Openings Logic

Goal:

Place the opening of the combo families in the correct position, based on the host wall opening

To avoid manual adjustments

Core functionality

- When placing a combo wall all openings are positioned correctly
- Translate the position of the host opening to the combo relevant parameters
- Detect number of openings and modify the correct one

Details

- At the first stage only windows and doors are considered as openings
- Supported adjustments Summary table

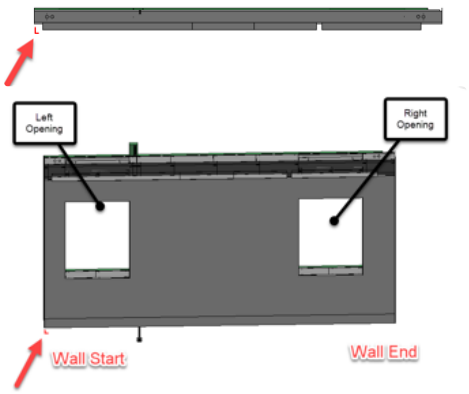
Title	Details	method	related parameters
Opening count	for choosing the correct combo	Count the number of elements with `windows` or `doors` category from the host wall. Ignore nested items (for familys with multiple windows)	`windows` or `doors` category
Right or Left Opening	Detect if it is a right opening or a left opening	Geometry analysis based on the combo Start-End direction	N/A
Determine opening type	only door or window. No support for other interference such as gap and column	copy value from the host opening parameter to another parameter in the combo (rely on Right\Left calculation)	• Host opening ◦ `TBD parameter name` • Combo parameter

			◦ `WL_LO Type` ◦ `WL_RO Type`
Horizontal position	Move the combo opening position relative to the host	Measure the host opening position relative to the host wall and copy the value to the combo parameters	• Combo parameter ◦ `WL_LO_Location` ◦ `WL_RO_Location`
Vertical position (Sill Height)	Move the combo opening sill Height relative to the host	Calculate the delta of the host and combo levels. add it to the host sill height and copy it to the combo sill height	• Host Parameters ◦ `Level` • Combo parameter ◦ `Work Plane` ◦ `WL_RO Sill Height` ◦ `WL_LO Sill Height`
Opening height	The height of the opening	copy value from host to combo mapped parameter	• Host Parameters ◦ `VEEV_Height` • Combo parameter ◦ `TBD WL_LO Actual Height` ◦ `TBD WL_RO Actual Height`
Opening width	The width of the opening	copy value from host to combo mapped parameter	• Host Parameters ◦ `VEEV_Width` • Combo parameter

			◦ `WL_LO Width`

Right or Left Opening

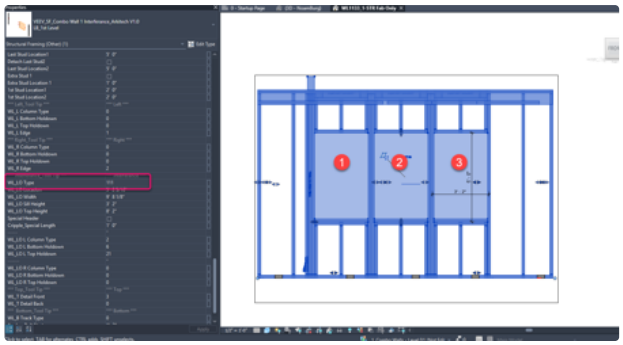
- Wall's Left or Right is determined by the walls main direction (its start and end point) where start point = Left
  End point = Right
  It can also be seen graphically by an "L" representung its left



Opening type

- The opening type is set by the Parameter `WL_LO Type` (Wall Left Opening Type) or `WL_RO Type` for right opening. **Read the opening type value from the host opening parameter** `TBD`

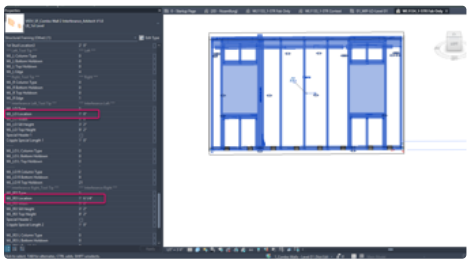
Some openings are very near to each other and they in fact 2 or 3 windows which are nested in one opening combo family that contains a few windows inside it. for those cases there would be a special type “11” for 2 windows or “111” for 3 windows. Anyways for the tool it is the same as it is simply copy the value from the host into the combo family parameter.



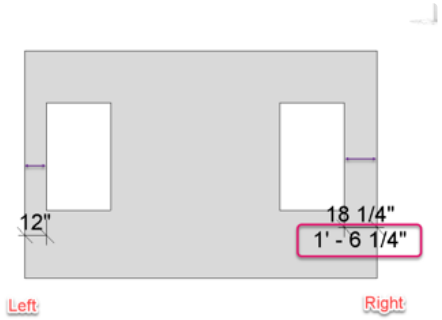
Opening location and dims

Location

- The Location of the opening in the combo is determined by the `WL_LO_Location` or `WL_RO_Location` parameter



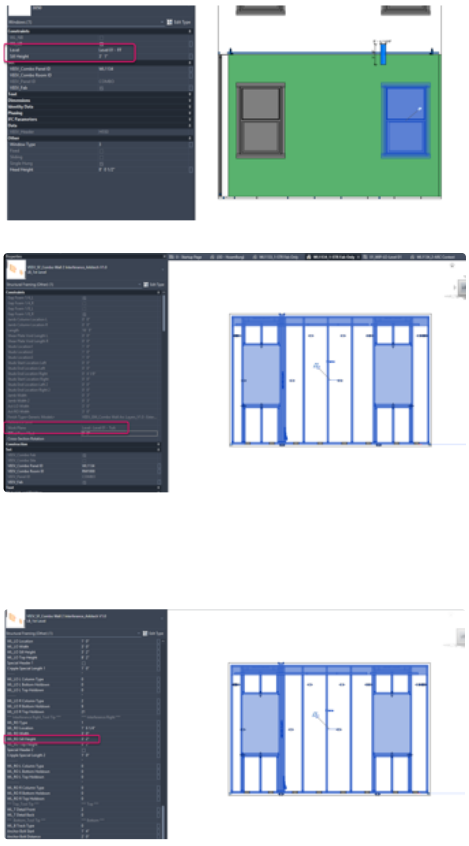
- The location in the combo needs to be calculated relative to the original host wall and opening global position and then translated into the combo position. It is calculated from the edge of the wall to the near edge of the actual opening (not the window but the cut in the wall). Each side is calculated individually. not from the same edge



Sill Height

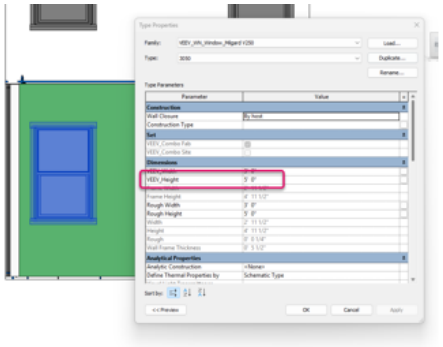
- Sill height, is the height of the bottom part of a window. it is calculated in relation to the level the element is positioned on. The original host window, and the combo opening are not placed at the same level. So there is a need to calculate the actual height of the host window, in order to determine the value for the combo's sill height. For example

	value	actual level elevation
Host window sill height	3' - 1"	
Host window level	Level 01 - FF	0"
Combo opening sill height	3' - 2"	
Combo level	Level 01 - ToA	-1"

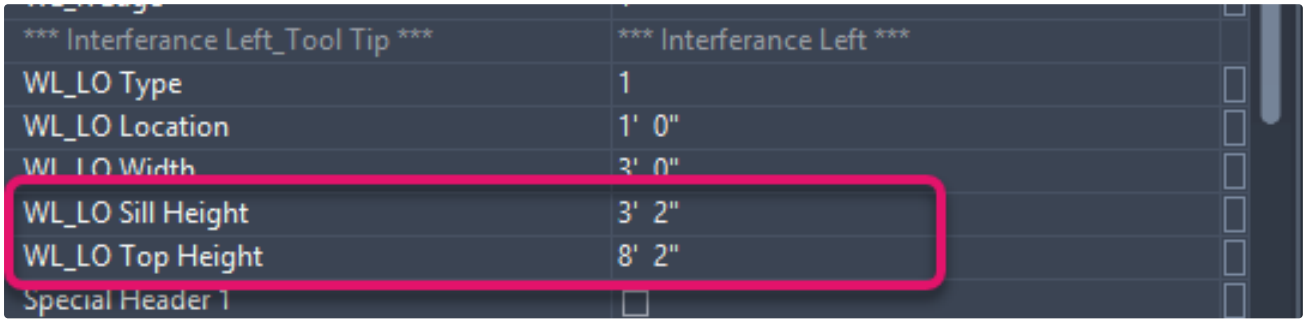


Height

- The host Window height is an actual height and represented by a type parameter "VEEV_Height".



In the combo opening the window or door height is an addition to the sill height. and is stored in “WL_LO Top Height” or “WL_RO Top Height”



For example:

Host height = 5'

Host sill height = 3' - 1”

Combo sill height = 3' - 2” (because of the delta from the level)

”Combo LO Top Height” = 8' - 2” (Combo sill height + Host height)

Width

The width is the most straightforward one. is is equal between host and combo

“VEEV_Width” (host) = “WL_LO Width” (combo)