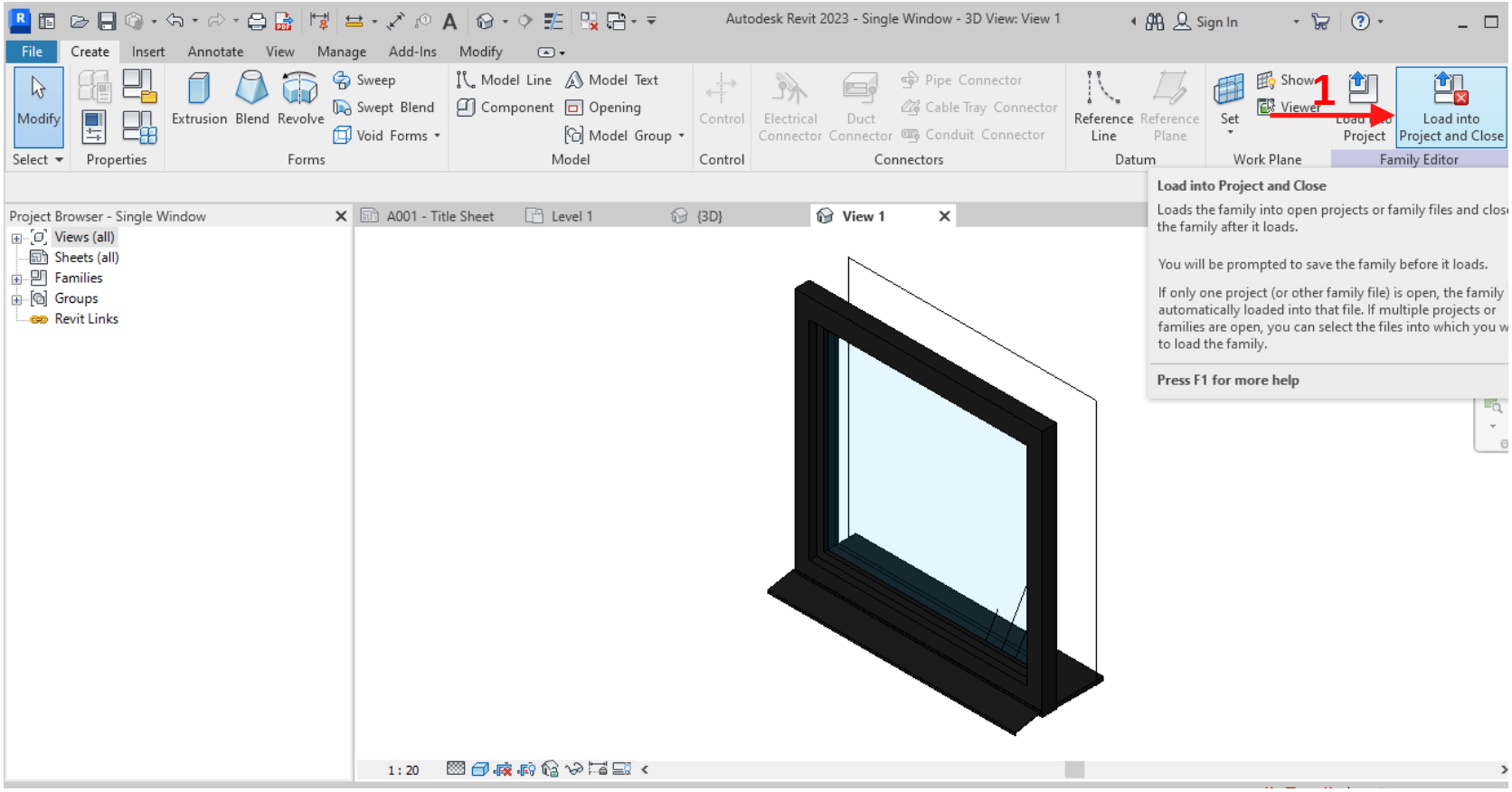


Family Parameters



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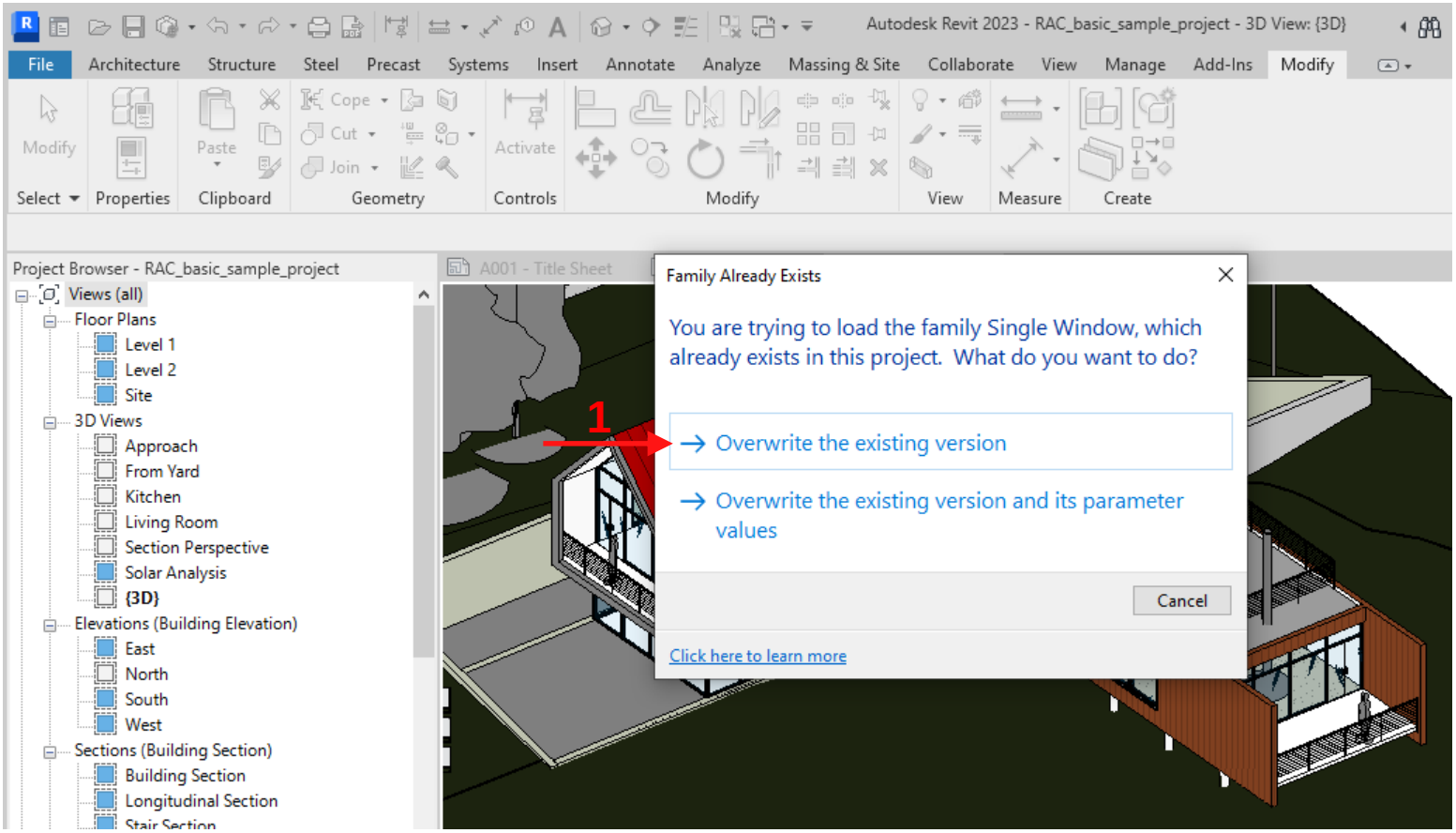
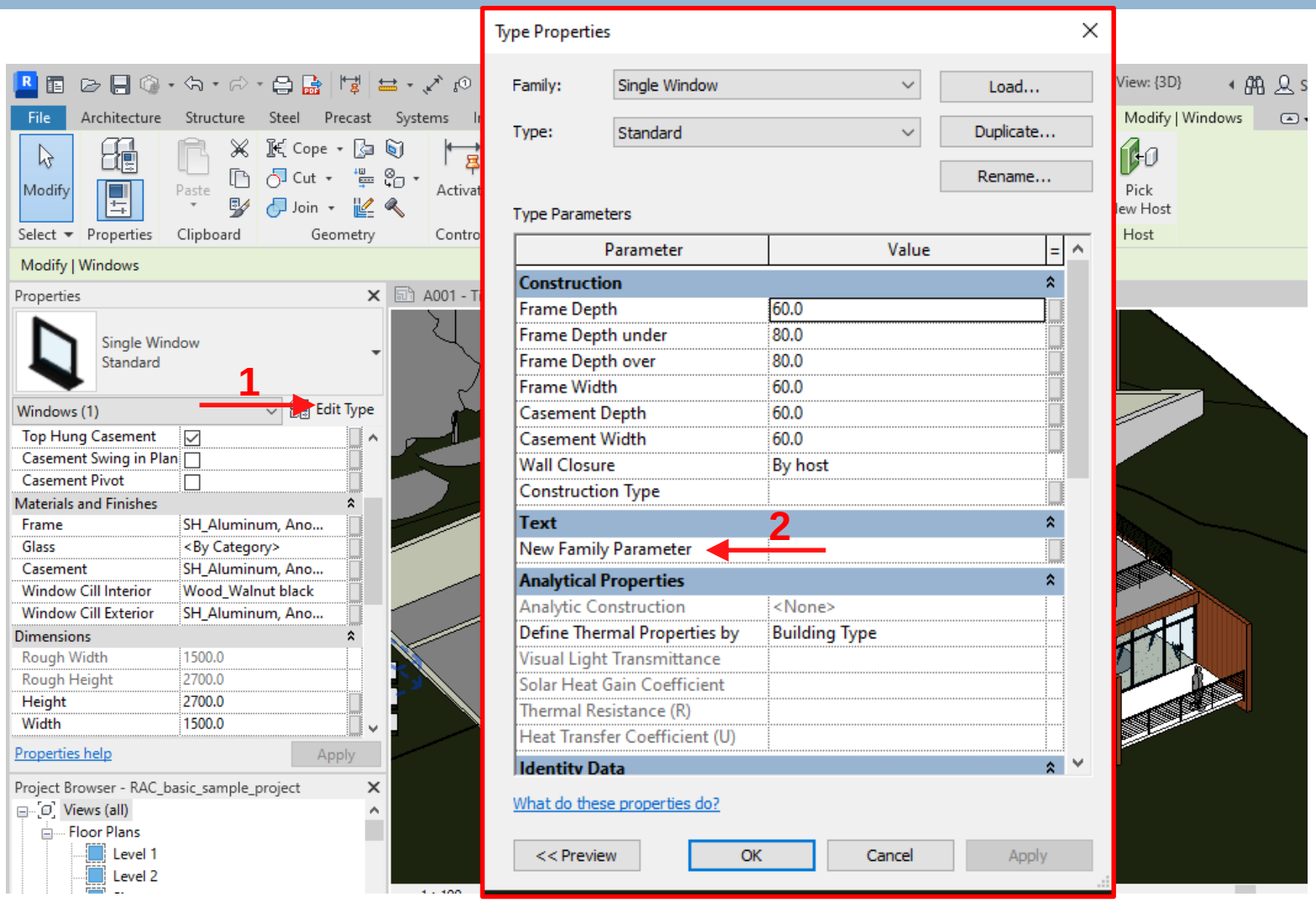


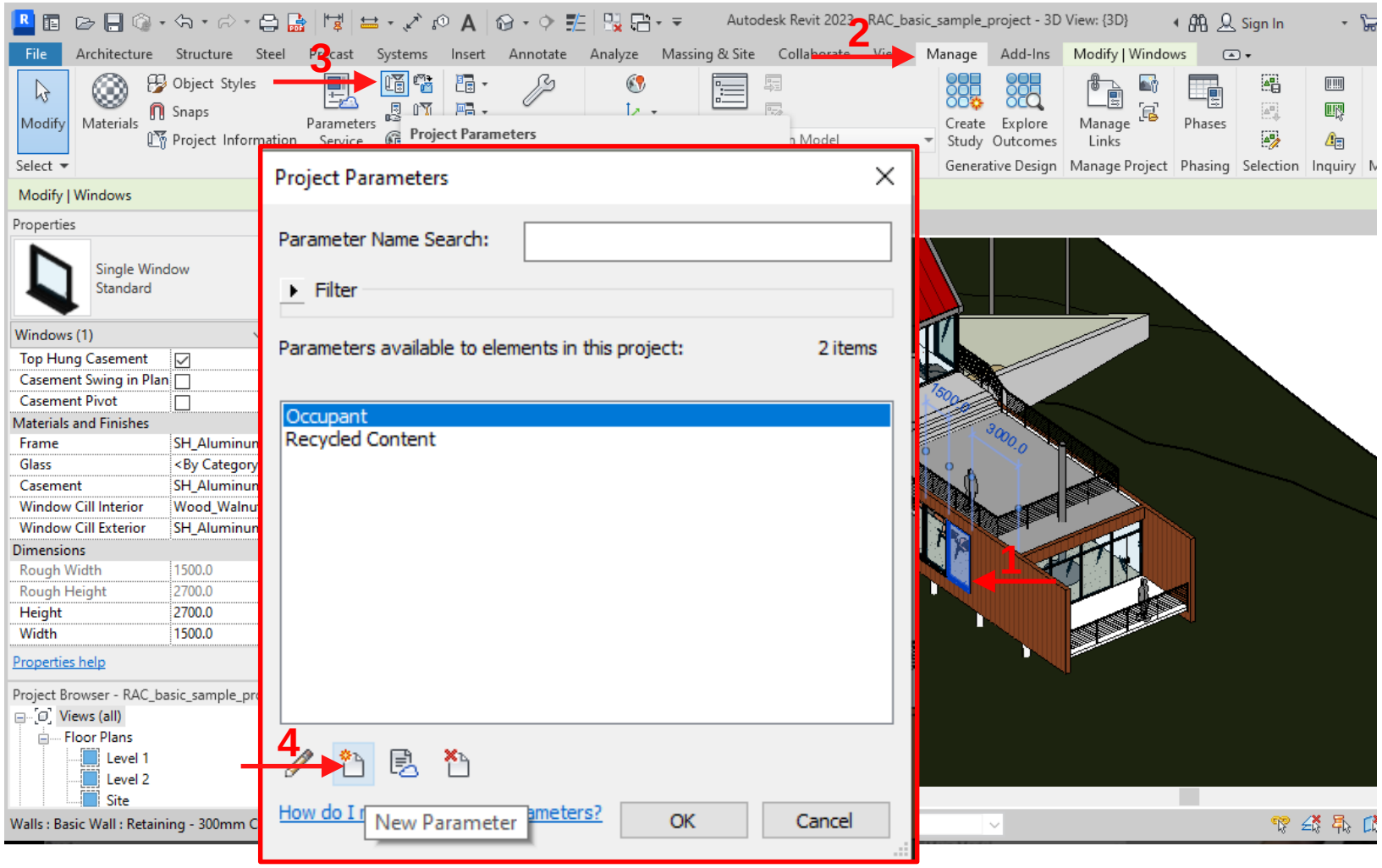
Family Parameters



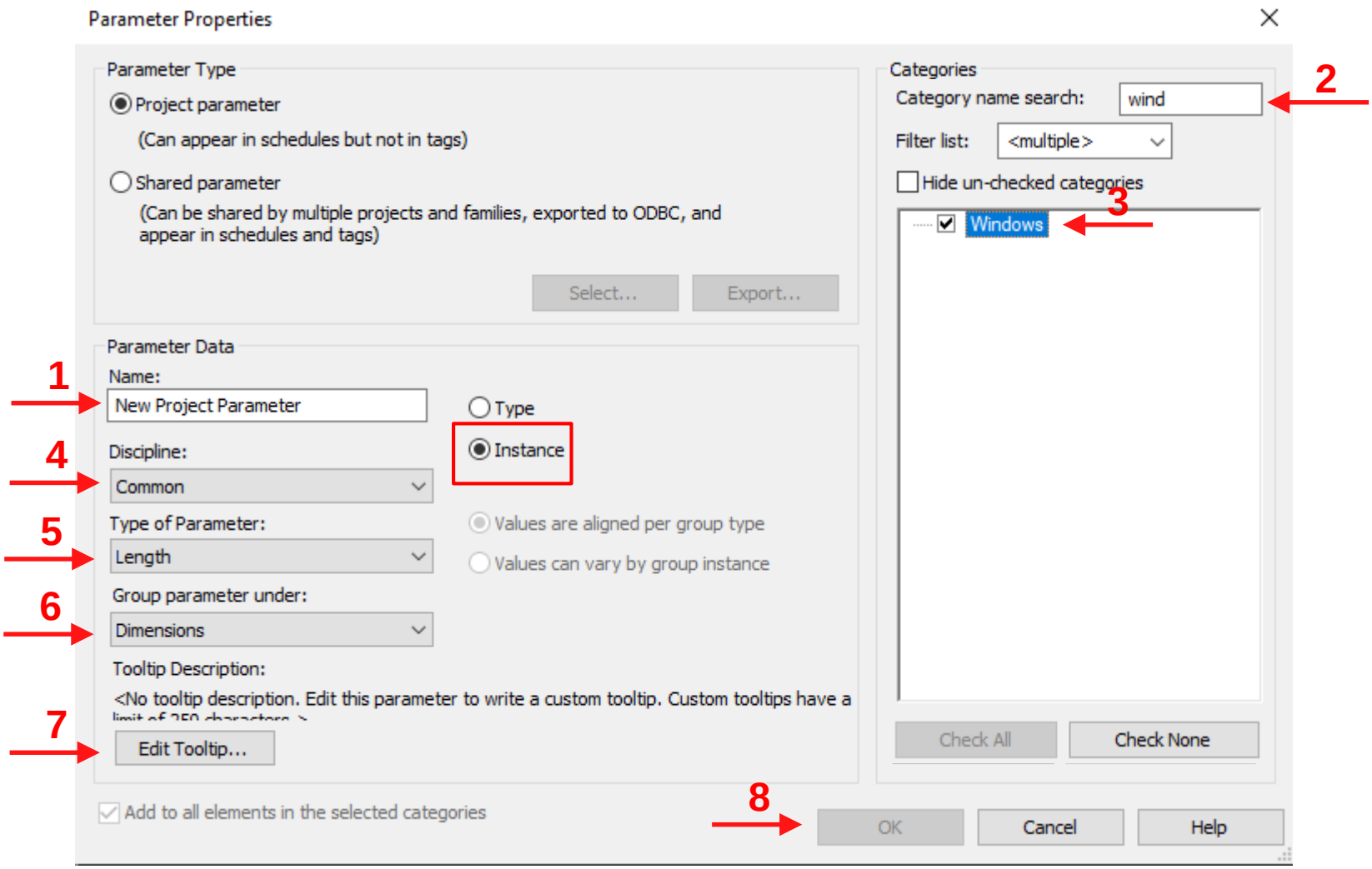
Project Parameters

- 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 Reivt projects,

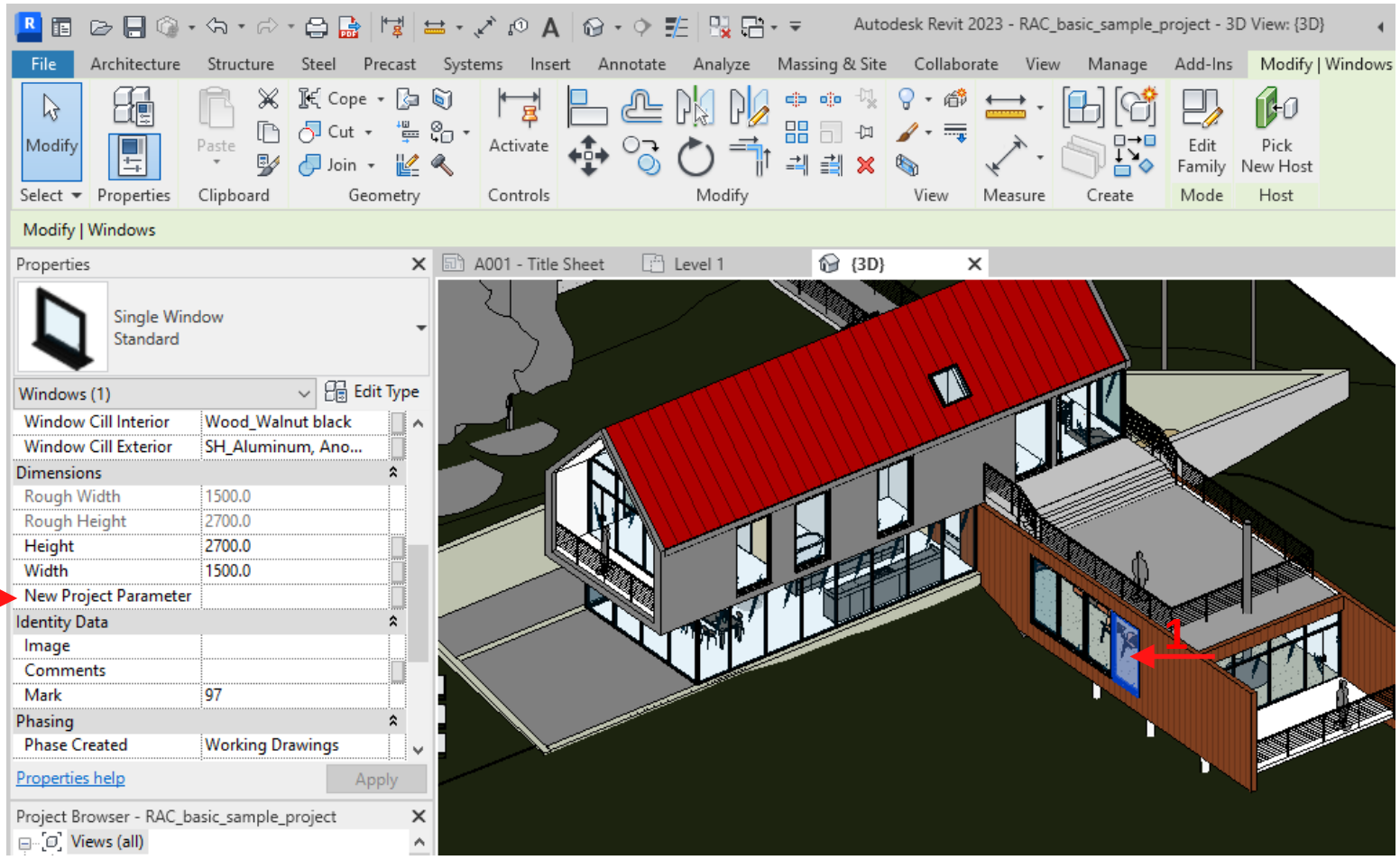
Project Parameters



Project Parameters



Project Parameters



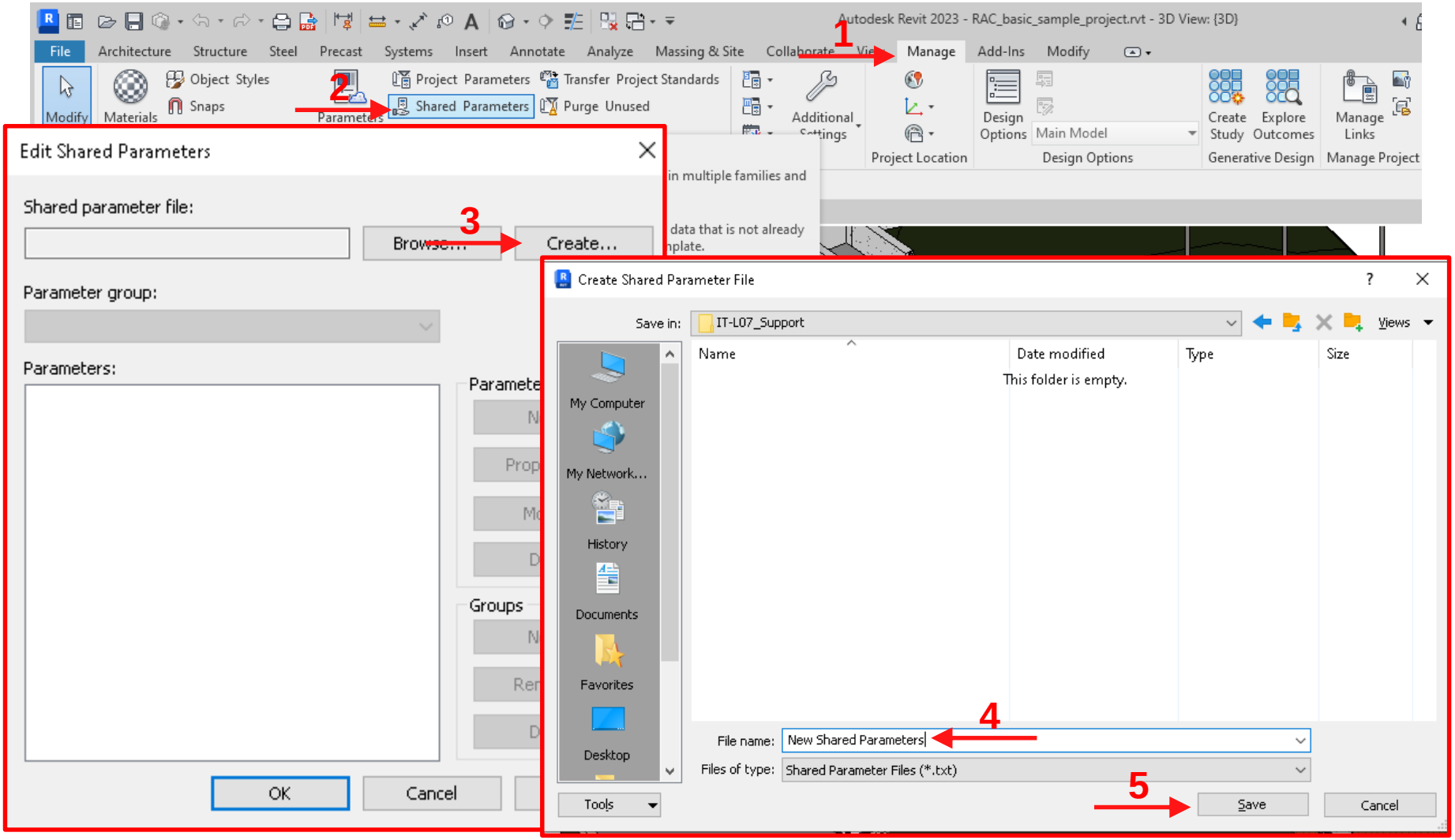
Shared Parameters

- 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!

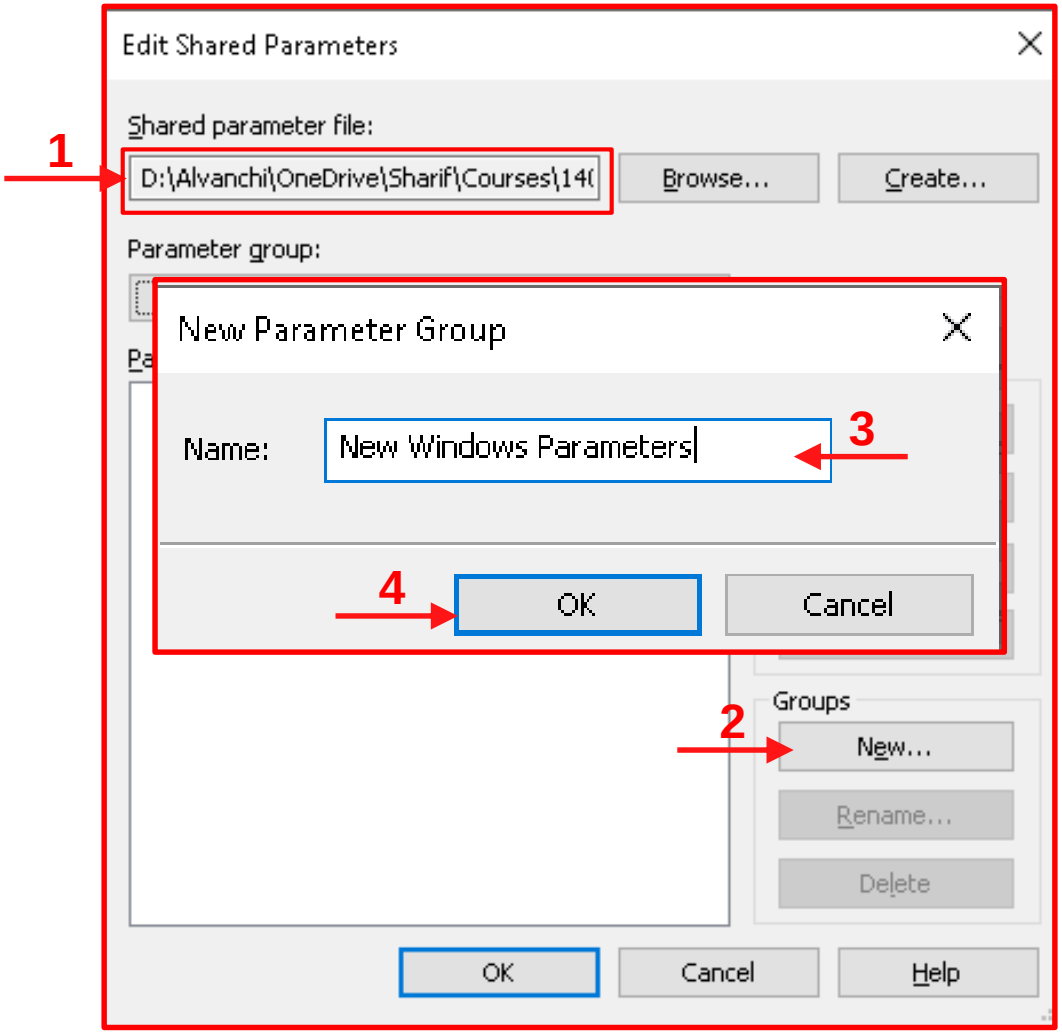
When do you recommend use shared parameters?

- 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!

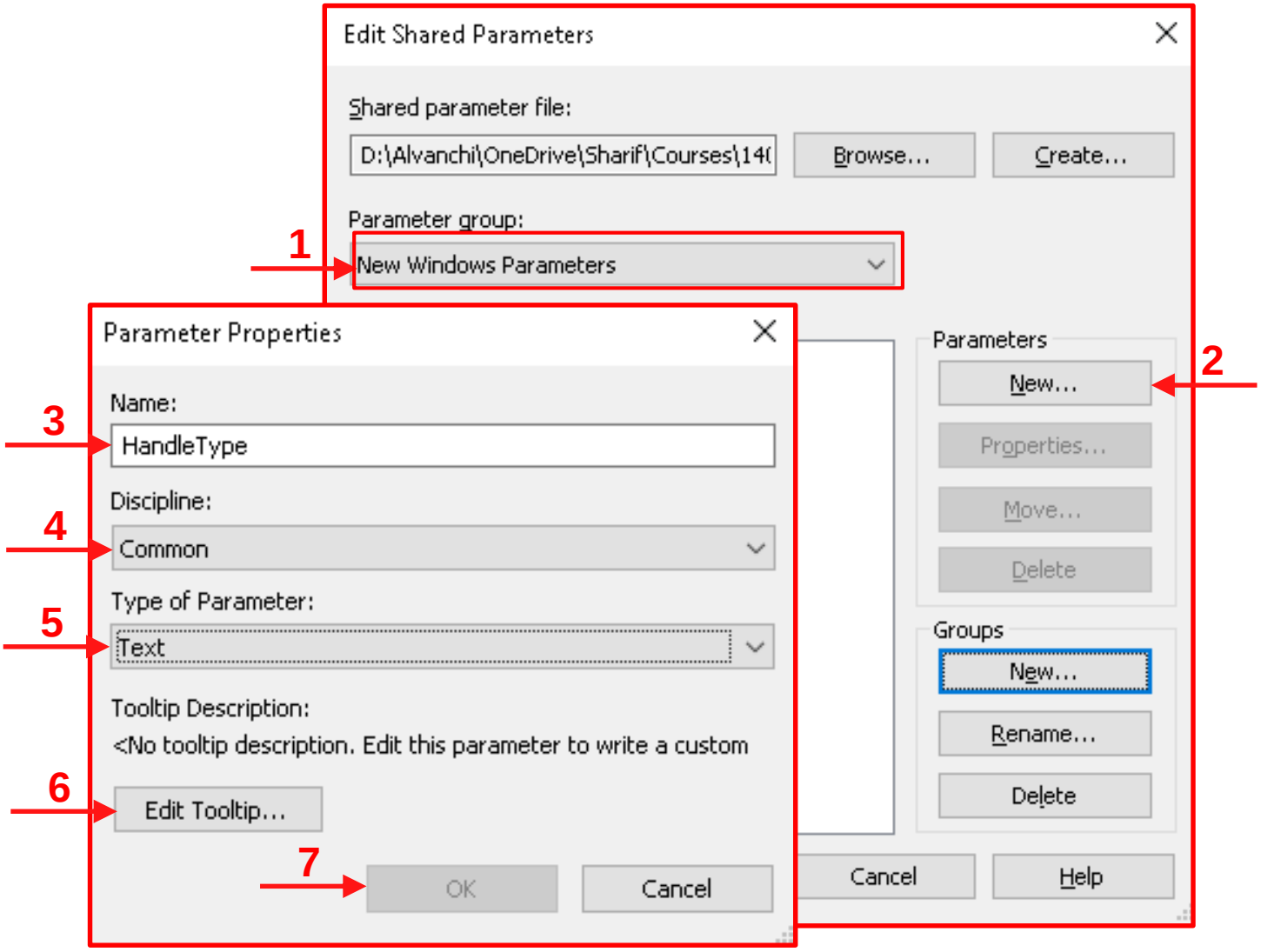
Defining Shared Parameters



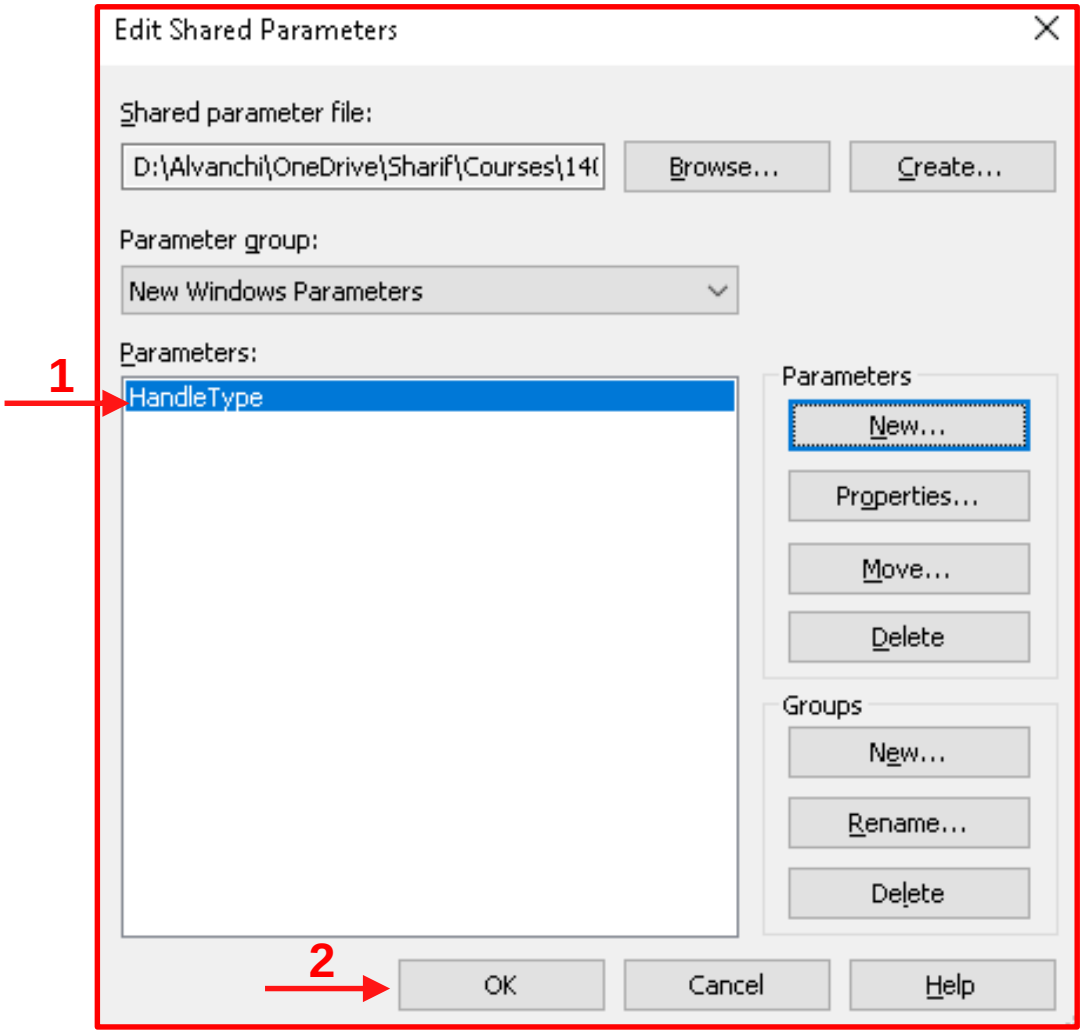
Defining Shared Parameters



Defining Shared Parameters

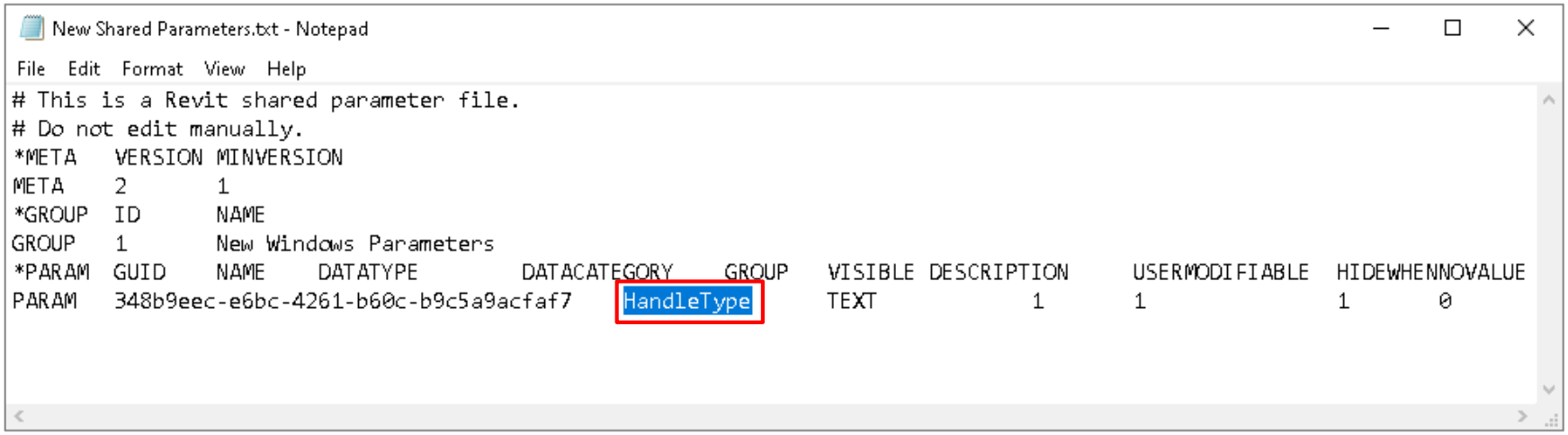


Defining Shared Parameters



Defining Shared Parameters

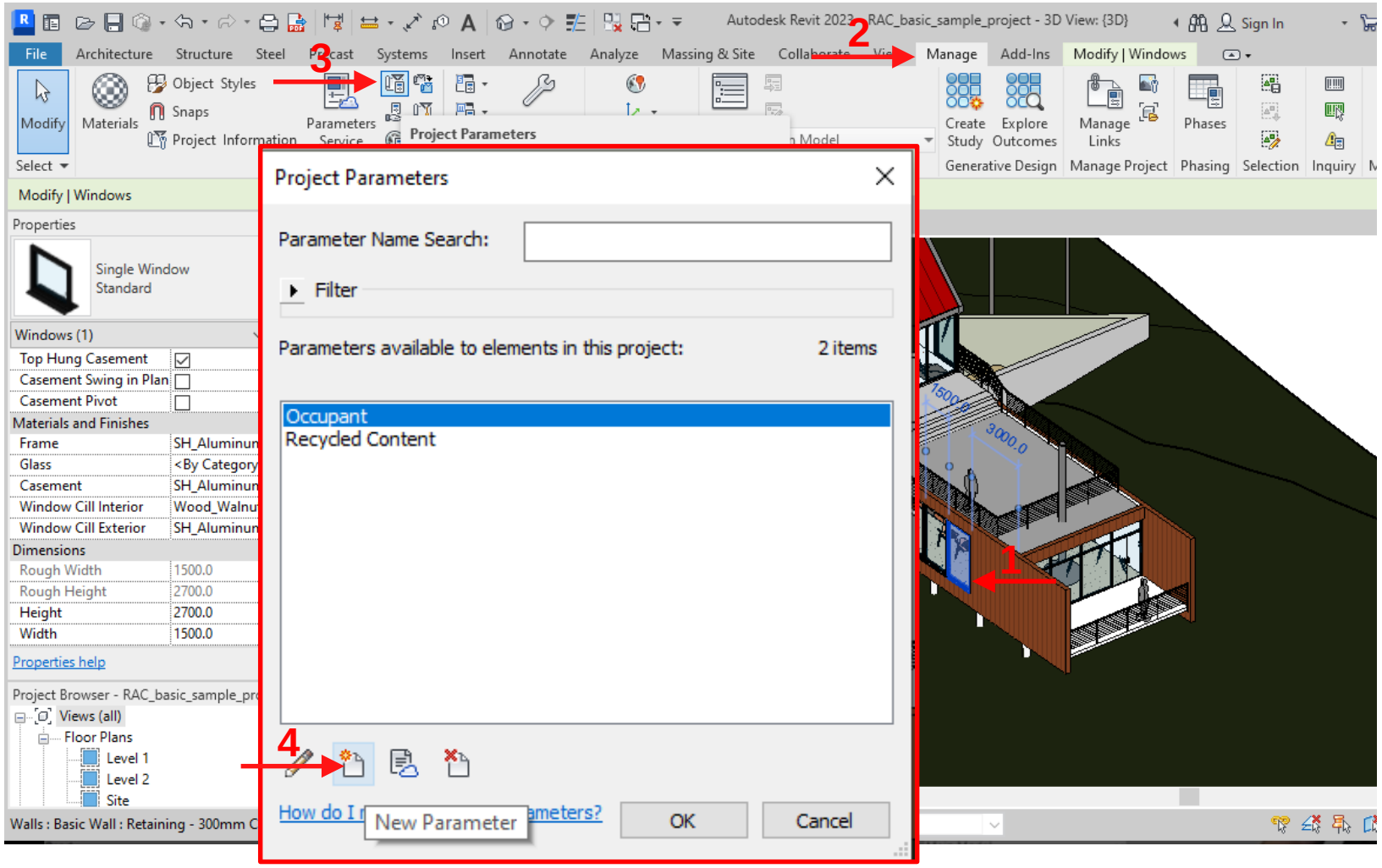
- When shared parameters are defined the text file is updated based on the predefined format in Revit:



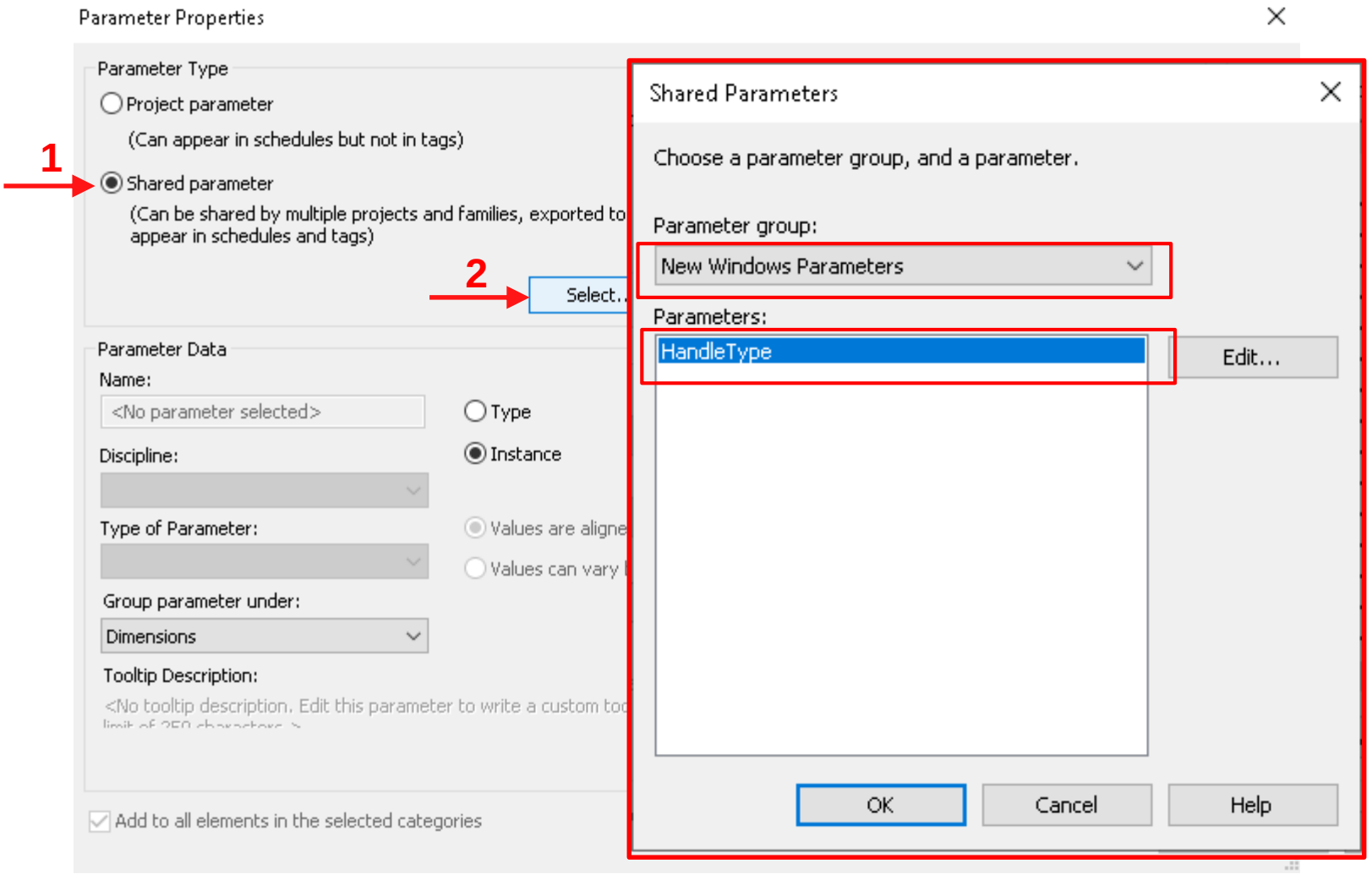
Assigning Shared Parameters

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

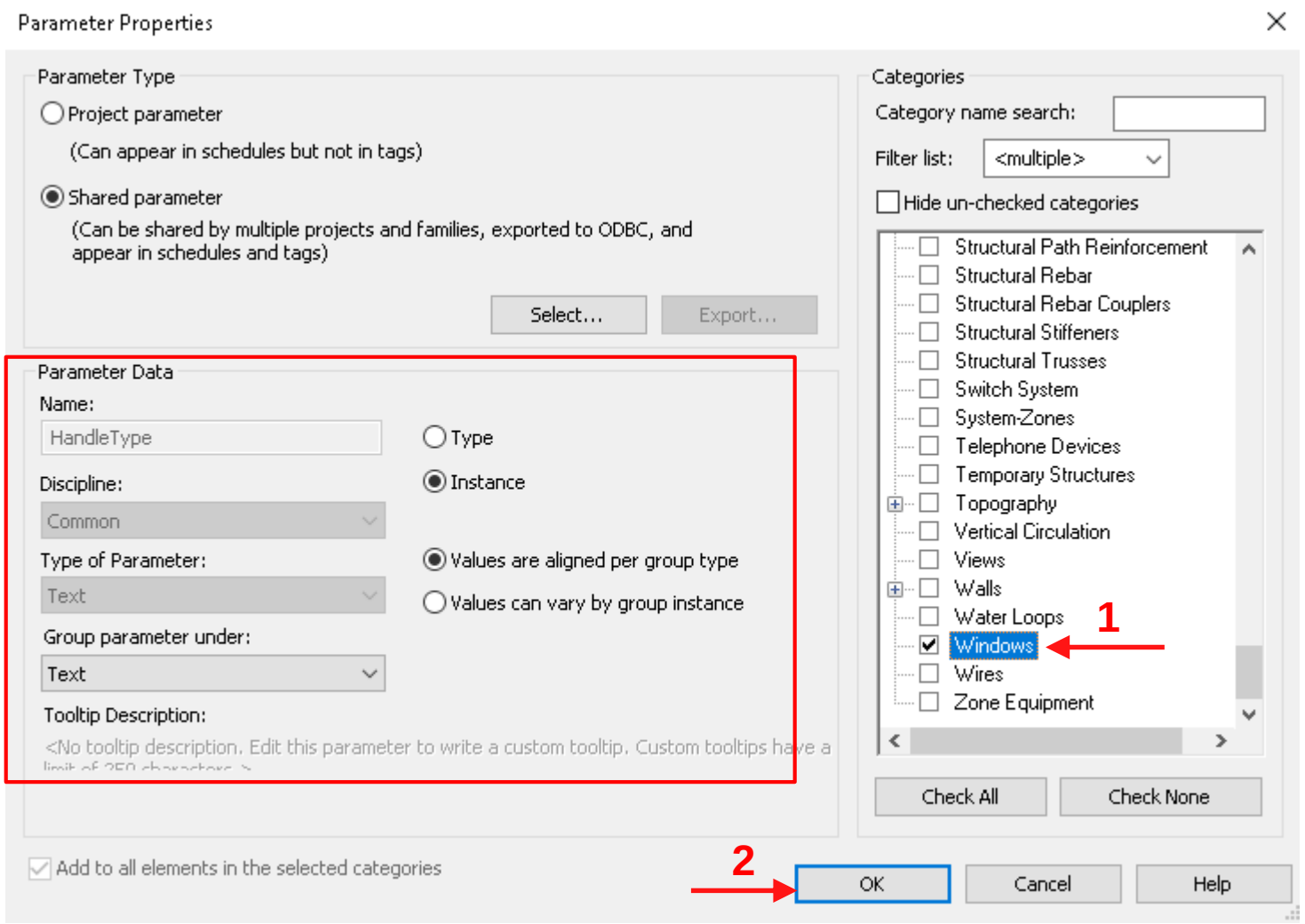
Assigning Shared Parameters



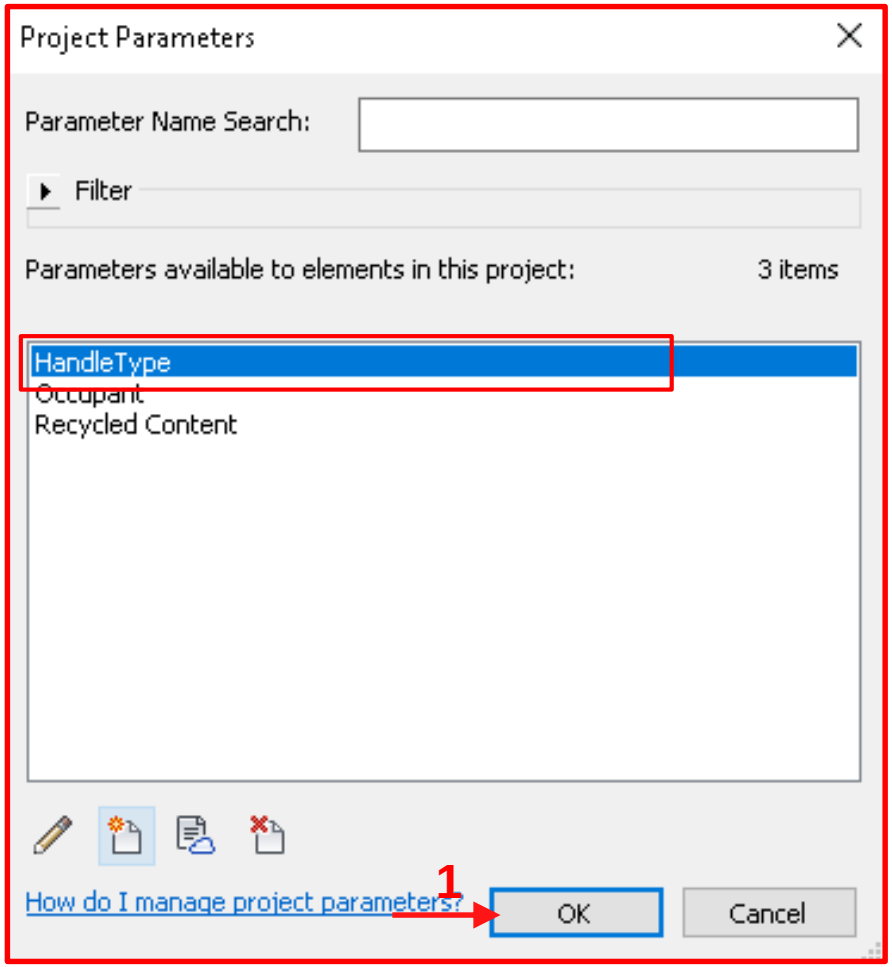
Assigning Shared Parameters



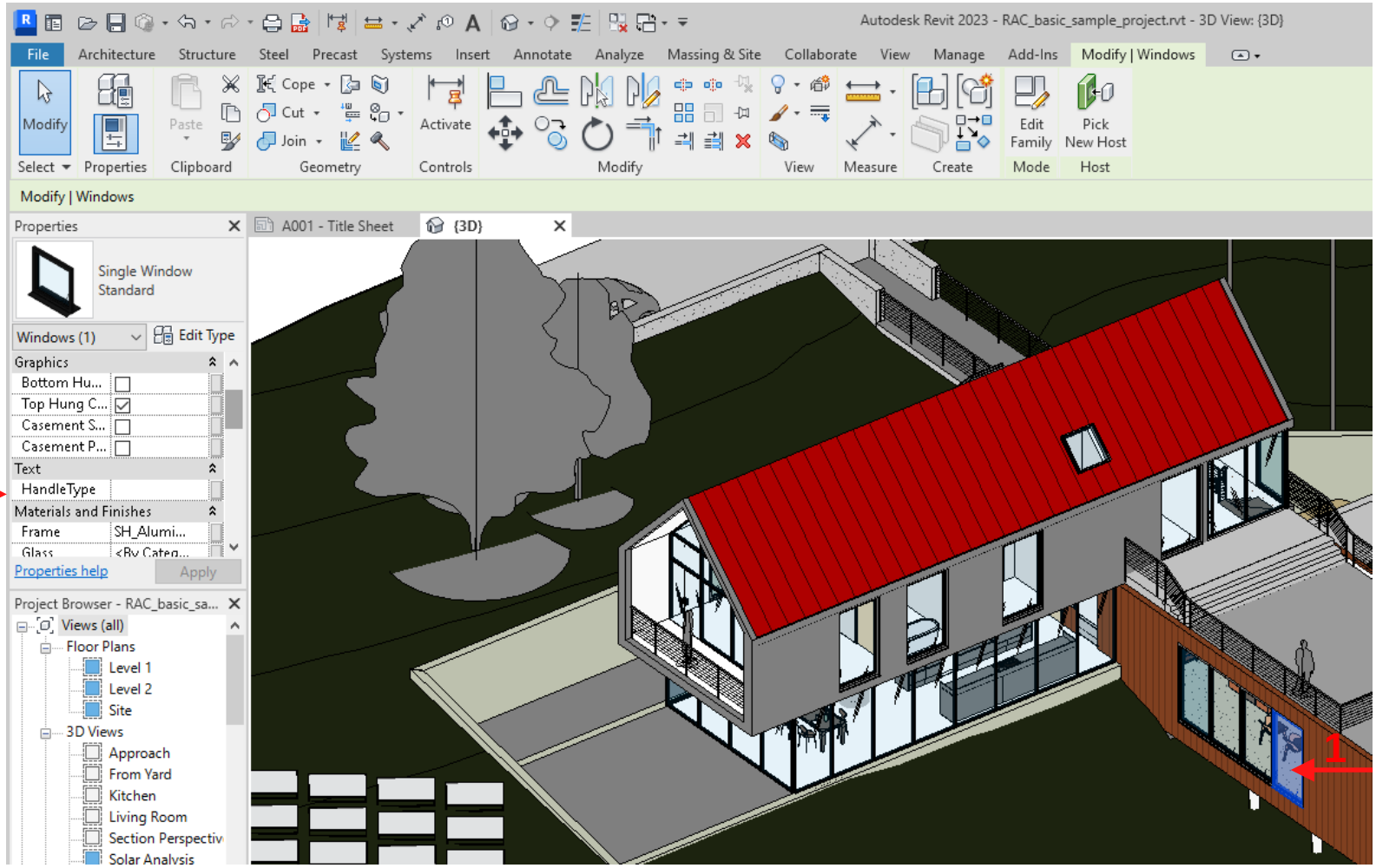
Assigning Shared Parameters



Assigning Shared Parameters



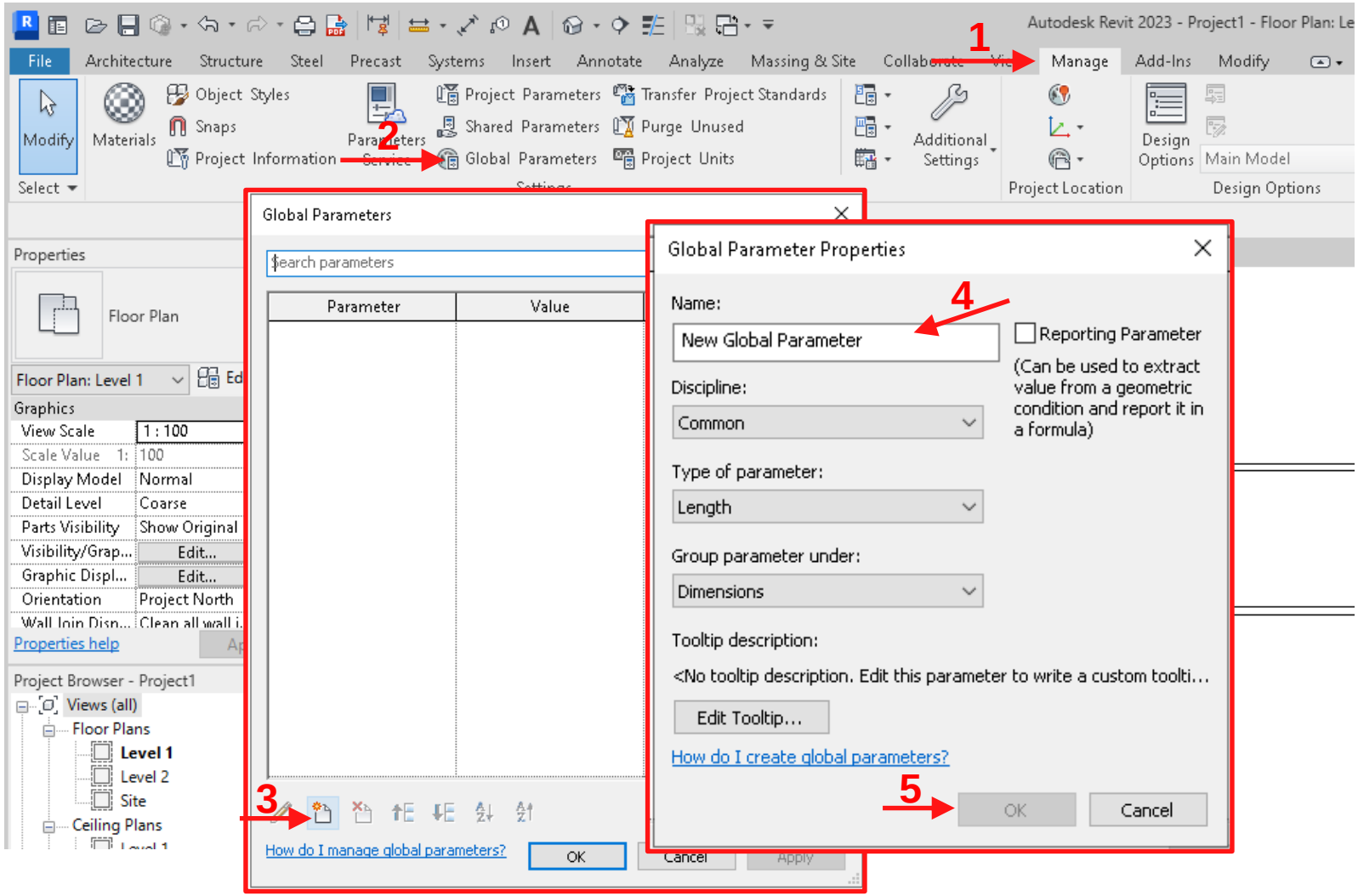
Assigning Shared Parameters



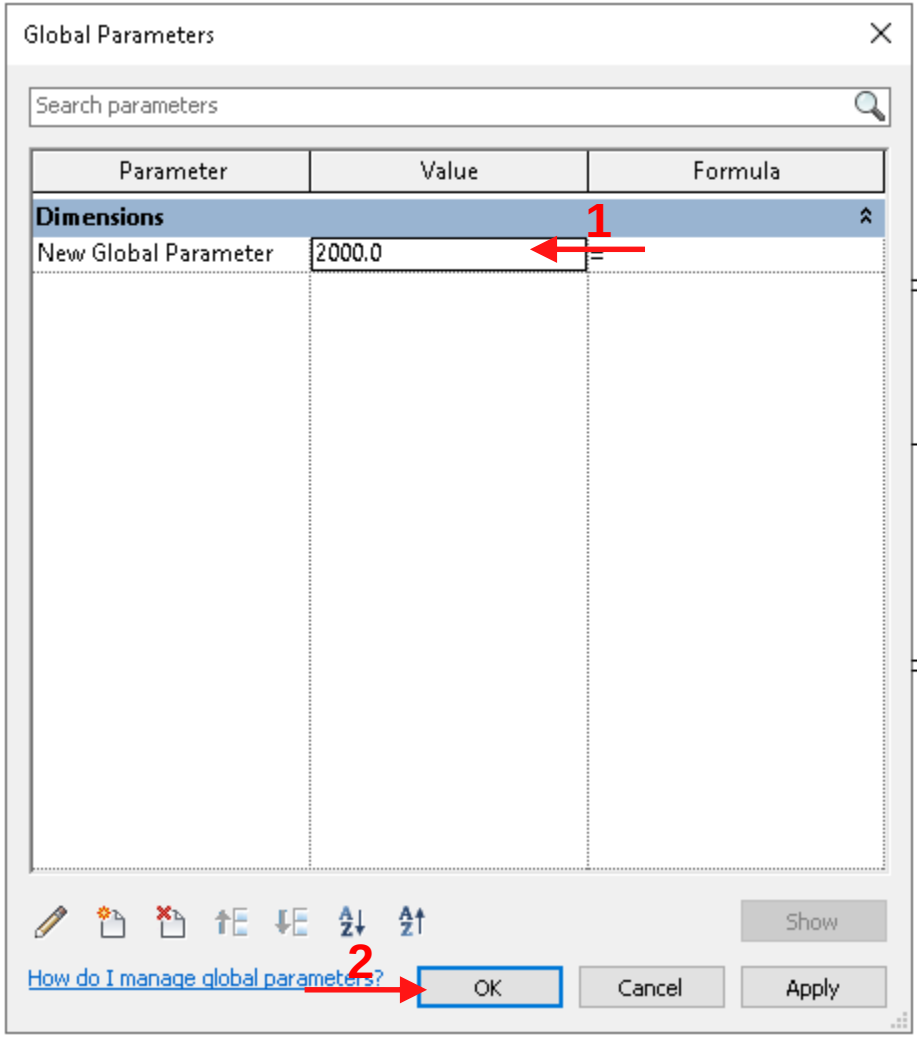
Global Parameters

- 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!

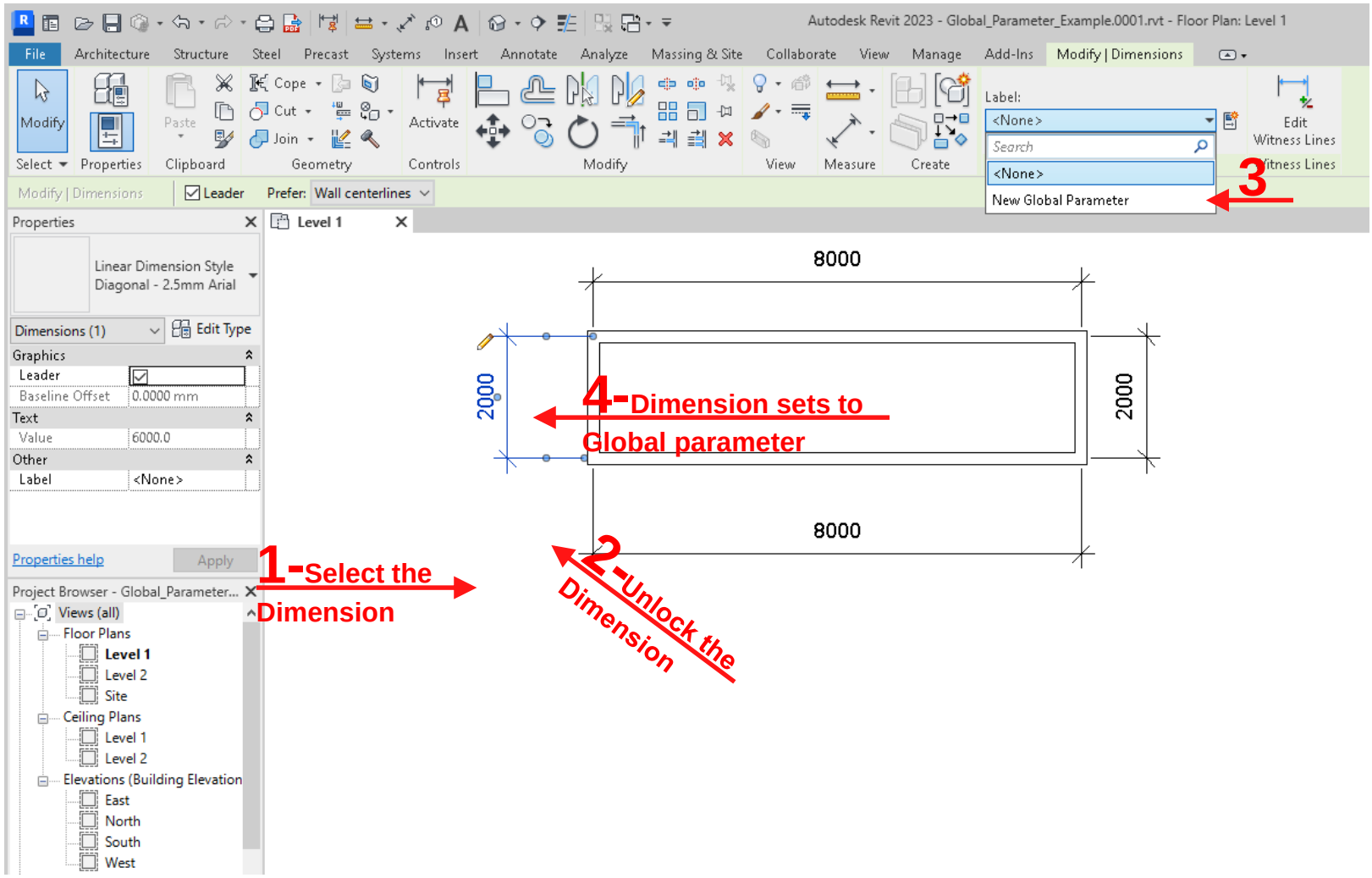
Defining Global Parameters



Defining Global Parameters



Using Global Parameters



Thanks