CERTIFICATE COURSE IN BIM MODELLING

Architecture Track

Certificate Course in BIM Modelling (Architecture Track)

Topic Overview

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DAY 1

Basic Site & Mass Modelling

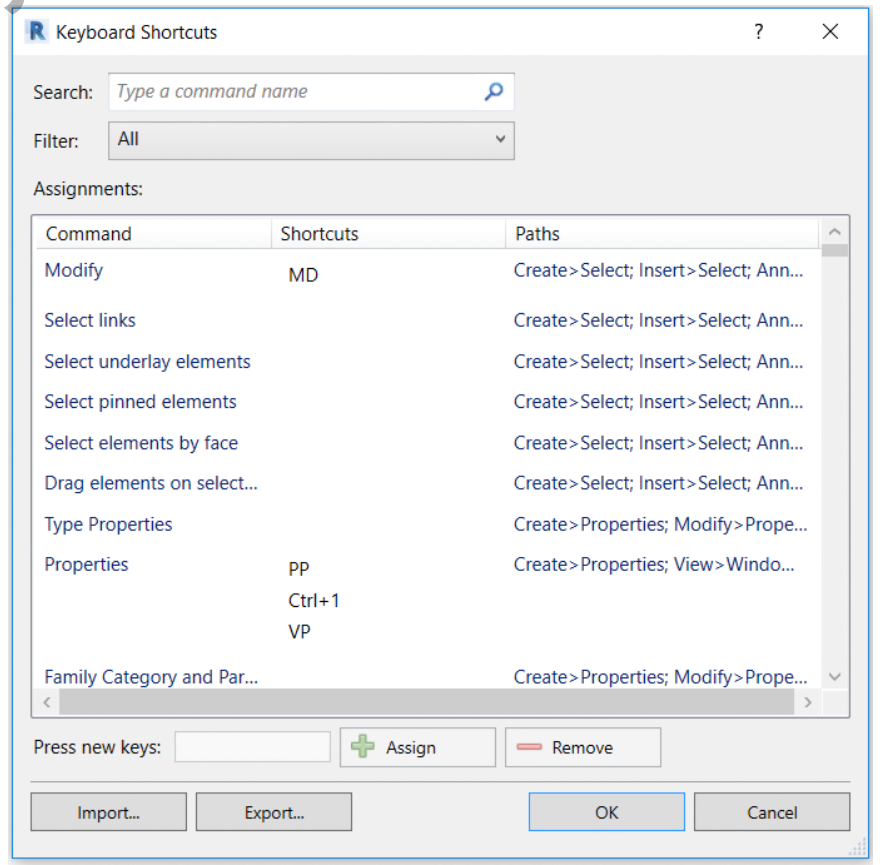
Keyboard Shortcuts

Applications Menu	
Ctrl+N	New
Ctrl+O	Open
Ctrl+S	Save
Ctrl+P	Print
Architecture>Build	
WA	Wall
DR	Door
WN	Window
CM	Place a Component
CL	Column
Architecture>Model	
GP	Create Group
LI	Model Line
Architecture>Room & Area	
RM	Room
RT	Tag Room
Architecture>Datum	
LL	Level
GR	Grid
Architecture>Work Plane	
RP	Reference Plane
Annotate>Dimension	
DI	Aligned Dimension
EL	Spot Elevation
Annotate>Detail	
DL	Detail Line
Annotate>Text	
TX	Text
FR	Find/Replace
Annotate>Tag	
TG	Tag by Category
Collaborate>Synchronize	
RL/RW	Reload Latest
ER	Editing Requests

View>Graphics	
VG/VV	Visibility/Graphics
TL	Thin Lines
RR	Render
RD	Render in Cloud
RG	Render Gallery
View>Windows	
WC	Cascade Windows
WT	Tile Windows
PP	Properties
KS	Keyboard Shortcuts
Manage>Settings	
UN	Project Units
SU	Sun and Shadow Settings
Modify>Clipboard	
MA	Match Type Properties
Modify>Geometry	
CP	Cope; Apply Notching
PT	Paint
RC	Cope: Remove Notching
SF	Split Face
Modify>Modify	
AL	Align
AR	Array
CO/CC	Copy
CS	Create Similar
DE	Delete
DM	Mirror - Draw Axis
MM	Mirror - Pick Axis
MV	Move
OF	Offset
PN	Pin
RE	Scale
RO	Rotate
SL	Split Element
TR	Trim/Extend to Corner
UP	Unpin

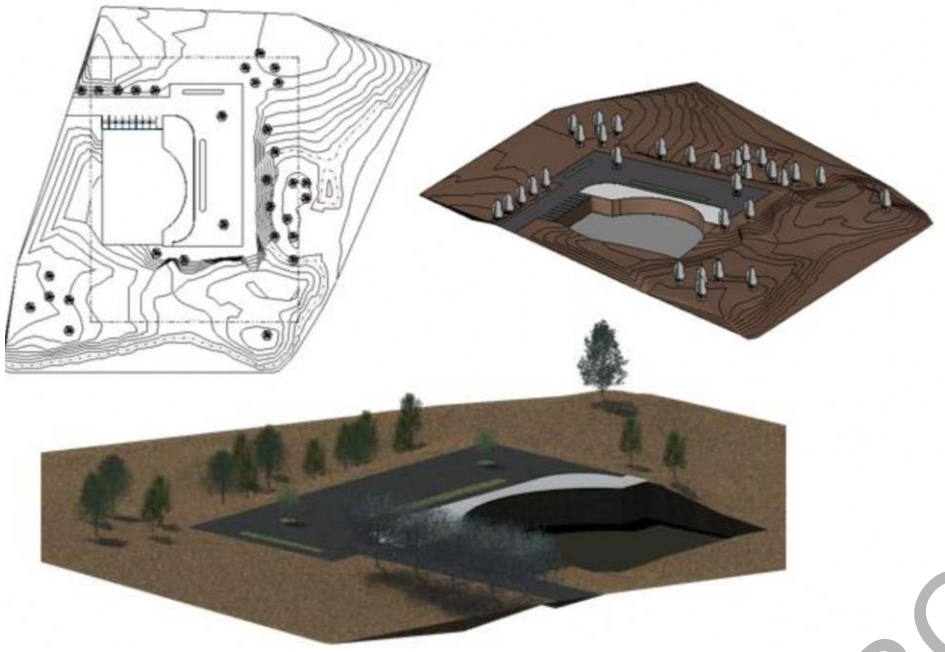
Modify>View	
EH	Hide in View: Hide Elements
EOD	Override Graphics in View
LW	Linework
VH	Hide in View: Hide Category
Zoom	
ZA	Zoom All to Fit
ZE/ZF/ZX	Zoom to Fit
ZO/ZV	Zoom Out(2x)
ZP/ZC	Previous Pan/Zoom
ZR/ZZ	Zoom in Region
ZS	Zoom Sheet Size
Snaps	
PC	Snap to Point Clouds
SC	Centres
SE	Endpoints
SI	Intersections
SM	Midpoints
SN	Nearest
SO	Snap Off
SP	Perpendicular
SQ	Quadrants
SR	Snap to Remote Objects
ST	Tangents
SW	Work Plane Grid
SX	Points
SZ	Close
View Control Bar	
CX	Reveal Constraints
GD	Graphic Display Options
HL	Hidden Line
RY	Ray Trace
SD	Shaded
WF	Wireframe
Function Keys	
F1	Displays Revit Help
F7	Spelling
F8	Navigation Wheel
F10/Alt	Keytips
Spacebar	Flip or rotate 90 degrees selected elements
Tab	Cycles through snaps or chain of elements

You may customize your own keyboard shortcuts in Revit. The window is available at **View tab > Windows panel > User Interface > Keyboard Shortcuts** or simply type **KS**.



Site Creation

Sketch a topo-surface, and then add property lines, a building pad, and parking and site components. You can then create a 3D view of the site design or render it for a more realistic presentation.

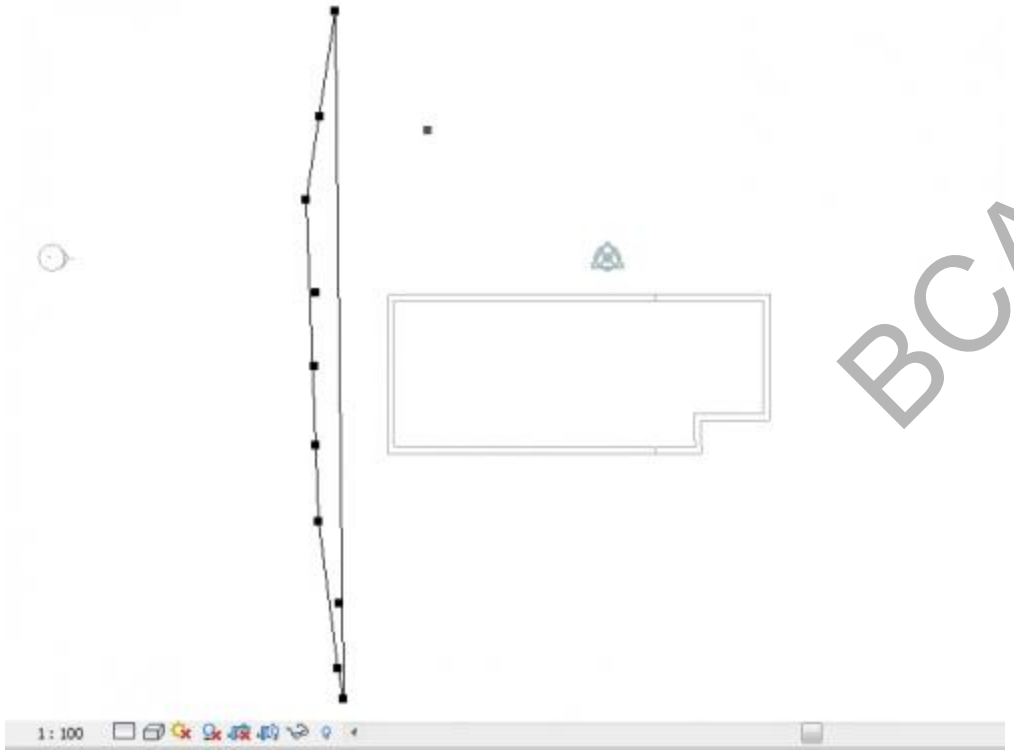


- Look at topo-surfaces in a site plan view or a 3D view. When viewing a topo-surface, consider the following:
  - Visibility. You can control the visibility of topographic points. There are 2 topographic point subcategories, Boundary and Interior. Revit classifies points automatically.
  - Triangulation edges. Triangulation edges for topo-surfaces are turned off by default. You can turn them on by selecting them from the Model Categories/Topography category in the Visibility/Graphics dialog.

Create Topo-surface: by Defining Points

1. Create a building site:
2. In the Project Browser, under Floor Plans, double-click Site Plan.
3. In the Ribbon, open the Massing & Site tab. The Model Site Panel click 

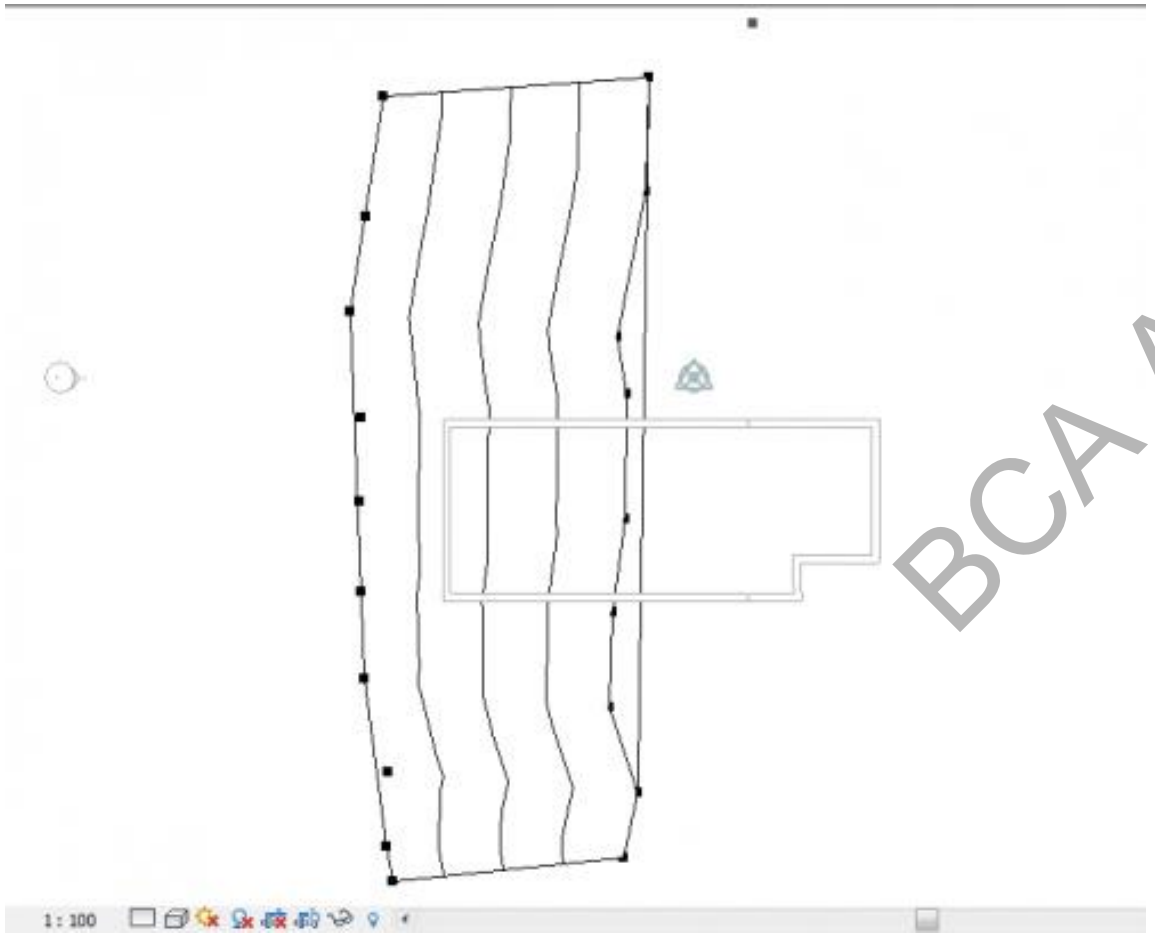
(Topo-surface).
4. On the Options Bar, for Elevation, enter -150 mm. (Continue entering other point w different value)
5. Add points to the left of the building, as shown. The order of the point selection is not important

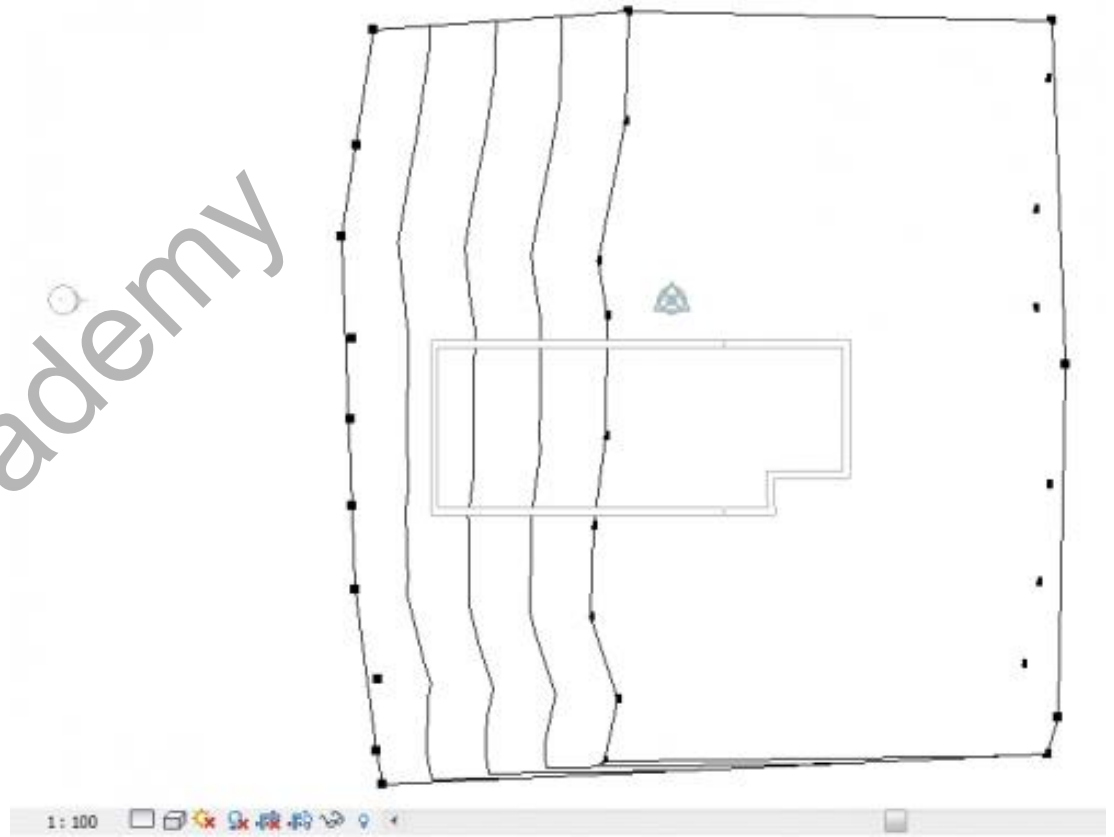


6. On the Options Bar, for Elevation, enter -4000 mm.
7. Add points near the center of the building, as shown. Contour lines are displayed.

Create Topo-surface: by Defining Points

8. On the Options Bar, for Elevation, enter -4300 mm.
9. Add points to the right of the building, as shown.

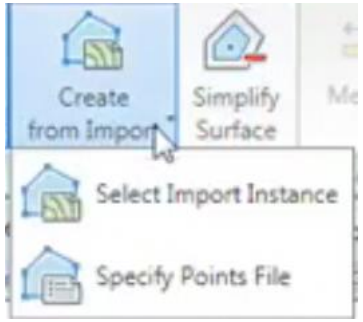


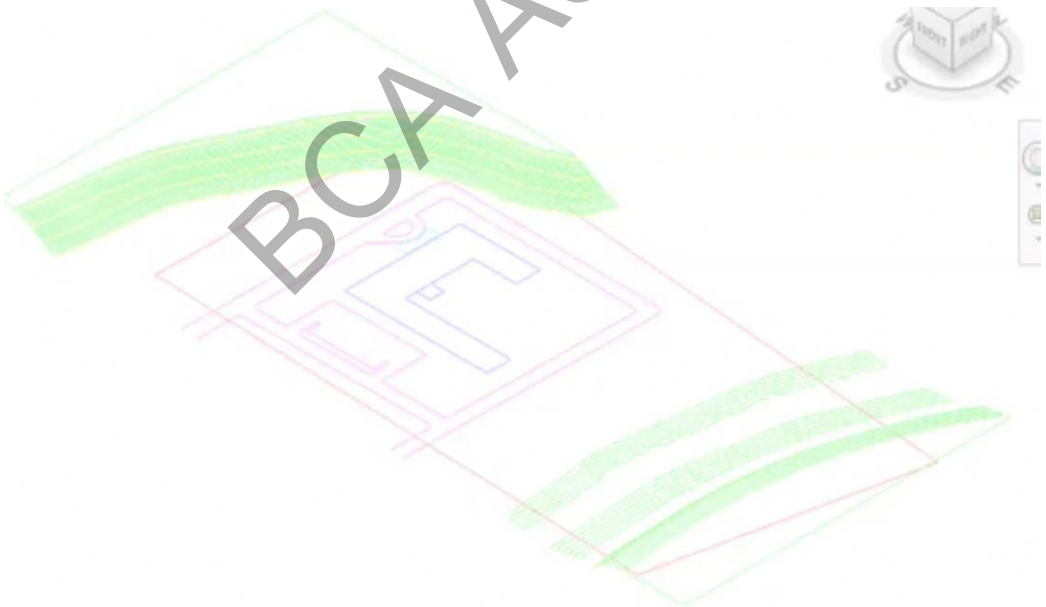


10. In the Ribbon, on the Surface Panel, click ✔ Finish Surface).

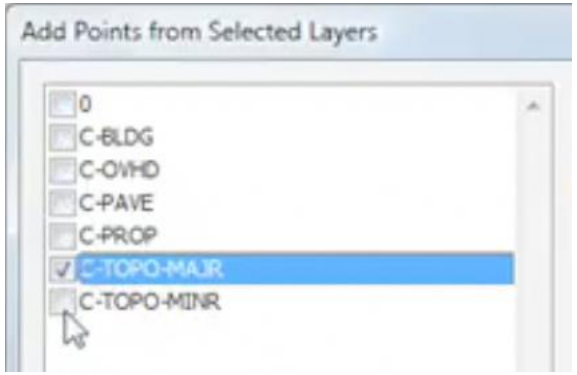
Create Topo-surface: by Import CAD

1. Create a building site:
2. In the Project Browser, under Floor Plans, double-click Site.
3. In the Ribbon, open the Insert tab. At The **Import Panel** click **(Import CAD).**
4. Open 3D view
5. In the Ribbon, open the **Massing & Site tab**. The the Model Site Panel click  (**Topo-surface**).
6. On the **Edit Surface** Ribbon, The **Tool Pan**el click **"Create From Import" dropdown**
7. Click "**Select Import Instance**" , Next in Drawing Area– click the CAD file just imported

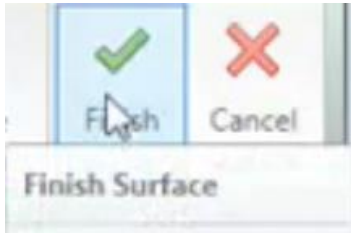


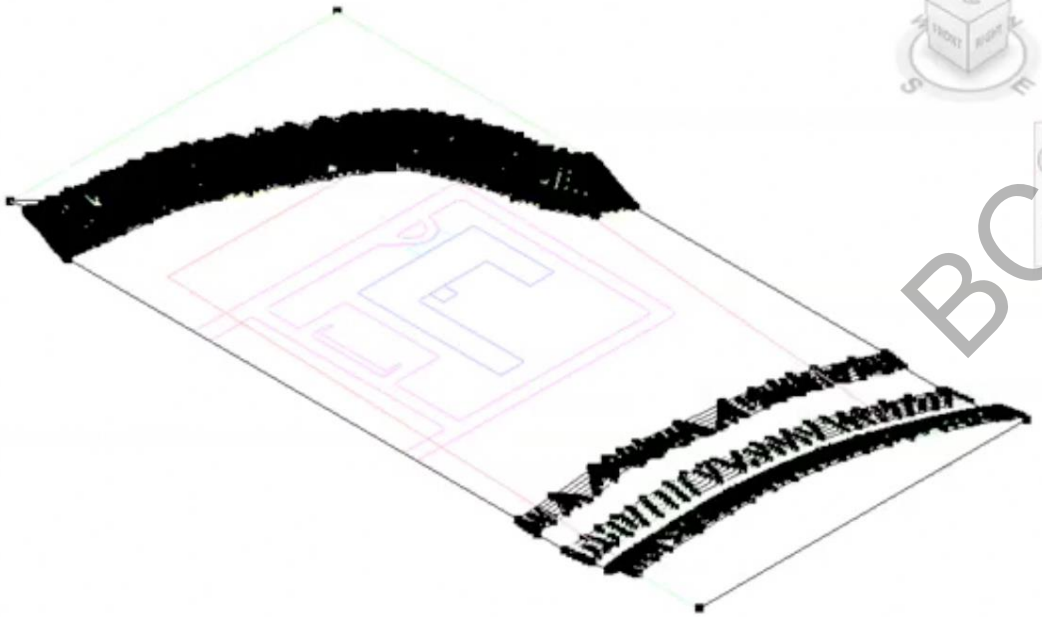


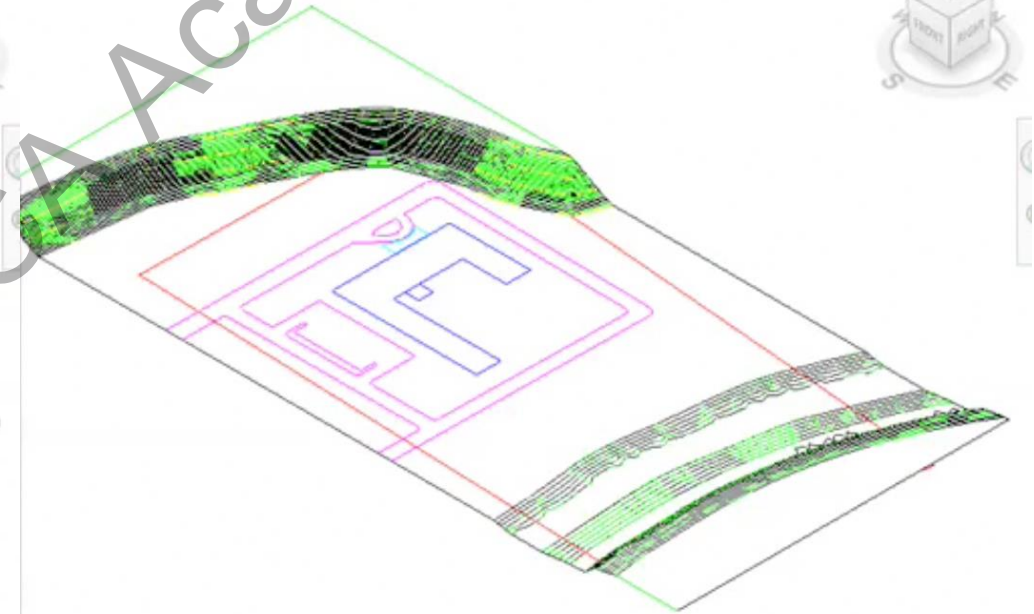
Create Topo-surface: by Import CAD



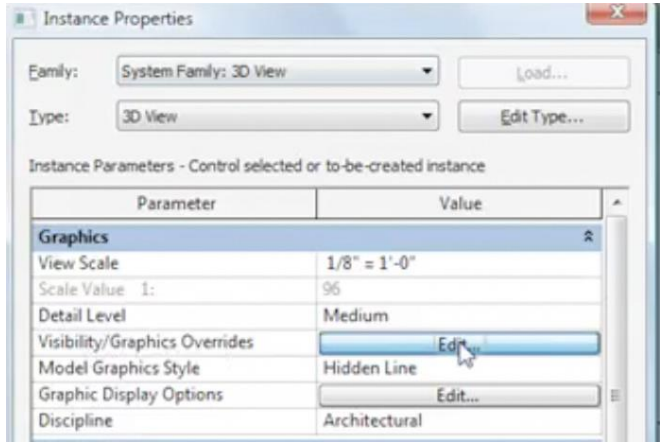
7. In new pop up menu "Add Point from Selected Layers" - Check None –
   a. Select "C-TOPO-MAJR" &
   b. Select "C-TOPO-MINR"
8. Completed the above selection with click OK – At the Edit Surface Panel click "Finish Surface"



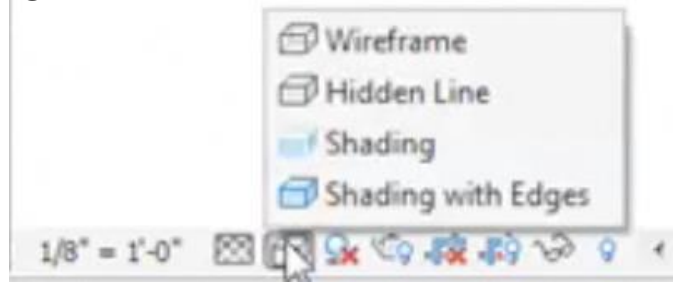




Create Topo-surface: by Import CAD



9. To off the CAD : Right Click the 3D view at the "Project Browser" – Select Properties
10. Instance Properties – Graphics – Visibility/Graphics Overrides – Click Edit.
11. In "Import Categories" – un-check the CAD drawing that we imported earlier -
12. Click OK
13. In the "View Control Box" – Click Model Graphics Style – Change to Shading with Edges

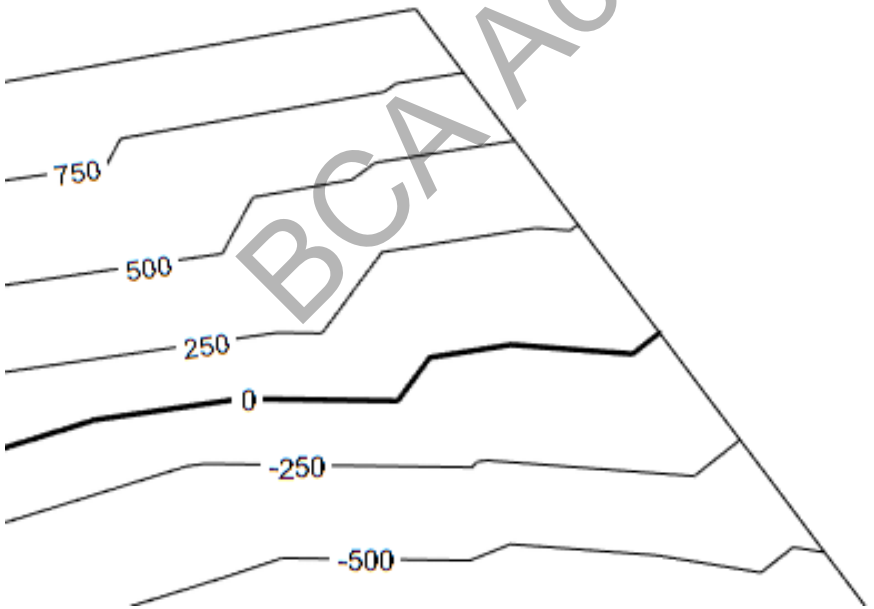


Create Topo-surface: Contour Labels

You can label contour lines to indicate their elevations. Contour labels display in site plan views.

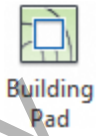
1. Create a topographic surface with different elevations.
2. Open a site plan view.
3. Click Massing & Site tab - Modify Site panel  (Label Contours).
4. Sketch a line that intersects one or more contour lines.

Labels display on the contour lines. (You may need to zoom in to see the labels.) The label line itself is not visible unless you select a label.

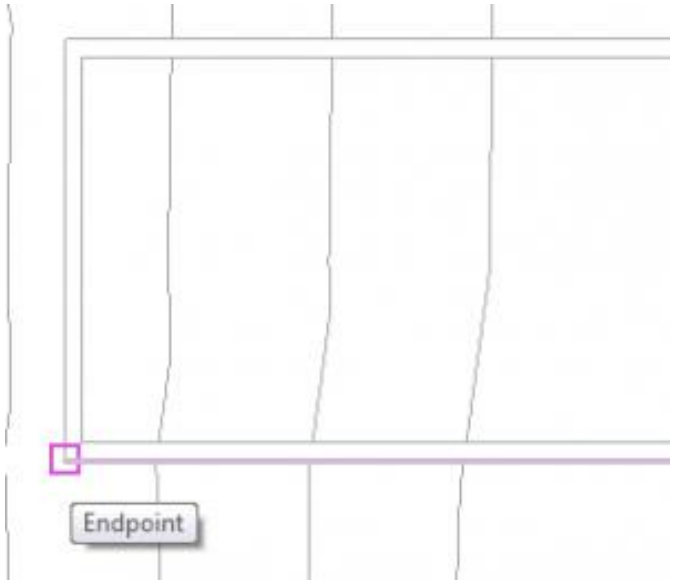


Create Building Pad

Create a building pad surface, which will cut out the toposurface to the specified depth:

1. In the Ribbon (Massing & Site tab), on the Model Site Panel, click _ 

(Building Pad)
2. In the Modify | Create Pad Boundary tab, make sure _  Boundary Line is selected
3. Click  (Rectangle).
4. Select the outer endpoint at the lower left of the building, as shown.



5. Select the outer endpoint at the upper right of the building.
6. In the Ribbon, click  (Finish).

Create Topo-surface Sub-regions

Toposurface subregions are areas that you sketch inside existing toposurfaces.

To create a subregion

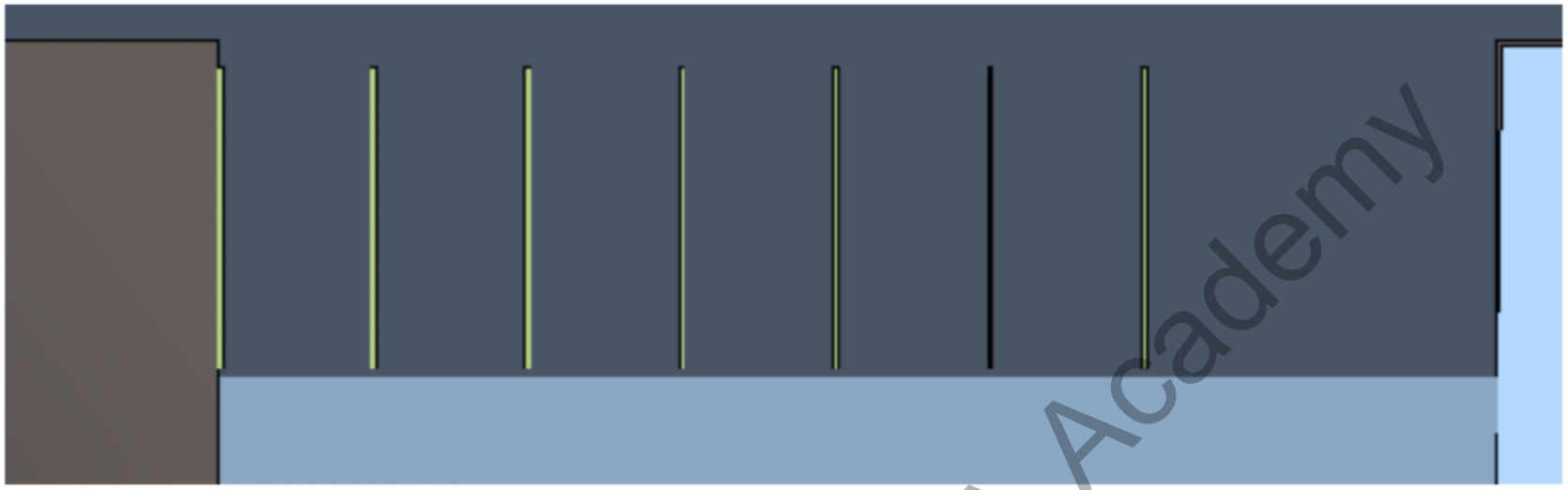
- Open a site plan that displays a toposurface.
- Click Massing & Site tab Modify Site panel  (Subregion). Revit enters sketch mode.
- Click  (Pick Lines) or use other sketch tools to create a subregion on the toposurface.

To modify subregion boundaries

- Select the subregion.
- Click Modify | Topography tab Subregion panel  (Edit Boundary).
- Click  (Pick Lines) or use other sketch tools to modify the subregion on the toposurface.

Add Parking Components

You can add parking spaces to a toposurface and define the toposurface as the parking component's host.



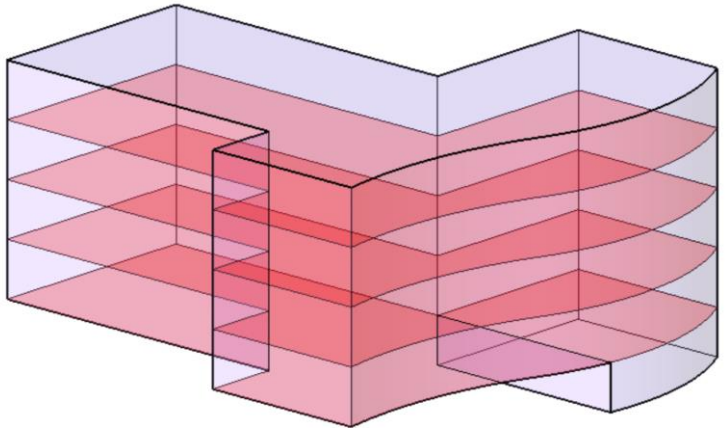
To add parking components

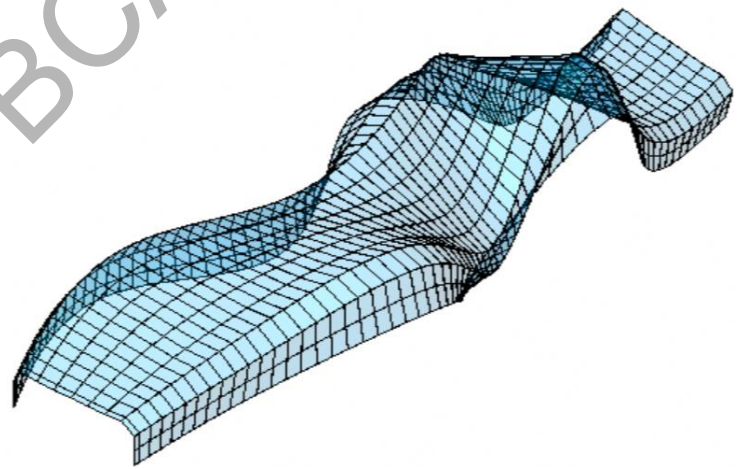
1. Open a view that displays the toposurface to modify.
2. Click Massing & Site tab Model Site panel (Parking Component).
3. Place the cursor on the toposurface and click to place the component. Place as many components as desired. You can create an array of parking components.

About Massing Studies

You can use massing studies to perform a variety of tasks.

- Create in-place or family-based mass instances that are specific to individual design options.
- Create mass families that represent the forms associated with often-used building volumes.
- Vary materials, forms, and relations between masses that represent major components of a building or development using design options.
- Study zoning compliance, both visually and numerically, by relating a proposed building mass to the zoning
- envelope and floor area ratio.
- Generate floors, roofs, curtain systems, and walls from mass instances with control over element category, type, and parameter values. Fully control regeneration of these elements when the mass changes.



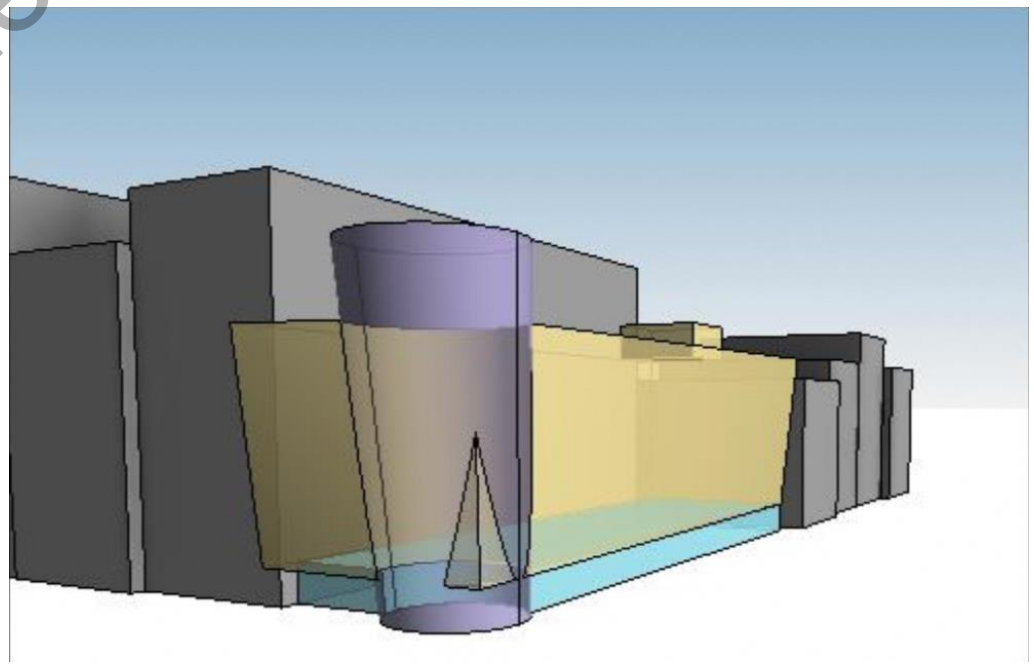


Perimeter Analysis		
Mass: Type	Level	Floor Perimeter
Rectangle	1	116 m
Rectangle	2	116 m
Rectangle	3	116 m
Rectangle	4	116 m
Rectangle	5	115 m
Rectangle	6	101 m
Rectangle		679 m

Massing Tool

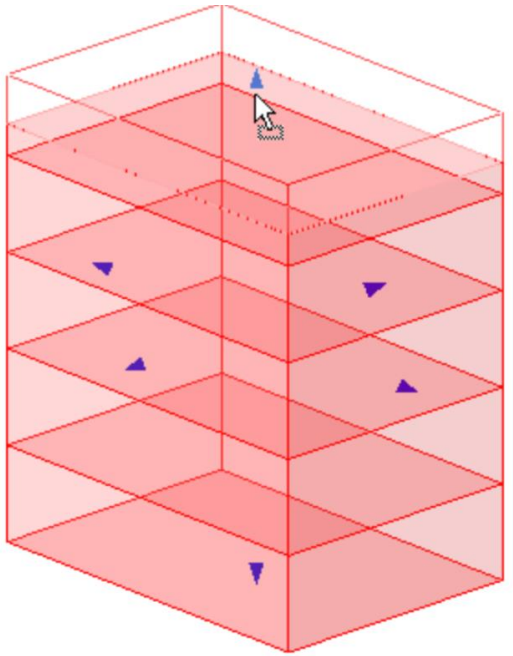
1. Click Massing & Site tab Conceptual Mass panel (In-Place Mass).
2. Enter a name for the in-place mass family, and click OK.
3. The application window displays the conceptual design environment.
4. Create the desired shapes using the tools on the Draw panel.
5. For more information, see the following topics:
   a. Forms
   b. Profiles
   c. Sketching
6. When you are finished, click Finish Mass.

*Do take note that all shape create in mass must in close loop



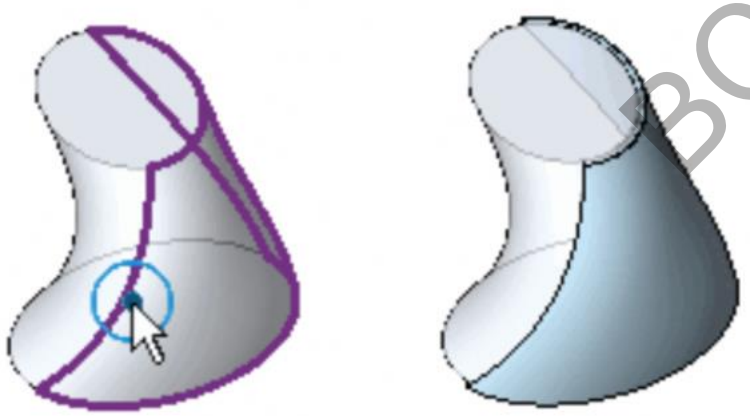
Massing Studies

1. If you have not already done so, add levels to the project. Mass floors are based on levels defined in the project.
2. Select the mass.
3. You can select the mass in any type of project view, including floor plan, RCP, elevation, section, and 3D views.
4. Click Modify | Mass tab Model panel (Mass Floors).
5. In the Mass Floors dialog, select each level that needs a mass floor, and click OK.
6. Initially, if you select a level that the mass does not intersect, the software does not create a mass floor for that level. However, if you later resize the mass so that it intersects the specified level, the software creates a mass floor on that level.
7. Mass floors
8. After creating mass floors, you can do any of the following:
   a. Select a mass floor to view its properties (including area, perimeter, exterior surface area, and volume) and assign a usage.
   a. Tag mass floors.
   b. Create building floors from mass floors.

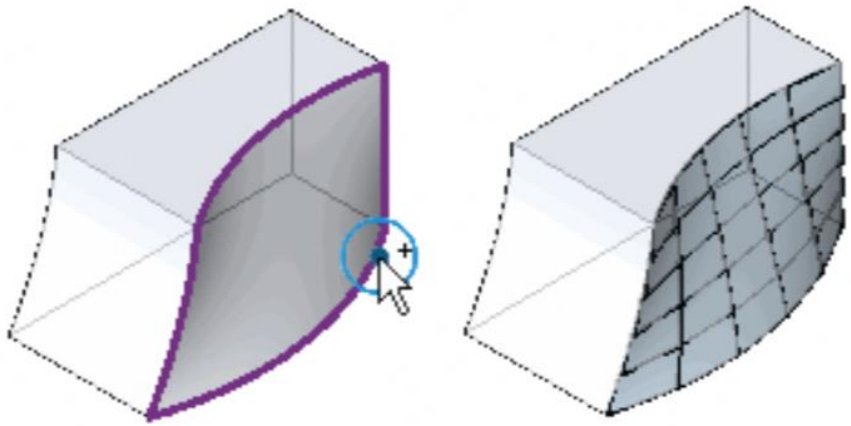


Building Maker Tool

1. To create a wall from mass faces
2. Open a view that displays the mass.
3. Click Massing & Site tab Model by Face panel  (Wall by Face).
4. In the Type Selector, select a wall type.
5. On the Options Bar, select desired values for Level, Height, and Location Line.
6. (Optional) To create the wall from a single mass face, click Modify | Place Wall by Face tab Selection panel (Select Multiple) to disable it. (It is enabled by default.)
7. Move the cursor to highlight a face.
8. Click to select the face.



(Wall by Face).



(Curtain Wall by Face).

Building Maker Tool

9. If the Select Multiple option is cleared, a wall is placed on the face immediately.

10. If Select Multiple is enabled, select more mass faces as follows:

    a. Click an unselected face to add it to the selection. Click a selected face to remove it.

    b. Multiple The cursor indicates whether you are adding (+) or removing (–) a face.

    c. To clear the selection and start over, click Modify | Place Wall by Face tab Multiple Selection panel (Clear Selection).

    d. When the desired faces are selected, click Modify | Place Wall by Face tab Multiple Selection panel Create Wall.