Opening Reinforcement

Modified on: Mon, 26 Oct, 2020 at 2:22 PM

There are 3 types of reinforcement available for openings: Edge Rebar, Opening Diagonal Rebar, and Opening U/O stirrups.
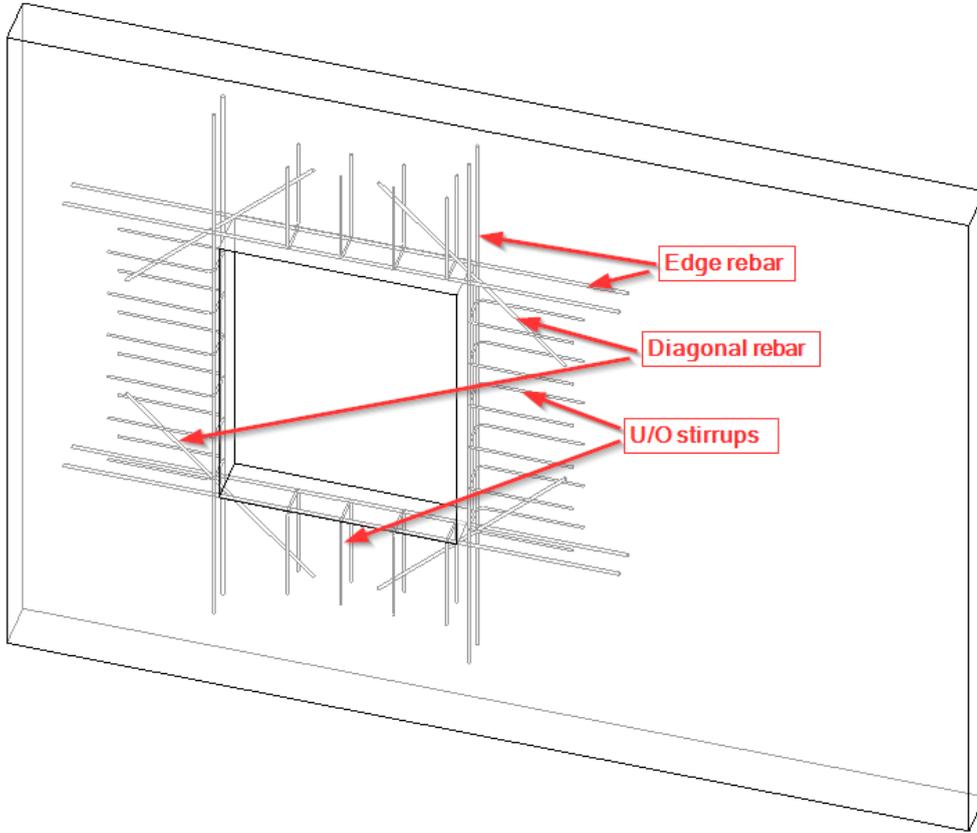
Also note:
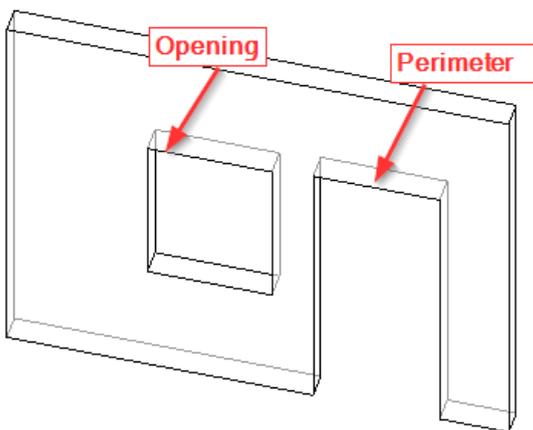
Opening Edge Rebar
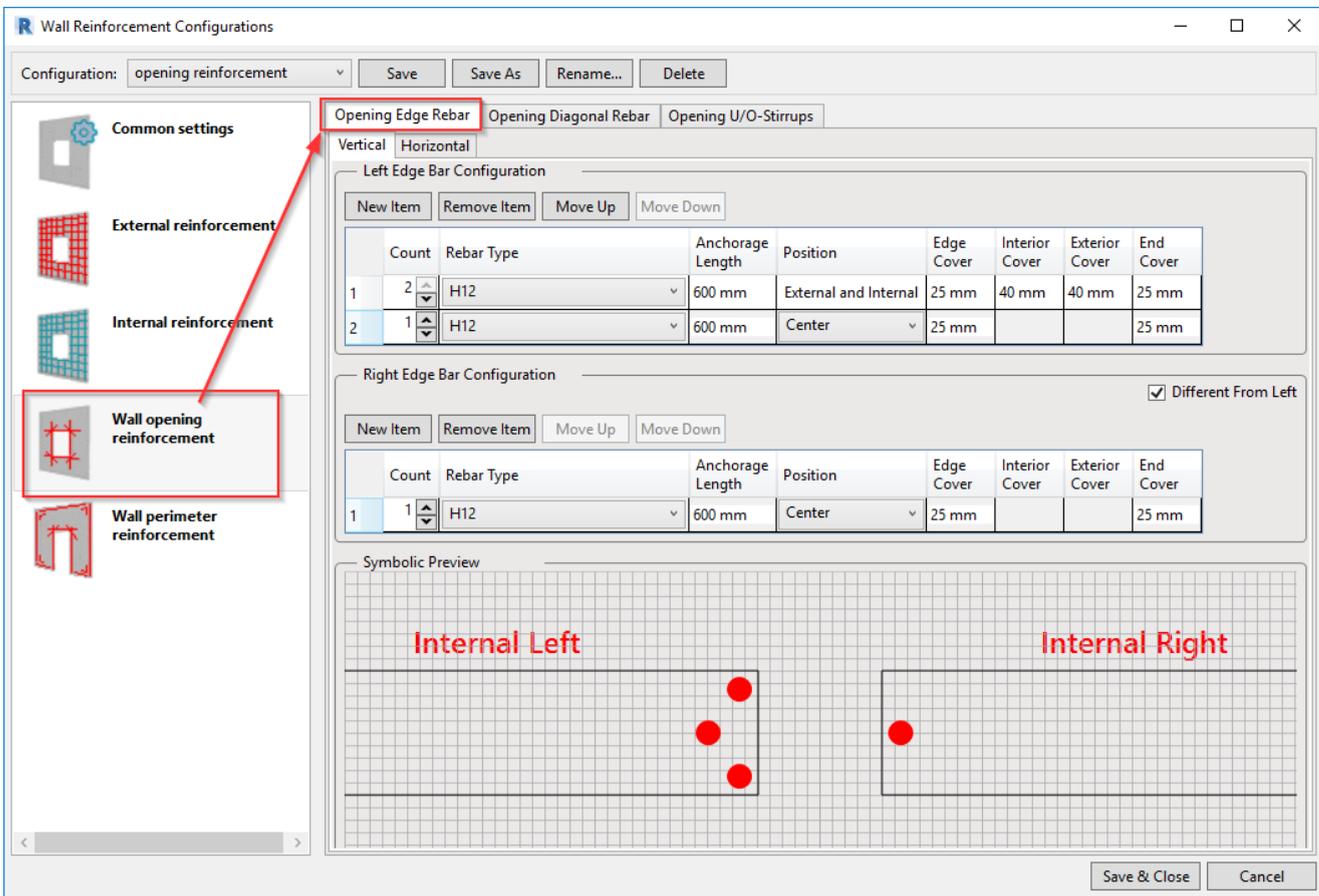
Opening Edge Rebar refers to straight bars around openings, which may be either vertical (side faces of opening) or horizontal (top/bottom faces of opening). The maximum number of bars on one edge is 4. At the bottom of the configuration window you can see a schematic layout of bars. Each row is represented by a different offset from the opening edge, but the actual distance is controlled by the Edge Cover parameter, so they might be in the same line.

First of all, select vertical or horizontal depending on the reinforcement that you want to define:
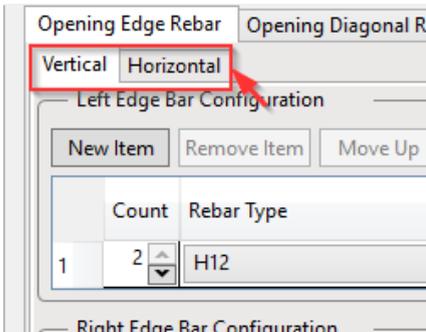
You can define settings for selected reinforcement in this kind of format:

	Count	Rebar Type		Anchorage Length	Position		Edge Cover	Interior Cover	Exterior Cover	End Cover
1	2	H12	∨	600 mm	External and Internal		25 mm	40 mm	40 mm	25 mm
2	1	H12	∨	600 mm	Center	∨	25 mm			25 mm

New Item – adds an additional line of reinforcement. A maximum of 2 lines are allowed.

Remove – removes reinforcement definition line.

Move Up/down – moves them in defined direction.

Count – defines how many bars you want to create in one row (max 2).

Rebar Type – choose rebar type.

Anchorage Length – defines the length of rebar that should extend from opening edge. If there will be another wall edge within achnorage distance - bar will be bended along that edge.

Position – two options:

Center – places rebar in the center of the wall.

External and Internal – places rebar with defined covers from external/internal sides of the wall layer.

Edge Cover – cover from opening edge.

Interior/Exterior cover – covers from external/internal sides of the wall layer.

End cover – if extended bar will meet another edge of the wall, then it will use this setting as a cover from that edge.

There is an option to use a different layout of rebar on Left/Right or Top/Bottom rebar. If you switch it on, you will be able to define different rebar for the other side.

Opening Diagonal Rebar

Opening Diagonal Rebar refers to diagonal bars at the corners of an opening.
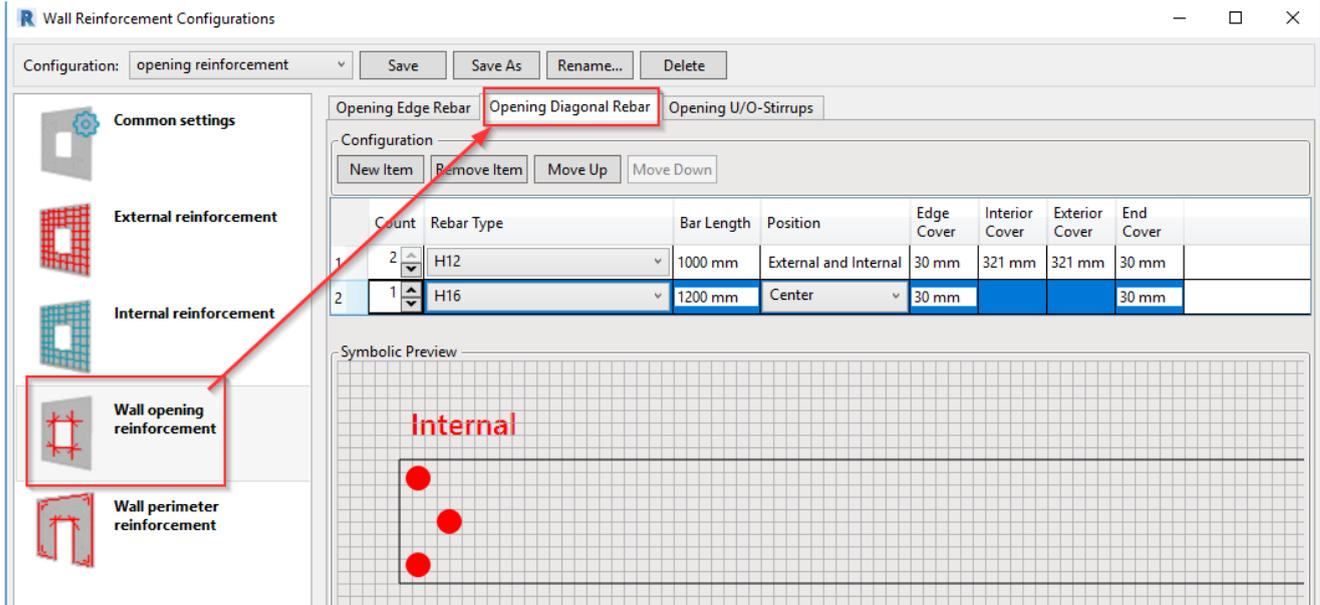
Settings are similar as in Opening Edge Rebar definition except for the following:

Bar Length – length of rebar. If there will be another wall edge within bar length distance - bar will be bended along that edge.

Edge cover – cover from the corner of the opening to rebar
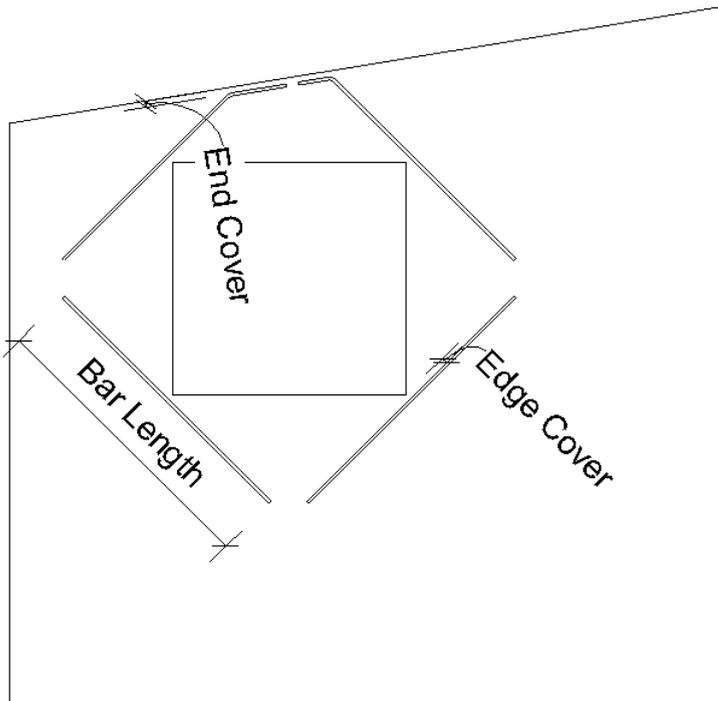
Opening U/O stirrups

You can define how U-shaped stirrups should be distributed around openings.
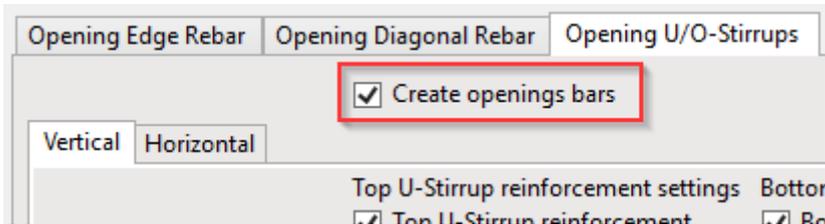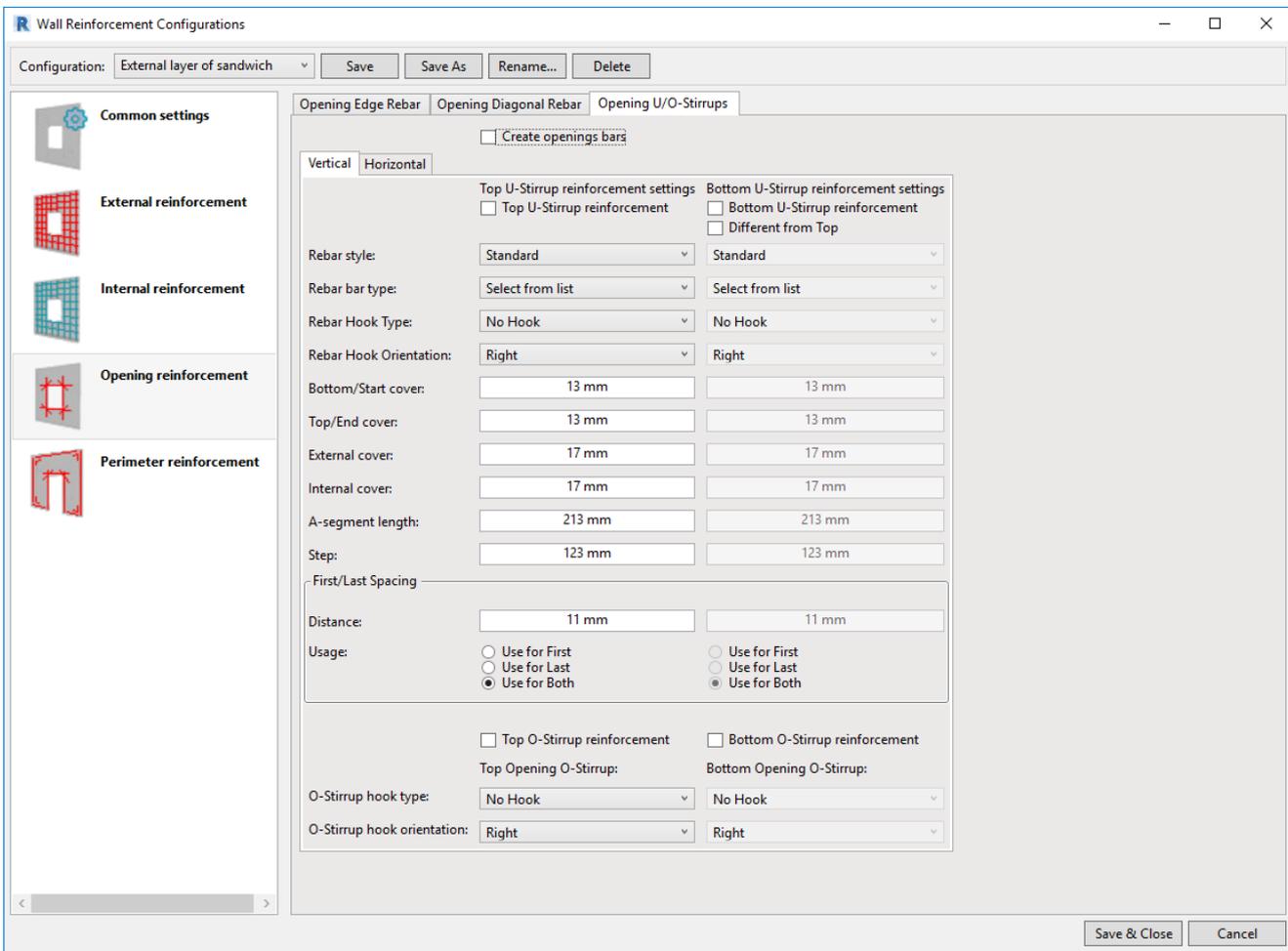
Create opening bars – if you want to create opening bars, turn ON. If not, switch OFF.

You can prepare different settings for vertical (top/bottom) and horizontal (left/right) reinforcement settings. Select the appropriate tab:
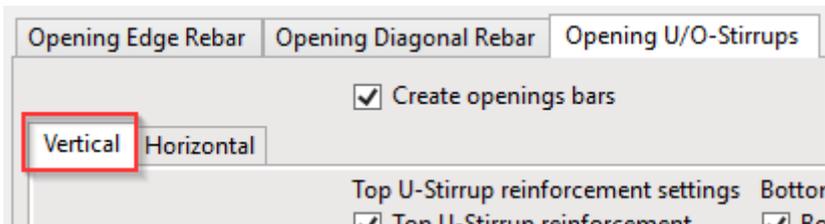
Select where U-shaped rebar should be created and what settings should be used:

Opening Edge Rebar	Opening Diagonal Rebar	Opening U/O-Stirrups

☑ Create openings bars

Vertical	Horizontal

	Top U-Stirrup reinforcement settings ☑ Top U-Stirrup reinforcement	Bottom U-Stirrup reinforcement settings ☑ Bottom U-Stirrup reinforcement ☐ Different from Top
Rebar style:	StirrupTie	StirrupTie
Rebar bar type:	H8	H8
Rebar Hook Type:	No Hook	No Hook
Rebar Hook Orientation:	Right	Right
Bottom/Start cover:	30 mm	30 mm
Top/End cover:	30 mm	30 mm
External cover:	38 mm	38 mm
Internal cover:	38 mm	38 mm
A-segment length:	396 mm	396 mm
Step:	400 mm	400 mm

First/Last Spacing

Distance:	50 mm	50 mm
Usage:	◉ Use for First	◉ Use for First

Top U-Stirrup reinforcement – switch ON if you want to create U bar at the top of opening.

Bottom U-Stirrup reinforcement – switch ON if you want to create U bar at the bottom of opening.

Different from Top – switch ON if you want to make bottom rebar different than top rebar.

Rebar Style – Standard or StirrupTie options available. Recommended to use StirrupTie for U shape bar.

Rebar bar type – select from available rebar types in the project.

Rebar Hook Type – select hook type for U shape. Usually 'No Hook' will be selected.

Rebar Hook Orientation – choose direction of hook.

Bottom/Start cover – cover from corresponding opening edge.

Top/End cover – cover from corresponding opening edge.

External Cover – cover from external face of the wall layer.

Internal Cover – cover from internal face of the wall layer.

A-segment length – U bar length from the middle of short edge to the end of U legs.

U bar step – step of U bar along the edge of opening.

See explanatory images below:

Plan view:
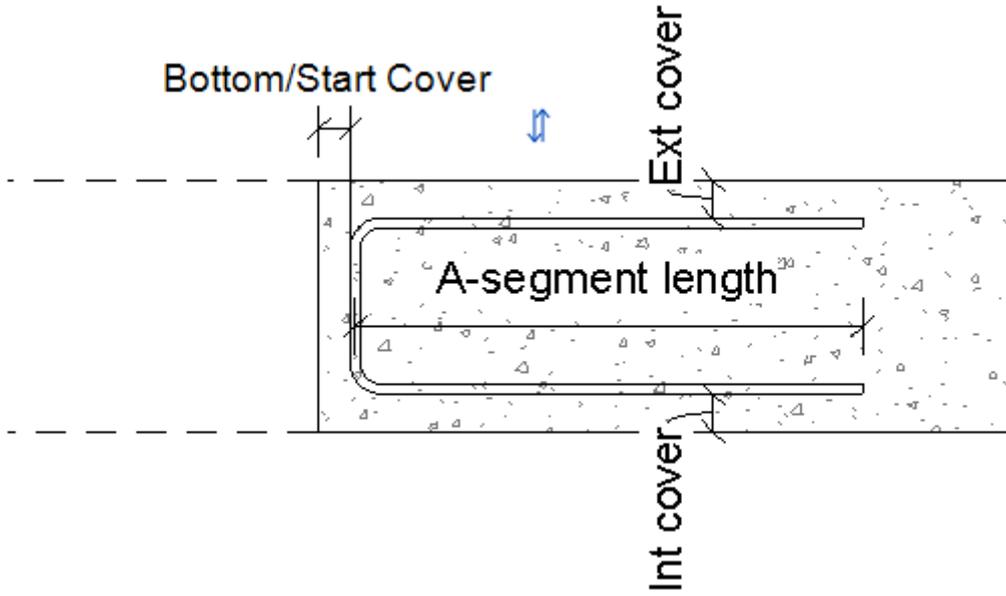
Front view:

First/Last Spacing:

Distance – define distance from opening start/end to first rebar.

Use for First/Last – choose from which side of the wall rebar should be distributed.

Use for Both option works together with Minimal Rebar distance in common settings. Software will try to create rebar at start and end of the wall with defined distance, and then it will distribute bars from the start of the wall, and if last step is smaller than Minimal Rebar Distance, rebar at the end will be removed. (Check common settings description.)

O shape bars

O-shaped bars will be created instead of U bars if there is not enough space for U-shaped bars, for example between two openings:

Top/Bottom O-Stirrup reinforcement – turn ON if you want to create O bars instead of U bars if condition is met.

O-Stirrup hook type – choose from available hook types in the project.

O-Stirrup hook orientation – choose direction of hook.