



UNIVERSITÀ DI PARMA

DIPARTIMENTO DI INGEGNERIA E ARCHITETTURA
CORSO DI LAUREA IN ARCHITETTURA E CITTA' SOSTENIBILI

**BUILDING INFORMATION MODELING:
DIGITAL MODELING OF ARCHITECTURE
DIGITAL VISUALIZATION OF PROJECT**

A.A. 2022-2023, Prof. Sandra Mikolajewska
18/04/2023

THE SLIDES PRESENTED IN THE CLASSROOM ARE INTENDED ONLY AS A REFERENCE FOR THE LECTURE.

THE CONTENT OF THESE SLIDES IN NO WAY REPLACES THE RECOMMENDED REFERENCE BIBLIOGRAPHY.



TOPICS OF TODAY: Revit. Part 3.

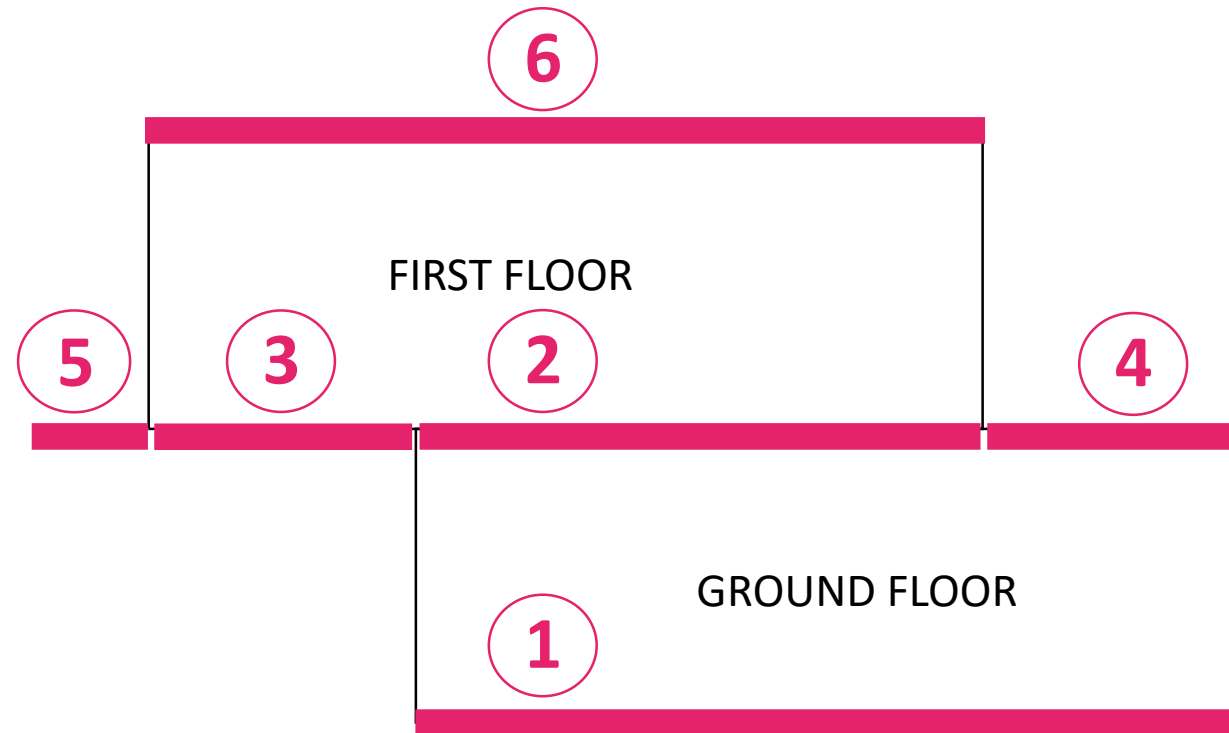
- HOW TO MANAGE ROOMS AND SCHEDULES;
- HOW TO MODIFY AND MANAGE DOOR/WINDOW;
- HOW TO CHANGE A SPECIFIC NODE VISUALIZATION [CUT PROFILE COMMAND];
- HOW TO MANAGE ROOFS;



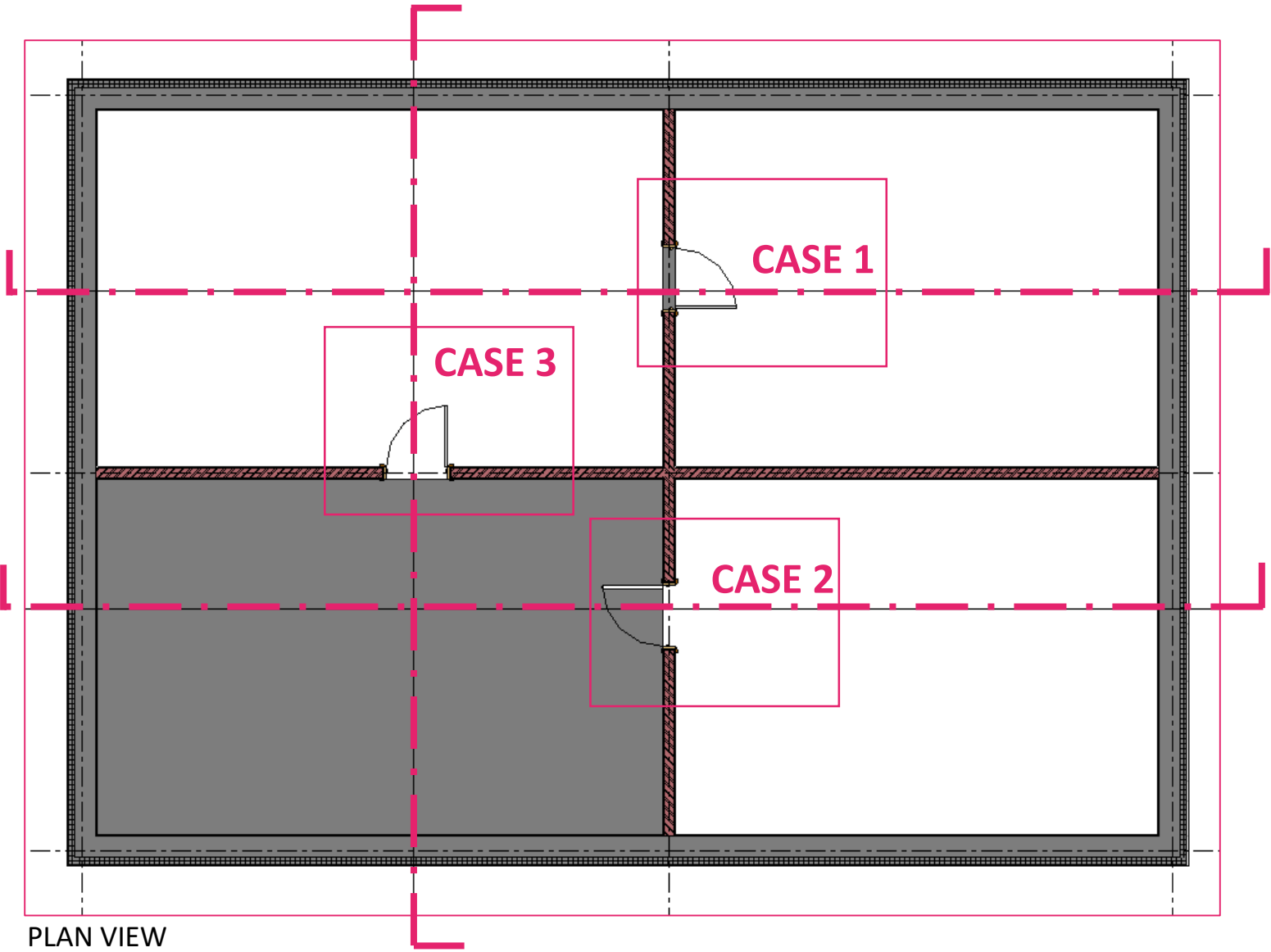
REFERENCE FILE

- UNIT OF REFERENCE: cm
- BUILDING OF 2 FLOORS [GROUND FLOOR PLAN, FIRST FLOOR PLAN]
- 6 LEVELS [-017, 000, +293, +310, +603, +620]
- 6 GRIDS [3 HORIZONTAL, 3 VERTICAL]
- 4 ROOMS SPACES ON EACH FLOOR
- 2 CUSTOMIZED TYPES OF FLOORS
- 2 CUSTOMIZED TYPES OF WALLS





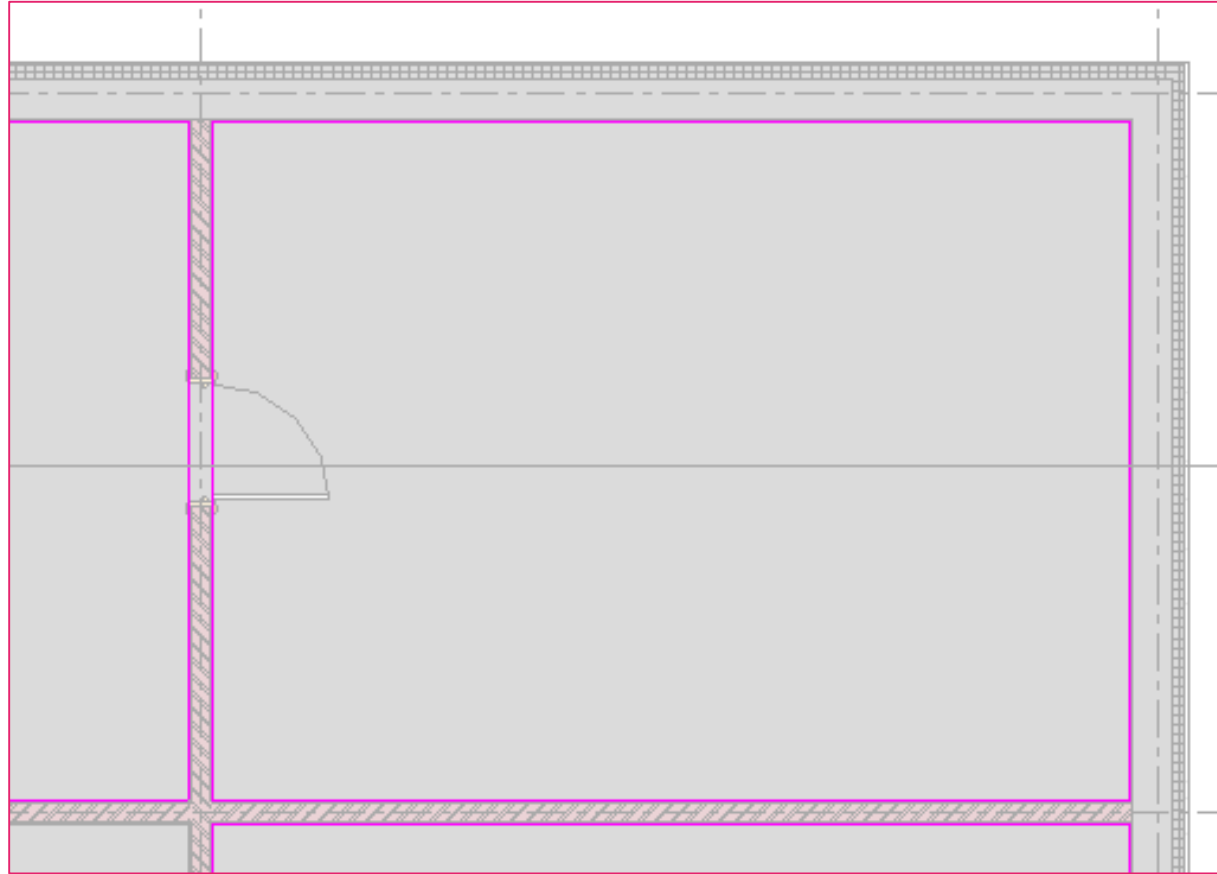
CONCEPTUAL SCHEME OF A BUILDING



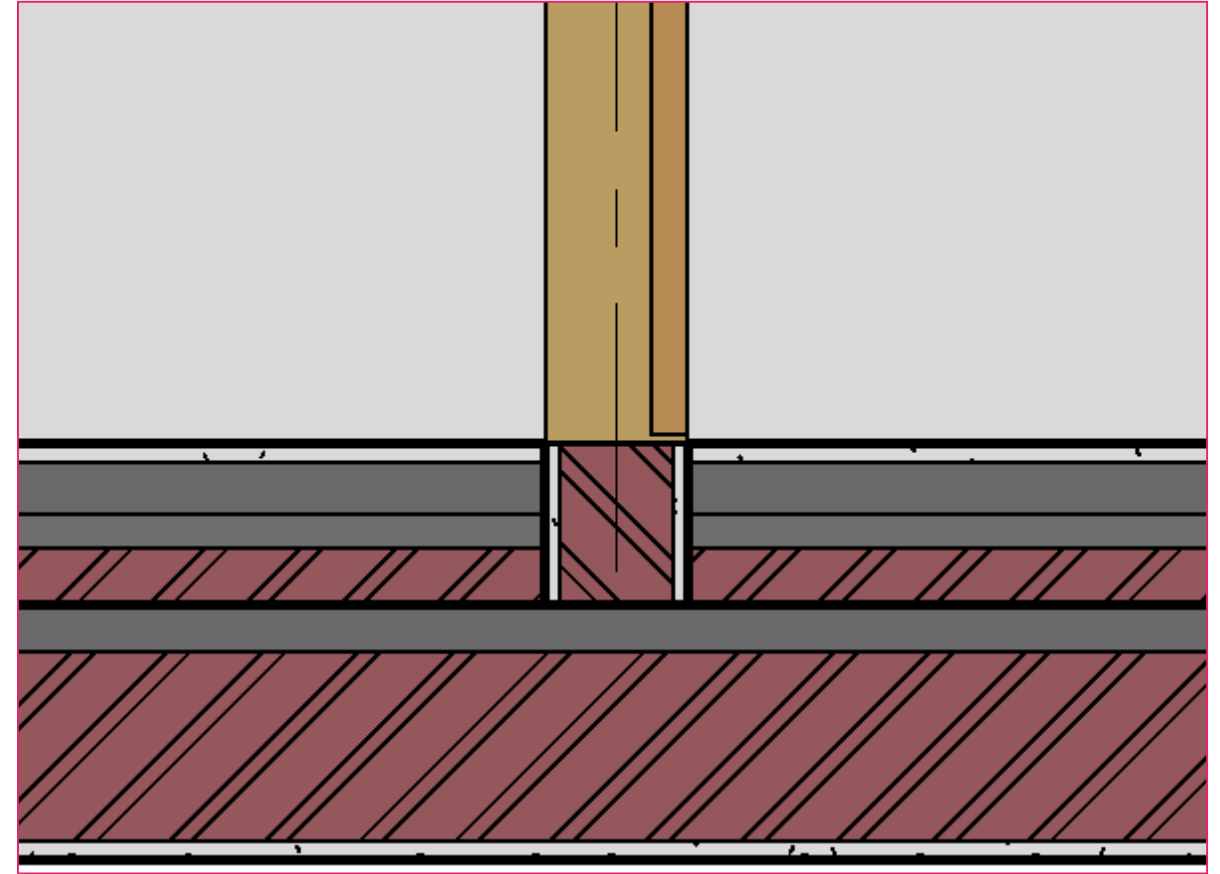
PLAN VIEW

CASE 1: WRONG INTERSECTION

THE PERIMETER OF THE FLOOR DOES NOT GO UNDER THE DOOR.



PLAN VIEW



SECTION VIEW



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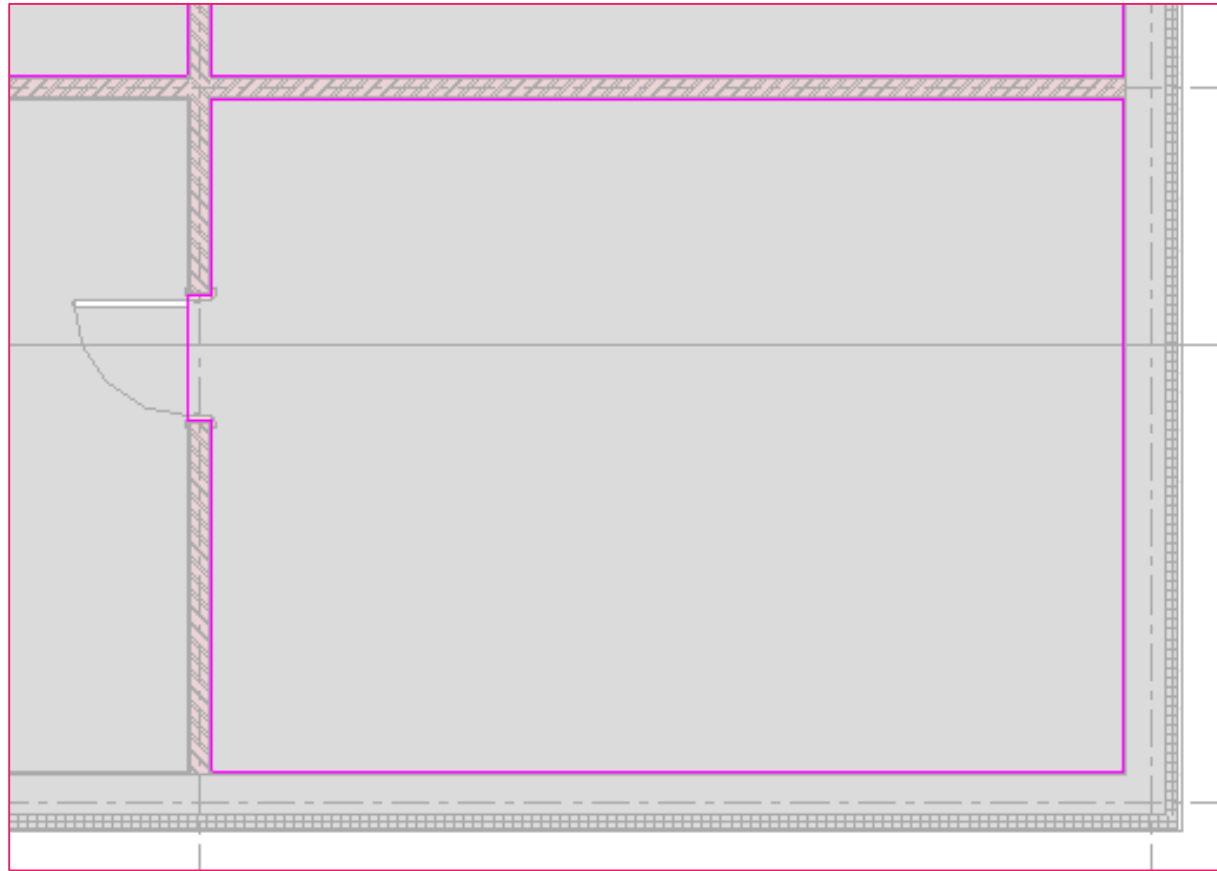
CORSO DI LAUREA IN ARCHITETTURA E CITTA' SOSTENIBILI

**BUILDING INFORMATION MODELING:
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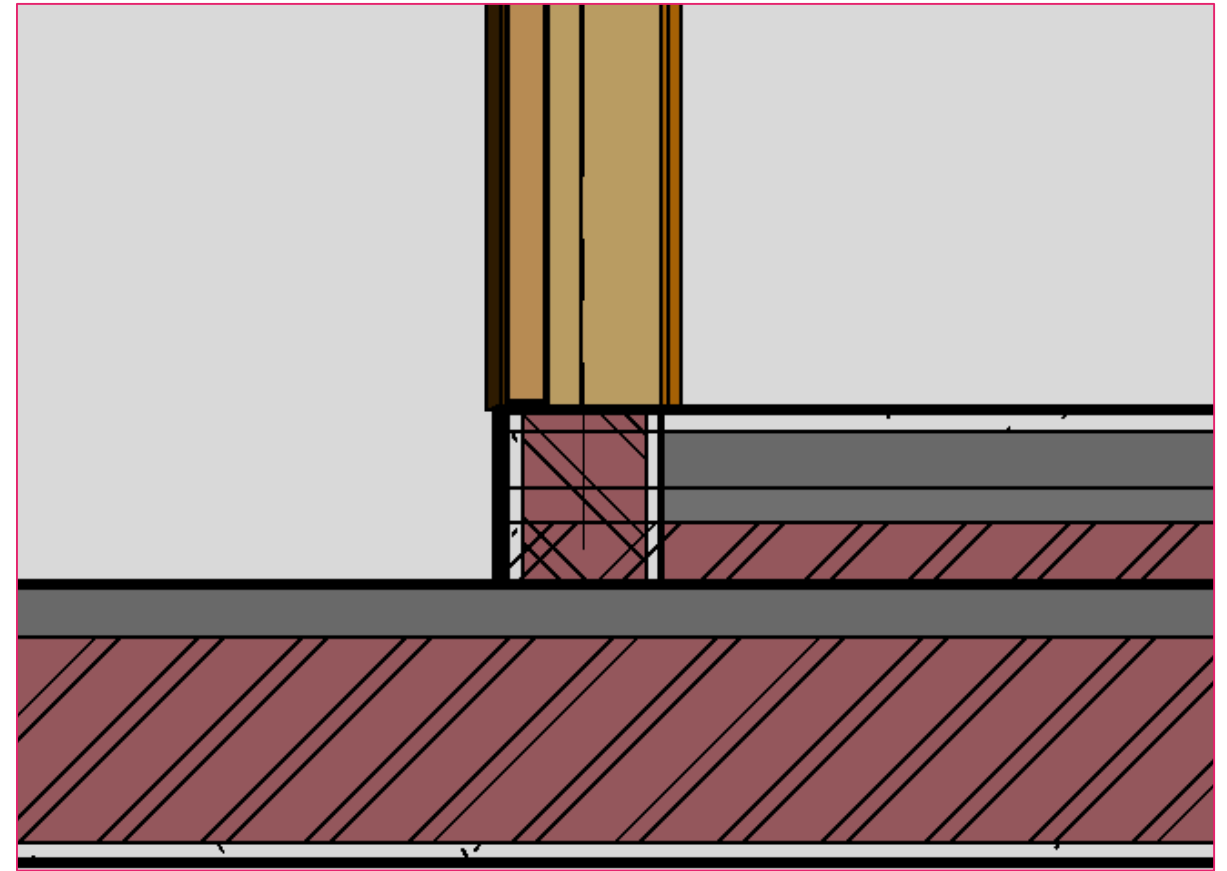
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CASE 2: WRONG INTERSECTION

THE PERIMETER OF THE FLOOR GOES UNDER THE DOOR, BUT THE FLOOR IS **NOT JOINED** TO THE DOOR.



PLAN VIEW

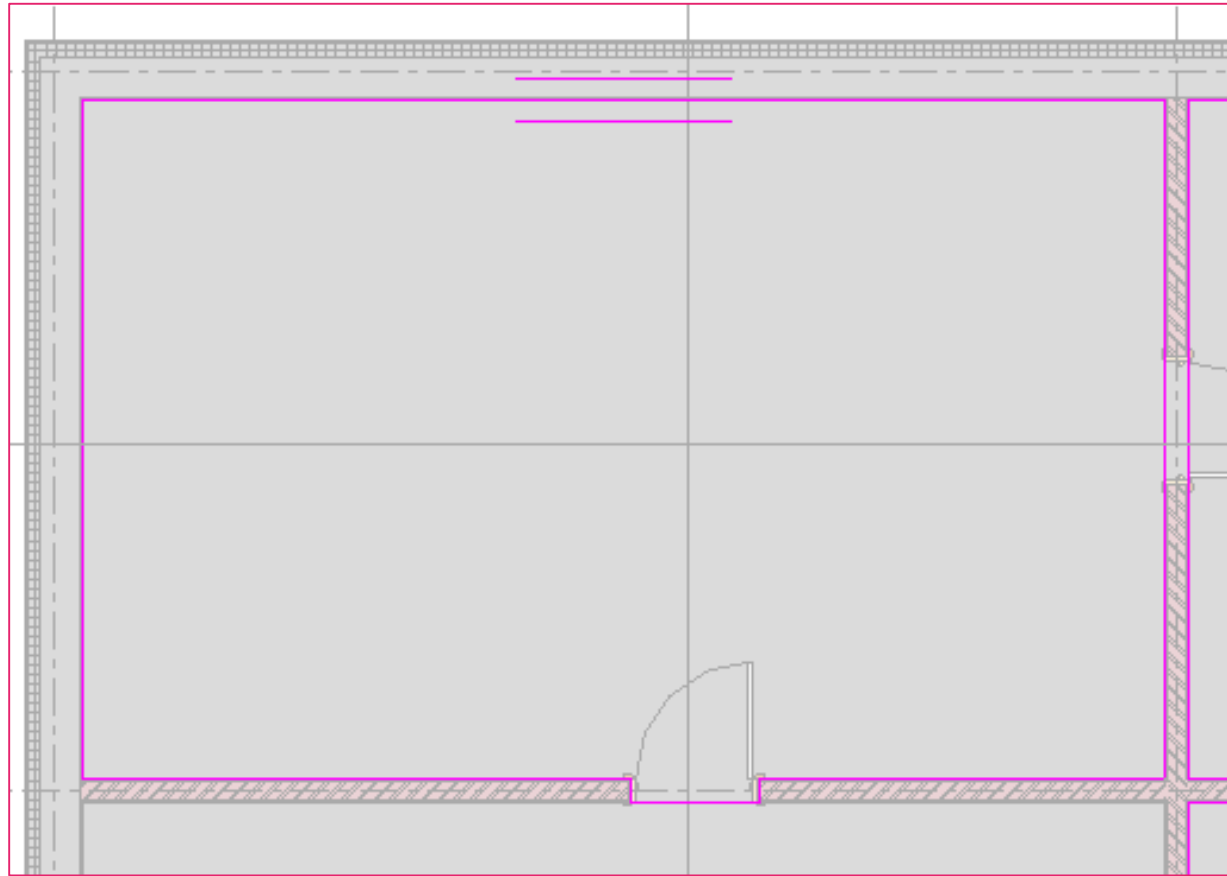


SECTION VIEW

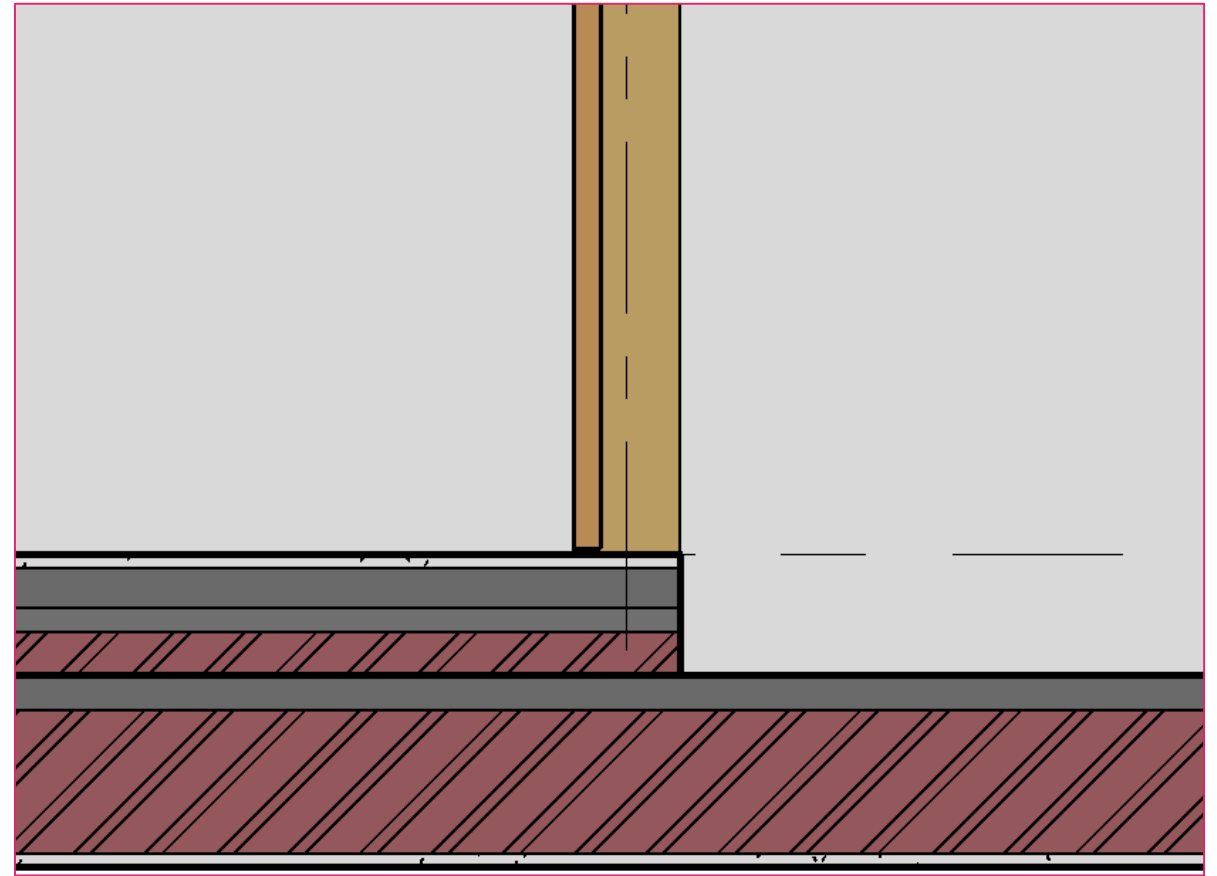


CASE 3: CORRECT INTERSECTION

THE PERIMETER OF THE FLOOR GOES UNDER THE DOOR AND THE FLOOR IS **JOINED** TO THE DOOR.



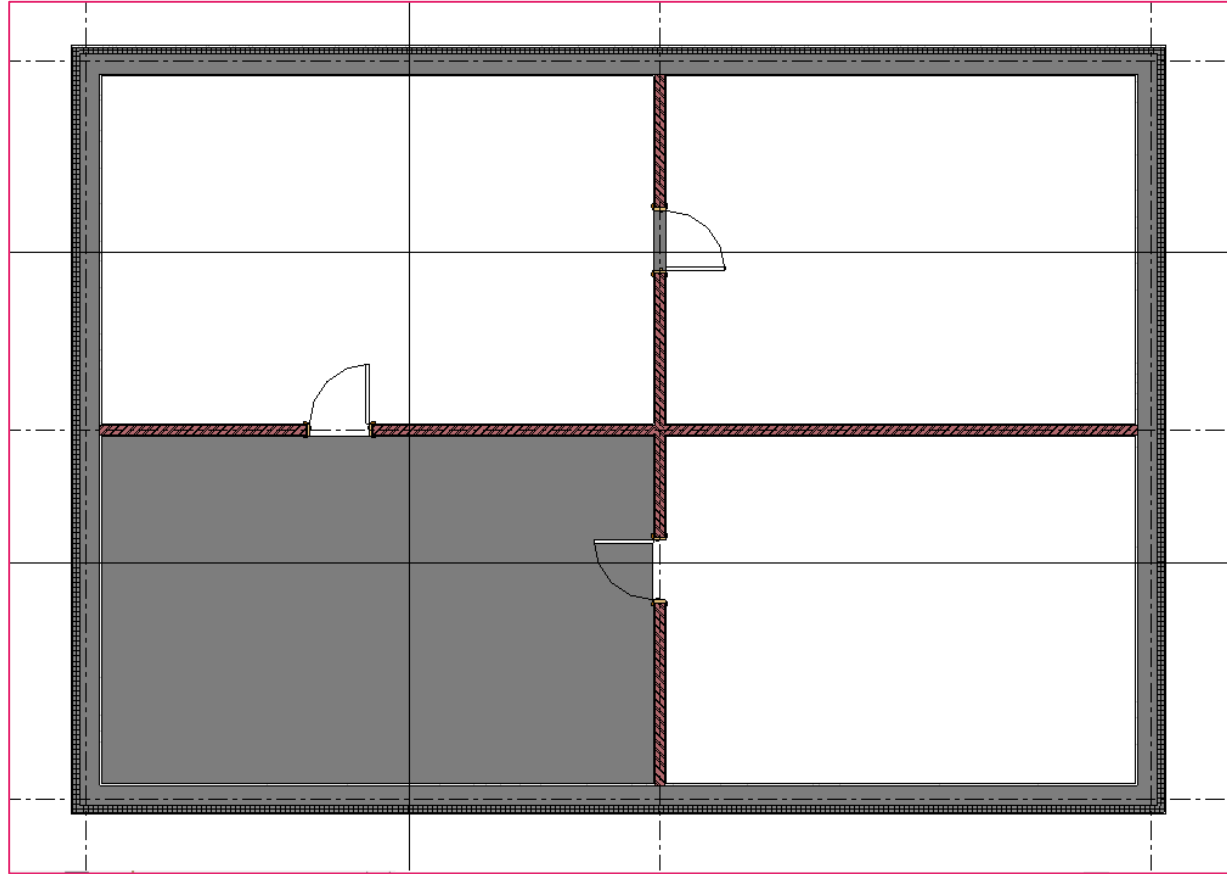
PLAN VIEW



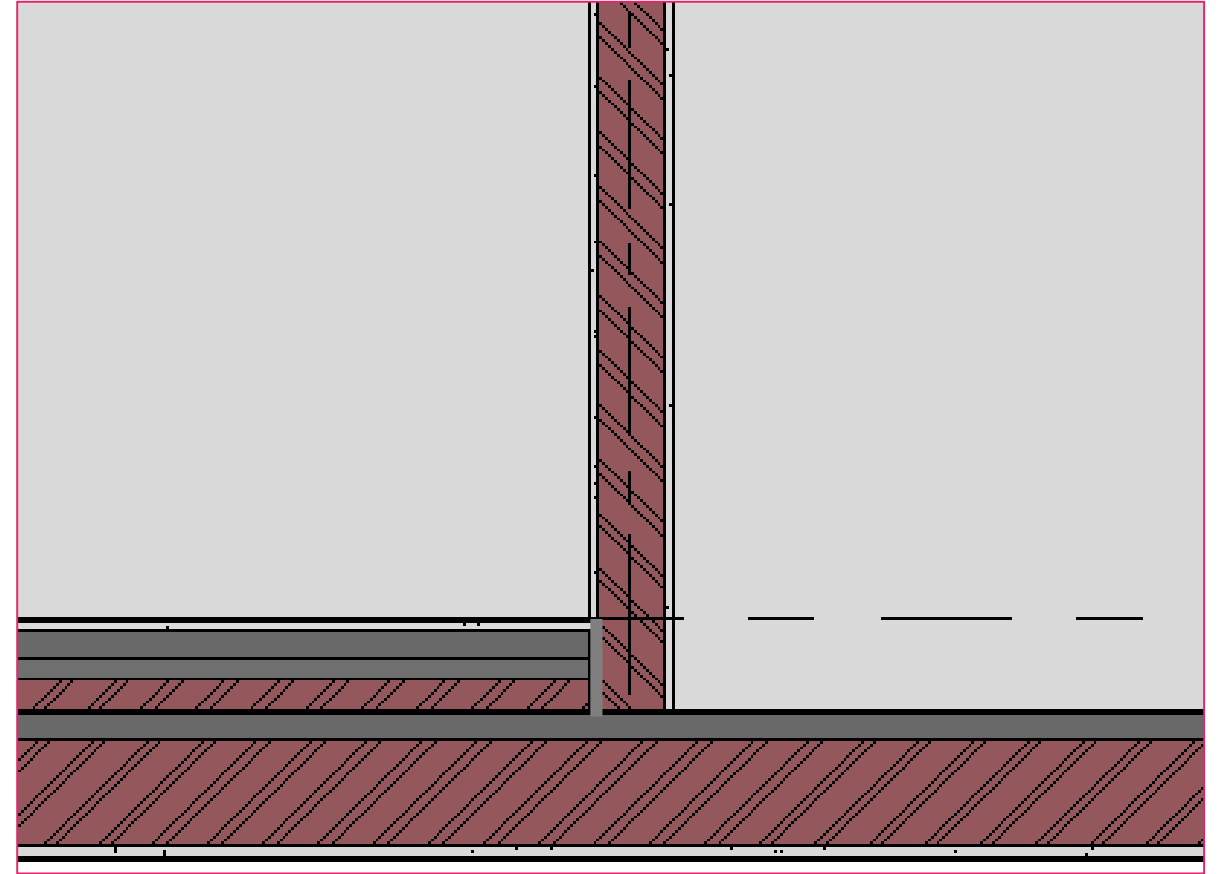
SECTION VIEW

CASE 3: CORRECT INTERSECTION

THE PERIMETER OF THE FLOOR GOES UNDER THE DOOR, THE FLOOR IS JOINED TO THE DOOR AND **ALIGNED** CORRECTLY THE FLOOR. BY MOVING THE DOOR, THE FLOOR WILL CHANGE AUTOMATICALLY.



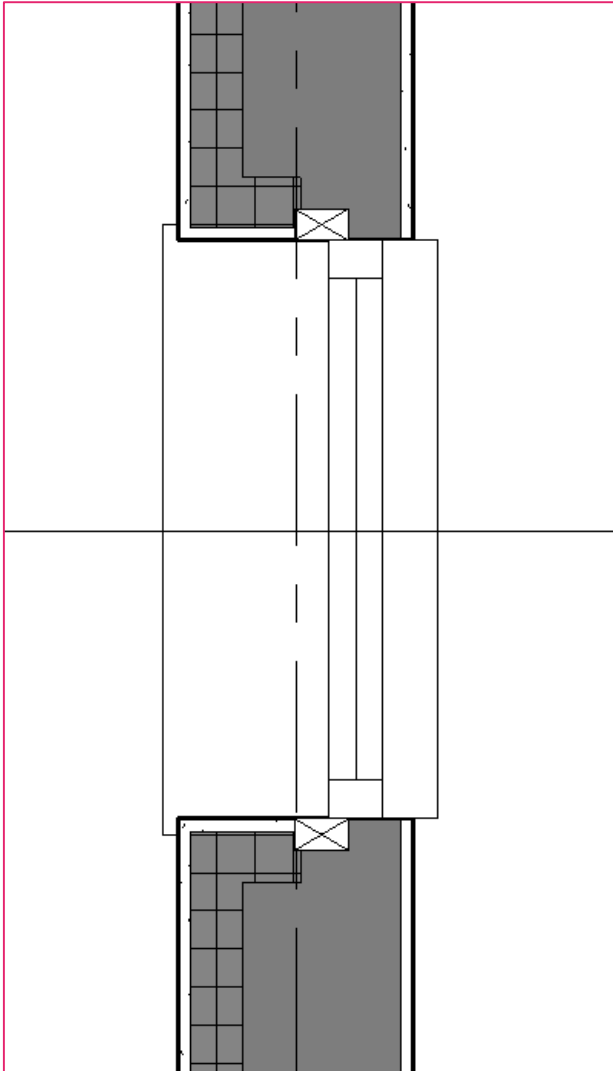
PLAN VIEW



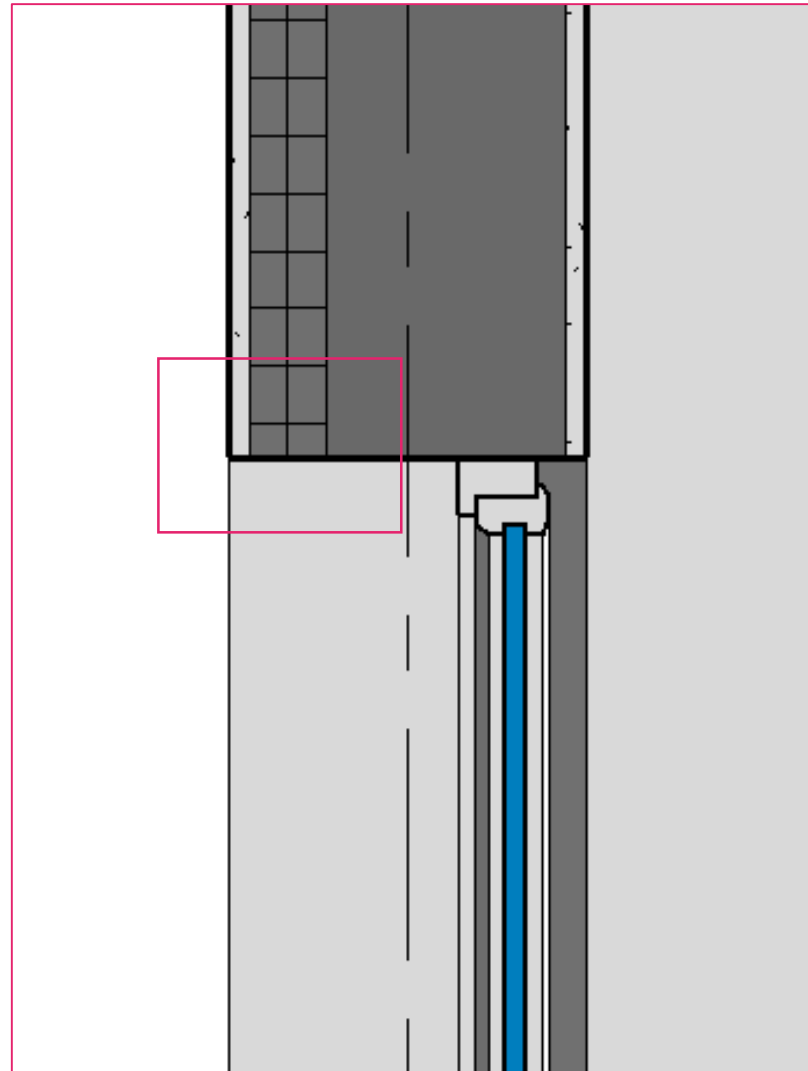
SECTION VIEW



CUT PROFILE COMMAND



PLAN VIEW



SECTION VIEW



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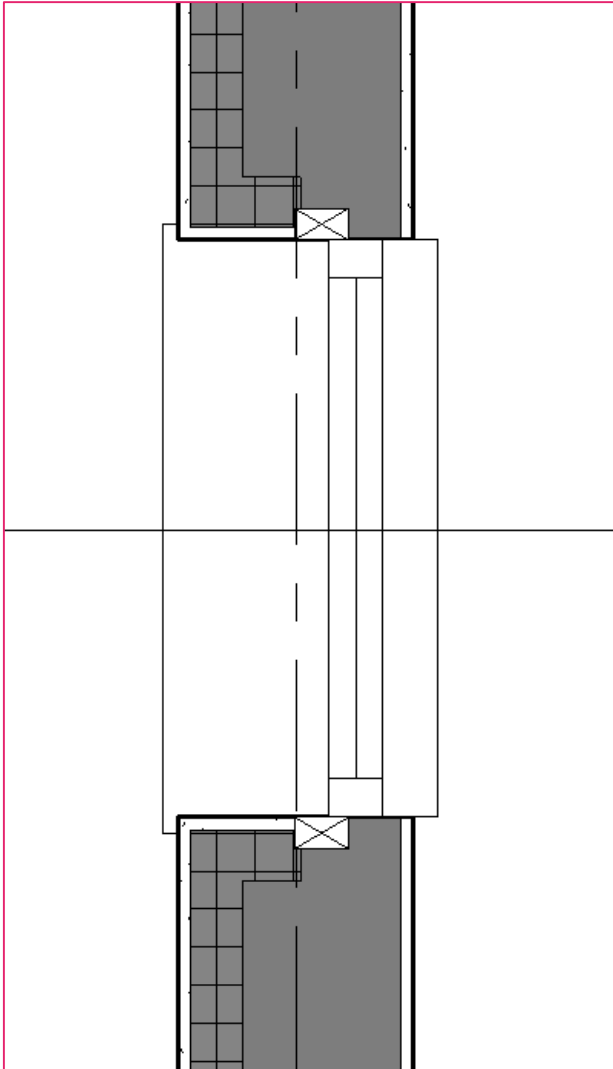
DIPARTIMENTO DI INGEGNERIA E ARCHITETTURA

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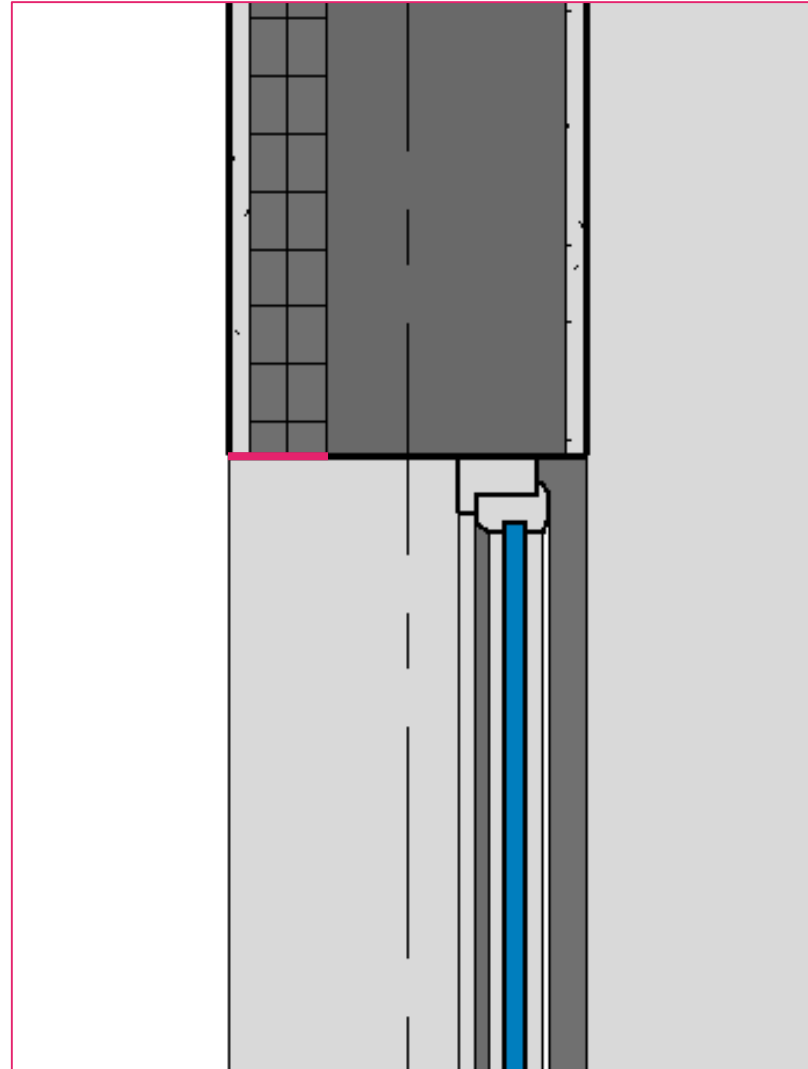
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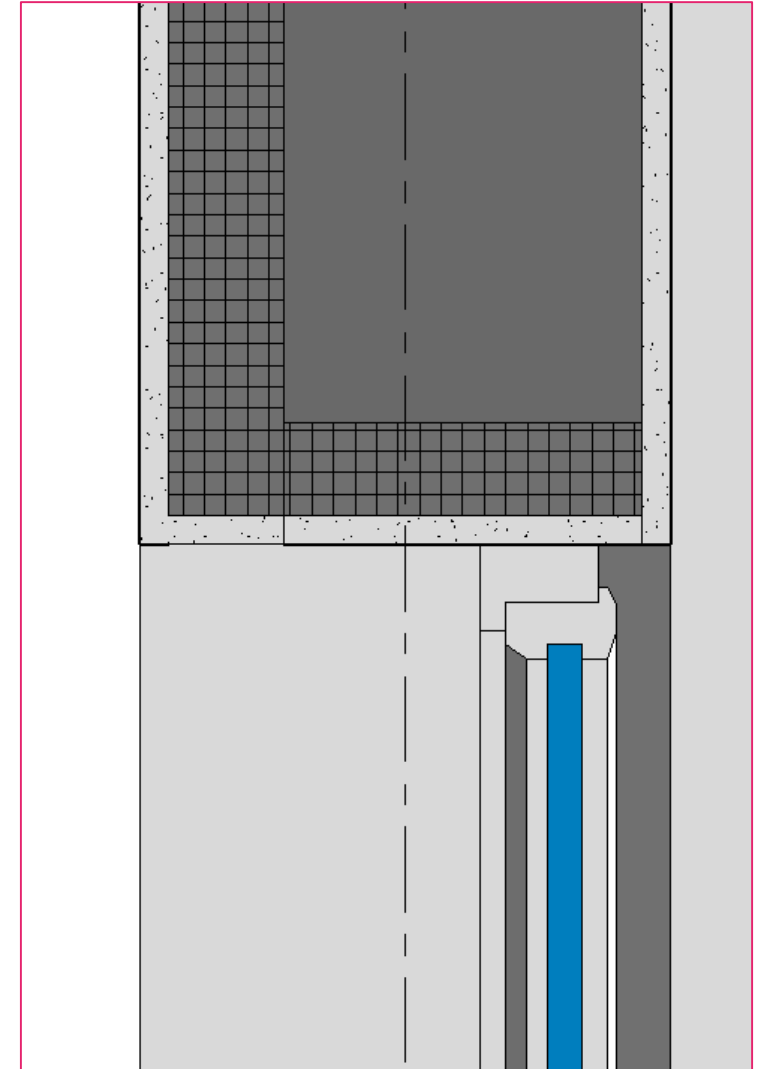
CUT PROFILE COMMAND



PLAN VIEW



SECTION VIEW



SECTION VIEW



Properties

Sez Long 0_GFP_000

Rooms (1) Edit Type

Constraints

Level	0_GFP_000
Upper Limit	1_FFP_310
Limit Offset	0.00
Base Offset	0.00

Dimensions

Area	28.154 m ²
Perimeter	2176.00
Unbounded Height	310.00
Volume	Not Computed
Computation Height	0.00

Identity Data

Number	5
Name	Room
Image	
Comments	
Occupancy	
Department	

Properties help Apply

Project Browser - Project_28.03

- Views (all)
- Structural Plans
- Floor Plans
 - 0_-17 cm
 - 0_GFP_000
 - 1_-202

ROOM

ROOM TAG

PLAN VIEW



The screenshot displays a software interface for room management. On the left, a 'Properties' panel shows details for a room on level '0_GFP_000'. The 'Volume' property is currently 'Not Computed'. A dialog box titled 'Area and Volume Computations' is open, allowing the user to select computation options. The 'Area Schemes' tab is active, showing 'Volume Computations' set to 'Areas and Volumes' and 'Room Area Computation' set to 'At wall finish'.

Properties Panel:

Rooms (1)	
Constraints	
Level	0_GFP_000
Upper Limit	1_FFP_310
Limit Offset	0.00
Base Offset	0.00
Dimensions	
Area	28.154 m ²
Perimeter	2176.00
Unbounded Height	310.00
Volume	Not Computed
Computation Height	0.00
Identity Data	
Number	5
Name	Room
Image	
Comments	
Occupancy	
Department	

Area and Volume Computations Dialog:

Computations Area Schemes

Volume Computations

Volumes are computed at finish faces.

- Areas only (faster)
- Areas and Volumes

Room Area Computation

- At wall finish
- At wall center
- At wall core layer
- At wall core center

Buttons: OK, Cancel, Help

PLAN VIEW



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The screenshot displays a BIM software interface with several key components:

- Room Properties Panel (Left):** Shows a table of properties for a room. The 'Volume' field is highlighted in red and contains the value 74.889 m³. Other fields include Level (0_GFP_000), Upper Limit (1_FFP_310), Area (28.154 m²), and Perimeter (2176.00).
- Floors (1) Properties Panel (Middle):** A smaller panel showing floor properties. The 'Room Bounding' checkbox is checked and highlighted in red. Other fields include Level (1_FFP_310) and Height Offset From Le... (-17.00).
- Section View (Right):** A vertical cross-section of a building. A blue room is shown with a blue crosshair at its center. The room is bounded by a floor (red hatched) and a ceiling (grey). Blue arrows point to the floor and ceiling levels.
- Elevation Markers (Top and Bottom):** Four circular markers with text labels: 2_SFP_+625 (+340.0 cm), 2_SFP_+622 (+310.0 cm), 1_-+293 (+293.0 cm), and 2_SFP_+621 (+0.0 cm). A blue circular marker at the bottom is labeled 0_-17 cm (-17.0 cm).

SECTION VIEW



$$\text{Volume/Area} = \text{Room height}$$
$$74,889 \text{ m}^3 / 28,154 \text{ m}^2 = 2,66 \text{ m}$$

The screenshot displays a BIM software interface with three main panels:

- Left Panel (Properties):** Shows the 'Rooms (1)' properties. The 'Unbounded Height' is set to 310.00, and the 'Volume' is 74.889 m³. The 'Identity Data' section shows the room number as 5 and the name as 'Room'. A 'Project Browser' at the bottom left shows the current view as 'Sez Long1'.
- Middle Panel (Section View):** Shows a vertical section through a room. It features four elevation markers: 2_SFP_+625 (+340.0 cm), 2_SFP_+622 (+310.0 cm), 1_+293 (+293.0 cm), and 2_SFP_+621 (+0.0 cm). A 'Properties' dialog box is open, showing the 'Floor' as 'Floor_27' and the 'Room Bounding' checkbox checked.
- Right Panel (3D Model):** Shows a 3D perspective view of the room, which is a blue rectangular prism. The room is bounded by a red hatched floor and a grey ceiling. Blue arrows indicate the height of the room.

SECTION VIEW

Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance Embedded Schedule

Select available fields from:
Rooms

Parameter Name Search:

Filter Available Fields

Available fields: 20 items

- Area
- Base Finish
- Base Offset
- Ceiling Finish
- Comments
- Count
- Department
- Floor Finish
- IfcGUID
- Image
- Level
- Limit Offset
- Name
- Number
- Occupancy
- Perimeter
- Unbounded Height
- Upper Limit
- Volume
- Wall Finish

Scheduled fields (in order):

Include elements in links

OK Cancel Help

<Room Schedule 1>

A	B	C	D
Area	Level	Number	Name
28 m ²	0_GFP_000	5	Room

Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance Embedded Schedule

Select available fields from:
Rooms

Parameter Name Search:

Filter Available Fields

Available fields: 15 items

- Base Finish
- Base Offset
- Ceiling Finish
- Comments
- Count
- Department
- Floor Finish
- IfcGUID
- Image
- Limit Offset
- Occupancy
- Perimeter
- Unbounded Height
- Upper Limit
- Wall Finish

Scheduled fields (in order):

- Area
- Level
- Number
- Name
- Volume

Revit

Inconsistent Units

Chiudi

OK Cancel Help

Calculated Value

Name: H_net

Formula Percentage

Discipline: Common

Type: Number

Formula: Volume/Area

OK Cancel Help

SCHEDULES_CALCULATED PARAMETERS

Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance Embedded Schedule

Select available fields from: Rooms

Parameter Name Search:

Filter Available Fields

Available fields: 15 items

- Base Finish
- Base Offset
- Ceiling Finish
- Comments
- Count
- Department
- Floor Finish
- IfcGUID
- Image
- Limit Offset
- Occupancy
- Perimeter
- Unbounded Height
- Upper Limit
- Wall Finish

Scheduled fields (in order):

- Area
- Level
- Number
- Name
- Volume
- H_net

Include elements in links

OK Cancel Help

Calculated Value

Name: H_net

Formula Percentage

Discipline: Common

Type: Number

Formula: (Volume/1)/Area

OK Cancel Help

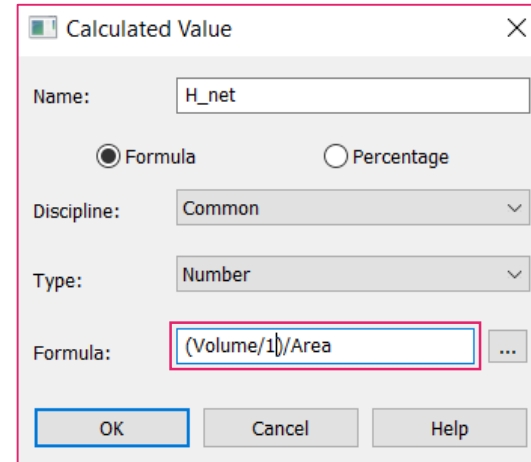
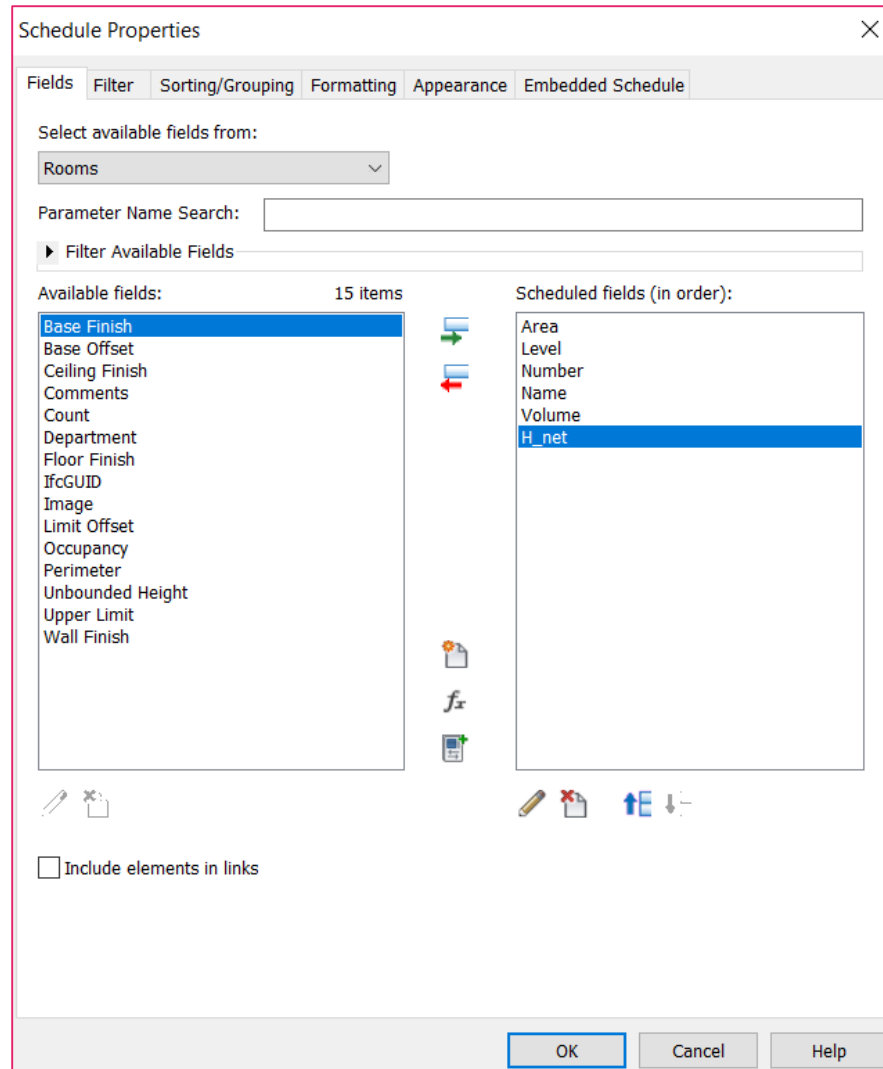
<https://www.autodesk.com/support/technical/article/caas/sfdc/articles/sfdcarticles/Inconsistent-units-when-creating-formula-for-calculation-in-a-family-in-Revit.html>

<Room Schedule 1>

A	B	C	D	E	F
Area	Level	Number	Name	Volume	H_net
28 m ²	0_GFP_000	5	Room	74.89 m ³	266



SCHEDULES_CALCULATED PARAMETERS



<https://www.autodesk.com/support/technical/article/caas/sfdcarticles/sfdcarticles/Inconsistent-units-when-creating-formula-for-calculation-in-a-family-in-Revit.html>

THE MINIMUM HEIGHT OF THE ROOM (FROM THE SURFACE OF THE FLOOR TO THE CEILING) SHOULD BE NOT LESS THAN 2.70 M ("LIVING ROOMS").

<Room Schedule 1>					
A	B	C	D	E	F
Area	Level	Number	Name	Volume	H_net
28 m ²	0_GFP_000	5	Room	74.89 m ³	266

SCHEDULES_NEW PROJECT PARAMETERS

<Room Schedule

A	B	C	D
Area	Level	Number	Name
28 m²	0_GFP_000	5	Room

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.>
Edit Tooltip...

Type
 Instance

Values are aligned per group type
 Values can vary by group instance

Add to all elements in the selected categories

Categories

Filter list:

Hide un-checked categories

- Levels
- Lighting Fixtures
- Lines
- Mass
- Materials
- Mechanical Equipment
- Medical Equipment
- Model Groups
- Parking
- Parts
- Planting
- Plumbing Fixtures
- Project Information
- Railings
- Ramps
- Roads
- Roofs
- Rooms
- RVT Links
- Schedules

Check All Check None

OK Cancel Help

SCHEDULES_NEW PROJECT PARAMETERS

Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance Embedded Schedule

Select available fields from:
Rooms

Parameter Name Search:

Filter Available Fields

Available fields: 15 items

- Base Finish
- Base Offset
- Ceiling Finish
- Comments
- Count
- Department
- Floor Finish
- IfcGUID
- Image
- Limit Offset
- Occupancy
- Perimeter
- Unbounded Height
- Upper Limit
- Wall Finish

Scheduled fields (in order):

- Area
- Level
- Number
- Name
- Volume
- H_net
- Accessory room

Include elements in links

OK Cancel Help

<Room Schedule 1>

A	B	C	D	E	F	G
Area	Level	Number	Name	Volume	H_net	Accessory room
28 m²	0_GFP_000	5	Room	74.89 m³	266	<input checked="" type="checkbox"/>

PROPERTIES PANEL

Identity Data

Number	1
Name	Room
Image	
Comments	
Occupancy	
Department	
Base Finish	
Ceiling Finish	
Wall Finish	
Floor Finish	

Phasing

Phase	New Construction
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Other

Accessory room	<input checked="" type="checkbox"/>
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TRY TO ADD NEW PROJECT PARAMETERS TO YOUR PROJECT
(FOR EXAMPLE: HABITABLE ROOMS AND NON-HABITABLE ROOMS AND SO ON).

