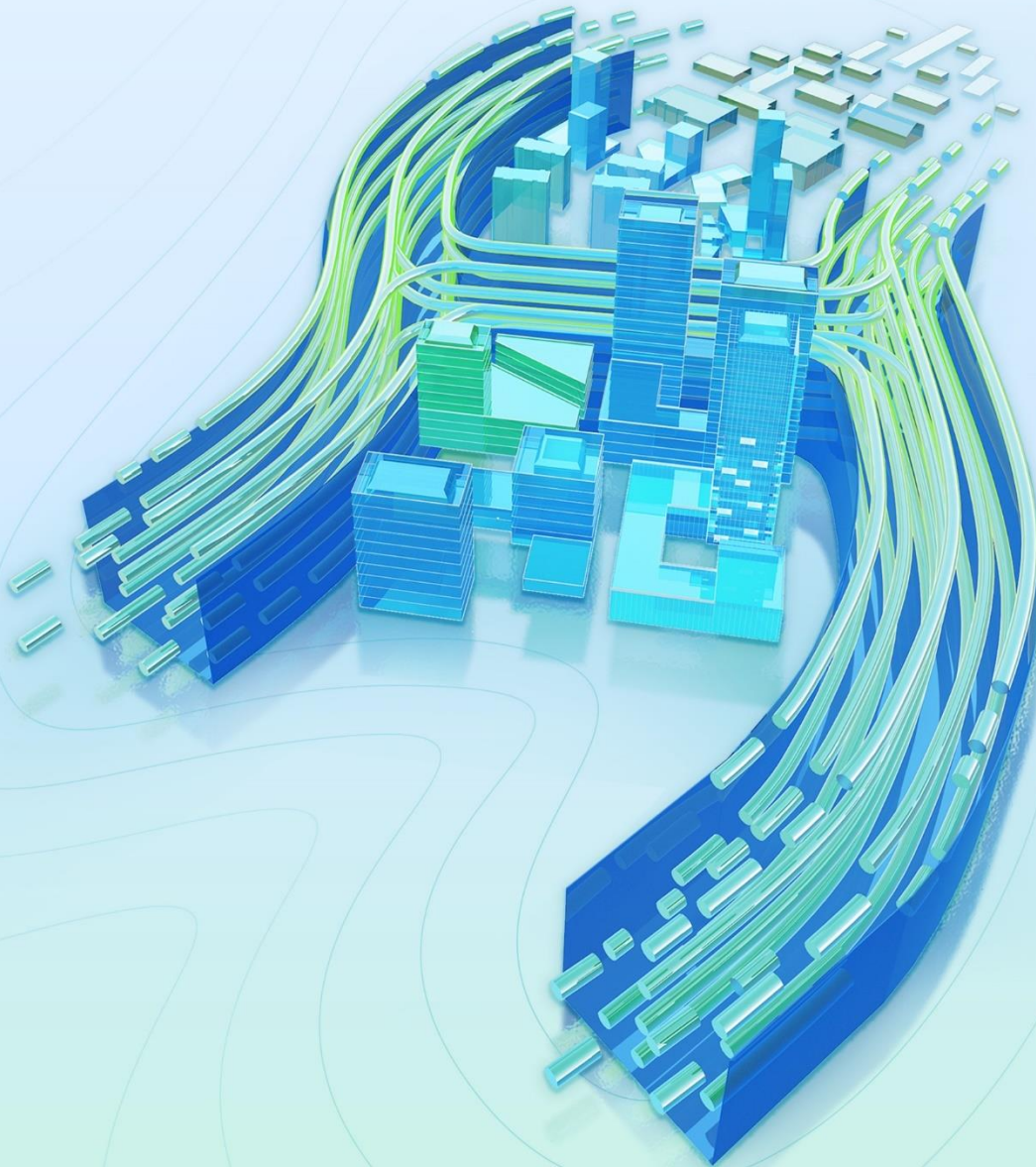




New Features Guide

Houseplan 2.0



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Houseplan 2.0 New Features Guide

Fast, Easy, and Powerful 3D Design Plan

Houseplan 2.0 is a versatile and intuitive 3D modeling and real-time rendering software, providing a lightweight yet robust solution for visualizing and presenting design schemes. Now featuring enhanced AI rendering tools, terrain tools, component editing tools and sun-shadow simulation tools, it has become even more powerful, offering improved accuracy and flexibility for architects, urban planners, and designers.

1. Software Introduction

1.1 System requirements

1.1.1 Hardware requirements

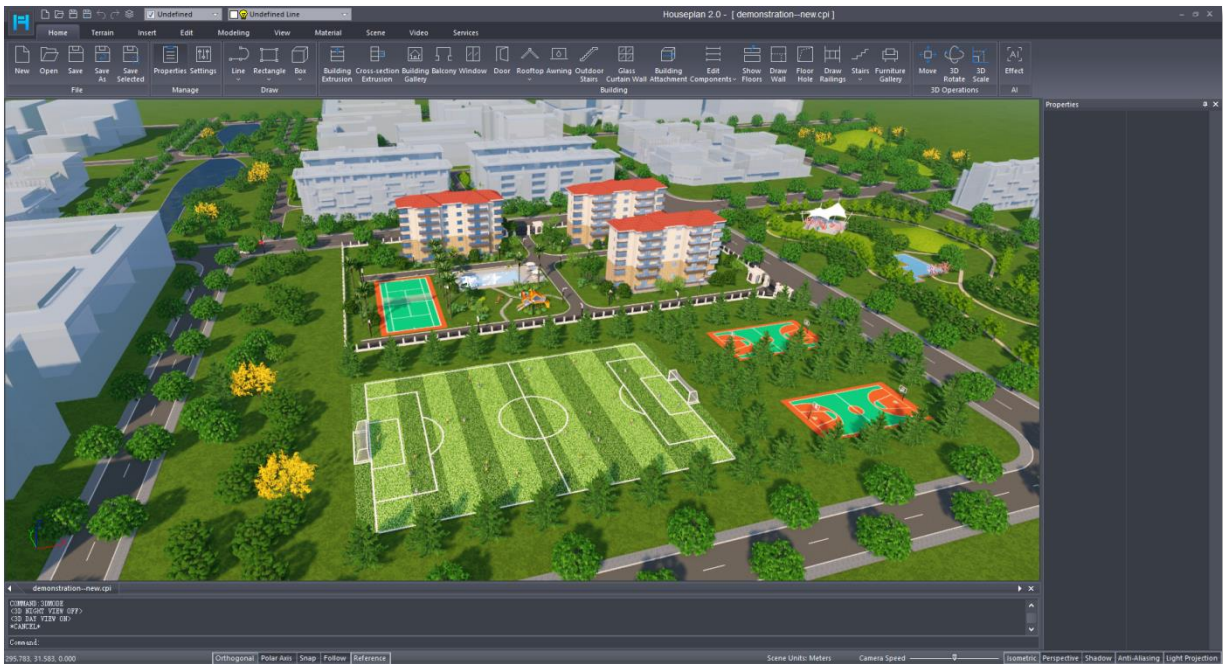
	Minimum	Recommended
CPU	Intel I5-6 processor	Intel I5-9 and above
Monitors	1440 x 900 true color display	1920 x 1080 or higher configuration
Video Card	Nvidia GTX1050Ti	Nvidia GTX1660Ti or higher
RAM	16GB	16GB or higher
Hard Drive	4G	8G
Others	Mouse, trackball or another pointing device	Mouse, trackball or another pointing device

1.1.2 Software Configuration

OS	Win 7 (64-bit) / Win10 (64-bit) / Win 11(64-bit)
----	--

1.2 Houseplan 2.0 Interface Overview

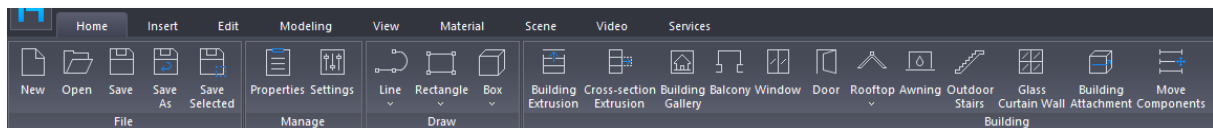
The user interface consists of a quick access toolbar, ribbon, property palette, status bar, file tab, command line and workspace.



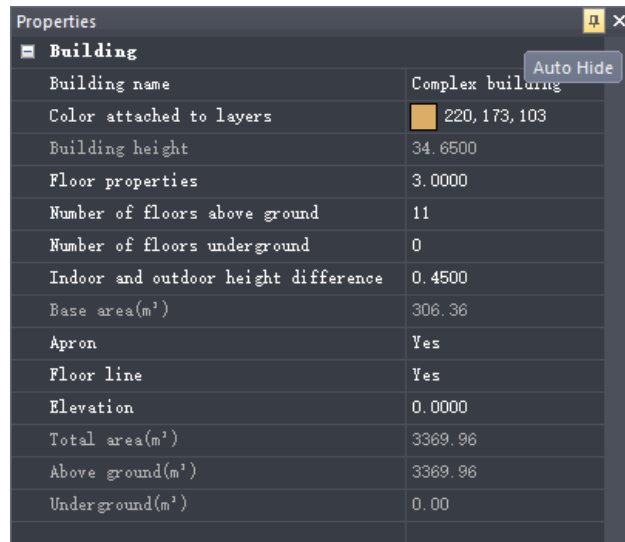
- (1) **Quick Access Toolbar:** Allows quick access to frequently used tools such as New, Open, Save, Save As, Undo, Redo, Layer Control, Element on/off and Layers.



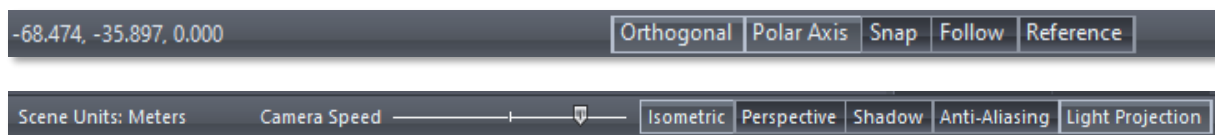
- (2) **Ribbon:** Displays task-based tools relevant to the current workspace that consists of nine tabs. Each tab consists of a series of panels of related functions.



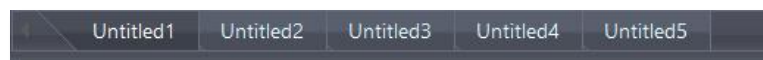
- (3) **Property Palette:** Displays the properties of selected object and can be modified.



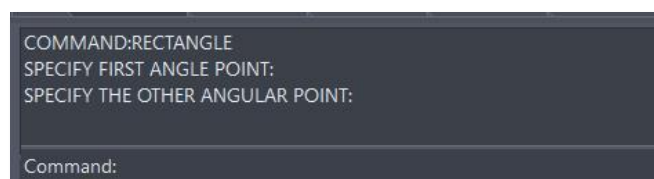
- (4) **Status Bar:** It is composed by cursor coordinate position, tools that affect the drawing environment (Orthogonal, Polar Axis, Snap, Follow, and Reference), The units used by the current drawing, slider to adjust camera speed, view mode buttons (Isometric, Perspective), and effect switch buttons (Shadow, Anti-Aliasing, Light Projection).



- (5) **File Tab:** Located above the command line, displays one or more opened files.



- (6) **Command Line:** Shows the command prompt during the execution of a tool or command.



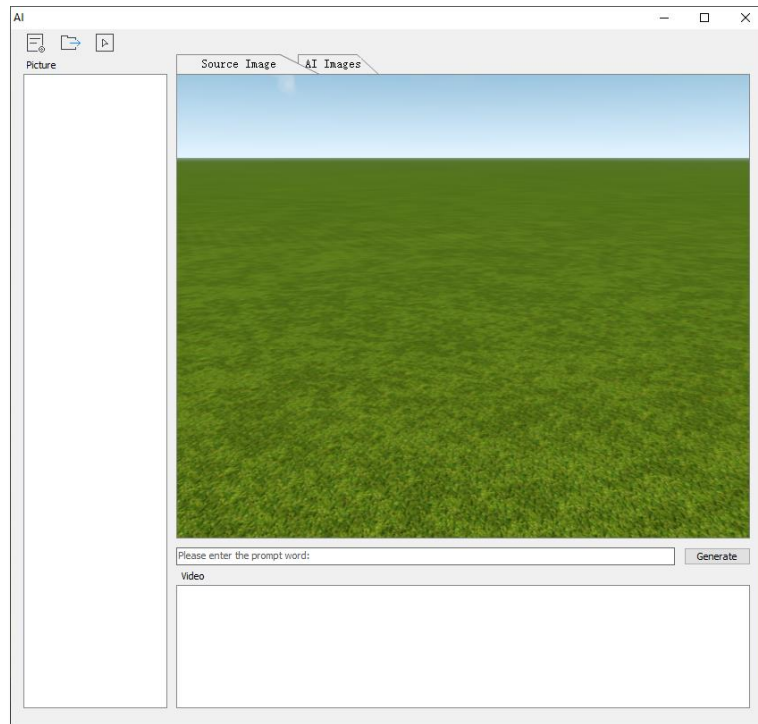
- (7) **Workspace:** Displays visible area of current opened file.

2. . What's new in Houseplan 2.0

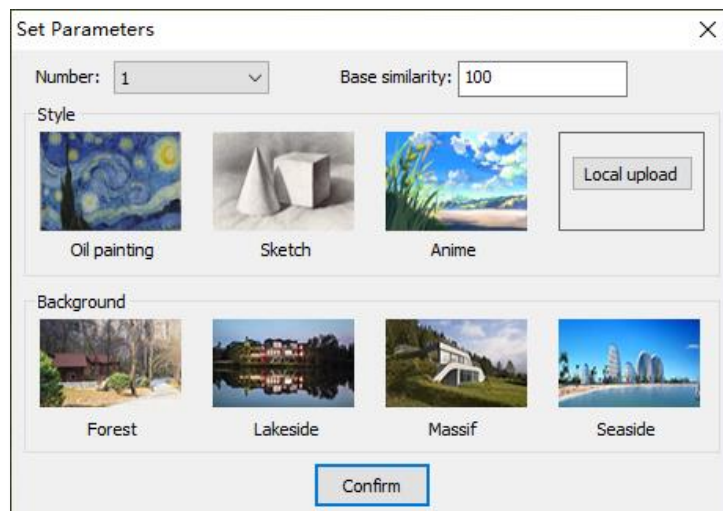
2.1 AI Effect *New*

Generate different styles of AI images and videos based on the currently selected entity in the workspace.


Select "Home Tab > AI panel > AI Effect"  to open the dialog box shown below.

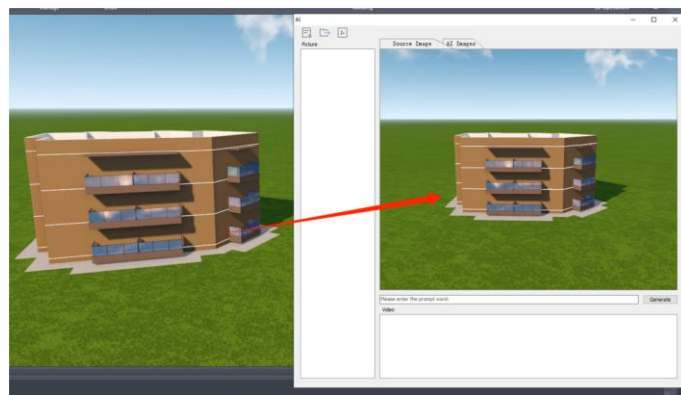


1. **Set Parameters:** Click on the " button to open the dialog box shown below:

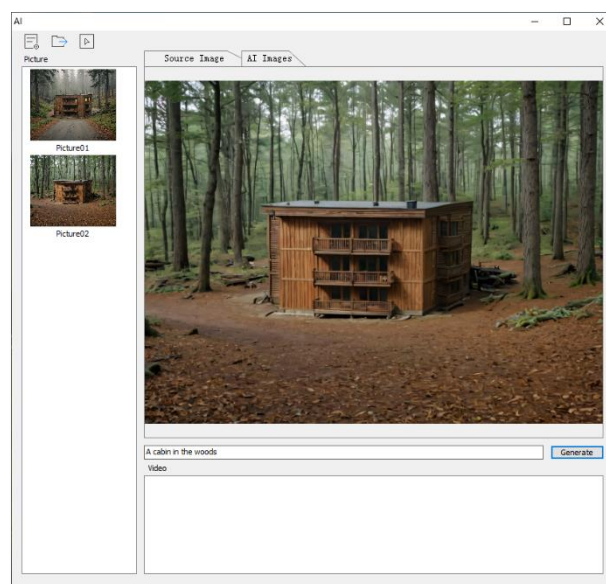


- Number: Sets the number of generated images.
- Base similarity: Sets similarity to the base image.
- Style: Sets style. You can also click the “Local upload” button, select a local image to be the generated style.
- Background: Sets background. Among them, clicking the “Local upload” button, you can select a local image as the generated style.

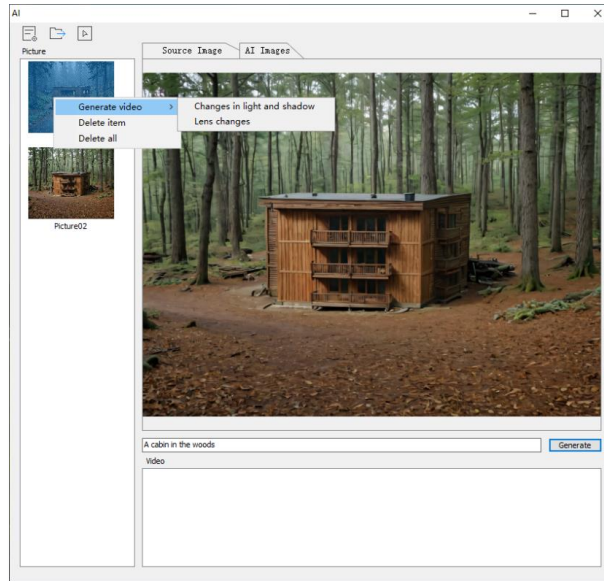
2. **Pickup:** Click on the “” button, and select the entities from the workspace to generate the effect, right click to end selection, and the selected entity will be displayed in the “Source Image” tab, as shown below:



3. **Generate:** Allows inputting the prompt words. After setting the number, similarity, style, background, and prompts, you can click the “Generate” button to generate the entities in the “Source Image” tab to AI effect image, and the result will be displayed in the “AI Images” tab, as shown in the figure below:

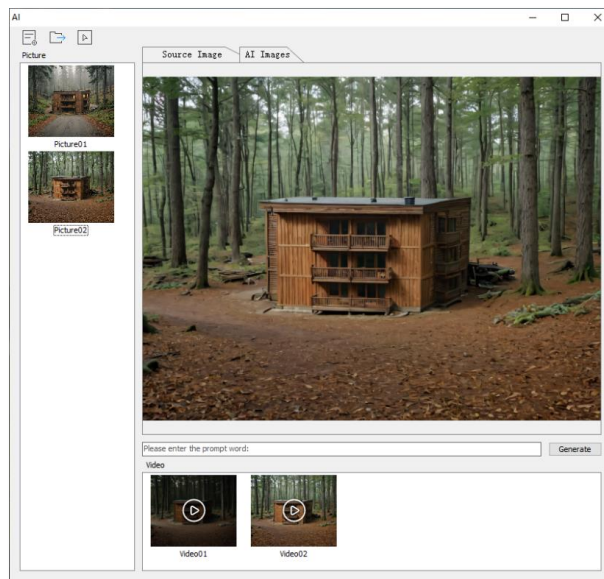


4. **Picture:** The generated AI effect will be displayed in the “Picture” list at the same time. Double-click on a picture in the list to view a larger version of it in the “AI Images” tab. Right-click on the picture list to bring up the following menu:

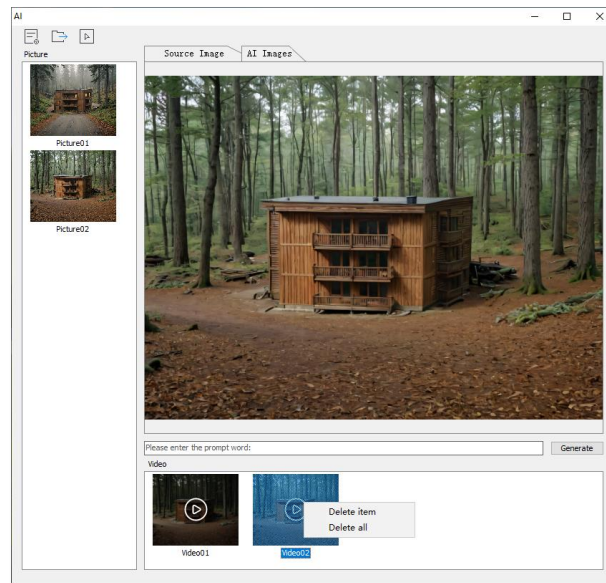


- **Generate video:** Changes in light and shadow: Generates an effect video with dynamic changes in light and shadow based on the AI effect image.
- **Lens changes:** Generates a video of the effect of the dynamic change of the lens based on the AI effect image.
- **Delete item:** Deletes the selected effect image.
- **Delete all:** Deletes all images in the picture list.

5. **Video:** The effect video generated from the AI effect image is displayed in the “Video” list, as shown below:




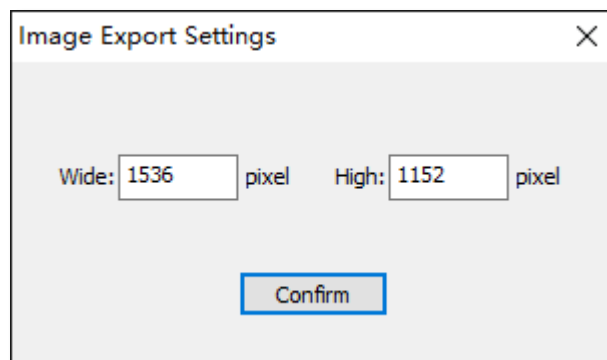
Double-click a video to view the corresponding video effect in the “Result” window. Right-click on the video under in the video list to open the menu as shown below:




- Delete item: Deletes the selected video.
- Delete all: Deletes all videos in this list.

6. Exporting:

- Exporting Images: Select the generated AI effect image, click the “” button, select the save path in the pop-up box, and click the “OK” button, the pop-up dialog box shown below:

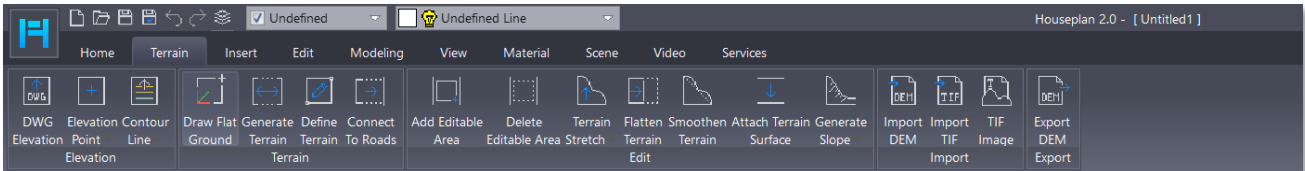


- Then you can set the width and height, and click the “OK” button to save the effect image in .png format to a local location.
- Exporting Videos: Select the generated AI effect video, click the “” button, select the save path in the pop-up box,


click the "OK" button to save the video in mp4 video format to a local location.

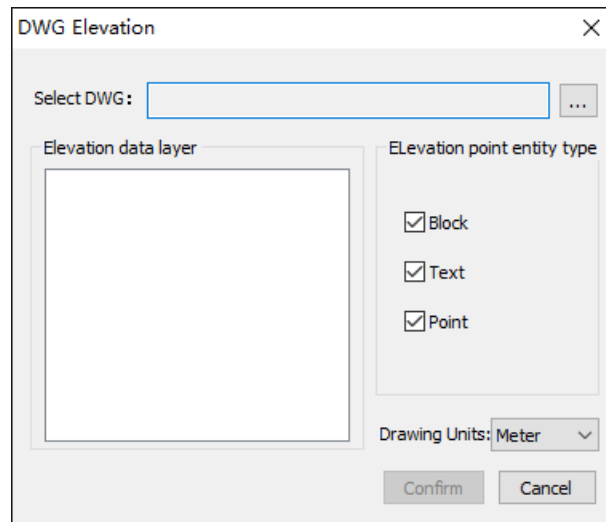
2.2 Terrain Menu *New*

Houseplan 2.0 adds a series of advanced terrain features, enabling users to more effectively manage and design terrain-related content in the Terrain menu.



2.2.1 DWG Elevation

DWG and DXF drawings containing elevation information can be imported into Houseplan. The software converts this data into elevation points or contour lines, which can then be used to create terrain models. Select "Terrain Menu > Elevation Panel >  DWG Elevation" to open its dialog box.



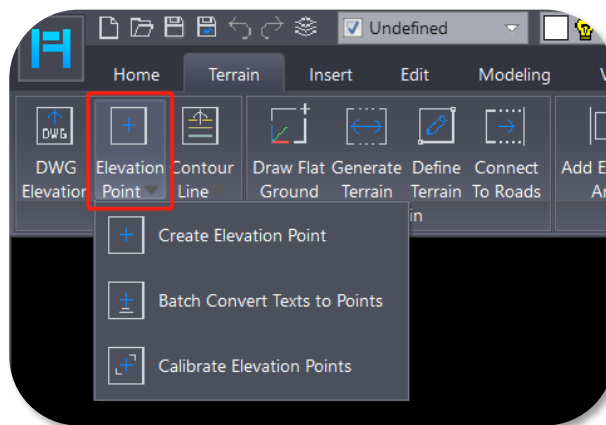
1. Parameter description:

- Select DWG: Selects DWG drawing from local space.
- Elevation data layers: Checked, import the layer; unchecked, do not import the layer.
- Elevation point entity type: Blocks, text or points can be imported and converted to elevation points separately.
- Drawing Unit: Drop down to select the drawing unit for the imported CAD drawing.

Note:

- ① Numbers, blocks, and point entities in DWG and DXF drawings are recognized as elevation points.
- ② Multi-segment lines in DWG, DXF drawings are recognized as contour lines.

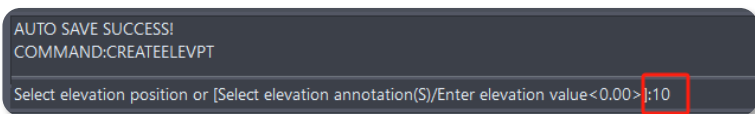
2.2.2 Elevation Point



2.2.2.1 Create Elevation Point

Elevation points, marked with elevation values, are typically utilized alongside contour lines to convey elevation data for geomorphic features. They are created based on a specified location and elevation value.

Select "Terrain Menu > Elevation Panel >  Elevation Point >  Create Elevation Point".



To set an elevation point, first determine the elevation value by either entering it directly or typing **S** and pressing Enter on the command line to select an exist elevation point, contour label, or number text in workspace for the value. Then, specify the location of the elevation point by either clicking on the desired location or entering the coordinates (x, y) manually.

Note: The right property bar allows you to modify the parameters of elevation value, character height, angle and font of the elevation point.

2.2.2.2 Batch Convert Texts to Points

Batch converts number text to elevation points.

Select "Terrain Menu> Elevation Panel >  Elevation Point>  Batch Convert Texts to Points".

According to the command line prompt, select the number to be converted to elevation points, right-click to end selection, then select one of the numbers, directly specify or enter the coordinate value to determine the relative position of the elevation point and text.

Note: Locked objects in the underlay layer cannot be used as conversion objects, if you want to convert them, you can first enable them, and then batch convert to points.

2.2.2.3 Calibrate Elevation Points

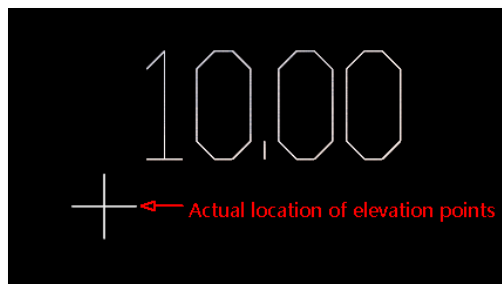
Calibrates the location of all elevation points.

Select "Terrain Menu> Elevation Panel >  Elevation Point>  Calibrate Elevation Points".

According to the command line prompt, select the elevation point to be used as a representative, and directly specify or enter the coordinate value to determine the position of the target point.

Note:

- ① The elevation points on the drawing are divided into two parts, the cross mark and the elevation figures, as follows:

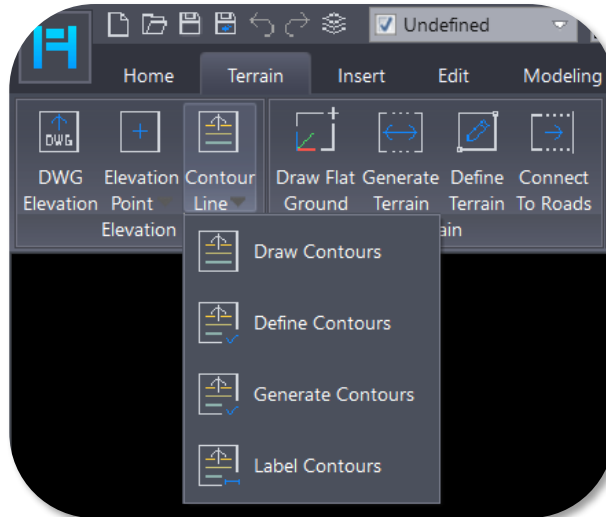


The elevation number is used to indicate the elevation value of the elevation point (such as the above figure, it means the elevation of the elevation point is 10.00), and the center of the cross mark is the actual position (x,y) of the elevation point. The elevation point created or imported will take the lower left corner of the elevation number as the position of the elevation point by default, if this is

not the actual position of the elevation point, you need to correct the elevation point to the actual position.

- ② This command corrects the position of all elevation points in the scene. If you want to modify an elevation point, you can use the Move function directly.

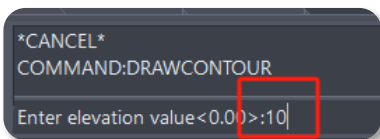
2.2.3 Contour Line



2.2.3.1 Draw Contours

This feature is used to draw contour lines.

Select "Terrain Menu > Elevation Panel >  Contour Line >  Draw Contours".

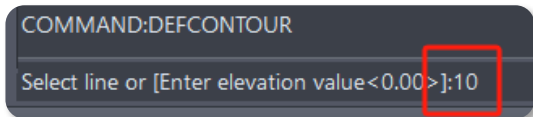


According to the command line prompts, enter numerical values or select existing elevation points, numbers, etc. to obtain elevation values, and draw contour lines in the form of polylines.

2.2.3.2 Define Contours

Defines line entities as contour lines.

Select "Terrain Menu > Elevation Panel >  Contour Line >  Define Contours".

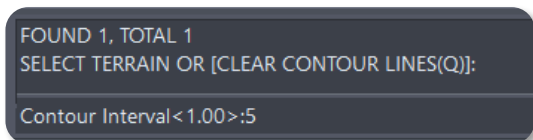


Enter numerical values or select existing elevation points, numbers, etc. to obtain elevation values, and select undefined line entities to define as contour lines.

2.2.3.3 Generate Contours

Generates contour lines based on the existing terrain and the differences in elevation between contour intervals.

Select "Terrain Menu> Elevation Panel >  Contour Line>  Generate Contours".



Contour lines are generated by selecting the terrain and entering a value to determine the height difference between the contour lines.

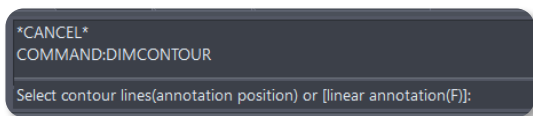
Enter Q on the command line to clear all contour lines in the current scene.

Note: Contour step difference refers to the vertical distance between two adjacent contour lines. For example, if you set the contour step difference to 5, a contour line will be generated every 5 meters of elevation based on the terrain's height. Larger step differences result in sparser contour lines and faster generation, while smaller step differences produce denser contour lines but may take longer to generate.

2.2.3.4 Label Contours

Elevation values for labeled contour lines.

Select "Terrain Menu> Elevation Panel >  Contour Line>  Label Contours".



According to the command line prompt, directly mark the elevation value of the contour line at the selected position, or enter F to perform linear labeling.

Note: Linear labeling, i.e., drawing line segments and marking the elevation values of the contour lines that intersect them.

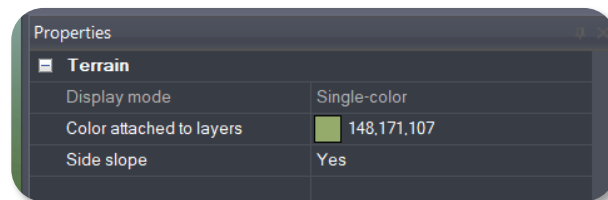
2.2.4 Draw Flat Ground

Draws horizontal terrain.

Select "Terrain Menu > Terrain Panel >  Draw Flat Ground".

Draw rectangular terrain directly or type P Enter to draw polygonal terrain.

Note: The right property bar allows you to adjust the terrain display mode, the color of the accompanying layer, and if the lowest point in the terrain is not on point 0, then the right property bar allows you to set whether or not to display the side slopes.



2.2.5 Generate Terrain

Generates terrain based on contour lines, elevation points.

Select "Terrain Menu > Terrain Panel >  Generate Terrain".

Select elevation points, contour lines, and after selecting the object, you can choose whether to delete the selected original data according to the command line prompts, enter Y to delete the selected source data after generating terrain; enter N to retain the selected source data after generating terrain.

Note: The right property bar allows you to adjust the terrain display mode, the color of the accompanying layer, and if the lowest point in the terrain is not on point 0, then the right property bar allows you to set whether or not to display the side slopes.

2.2.6 Define Terrain

Defines closed objects as terrain.

Select "Terrain Menu > Terrain Panel >  Define Terrain".

Generate terrain by selecting closed polylines, undefined surfaces, mesh surfaces or fbx models, etc.

Note: The right property bar allows you to adjust the terrain display mode, the color of the accompanying layer, and if the lowest point in the terrain is not on point 0, then the right property bar allows you to set whether or not to display the side slopes.

2.2.7 Connect To Roads

Connects topography, planned land use, or undefined planes to the road in accordance with the road's elevation information.

Select "Terrain Menu > Terrain Panel >  Define Terrain".

Selecting terrain that is tangent to the roadway so that it meets the road.

Note: The right property bar allows you to adjust the terrain display mode, the color of the accompanying layer, and if the lowest point in the terrain is not on point 0, then the right property bar allows you to set whether or not to display the side slopes.

2.2.8 Add Editable Area

Defines editable areas on the terrain, allowing flexible control of the editing range to enhance the speed and efficiency of terrain modifications.

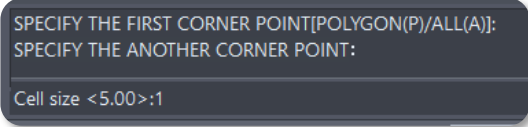
Select "Terrain Menu > Edit Panel >  Add Editable Area".

There are three ways to draw editable area:

- Draw rectangular editable areas directly;
- Type P to enter and draw the polygon editable area.

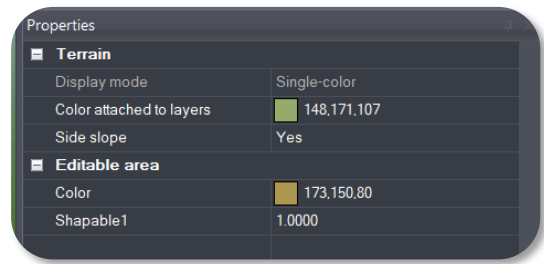
- Type A Enter to generate editable areas for all selected terrain.

After drawing the editing area, follow the command line prompts to enter a value for the cell grid size. This completes the definition of the editable area.



Note:

- ① Houseplan automatically calculates an appropriate cell grid size based on the terrain's dimensions, or users can set their own value.
- ② A smaller cell grid size allows for finer terrain edits but may slow down the generation and editing processes.
- ③ The cell grid size is displayed in the property column under Editable Area > Shapable 1. Multiple editable areas can be defined for the same terrain, corresponding to Shapable 1, Shapable 2, Shapable 3, and so on, each with its own adjustable parameter.
- ④ Other editing tools are only available when there is an editable area.



2.2.9 Delete Editable Area

Removes editable areas from terrain. Select "Terrain Menu > Edit Panel >  Add Editable Area", Select the editable area to delete.

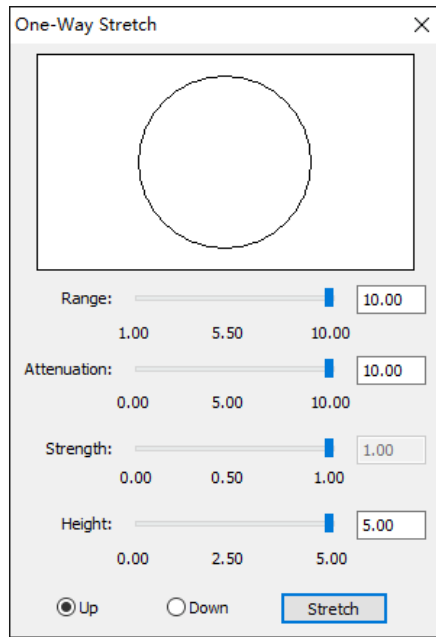
2.2.10 Terrain Stretch

2.2.10.1 One-Way Stretch

Adjusts the height of the terrain within the editable area, allowing for quick shaping of the terrain.

Select "Terrain Menu > Edit Panel >  Terrain Stretch >  One-Way Stretch".

The dialog box shown below pops up:



1. Parameter description:

- Range: Diameter of the area modified during stretching.
- Attenuation: The diameter of the area attenuated during stretching.
- Strength: Speed of modification during stretching.
- Height: Maximum height of the terrain bulge when stretched.
- Direction: The direction when stretching, can choose up or down.

2. After setting the parameters, click the “Stretch” button and drag the mouse up or down in the editable area.

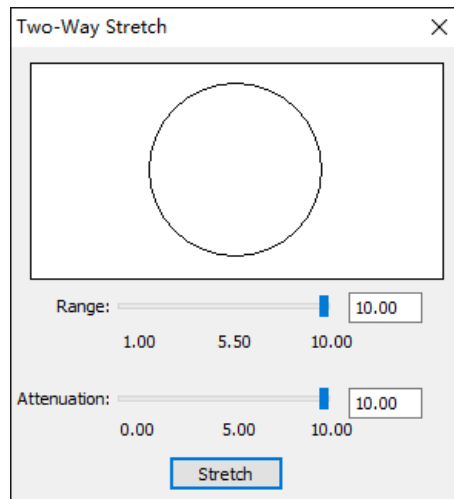
Note: If there are sharp edges in the stretching process, you can adjust the cell grid size to make it smooth, you can go to “2.2.8 Add Editable Area” for details.

2.2.10.2 Two-Way Stretch

Stretches the terrain up and down in the editable area to adjust the height according to the size of the setup area.

Select "Terrain Menu > Edit Panel >  Terrain Stretch >  Two-Way Stretch".

The dialog box shown below pops up:



1. Parameter description:

- Range: Diameter of the area modified during stretching.
- Attenuation: The diameter of the area attenuated during stretching.

2. After setting the parameters, click the “Stretch” button and drag the mouse up or down in the editable area.

Note:

- ① You can enter any value in the input box, and the number on the slider will follow the value in the input box.
- ② If there are sharp edges in the stretching process, you can adjust the cell grid size to make it smooth, see “2.2.8 Add Editable Area” for details.

2.2.10.3 Stretch Along Planes

Modifies the height of the terrain by dragging the plane area within the editable area.

Select "Terrain Tab>Edit Panel> Terrain Stretch> Stretch Along Planes".

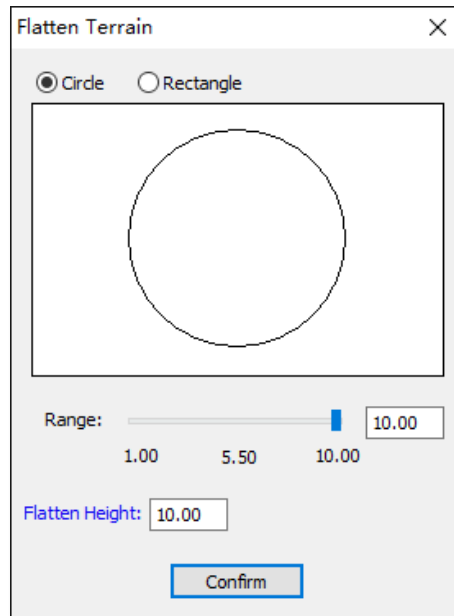
Click on an undefined plane on the terrain and drag the mouse up or down.

Note: If there are sharp edges in the stretching process, you can adjust the cell grid size to make it smooth, see “2.2.8 Add Editable Area” for details.

2.2.11 Flatten Terrain

Levels the terrain to the same height within the editable area to create flat ground.

Select "Terrain Tab>Edit Panel >  Flatten Terrain". The dialog box shown below pops up:



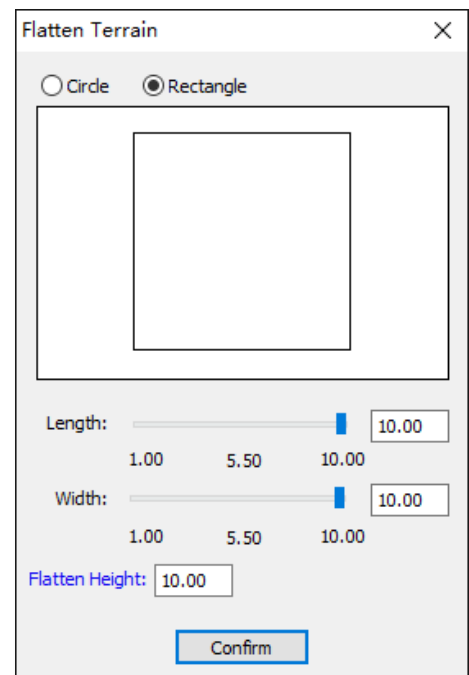
(1) Parameter description:

(1) **Circle:** Levels of terrain in the form of circular ranges.

- Range: The diameter of the area modified by the leveling.
- Flatten Height: Sets the height of the terrain after leveling, or click on the blue font "Flatten Height" and click on any location in the workspace to set the height of that point as the leveling height of the terrain.

(2) **Rectangle:** Levels the terrain in the form of a rectangular range, as shown below:


- Length: The length of the area modified by the pushpin.
- Width: The width of the area modified by the pushpin.
- Flatten Height: Sets the height of the terrain after leveling, or click on the blue font "Flatten Height" and click on any location in the scene to set the height of that point as the leveling height of the terrain



(2) After setting the parameters, click the “Confirm” button and click or drag the mouse in the editable area.

2.2.12 Smoothen Terrain

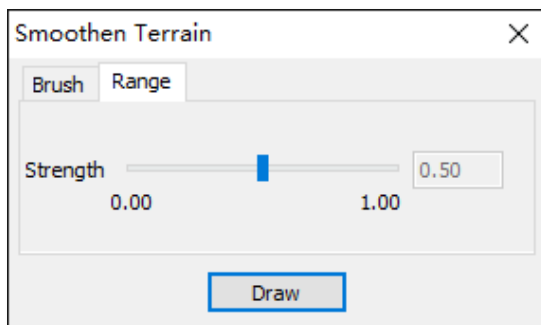
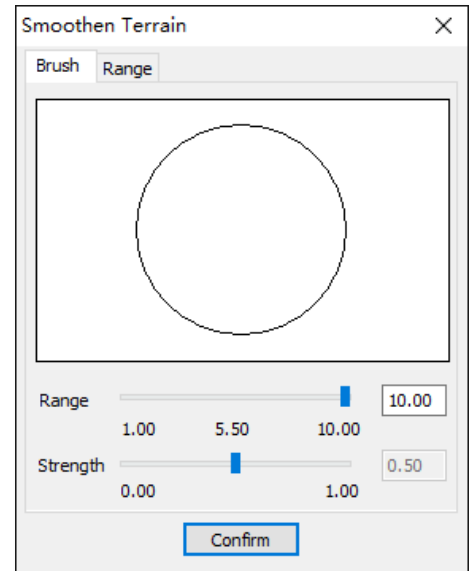
Modifies the terrain evenly within the editable area to make smooth transitions.

Select "Terrain Tab>Edit Panel> Smoothen Terrain". The dialog box shown below pops up:

1. Brush:

- Range: Diameter of the area modified during smoothing.
- Strength: Controls how much the terrain is changed during smoothing.

2. **Range:** Smooths the terrain by drawing a range, the dialog box is shown below:



Drag the slider to modify the smoothing intensity, click the “Draw” button, according to the command line prompts, there are two ways of drawing

- Draw the range directly as a drawn polygon.
- Define the range: Enter D and follow the command line prompts to select an undefined plane or the horizontal plane, or closed polylines. Hold down the left mouse button and drag to smooth the range. Adjust as needed, then right-click to finish the command.

Note: The cell grid size determines how smooth the terrain will be, the smaller the grid size the smoother the terrain will be.

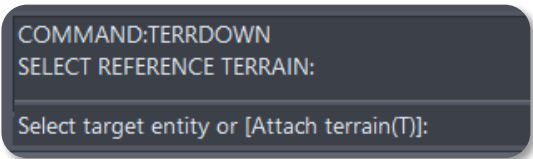
2.2.13 Attach Terrain Surface

Aligns entities within the terrain either horizontally or directly to the terrain surface.

Select "Terrain Tab>Edit Panel> Attach Terrain Surface".

According to the command line prompts, select the reference terrain and the landing object. There are two ways to land:

1. When referencing the terrain, you can either directly select an entity to land it in a horizontal manner, or enter T and press Enter to select the entity, which will then land attached to the terrain, following its contours.



```
COMMAND:TERRDOWN  
SELECT REFERENCE TERRAIN:  
Select target entity or [Attach terrain(T)]:
```

2. When referencing objects other than the terrain, simply select the entity to land it horizontally.

Note:

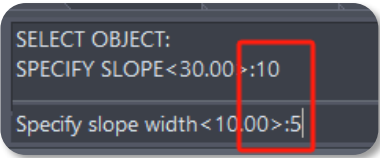
- ① Entities that can follow the terrain's contours when landing include roads, lawns, hardened grounds, library models, undefined planes, and grid surfaces.
- ② This command can be used with or without an editable area.

2.2.14 Generate Slope

2.2.14.1 Generate Slope

Shapes a sloping piece of terrain for entities within the terrain boundaries.

Select "Terrain Tab>Edit Panel> Generate Slope> Generate Slope".



```
SELECT OBJECT:  
SPECIFY SLOPE<30.00 >:10  
Specify slope width<10.00>:5
```

According to the command line prompt, select the entity to generate the berm, enter the values to determine the slope and break width, you can generate the berm.

Note:

- ① Linear entities (lines, isochrones, labels), editable polygons, etc. do not support the generation of slope.
- ② This command can be used with or without an edit area.

2.2.14.2 Generate Slope From Lines

Line entities on the terrain are selected to generate terrain with slopes according to the set parameters.

Select "Terrain Tab>Edit Panel> Generate Slope> Generate Slope From Lines".

```
COMMAND:XSCP
SPECIFY SLOPE<45.00>:10
SPECIFY SLOPE WIDTH<10.00>:5
SELECT THE LINE TO GENERATE SLOPE:
SPECIFY THE ORIENTATION OF THE SLOPE:
```

According to the command line prompts, enter the values to determine the slope and slope width, select the undefined line, and specify the direction of the berm to generate the berm on the specified side.

2.2.15 Import DEM

Imports terrain files in DEM format in Houseplan and generate terrain.

Select "Terrain Tab>Import Panel> Import DEM".

Select the DEM file to be imported and click the "Open" button.

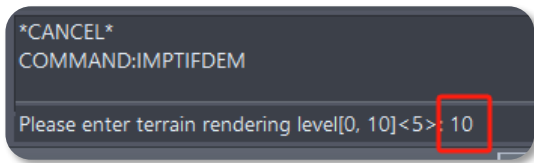
Note:

- ① DEM is a digital elevation model that digitally simulates the surface topography with limited terrain elevation data.
- ② The imported DEM file can be re-edited by the terrain function.

2.2.16 Import TIF

Import terrain files in TIF format into the system to generate terrain.

Select "Terrain Tab>Import Panel> Import TIF".



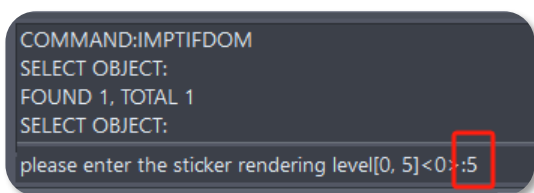
Select the TIF file to be imported, click the “Open” button, according to the command line prompt, enter the value to determine the rendering level, you can complete the TIF import.

Note: Terrain rendering level: Smaller values produce more detailed models, while larger values create more simplified models.

2.2.17 TIF Image

Applies TIF maps as materials to terrain.

Select "Terrain Tab>Import Panel> Import TIF".



Select the TIF map to be imported, click the “Open” button, according to the command line prompts, select the terrain, enter the value to determine the rendering level, you can complete the TIF map.

Note: Terrain rendering level: Smaller values produce more detailed models, while larger values create more simplified models.

2.2.18 Export DEM

Exports of terrain as a file in DEM/TIF format.

Select "Terrain Tab>Export Panel> Export DEM".

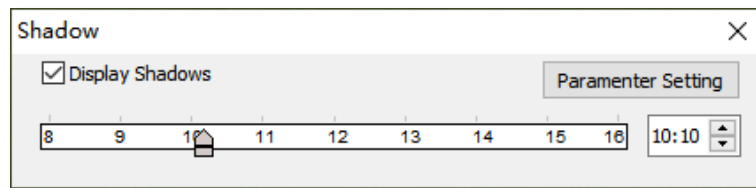
In the pop-up dialog box, select the save location and save type, enter the file name and click the “Save” button to export.

Note: When there is only one piece of terrain in the drawing, you are not prompted to select the terrain and the Export dialog box opens directly.

2.3 Shadow Variation *New*

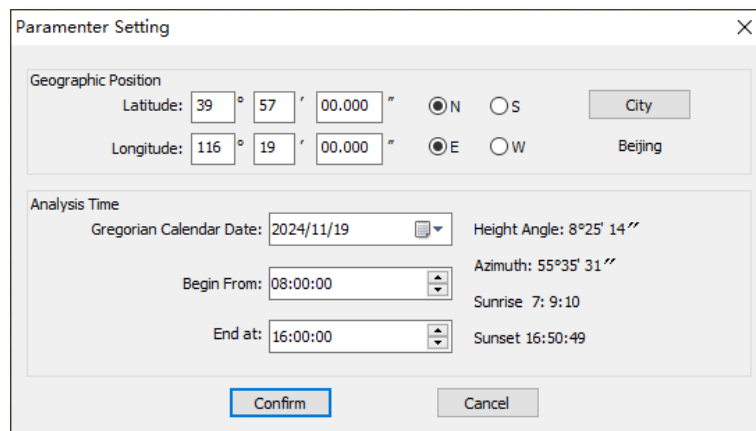
Simulates the dynamic changes in shadow patterns throughout the day to enhance realism and visual variation. Select "Scenes Tab >

Environment Panel >  Shadow Variation".



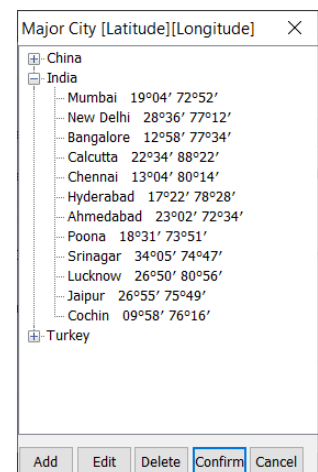
Check “Display Shadows”, drag the slider or modify the time directly to show the shadows of the sunshine at different moments of the day.

Click “Parameter Settings” to set the parameters for performing shadow changes.

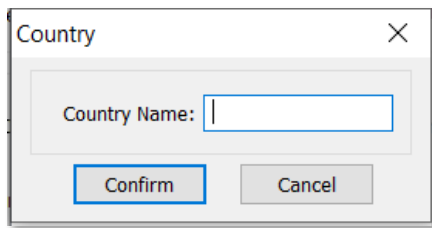


1. **Geographic location:** Sets east longitude and west longitude, south latitude and north latitude value. And you can also click on the “City” button to select a city.

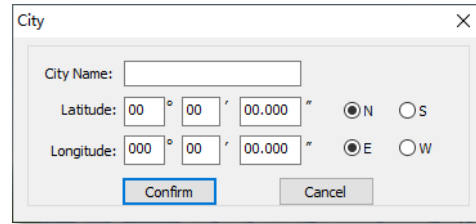
The dialog box provides the latitude and longitude of some countries and their cities, and you can add, edit, or delete cities and their latitude and longitude. After selecting a city and clicking the “Confirm” button, the main dialog box displays the corresponding latitude and longitude.



You can click on the Add button or right click at the blank area to create a new country, then click the Add button or right click on the country to add new city.



A dialog box titled "Country" with a close button (X) in the top right corner. It contains a text input field labeled "Country Name:" and two buttons at the bottom: "Confirm" and "Cancel".



A dialog box titled "City" with a close button (X) in the top right corner. It contains a text input field labeled "City Name:", two rows of latitude and longitude input fields (each with degree, minute, and second sub-fields), and radio buttons for North/South and East/West. It also has "Confirm" and "Cancel" buttons at the bottom.

- New: Creates new country or city.
- Edit: Edits the city name and location.
- Delete: Deletes the city or country.

3. **Analysis time:** Sets a day and a time period in the calendar day.

- Gregorian Calendar Date: Select the date.
- Begin from: Sets the sun variation begin time.
- End at: Sets the sun variation end time.

Note:

- ① Height Angle and Azimuth Angle: The Height angle (altitude angle) is the angle between direct sunlight and the horizontal plane. The azimuth angle is the angle between the horizontal projection of direct sunlight and the south direction. It is 0° when facing south and negative before noon.
- ② Begin From and End At: Calculates the solar altitude and azimuth angles automatically based on the specified latitude, longitude, and date, determining the sunrise and sunset times accordingly.

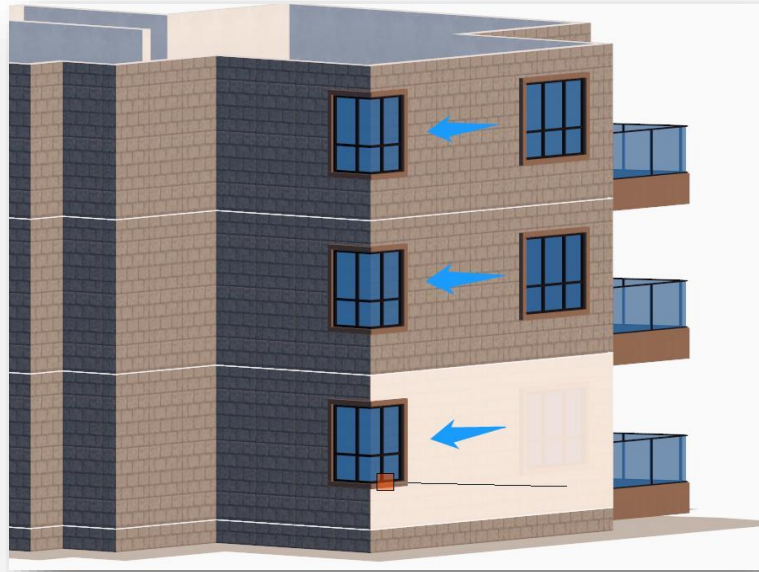
2.4 Edit Components *New*

2.4.1 Move Components

Changes the position of components like windows, doors, awnings and stairs on the building.

Select "Home Tab > Building Panel >  Move Components".

Select the component and press Enter, then drag the mouse or enter the distance from the specified base point to move them.



Note:

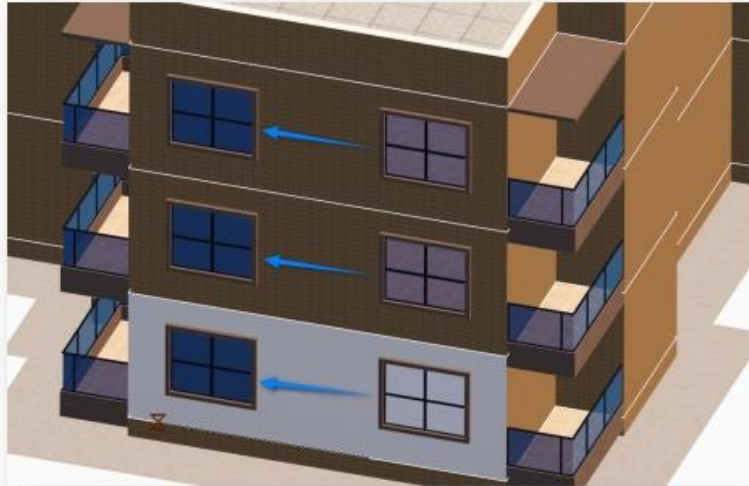
- ① Moving elements supports the selection of balconies, windows, doors, awnings, outdoor stairs, steps along the line and area layering.
- ② When specifying the base point, the component shall be specified on the building's vertical plane.
- ③ When moving a component, the component moves along the side vertical plane of the building.

2.4.2 Copy Components

Copies the building component and insert the copy at a suitable location on the building.

Select "Home Tab > Building Panel >  Edit Components >  Copy Components"

Select building components and specifying the base point, insert a single component directly at the specified location, or type L to insert a column of components at the specified location.



Note: Copy components tool supports selecting balconies, windows, doors, awnings, outdoor stairs, other components, stairs along the line and outside wall region, etc.

2.4.3 Mirror Components

Mirrors building components and insert copies at appropriate locations on the building.

Select "Home Tab > Building Panel >  Edit Components >  Mirror Components " .

Select the building component, specify the position of the axis of symmetry, and then follow the prompts on the command line to confirm whether to delete the source object.



Note:

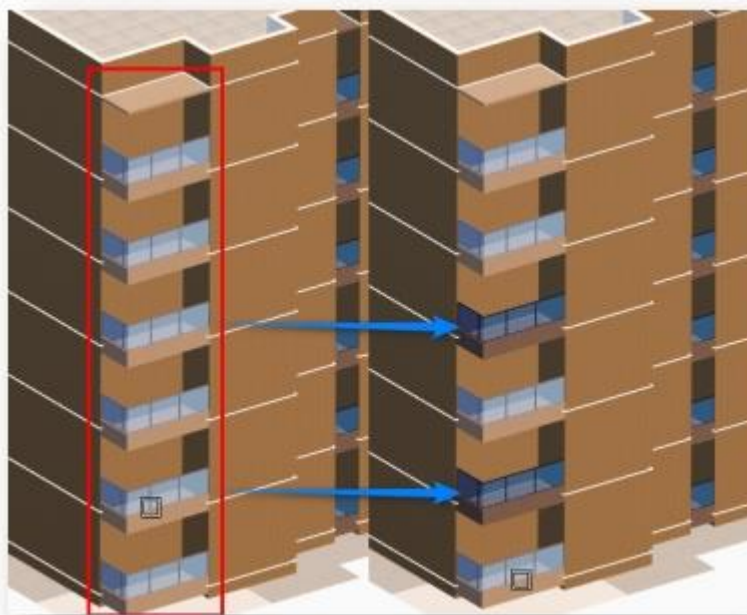
- ① Mirror components tool supports the selection of balconies, windows, doors, awnings, outdoor stairs, other components, stairs along the line and outside wall region, etc.
- ② Mirrors can only be generated on the face or opposite face of the component.

2.4.4 Separate Components

Splits a column or group of building components into a single component or groups of components.



Select "Home Tab > Building Panel >  Edit Components >  Separate Components” .

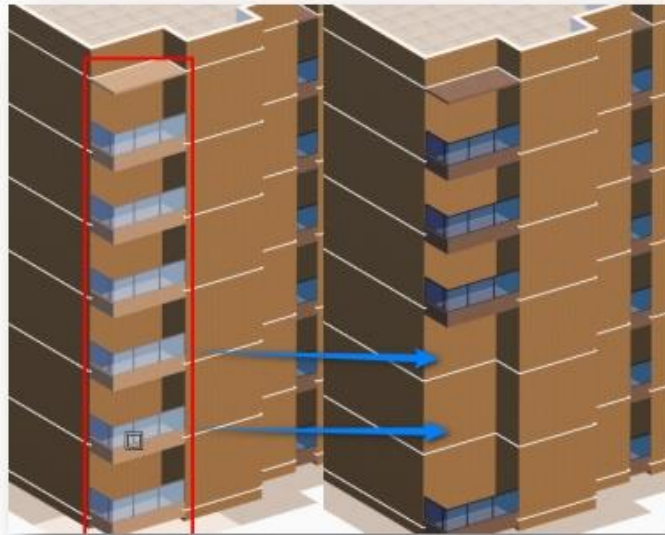
Select the components you want to singly divide.



Note: Separate components tool supports the selection of balconies, windows, doors, awnings, other components, etc.

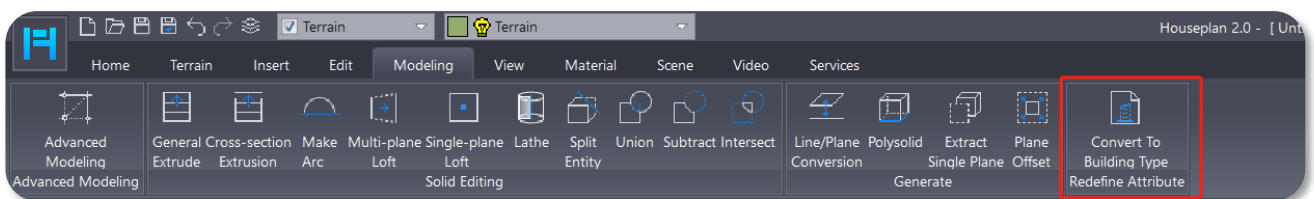
2.4.5 Delete Components

Deletes building components individually. Select "Home Tab > Building Panel >  Edit Components >  Delete Components" and select the components to be singled out for deletion.



Note: Delete components tool supports the selection of balconies, windows, doors, awnings, and other components.

2.5 Convert To Building Type *New*



Defines and attributes non-specialized entities and externally imported models as specialized building entities.

Select "Modeling Tab > Redefine Attribute Panel >  Convert To Building Type".

Select non-specialized entities or externally imported models, right-click to end definition.

Delete entities converted to buildings:

- When only one object is converted, left click on the mouse to select the object and click the "Delete" button on the

keyboard to delete the entity.

- When converting multiple objects at the same time, if you want to delete one of them, you need to press “Ctrl” + “Shift” on the keyboard at the same time and then click the left mouse button to select the object that needs to be deleted, and then click the “Delete” button on the keyboard to delete the entity.

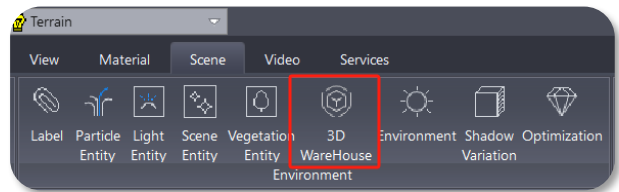
Note:

- ① The definition of particle entities, light entities, plant entities, animated entities buildings are not available.
- ② Supports grouped entity definitions, if there are unsupported entities within the grouping, they are excluded and the remaining entities are defined
- ③ Objects are grouped when multiple object definitions are selected.

2.6 3D Warehouse *New*

Quick access to the Sketchup 3D Warehouse website.

Select "Scene Tab > Environment Panel >  3D Warehouse".

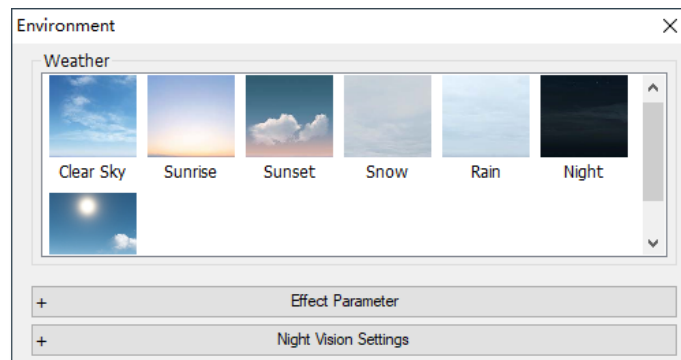


Note: We are not affiliated with Trimble. This button serves as a quick access tool, but users will need a valid SketchUp account to download materials from the 3D Warehouse.

2.7 Environment *Improvement*

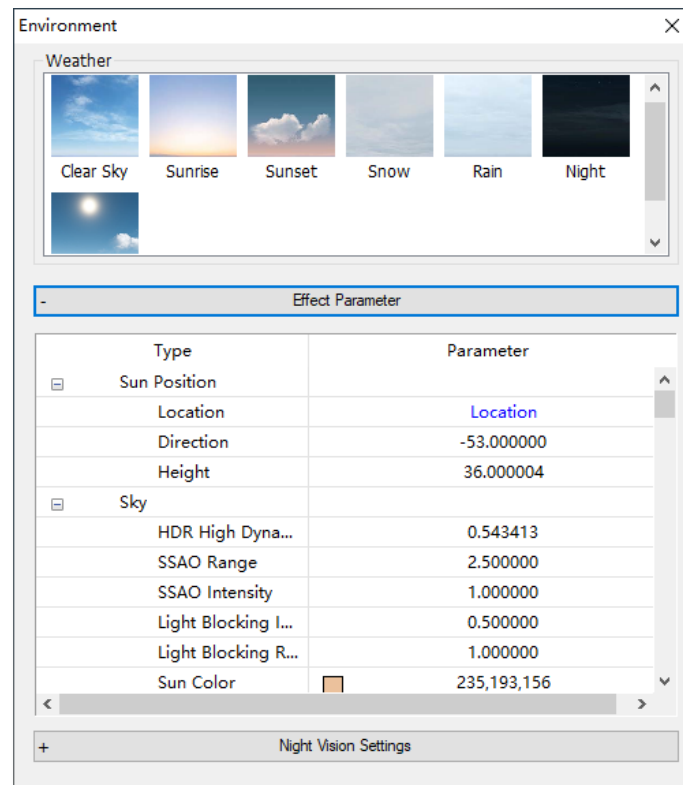
Applies weather, lighting and fog effects to the environment, and support customizing environment parameters.

Select "Scene Tab > Environment Panel >  Environment". The dialog box shown below pops up:



1. **Weather:** Double-click on a weather image to apply the corresponding weather effects.

2. **Effect Parameters:** Click on "Effect Parameters" and the dialog box will look like this:



Solar, ambient, fog effect, volumetric light and HDR parameters can be modified separately to enhance the ambient effect.

(1) Sun Position

- Location: Click on the blue font to quickly locate the position of the sun in the scene.
- Direction/Height: Adjusts the sun's direction and height by entering values or dragging the slider. When shadows are enabled, these adjustments will change how the shadows look.

(2) Sky

- HDR High Dynamic Range Factor: Adjusts the brightness and color range using HDR technology for more realistic and detailed visuals. Enter a value or drag the slider to adjust.
- SSAO Range/SSAO Intensity: Screen Space Ambient Occlusion (SSAO) enhances shadow details and depth by simulating how light is occluded between objects. Adjust the range and intensity by entering a value or dragging the slider.
- Light Blocking Intensity/Light Blocking Radius: Controls how much light is blocked in shading techniques like SSAO. Use the slider or enter a value to adjust.
- Sun Color: Sets the sunlight color. Select a color directly from the color panel.
- Sun Color Multiplier: Adjusts the brightness of the sunlight color. Use the slider or enter a value to modify.

- Sun Specular Multiplier: Controls the intensity of reflections (highlights) caused by sunlight on surfaces. Adjust with the slider or by entering a value.
- Sky Color: Defines the color of the sky. Choose a color directly from the color panel.
- Sky Color Multiplier: Adjusts the brightness of the sky color. Use the slider or enter a value to make changes.
- Ground Ambient Light Color: Defines the ambient light reflected from the ground, which affects the scene's overall tone. Choose a color from the color panel.
- Ground Ambient Light Color Multiplier: Adjusts the intensity of the ground ambient light. Enter a value or use the slider to modify.
- Minimum Ambient Light Height: Specifies the lowest height at which ambient light has an effect. This parameter controls vertical light distribution, simulating base lighting for terrain, buildings, or other scene elements under natural conditions. Adjust with the slider or by entering a value.
- Maximum Ambient Light Height: Specifies the highest height at which ambient light influences the scene. This parameter defines vertical light distribution, ensuring realistic and precise lighting effects. Adjust by entering a value or using the slider.

(3) Cloud

- Sun Influence: Controls how much sunlight affects the clouds in the scene. Adjust by entering a value or using the slider.
- Sky Influence: Controls how much skylight affects the clouds in the scene. Adjust by entering a value or using the slider.
- Custom Sun Color: Allows you to customize the color of sunlight affecting the clouds. Select a color directly from the color panel.
- Custom Sun Color Multiplier/Influence: Adjusts the intensity of the custom sunlight color's effect on the clouds. Modify by entering a value or dragging the slider.
- Custom Sky Color: Allows you to customize the sky color affecting the clouds. Choose a color from the color panel.
- Custom Sky Color Multiplier/Influence: Adjusts the intensity of the custom sky color's effect on the clouds. Modify by entering a value or dragging the slider.

(4) Fog

- Fog Color (Bottom): Defines the color of the fog starting at ground level, typically used to simulate low-altitude fog. Choose a color from the color panel.
- Fog Color (Bottom) Multiplier: Adjusts the intensity of the bottom fog color. Higher values make the color more prominent. Enter a value or drag the slider to adjust.
- Fog Height (Bottom): Sets the starting height of the bottom fog. Determines where the fog begins to appear in the scene.

Enter a value or drag the slider to adjust.

- Fog Density (Bottom): Controls the thickness of the bottom fog. Higher density reduces visibility. Adjust by entering a value or using the slider.
- Fog Color (Top): Defines the color of the fog near the sky, often used for a gradient effect when combined with the bottom fog color. Choose a color from the color panel.
- Fog Color (Top) Multiplier: Adjusts the intensity of the top fog color. Higher values make it more visible. Enter a value or drag the slider to modify.
- Fog Height (Top): Sets the maximum height of the top fog. Determines how far the fog reaches upward. Adjust by entering a value or using the slider.
- Fog Density (Top): Controls the thickness of the fog at higher altitudes. Adjust by entering a value or dragging the slider.
- Color Height Offset: Adjusts the transition point for the fog color change between bottom and top, creating a natural gradient. Modify using a value or slider.
- Radial Size: Defines how the fog spreads radially around a center point. Adjust by entering a value or dragging the slider.
- Radial Foliage: Adjusts fog behavior around vegetation, emphasizing or reducing its effect on trees, grass, etc. Modify using the slider or a value.
- Final Density Clamp: Limits the maximum fog density to prevent it from becoming overly thick and obscuring visibility. Adjust by entering a value or using the slider.
- Global Density: Sets the overall fog concentration throughout the scene, affecting all other density-related parameters. Adjust using a value or slider.
- Slope Start: Defines where fog begins to appear on inclined surfaces like hillsides. Adjust by entering a value or using the slider.
- Slope End: Specifies where the fog effect stops on inclined surfaces. Modify with a value or slider.
- Slope Weight: Controls how strongly the fog changes along slopes, affecting its visibility in sloped regions. Adjust by entering a value or dragging the slider.

(5) Skylight

- Sun Intensity: Adjusts the brightness of sunlight in the scene, significantly impacting overall lighting. Modify by entering a value, dragging the slider, or selecting a color from the color panel.
- Sun Intensity Multiplier: Fine-tunes the effect of sunlight intensity. This parameter multiplies the base intensity for more precise control. Enter a value or drag the slider to adjust.
- Mie Scattering: Simulates light scattering by larger atmospheric particles like water droplets or dust, creating a halo

effect around the sun and hazy conditions. Adjust using a value or slider.

- Rayleigh Scattering: Models light scattering by small particles (e.g., air molecules). Responsible for blue skies and red sunsets by scattering shorter wavelengths like blue light more efficiently. Enter a value or drag the slider to adjust.
- Solar Anisotropy Factor: Controls the directionality of sunlight scattering. Higher values simulate more direct and concentrated sunlight. Adjust by entering a value or using the slider.
- Wavelength (R): Adjusts the scattering of red light in the atmosphere, influencing the sky's reddish tones. Modify by entering a value or dragging the slider.
- Wavelength (G): Controls the scattering behavior of green light in the atmosphere, affecting overall sky coloration alongside other wavelength parameters. Enter a value or drag the slider to adjust.
- Wavelength (B): Determines how blue light scatters, significantly impacting the sky's blue appearance. Adjust using a value or slider.

(6) HDR

- Film Curve Shoulder Scale: Adjusts the compression of highlights to preserve detail in bright areas and prevent overexposure. Higher values soften the transition in highlights. Modify by entering a value or dragging the slider.
- Film Curve Midtones Scale: Controls brightness and contrast in mid-tones, enhancing details in the medium brightness range. Adjust using the slider or by entering a value.
- Film Curve Toe Scale: Alters the appearance of shadow areas, either improving dark details or enhancing shadow depth. Enter a value or drag the slider to adjust.
- Film Curve White Point: Defines the pure white point in an image, impacting overall brightness and contrast, especially in bright scenes. Adjust by entering a value or using the slider.
- HDR Saturation: Modifies overall color saturation. Higher values make colors more vibrant, while lower values reduce saturation, making the image appear grayed out. Adjust via the slider or by entering a value.
- HDR Contrast: Adjusts overall image contrast. Higher contrast intensifies the difference between light and dark, while lower contrast flattens the image. Modify by entering a value or using the slider.
- Color Balance: Changes the overall tonal balance to correct color casts or create specific visual effects (e.g., adding blue for a cooler tone or red for warmth). Adjust directly using the color panel.

(7) Volumetric Lighting

- Sun Ray Attenuation: Adjusts how much sunlight fades as it passes through a medium, controlling the dimming effect over distance. Modify by entering a value or dragging the slider.
- Custom Sun Ray Color: Allows you to set a custom color for sun rays, selected directly from the color panel.

- Sun Ray Color Weight: Determines the intensity of the custom sun ray color's effect on the overall lighting. Adjust using the slider or by entering a value.
- Sun Ray Visibility: Controls how visible the sun rays are within the scene. Adjust by entering a value or dragging the slider.

(8) Color

- Saturation: Adjusts the vibrancy of colors. Increasing saturation makes colors more vivid, while decreasing it makes them appear faded or grayscale. Modify using the slider or by entering a value.
- Contrast: Changes the difference between the brightest and darkest areas of the image to enhance or reduce the image's depth. Adjust with the slider or by entering a value.
- Brightness: Controls the overall lightness or darkness of the image. Adjust using the slider or by entering a value.
- Hue: Shifts the base color tones of the entire image, allowing for creative or corrective color changes. Adjust by entering a value or using the slider.

(9) Rain

- Rain Effect: Enables or disables the rain effect. Use the drop-down menu to toggle it on or off.
- Rainfall Intensity: Adjusts the amount and strength of rainfall in the scene. Modify by entering a value or dragging the slider.
- Puddles: Controls the appearance and impact of water accumulation on surfaces. Adjust using the slider or by entering a value.
- Reflection: Modifies the intensity of reflections caused by rain on surfaces. Adjust by entering a value or dragging the slider.

(10) Snow

- Snow Effect: Enables or disables the snow effect. Use the drop-down menu to toggle it on or off.
- Snowfall Intensity: Adjusts the density and strength of snowfall within the scene. Modify using the slider or by entering a value.

(11) Shadow

- Depth Map: A texture storing the distance between objects and the light source, used in shading calculations to determine if a pixel is in shadow, ensuring accurate shadow rendering. Adjust by entering a value or dragging the slider.
- Grading: Adjusts the brightness or color of shadowed areas, useful for achieving specific visual styles or enhancing shadow details. Modify by entering a value or using the slider.
- CSM0 Offset: Adjusts the depth offset of the first Cascade Shadow Map to minimize Z-fighting and reduce artifacts.

Modify by entering a value or dragging the slider.

- CSM0 Slope Offset: Fine-tunes the offset based on surface slopes to stabilize shadows on various terrains. Adjust using the slider or by entering a value.
- CSM0 Distance: Defines the distance range covered by the first cascading shadow map. Adjust by entering a value or using the slider.
- CSM1 Offset: Adjusts the depth offset for the second Cascade Shadow Map to prevent artifacts. Modify using the slider or by entering a value.
- CSM1 Slope Offset: Adjusts the slope-based offset for the second Cascade Shadow Map. Adjust using the slider or by entering a value.
- CSM1 Distance: Defines the distance range covered by the second cascade shadow. Adjust by entering a value or dragging the slider.
- CSM2 Offset: Adjusts the depth offset for the third Cascade Shadow Map to minimize artifacts. Modify using the slider or by entering a value.
- CSM2 Slope Offset: Fine-tunes the slope offset for the third Cascade Shadow Map. Adjust using the slider or by entering a value.
- CSM2 Distance: Specifies the distance range covered by the third cascade shadow. Adjust by entering a value or using the slider.
- CSM3 Offset: Adjusts the depth offset for the fourth Cascade Shadow Map to reduce artifacts. Modify by entering a value or dragging the slider.
- CSM3 Slope Offset: Adjusts the slope offset for the fourth Cascade Shadow Map. Modify by entering a value or using the slider.
- CSM3 Distance: Defines the distance range covered by the fourth and final cascading shadow map. Adjust by entering a value or dragging the slider.
- Exponential Split Weight: Controls the spacing between cascade levels using exponential weights, affecting how shadows transition between cascades. Adjust by entering a value or using the slider.
- Distance: Sets the maximum distance covered by global shadows. Beyond this range, objects will not cast shadows. Adjust by entering a value or dragging the slider.

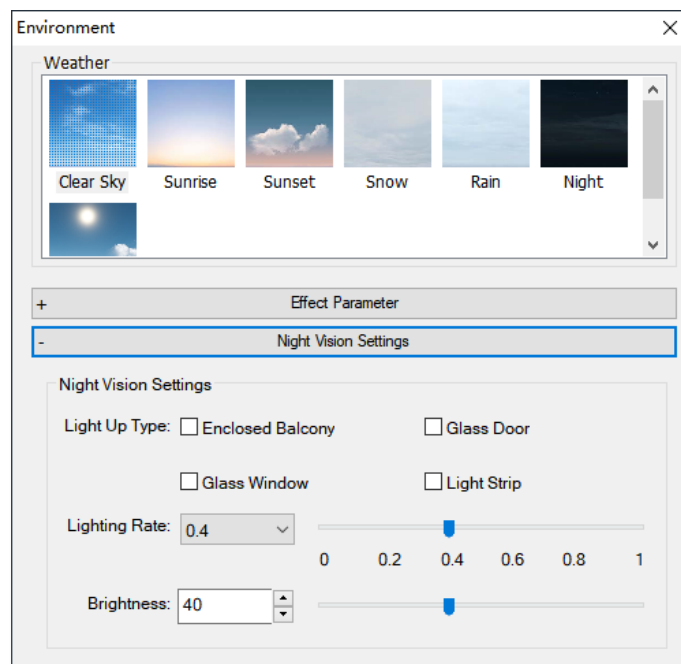
(12) Deferred Lighting

- Lighting: Controls the overall lighting settings during the deferred lighting process. Toggle this option by selecting "on" or "off" from the drop-down menu.

(13) Show Setting

- SMAA: Reduces edge jaggedness (aliasing) in computer graphics, enhancing the visual quality of images. Toggle this option by selecting "on" or "off" from the drop-down menu.

3. **Night vision settings:** Click on "Night vision settings" and the dialog box will look like this:

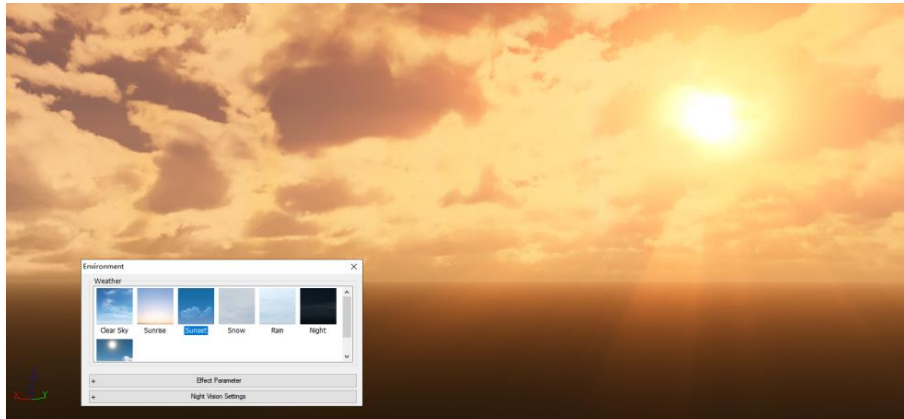


The lighting category, lighting rate and brightness can be modified separately to adjust the lighting effect in night mode.

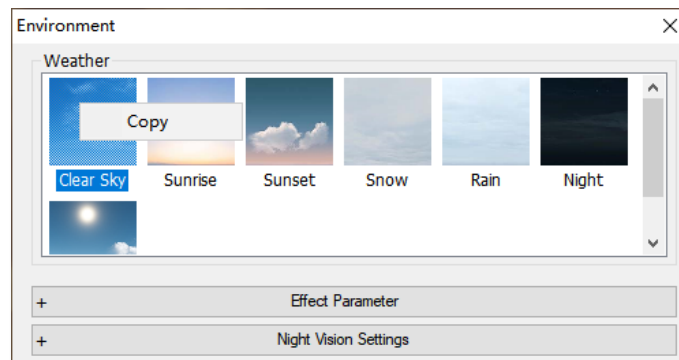
- Light up type: Controls the lighting status of the corresponding category in the scene.
- Lighting rate: Controls the number of entities lit in the scene. The higher the value of the lighting rate, the more entities are lit, and vice versa.
- Brightness: Only affects the brightness of the lit solid material.

4. Operating Instructions

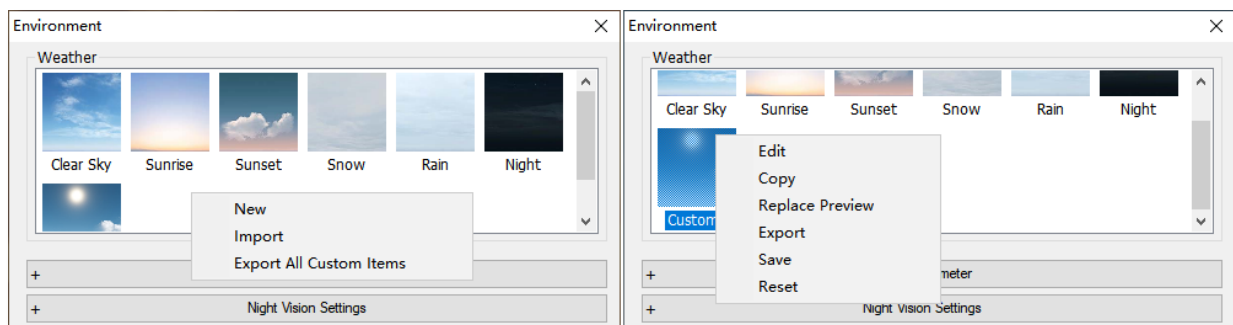
- Switching environments: Double-click the different environment preview images under the Weather module to switch the corresponding environment effect in the scene, as shown in the following figure:



The first six environments are system default environments, which only support modifying effect parameters and copying. Right-click on the preview image to expand the menu, as shown below:



Click the right mouse button in a blank area or customized environment to display the More Functions menu, as shown in the following figure:

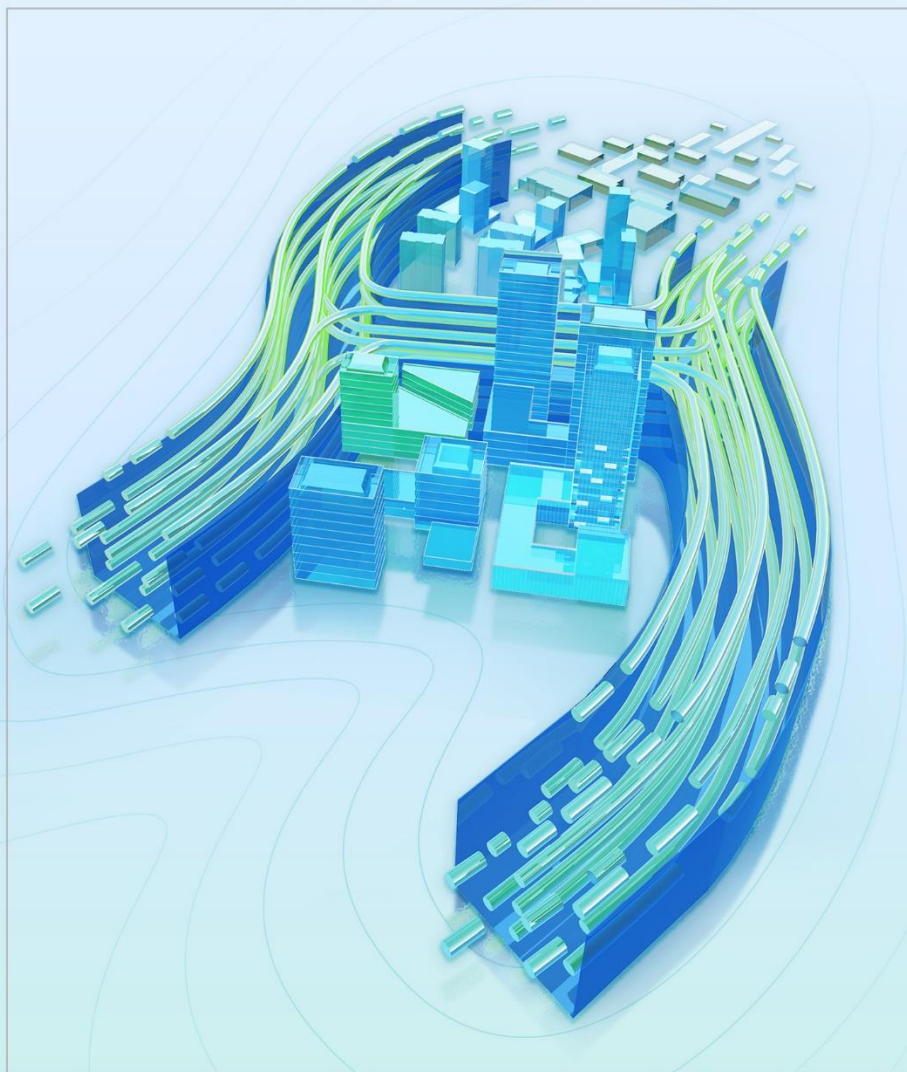


- Copy: Duplicates the selected custom environment and places it at the end of the weather preview list.
- New: Creates a new scene using the same effect parameters as the current scene. The current view will serve as the weather's preview image.
- Export: Exports the current weather settings in .epr format.
- Export All Custom Items: Exports all customized environments at once.
- Import: Imports an environment file in .epr format.

- Edit: Allows editing of the name for the environment's preview map.
- Replace Preview: Updates the environment's preview image to reflect the current view.
- Save: Saves any modified effect parameters for the selected weather.
- Reset: Resets the effect parameters for the selected weather to their original values before modification.



Houseplan2.0



■ www.gstarcad.net/houseplan/