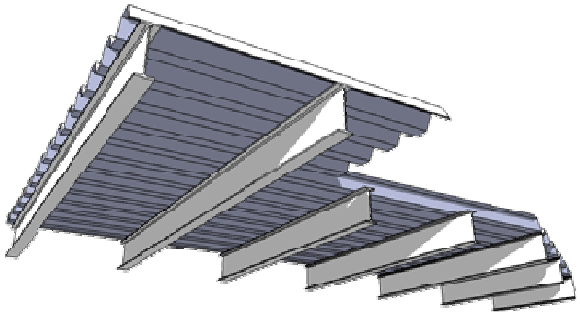
1001bit Pro



1001bit Pro Users Guide

by Goh Chun Hee, www.1001bit.com

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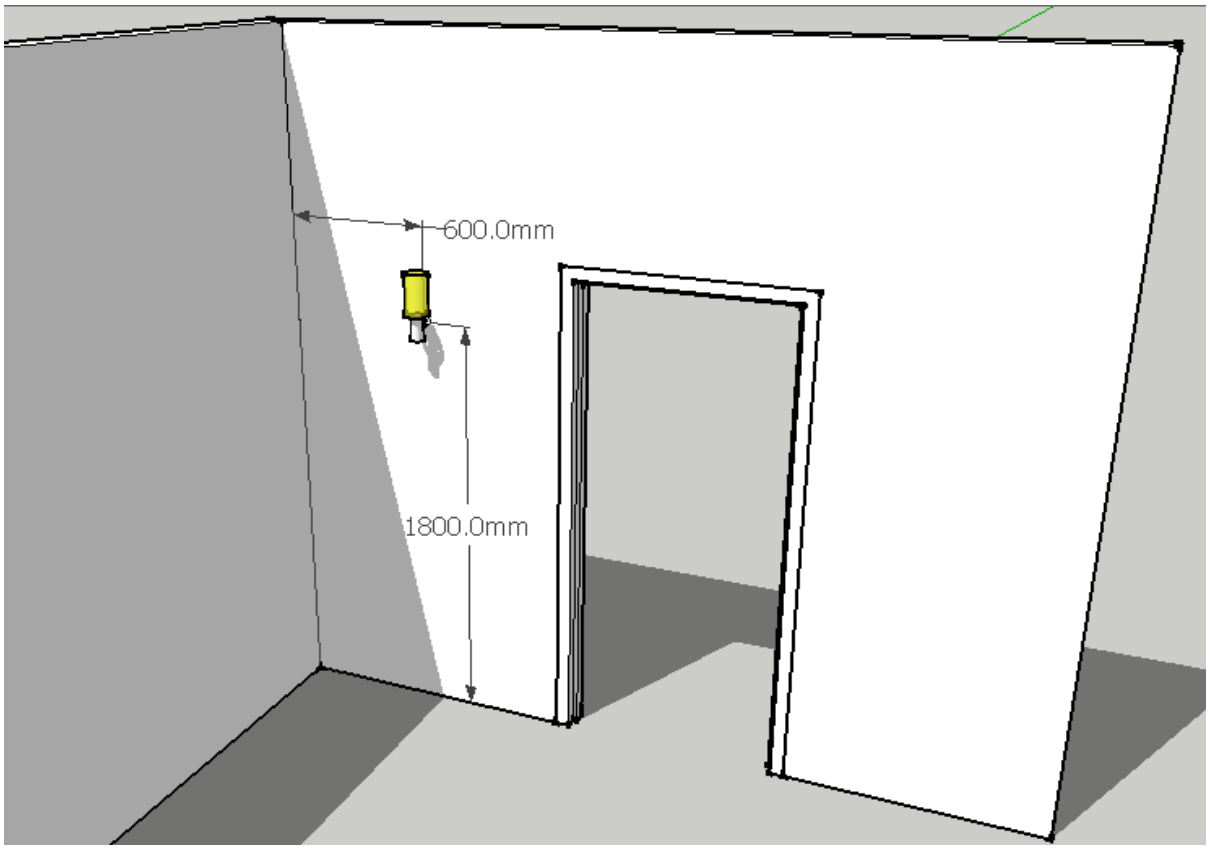
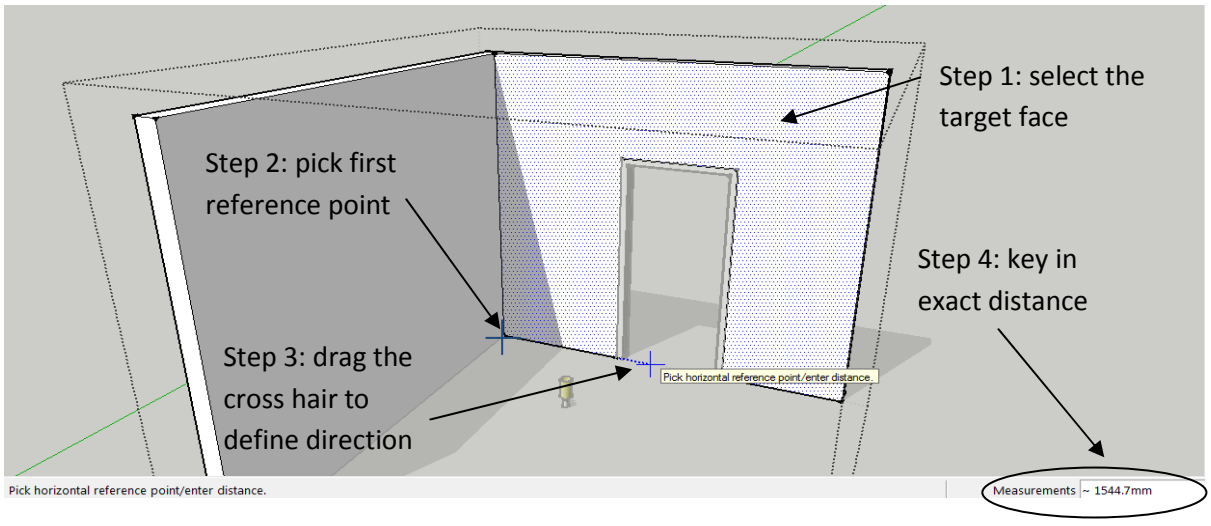
Point on face – setting out reference point.

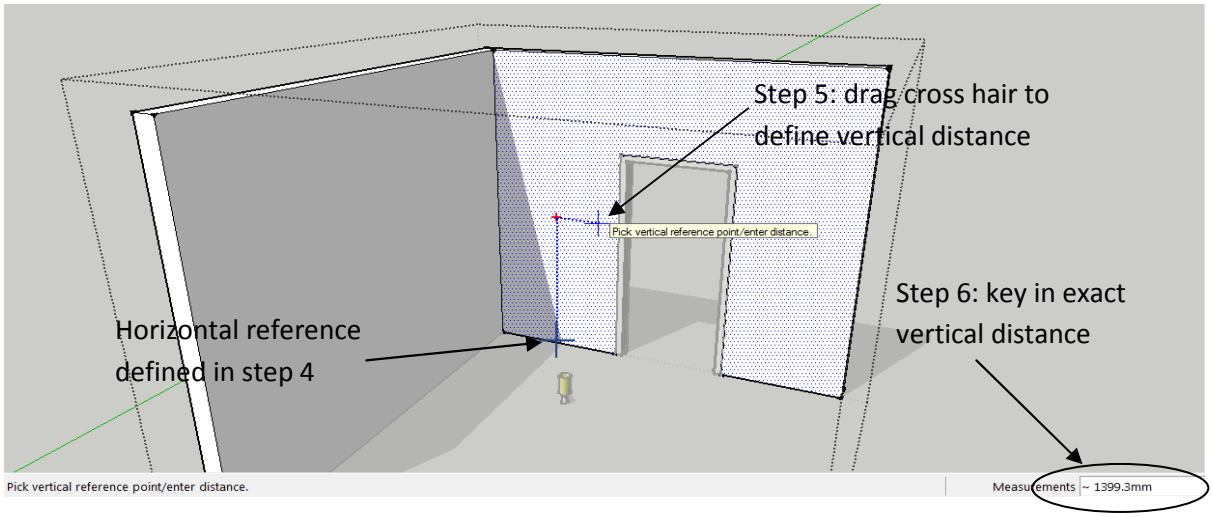
This tool places a construction point on a selected face by defining horizontal and vertical distances. It is intended to be used for creating setting out reference points, particularly on faces that is not vertical or horizontal.

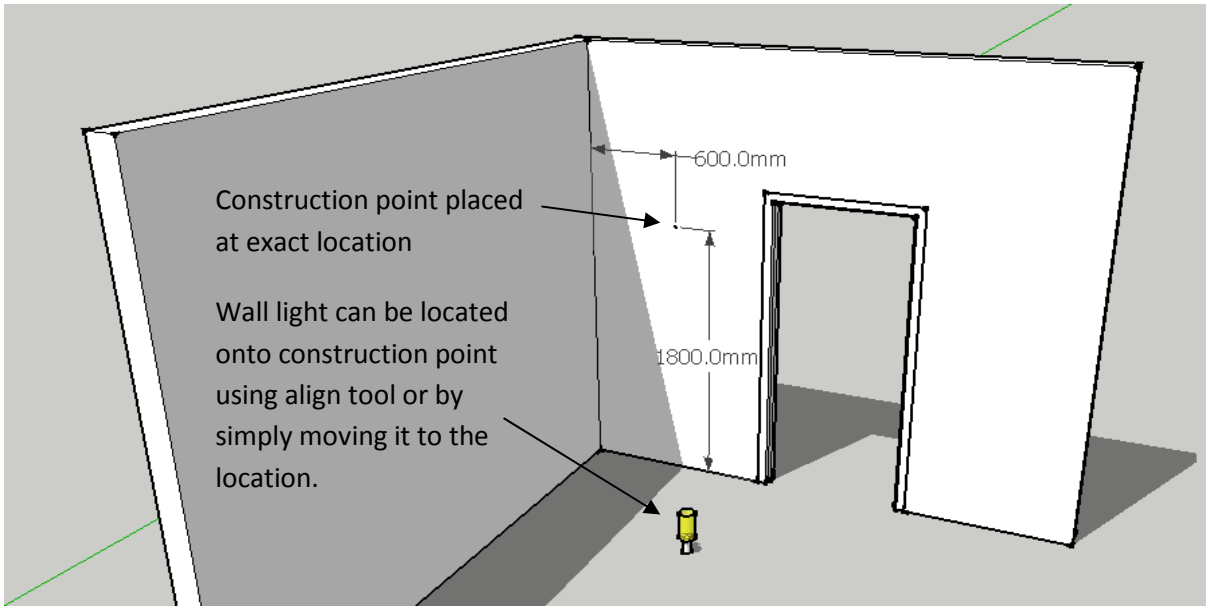
Example: to setup a wall light at exactly 600mm from edge of wall at a height of 1800mm.



Procedure:

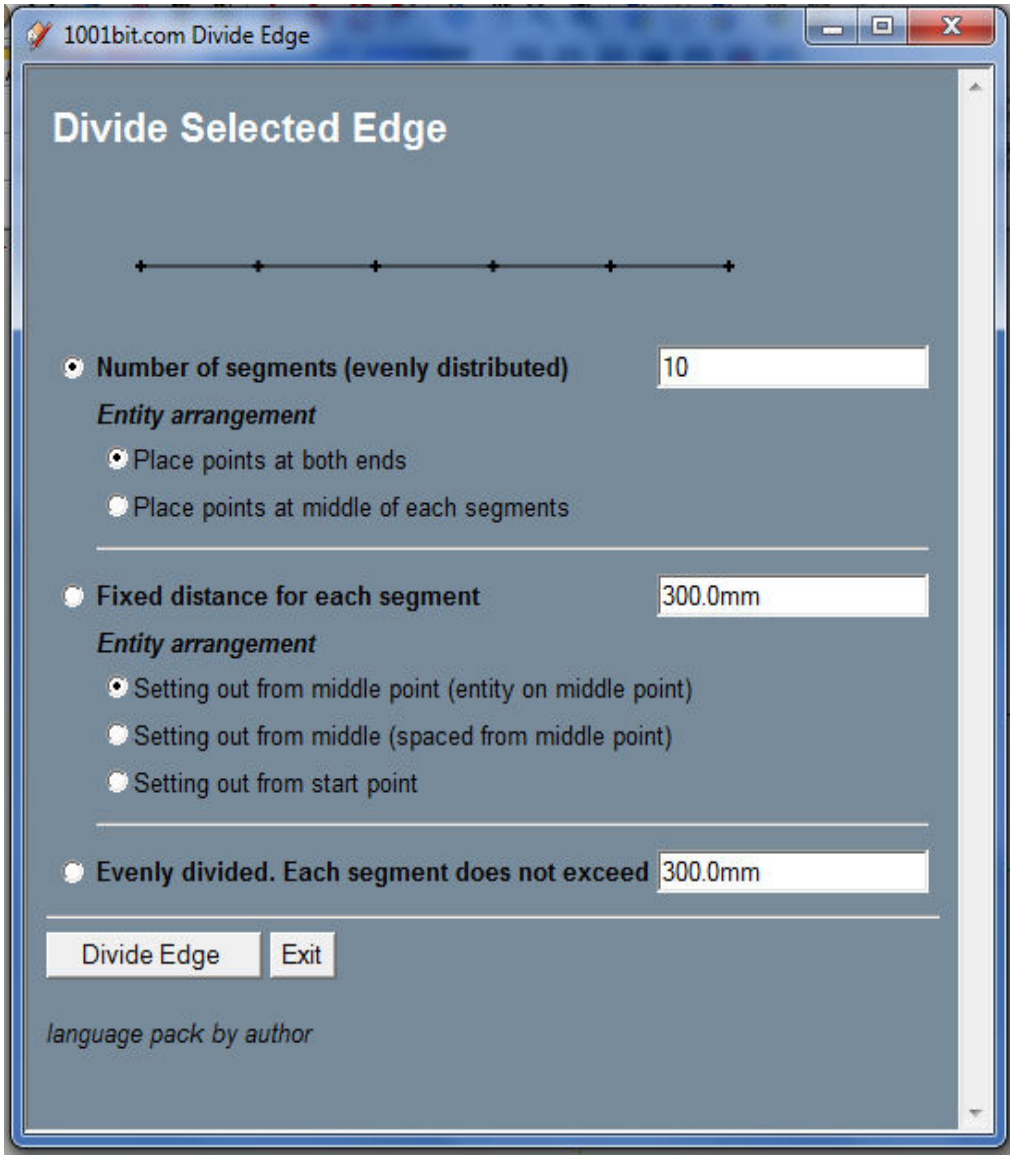



Step 5: drag cross hair to define vertical distance
Pick vertical reference point/enter distance.
Step 6: key in exact vertical distance
Horizontal reference defined in step 4
Pick vertical reference point/enter distance.
Measurements ~ 1399.3mm


600.0mm
Construction point placed at exact location
Wall light can be located onto construction point using align tool or by simply moving it to the location.
1800.0mm

Divide – divide selected edge with different setting out options

The divide tool creates a series of construction points along the selected edge. There are different setting out options to place the construction points.



Procedure:

Step 1: select the edge to divide.

Step 2: select any option to perform division.

Note that the selected edge remains as an edge. The divide tool only places reference points on the edge instead of physically dividing the edge.

Among the different division options are:

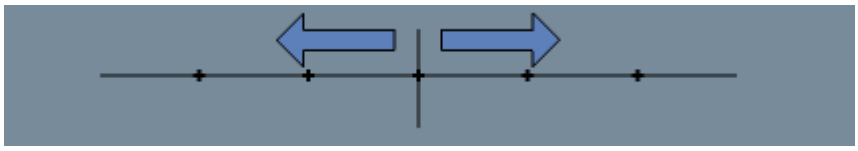
1) Evenly divide the edge by number of segments. This is again divided by

i) placing construction points either on the division segments

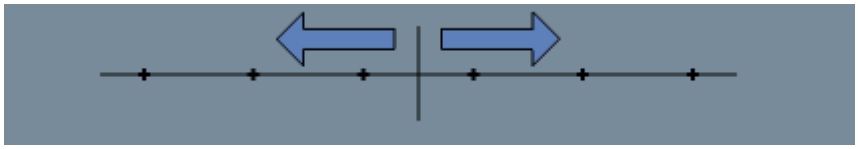
ii) placing construction points in the middle of the segments.

2) Fixed distance division. There are 3 options to divide with fixed distance:

i) Setting out the entities from the middle of the edge.



ii) Setting out the entities spaced from the middle of the edge.



iii) Setting out the entities from a starting end

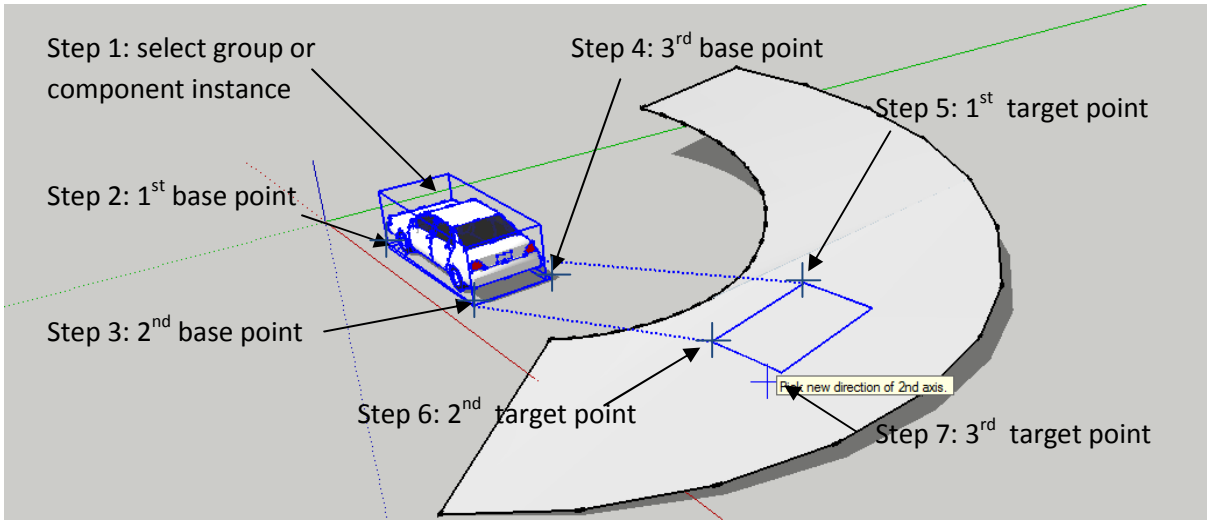
3) Divide edge into segments where the interval does not exceed a given distance.

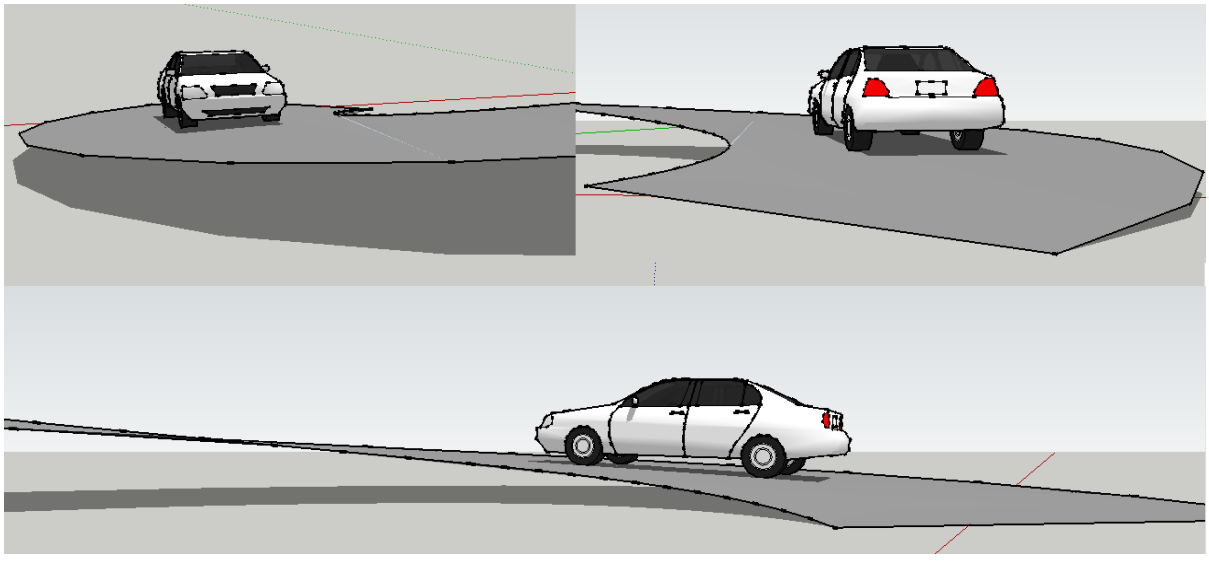
This option is particularly useful when there is a max gap to control; for example in case of staircase balusters.

Align selected entities

This tool allows for aligning any group or component instance by defining 3 basepoints and 3 target points. This is particularly useful for accurate placement of elements on non flat planes, for example placing a car on a slope, or placing a hatch opening onto a sloping roof surface.

Procedure:





The end result is the car that is perfectly placed with 4 wheels touching the sloping surface.

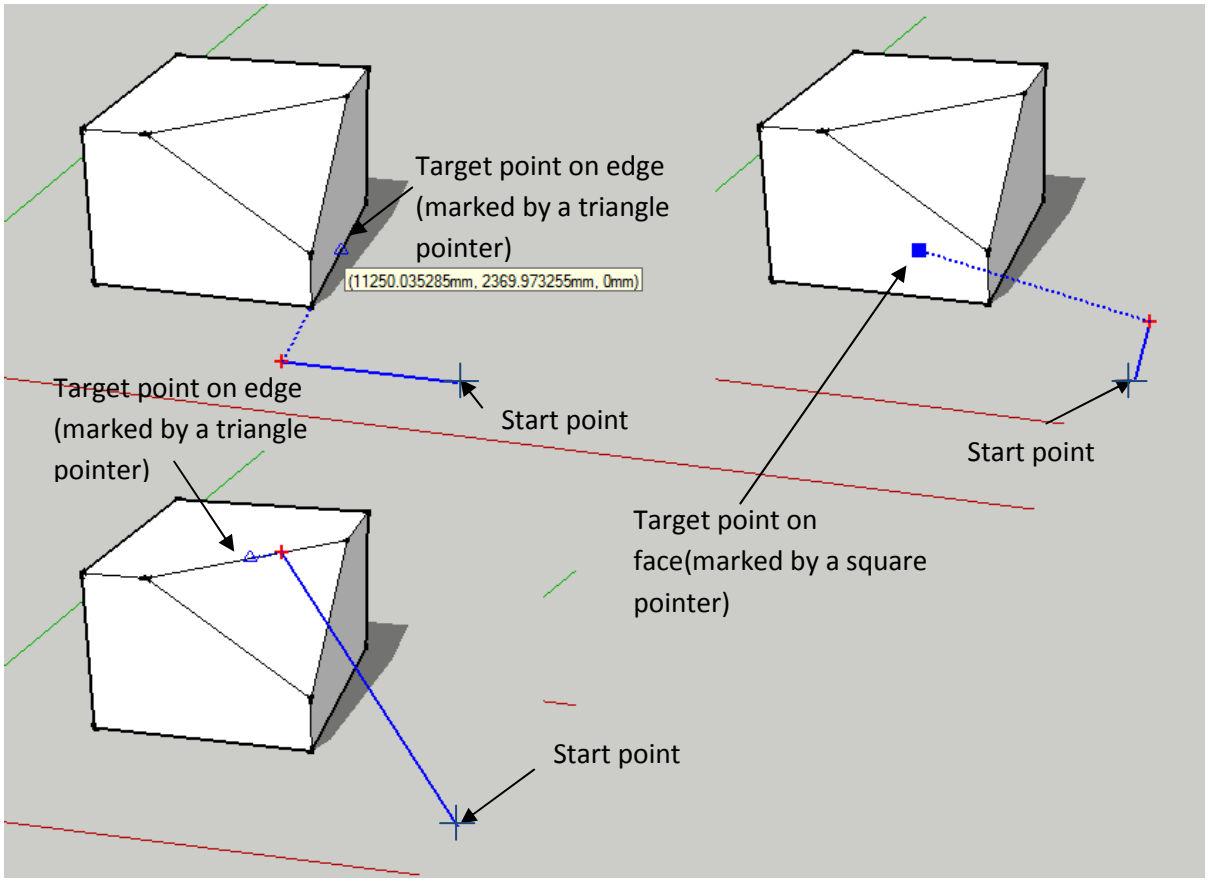
Perpendicular line

This tool draws an edge perpendicular to another edge, or a face.

Procedure:

Step1: pick start point

Step 2: point to an edge or a face. If target is an edge, the edge is drawn perpendicular to the line projected from that edge. If target is a face, the edge is drawn perpendicular to the plane defined by the face.



Face on plane defined by 3 points

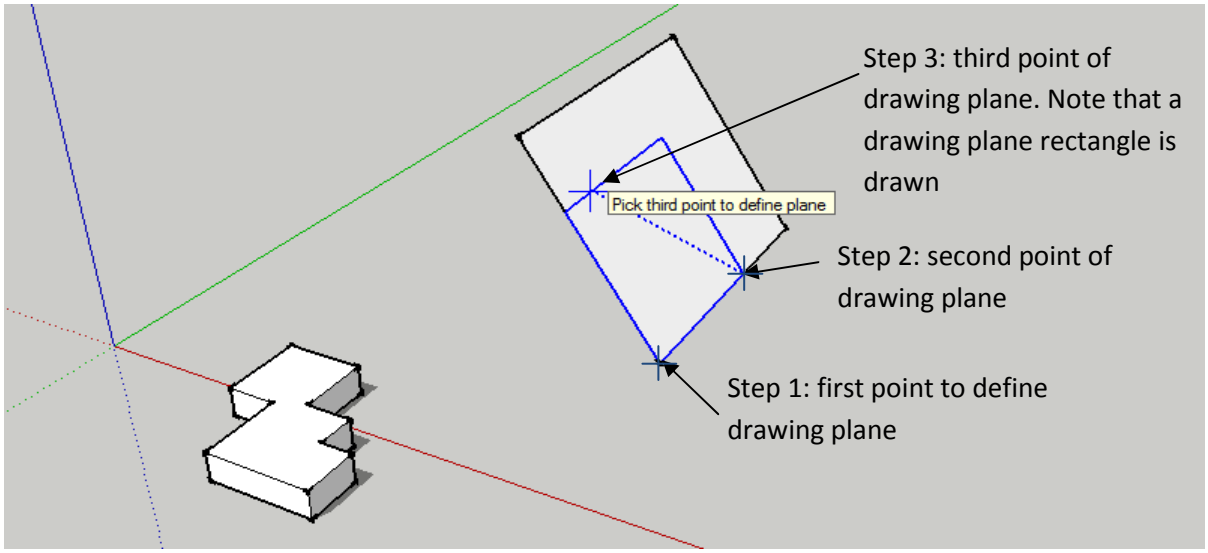
This tool draws a face on a plane defined by 3 points. This is useful in tracing a profile projected to a target plane, or creating a face by tracing along minor non-coplanar points.

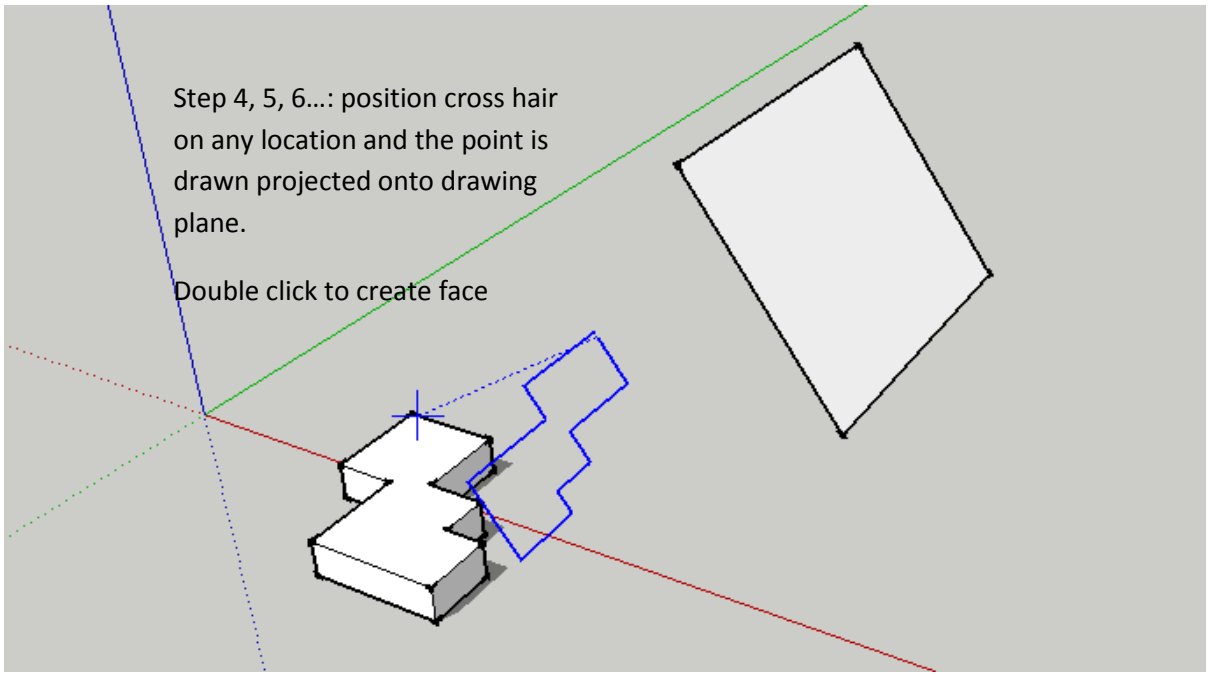
Procedure:

Step1,2 and 3: pick 3 points to define the drawing plane.

Step 4, 5…..: pick points on any location; points are always drawn projected perpendicular to the drawing plane.

Double click on last point to create face.



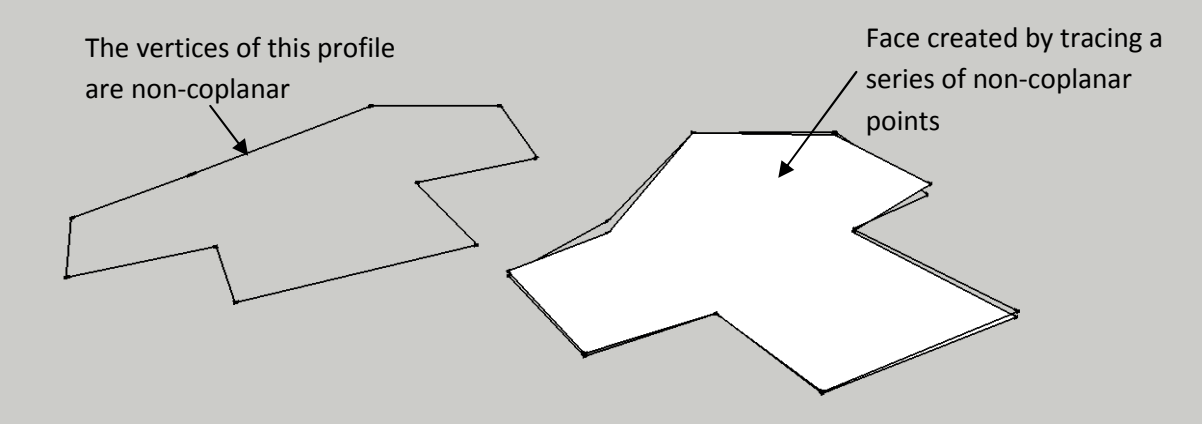


Best fit face

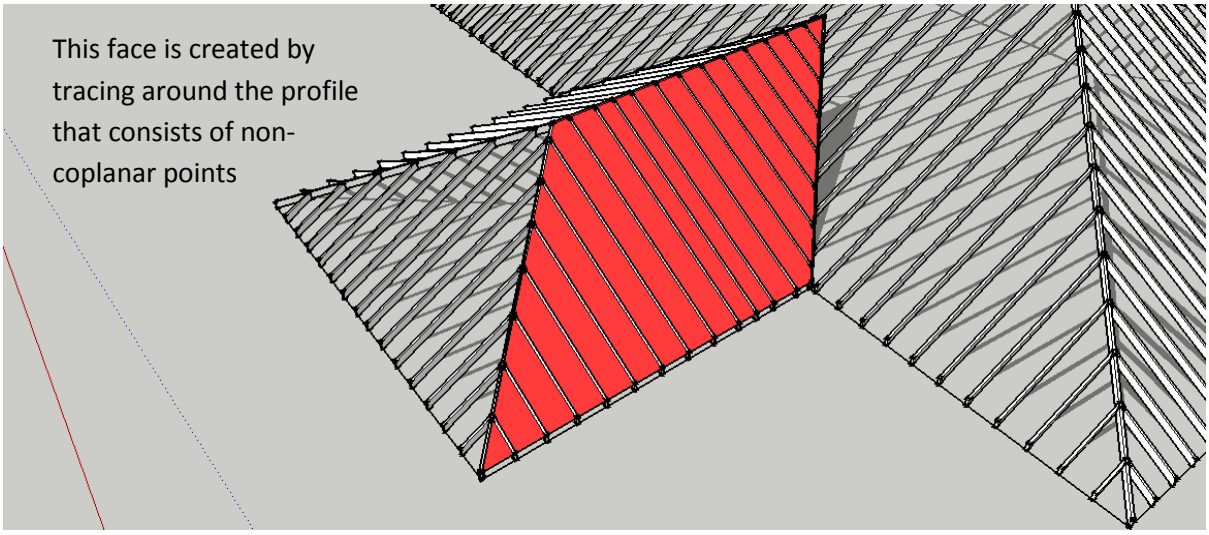
This tool creates a face from a series of non-coplanar points. This is useful when patching up models with minor non-coplanar points.

Procedure:

Pick series of points. Double click to create face.



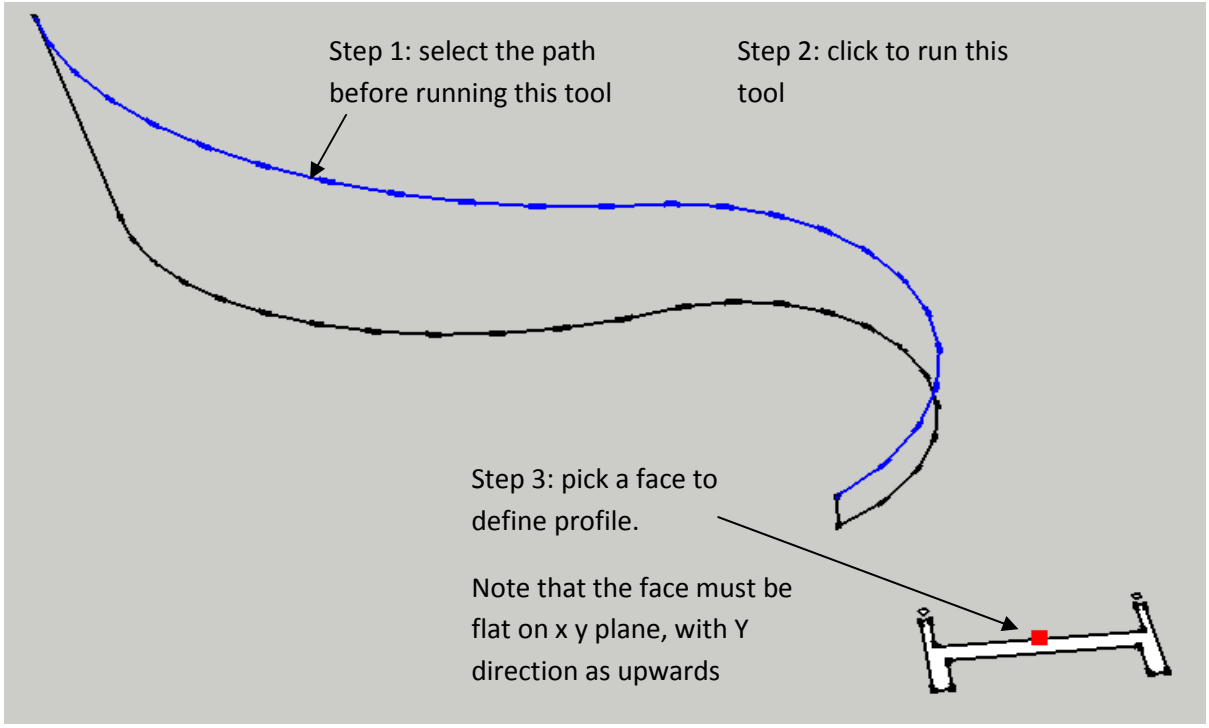
This tool, together with face on plane tool is meant for repairing/patching up a model where minor non-coplanar points prevents the effective drawing of a face. Example of application is drawing a roof face from the rafters below.

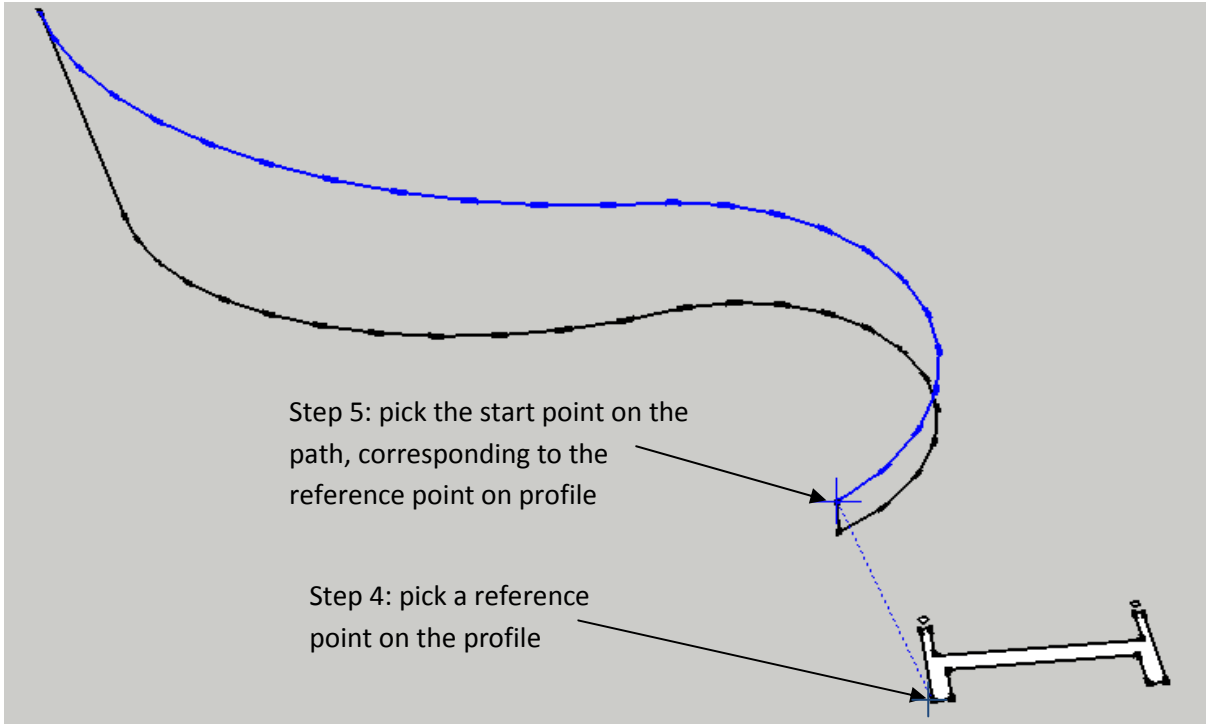


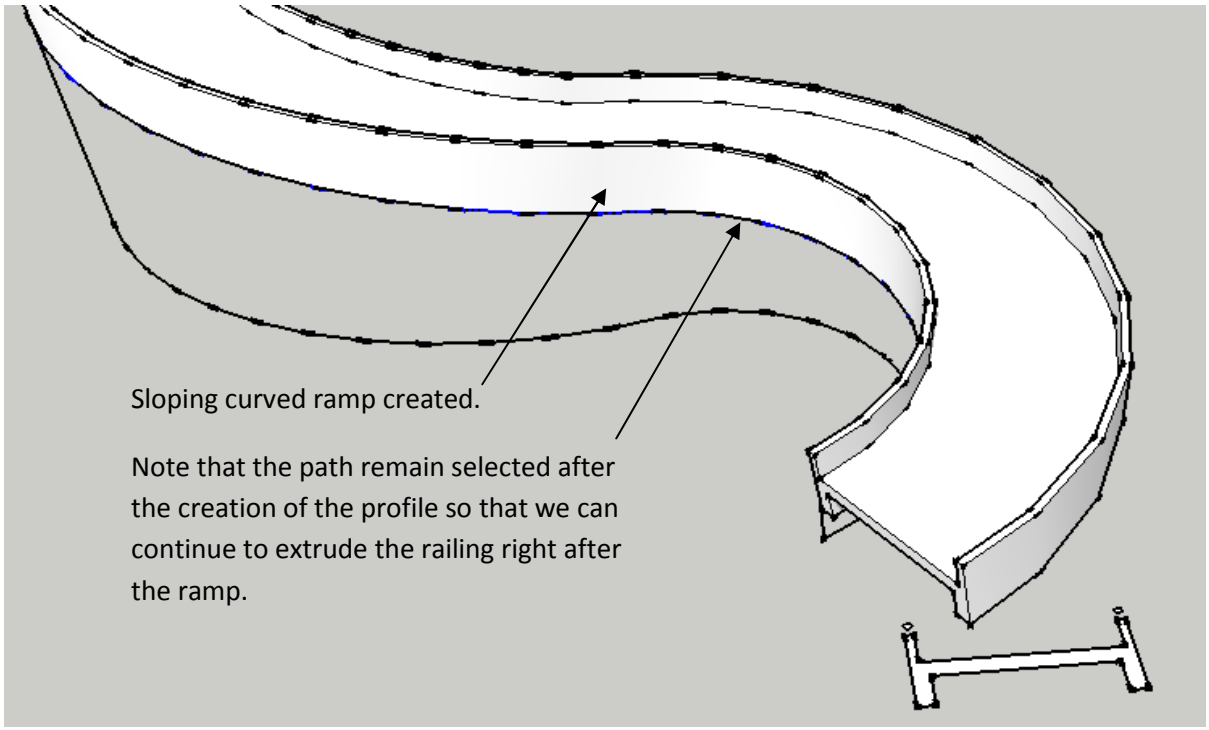
Extrude along sloping curved path

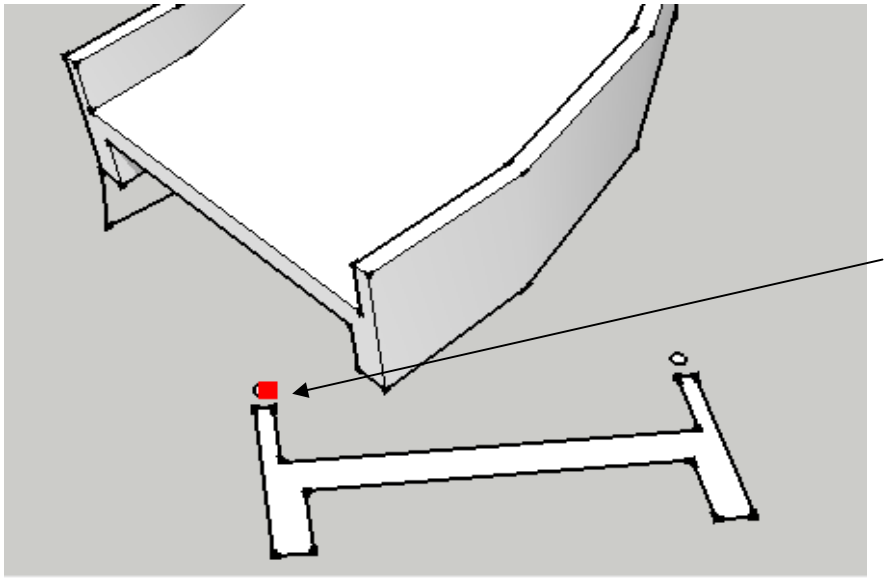
This tool is specially meant for extruding a profile along a sloping curved path; for example, car park ramp, railing of spiral staircase, etc. The tool will maintain vertical profile along the slope.

Procedure:





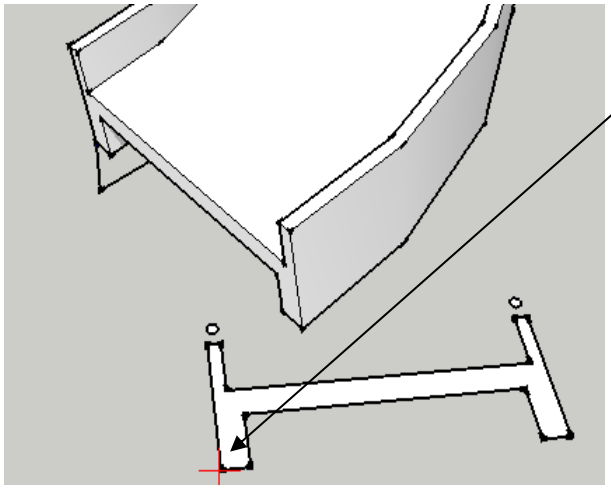




To continue creating the railing, (with the path remain in selection)

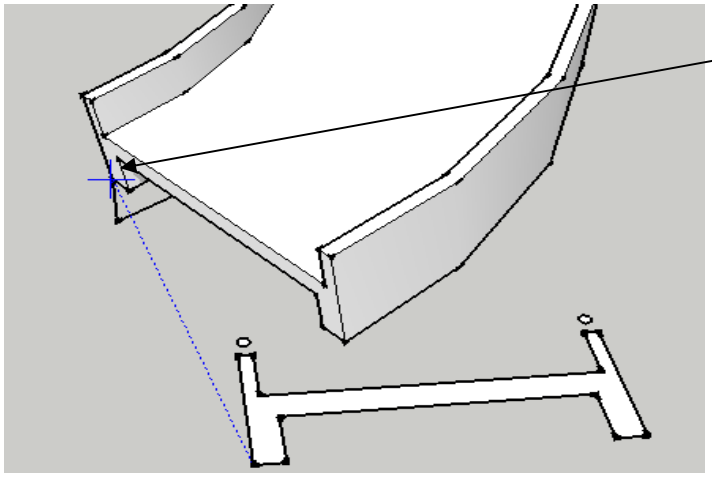
Step 1: call the tool,

Step 2: pick on the profile



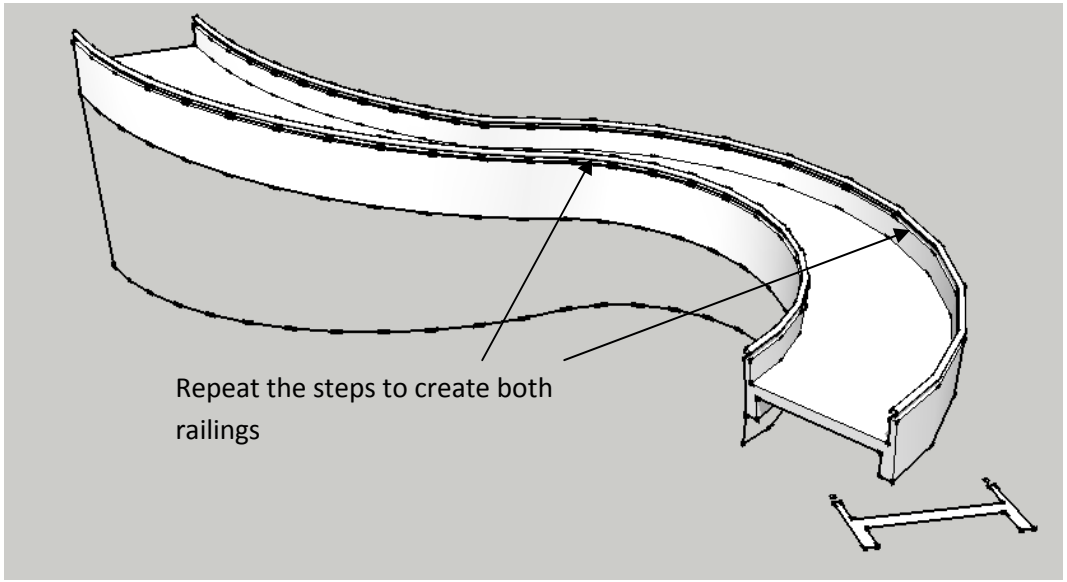
Step 3: pick on the reference point.

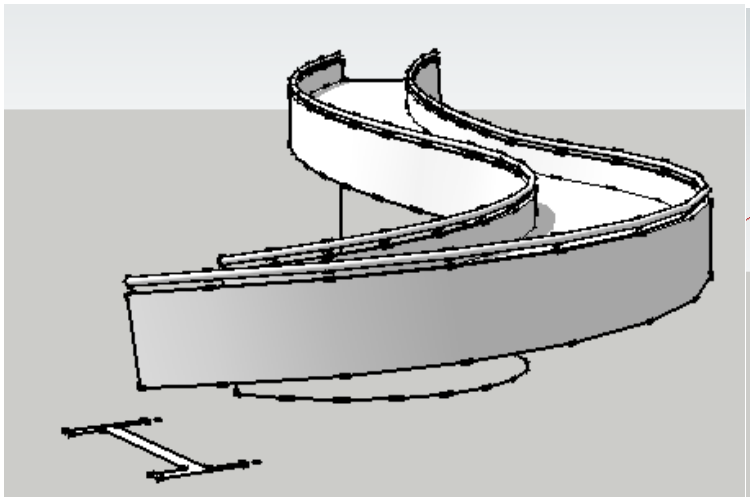
Please take extra note that the reference point here is the same reference point used to create the ramp. This will ensure that the railing is positioned at the correct location in relation to the ramp.

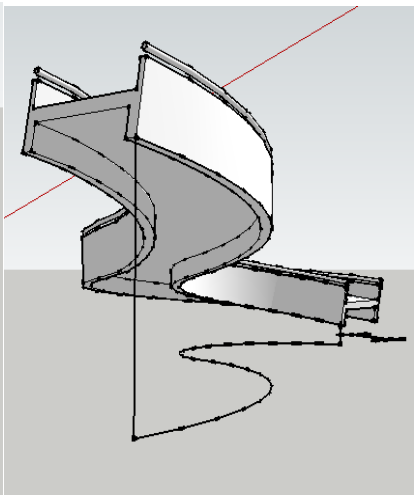


Step 4: pick on the reference point on path.

Please take extra note that the reference point here is the same reference point used to create the ramp. This will ensure that the railing is positioned at the correct location in relation to the ramp.







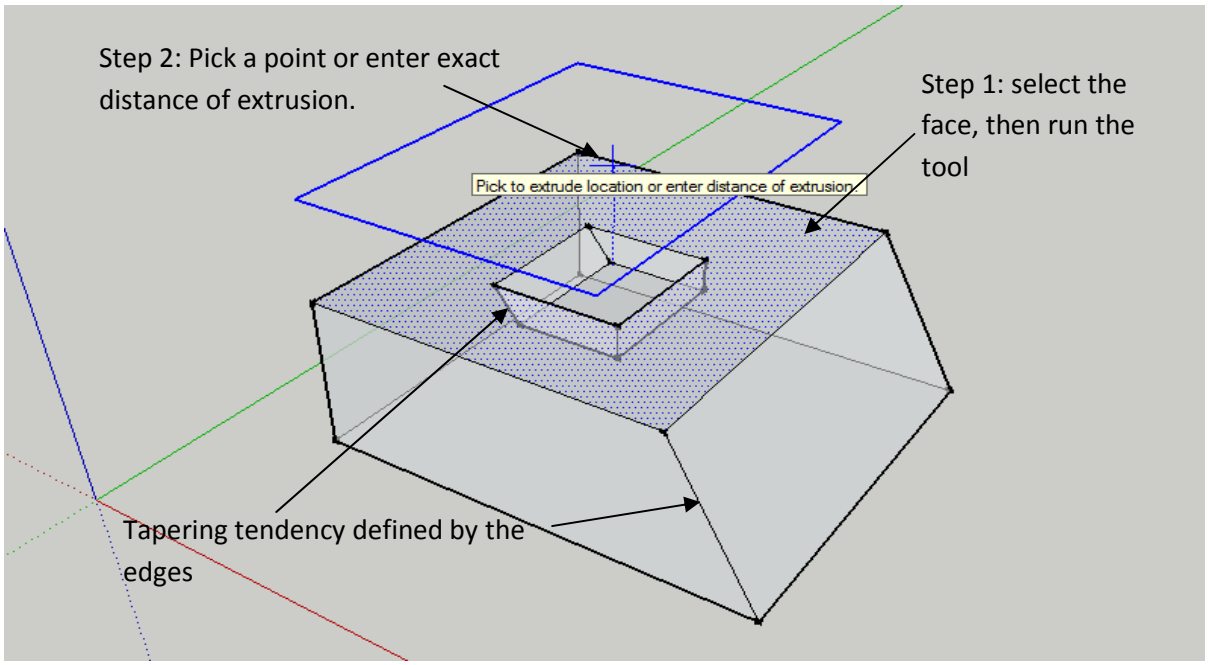
Extrude maintaining taper

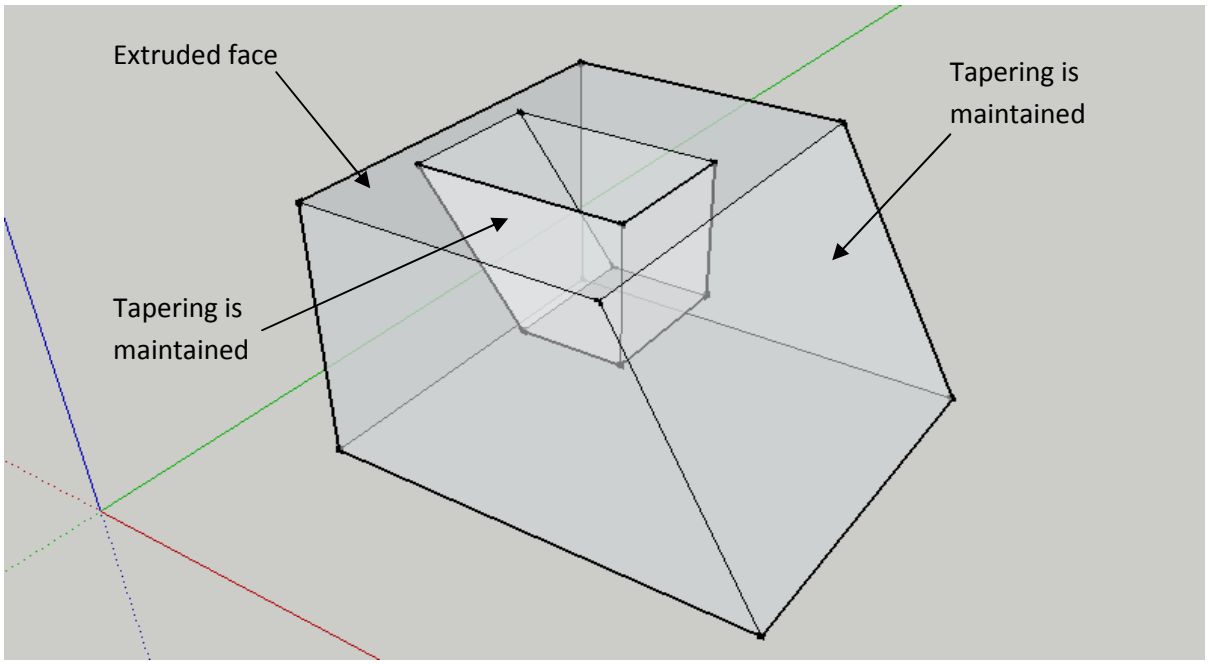
This tool extrudes a selected face while maintaining any tapering tendency that is associated with the face.

Procedure:

Step 1: select the face, then run the tool.

Step 2: Pick a point or enter exact distance.

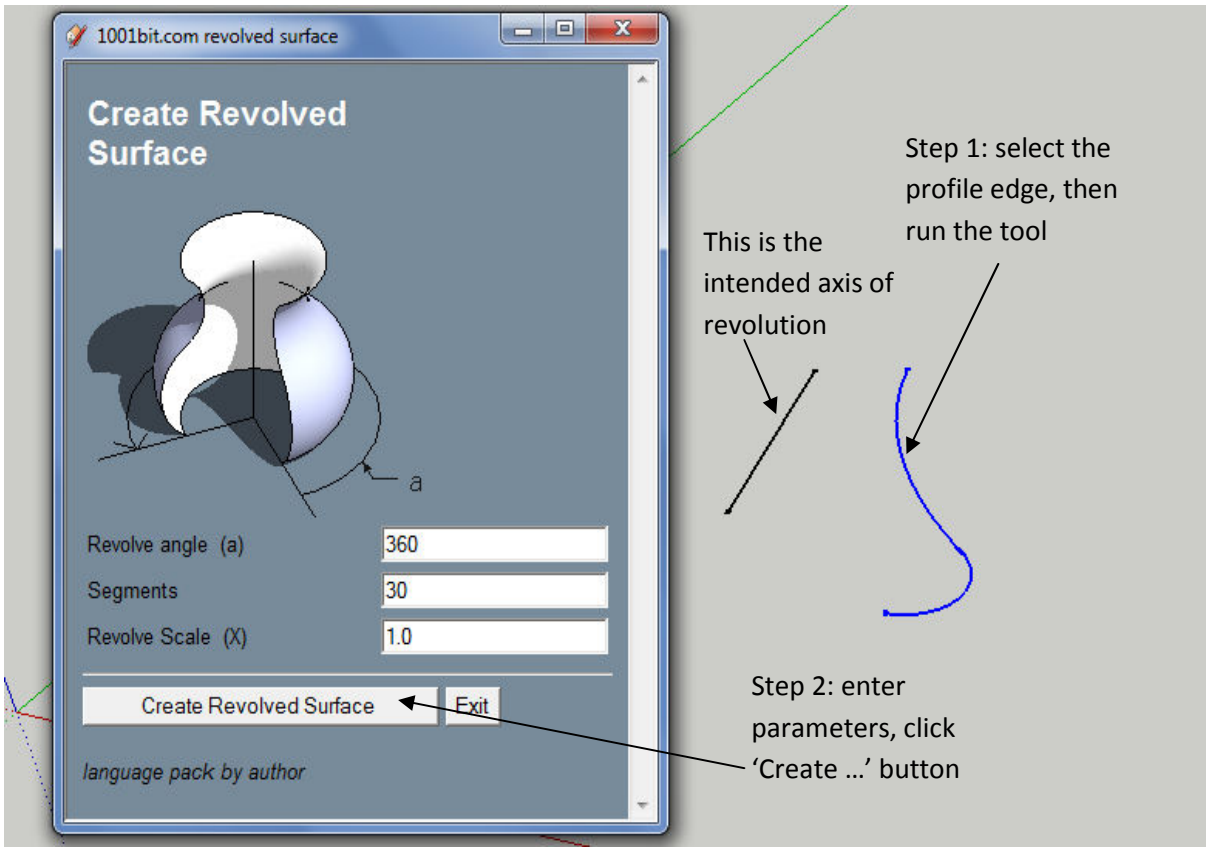


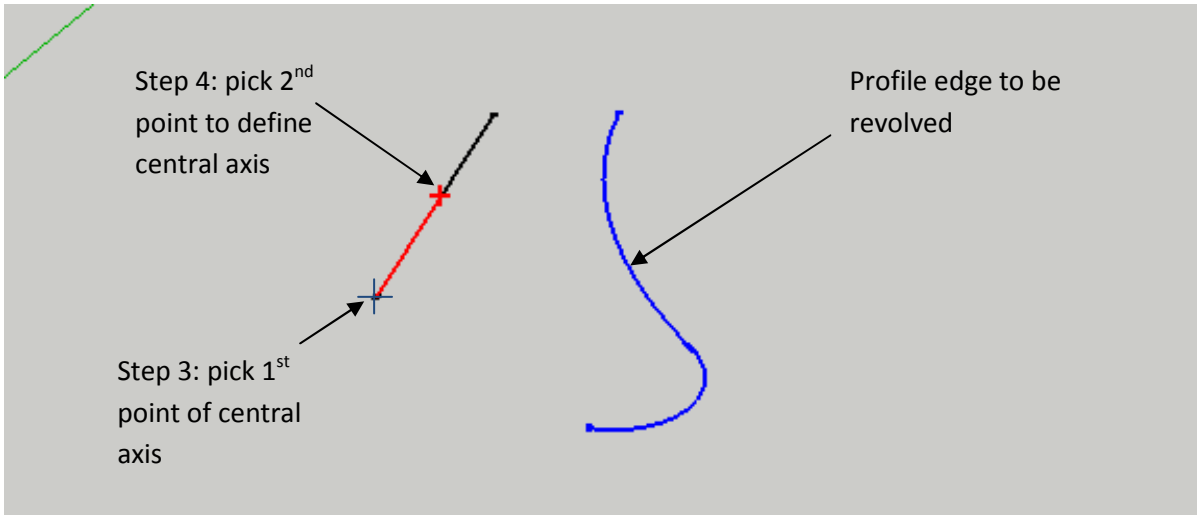


Revolved surface

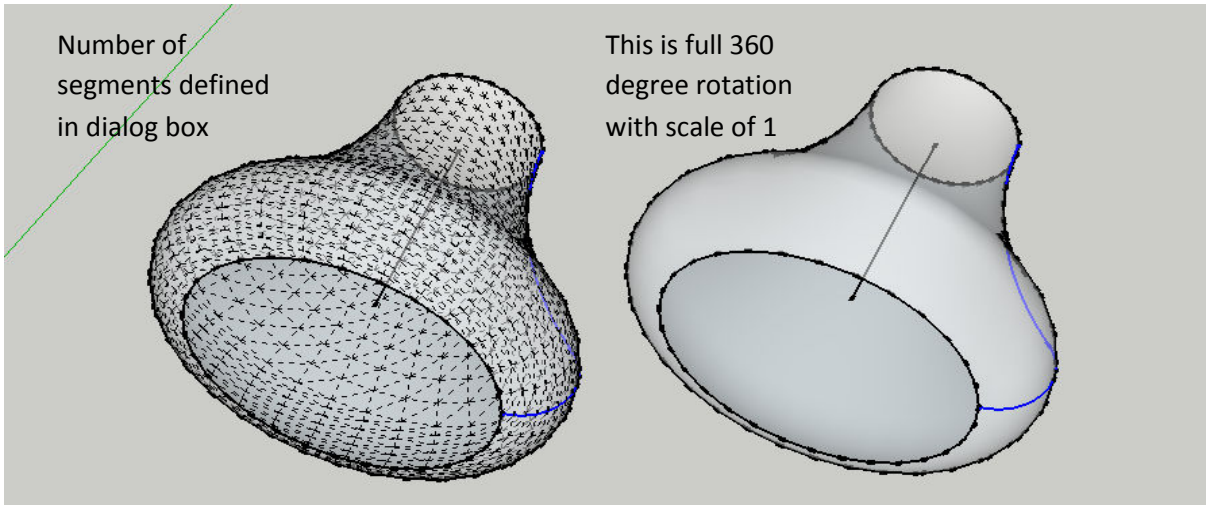
This tool creates surface by revolving along a selected profile along a defined axis. It has an added feature to scale profile as it's being revolved. The scale factor refers to the ratio of the final distance of a point to the axis over its original distance.

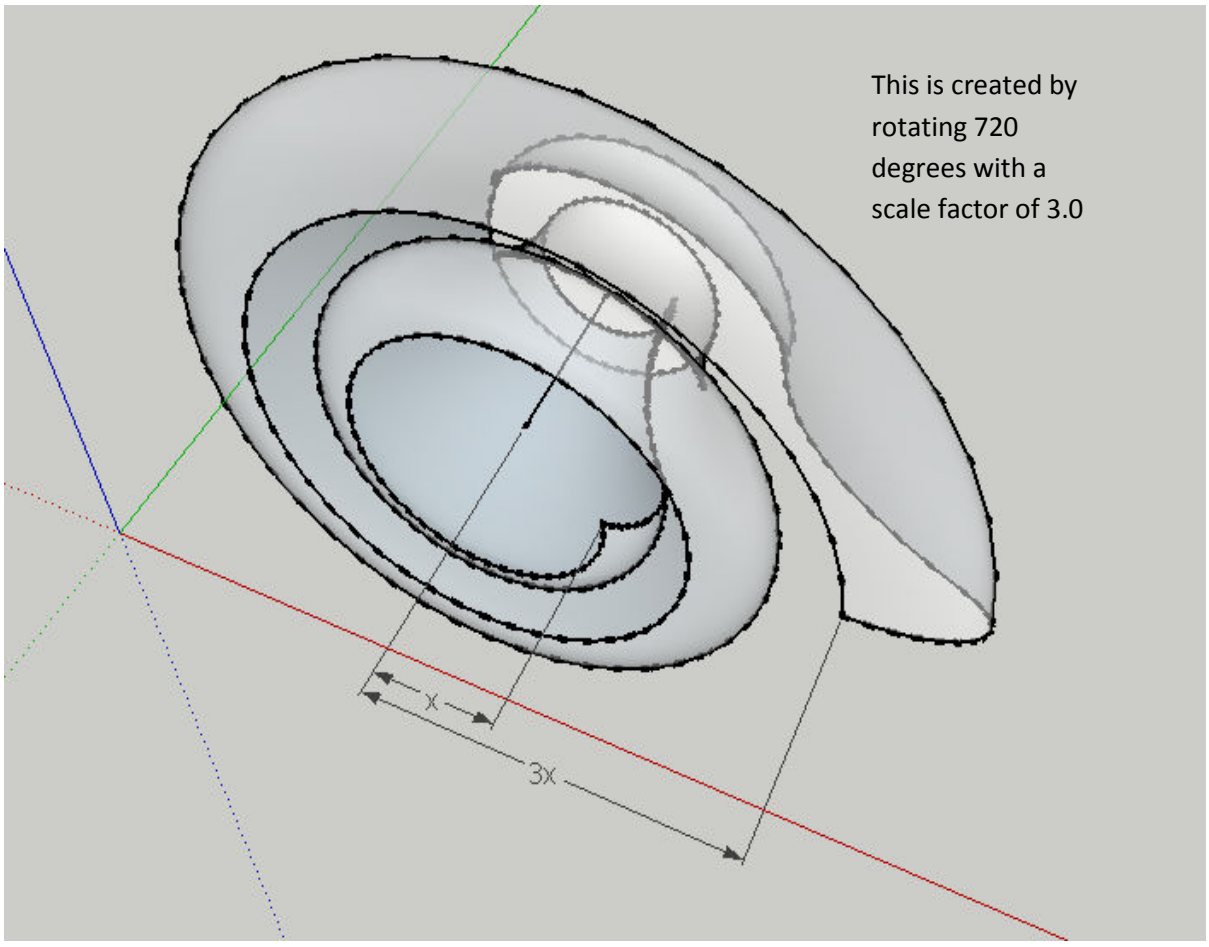
Procedure





Note that this tool may take a while to generate the surfaces. If Sketchup seems to be 'frozen', just let it be for a while. The tools are most probably still running...


Number of segments defined in dialog box
This is full 360 degree rotation with scale of 1


This is created by rotating 720 degrees with a scale factor of 3.0
x
3x

Move vertex

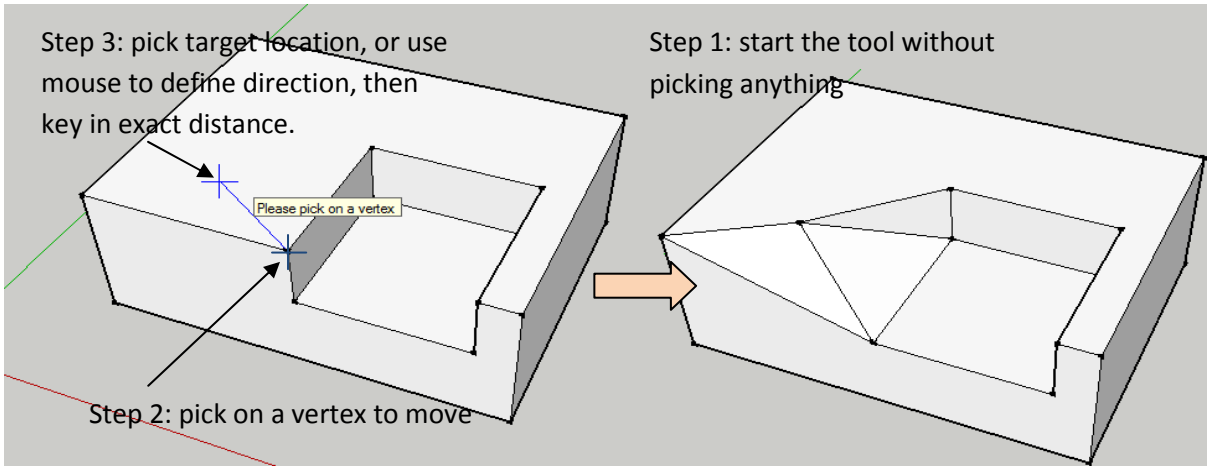
This tool allows for flexible editing of individual vertex of a model.

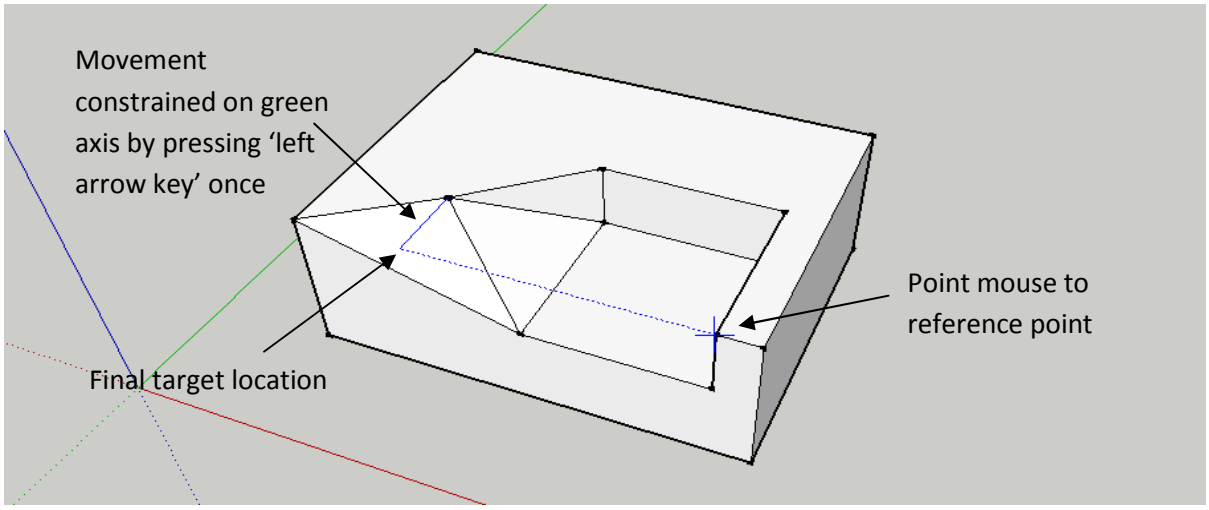
Procedure

Step 1: start the tool (no need to select anything)

Step 2: pick any vertex

Step 3: pick target location. Note that you can also point the cross hair to any direction, then key in the exact distance. The vertex will be moved to the distance in that direction.





Use the arrow keys to keep the target point along a fixed inference;

Left arrow – green (Y) axis

Right arrow – red (X) axis

Up arrow – blue (Z) axis

Down arrow – release

Fillet

This tool creates a radius fillet between 2 edges. (note that the edges has to intersect)

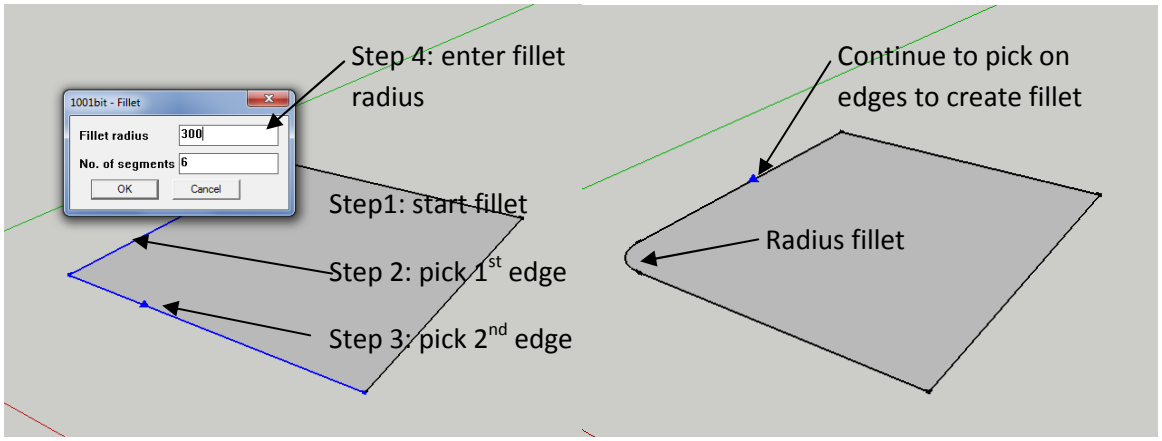
Procedure:

Step 1: run fillet tool

Step 2: select 1st edge

Step 3: select 2nd edge

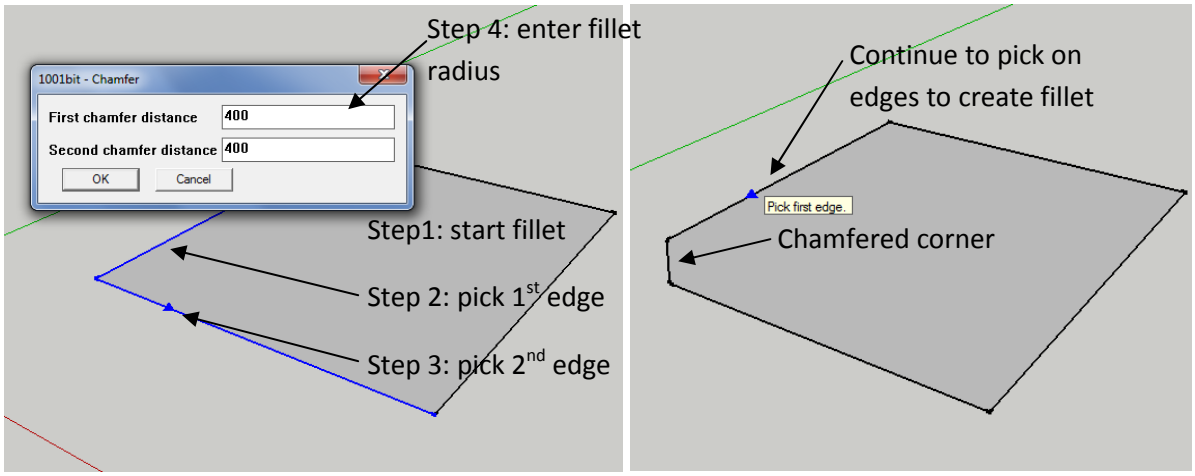
Step 4: enter radius of fillet (you can also enter number of segments in Pro version)



Chamfer

This tool is similar to fillet tool except it creates chamfered corners.

Procedure:



Extend

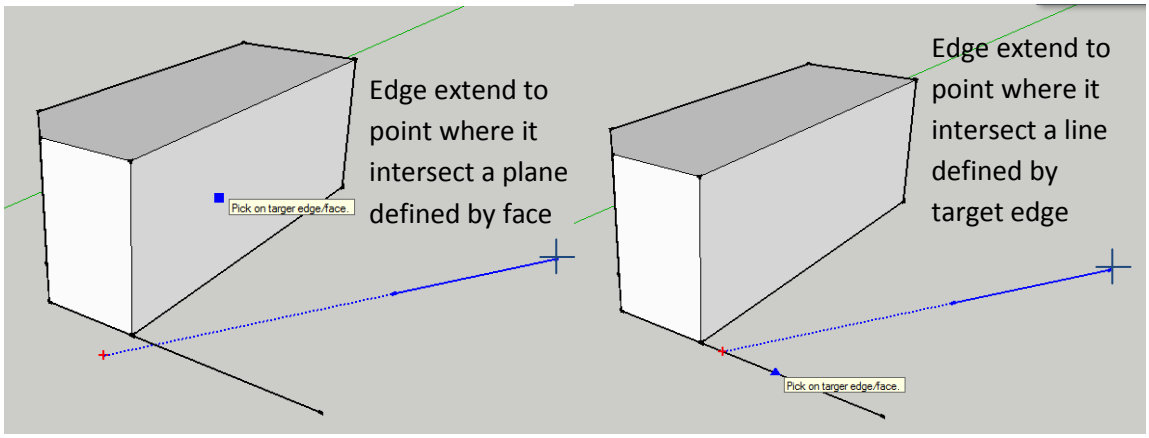
This tool extends an edge to a face or another edge.

Procedure:

Step 1: pick an edge then run the tool

(note: this tool also works if you run the tool first then pick the edge)

Step 2: move the cross hair to target face or edge and click left button.



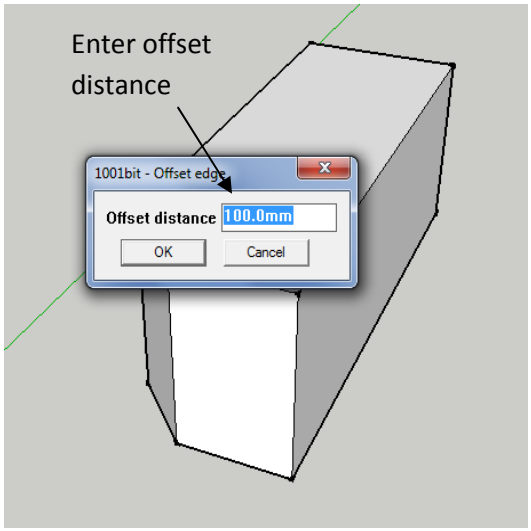
Offset

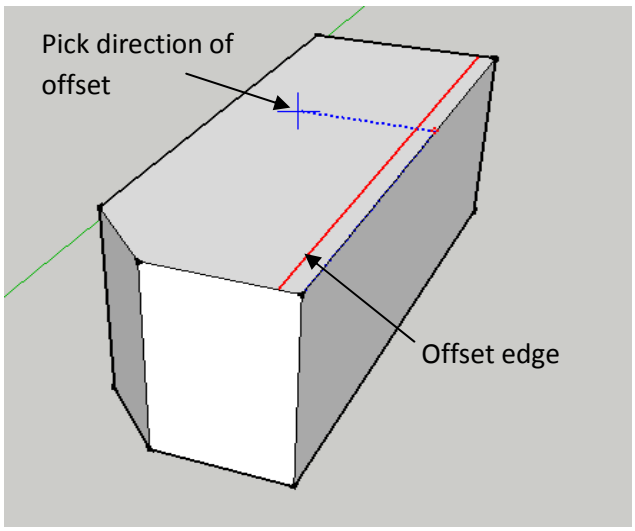
This tool offsets an edge at a distance from the edge.

Procedure:

Step 1: run the tool and enter offset distance.

Step 2: pick an edge, then pick on offset direction.





Horizontal slice selected face

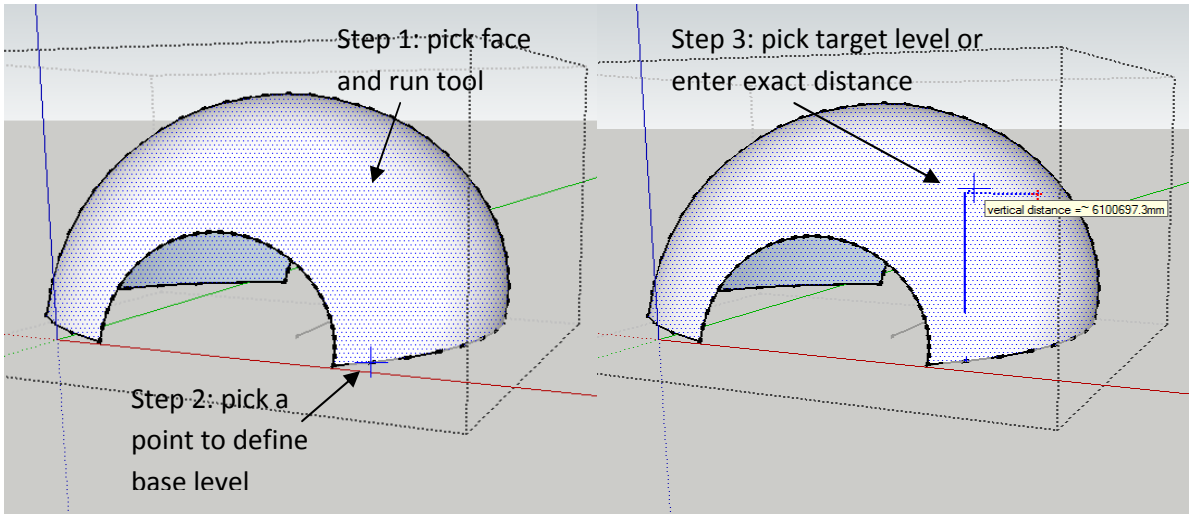
This tool slices faces connected to the selected face /faces at a horizontal level.

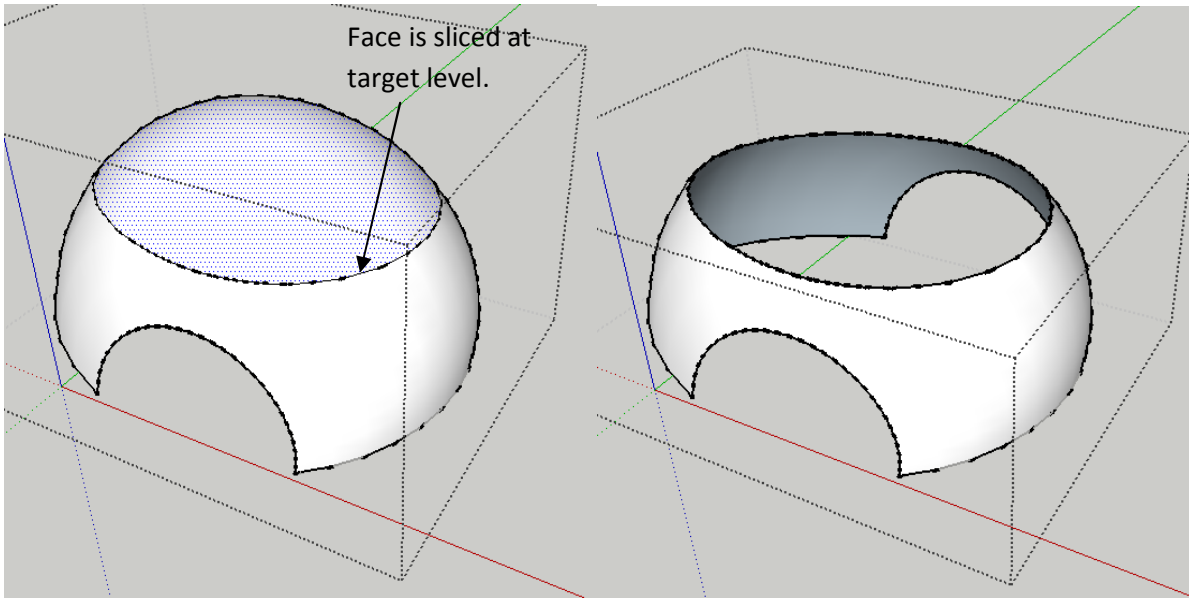
Procedure:

Step 1: Select the face/faces and run tool.

Step 2: pick a reference level (for example ground level. This is intended for accurately placing the cutting plane at a certain distance over a base level)

Step 3: pick the target level or enter the exact distance.





Slope selected edges

This tool allows the user to change the selected edges into one with continuous slope. It comes with a slope calculator that allows for calculation of gradients between degrees and ratio as well as actual height in relation to the length of the edges.

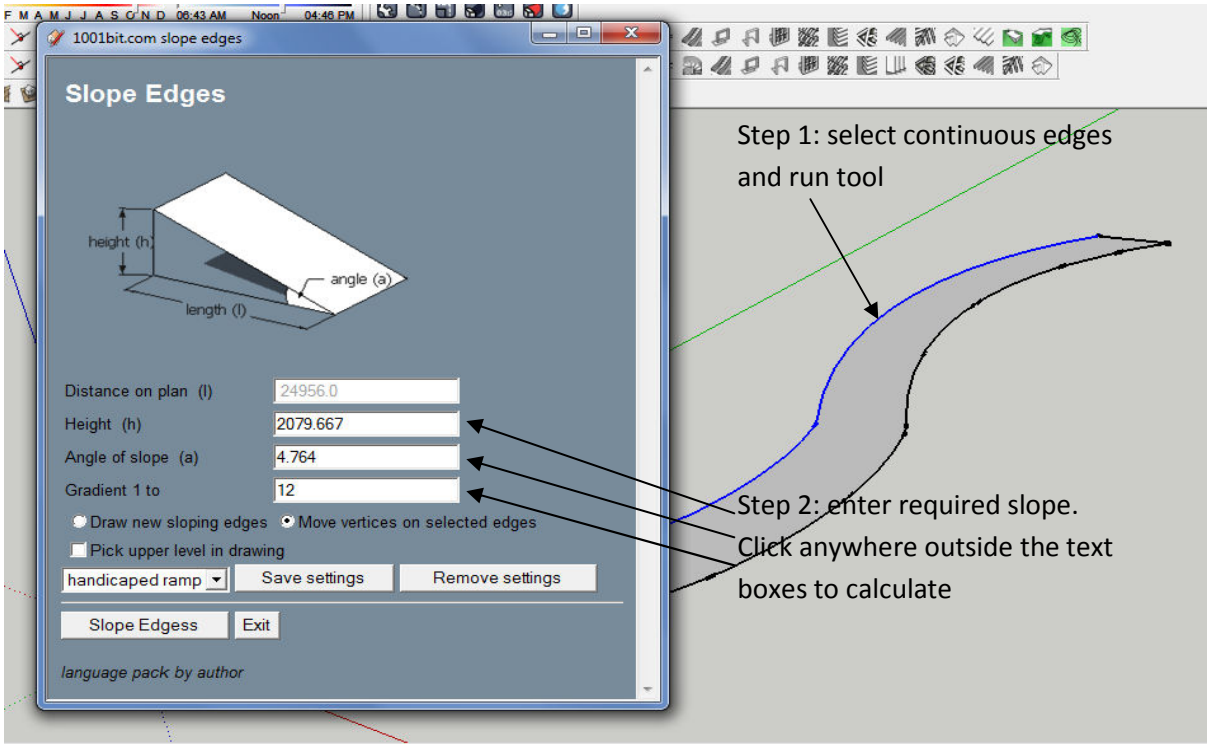
Procedure:

Step 1: select continuous edges to slope and run the slope selected edges tool. Note that the edges doesn't not have to be flat on x,y plane.

Step 2: enter the required slope. (can be angle, final height, ratio)

Step 3: pick start point (lower point of slope)

Step 4: pick start level (you can draw the edges at any level. By picking a start level, the slope will start from this level)



Note that you can select following options

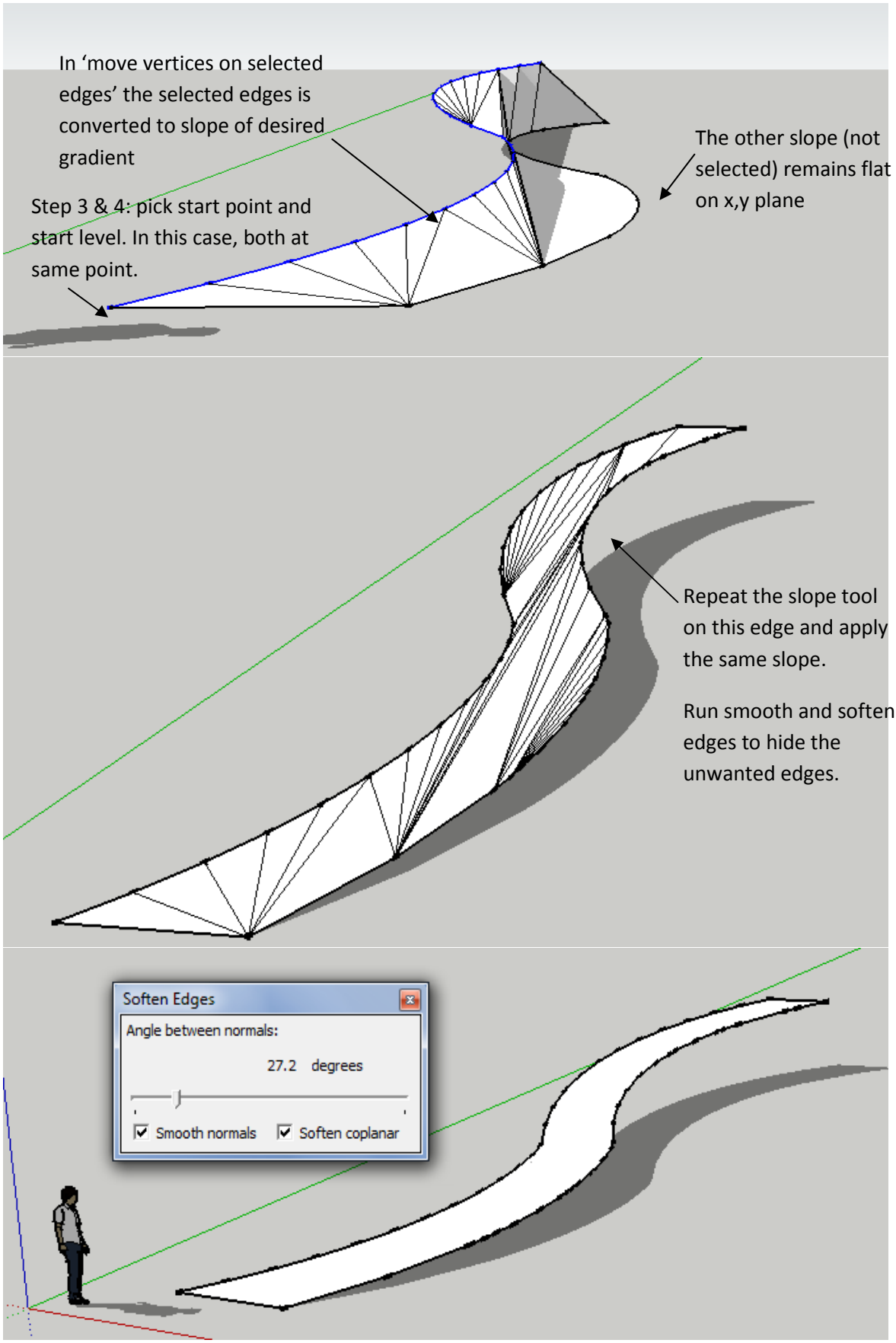
i) create new sloping edges based on the selected .

ii) move/stretch the selected edges to match the desired slope.

User can also choose to pick upper level. This will create a even slope from base level to final level.

There is also an option to save and select preset settings for different slopes (PRO version only)

Step 5: click ‘Slope edges’ to create slope.



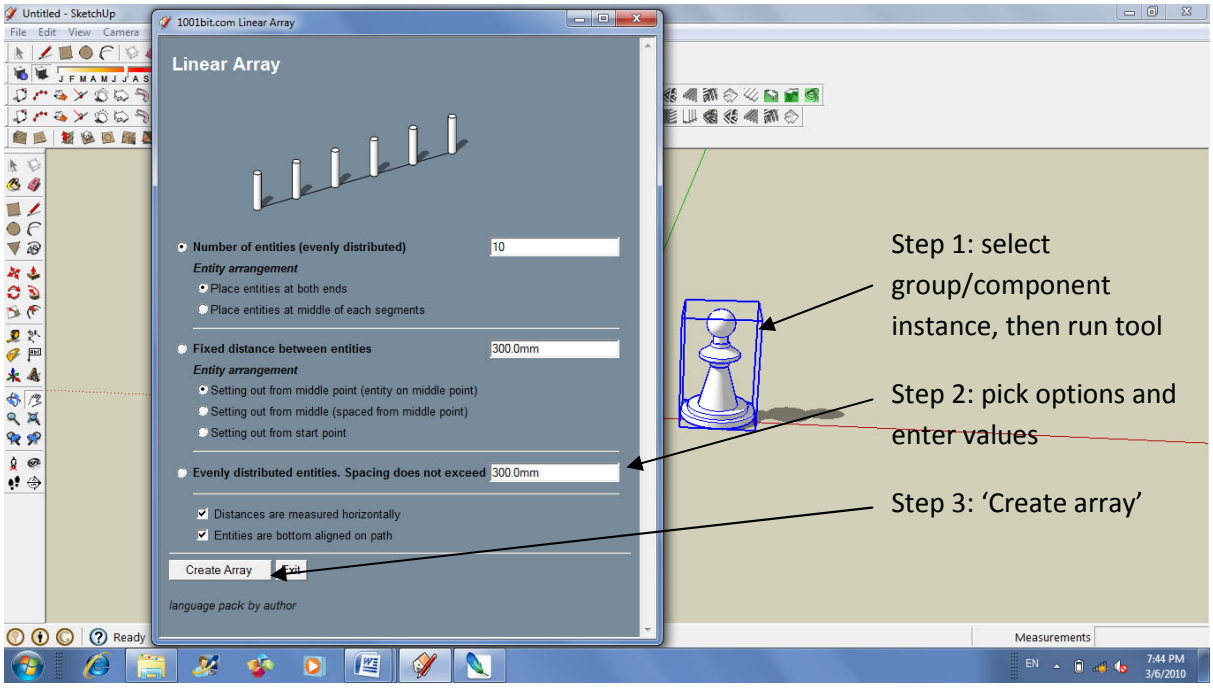
Linear array

This tool creates an array of group/component instance along a straight line.

Step 1: select a group or a component instance then run the array tool.

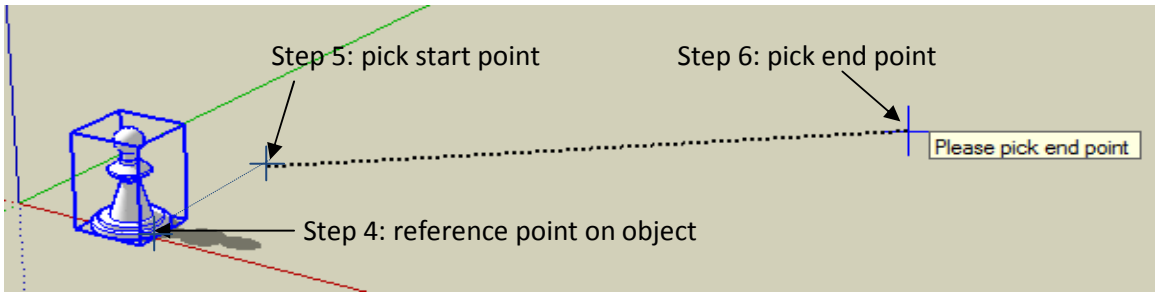
Step 2: pick desired options and enter desired value into the dialog box.

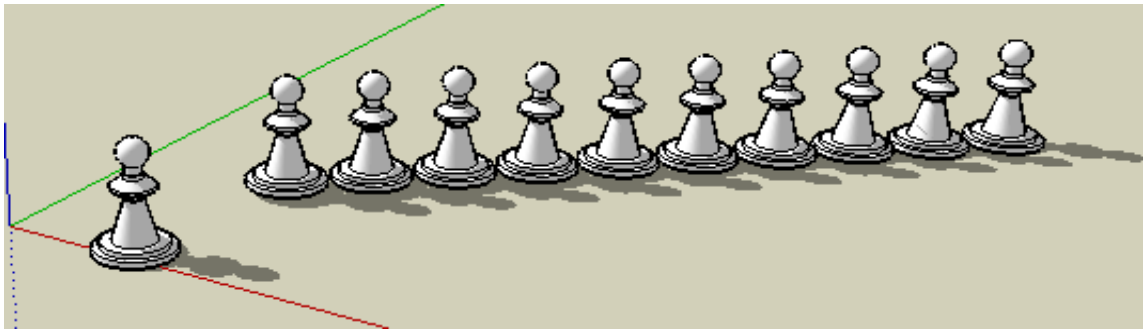
Step 3: click ‘Create array’



Step 4: pick start point

Step 5: pick end point

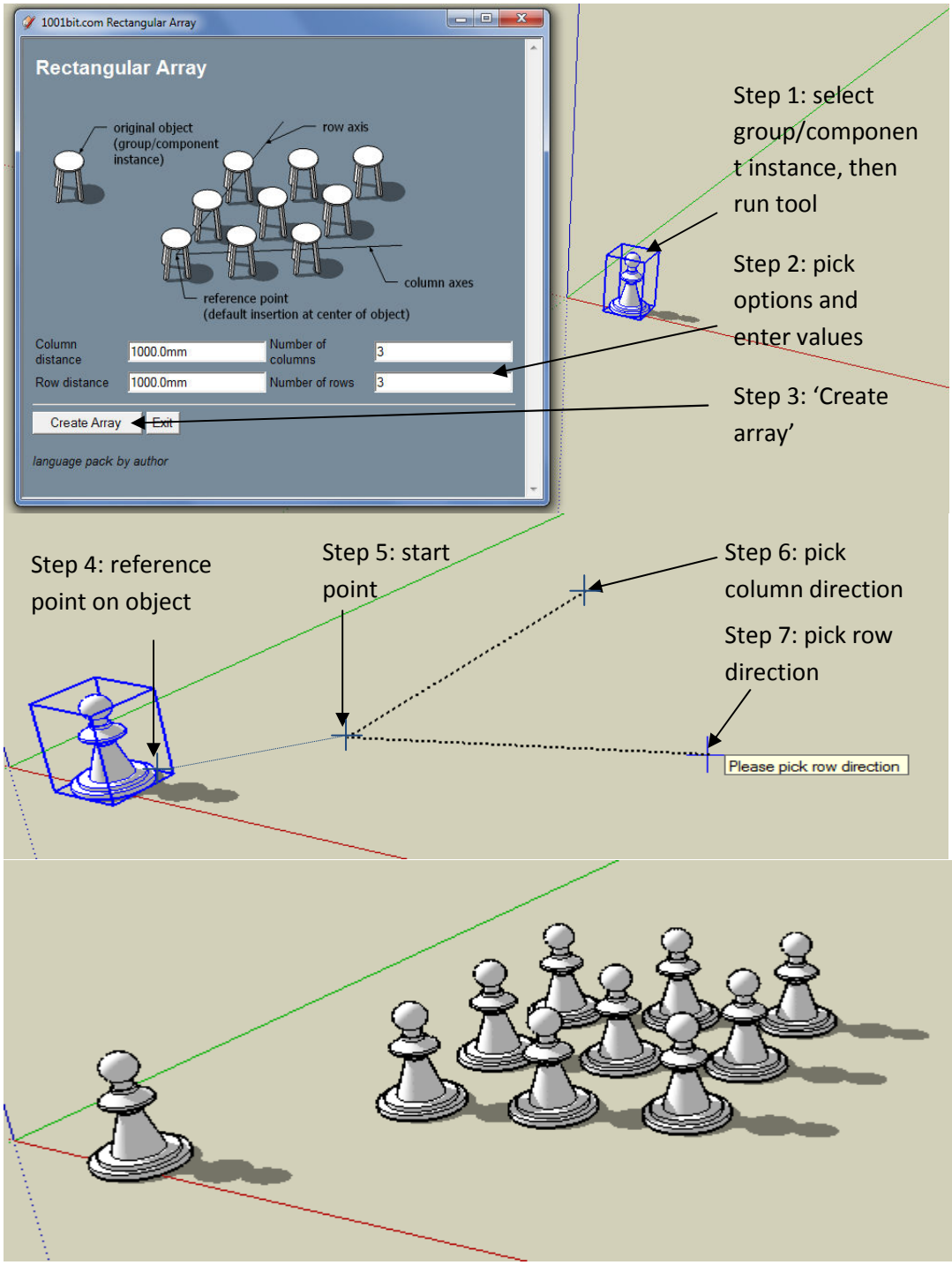




Rectangular array

This tool creates 2 dimensional rectangular array of group and component instances.

Procedure:



Polar array

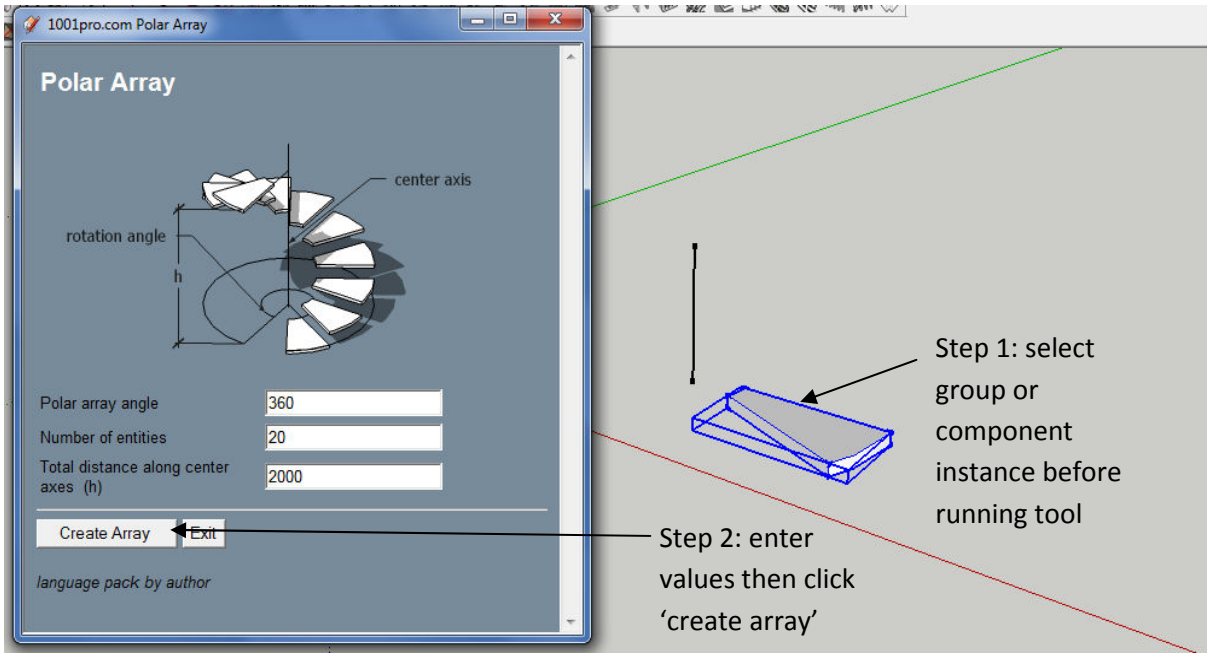
This tool creates array of group/component instance rotated around a center axis.

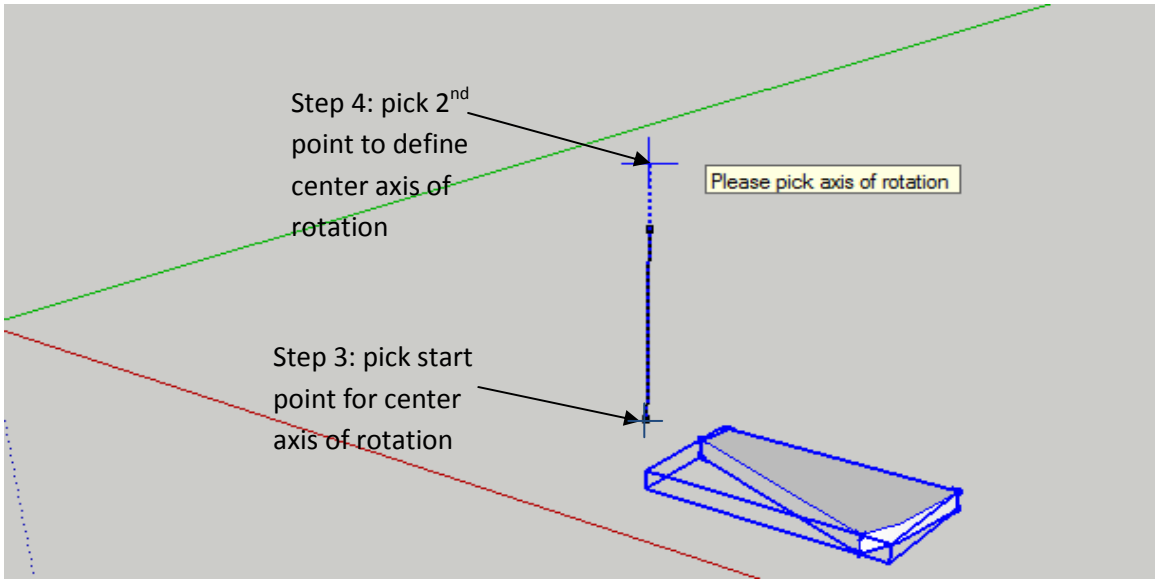
Procedure:

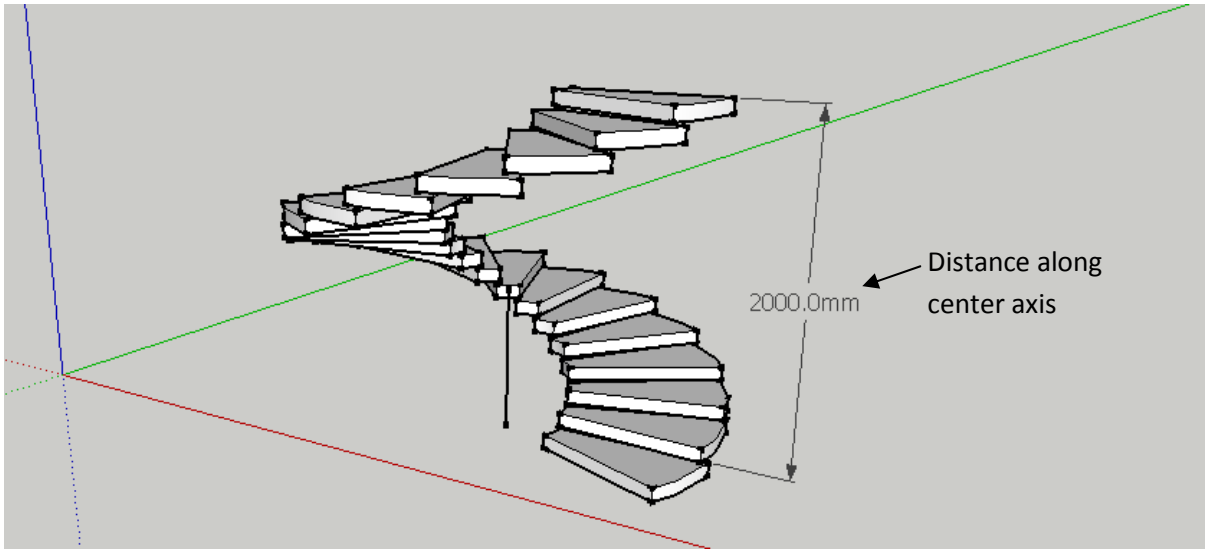
Step 1: select a group or component instance, then run the tool.

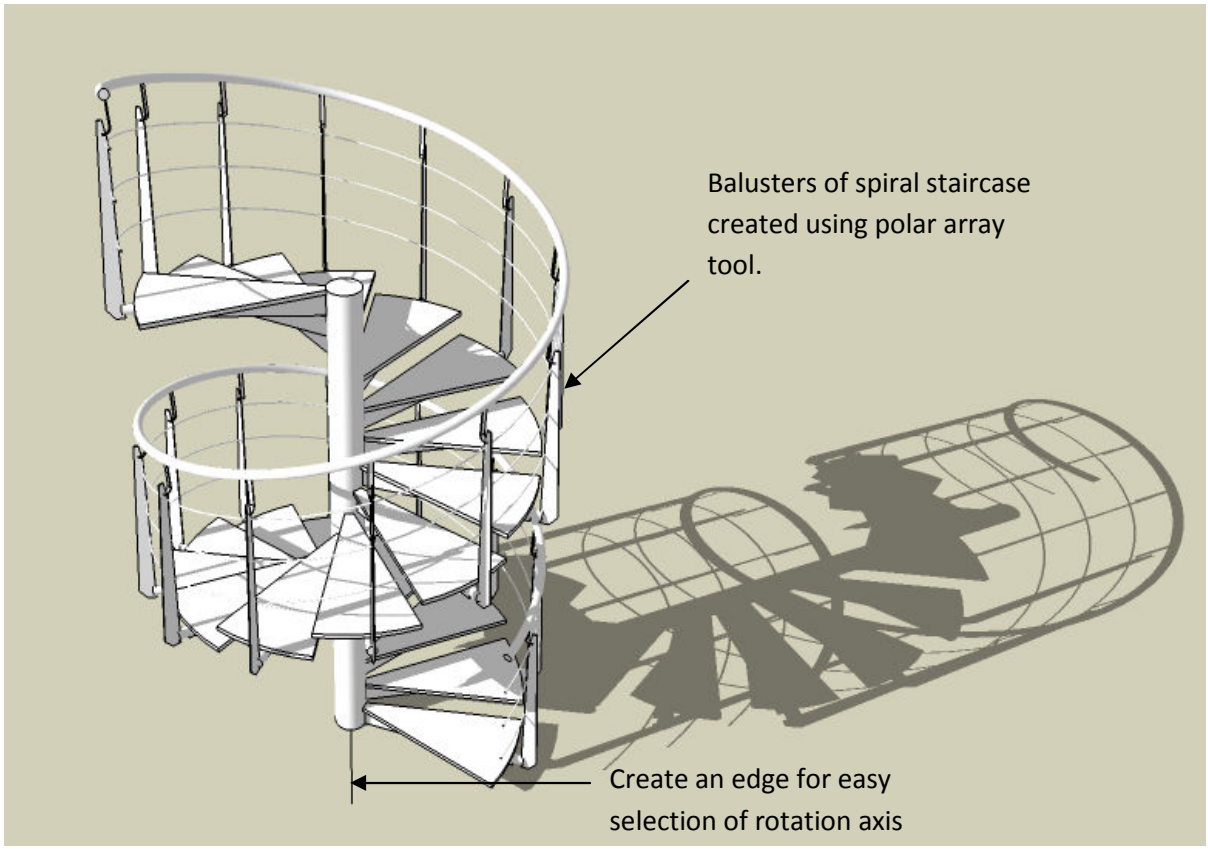
Step 2: enter values in dialog box

Step 3: pick to define center axis of rotation.






2000.0mm
Distance along
center axis


Balusters of spiral staircase
created using polar array
tool.
Create an edge for easy
selection of rotation axis

Path array

This tool creates array of group/component instance along a path (a series of connected edges). The groups/component instances are rotated to follow the direction of the path.

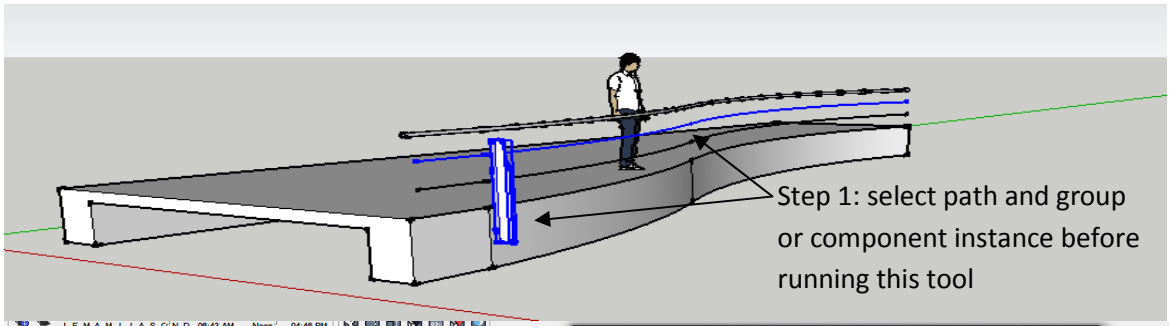
Procedure:

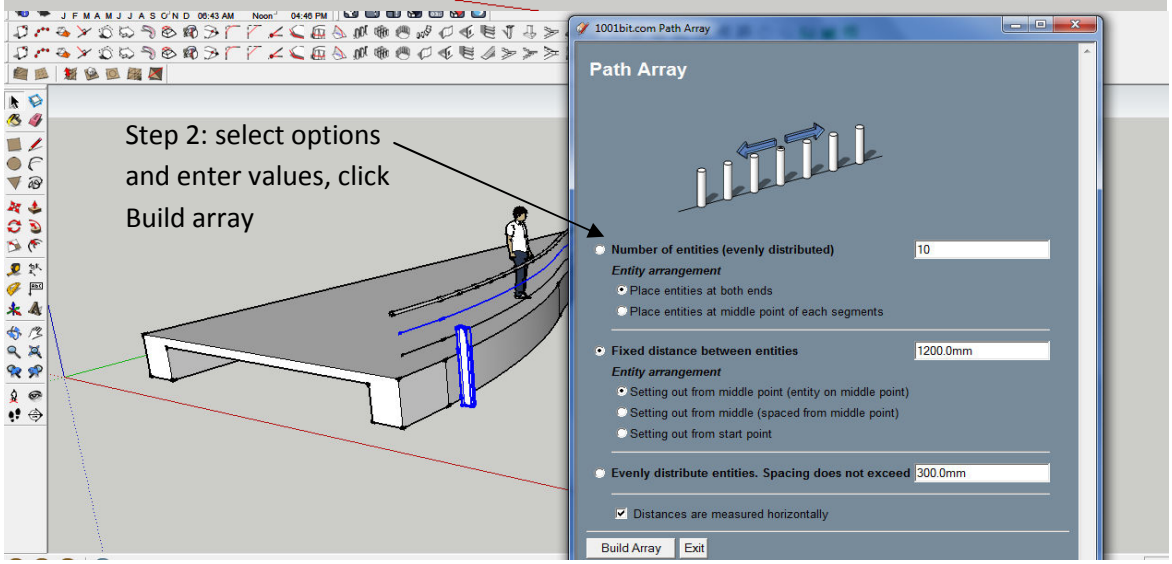
Step 1: select edges of path and group/component instance before running tool.

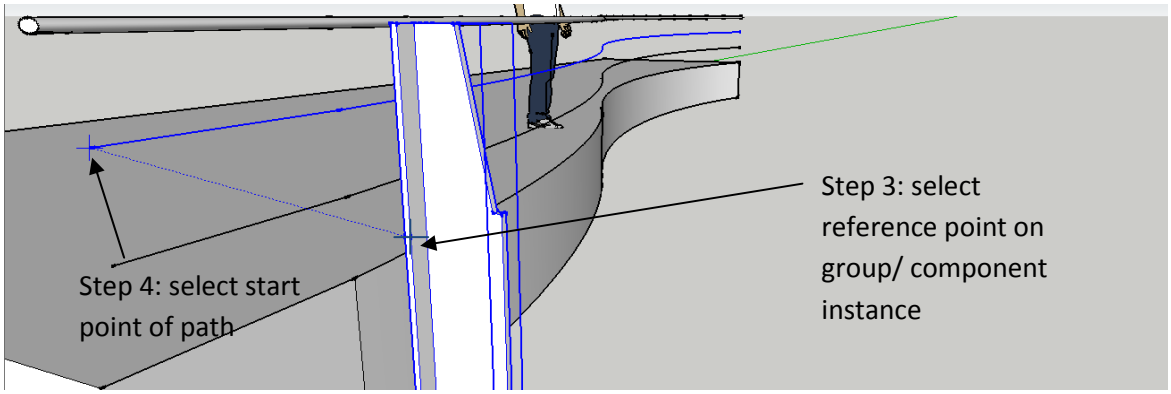
Step 2: select options and key in value into dialog box and click ‘Build array’

Step 3: pick reference point on group/component instance

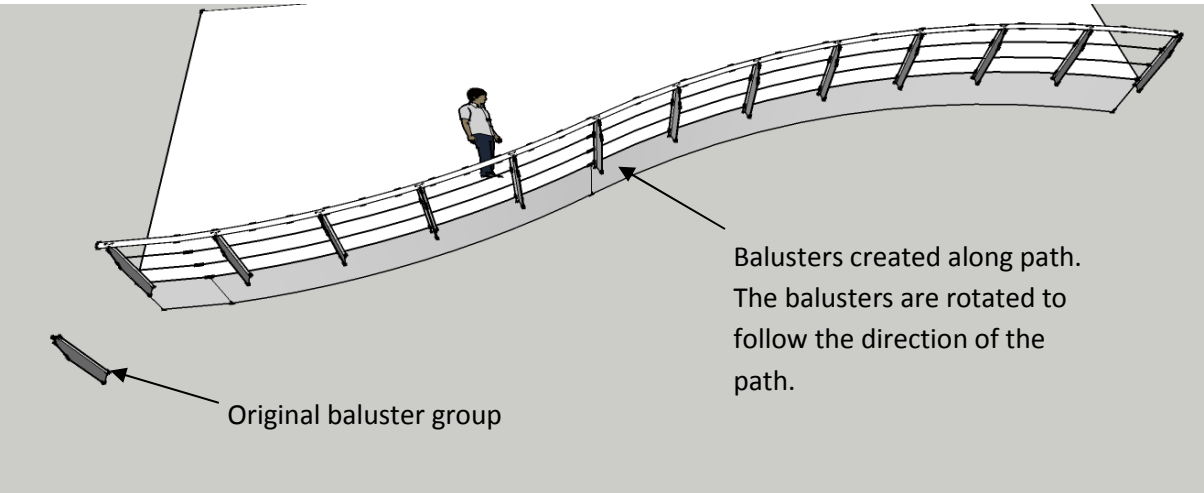
Step 4: pick start point on path







Note: you can place the group/component instance at the start point of the path to align it's orientation in relation to the path. In this case, the reference point and the start point can be the same point.



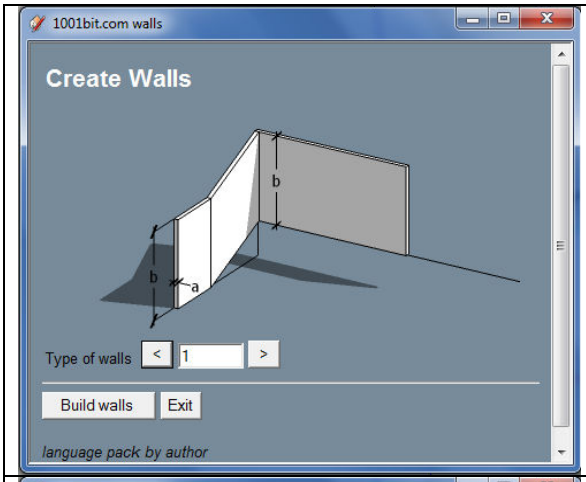
The chairs are arrayed and aligned around the path with a 3m 'max distance' setting.

(chairs and trees are component instances from Google's 3d warehouse.)

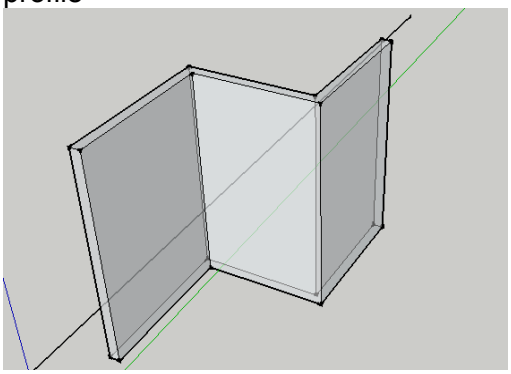
Vertical Walls

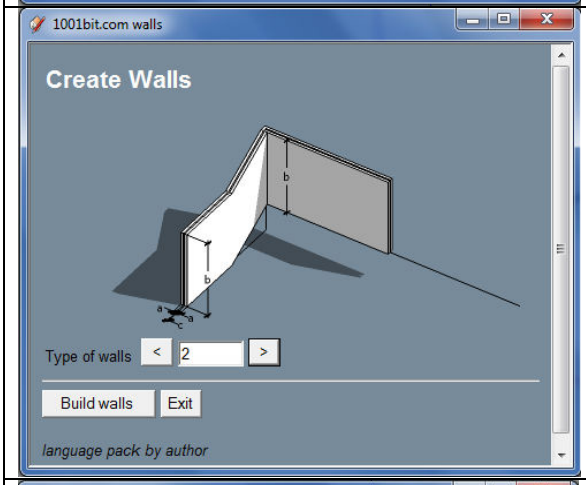
1001bit Pro version come with multiple choices for types of walls.

To prevent too many icons a wall browser is introduced. Use this browser to select the type of wall to build.

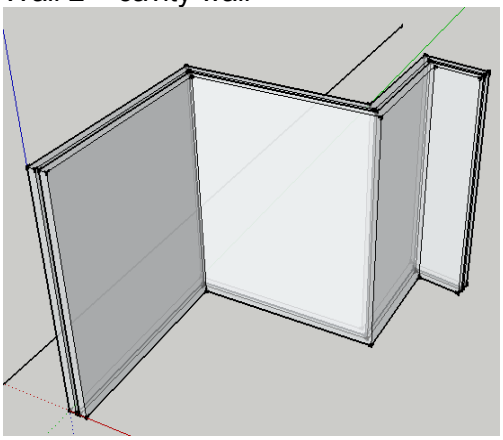


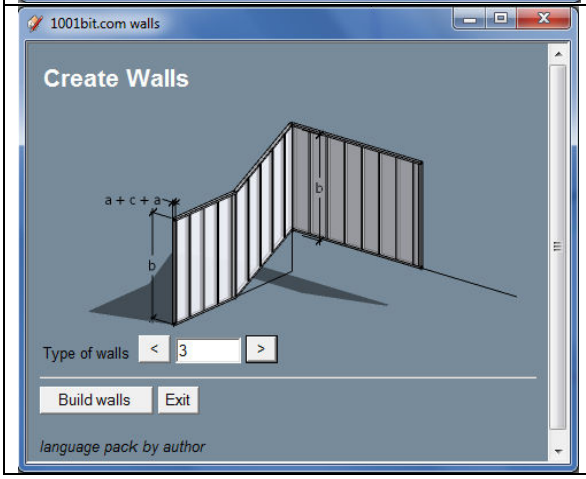
Wall 1 – standard vertical wall.
Option to select a face to define wall sectional profile



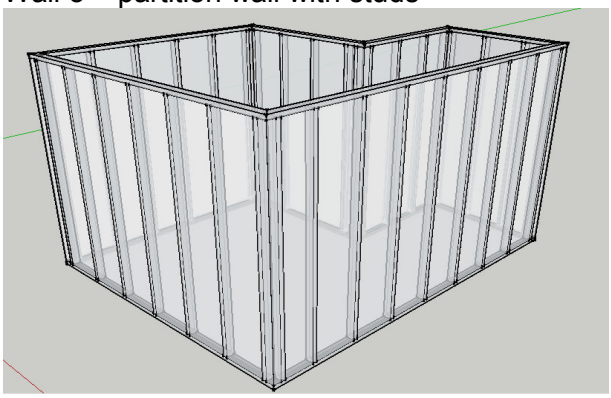


Wall 2 – cavity wall





Wall 3 – partition wall with studs



Wall 1

This tool creates vertical walls. The tool will maintain verticality of walls even if it is along a sloping path, and will automatically sort out the profiles necessary when running along a slope.

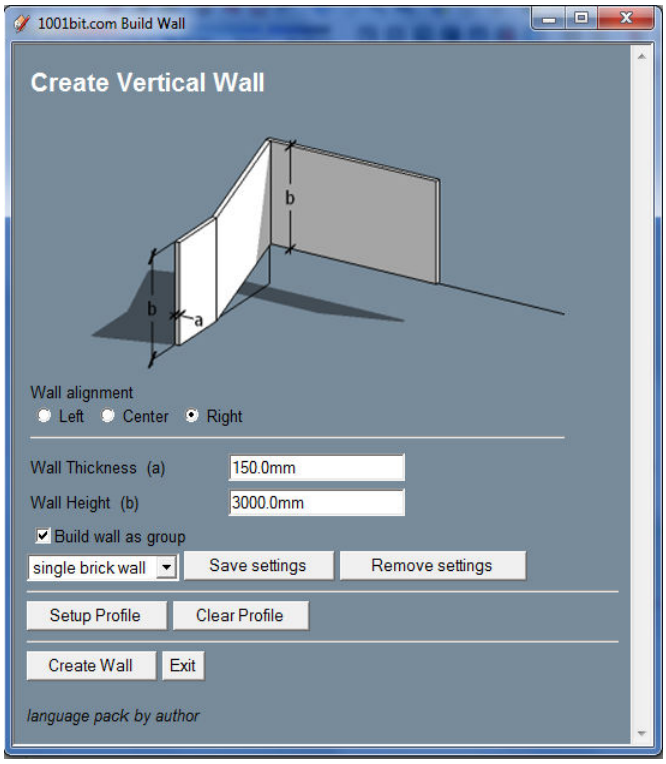
There is also an option to custom define the sectional profile from a face.

Procedure:

Step 1: run the tool, fill in the desired values in the dialog box and click ‘create wall’.

Step 2: pick start point of wall

Step 3, 4…: continue to pick different points of the wall. Double click on last point or click on the starting point (a construction point is placed to define the start point).



Use the arrow keys to keep the target point along a fixed inference;

Left arrow – green (Y) axis

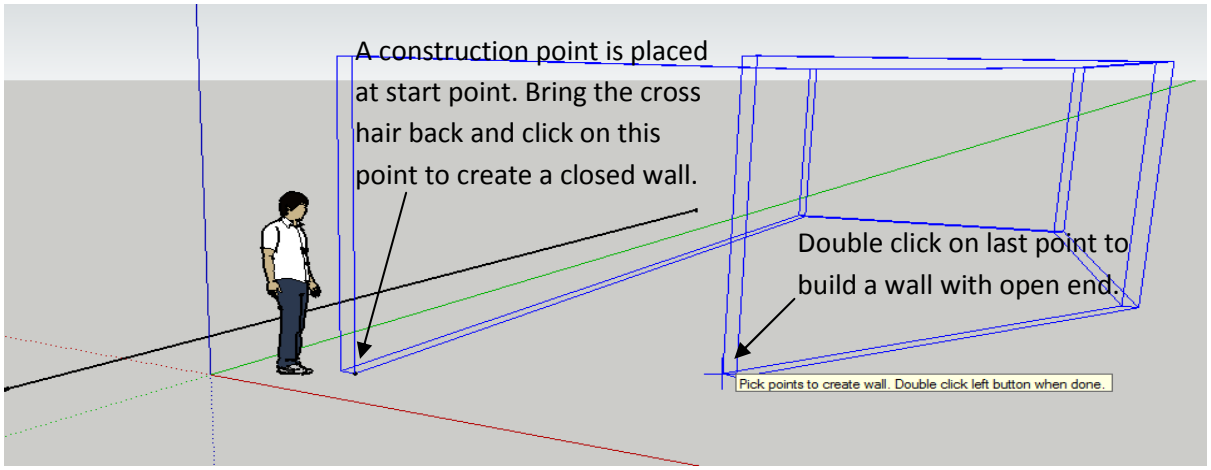
Right arrow – red (X) axis

Up arrow – blue (Z) axis

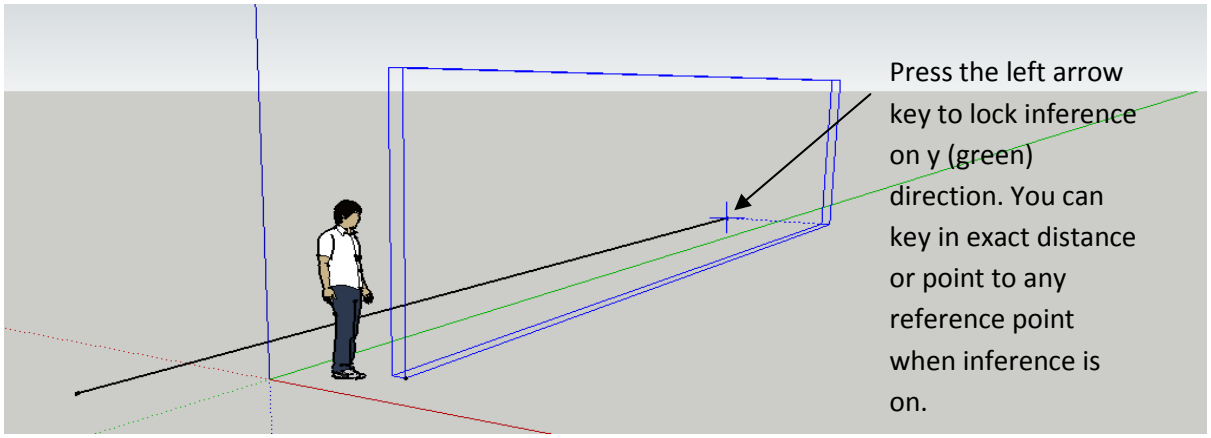
Down arrow – inference off

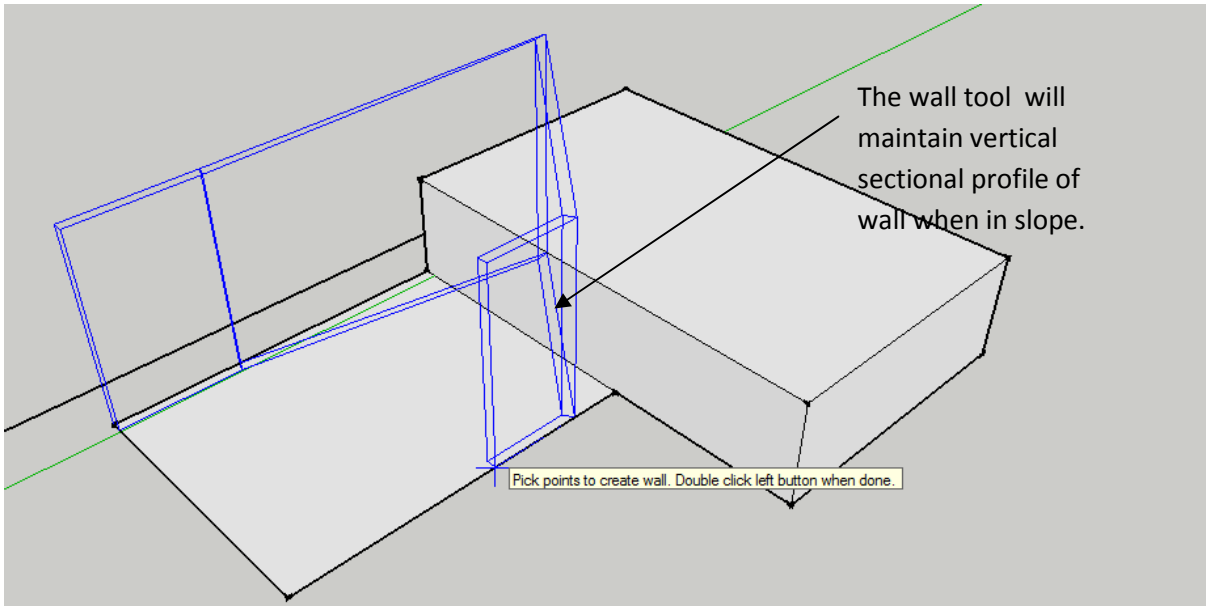
To draw walls with exact distance, point the cross hair to define direction, then key in distance.

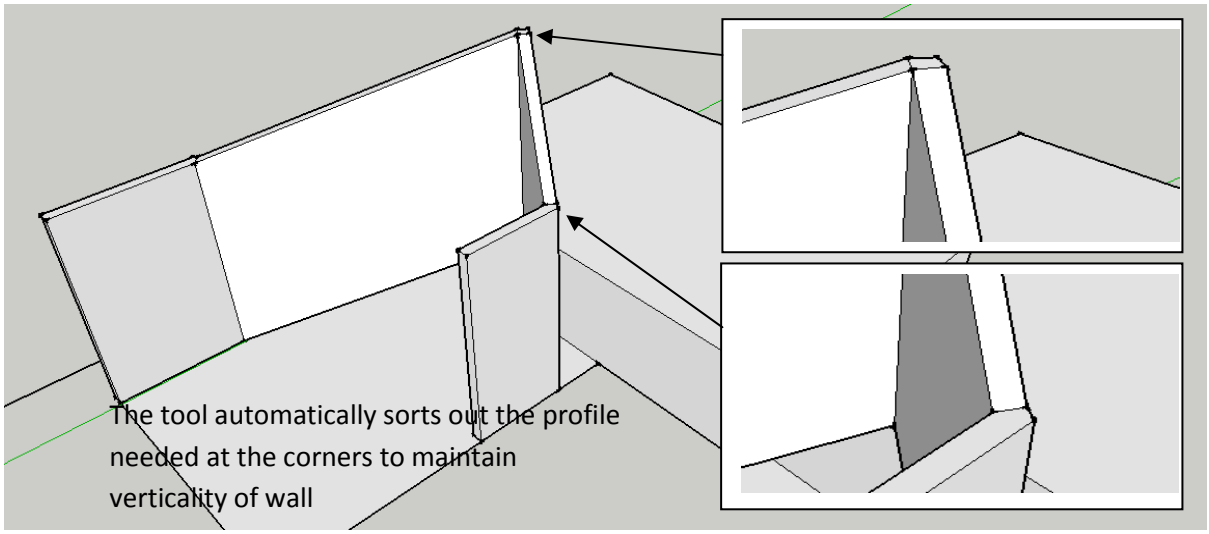
Note: Save settings function is only available in Pro version.



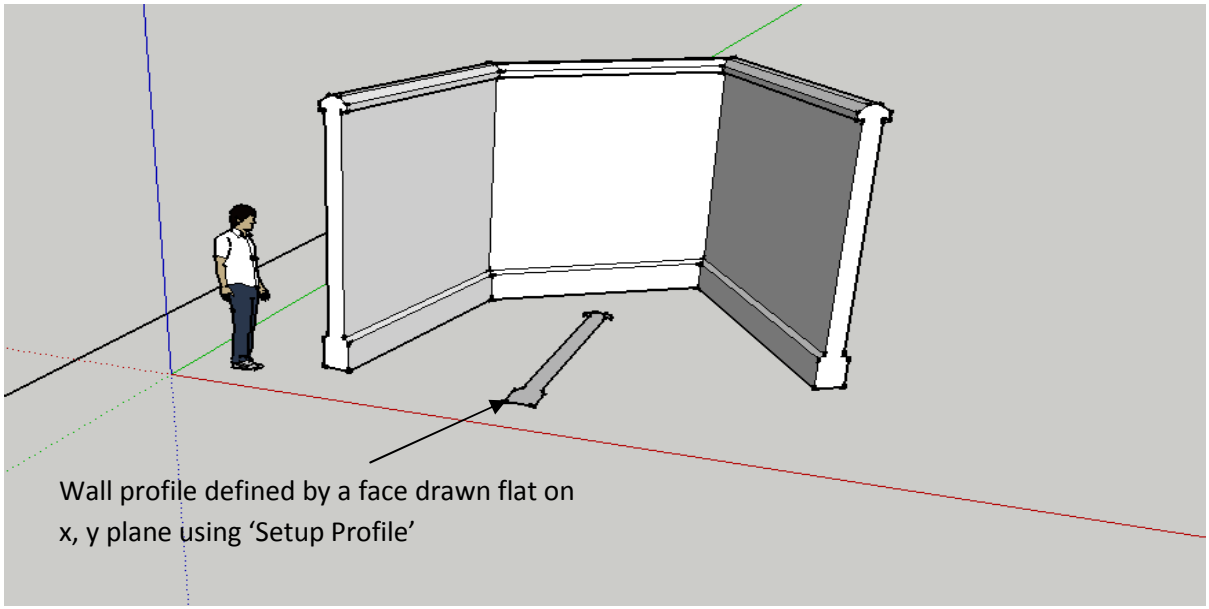
To build wall with exact distance and fixed direction:

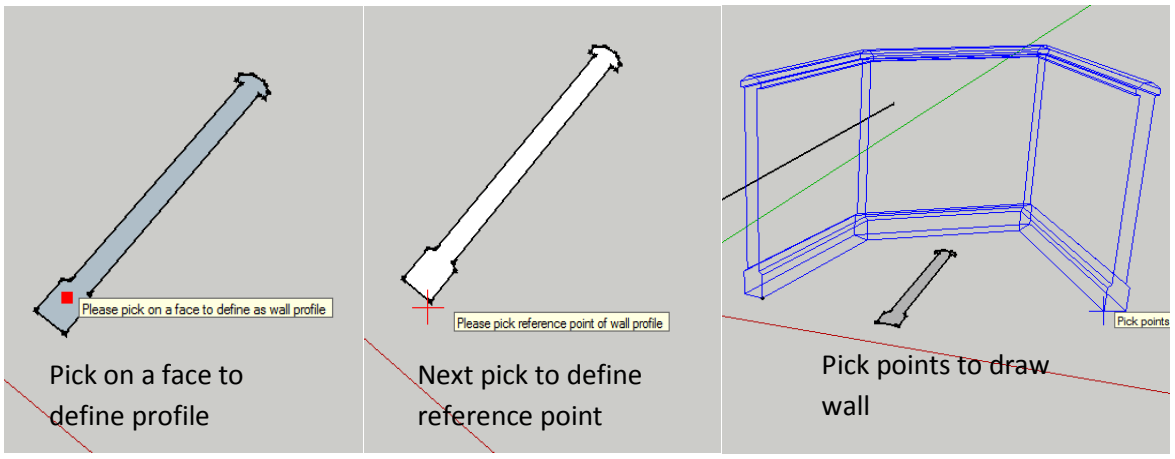






'Setup Profile' allows user to pick on a face (flat on x,y plane) to define it as the wall section. This is particularly useful for using this tool to create drains, cornices, walls with coping, etc.





Wall 2 (cavity wall)

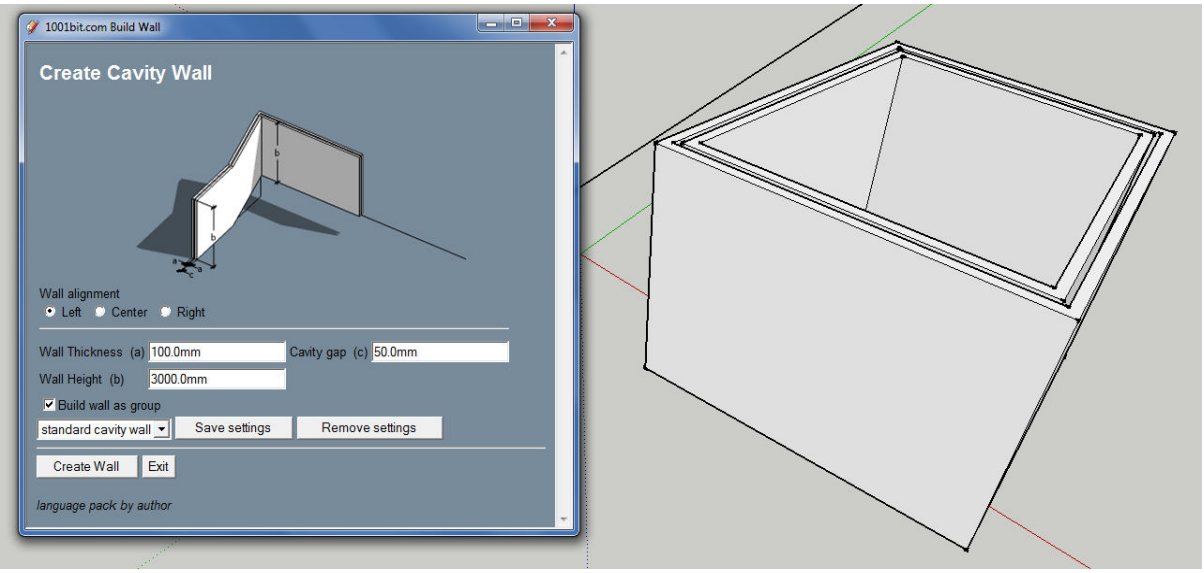
This tool creates vertical cavity walls. The tool will maintain verticality of walls even if it is along a sloping path, and will automatically sort out the profiles necessary when running along a slope.

Procedure:

Step 1: run the tool, fill in the desired values in the dialog box and click ‘create wall’.

Step 2: pick start point of wall

Step 3, 4…: continue to pick different points of the wall. Double click on last point or click on the starting point (a construction point is placed to define the start point).



Use the arrow keys to keep the target point along a fixed inference;

Left arrow – green (Y) axis

Right arrow – red (X) axis

Up arrow – blue (Z) axis

Down arrow – inference off

To draw walls with exact distance, point the cross hair to define direction, then key in distance.

The procedure to create wall is similar to Wall 1.

Use the ‘Save settings’ function to create different preset settings for different scenarios.

Wall 3 (partition wall with studs)

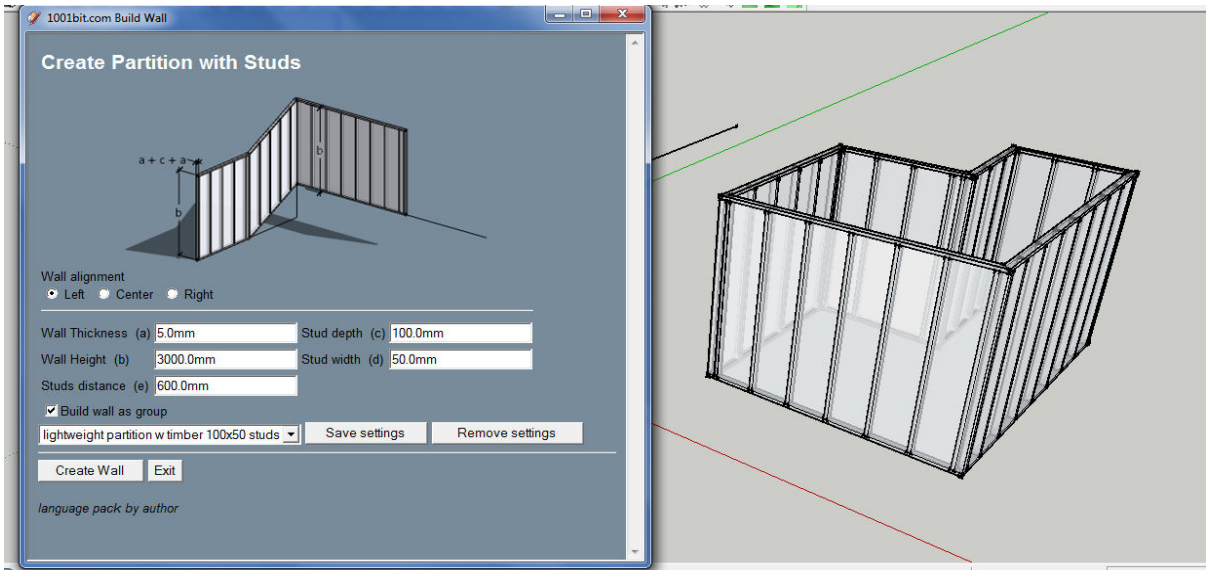
This tool creates vertical partition walls with vertical studs. The tool will maintain verticality of walls even if it is along a sloping path, and will automatically sort out the profiles necessary when running along a slope.

Procedure:

Step 1: run the tool, fill in the desired values in the dialog box and click ‘create wall’.

Step 2: pick start point of wall

Step 3, 4…: continue to pick different points of the wall. Double click on last point or click on the starting point (a construction point is placed to define the start point).



Use the arrow keys to keep the target point along a fixed inference;

Left arrow – green (Y) axis

Right arrow – red (X) axis

Up arrow – blue (Z) axis

Down arrow – inference off

To draw walls with exact distance, point the cross hair to define direction, then key in distance.

The procedure to create wall is similar to Wall 1.

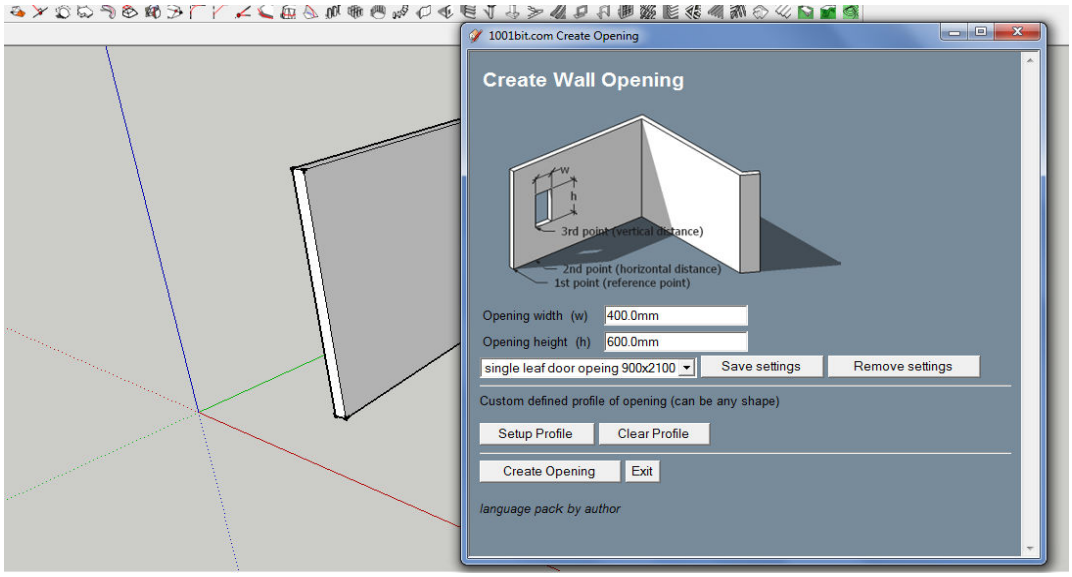
Use the ‘Save settings’ function to create different preset settings for different scenarios.

Opening on wall

This tool creates openings on walls (whether grouped or not). There's also an option to create custom shaped openings defined by a face.

Procedure

Step 1: Run the tool without selecting anything.



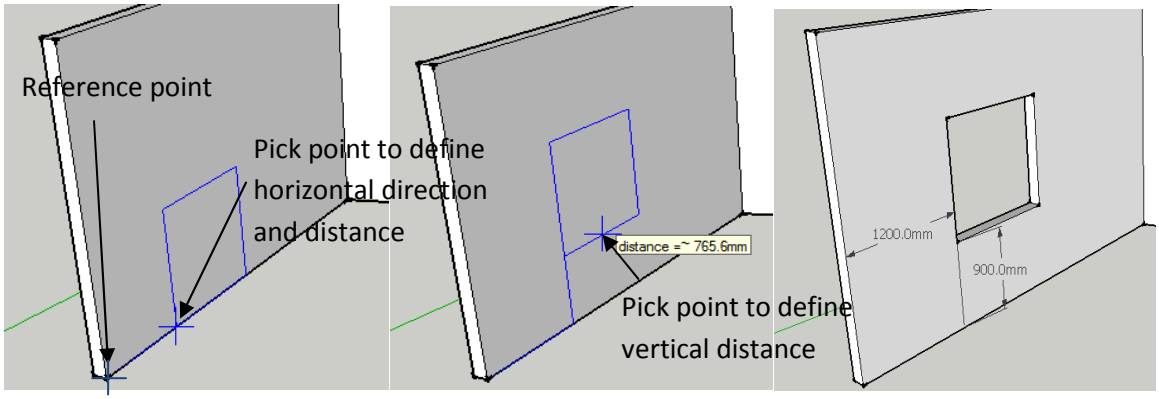
Step 2: fill in the desired parameters. Note that there's an option to save and select from preset settings. Click Create Opening.

Step 3: move the cross hair over the face of the wall. The tool will align the opening on the plane of the wall.

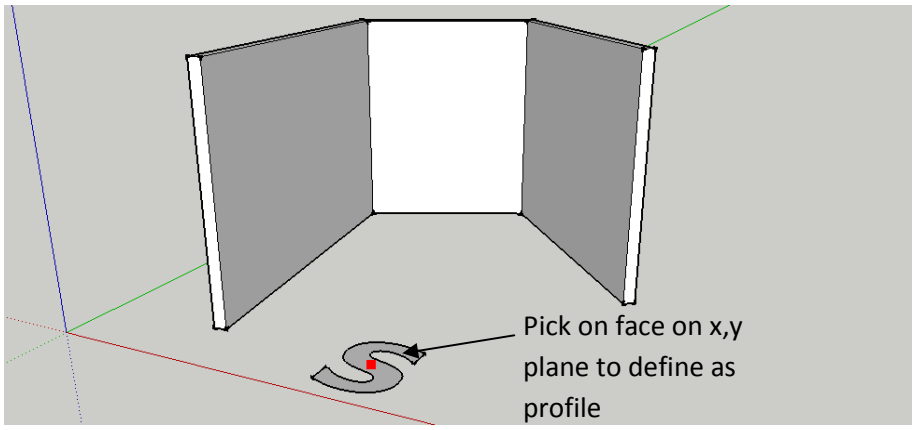
Step 4: pick a reference point, then a point identifying the horizontal direction and distance. To place the opening at exact distance, simply point the cross hair to mark the direction and key in exact distance.

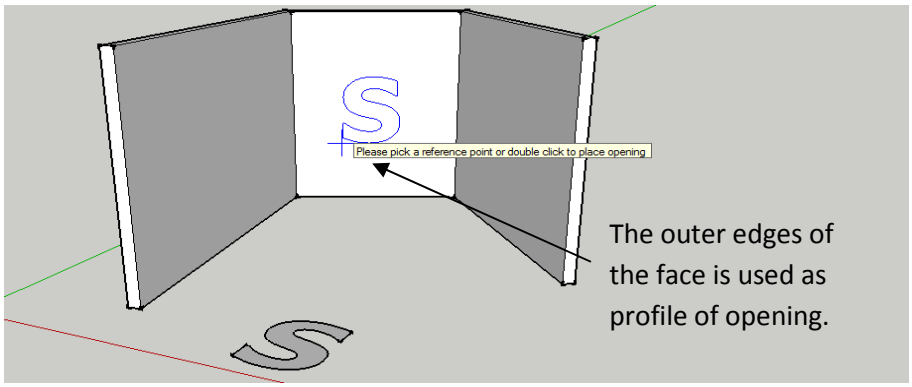
Step 5: pick a point to define vertical distance or key in vertical distance.

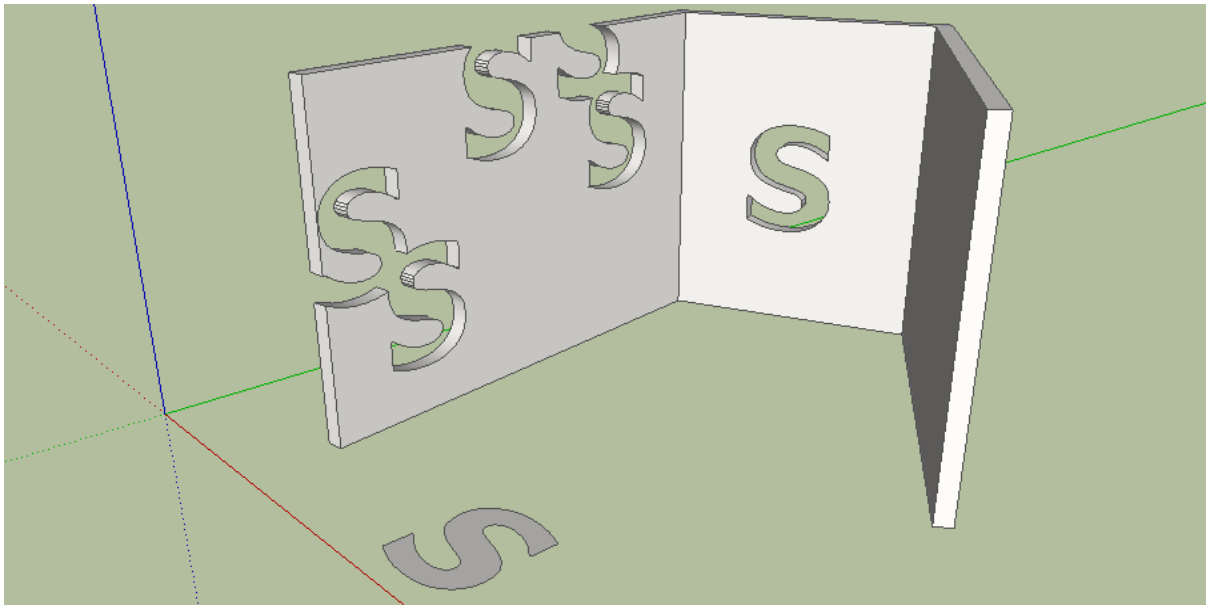
Note that you can simple double click to create opening at the cross hair location.



To create custom shaped opening, click on ‘Setup Profile’, then pick a face that is flat on x,y plane to define the profile of the opening.







The opening tool can be used to create overlapping openings!

Horizontal grooves

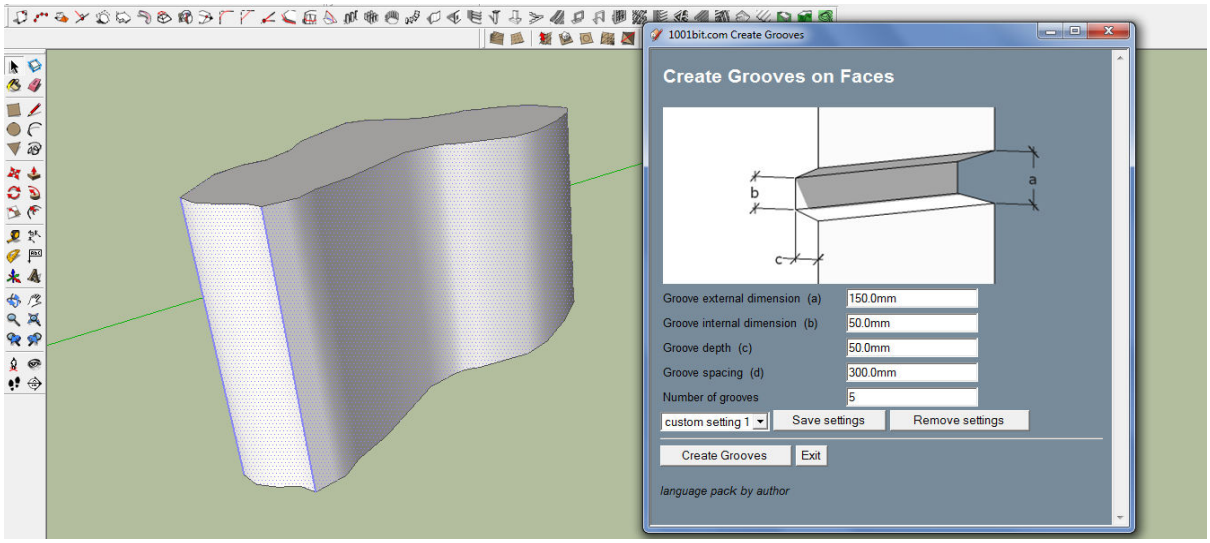
This tool creates horizontal recessed groove lines or protruded lines (use –ive value for depth) on selected faces.

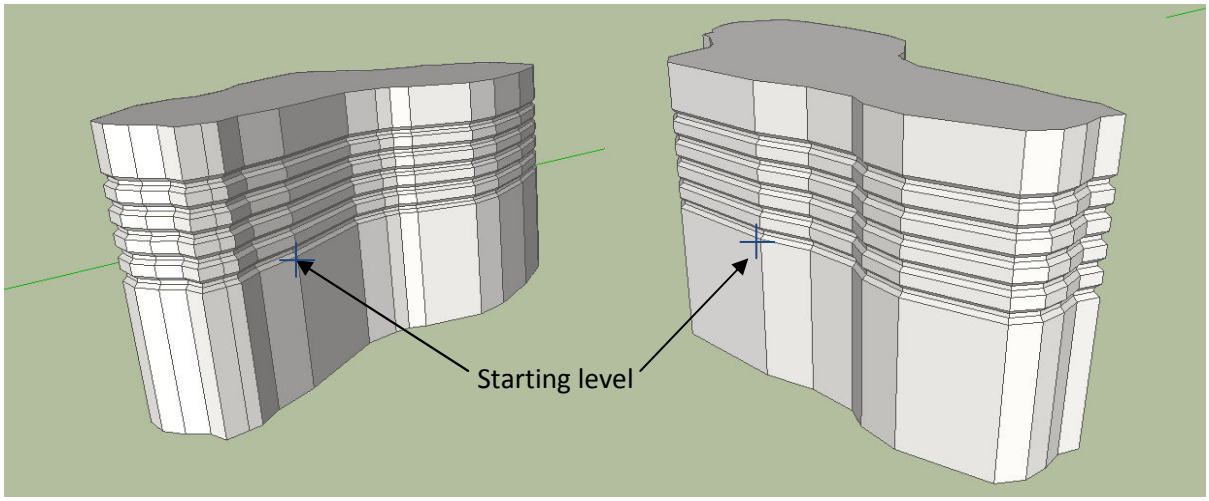
Procedure

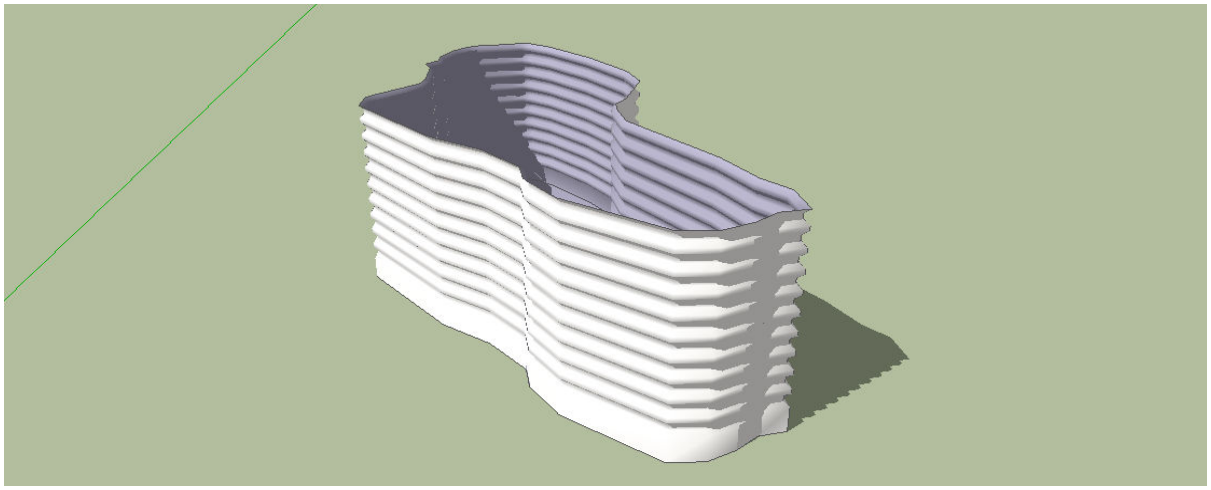
Step 1: select the faces and run the tool.

Step 2: enter the desired parameters and click create grooves

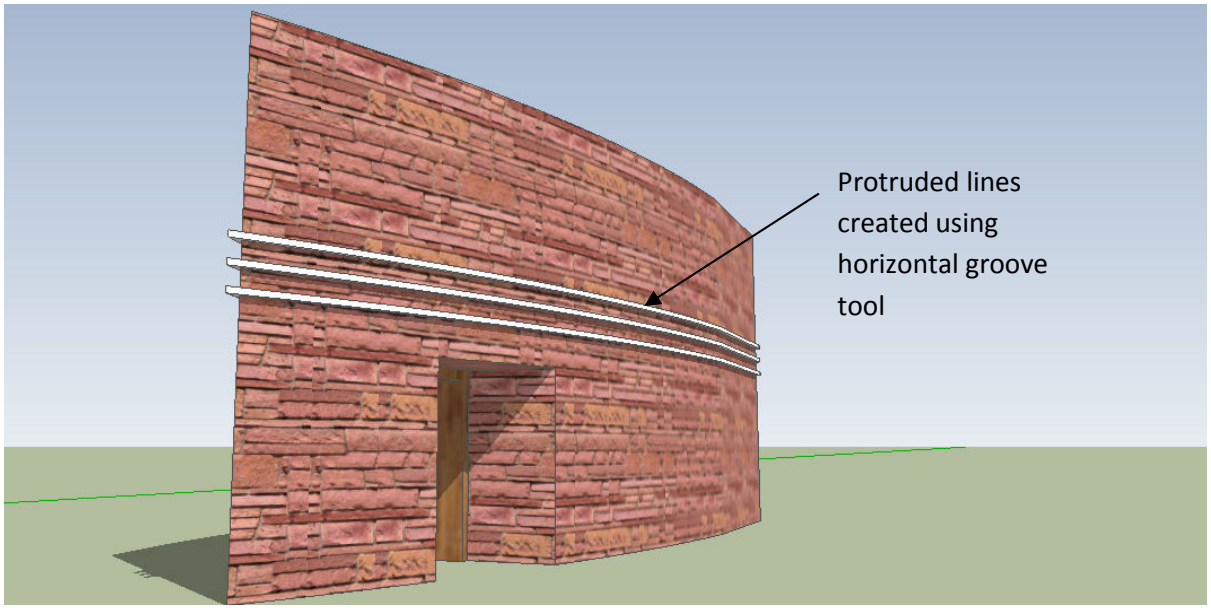
Step 3: pick on a starting level (lower level of groove lines)







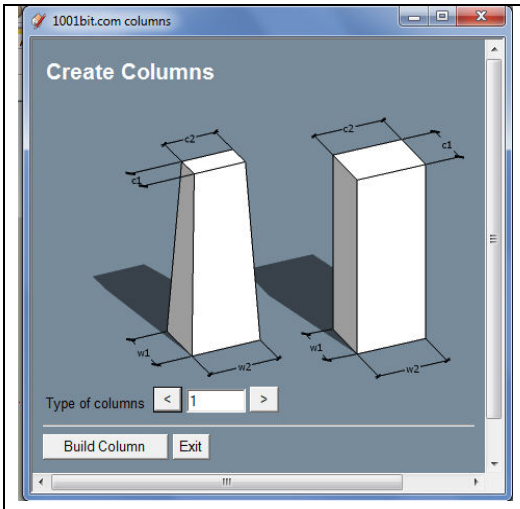
The horizontal groove tool can be used in conjunction of smooth/soften function to create effect of corrugated sheets on odd shapes.



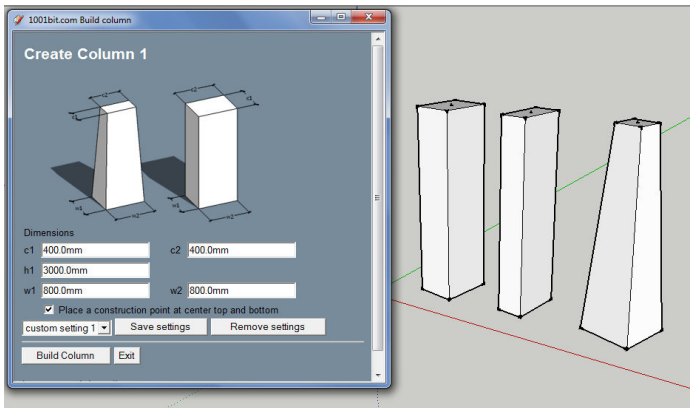
Columns

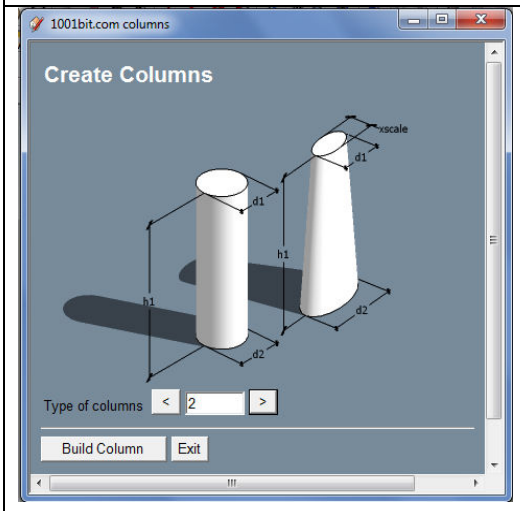
1001bit Pro version come with multiple choices for types of columns.

To prevent too many icons a columns browser is introduced. Use this browser to select the type of columns to build.

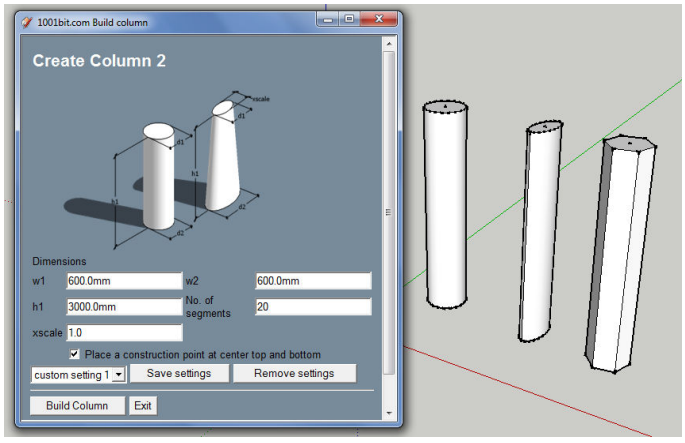


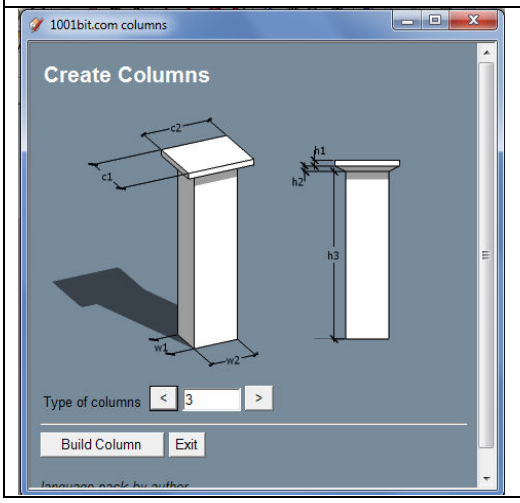
Column 1 – Rectangular column



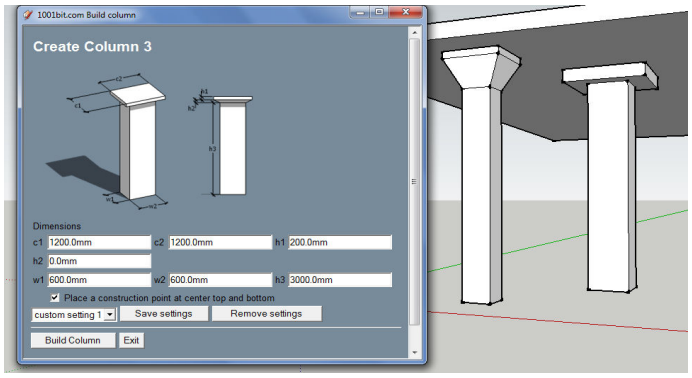


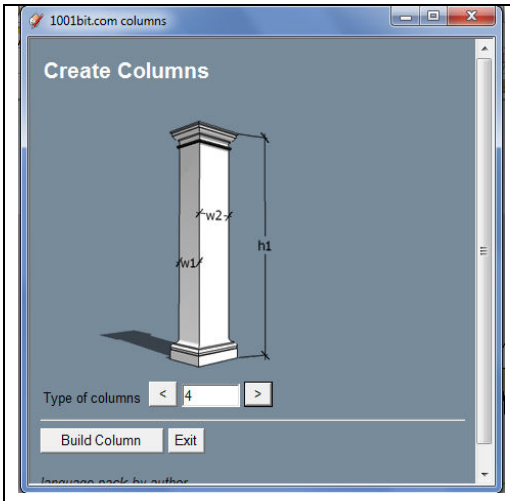
Column 2 – Circular and ellipse column



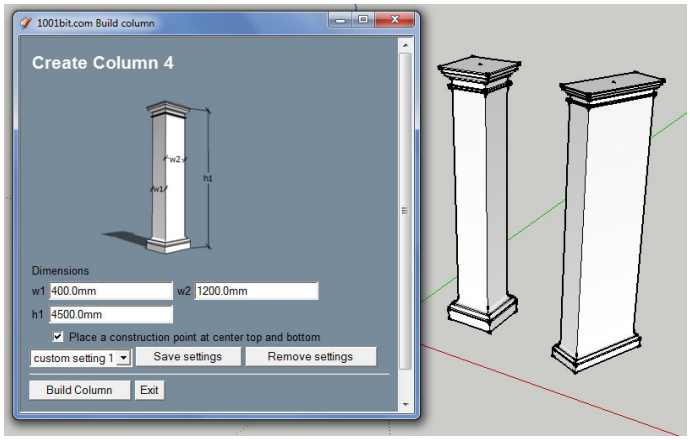


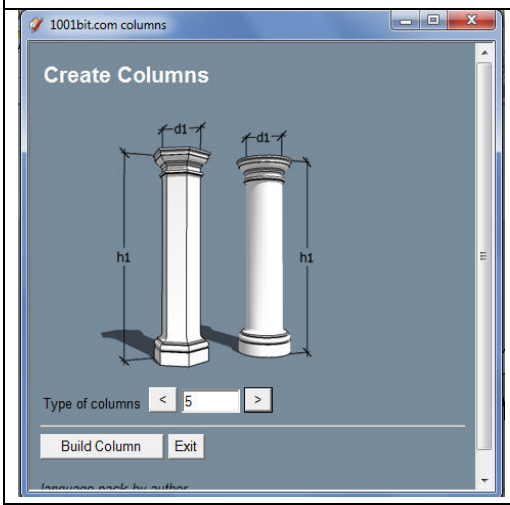
Column 3 – rectangular column with capital



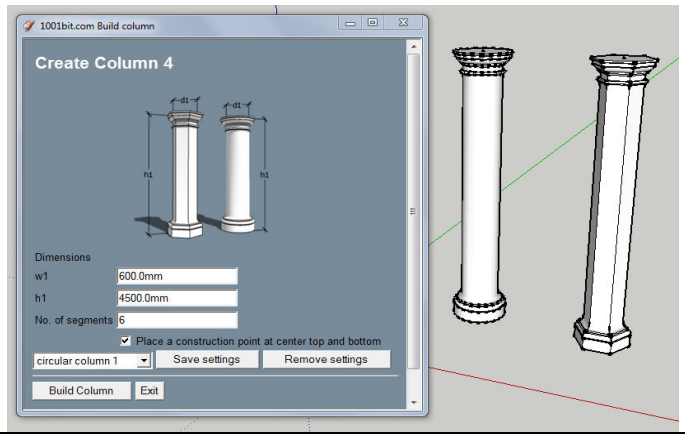


Column 4 – Tuscan column





Column 5 – circular Tuscan column



Procedure for creating columns

Step 1: click on icon to run the column browser,

Step 2: select type of column

Step 3: enter parameters and click ‘Build Column’

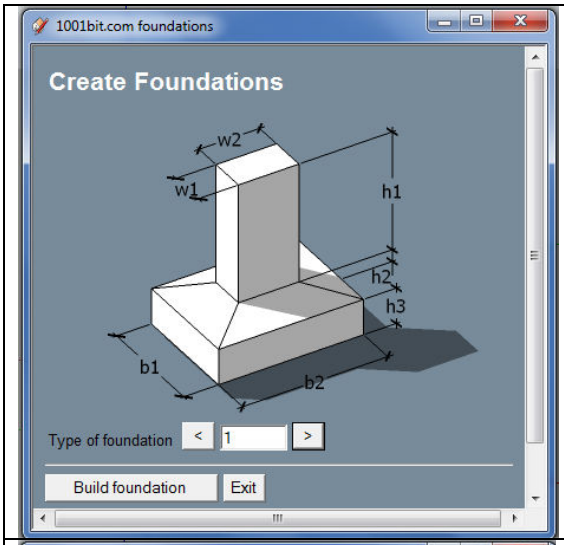
Step 4: click on insertion point (bottom center of column)

Step 5: click to define rotation angle.

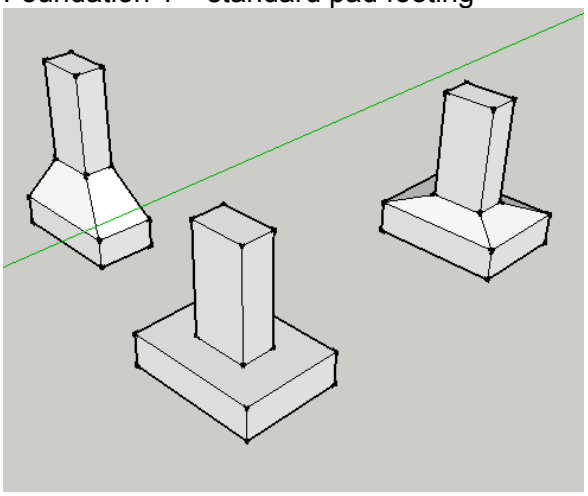
Foundations

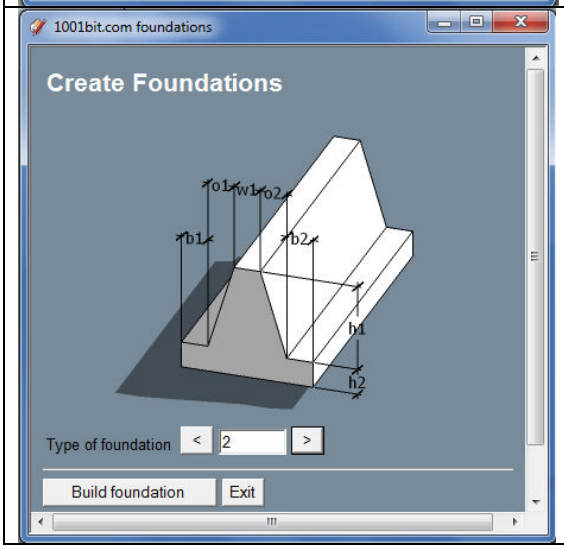
1001bit Pro version come with multiple choices for types of foundations.

To prevent too many icons a columns browser is introduced. Use this browser to select the type of foundations to build.

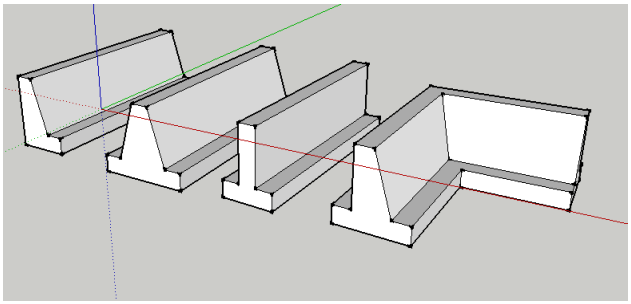


Foundation 1 – standard pad footing





Foundation 2 – strip footing
Note: different types of strip footings can be created by simply modifying the parameters.

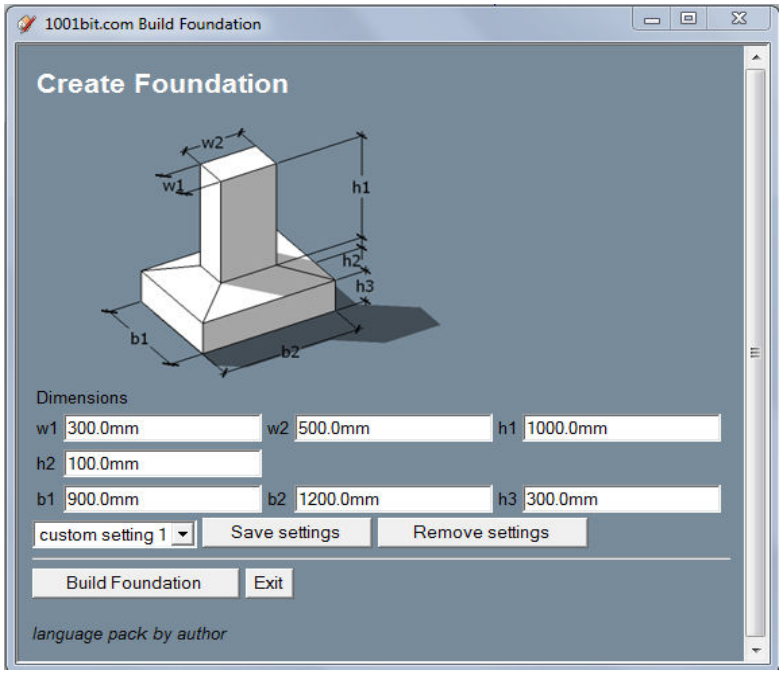


Create Foundation 1 – standard pad footing

This tool creates pad footings from user defined parameters.

Procedure:

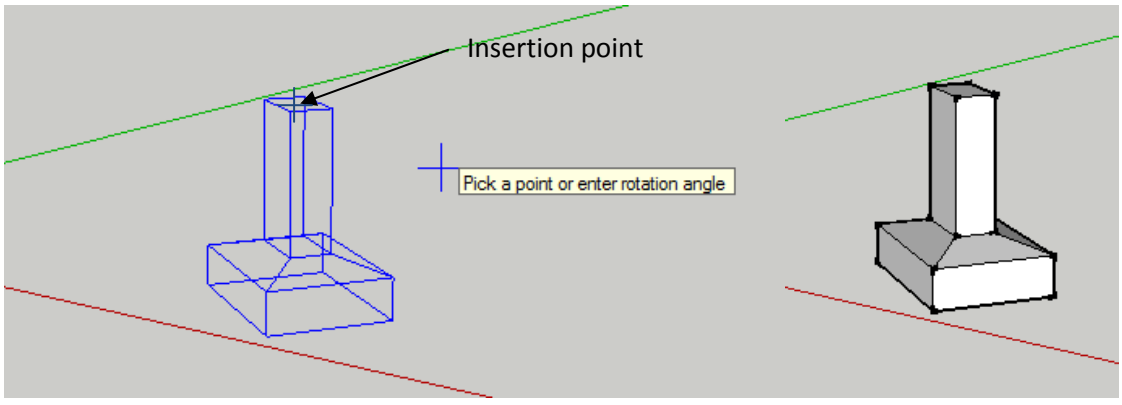
Step 1: Run this tool and fill in required dimensions, then click “Build Foundation”



Step 2: Pick an insertion point (center top of stump)

Step 3: Pick to define rotation (orientation)

Note: you can key in exact angle of rotation.

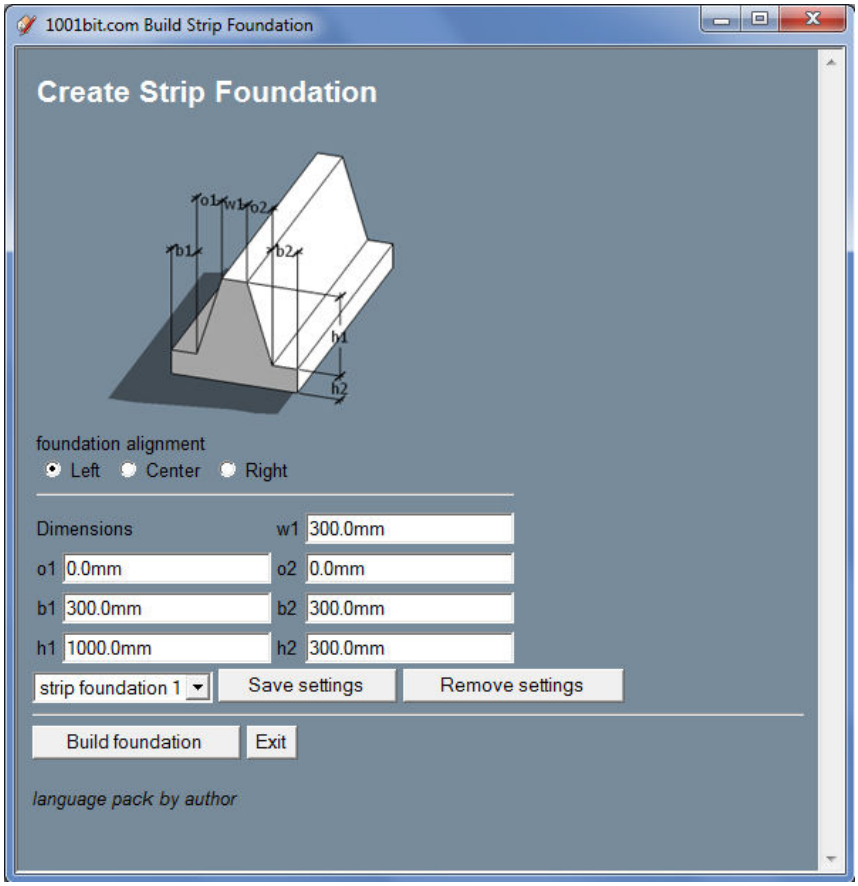


Create Foundation 2 – standard strip footing

This tool creates strip foundations. The shape of the cross section can be defined.

Procedure:

Step 1: Run the tool, enter parameters and click “Build Foundation”



Note that you can align the top of the foundation to be on Left, Right or Center to the path.

Step 2: Pick points to define path of the strip foundation.

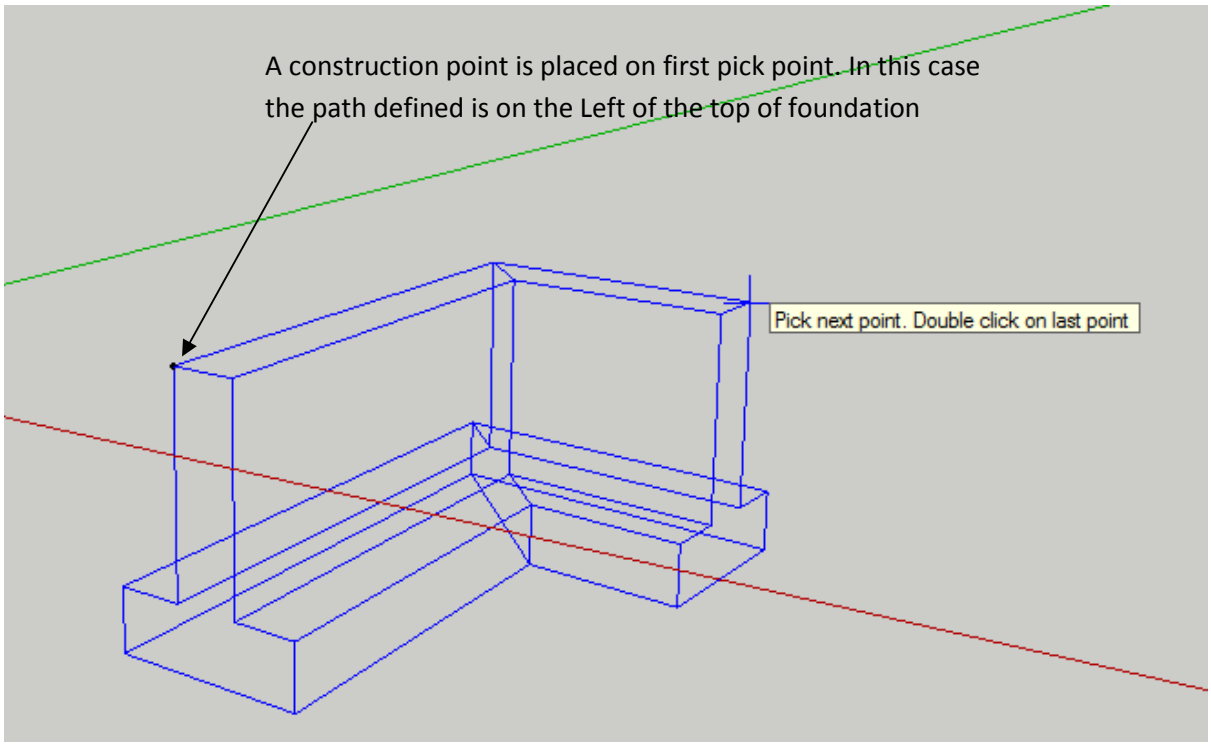
Note: you can use direction buttons to fix inference to x, y direction and enter exact distance.

Left arrow – green (Y) axis

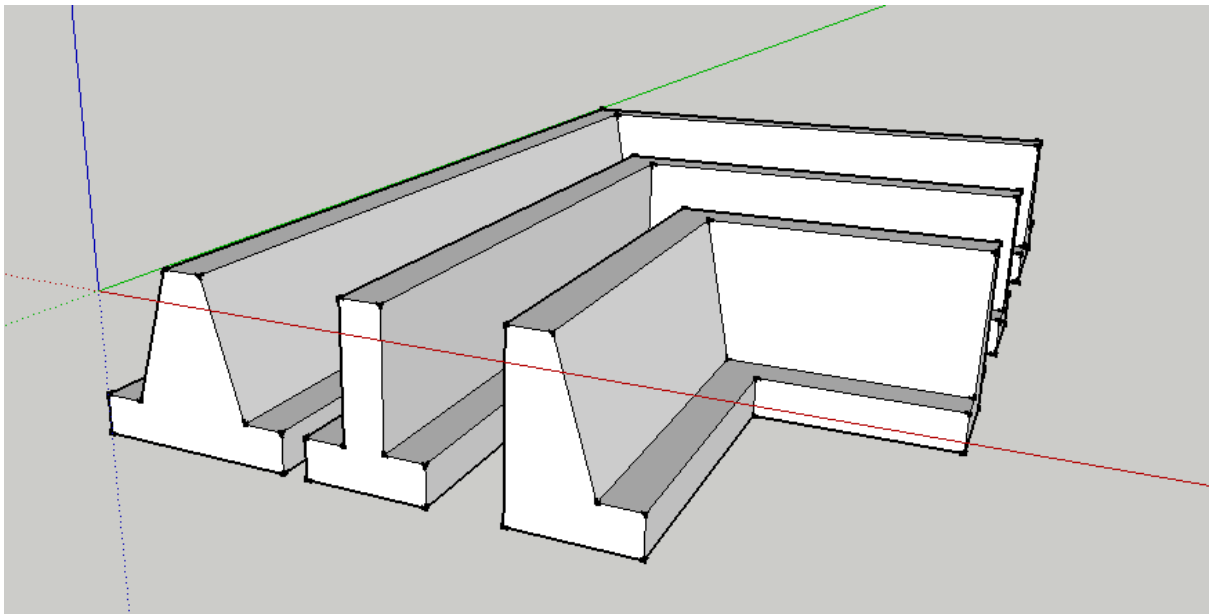
Right arrow – red (X) axis

To draw walls with exact distance, point the cross hair to define direction, then key in distance.

Step 3: Double click on last point to create foundation, or click on the construction point marking the first pick point to create a closed loop of strip foundation.



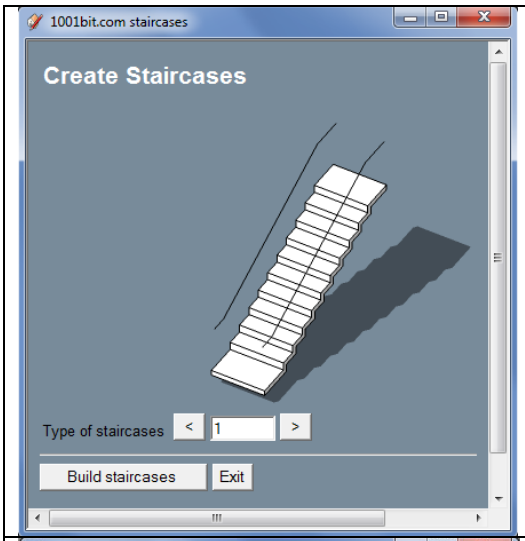
Various type of strip foundations can be created by adjusting the parameters.



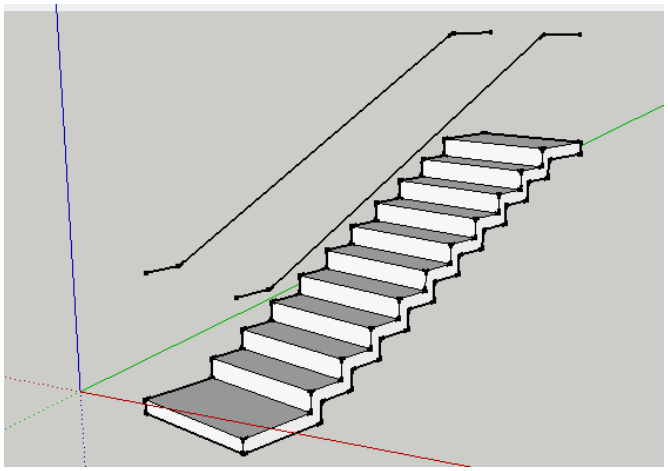
Staircases

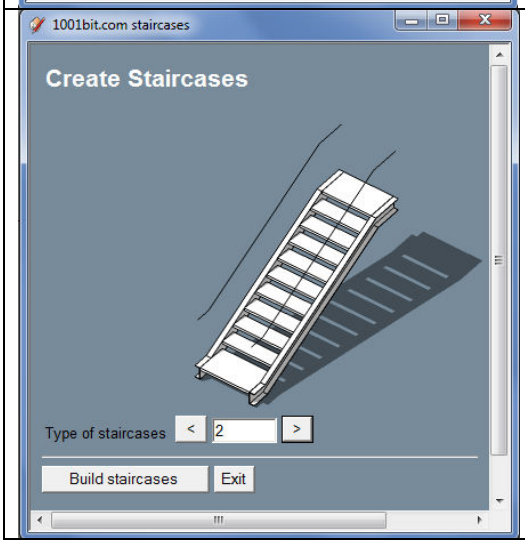
1001bit Pro version come with multiple choices for types of staircases.

To prevent too many icons a staircases browser is introduced. Use this browser to select the type of staircase to build.

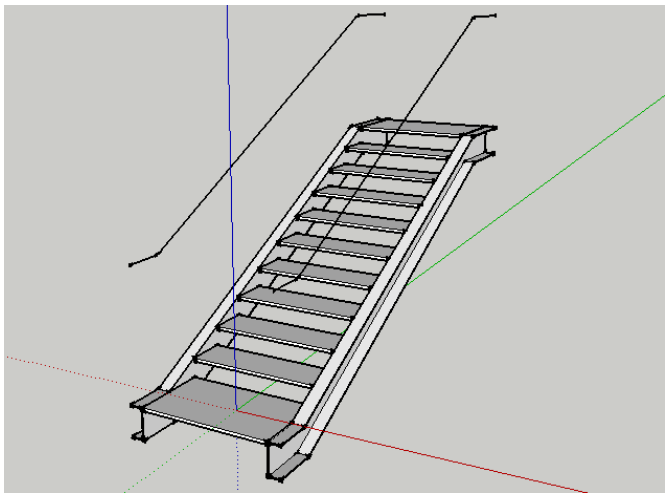


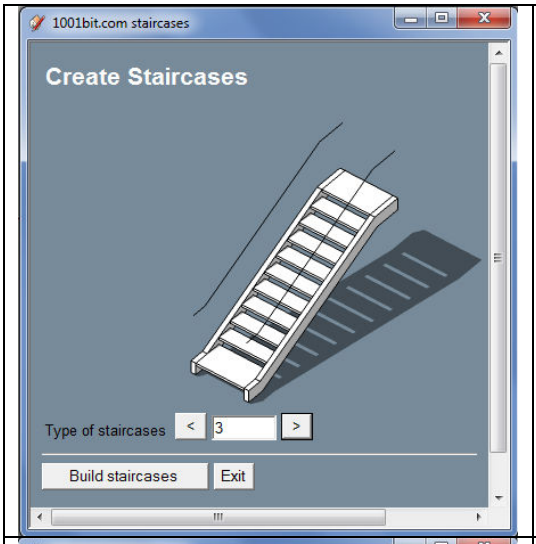
Staircase 1



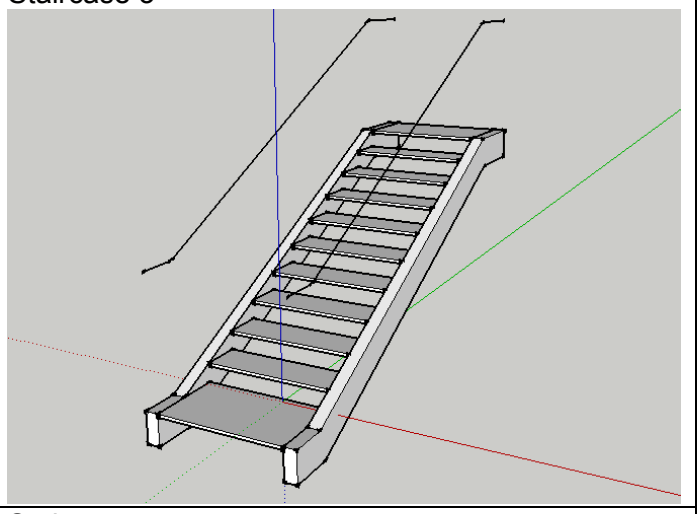


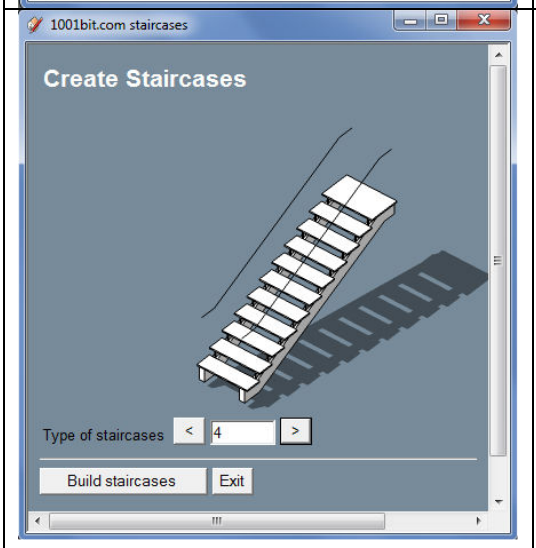
Staircase 2



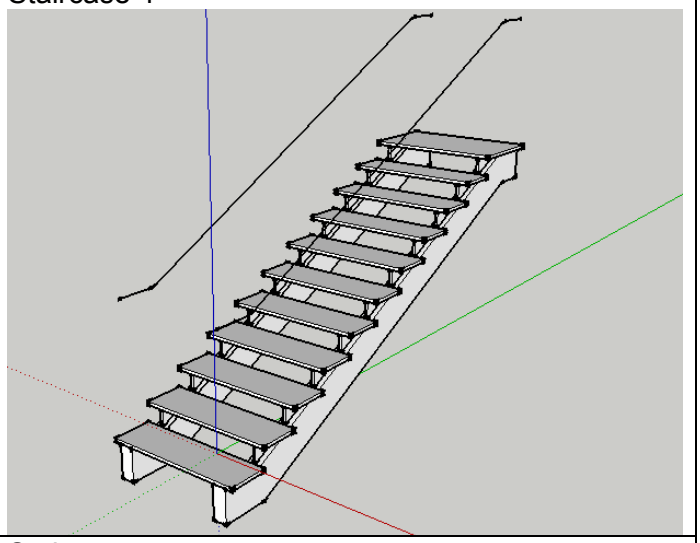


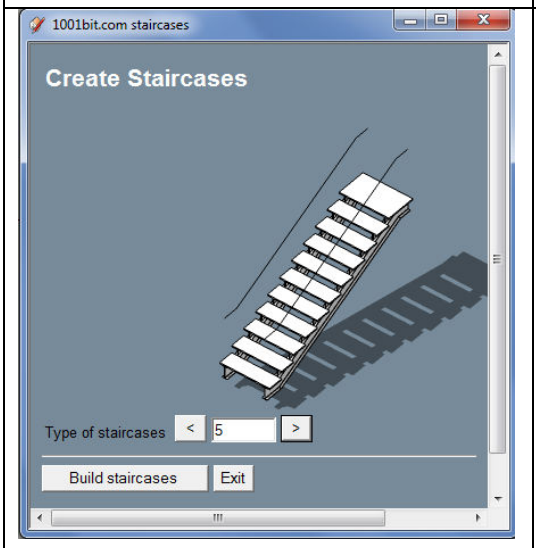
Staircase 3



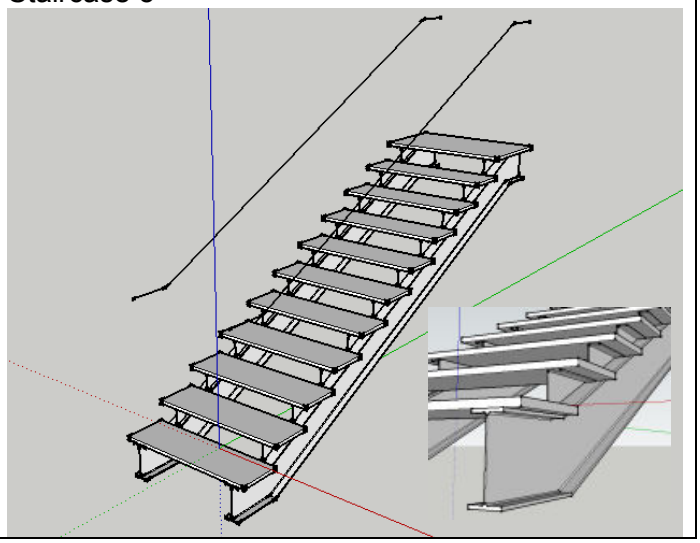


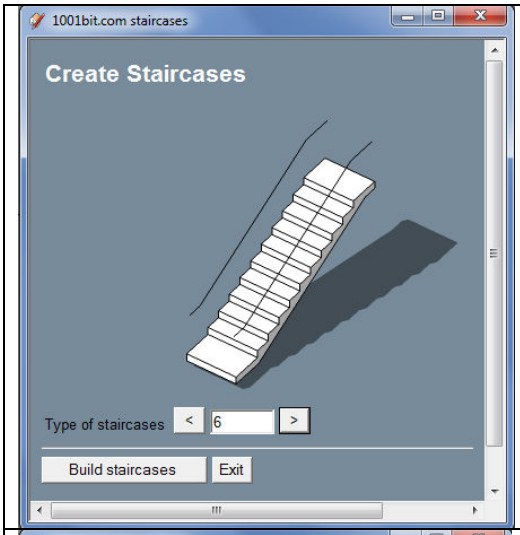
Staircase 4



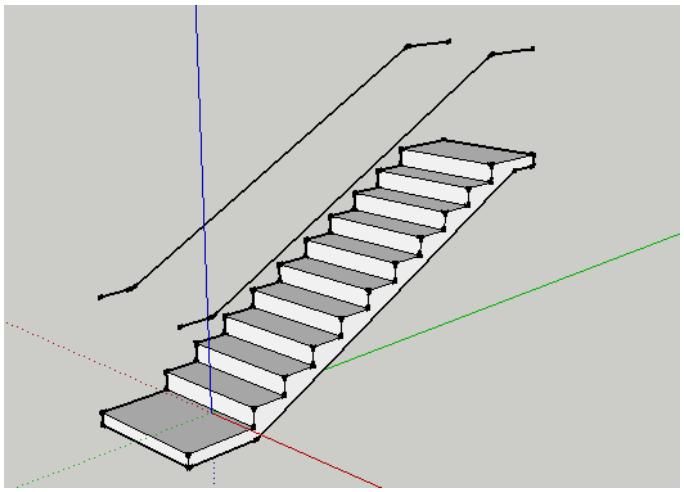


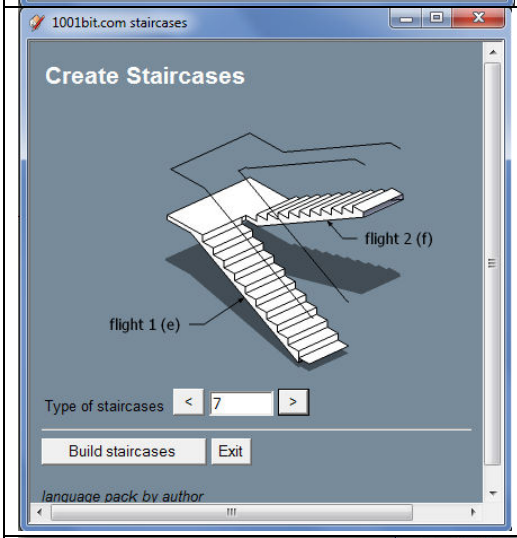
Staircase 5



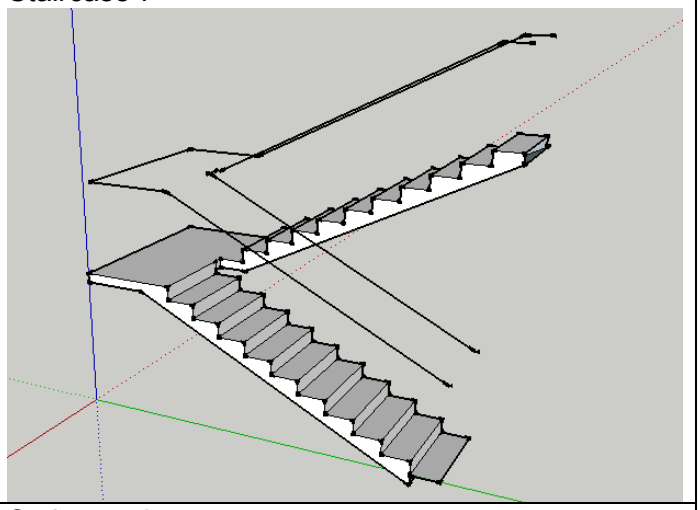


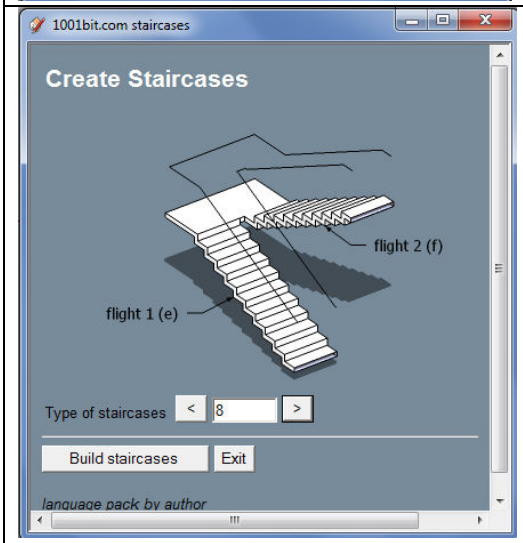
Staircase 6



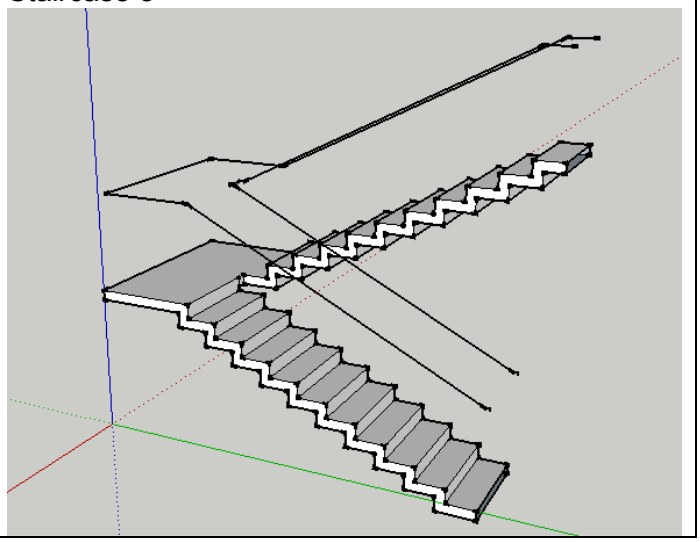


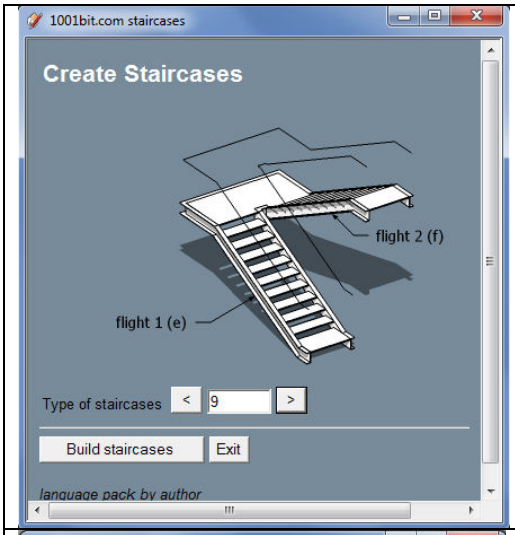
Staircase 7



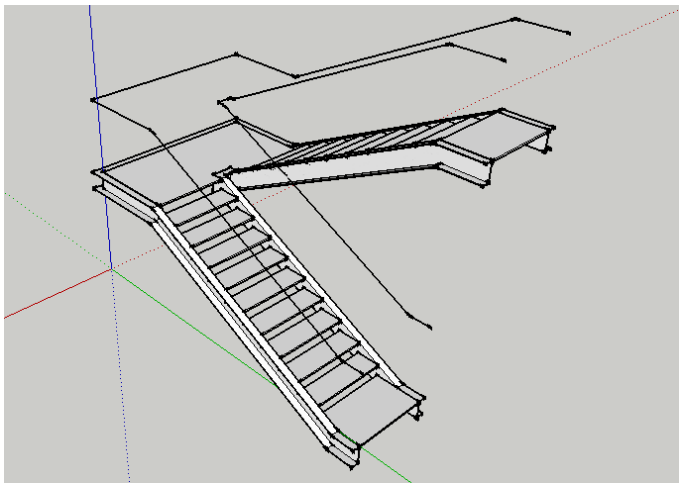


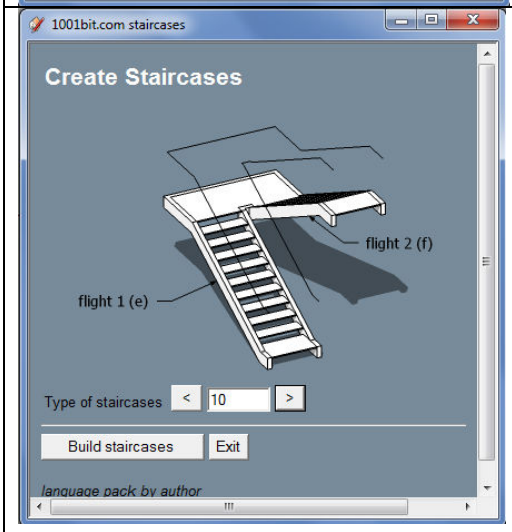
Staircase 8



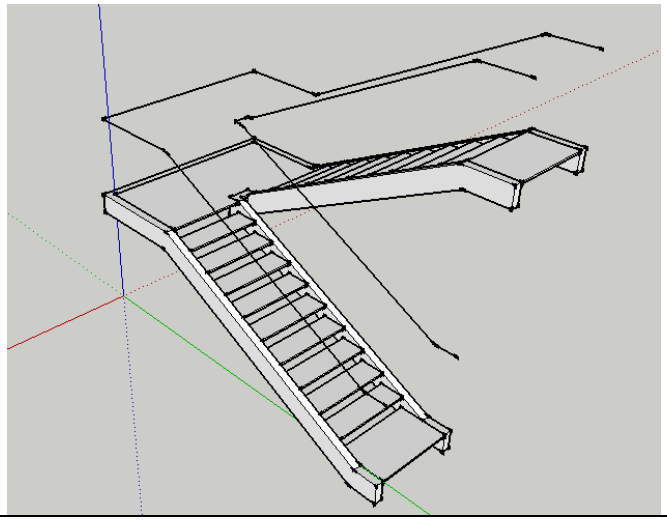


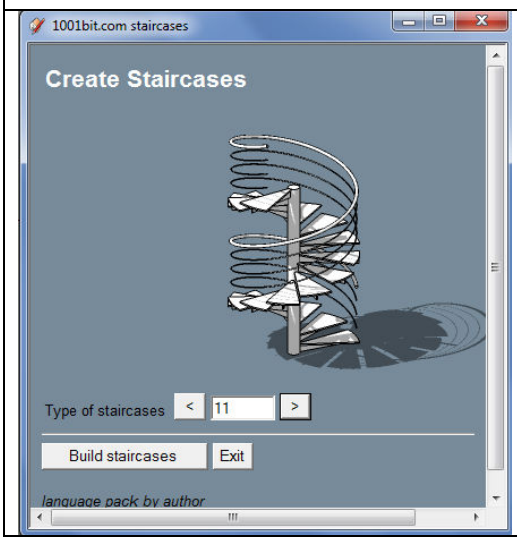
Staircase 9



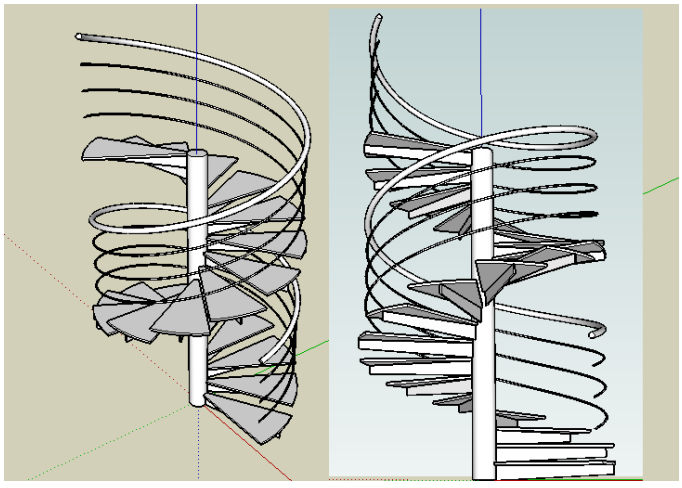


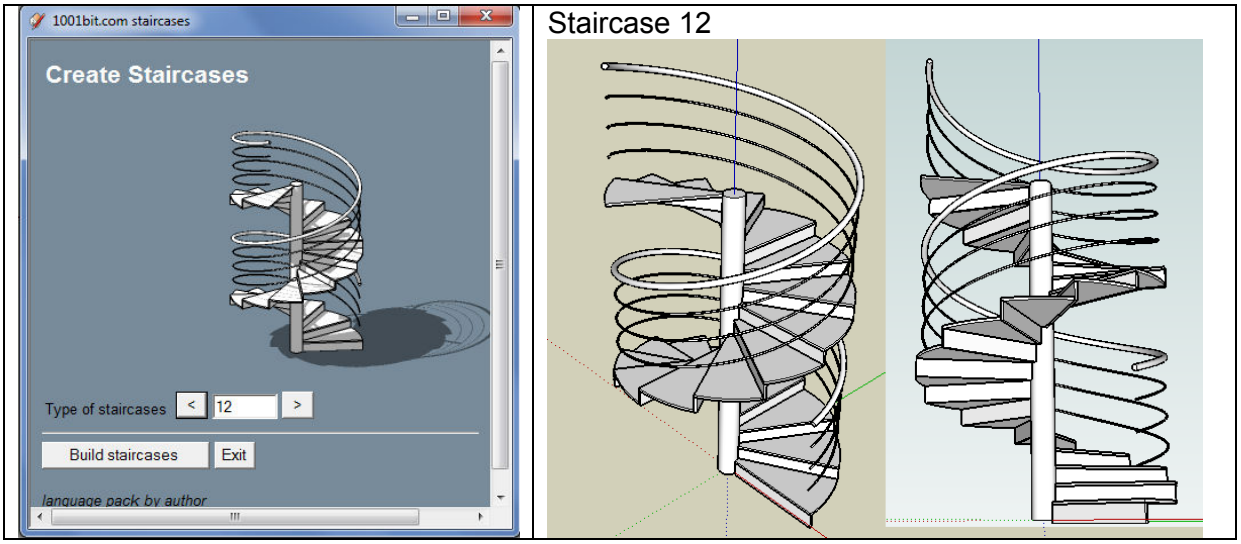
Staircase 10





Staircase 11





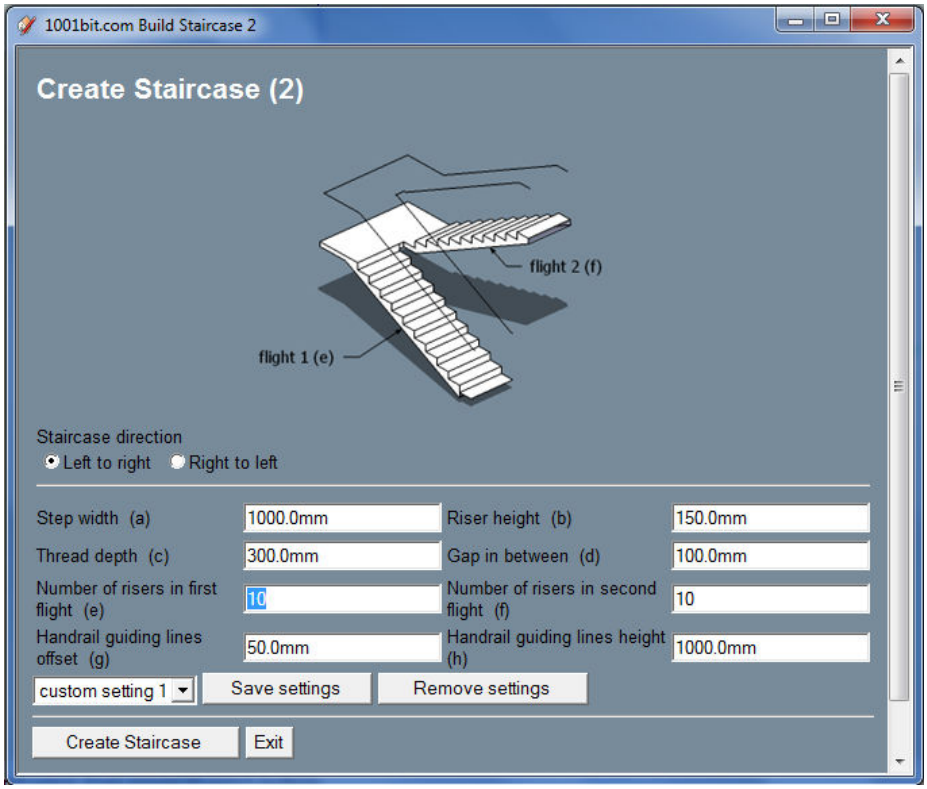
Creating the staircases are quite simple.

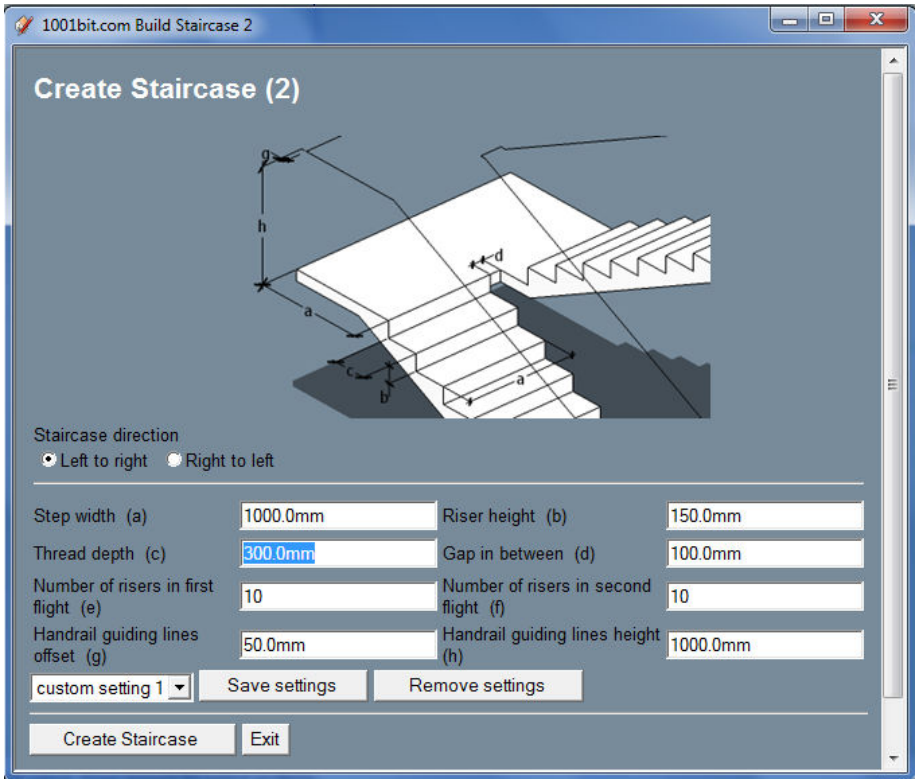
Step 1: click the icon to run the tools, select type of staircases then click “Create Staircase”.

Step 2: enter parameters into dialog box then click “Create Staircase”

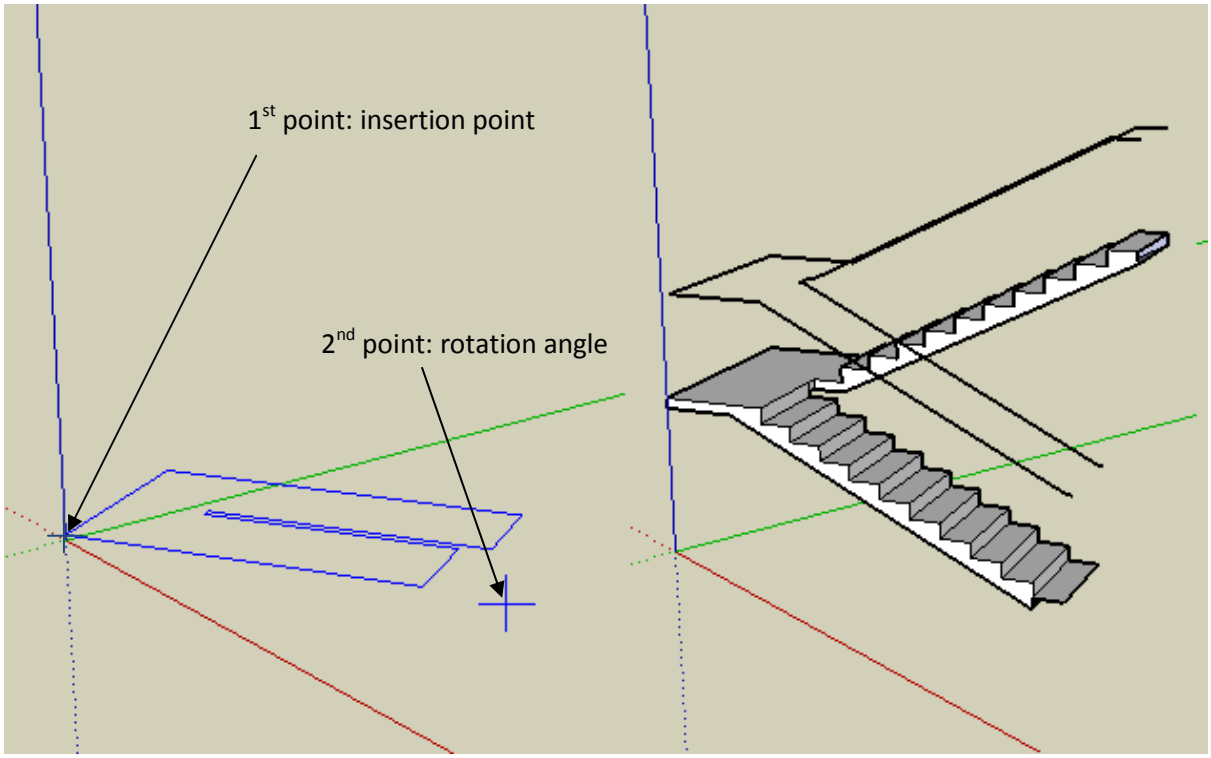
Step 3: pick insertion point

Step 4: pick rotation angle.





The images on the dialog box change in accordance to the text box.



Escalator

This tool automatically creates standard escalators. The dimensions of standard components are fixed to commonly available escalators.

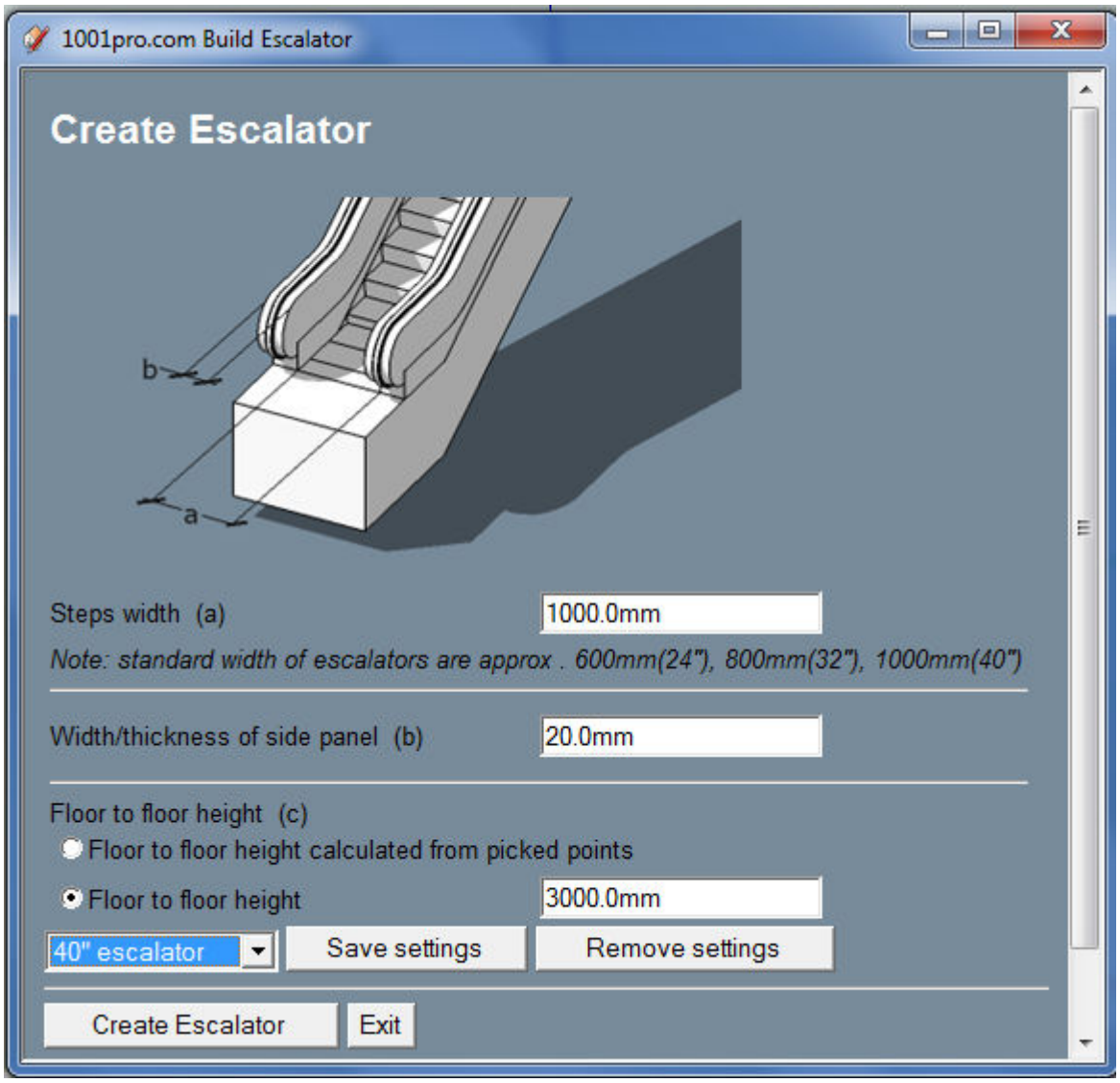
Procedure:

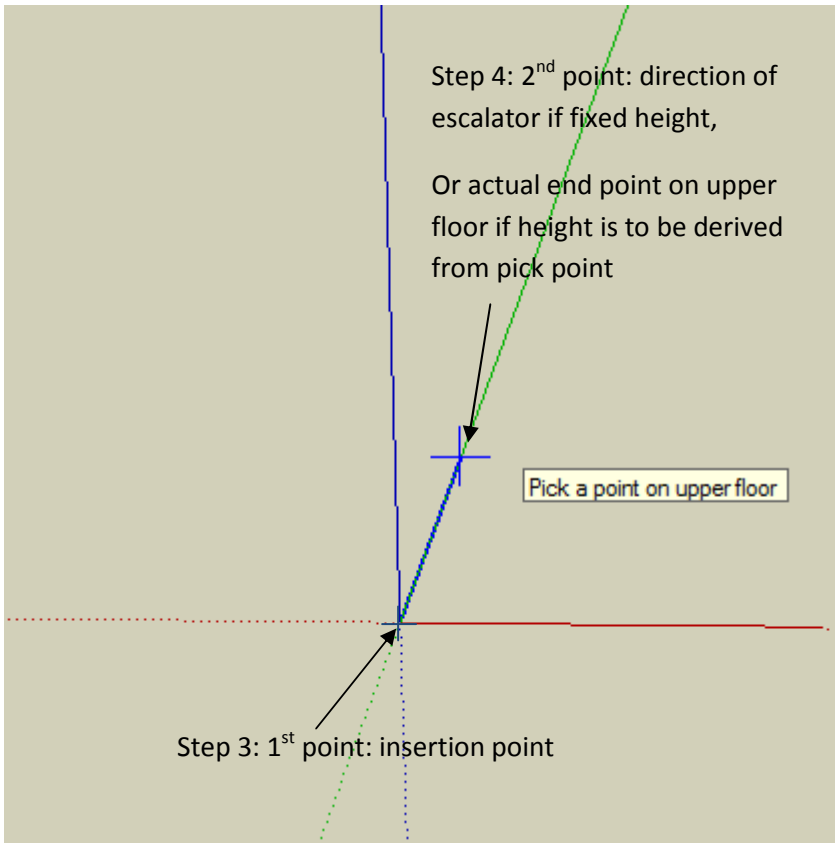
Step 1: Click icon to run escalator tool.

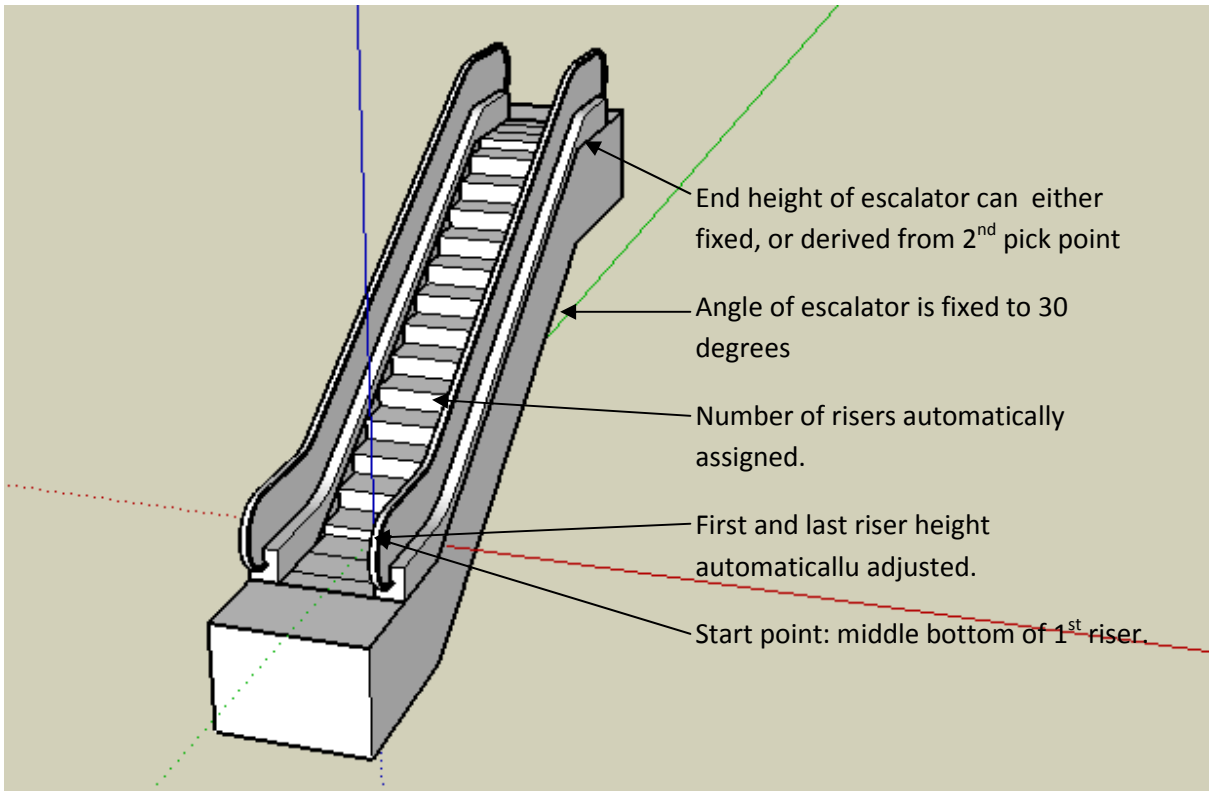
Step 2: Enter parameters and click “Create Escalator”

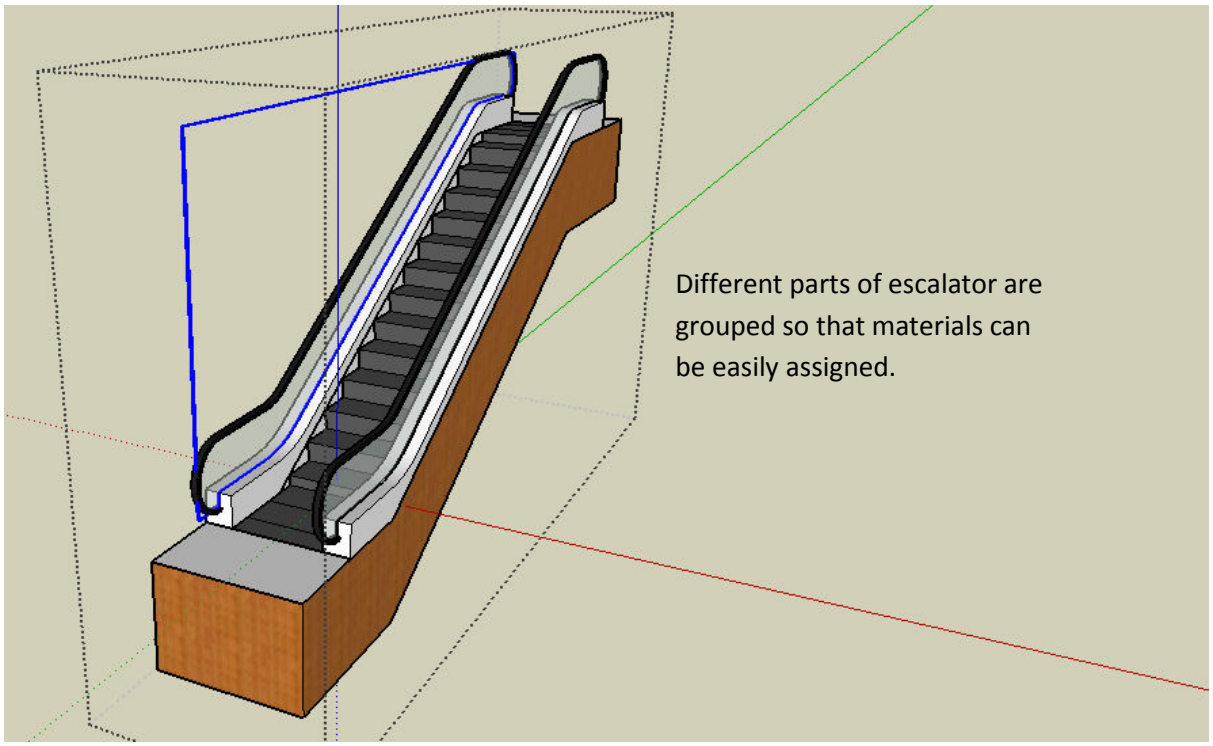
Step 3: Pick start point

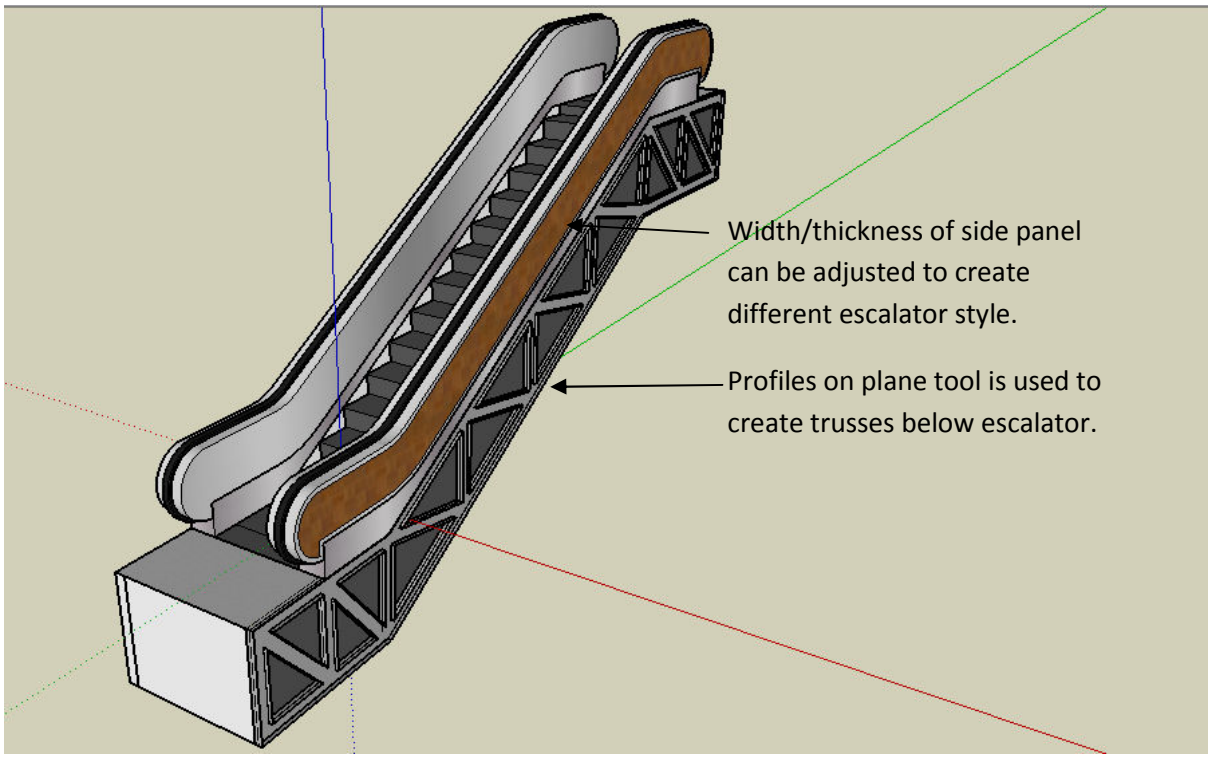
Step 4: Pick to define direction (or pick end point)




Step 4: 2nd point: direction of escalator if fixed height,
Or actual end point on upper floor if height is to be derived from pick point
Pick a point on upper floor
Step 3: 1st point: insertion point


End height of escalator can either fixed, or derived from 2nd pick point
Angle of escalator is fixed to 30 degrees
Number of risers automatically assigned.
First and last riser height automaticallu adjusted.
Start point: middle bottom of 1st riser.


Different parts of escalator are grouped so that materials can be easily assigned.

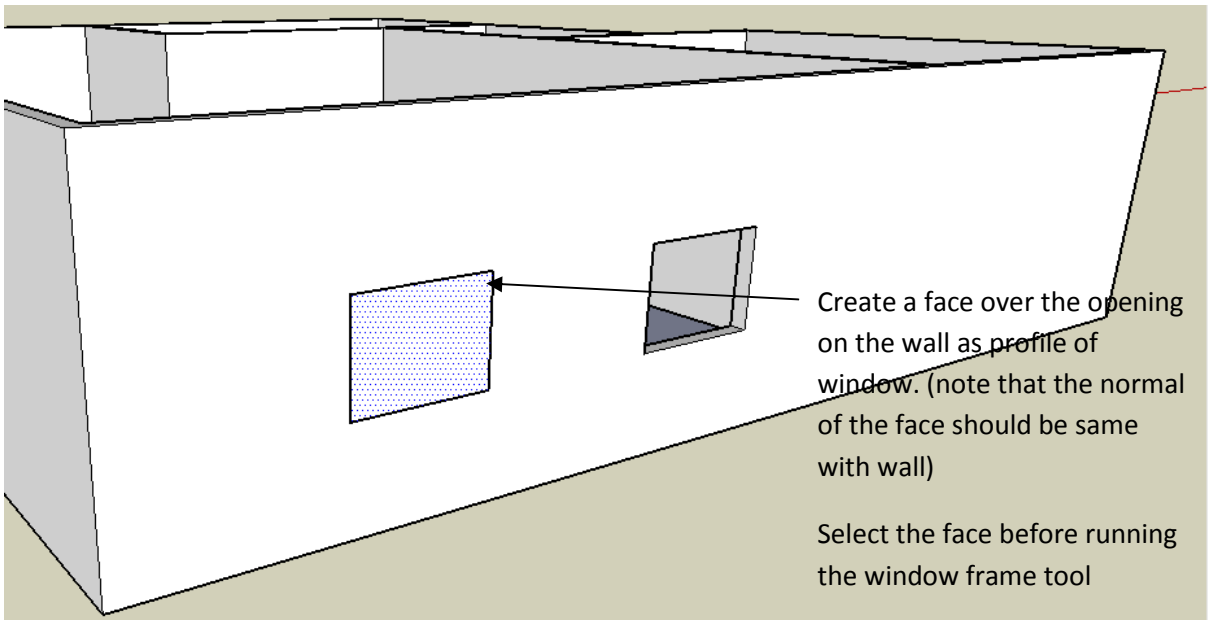

Width/thickness of side panel can be adjusted to create different escalator style.
Profiles on plane tool is used to create trusses below escalator.

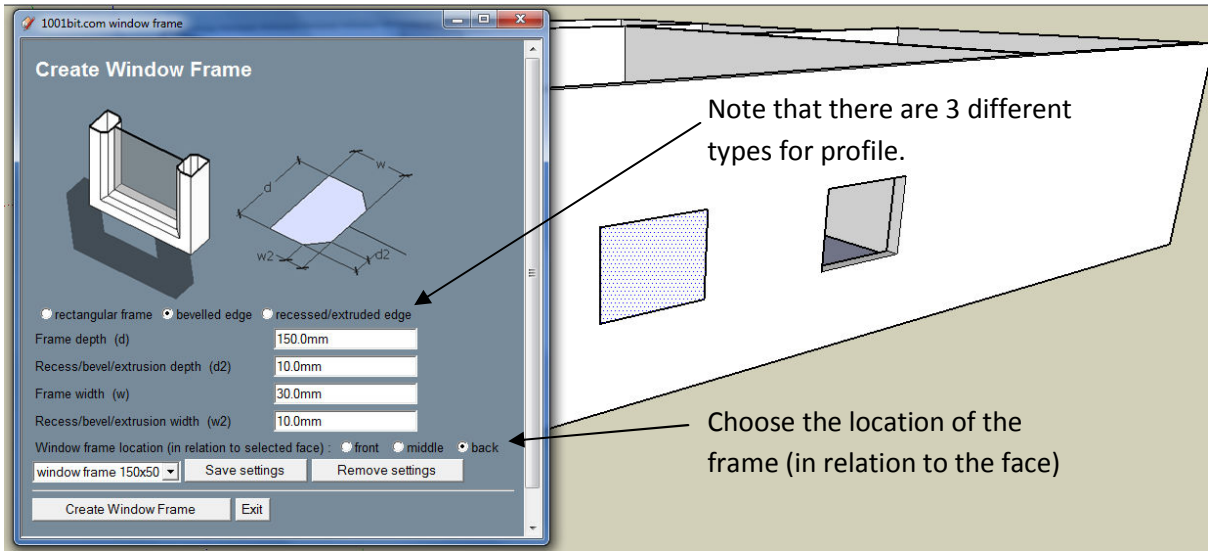
Window Frame

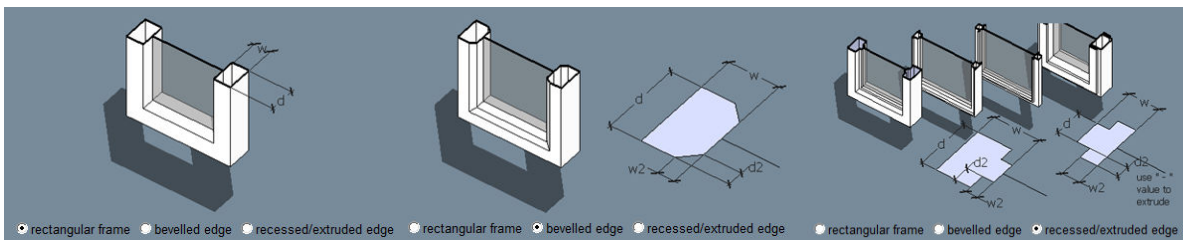
This tool is used to create window frame and window panels.

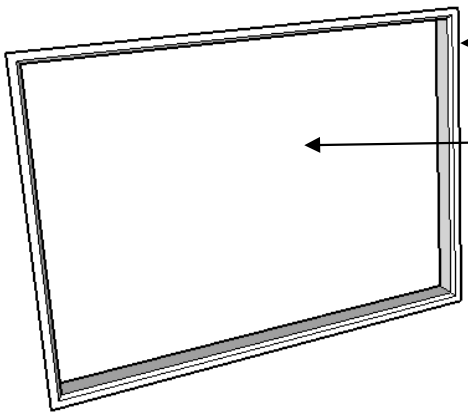
Procedure:

Following is an example of using the window frame tool to create a framed double leaf sliding window.



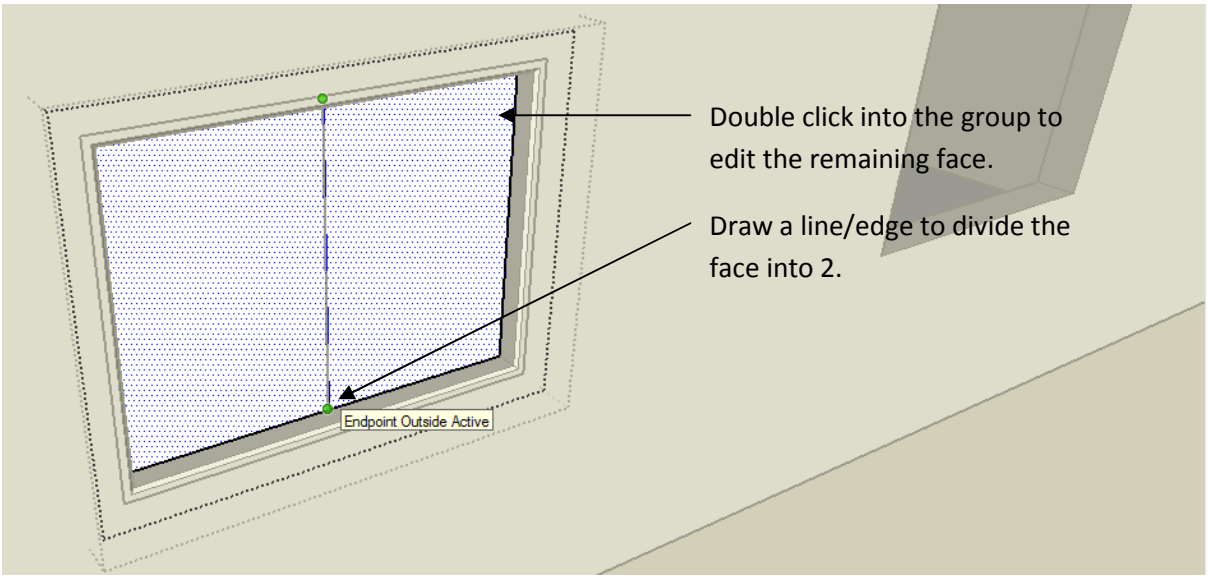






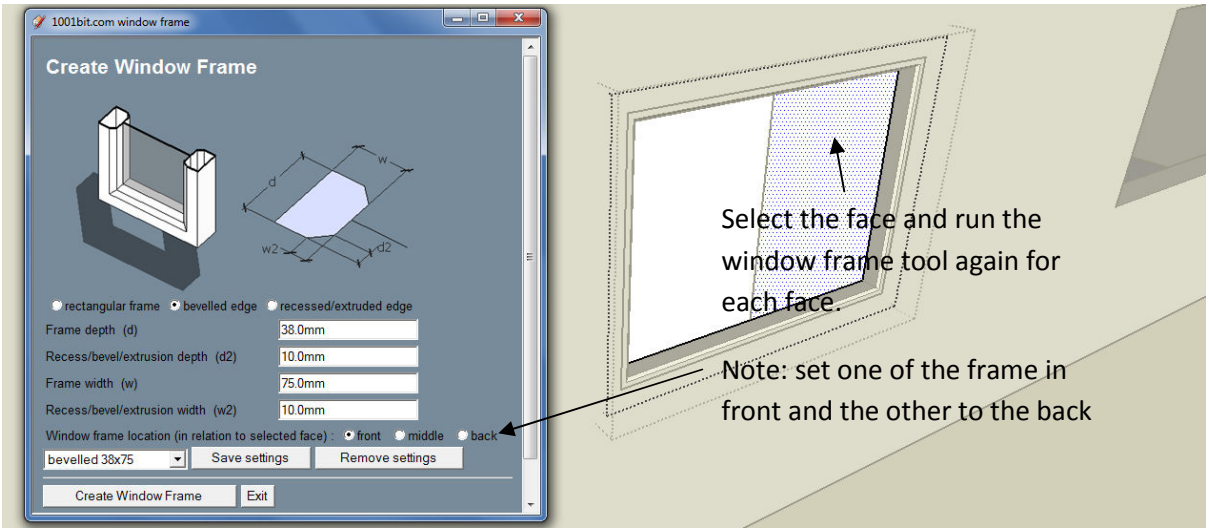
Window frame is created as a group.

The original face is trimmed to the size of remaining opening after the frame.



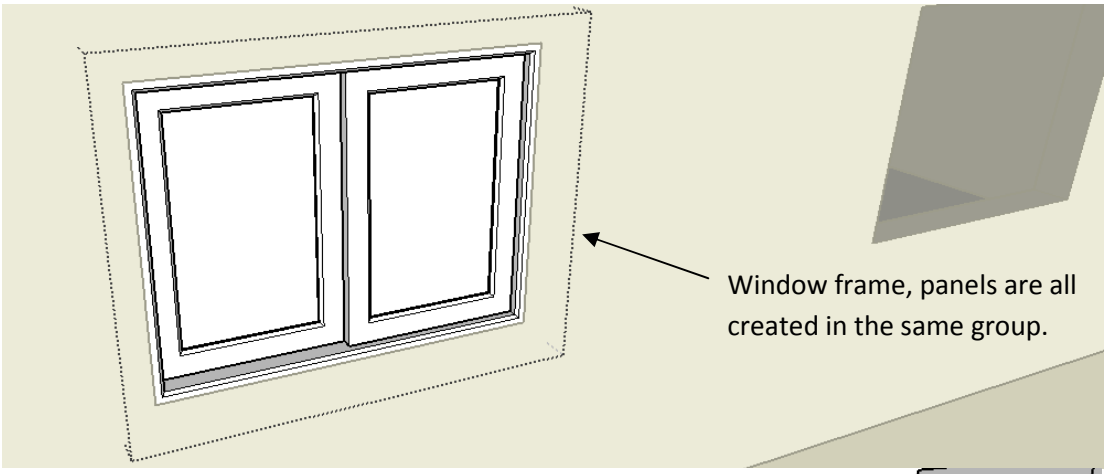
Double click into the group to edit the remaining face.

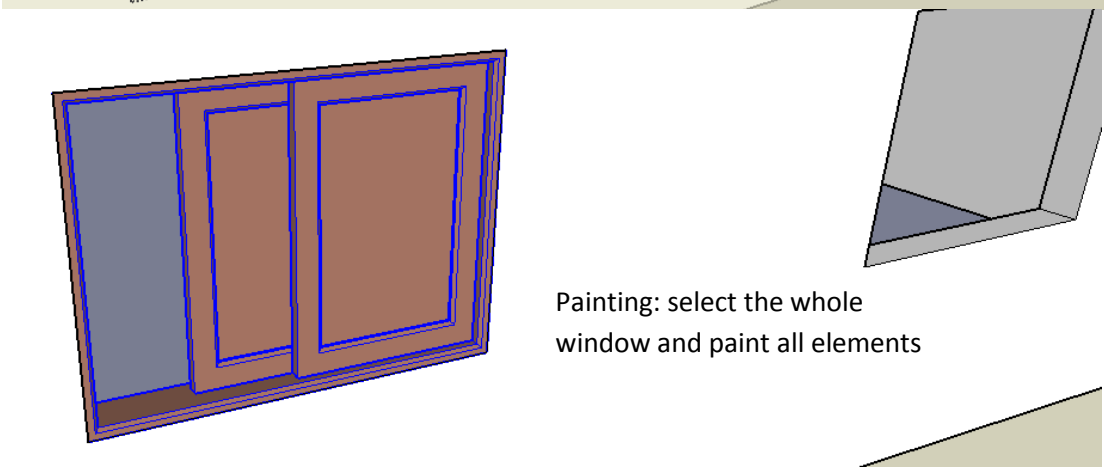
Draw a line/edge to divide the face into 2.

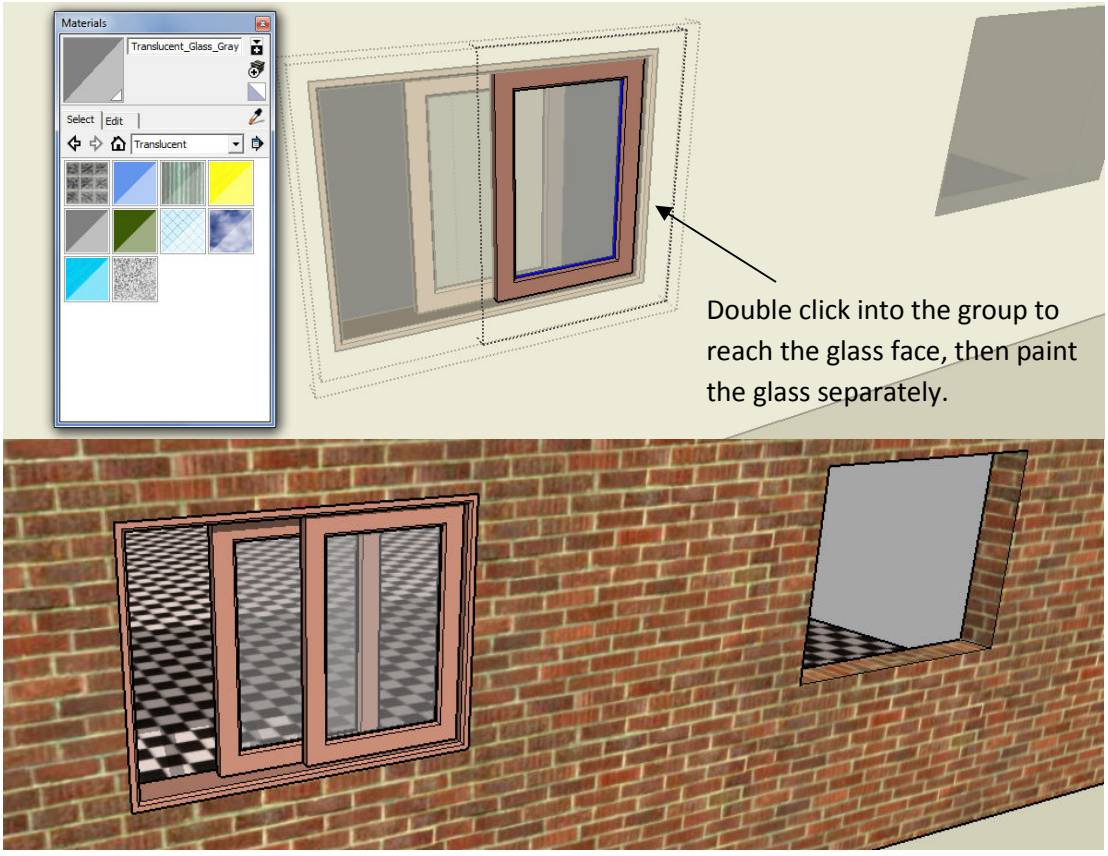


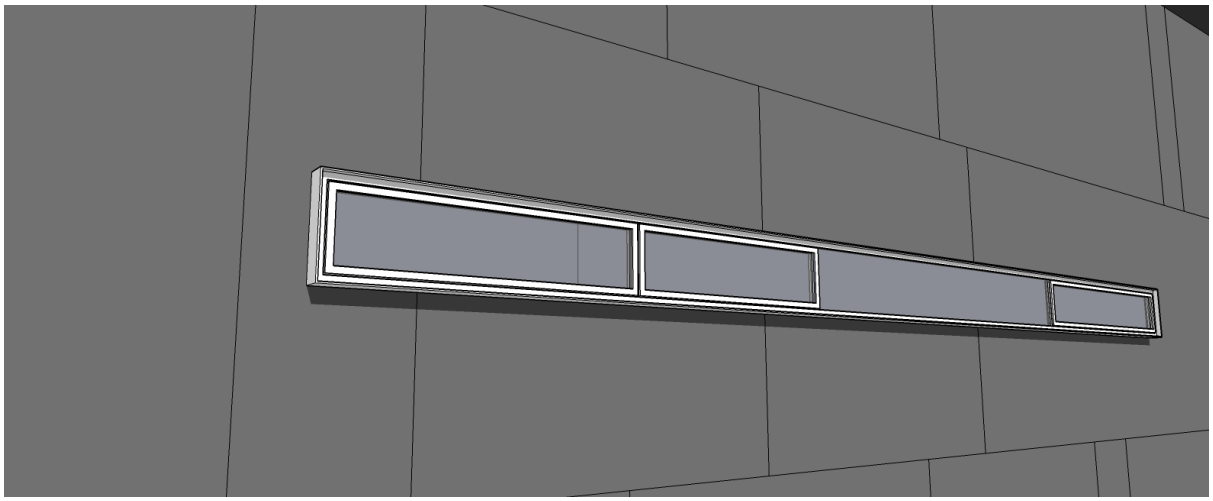
Select the face and run the window frame tool again for each face.

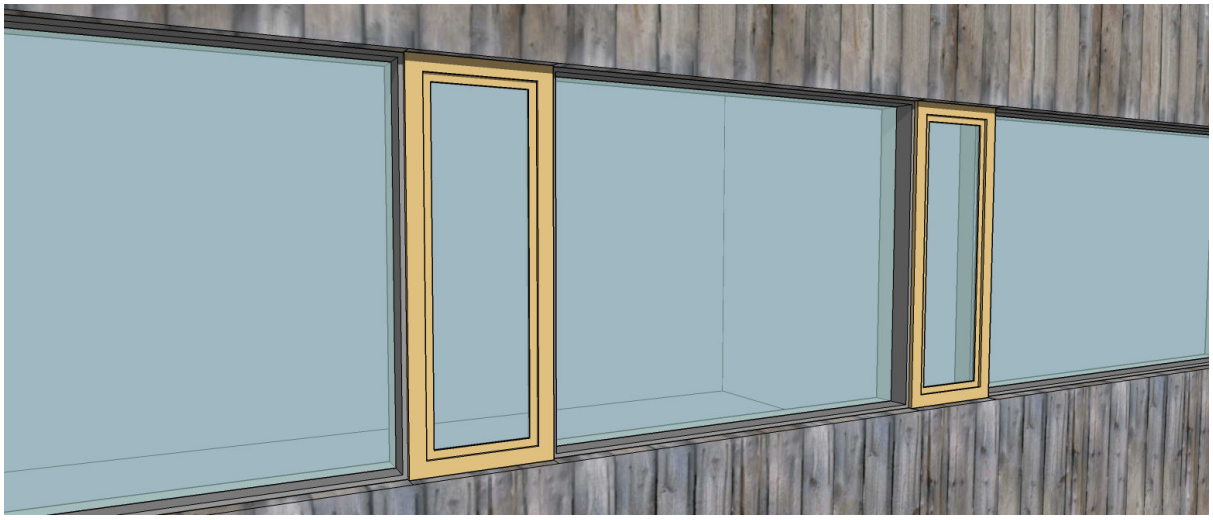
Note: set one of the frame in front and the other to the back

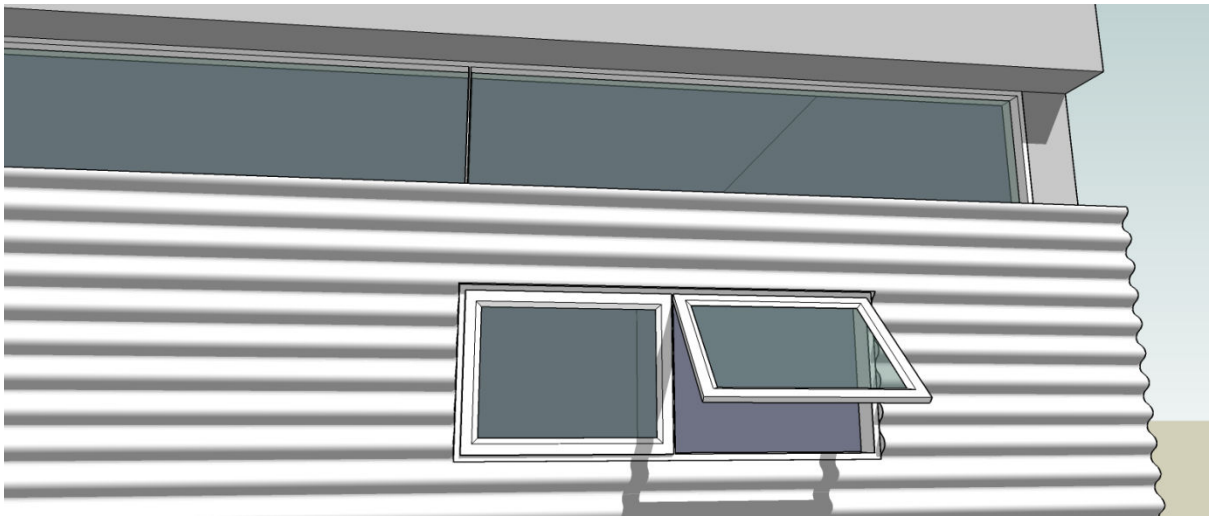

Window frame, panels are all created in the same group.


Painting: select the whole window and paint all elements


Materials
Translucent_Glass_Gray
Select
Edit
Translucent
Double click into the group to reach the glass face, then paint the glass separately.

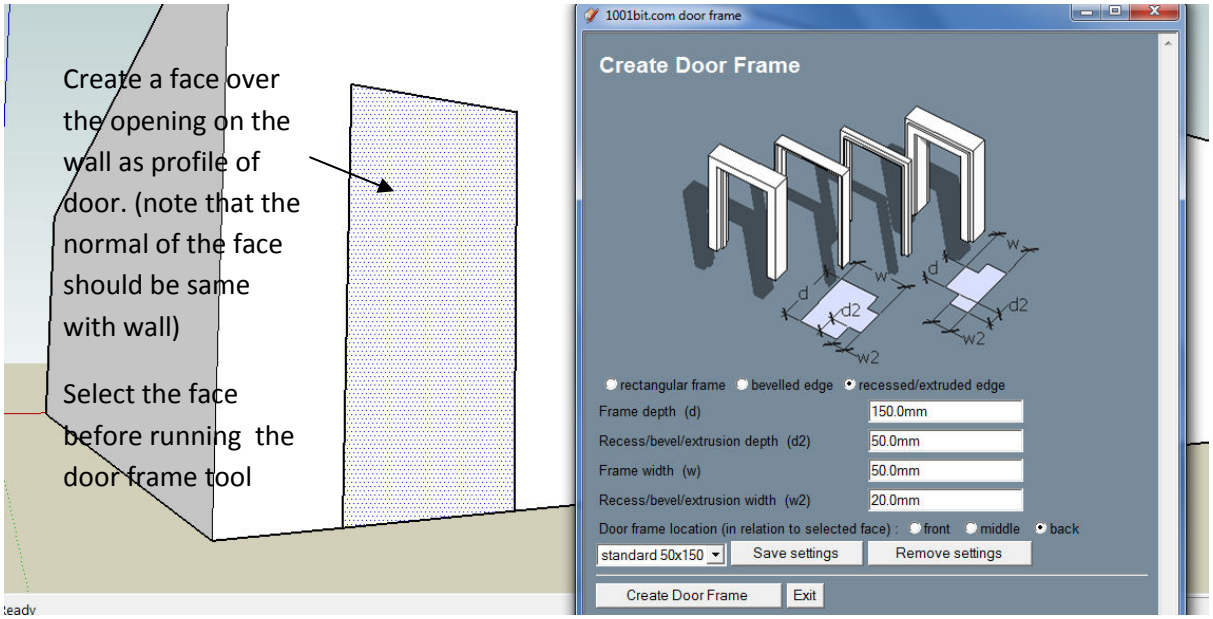


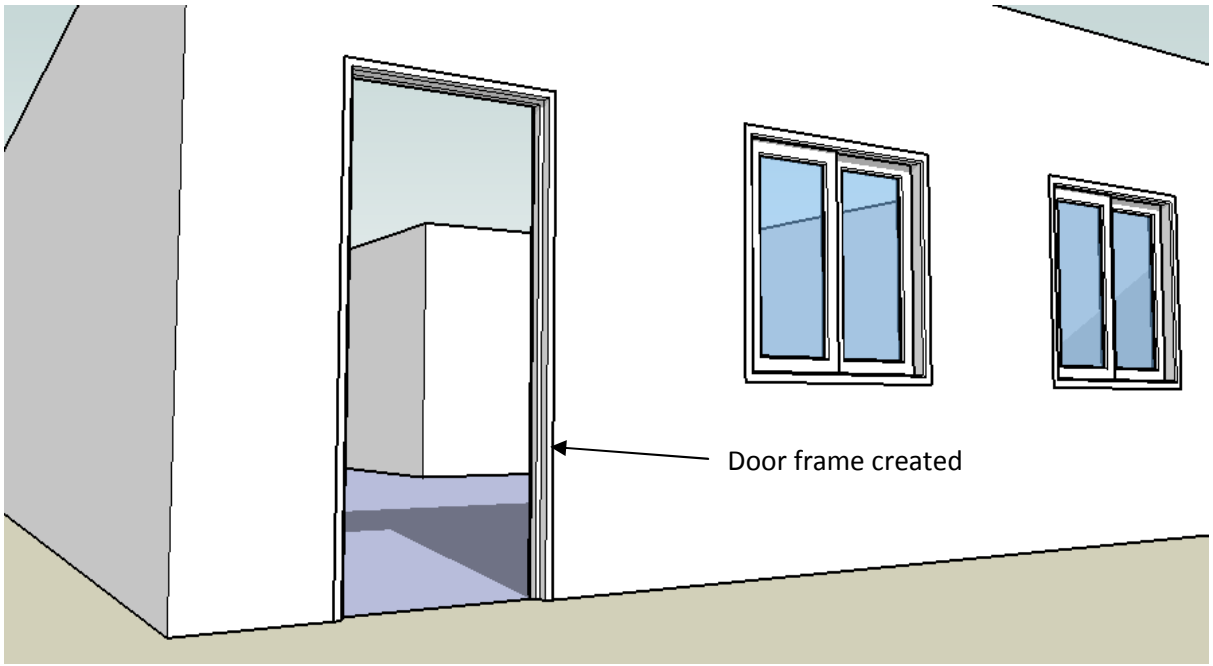




Door Frame

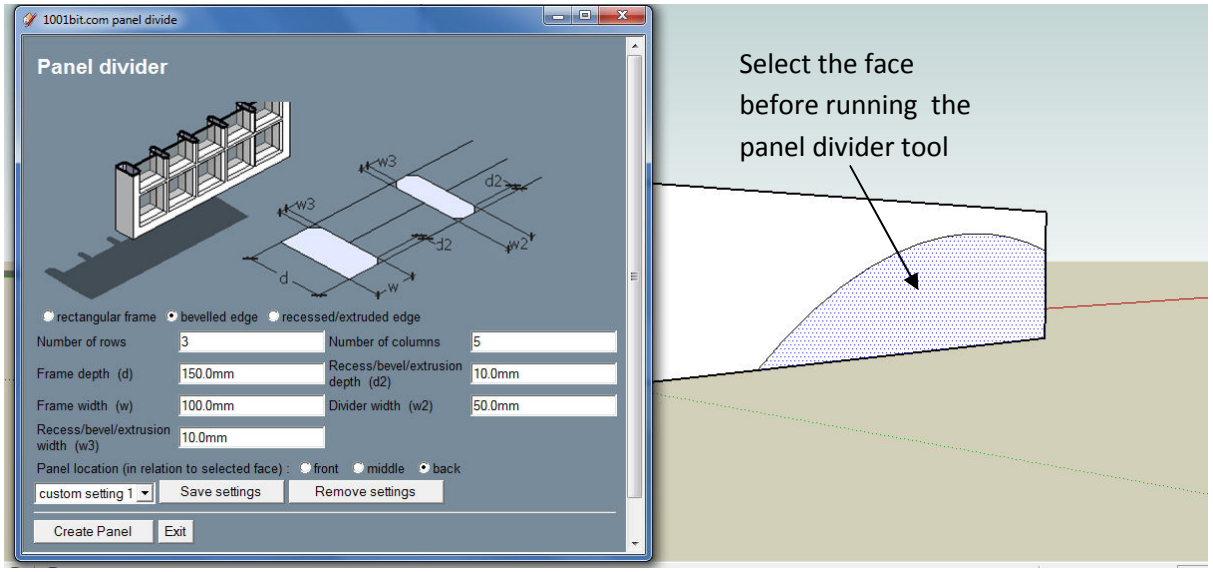
The create door frame tool works similarly to the window frame tool. The only difference is the frame is built without at bottom frame. Please refer window frame tool for procedures.

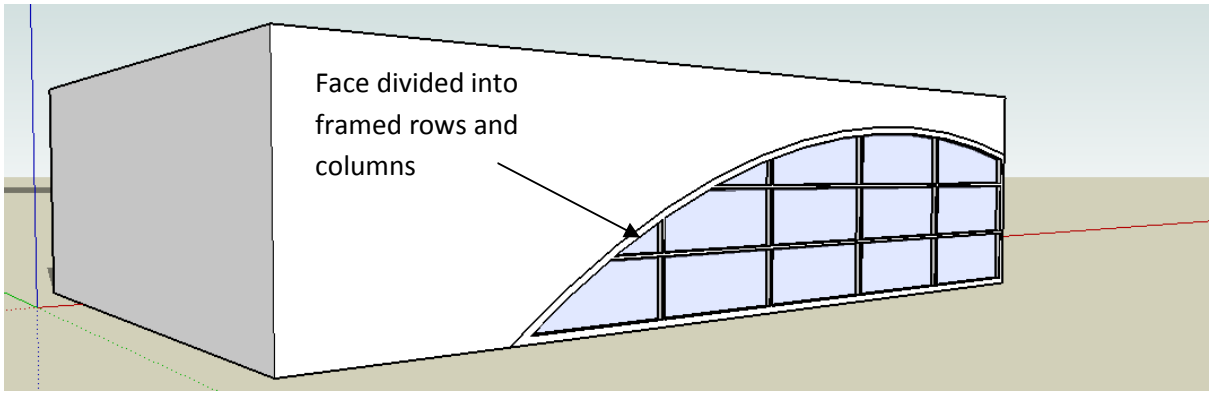


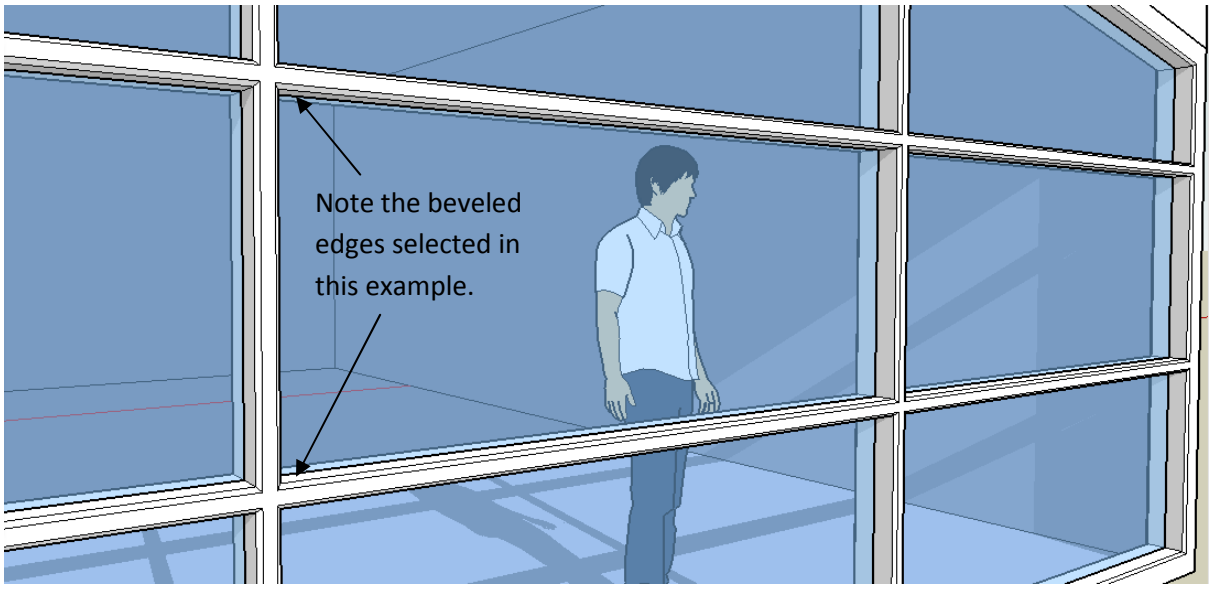


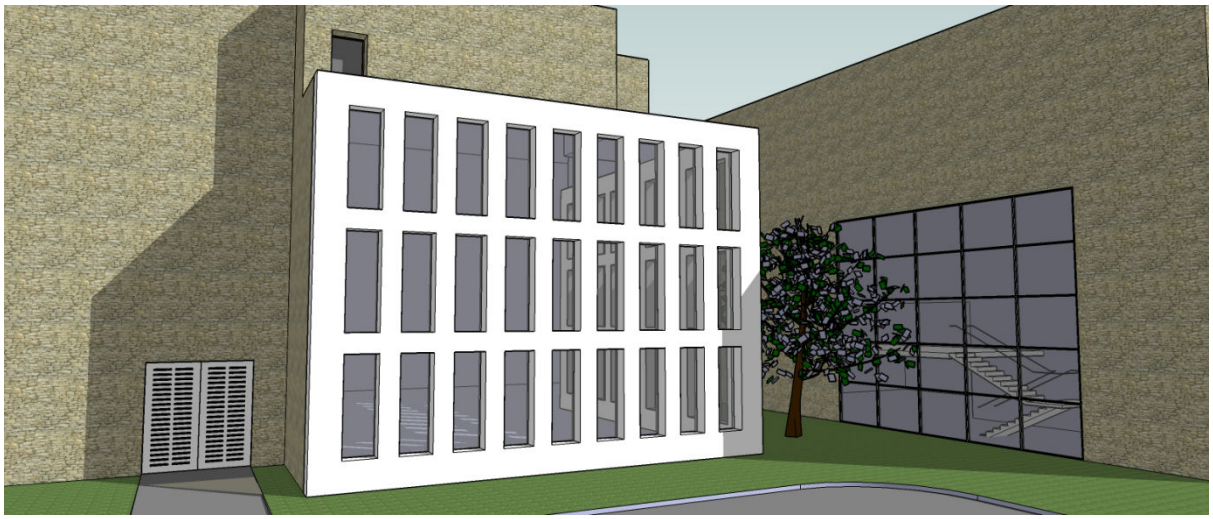
Divided Panels

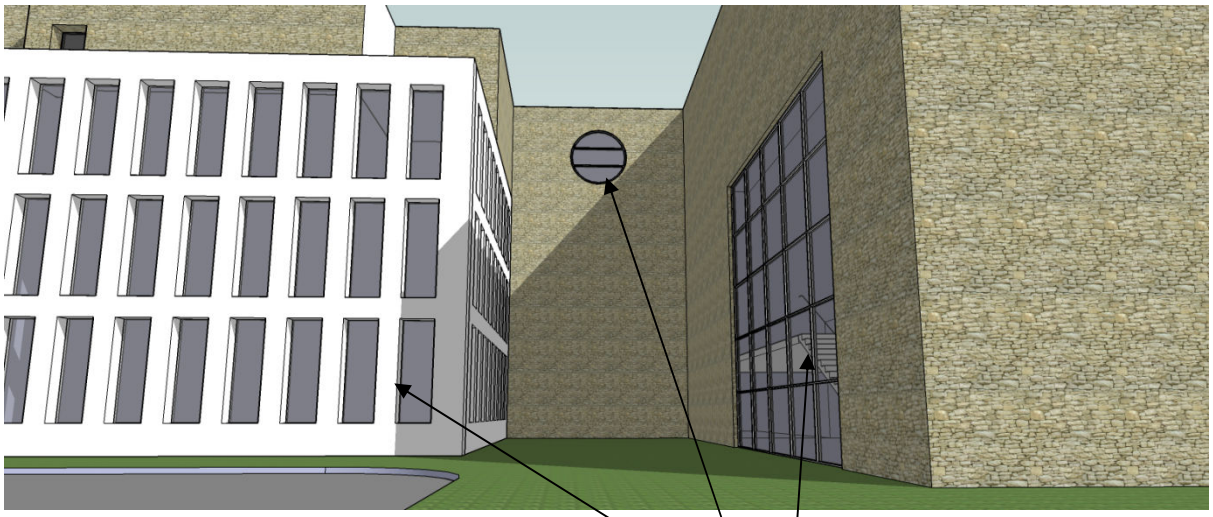
The tool divides the selected face into different framed panels. The procedure is similar to that of window frame and door frame. The options on the frame profiles are similar.

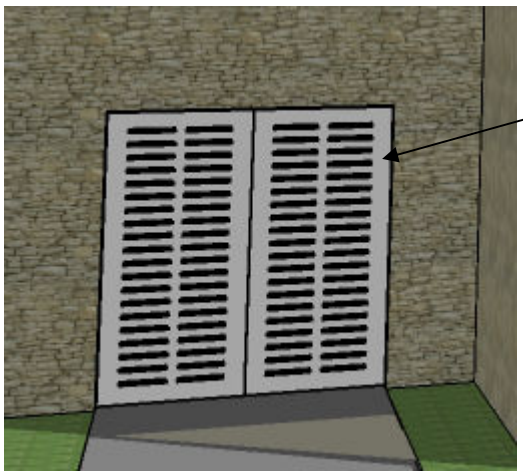












These items created using panel divide tool with different settings

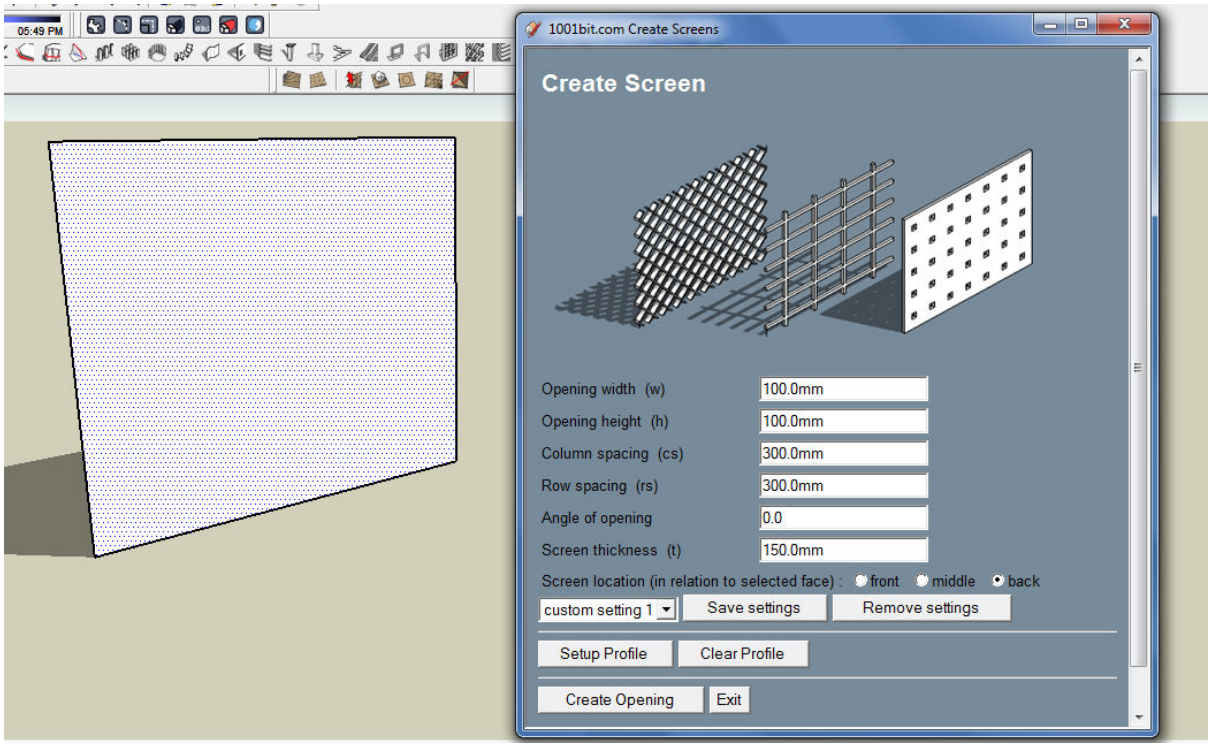
Perforated Screen

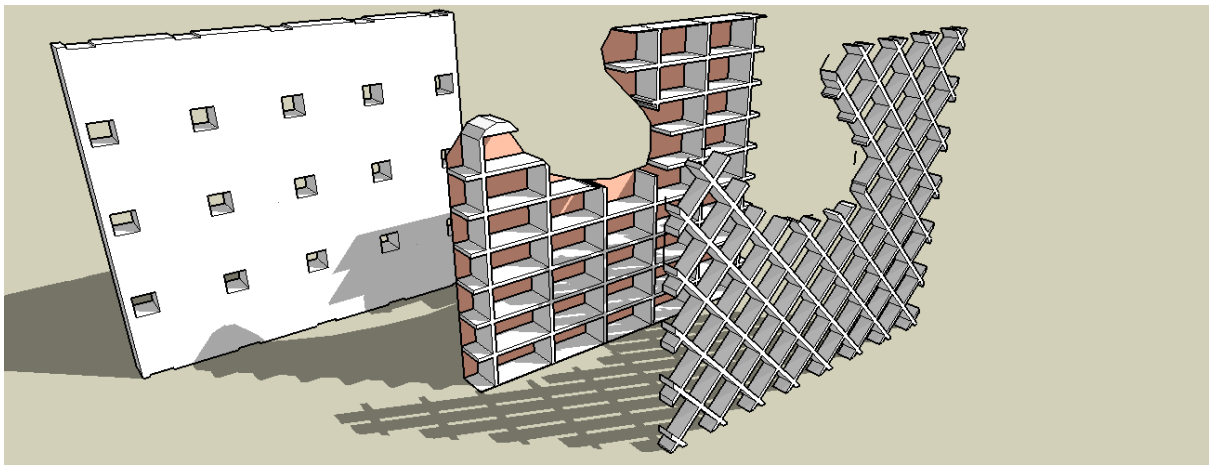
This tool creates perforated screens. Thickness, angle, opening dimensions can be freely defined. There is also an option to use custom defined profile as shape of openings.

Procedure:

Step 1: Select a face and run the tool.

Step 2: Enter desired parameters then click Create Opening.





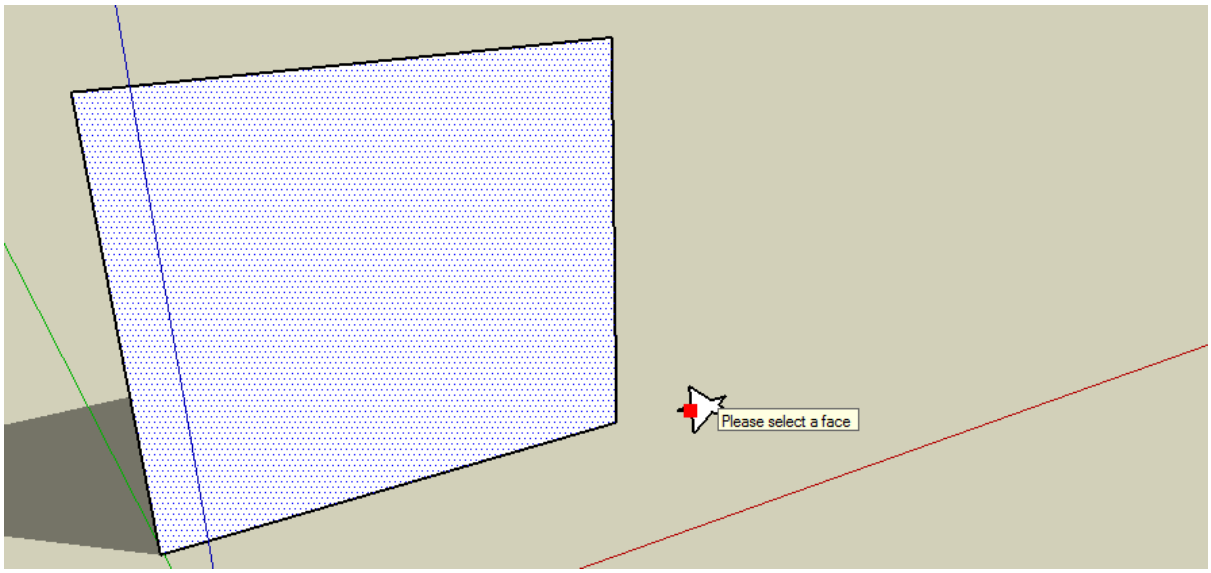
Note: that the face can be any shape.

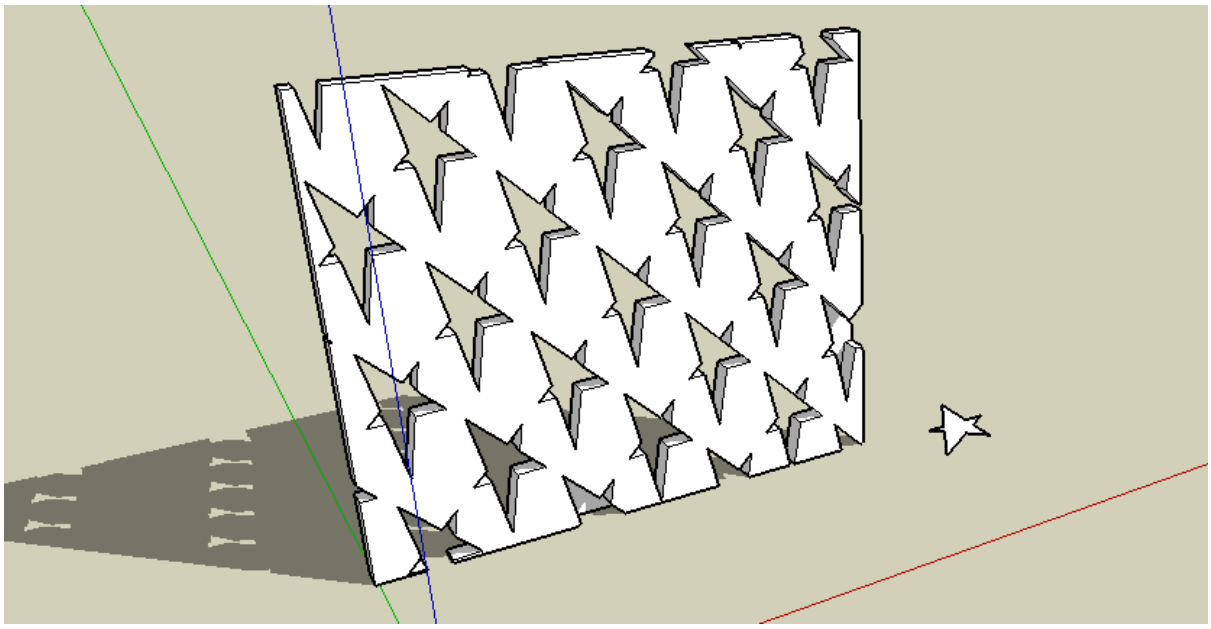
The perforated screen tool come with a function to make use of user defined profile for openings.

To define profile, create a face that is flat on x, y plane.

Run the tool and click ‘Setup Profile’.

Then select the face to define profile and the screen will be created.





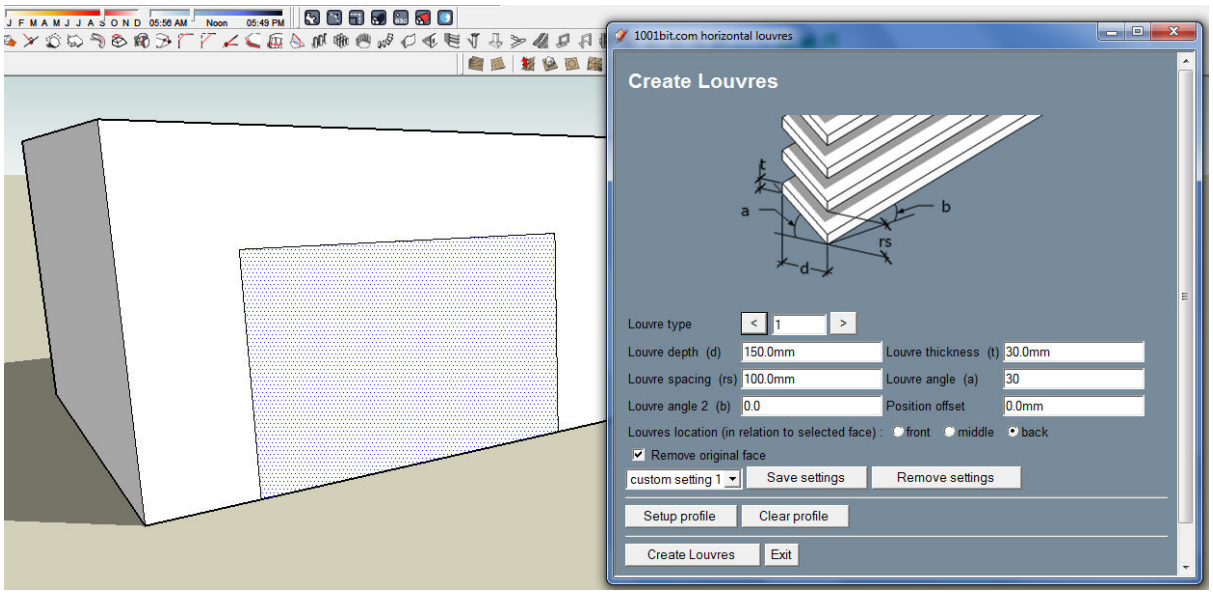
Louvres

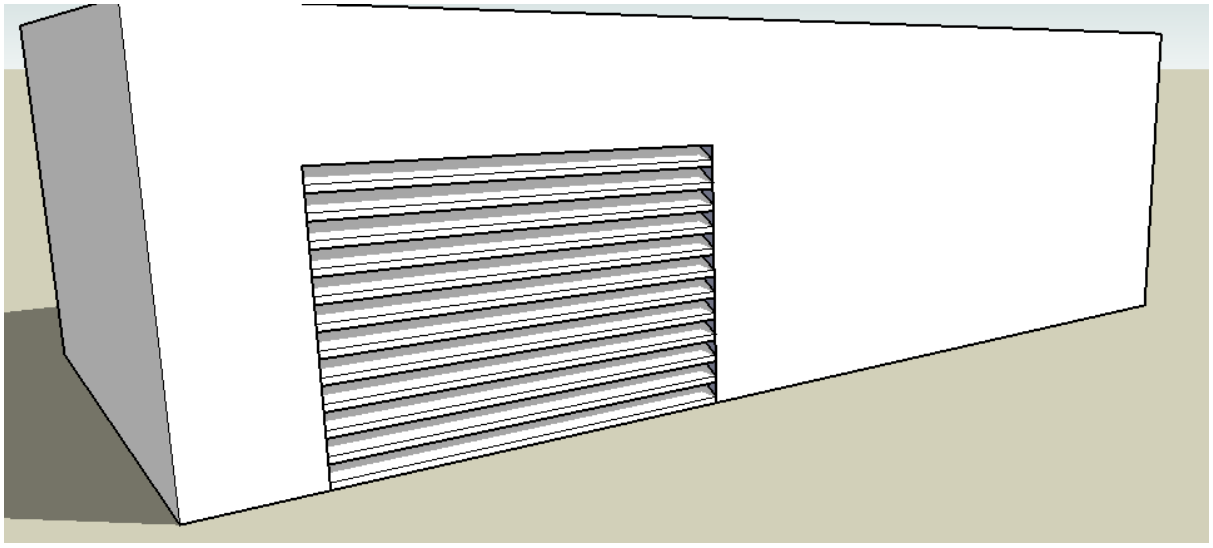
This tool creates louvers from selected face. There are multiple types of louver profiles to choose from. There is also an option of using user defined profile to create louvers.

Procedure:

Step 1: pick a face before running the tool.

Step 2: Select type of louver, and enter the parameters. Then click Create Louvres.

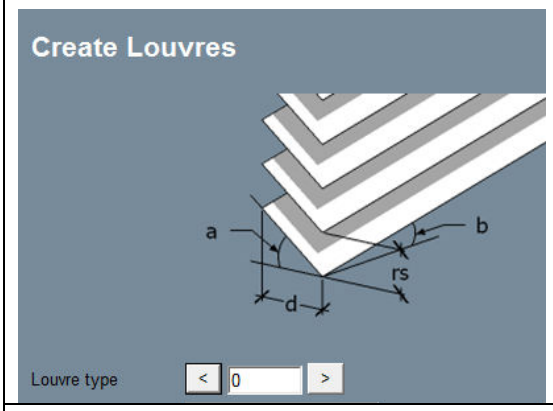




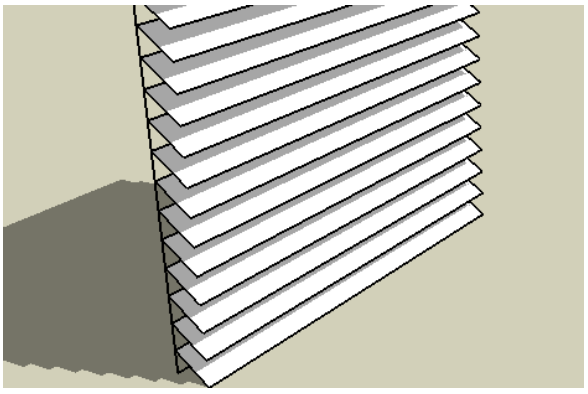
Louvers created from selected face. Note that there are options to place louver in front, middle and behind the face.

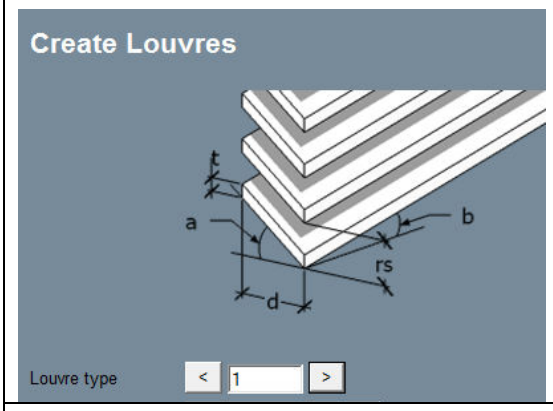
There is also an option to delete or keep the selected face after generating louvers.

And of course, the face can be of any shape.

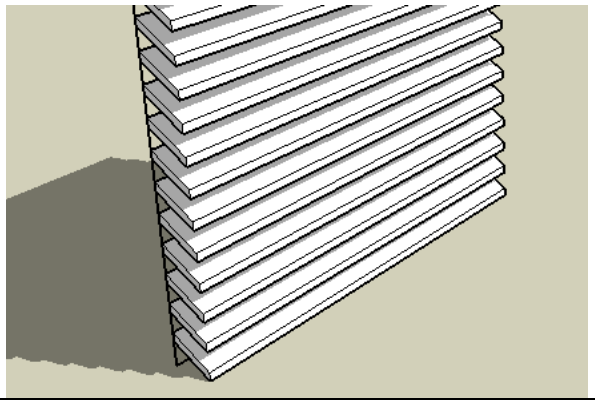


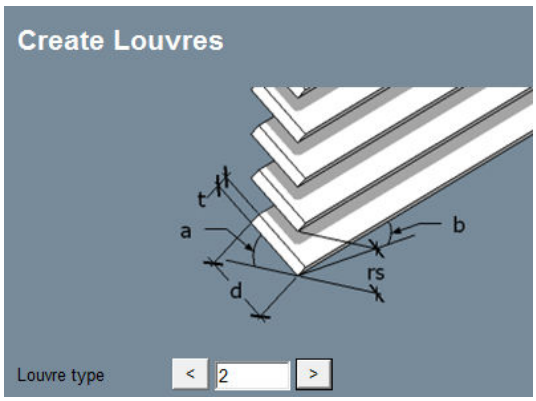
Louvre 0 - without thickness



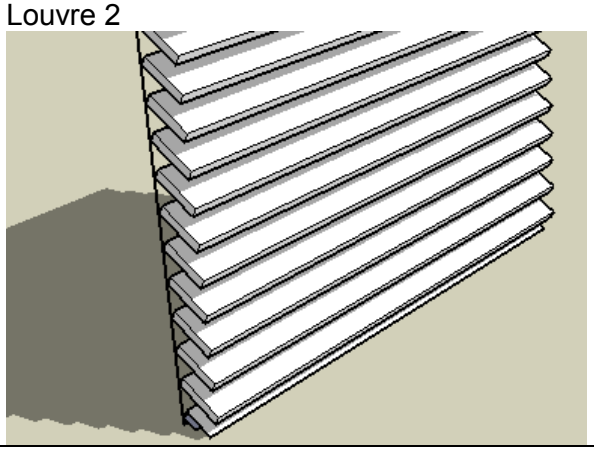


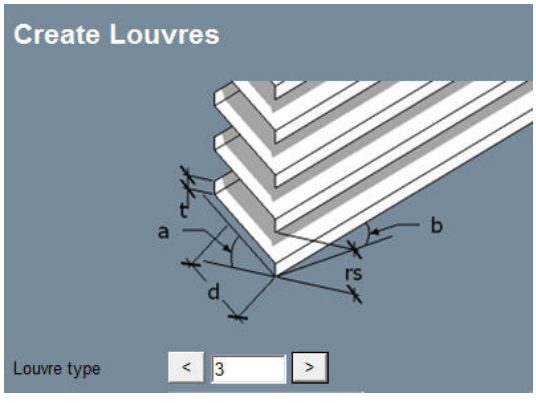
Louvre 1



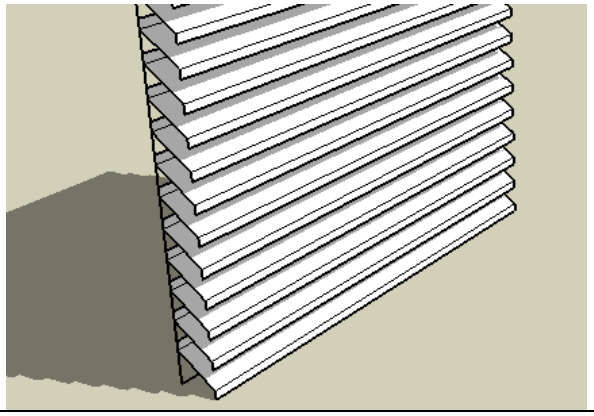


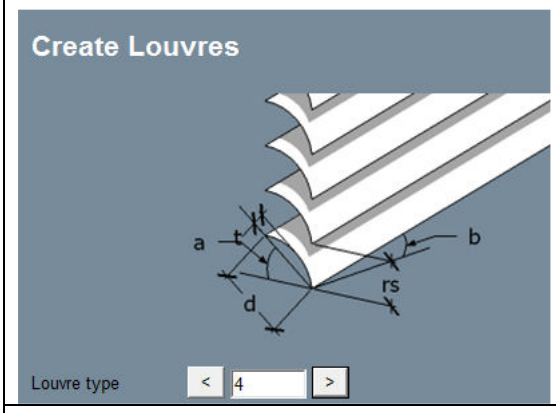
Louvre 2



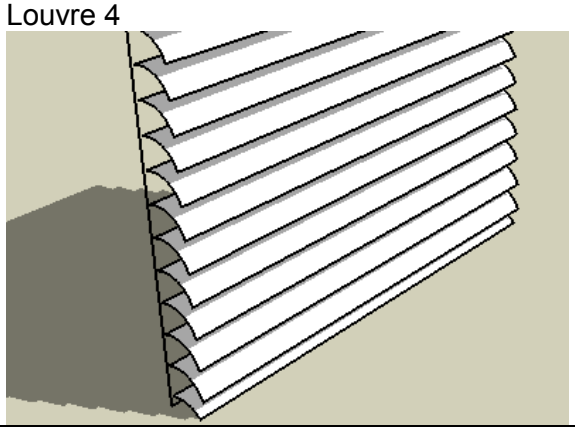


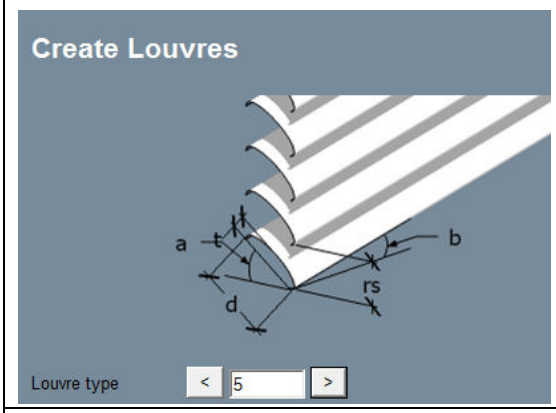
Louvre 3



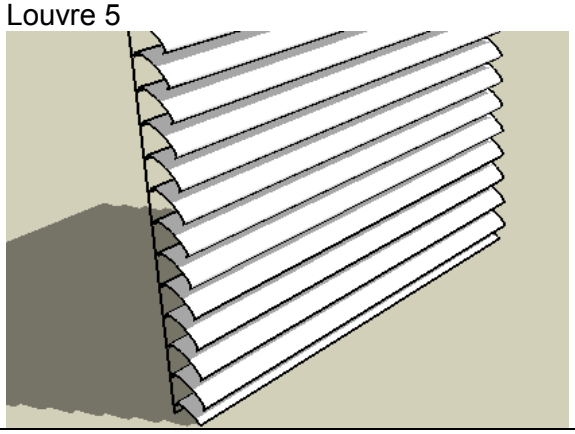


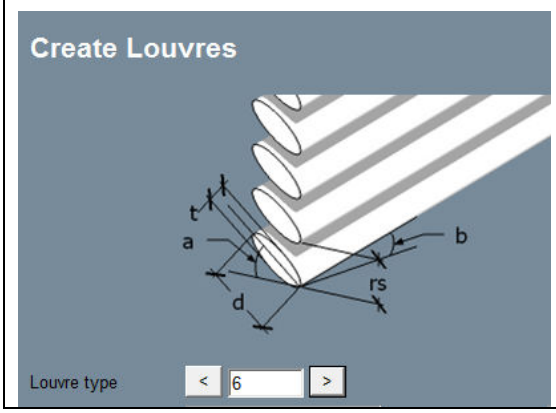
Louvre 4



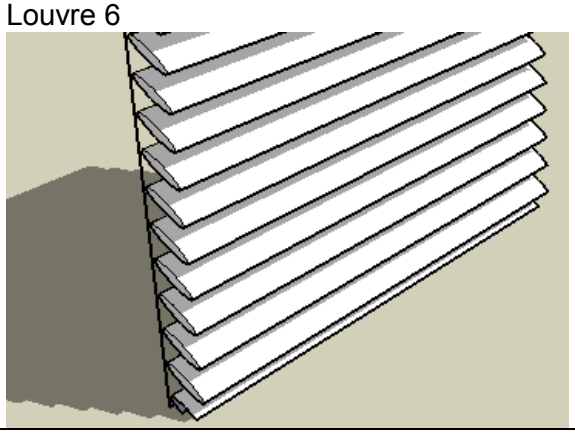


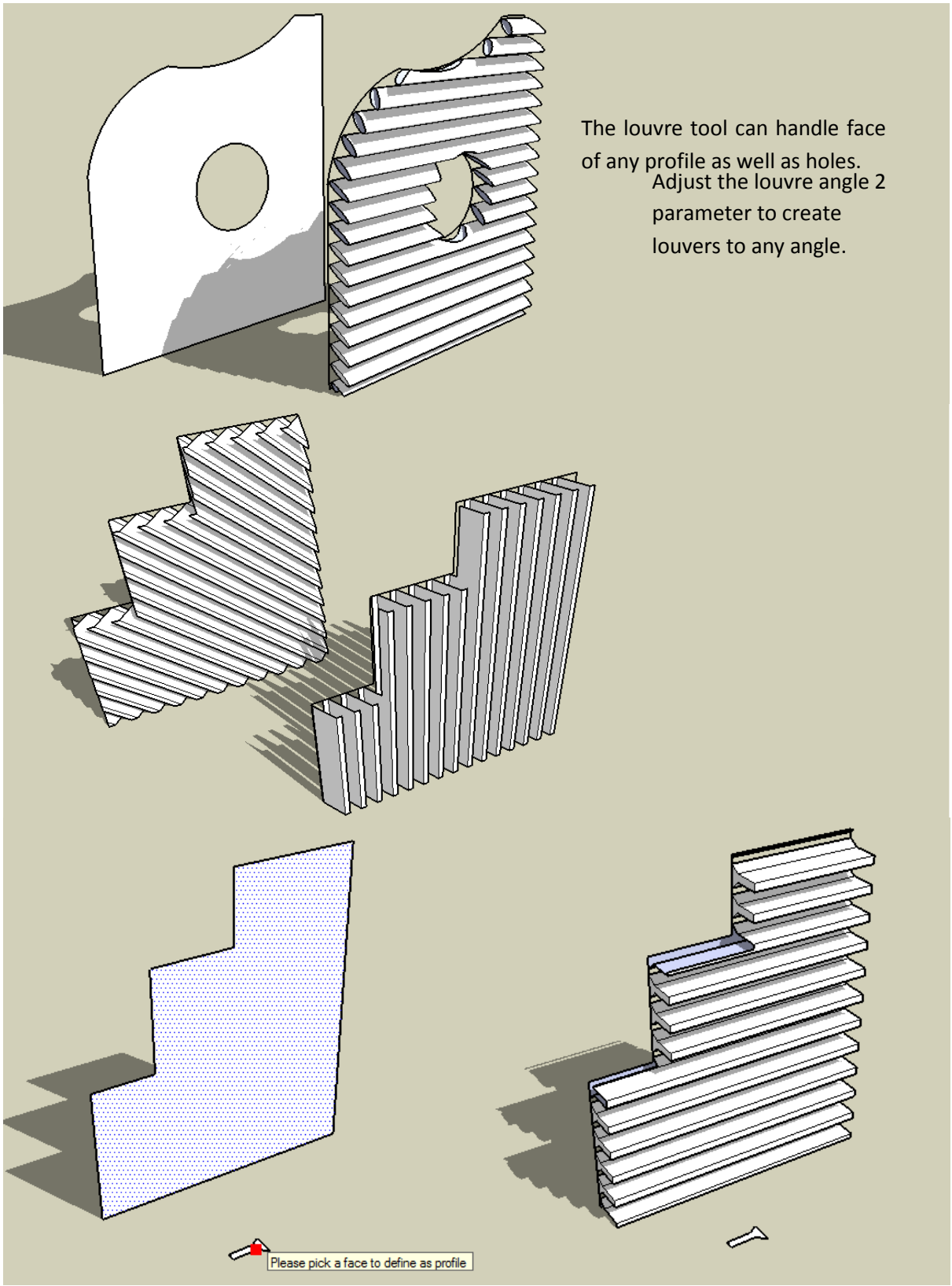
Louvre 5





Louvre 6



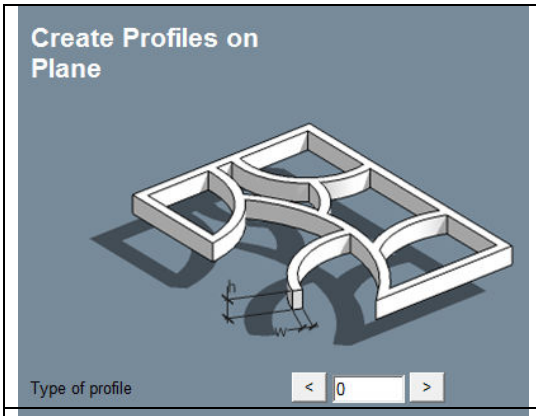
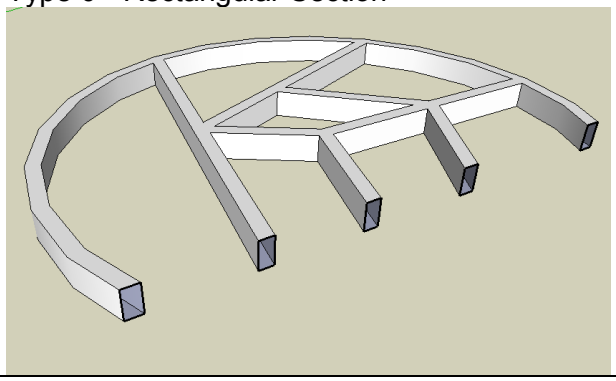
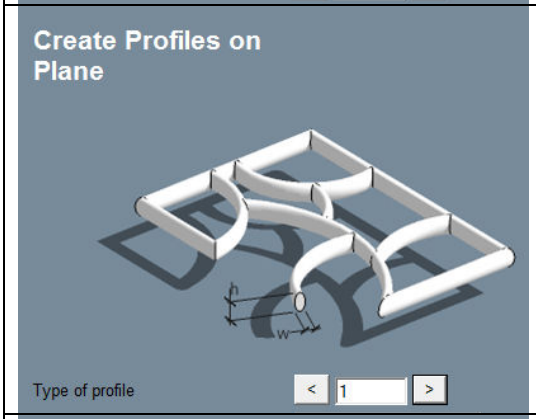
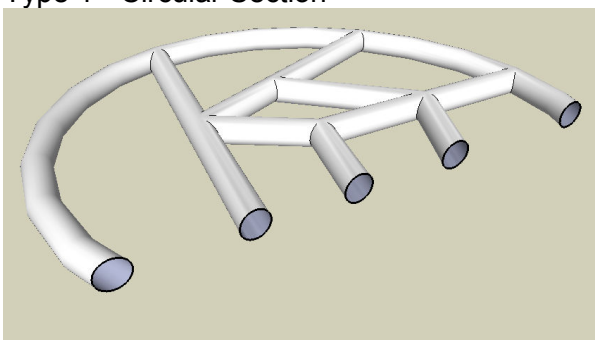
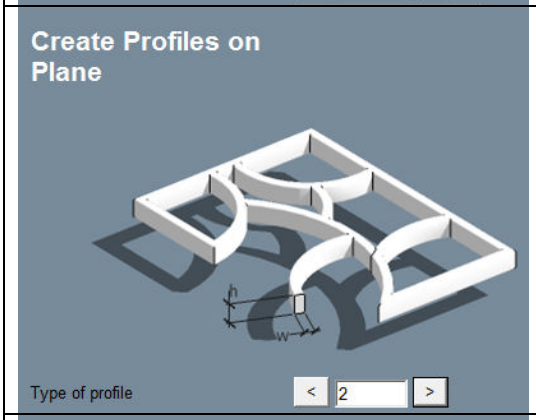
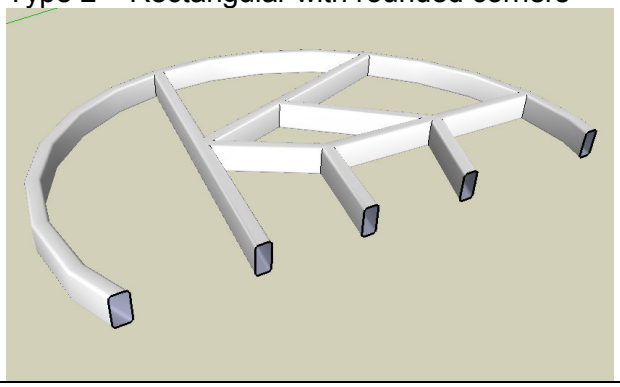
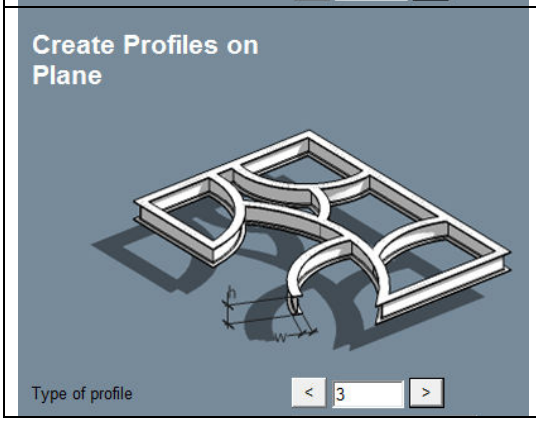
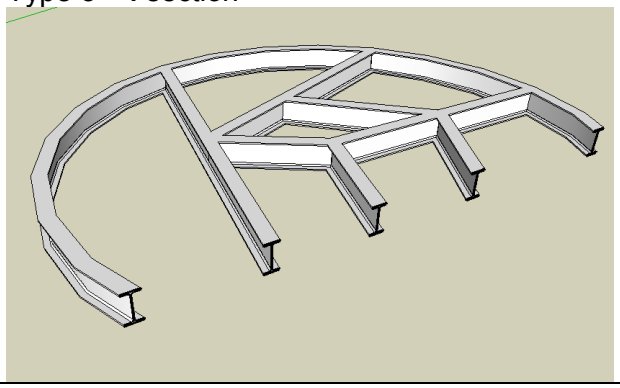


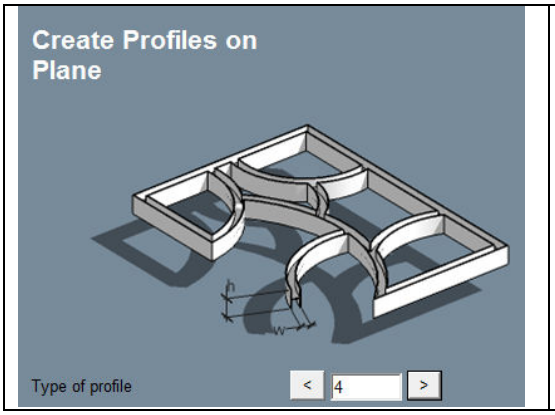
The louver tool come with a function to make use of user defined profile as louver. To define profile, create a face that is flat on x, y plane.

Run the tool and click ‘Setup Profile’. Then select the face to define profile and the louvers will be created.

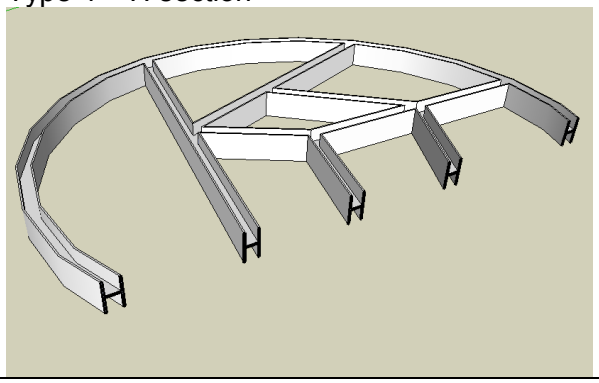
Profiles On Plane

The tool converts edges on to profiled sections. There are multiple options of profile to choose from.

	Type 0 - Rectangular Section 
	Type 1 - Circular Section 
	Type 2 – Rectangular with rounded corners 
	Type 3 – I section 



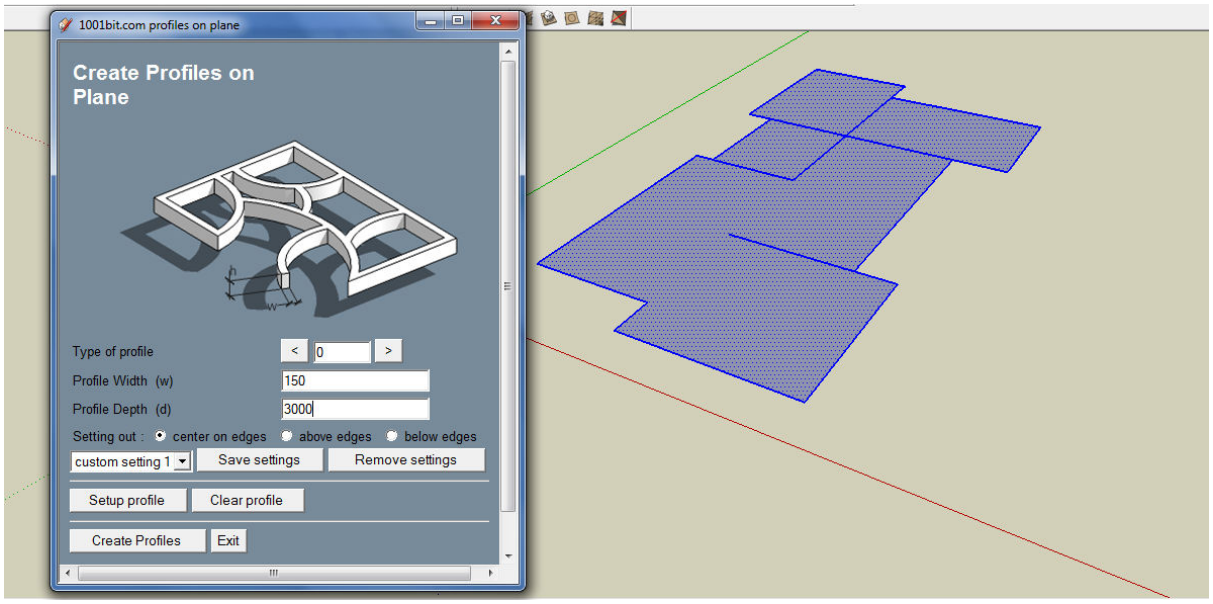
Type 4 – H section

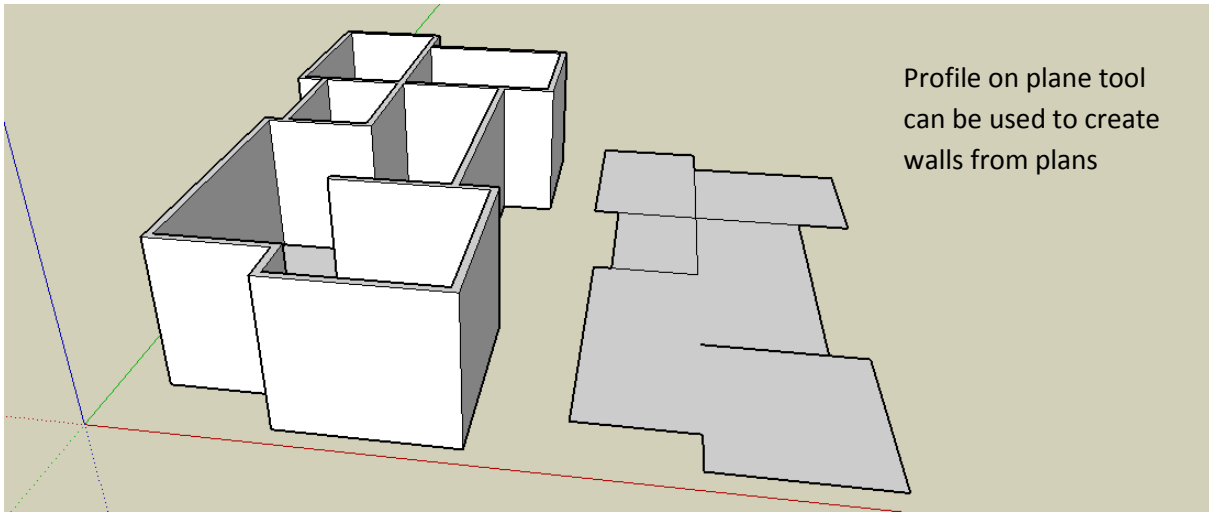


Procedure:

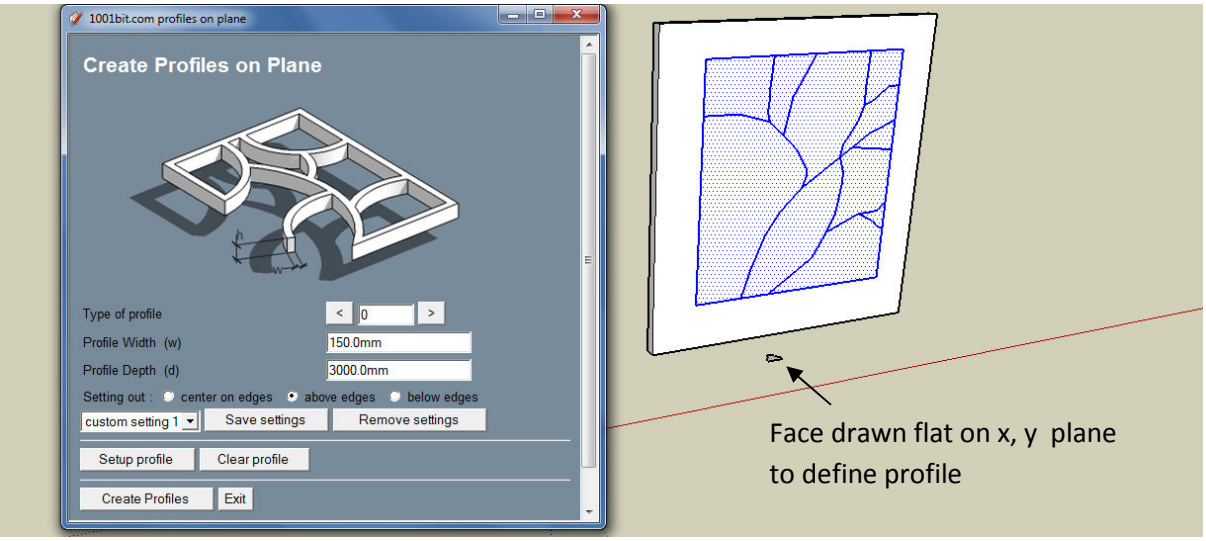
Step 1: Select edges then run Profile on Plane tool. (Works on open edges. Non coplanar edges will be projected to common plane.)

Step 2: Enter width and height, then click Create Profiles

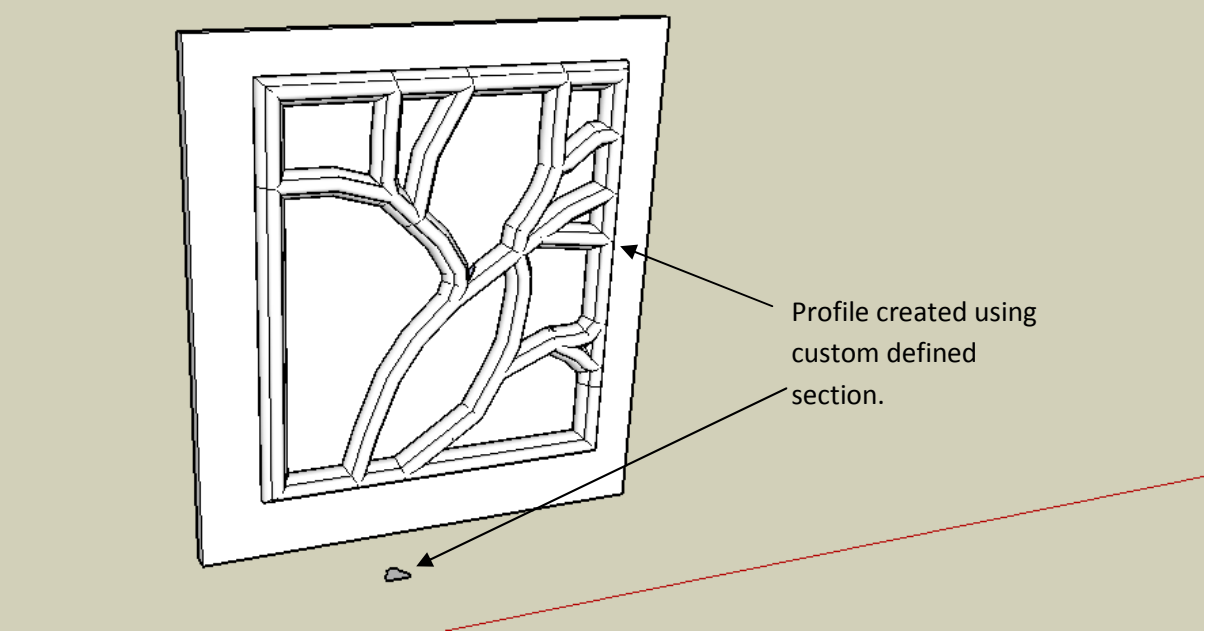




Profile on plane tool can be used to create walls from plans

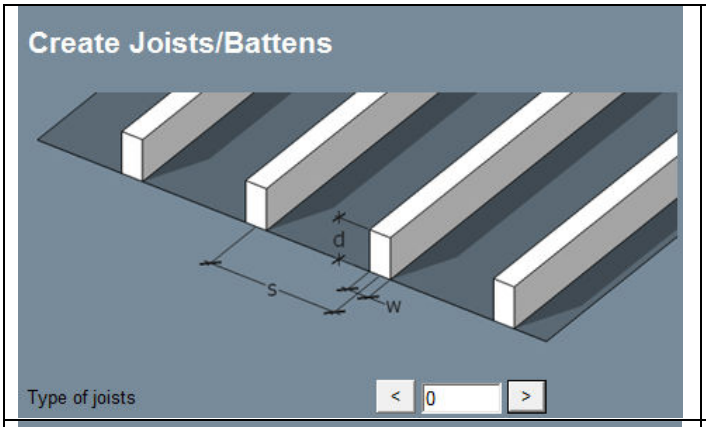


Users can also create custom defined profiles. Create a face flat on x, y plane to define profile. Click Setup Profile to make use of custom defined profile.

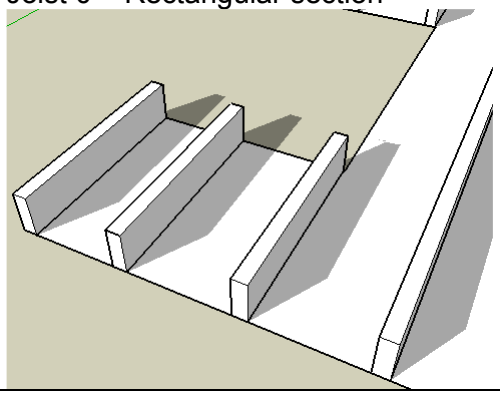


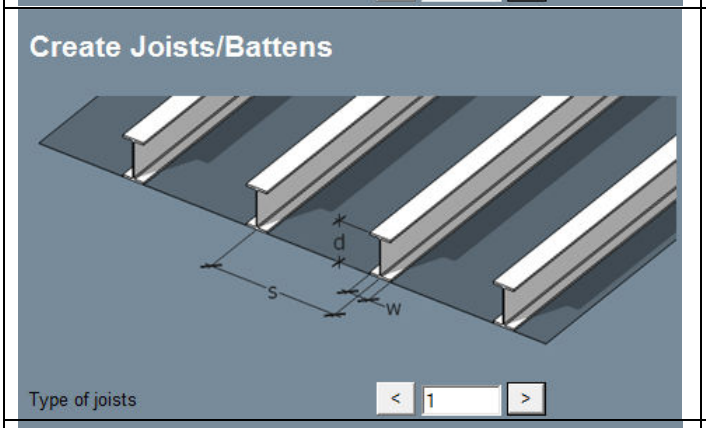
Joists

Create joists tool automatically creates joists, rafters, battens, etc on selected face. There are multiple type of profiles as well as multiple options in ways to layout the joists.

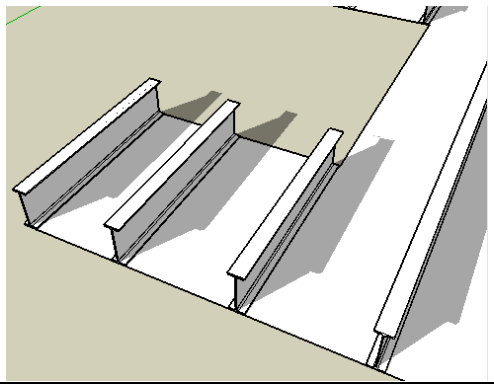


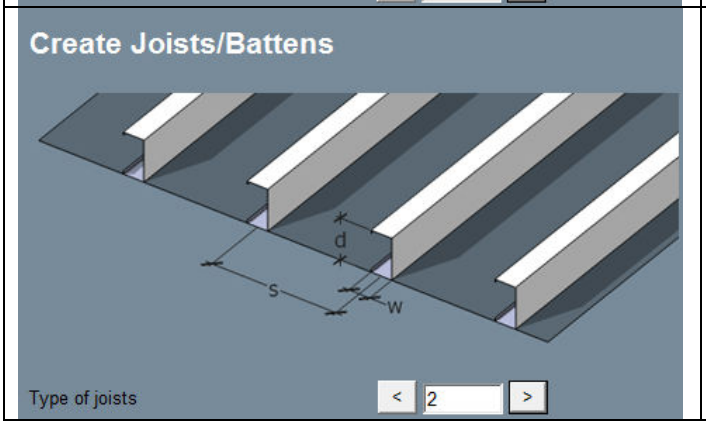
Joist 0 – Rectangular section



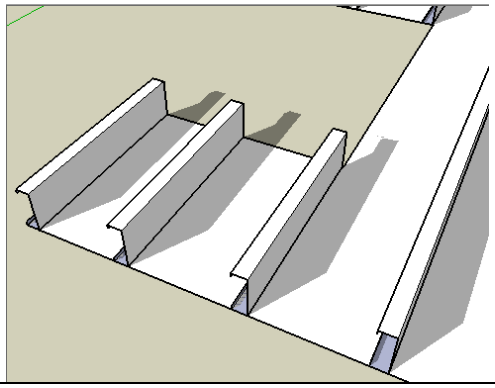


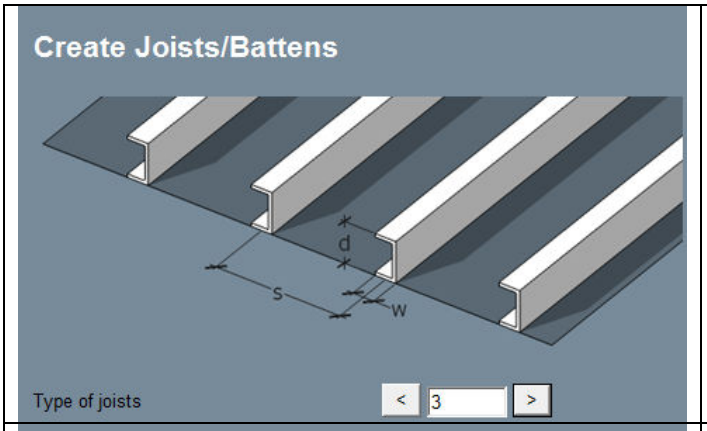
Joist 1 – I section



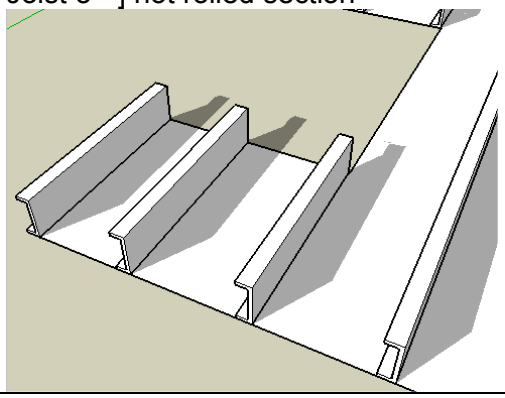


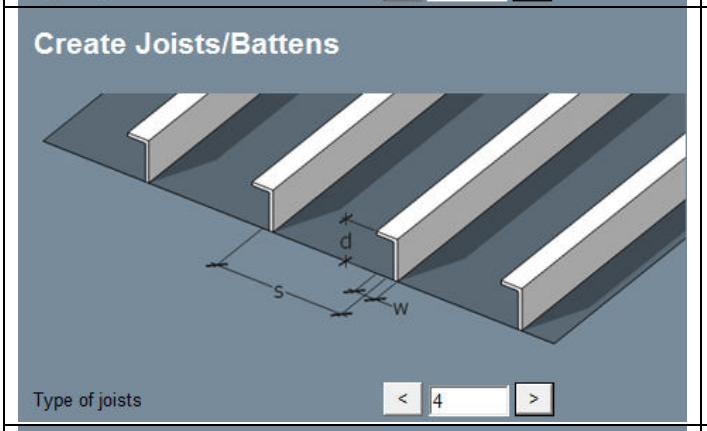
Joist 2 – C cold formed section



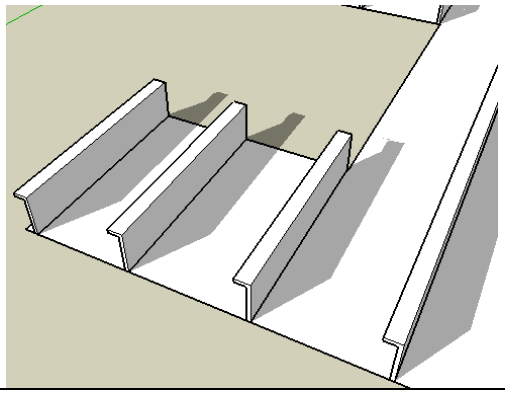


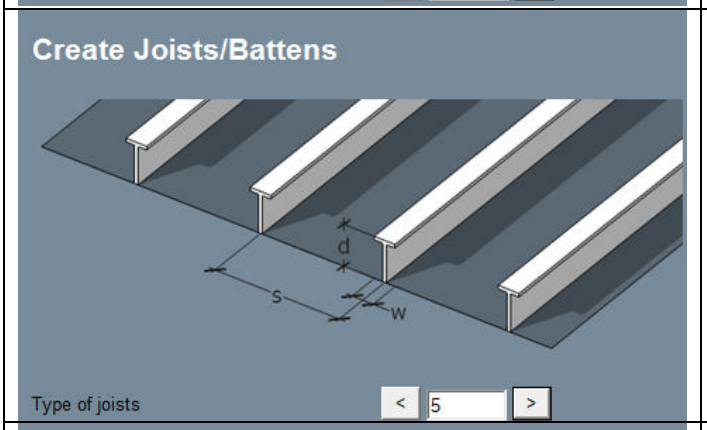
Joist 3 -] hot rolled section



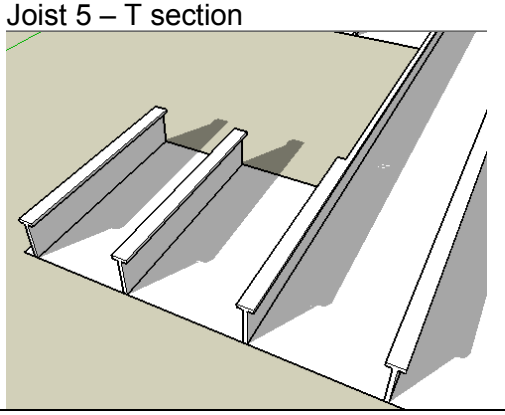


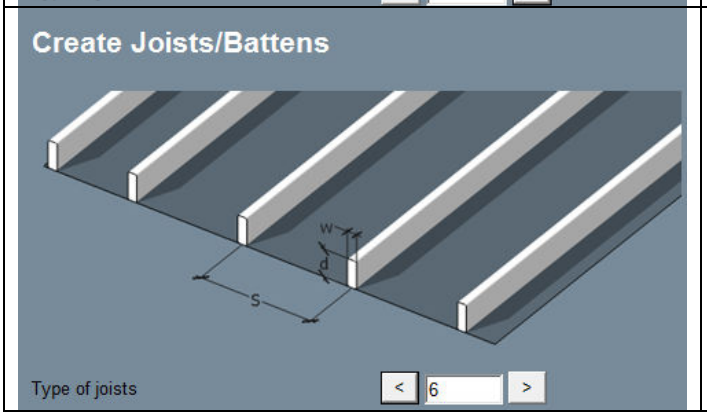
Joist 4 – L hot rolled section



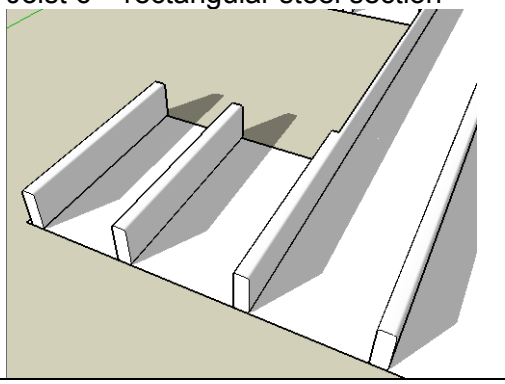


Joist 5 – T section





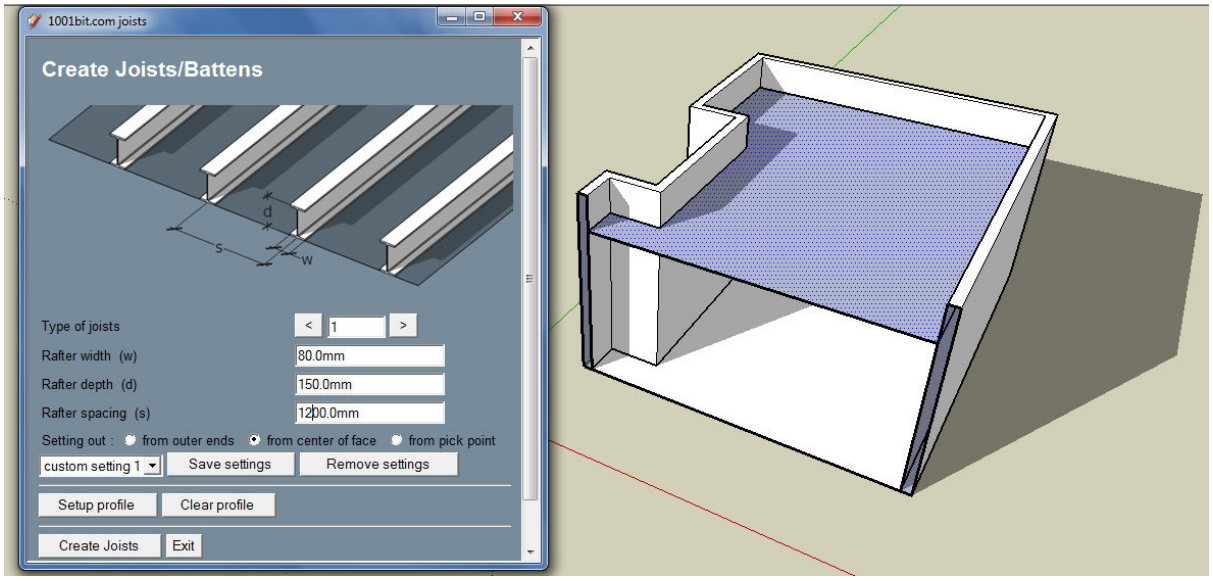
Joist 6 – rectangular steel section



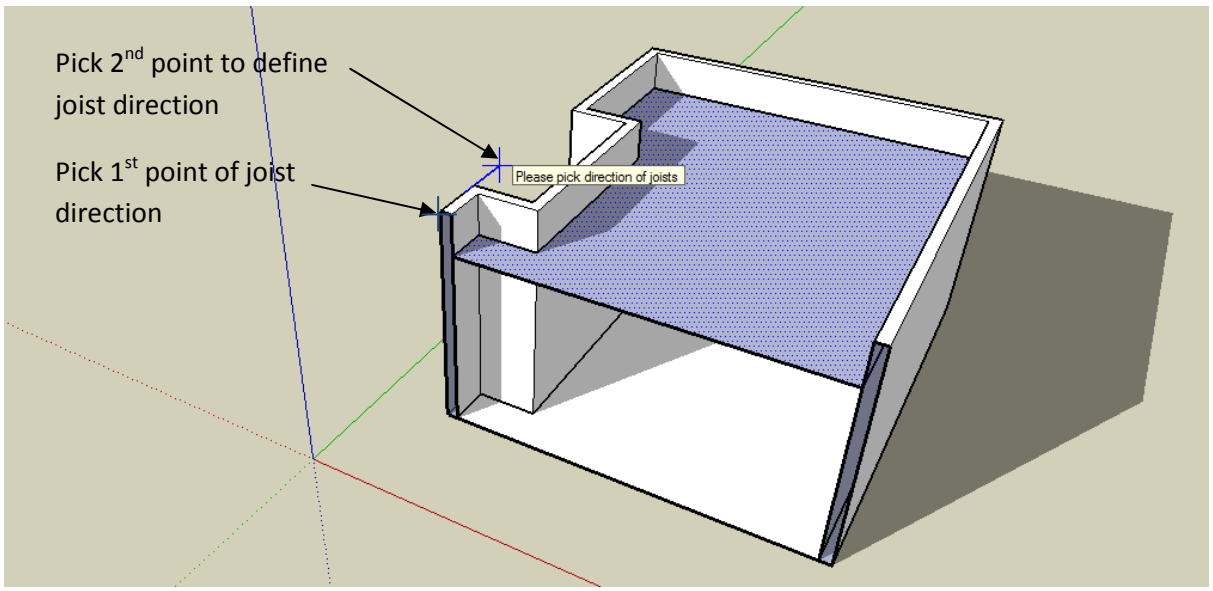
Procedure:

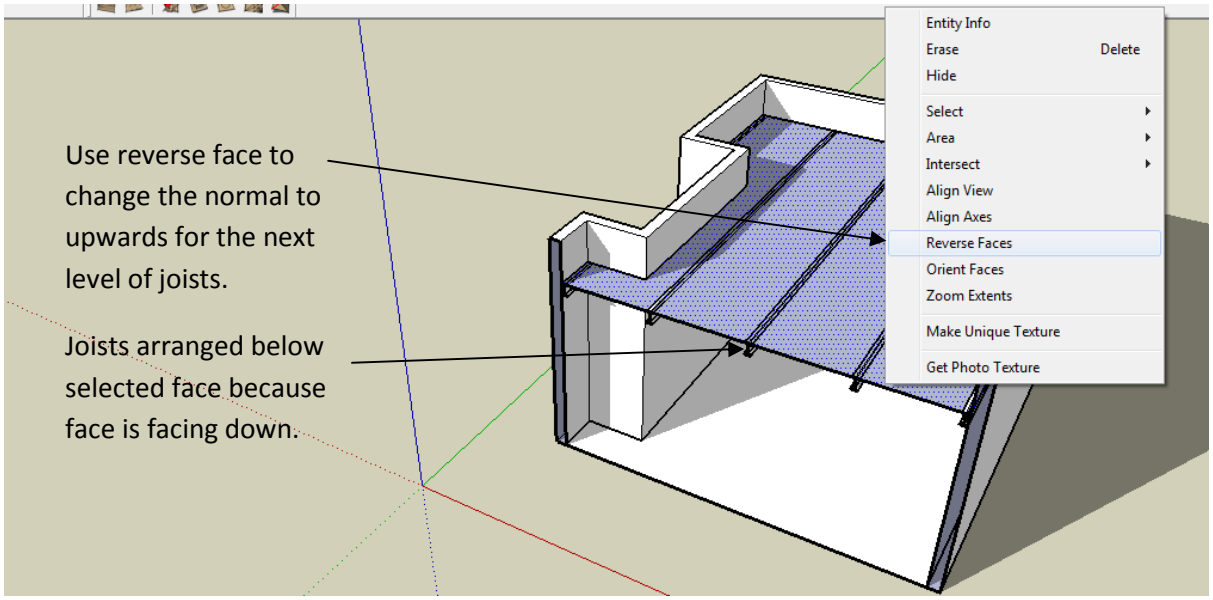
Step 1: select a face and run the tool.

Step 2: select the desired sectional profile, dimensions, spacing, and click Create Joists

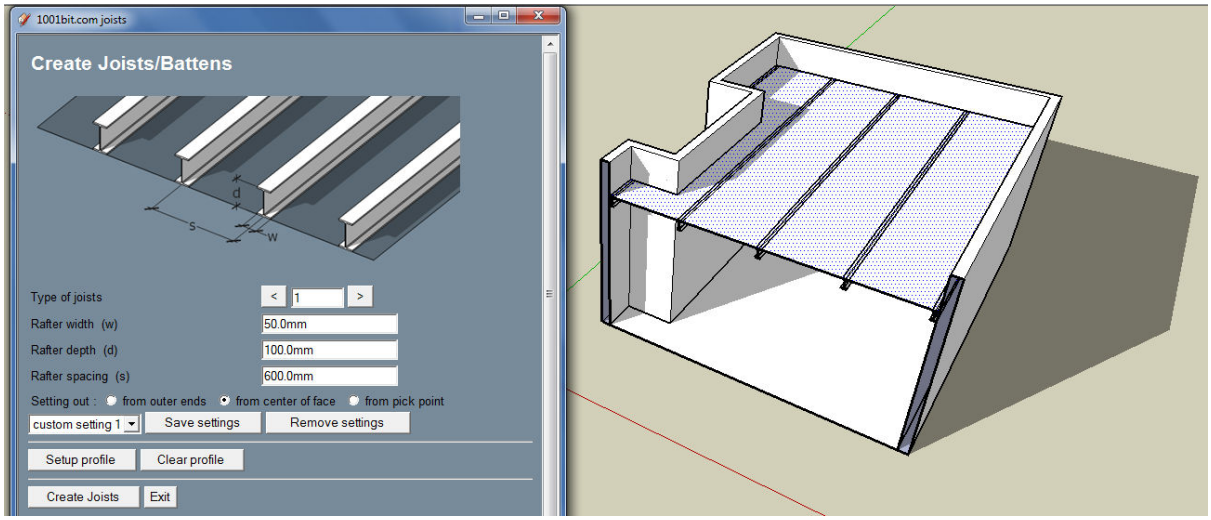


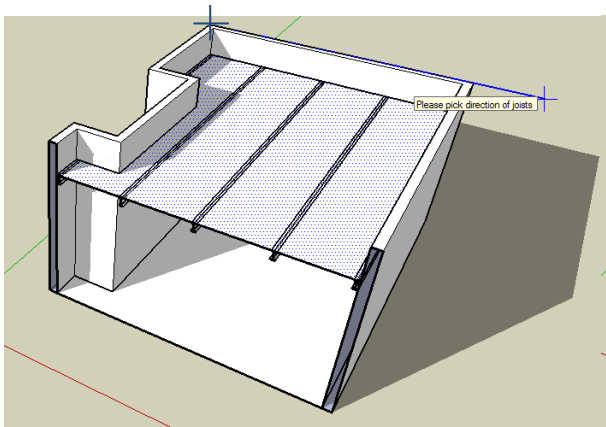
Note that in this example, the normal of the face is downwards. This is because we want to create the joists below the face.



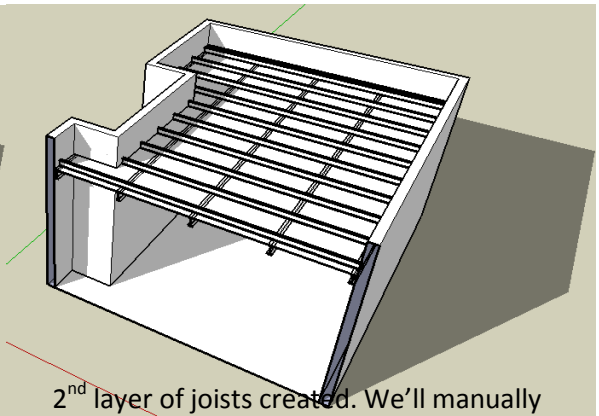


Next we create cold form C channel joists above the steel sections.

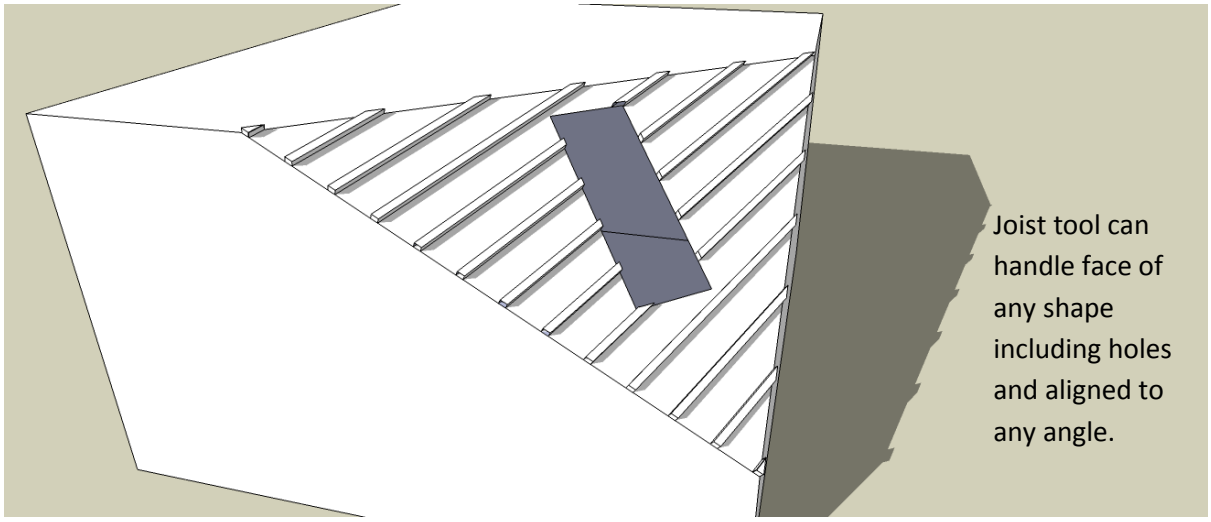




Pick points to define the directions of joists



2nd layer of joists created. We'll manually delete the original face or use it as floor.



The joists tool comes with an option to make use of user defined shapes as profile of joists.

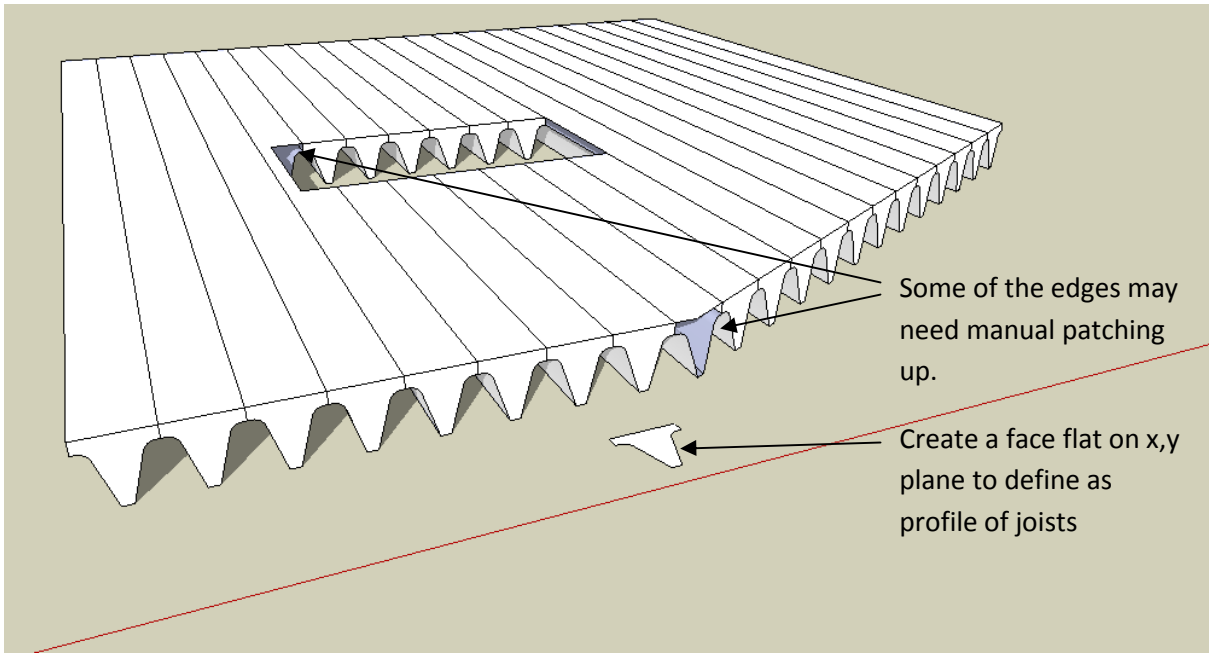
Step 1: Just draw a face that is flat on x, y plane,

Step 2: select the face to place the joists on and the call the tool,

Step 3: click on ‘Setup Profile’

Step 4: click on the face to use as profile.

Step 5: pick points to define direction of joists.



The tool will attempt to close up open ends as much as possible. Depends on complexity, there might be open ends that need manual touch ups.

Roof Rafters, Battens/Purlins

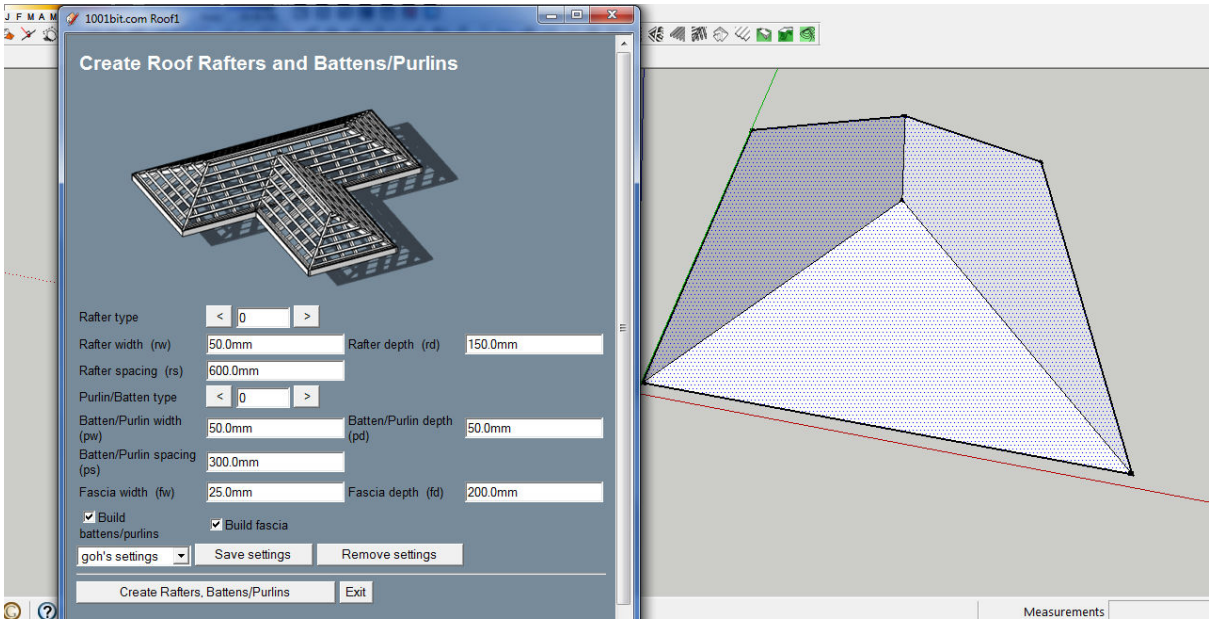
This tool automatically creates roof rafters, purlins/battens, fascia board from selected faces.

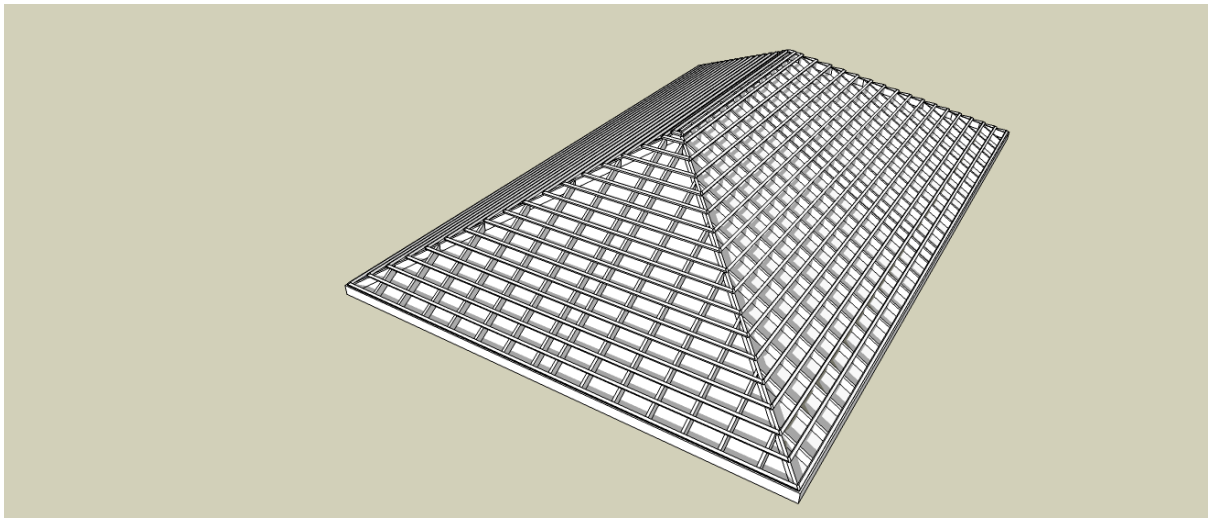
There a multiple choices of rafters and battens to choose from.

Procedure:

Step 1: Select faces that make up the roof.

Step 2: call the tool, enter parameters and select options, then click Create Rafters, Battens/Purlins

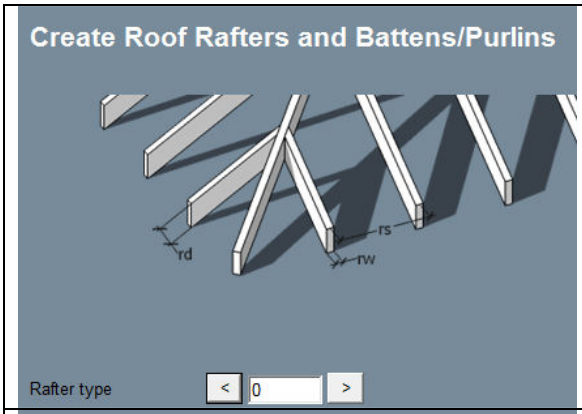
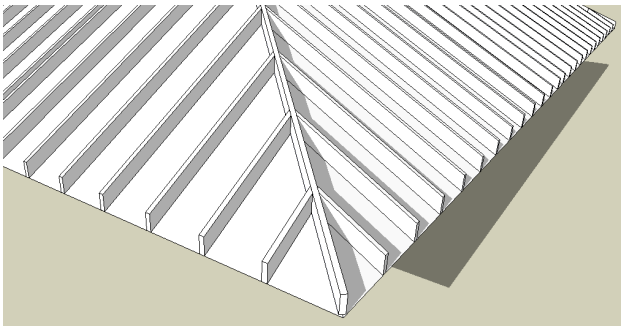
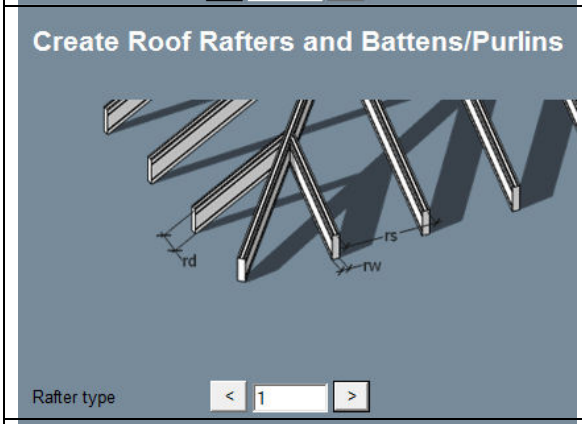
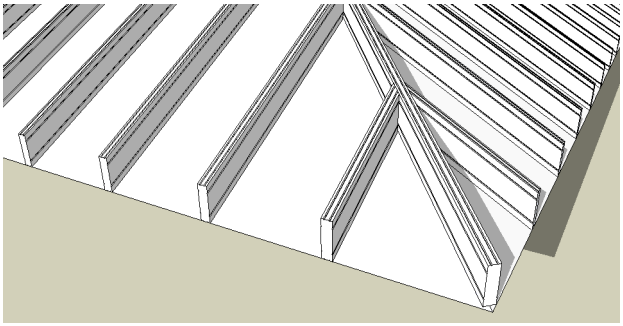
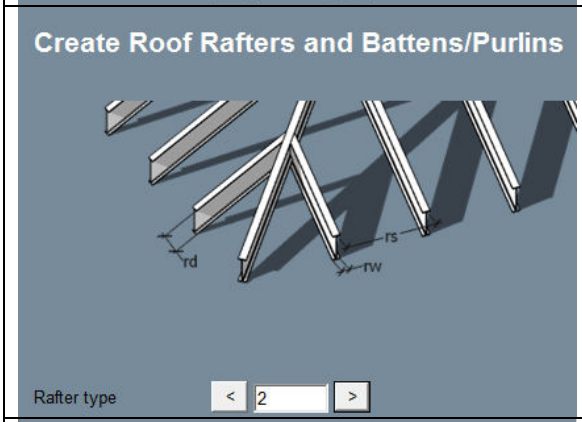
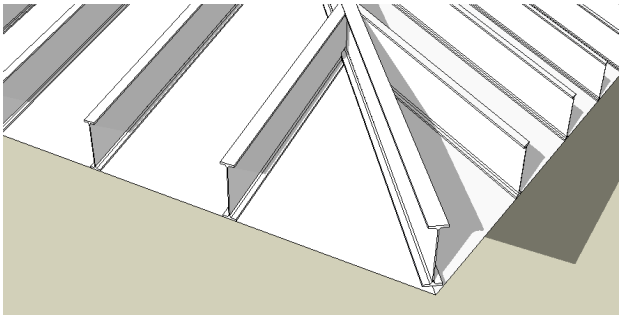
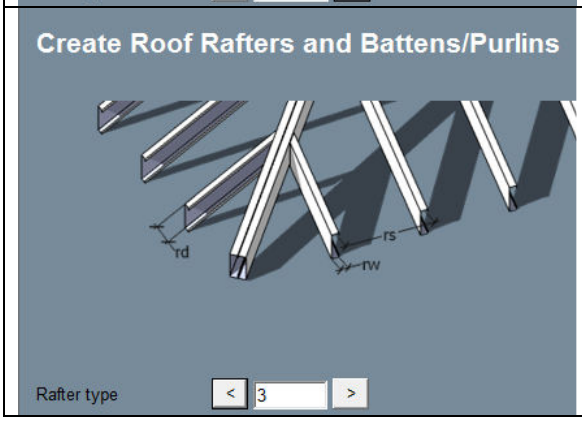
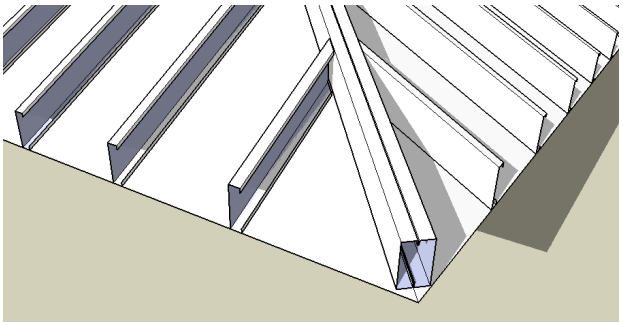




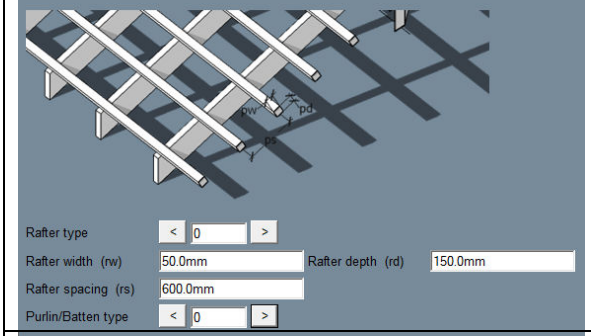
The tool automatically creates and spaced out rafters, battens and fascia boards.

Note that the original faces remains and are selected in case you need to use it for roof surfaces. Press delete to remove.

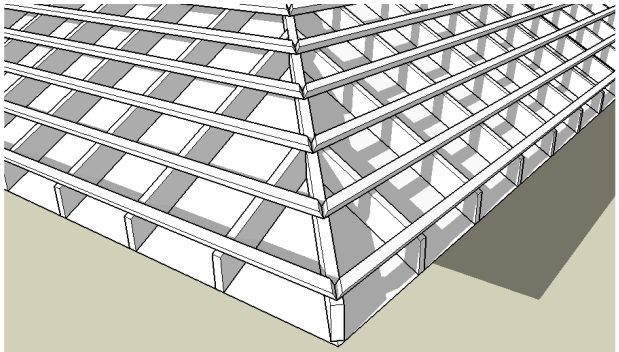
The different types of rafters are as follows

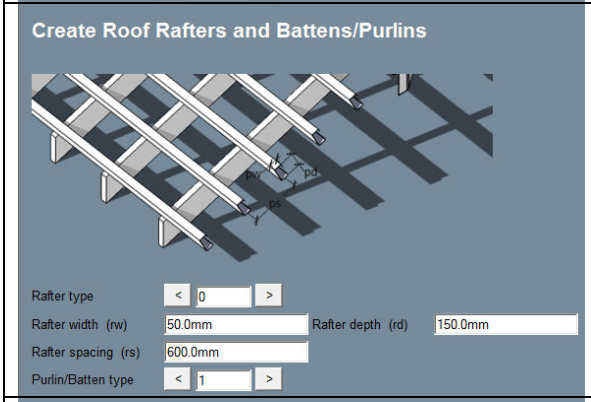
	Rafter 0 
	Rafter 1 
	Rafter 2 
	Rafter 3 

There are different types of battens/purlins to choose from

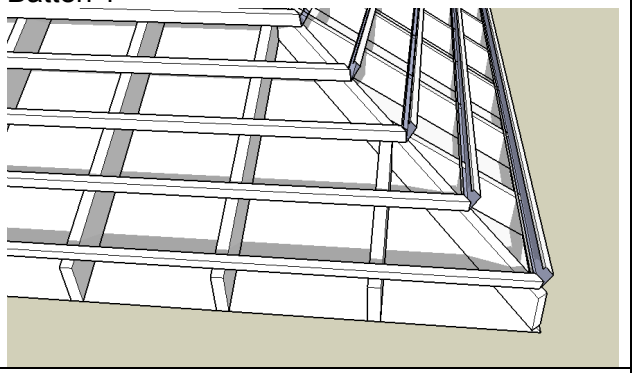


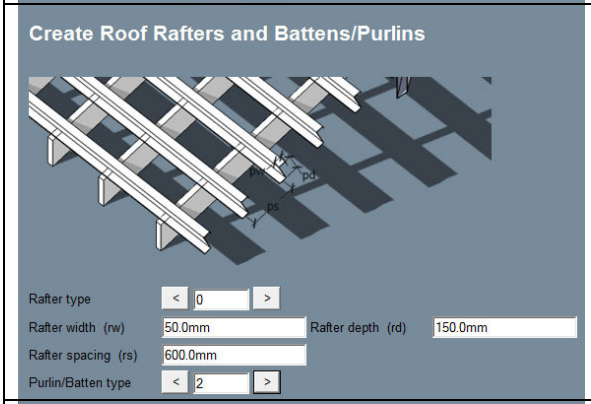
Batten 0



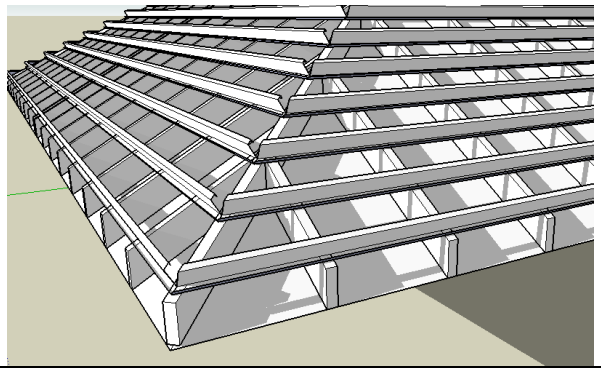


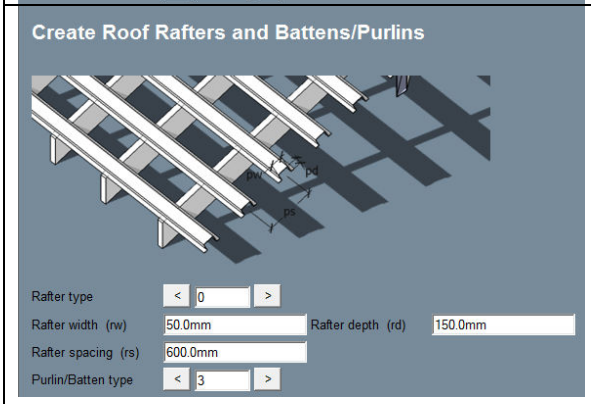
Batten 1



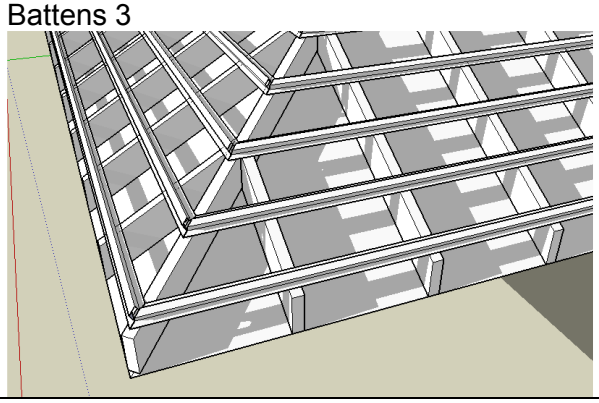


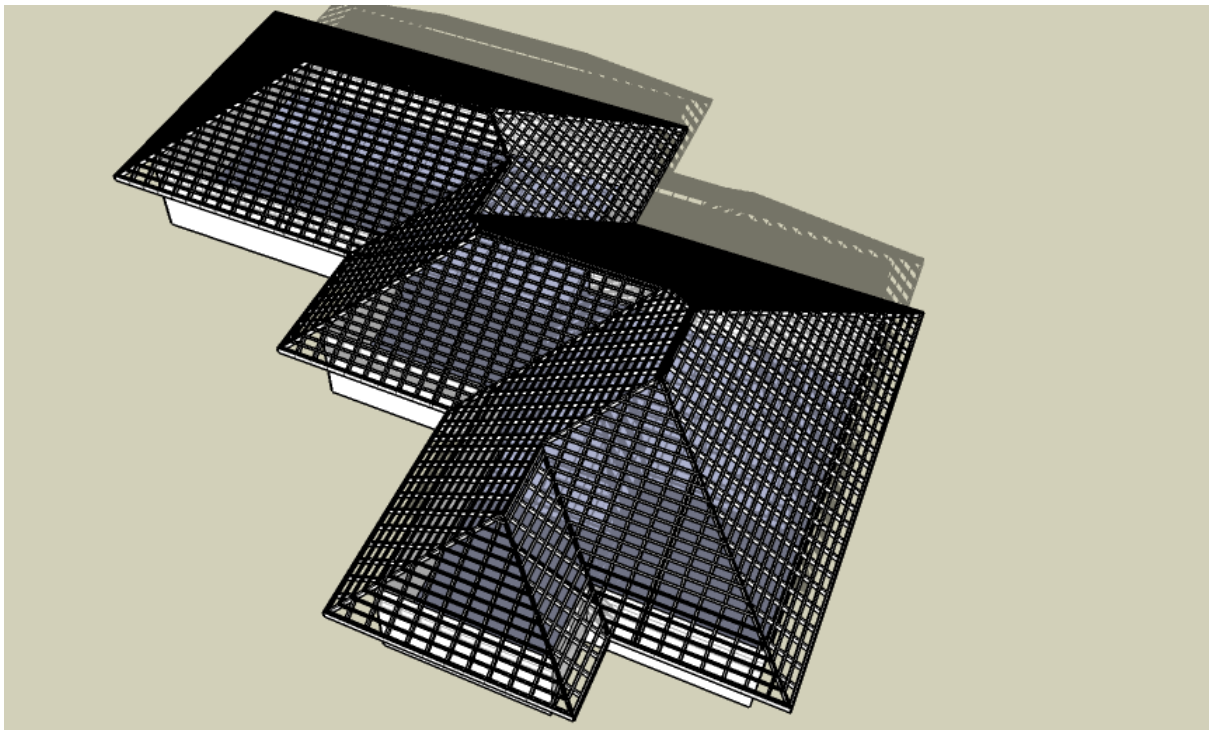
Battens 2

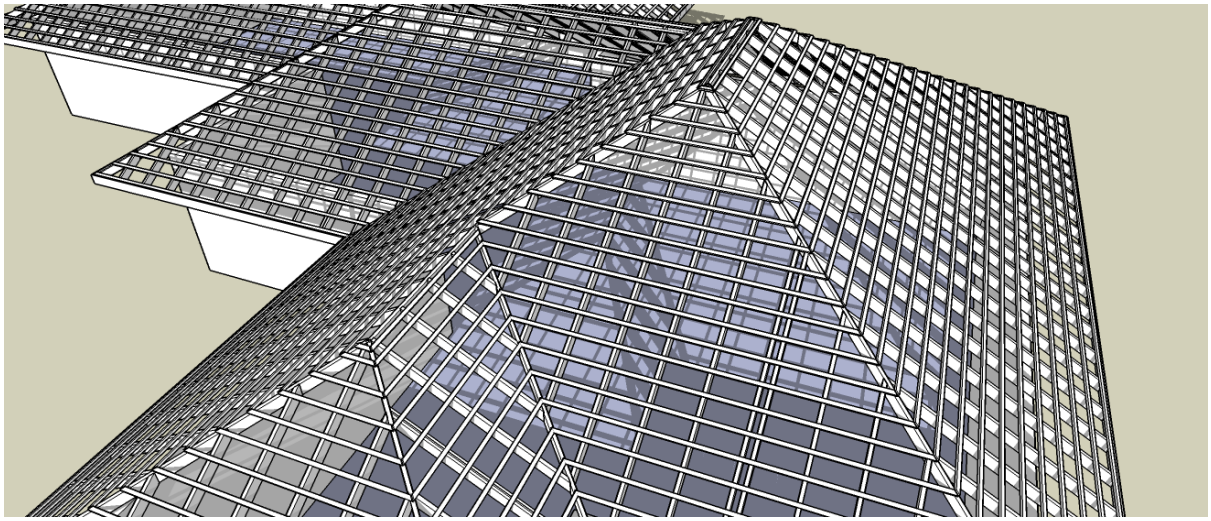


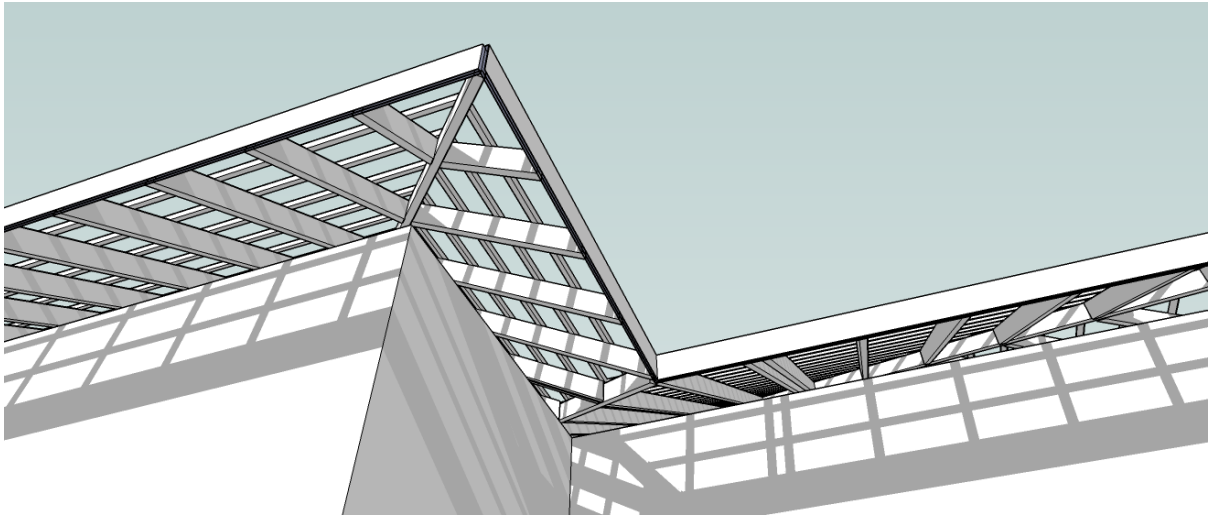


Battens 3









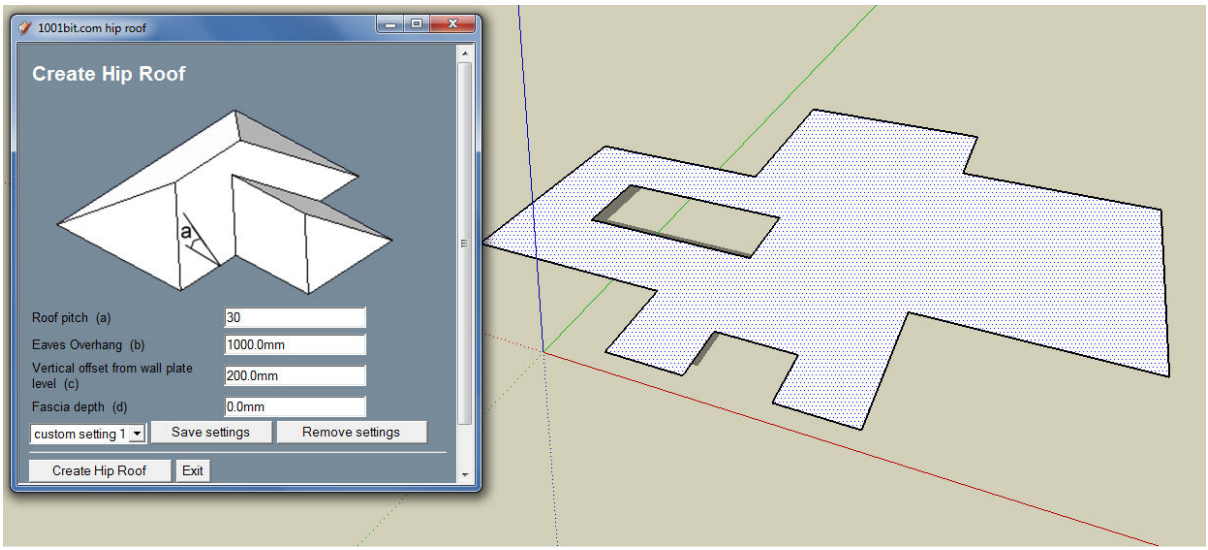
Hip Roof

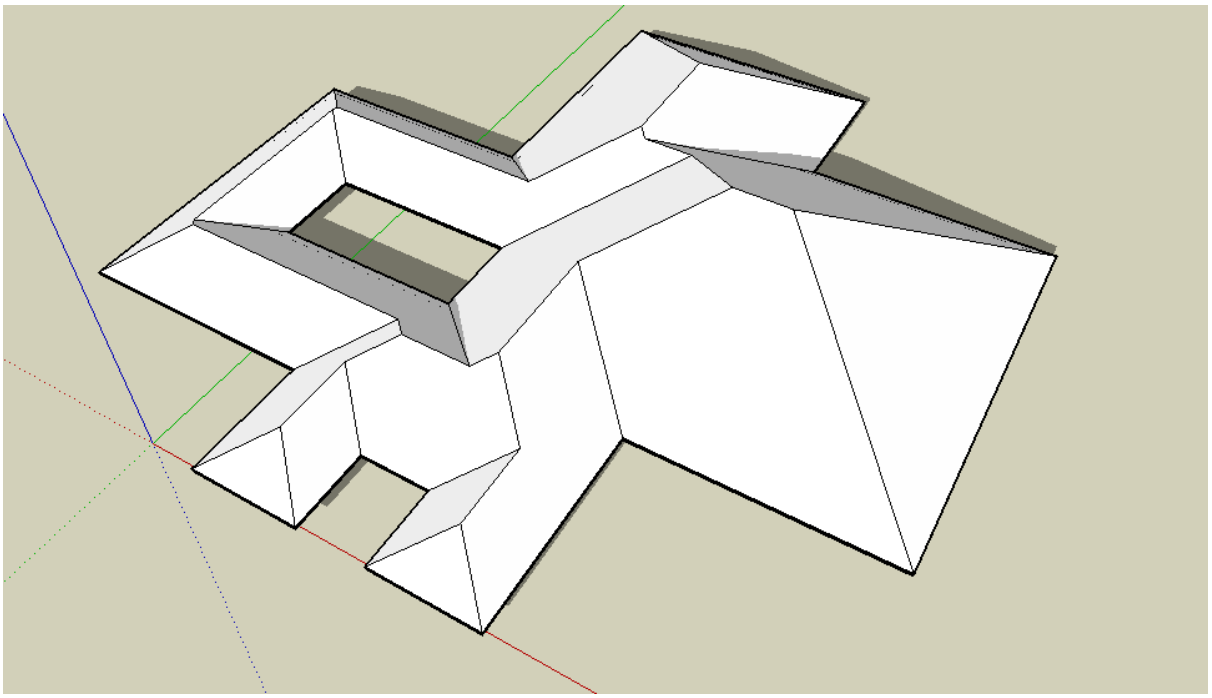
This tool automatically solves hip roof geometry from face of any shape.

Procedure:

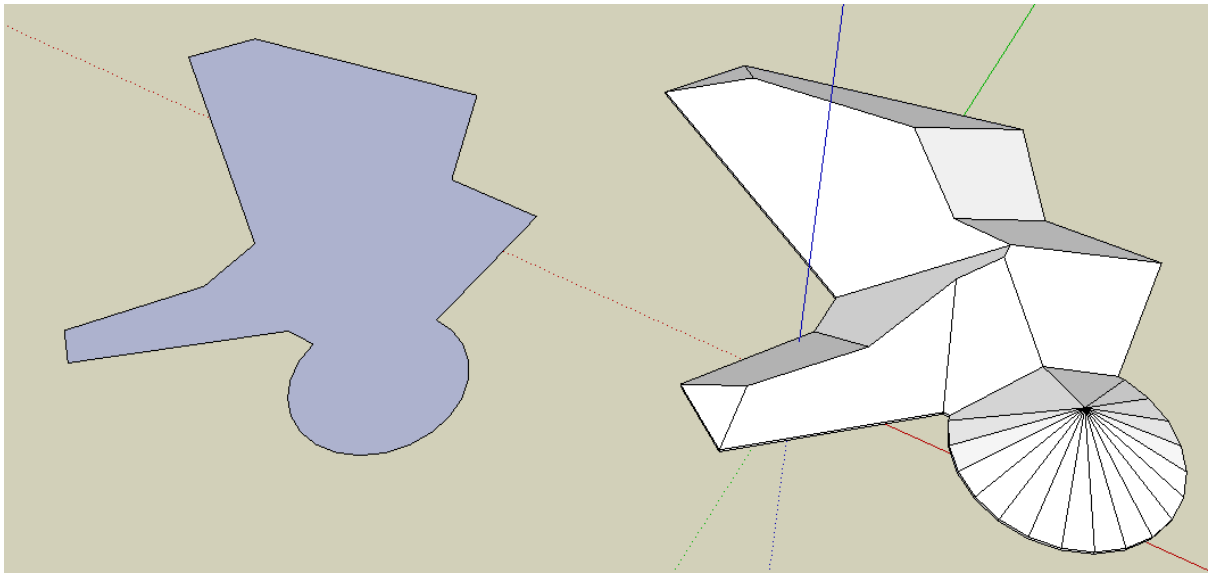
Step 1: select the face before running this tool.

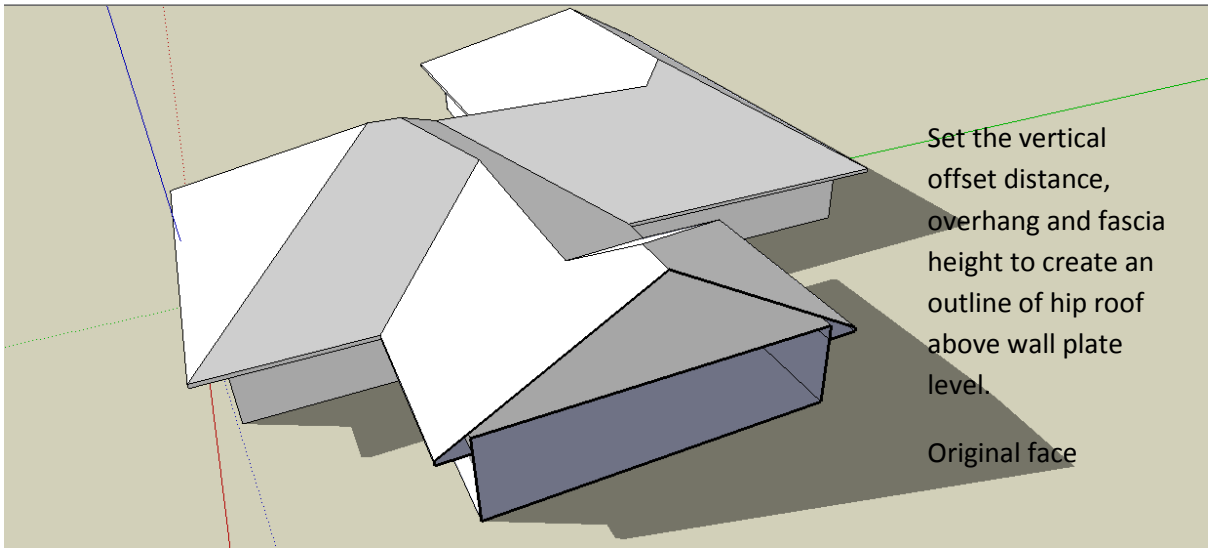
Step 2: call the tool and enter parameters, then click Create Hip Roof





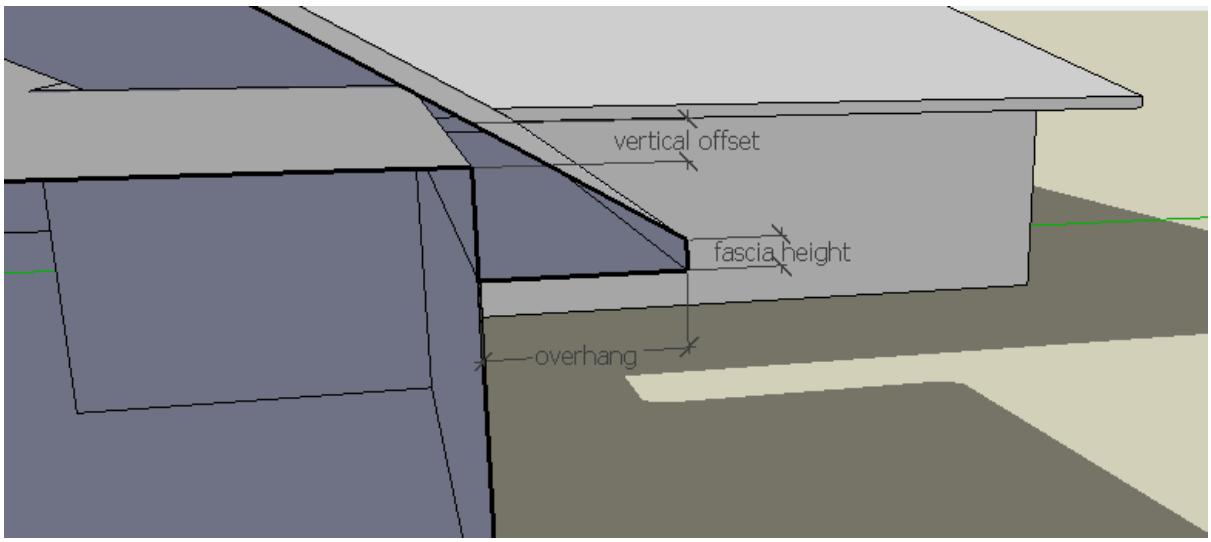
Note that this tool works with faces with holes.





Set the vertical offset distance, overhang and fascia height to create an outline of hip roof above wall plate level.

Original face



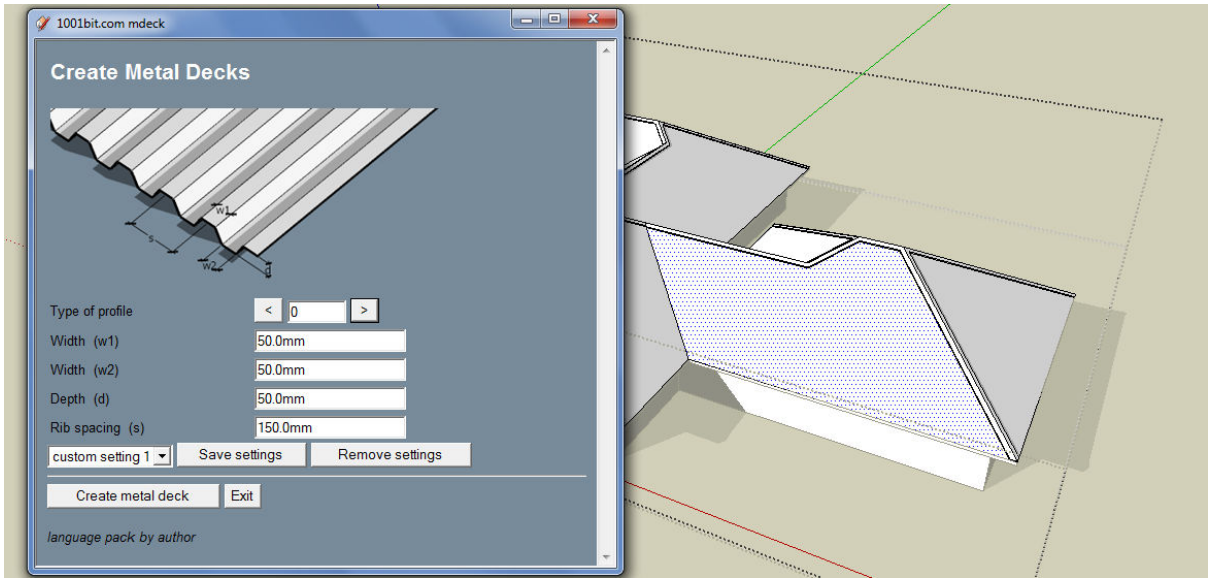
Metal Deck

This tool converts a face into metal decks with different profiles.

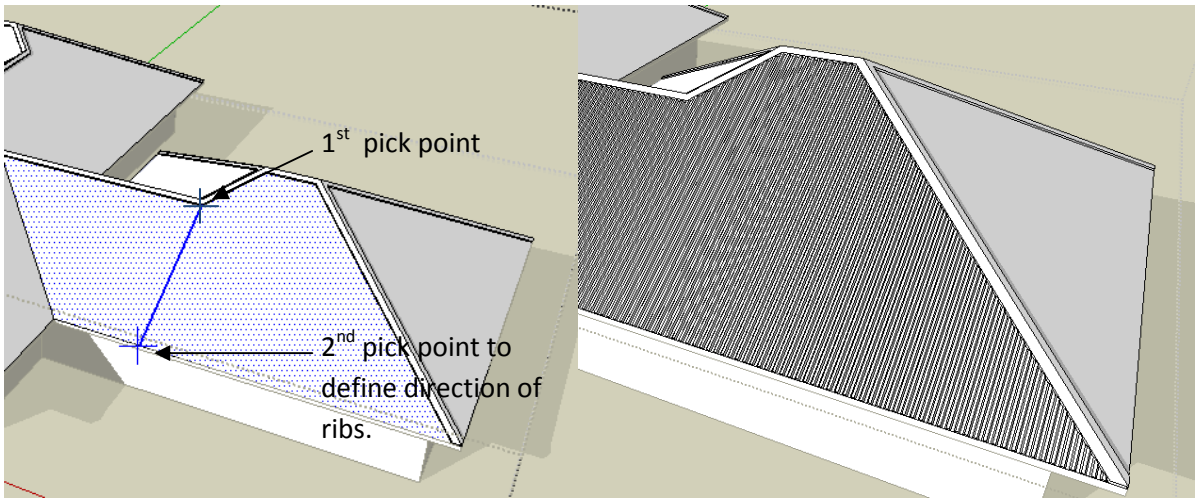
Procedure:

Step 1: select a face, then run tool

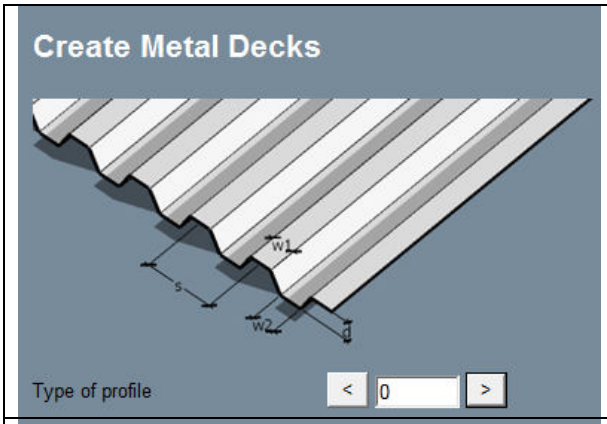
Step 2: select type of profile and enter parameters, click ‘Create Metal Deck’



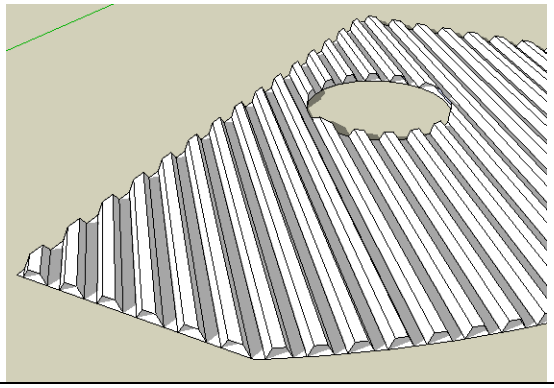
Step 3: pick points to define direction of ribs.

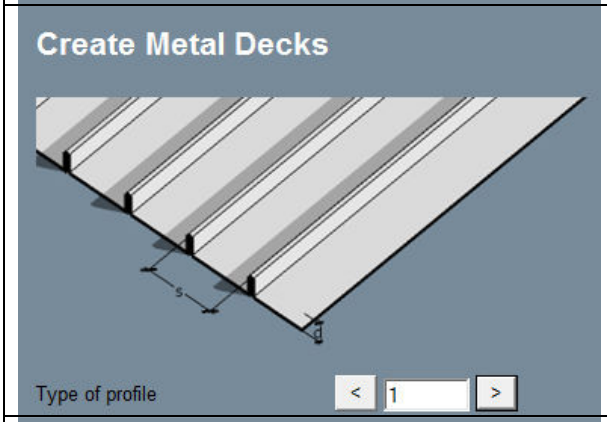


There are currently 3 types of profiles

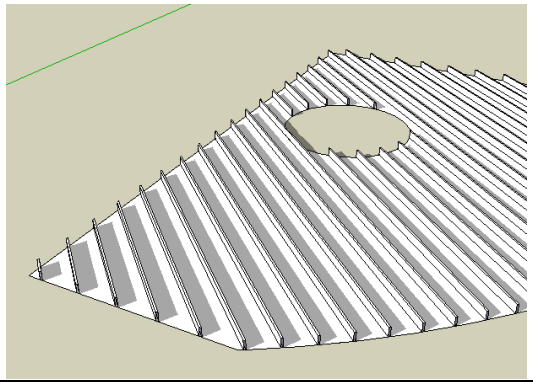


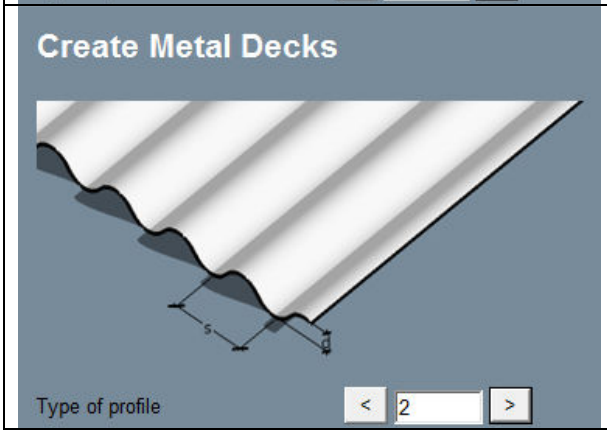
Metal deck 0



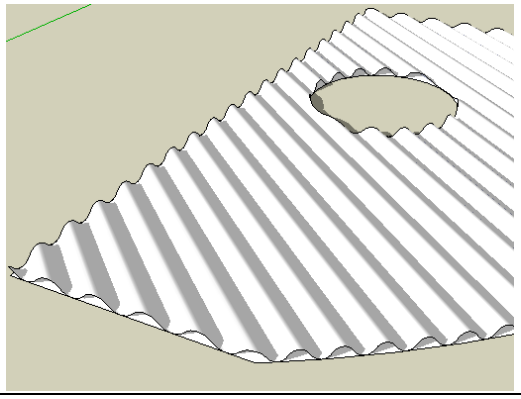


Metal deck 1



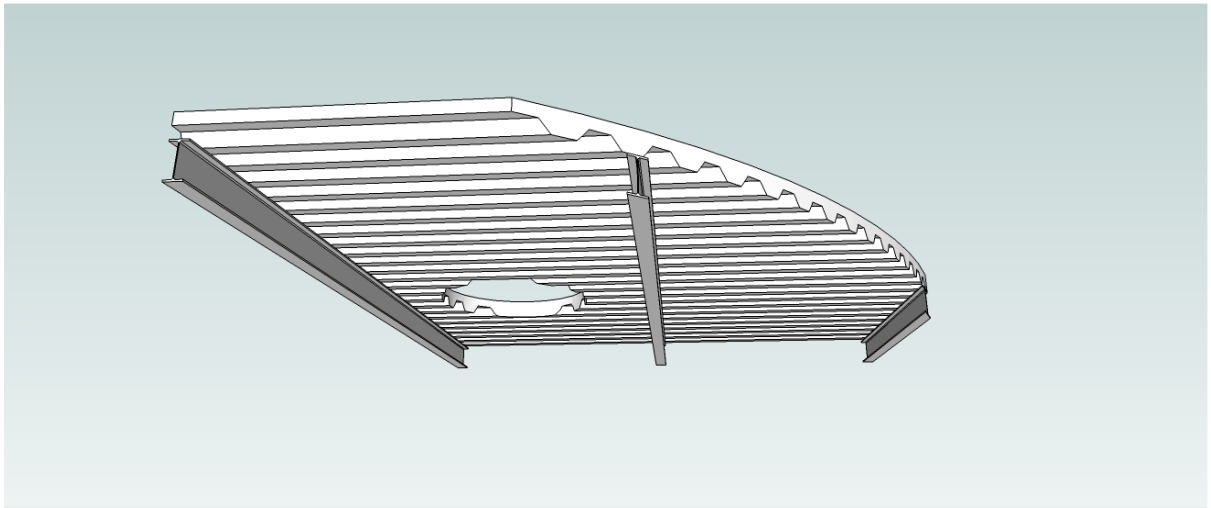


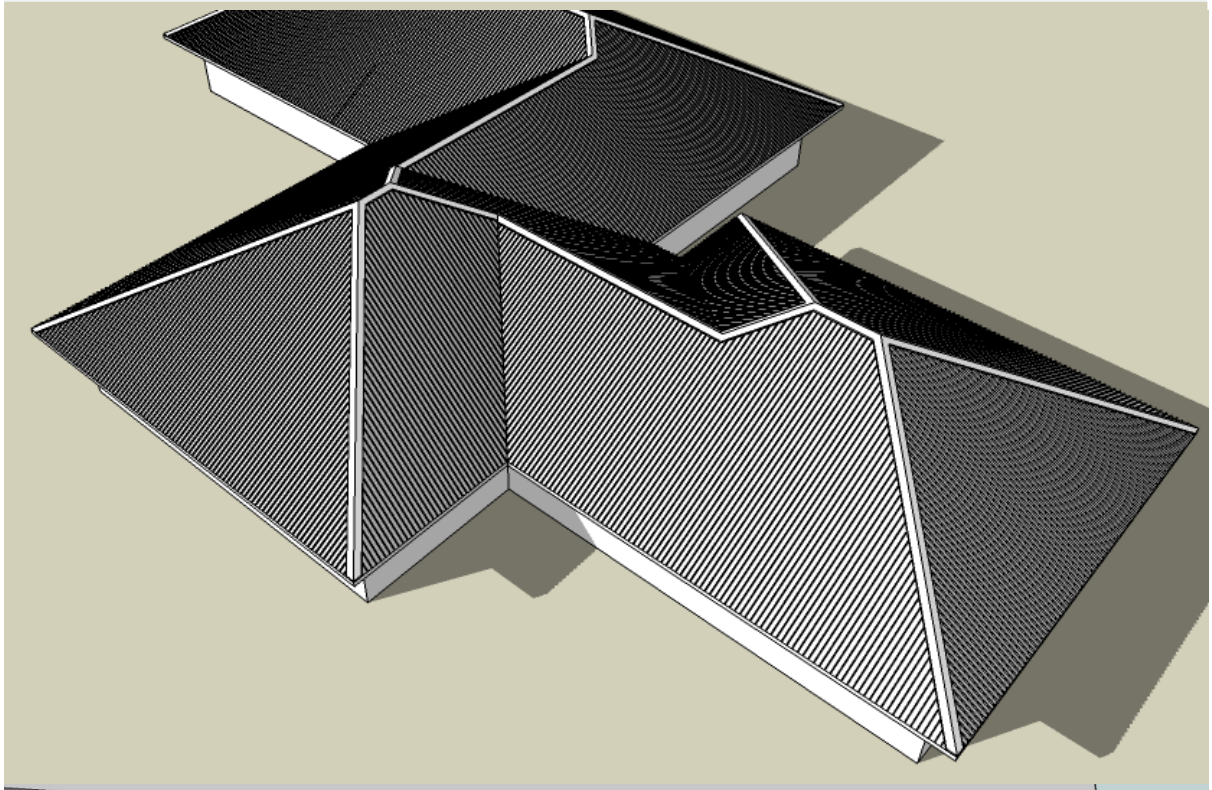
Metal deck 2

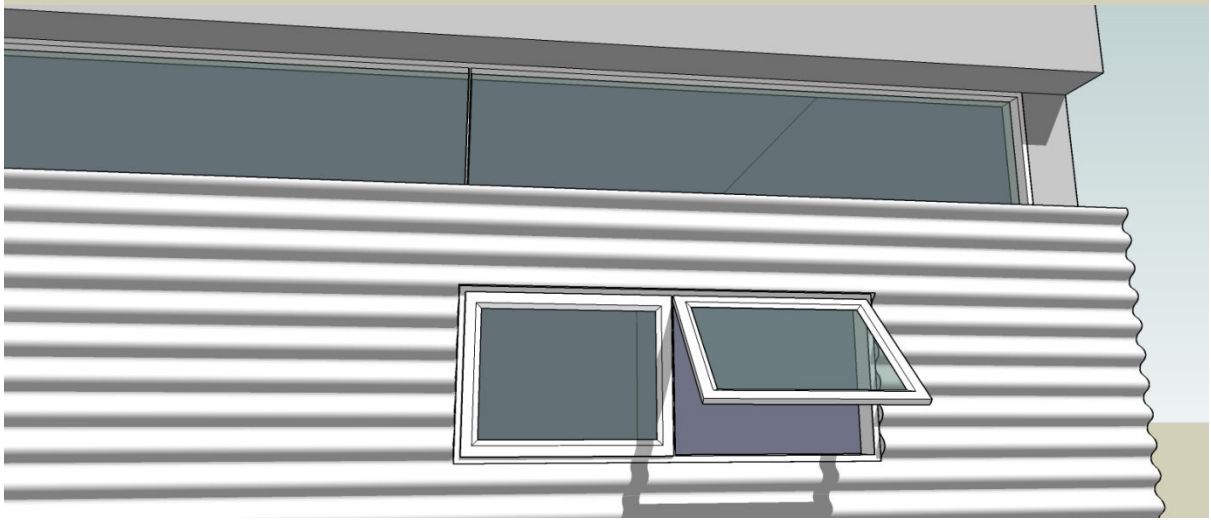


The metal deck tool works on faces of any shape, orientations and faces with holes.

The original face is left remaining. Manually delete if desired.







Cut and Fill Site

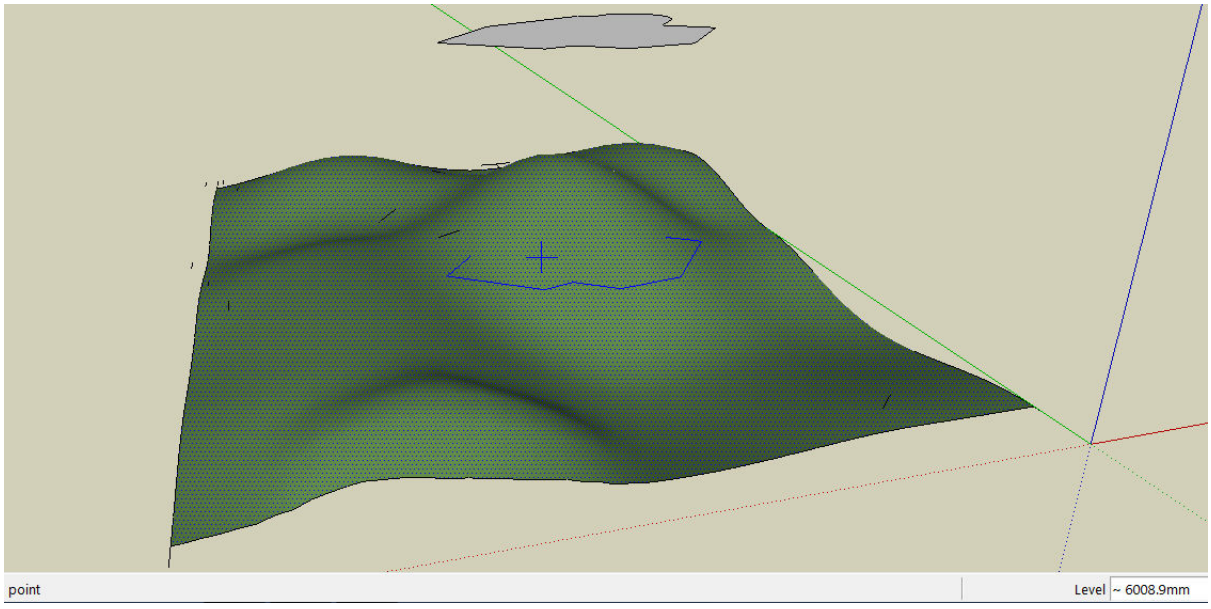
This tool is meant for placing a flat plane on a contoured site. The tool will automatically cut and fill areas and the angle of the ‘retaining walls’ can be defined.

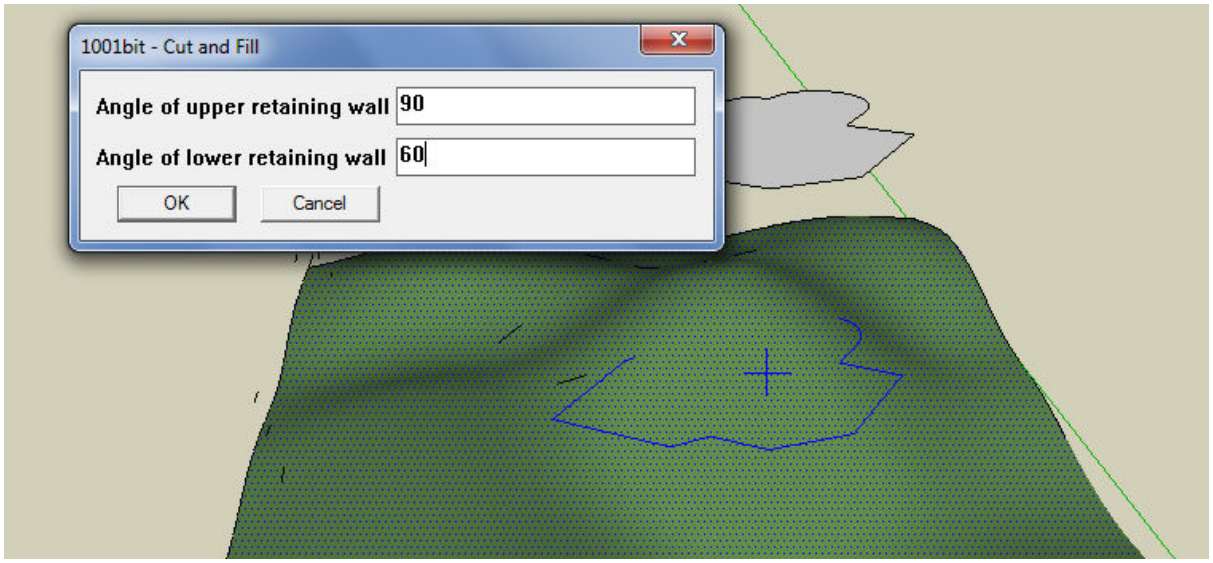
Procedure:

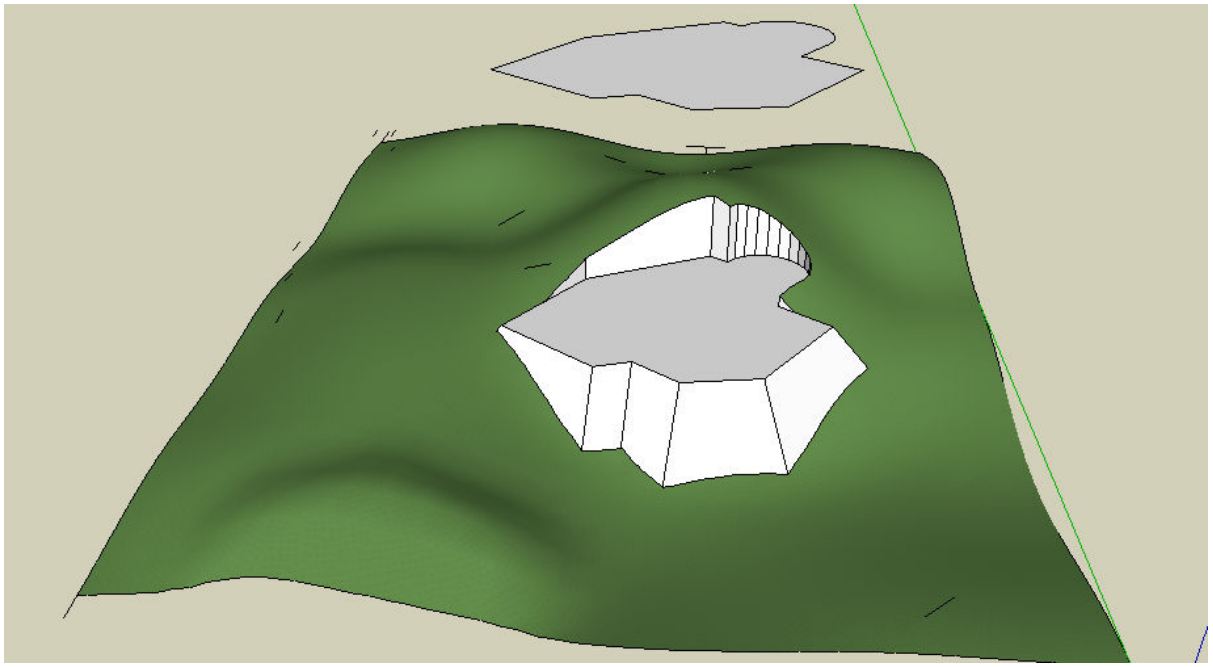
Step 1: select the site (may have to be exploded), then run the tool

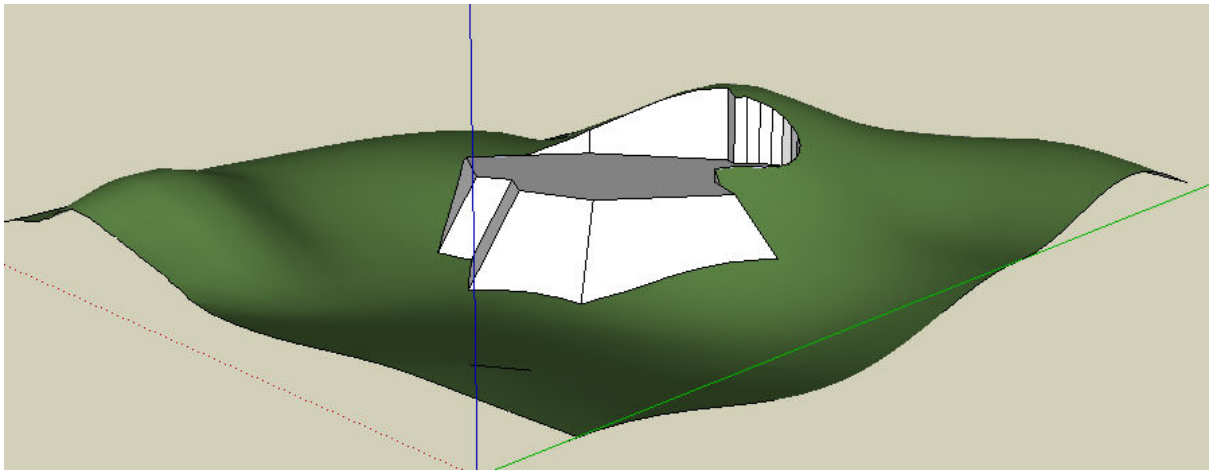
Step 2: pick on the face defining the shape of the platform. (Have to be placed above the contoured site).

Step 3: pick a level on the contour, or type in actual level.




1001bit - Cut and Fill
Angle of upper retaining wall
90
Angle of lower retaining wall
60
OK
Cancel





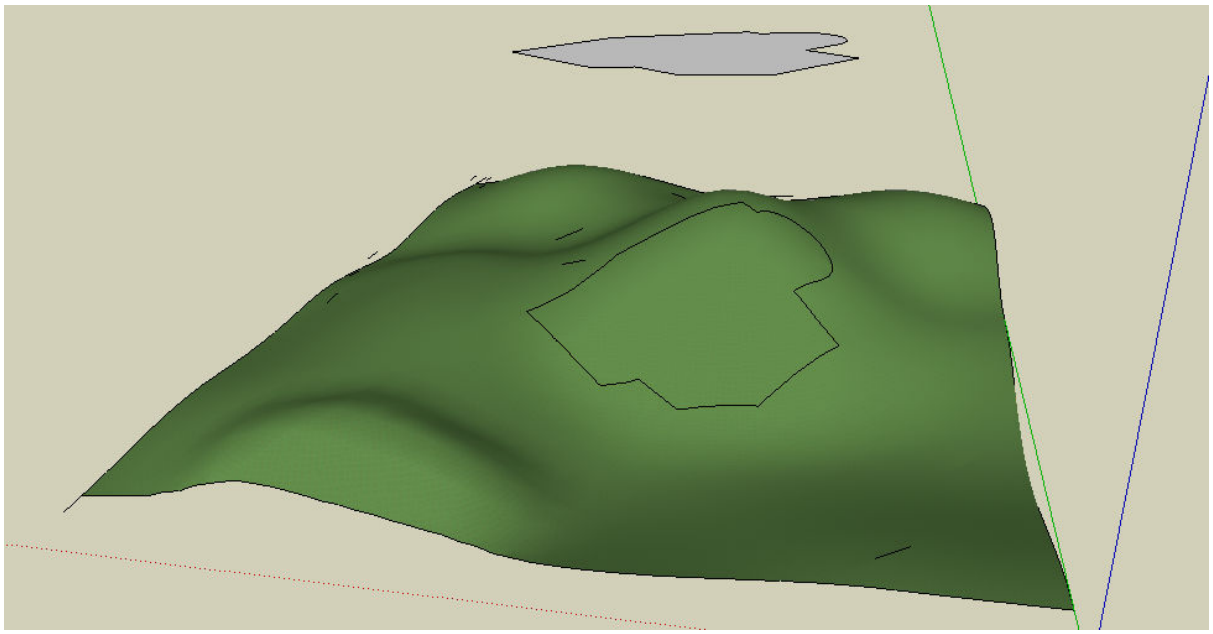
Site Boundary

This tool traces the boundary of a face onto a contour.

Procedure:

Step 1: select the contour face

Step 2: pick the face defining the boundaries (have to be placed above the contour)



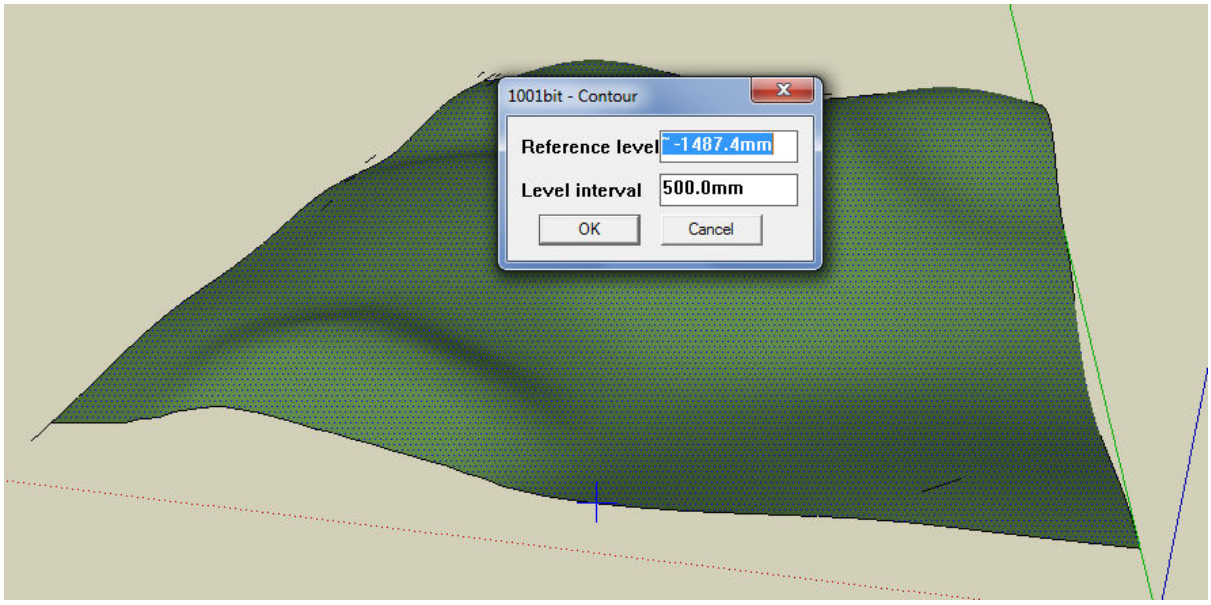
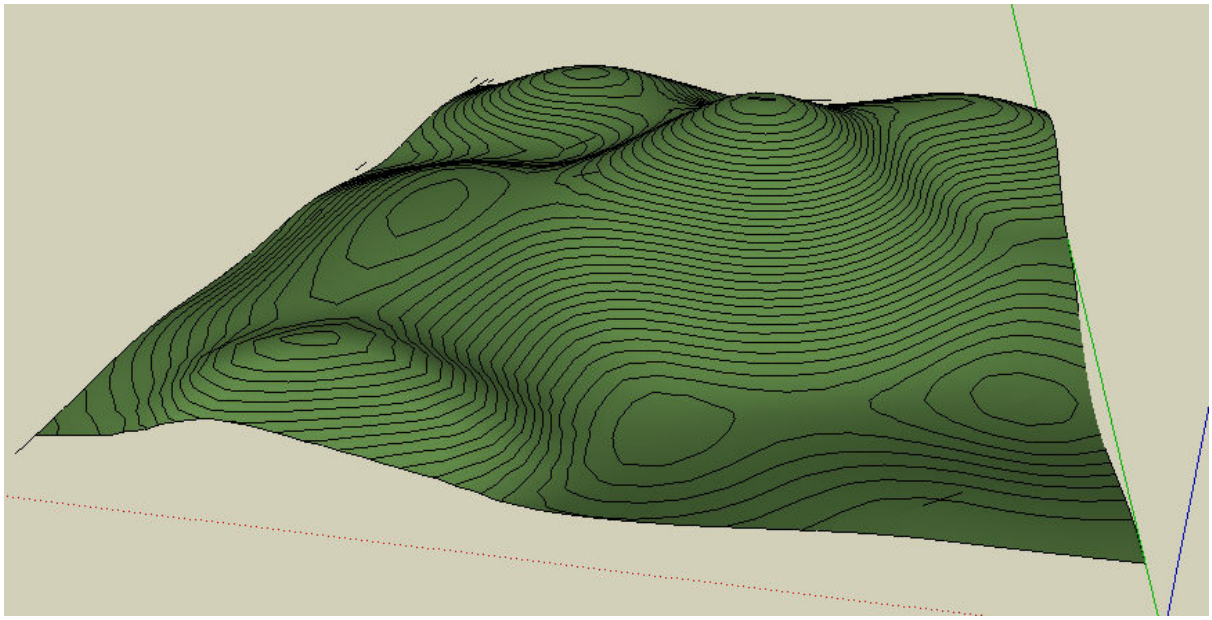
The boundary of the upper face is traced onto the contour.

Trace Contour Lines

This tool traces contour lines at fixed vertical distance intervals. (note: it applies to all objects in active model)

Procedure:

Step 1: Run the tool (no need to select anything)

Step 2: Pick a starting level. The dialog box will display the actual level picked. You can key in exact level if desired.

Step 3: Enter desired vertical distance interval, click OK.