



# SMART WALLS

MANAGE WALLS QUICKLY AND EASILY



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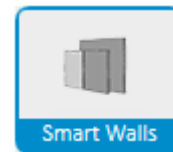
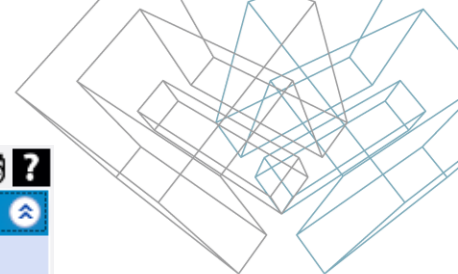
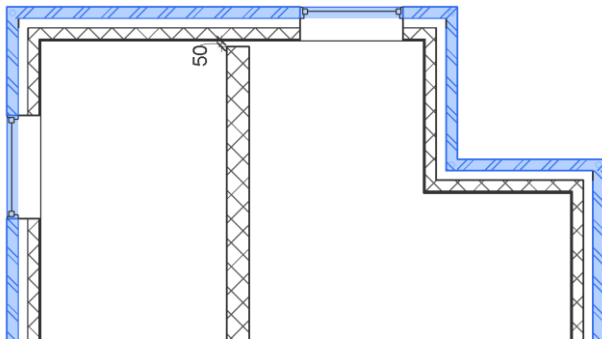
# OVERVIEW

## Smart Walls

# Smart Walls

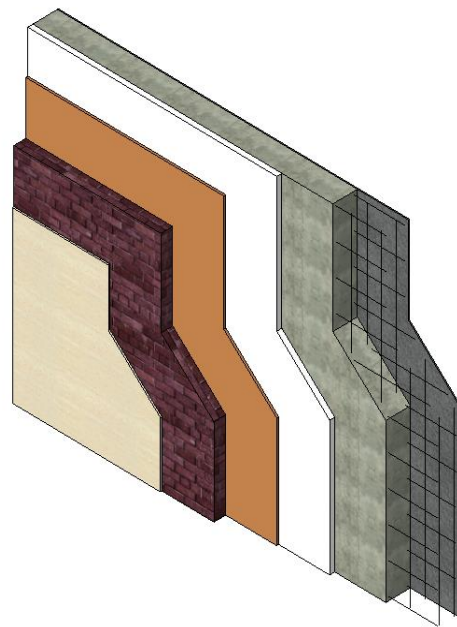
## Working with Walls

**Smart Walls** is a powerful add-on for wall management in Revit®, allowing you to rapidly disassemble layers into different wall types, fully control joins and gap distances, insert gravity points, split walls by grids, and add orientation, elevation, or coordinate selected walls.

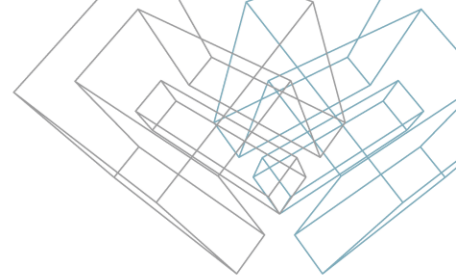


# Frequently Asked Questions

- How to split a wall with layers into different wall segments to make my design workflow more convenient?
- I spend a lot of time changing the joins between walls. How can I manage the joins faster?
- How can I get a gravity centre point of the wall?

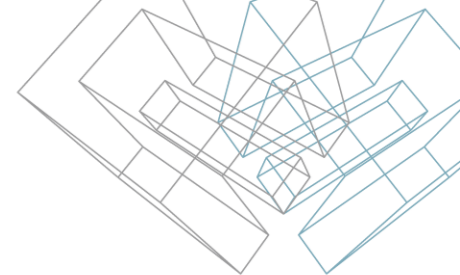


# Powerful Features



- **Decomposes Wall layers** to separate wall types according to user predefined configuration.
- Possibility to **fully control** joins and gap distances between walls.
- Inserts **gravity points**.
- Adds additional information about real wall orientation, elevation, or coordinates.
- **Splits walls** by grids.

## Ideal For



<b>Structural Engineers</b>	Smart Walls lets you to easily split walls at desired points, separate structural and architectural layers (decompose walls), control and update gap distances between them, and add gravity points.
<b>Architects</b>	Smart Walls lets you to easily manage all walls in the project, decompose walls into separate layers for different material handling, and adjust parameters directly in wall management dialog window.





# SMART WALLS

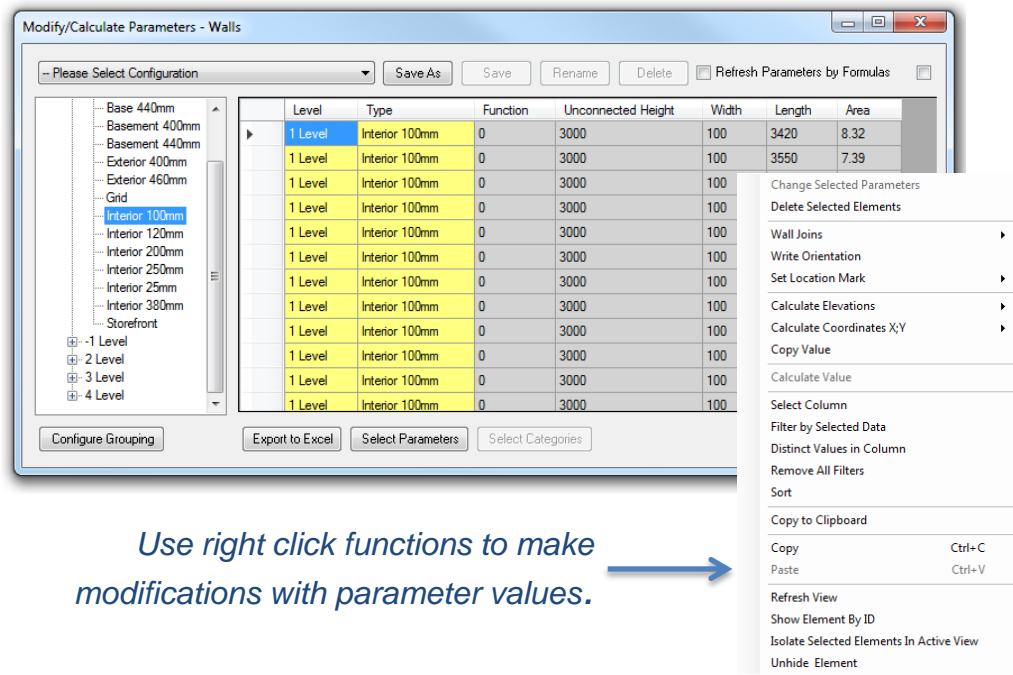
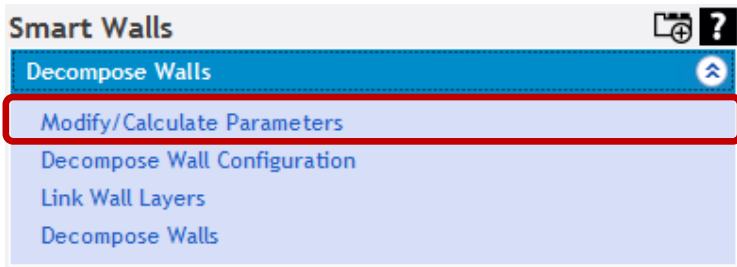
## Decompose Walls

# Smart Walls

# Decompose Walls

## Modify/Calculate Parameters

**Modify/Calculate Parameters** – changes parameters of hundreds of grouped or sorted different walls with one click.

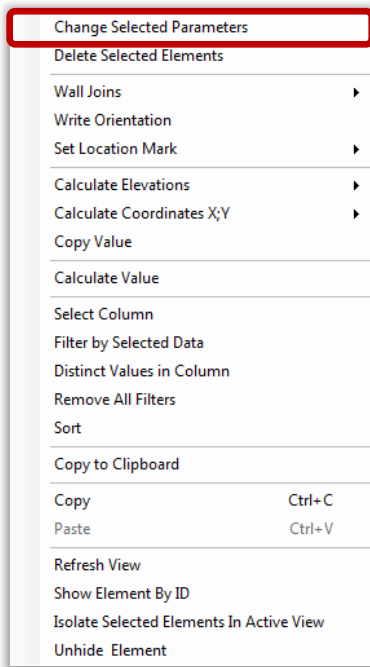
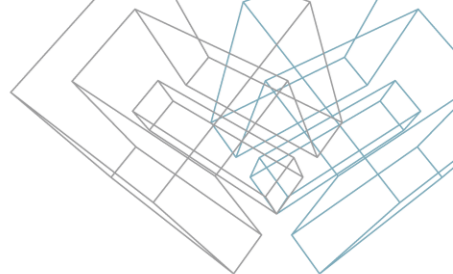




# Smart Walls

## Decompose Walls

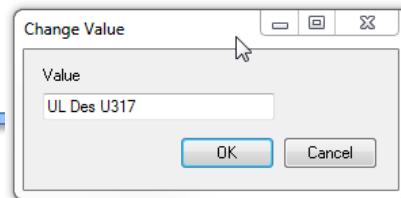
Modify/Calculate Parameters



**Change Selected Parameters** – changes parameter values of selected walls.

	Level	Type	Width	Area	Fire Rating
▶	1 Level	Base 380mm	380	11.83	
	1 Level	Base 380mm	380	87.23	
	1 Level	Base 380mm	380	18.57	
	1 Level	Base 380mm	380	11.35	
	1 Level	Base 440mm	440	15.38	
	1 Level	Base 440mm	440	24.46	
	1 Level	Basement 400mm	400	1.2	
	1 Level	Basement 440mm	440	3.02	
	1 Level	Basement 440mm	440	6.62	
	1 Level	Basement 440mm	440	1.94	

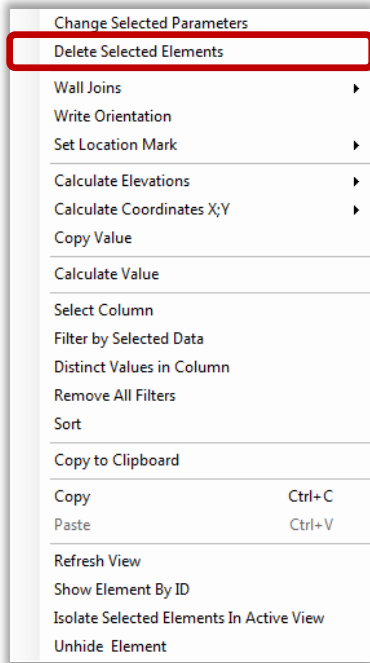
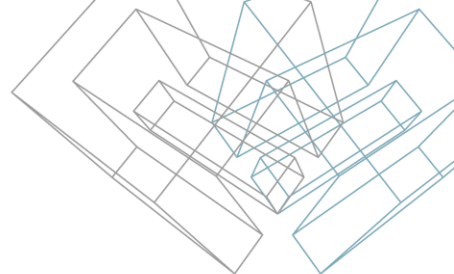
	Level	Type	Width	Area	Fire Rating
▶	1 Level	Base 380mm	380	11.83	UL Des U317
	1 Level	Base 380mm	380	87.23	UL Des U317
	1 Level	Base 380mm	380	18.57	UL Des U317
	1 Level	Base 380mm	380	11.35	UL Des U317
	1 Level	Base 440mm	440	15.38	UL Des U317
	1 Level	Base 440mm	440	24.46	UL Des U317
	1 Level	Basement 400mm	400	1.2	UL Des U317
	1 Level	Basement 440mm	440	3.02	UL Des U317
	1 Level	Basement 440mm	440	6.62	UL Des U317
	1 Level	Basement 440mm	440	1.94	UL Des U317



# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



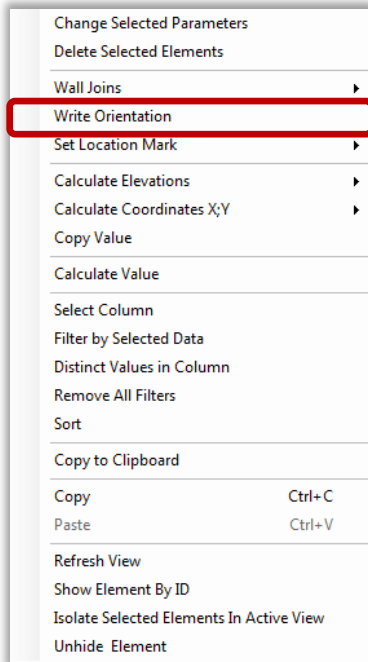
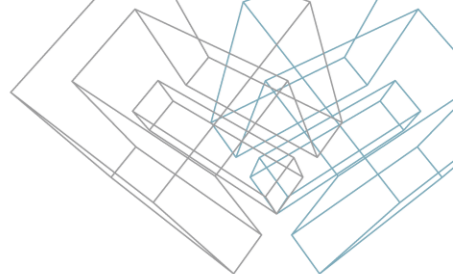
**Delete Selected Elements** – deletes selected walls from the model. The function can be activated by selecting entire rows from the list.

	Level	Type	Width	Area
	3 Level	Interior 100mm	100	8.32
	3 Level	Interior 100mm	100	7.37
	3 Level	Interior 100mm	100	10.68
	3 Level	Interior 120mm	120	5.43

# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



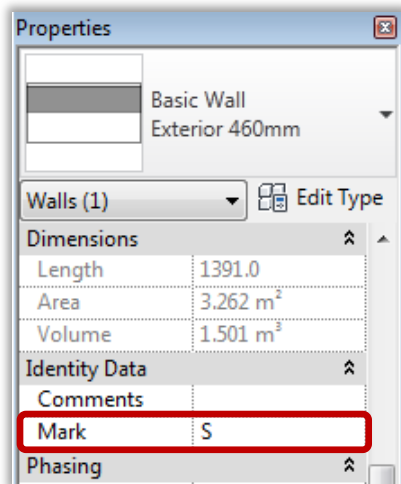
**Write Orientation** – writes orientation (north, south, west, east) for selected walls to user created or selected instance text parameter.

	Level	Type	Width	Area	Mark
	4 Level	Exterior 460mm	460	3.26	
	4 Level	Exterior 460mm	460	3.26	
	4 Level	Interior 100mm	100	7.05	
	4 Level	Interior 100mm	100	5.37	
	4 Level	Interior 100mm	100	2.29	
	4 Level	Interior 100mm	100	12.22	



	Level	Type	Width	Area	Mark
	4 Level	Exterior 460mm	460	3.26	S
	4 Level	Exterior 460mm	460	3.26	N
	4 Level	Interior 100mm	100	7.05	S
	4 Level	Interior 100mm	100	5.37	E
	4 Level	Interior 100mm	100	2.29	N
	4 Level	Interior 100mm	100	12.22	W

Result:



# Smart Walls

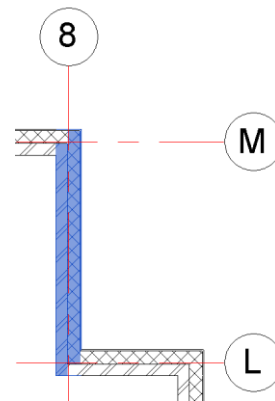
## Decompose Walls

Modify/Calculate Parameters

- Change Selected Parameters
- Delete Selected Elements
- Wall Joins
- Write Orientation
- Set Location Mark**
- Calculate Elevations
- Calculate Coordinates X;Y
- Copy Value
- Calculate Value
- Select Column
- Filter by Selected Data
- Distinct Values in Column
- Remove All Filters
- Sort
- Copy to Clipboard
- Copy Ctrl+C
- Paste Ctrl+V
- Refresh View
- Show Element By ID
- Isolate Selected Elements In Active View
- Unhide Element

**Set Location Mark** – writes grid names where the wall is located.

Start Location Mark  
Location Mark  
End Location Mark



	Level	Type	Width	Area	Start Location Mark	Location Mark	End Location Mark
▶	2 Level	Exterior 400mm	400	11.49			

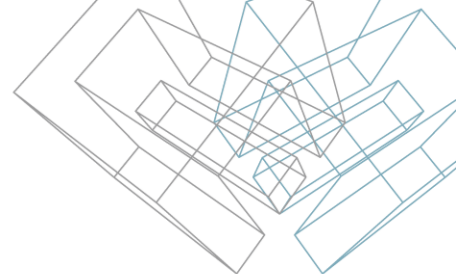
↓

	Level	Type	Width	Area	Start Location Mark	Location Mark	End Location Mark
▶	2 Level	Exterior 400mm	400	11.49	M	8	L

# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



- Change Selected Parameters
- Delete Selected Elements
- Wall Joins
- Write Orientation
- Set Location Mark
- Calculate Elevations**
- Calculate Coordinates X;Y
- Copy Value
- Calculate Value
- Select Column
- Filter by Selected Data
- Distinct Values in Column
- Remove All Filters
- Sort
- Copy to Clipboard
- Copy Ctrl+C
- Paste Ctrl+V
- Refresh View
- Show Element By ID
- Isolate Selected Elements In Active View
- Unhide Element

**Calculate Elevations** – calculates Z coordinates for selected walls and writes values to selected parameter. *The function works with instance length parameters.*

Top (Shared)  
Bottom (Shared)  
Top (Project)  
Bottom (Project)

	Level	Type	Width	Area
▶	Level 0	Cav - 102 50 45i 100 p - Dense	310	9



	Level	Type	Width	Area	New Parameter
	Level 0	Brick, Common 102.5 mm	103	22	8000
	Level 0	Brick, Common 102.5 mm	103	31	8000
	Level 0	Cav - 102 50 45i 100 p - Dense	310	9	1500
	Level 0	Cav - 102 75i 100 p - Lwt	300	40	8000
▶	Level 0	Cav 102 75i 140 P - w Soldier Banding	330	14	8000

Select Parameter

Parameter Name [Length]

<Create New Shared Parameter>

Base Offset

Top Offset

Items selected - 1

OK Cancel

Create Shared Parameter

Shared parameter name:

New Parameter

Shared parameter group:

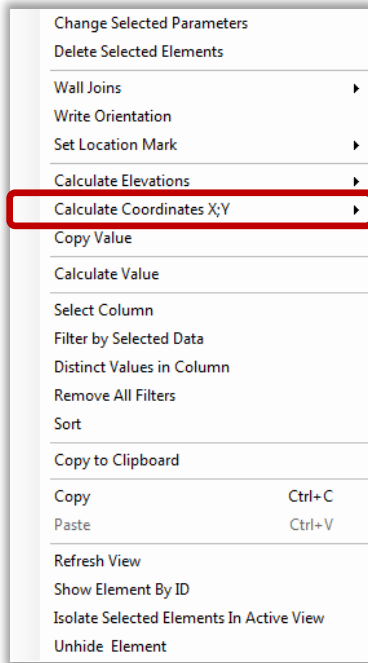
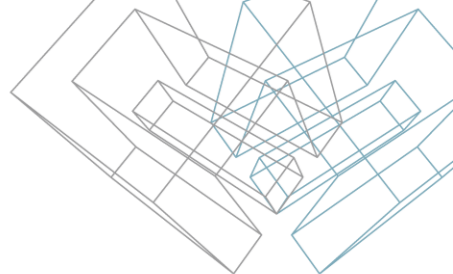
Identity Data

OK Cancel

# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



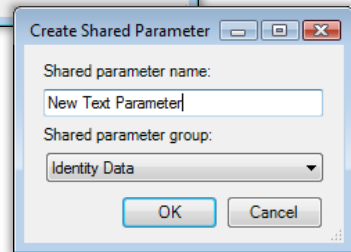
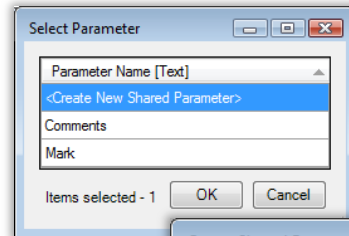
**Calculate Coordinates X;Y** – calculates X and Y coordinates for selected walls and enters values to selected parameter. *The function works with instance text parameters.*

	Level	Type	Width	Area
▶	Level 0	Cav - 102 50 45i 100 p - Dense	310	9

Shared coordinates of walls' middle point are written into user's created instance text parameter.



	Level	Type	Width	Area	New Text Parameter
	Level 0	Fnd 440 Trench Blockwk	50	13	6846.3;5731.8
	Level 0	Fnd 440 Trench Blockwk	50	8	7346.3;4923.7
	Level 0	Fnd 440 Trench Blockwk	50	14	7846.3;4018.7
	Level 0	Fnd 440 Trench Blockwk	50	39	5396.3;3113.7
▶	Level 0	Fnd 440 Trench Blockwk	50	27	2946.3;4826.8

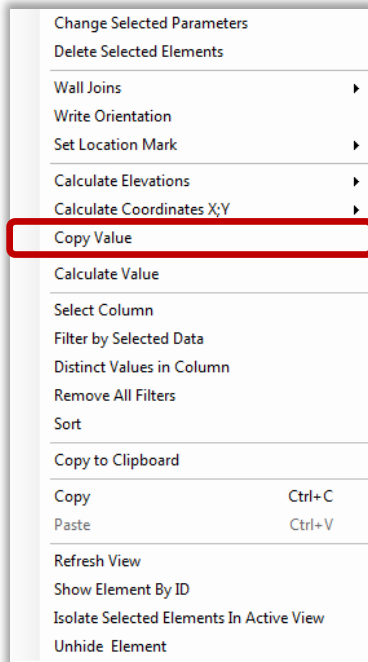
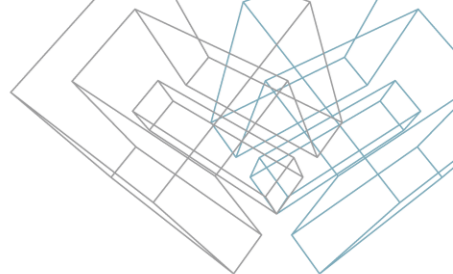




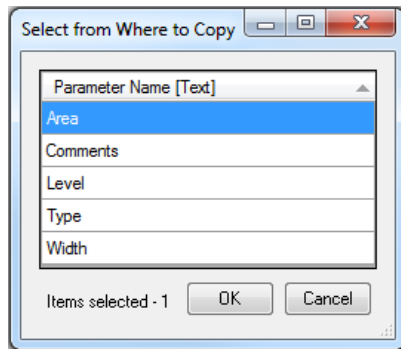
# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



**Copy Value** – copies selected parameter values into other selected or newly created parameters.



	Level	Type	Width	Area	Comments
▶	Level 1	Exterior - Brick on Mtl. Stud	350	55	
	Level 1	Exterior - Brick on Mtl. Stud	350	29	
	Level 1	Exterior - Brick on Mtl. Stud	350	13	
	Level 1	Exterior - Brick on Mtl. Stud	350	26	
	Level 1	Exterior - Brick on Mtl. Stud	350	33	

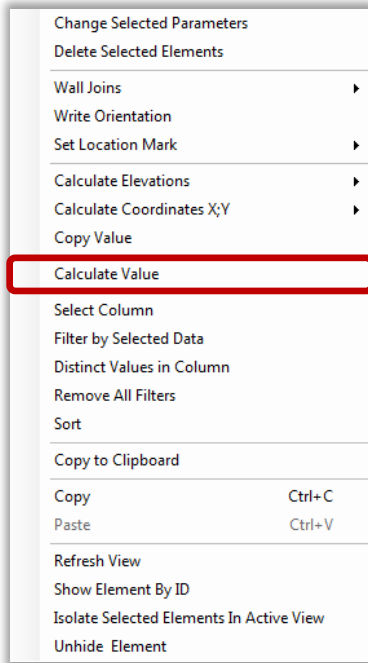
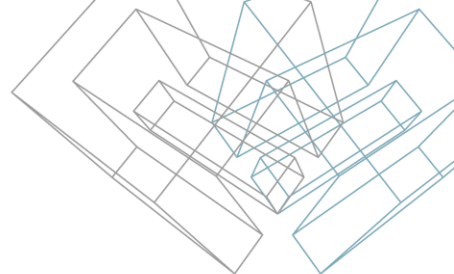


	Level	Type	Width	Area	Comments
▶	Level 2	Exterior - Brick on Mtl. Stud	350	31	31
	Level 2	Exterior - Brick on Mtl. Stud	350	31	31
	Level 1	Exterior - Brick on Mtl. Stud	350	30	30
	Level 1	Exterior - Brick on Mtl. Stud	350	29	29
	Level 2	Exterior - Brick on Mtl. Stud	350	28	28

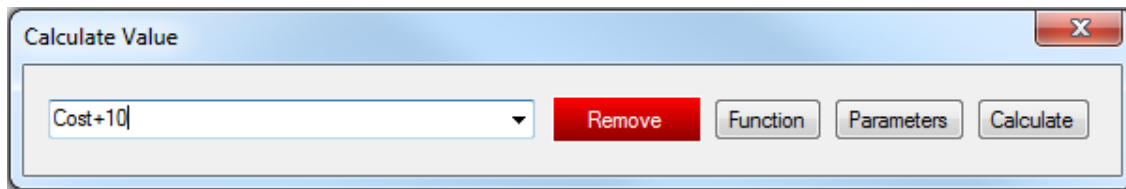
# Smart Walls

## Decompose Walls

Modify/Calculate Parameters



**Calculate Value** – calculates and writes value into selected or newly created parameter.



**Remove** – deletes written formula.

**Function** – a list of functions, that depends on the calculated value parameter type.

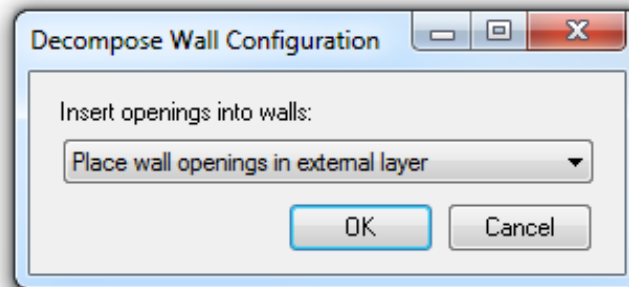
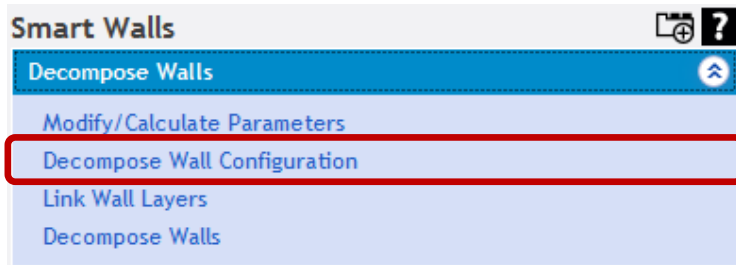
**Parameters** – a list of available parameters that can be added to the formula.

**Calculate** – finishes the command by calculating entered formula value,

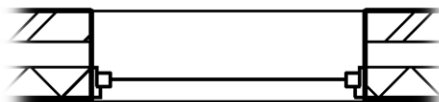
# Smart Walls

## Decompose Walls

**Decompose Wall Configuration** – predefines the placement of wall openings.



Openings can be added to the structural layer of the wall:

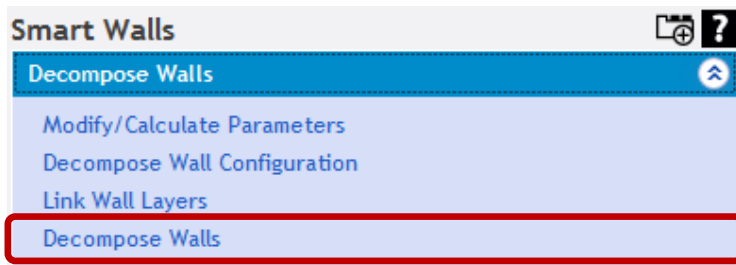


Or to the external layer:

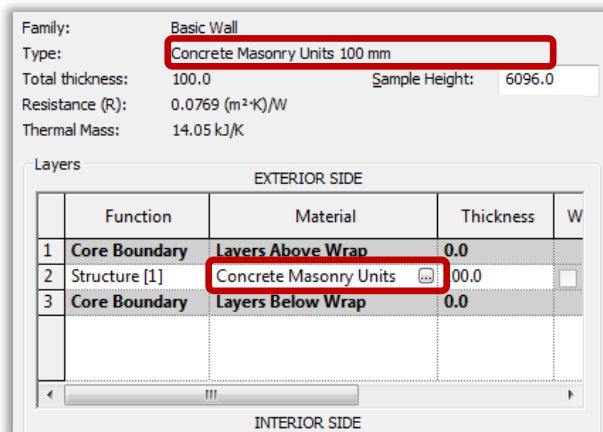


# Smart Walls

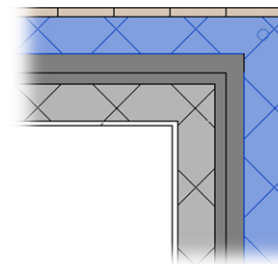
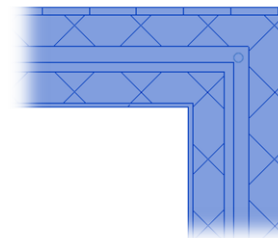
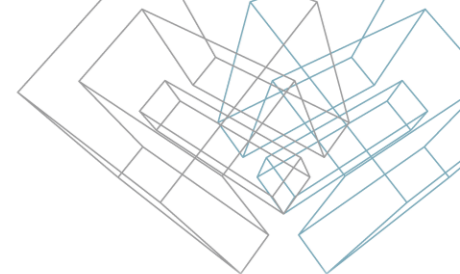
## Decompose Walls



**Decompose Walls** – splits selected walls into separate walls.

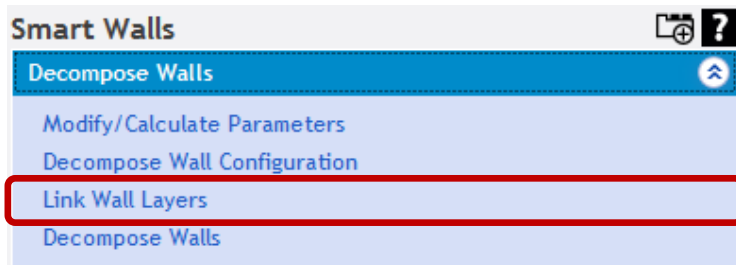


Newly created wall type name will be combined of layer material name and the value of wall thickness.



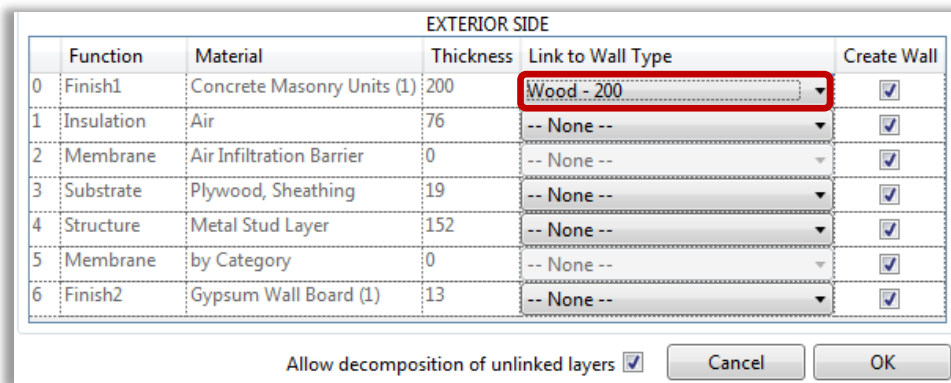
# Smart Walls

## Decompose Walls

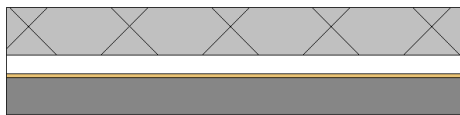


**Link Wall Layers** – creates a link between selected wall layers and chosen wall types for future decomposing.

Wall types for linking have to be of the same thickness as wall layers and be combined of only one layer.



Before decomposition:



After decomposition, the walls are split to separate layers and linked layers are replaced with predefined wall types:





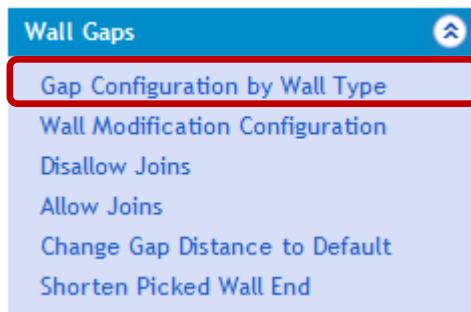
# SMART WALLS

## Wall Gaps



# Smart Walls

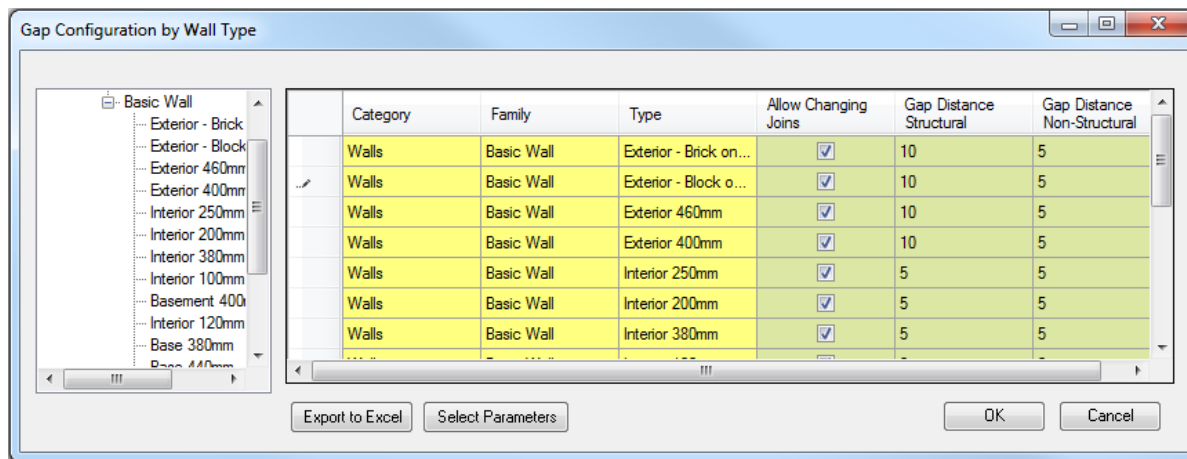
## Wall Gaps



**Gap Configuration by Wall Type** – change gap settings for every wall type in current project.

Allow Changing Joins – select if wall joins can be changed;

*Green rows show the wall types that are already used in the project.*

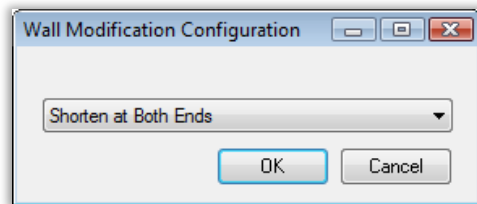
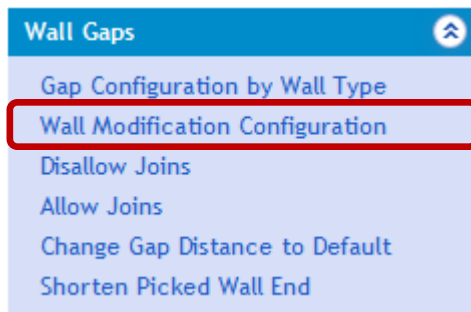


Gap Distance Structural – set a gap distance for structural walls.

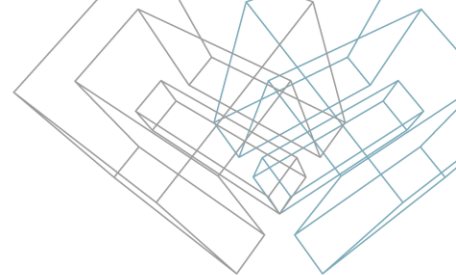
Gap Distance Non-Structural – set a gap distance for non-structural walls.

# Smart Walls

## Wall Gaps



**Wall Modification Configuration** – select which wall side has to be shortened after executing “Disallow Joins” function.



Shorten at both Ends:



Shorten at End Point:

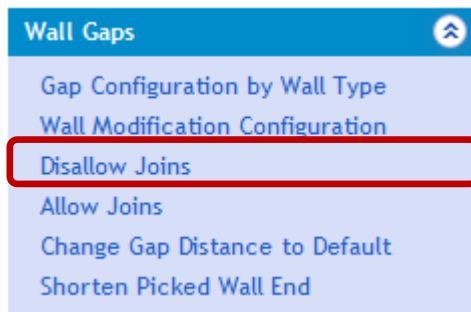


Shorten at Start Point:

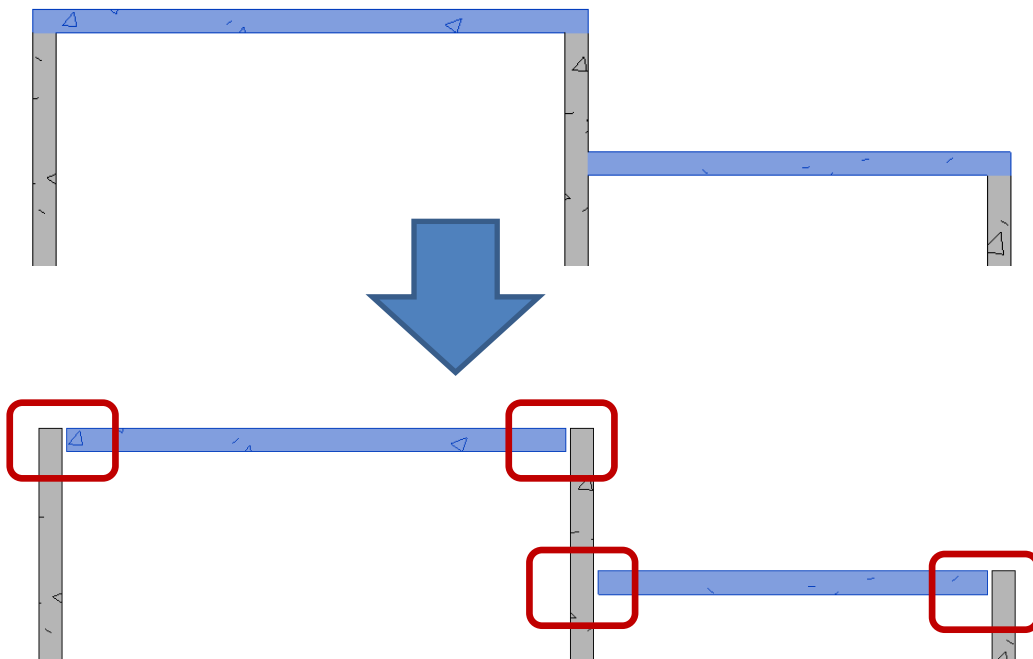


# Smart Walls

## Wall Gaps

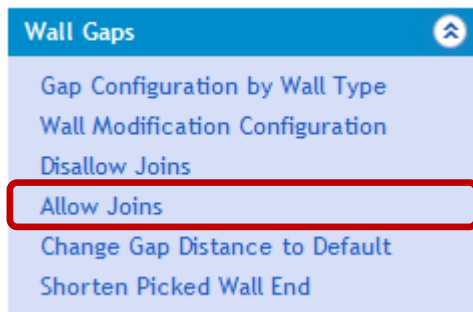


**Disallow Joins** – disallows joins between selected walls by predefined settings. Settings for this function can be found under “Gap Configuration by Wall Type” and “Wall Modification Configuration”.

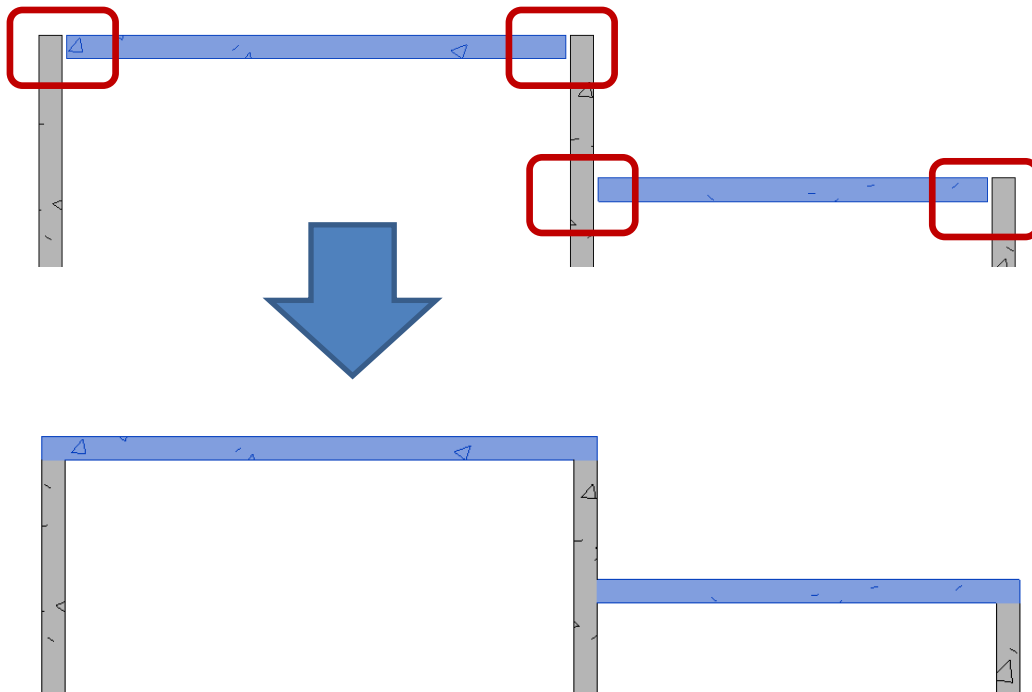


# Smart Walls

## Wall Gaps

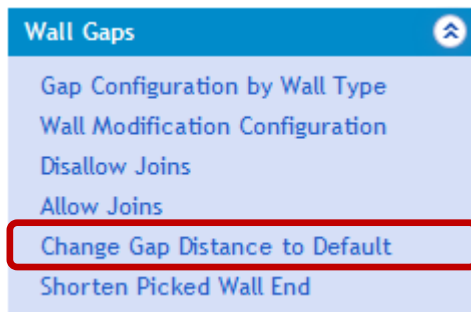


**Allow Joins** – joins the ends of selected walls.

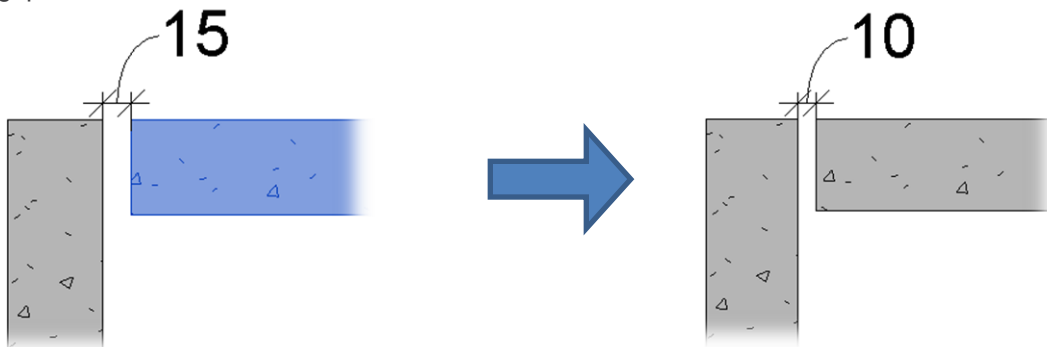


# Smart Walls

## Wall Gaps



**Change Gap Distance to Default** – changes gap distances of selected walls to default gap distances.



Default gap distances can be changed under “Gap Configuration by Wall Type”:

	Category	Family	Type	Allow Changing Joins	Gap Distance Structural	Gap Distance Non-Structural
	Walls	Basic Wall	Exterior - Brick on...	<input checked="" type="checkbox"/>	10	5
	Walls	Basic Wall	Exterior - Block o...	<input checked="" type="checkbox"/>	10	5
	Walls	Basic Wall	Exterior 460mm	<input checked="" type="checkbox"/>	10	5
	Walls	Basic Wall	Exterior 400mm	<input checked="" type="checkbox"/>	10	5



# SMART WALLS

## Split Walls



# Smart Walls

## Split Walls

Split Walls

Split Wall Menu

**Split Wall Menu** – opens Split Wall Menu window.

**Split Settings** - allows user to configure and save settings for wall splitting by various rules.



Split Settings

Split by Intersecting Walls  
Distance from Core Face 0 mm

Split by Openings

Windows

Distance from Window 250 mm

Minimum Window Width 300 mm

Doors

Distance from Door 250 mm

Minimum Door Width 600 mm

Generic Openings

Distance from Generic Opening 250 mm

Minimum Generic Opening Width 600 mm

System Openings

Distance from System Opening 250 mm

Minimum System Opening Width 600 mm

Split by Spacing

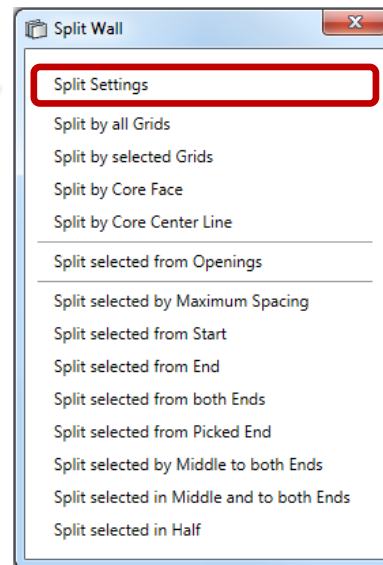
Panel Width/Split Spacing 2400 mm

Maximum Panel Width/Split Spacing 2400 mm

Minimum Length of Split Wall 1200 mm

Note

Save Close



Split Wall

Split Settings

Split by all Grids

Split by selected Grids

Split by Core Face

Split by Core Center Line

Split selected from Openings

Split selected by Maximum Spacing

Split selected from Start

Split selected from End

Split selected from both Ends

Split selected from Picked End

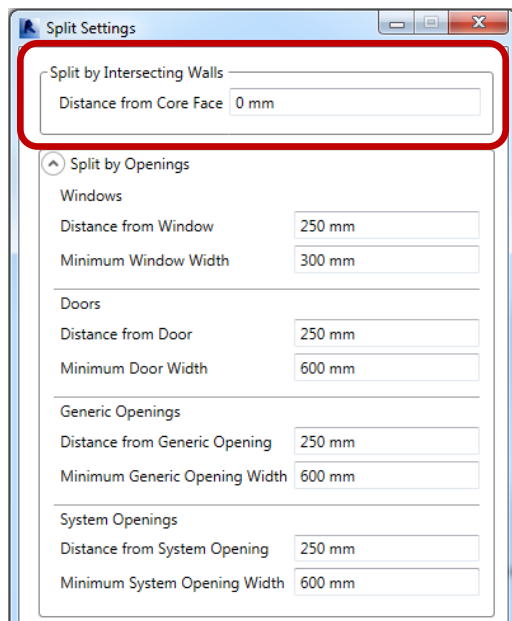
Split selected by Middle to both Ends

Split selected in Middle and to both Ends

Split selected in Half

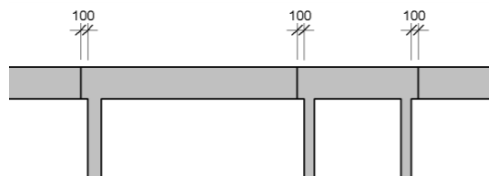
# Smart Walls

## Split Settings

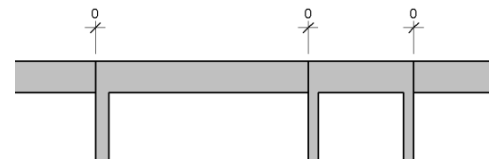


### Split by Intersecting Walls

**Distance from Core face** – value of Distance from Core Face that will be used when **Split by Core Face** function is used.



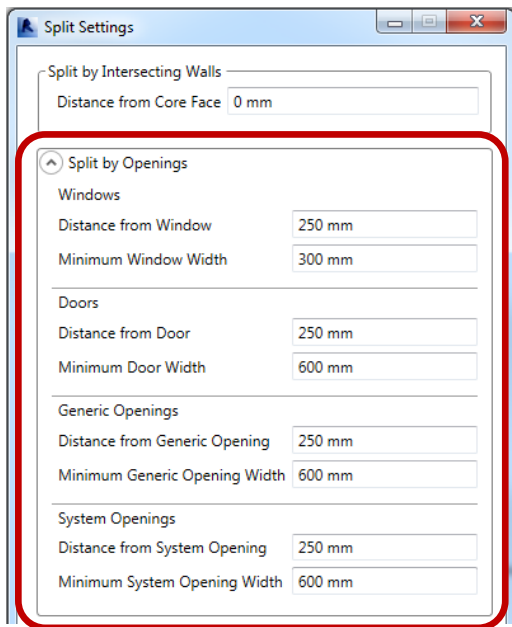
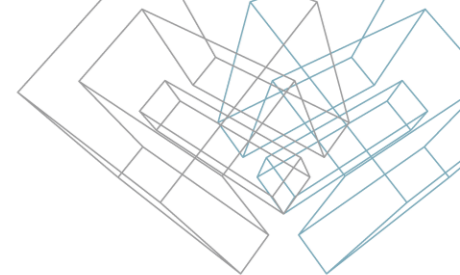
Distance from Core face = 100 mm



Distance from Core face = 0 mm

# Smart Walls

## Split Settings



### Split by Openings

**Distance from Windows / Doors / Generic Openings / System Openings** – minimal value of split Distance from Windows / Doors / Generic Openings / System Openings.

**Minimum Windows / Doors / Generic Openings / System Openings Width** - Function “Split from Openings” will ignore openings which width is less than entered, so they will have no impact on the splitting layout.

Functions that are listed below “Split from Openings” (“Split selected by Maximum Spacing”, “Split selected from Start”, etc.) will split according to predefined settings in “Split Settings” dialog window, and openings will have no impact on the split layout. So if a split will overlap with an opening which width is less than minimum, the tool will split directly through them (does not apply to System Openings).

# Smart Walls

## Split Settings

### Example:

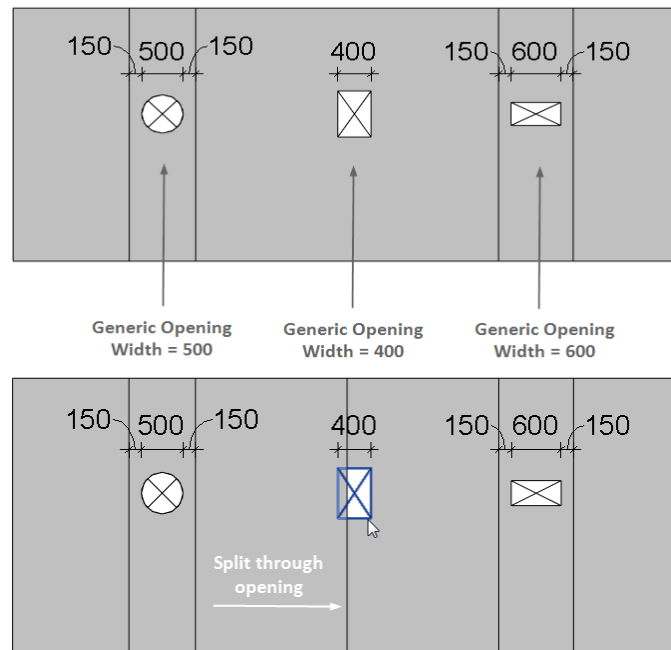
In this case, function “Split from Openings” will ignore openings which width is less than 500 mm, so if Minimum Openings’ Width is less than 500mm, they will have no impact on the splitting layout.

Settings used: **Generic Openings**

Distance from Generic Opening 150 mm

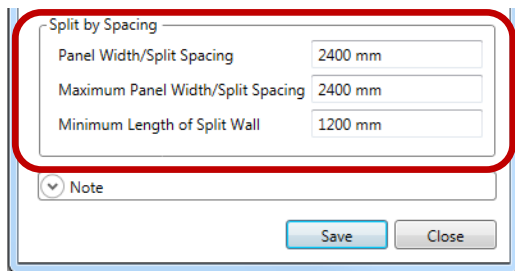
Minimal Generic Opening Width 500 mm

Functions that are listed below “Split from Openings” (“Split selected by Maximum Spacing”, “Split selected from Start”, etc.) will split according to predefined settings in “Split Settings” dialog window, and openings which width is less than 500 mm will have no impact on the split layout. If a split will overlap with an opening which width is less than minimal, the tool will split directly through them.



# Smart Walls

## Split Settings



Split by Spacing

Panel Width/Split Spacing 2400 mm

Maximum Panel Width/Split Spacing 2400 mm

Minimum Length of Split Wall 1200 mm

Note

Save Close

### Split by Spacing

**Panel Width/Split Spacing** – wall split's spacing value that will be used when splitting wall.

*Note:*

*Wall split's Spacing Length cannot be less than Minimal Length of Split Wall.*

**Maximal Panel Width/Split Spacing** – wall split's maximal spacing value that will be used when splitting wall using function Split Selected by Maximal Spacing.

*Note:*

*Maximum Panel Width/Split Spacing must be at least twice as big as "Minimum Length of Split Wall"*

**Minimal Length of Split Wall** – value of Minimal Length of Split Wall that will be created upon splitting.

# Smart Walls

## Split Walls

### Recommended workflow

User should start off by splitting walls by openings using “Split by Openings” function, and then continue by splitting them using other functions that are listed below in the Split Wall dialog window. You can use functions that are above “Split by Openings” at any time.

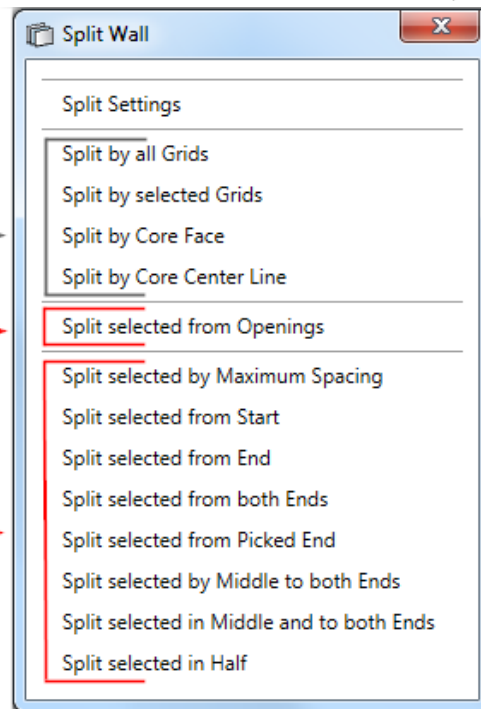
**Step 1** - walls are “Split by Openings” that exceed Minimum Width, which is configured in the “Split Settings” dialog.

**Step 2** - walls with openings which width are less than Minimum or no openings at all, are split by user chosen function (“Split selected by Maximum Spacing”, “Split selected from Start”, etc.)

Use  
anytime →

Step 1 →

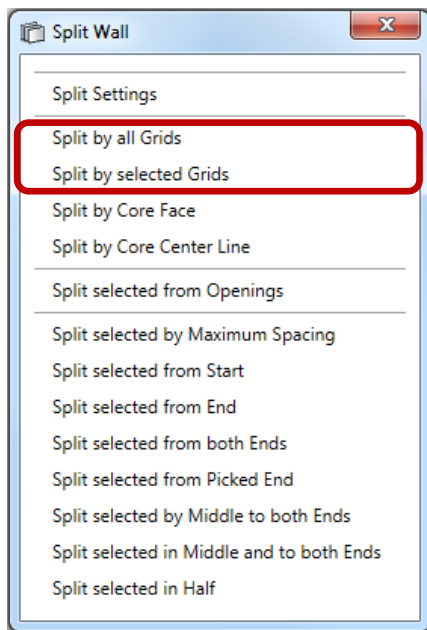
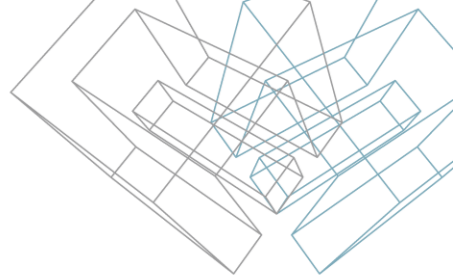
Step 2 →



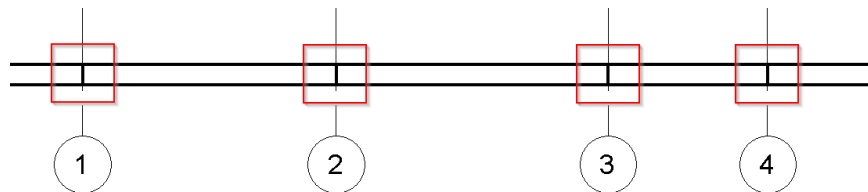


# Smart Walls

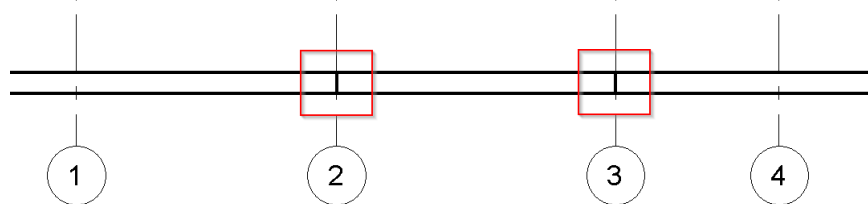
## Split Wall



**Split by all Grids** - splits selected Walls by all intersecting grids.

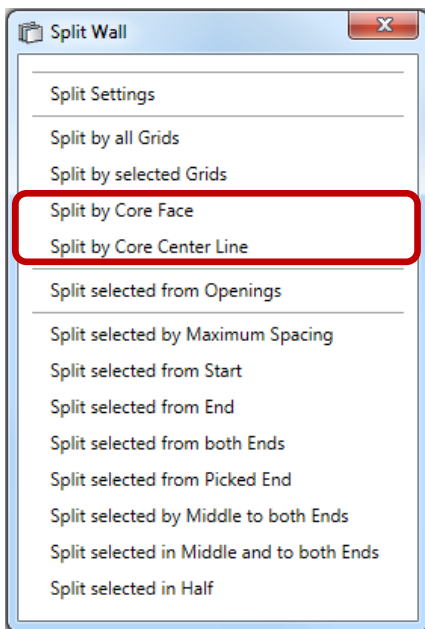


**Split by selected Grids** - splits selected Walls by selected intersecting grids.

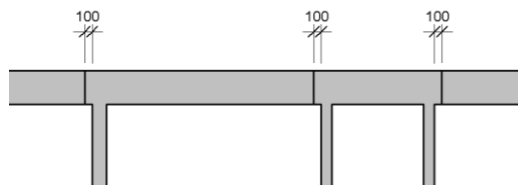


# Smart Walls

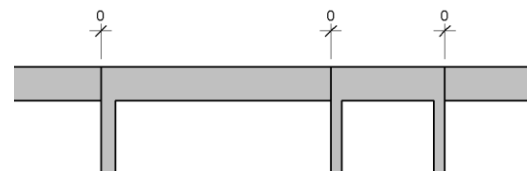
## Split Wall



**Split by Core Face** - splits selected Wall by selected intersecting walls' Core Faces. Core Face is picked by clicking on desired Core side.



Distance from Core face = 100 mm

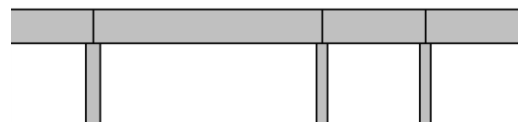


Distance from Core face = 0 mm

Distance from Core Face can be predefined in Split Settings:

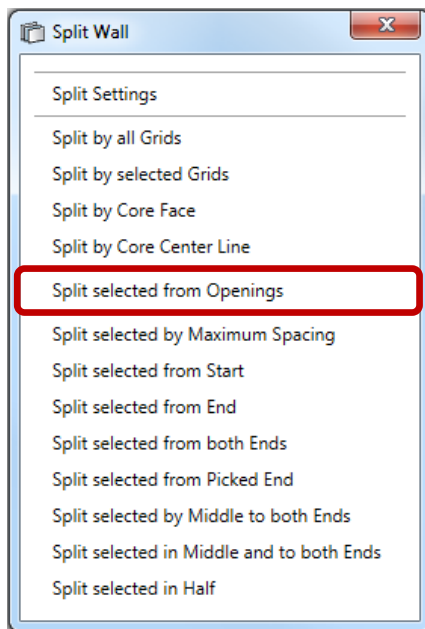
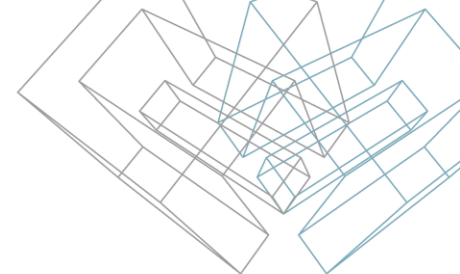


**Split by Core Center Line** – splits selected Wall by selected intersecting walls' Core Center Line.



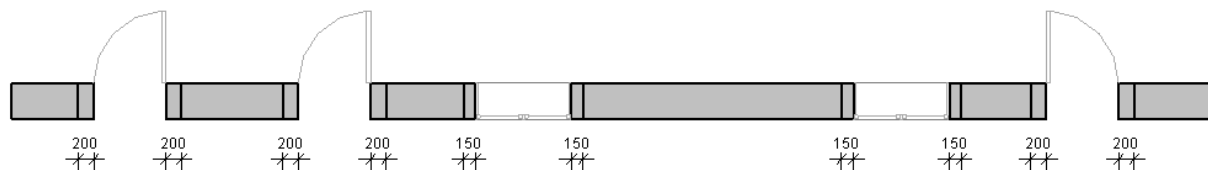
# Smart Walls

## Split Wall – Step 1



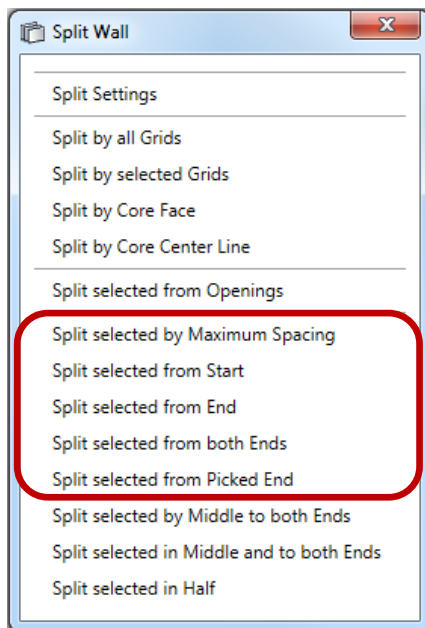
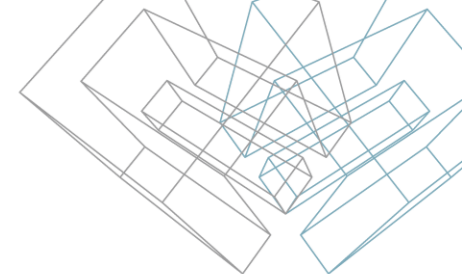
**Split selected from Openings** - splits selected Walls from inserted Window, Door, Generic Openings' and System Openings' sides according to predefined configuration. Distances of splits from Openings and Minimum Openings' Width are configured in Split Settings.

Example:



# Smart Walls

## Split Wall – Step 2



**Split selected by Maximal Spacing** - splits selected Walls by Maximal Spacing predefined in configuration. Maximal spacing is configured in Split Settings.

**Split selected from Start** - splits selected Walls from their Start according to predefined configuration. Split spacing is configured in Split Settings.

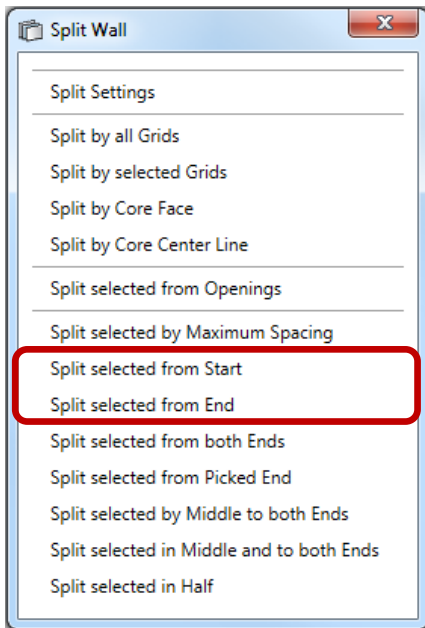
**Split selected from End** - splits selected Walls from their End according to predefined configuration. Split spacing is configured in Split Settings.

**Split selected from both Ends** - splits selected Walls from both Ends according to predefined configuration. Split spacing is configured in Split Settings.

**Split selected from Picked End** - splits selected Walls from the End which is picked by clicking on desired Wall Start/End. This function is convenient for interior wall splitting, when it is hard to determine which end is which: start or end.

# Smart Walls

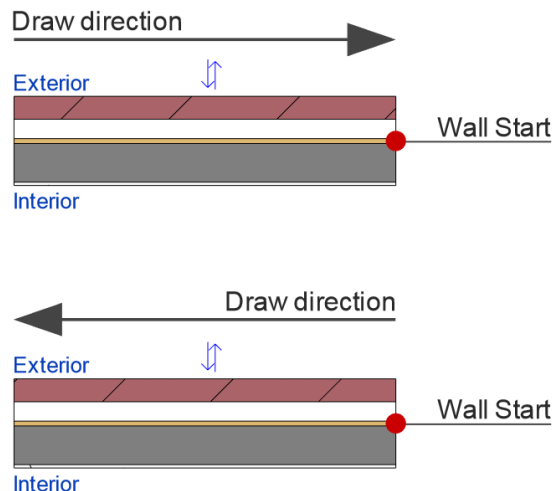
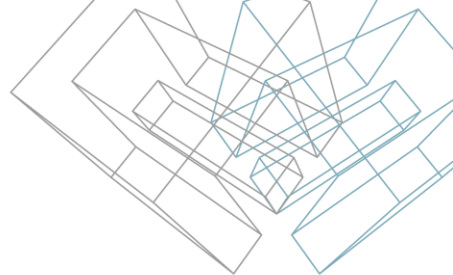
## Split Wall



### Note

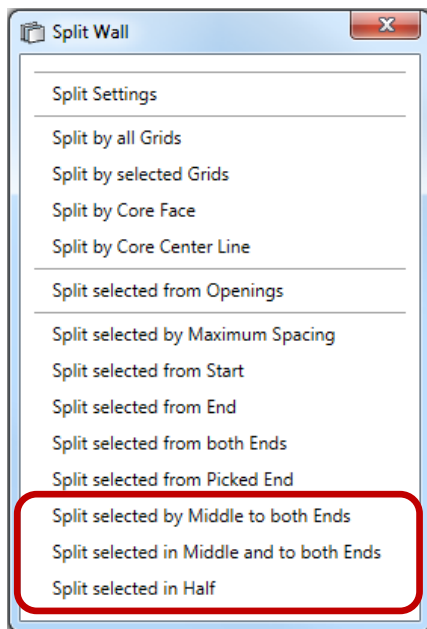
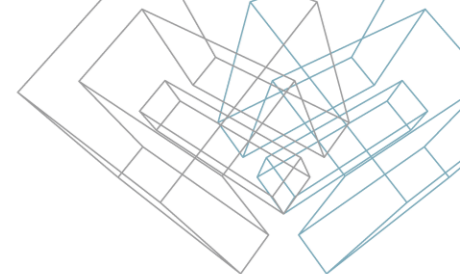
Wall Start is always on the left end when facing exterior side of the wall, and on the right end when facing interior side. Draw order and direction has no impact on wall start/end points.

User can click on control arrows “ $\downarrow\uparrow$ ” displayed on the exterior side of the wall to flip wall’s orientation. The wall will flip around the location line of the wall, so the start and end points will swap places as well.



# Smart Walls

## Split Wall – Step 2



**Split selected by Middle to both Ends** - splits selected Walls from the Middle according to predefined spacing configuration. Split spacing is configured in Split Settings.

**Split selected in Middle and to both Ends** - splits selected Walls in their Middle and arrays splits to both Ends according to predefined spacing configuration. Split spacing is configured in Split Settings.

**Split selected in Half** - splits selected Walls in half.

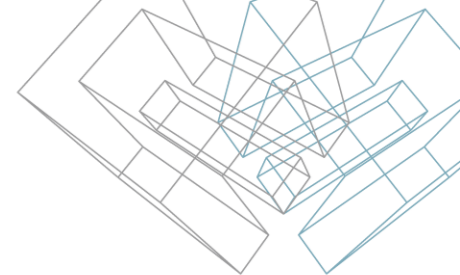


# SMART WALLS

## Gravity Point

# Smart Walls

## Gravity Point



### Gravity Point

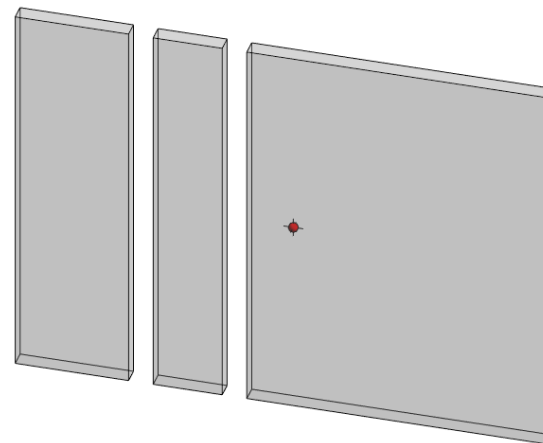
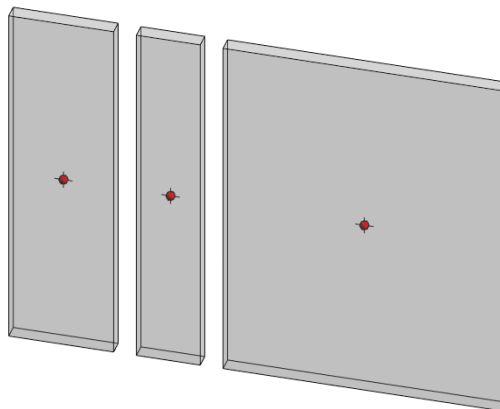


Insert Gravity Points

Insert one Gravity Point

**Insert Gravity Points** – inserts individual gravity point families into every selected wall.

**Insert one Gravity Point** – Inserts a single gravity point family for all selected walls.

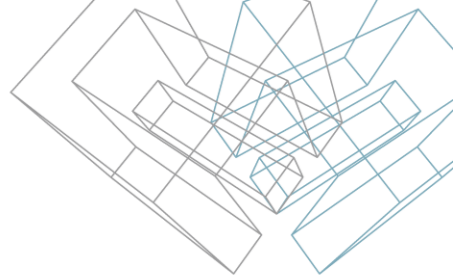


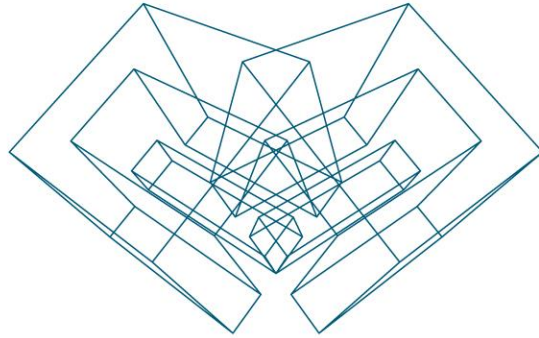


# Smart Walls

## Benefits

- **High Modeling Speed**
- **Error Prevention** and **Easy Control Process**
- Increased **Productivity** and **Cost Savings**





AGA CAD, UAB