



**Elysium  
InfiPoints®**



# **Elysium InfiPoints Operation Manual**

## **Vol.6. Exporting Files for Revit**

February 2023

Elysium Co. Ltd.

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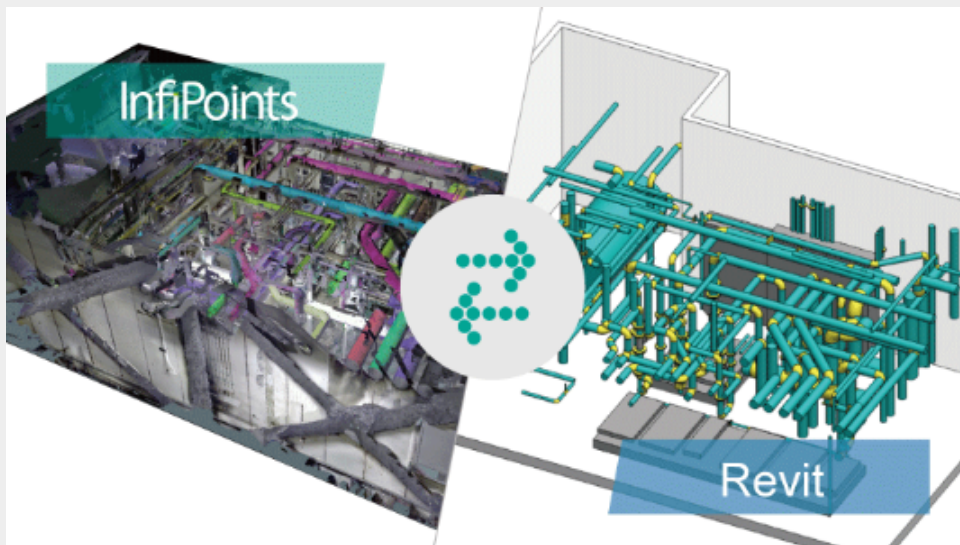
# 1. Introduction

This manual explains how to create an InfiPoints for Revit project file.

InfiPoints for Revit allows you to convert the plane, piping, structure, and duct elements created in InfiPoints to Revit®.

## About InfiPoints for Revit

InfiPoints for Revit is a plug-in for Revit®, a 3D BIM software. By installing this plug-in to Revit®, you can import the intermediate Revit® file (\*.iprvt) exported from InfiPoints.



To create an intermediate Revit® file, a standard license and a Revit® Plug-in option license (IFP-RVT) are required.

This supports data export to Revit 2022® or Revit 2023® only. There is no license required to import an intermediate Revit file into Revit®.

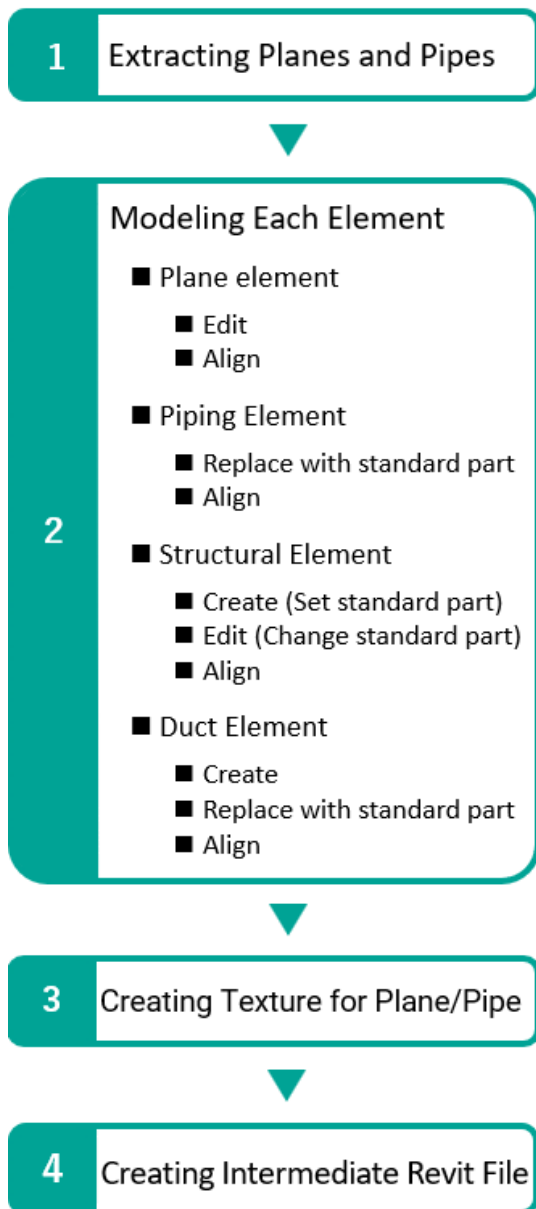


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Revit® is a registered trademark of Autodesk.

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## ■ Flow for Creating an intermediate Revit® File



### Data Creation Flow

1. Extracting Planes and Pipes
2. Modeling Each Element
  - [Plane Element](#)
    - Edit plane element
    - Align plane element
  - [Piping Element](#)
    - Replace piping element with standard part
    - Align piping element
  - [Structural Element](#)
    - Create structural element (Set standard part)
    - Edit structural element (Change standard part)
    - Align structural element
  - [Duct Element](#)
    - Create duct element
    - Replace duct element with standard part
    - Align duct element
3. [Creating Texture for Plane / Pipe](#)
4. [Creating Intermediate Revit File](#)

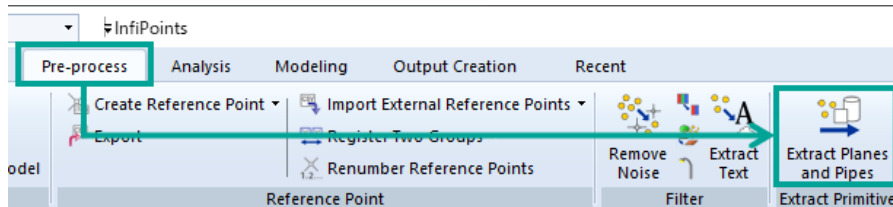


Only "Wall / Floor / Ceiling" of plane texture will be shown when using Revit®.

## 2. Modeling Each Element

Model the elements of plane, piping, structure, and duct you want to convert to Revit®.

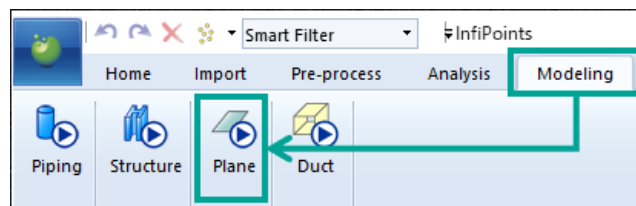
If neither planes nor pipes are extracted, perform [Extract Planes and Pipes] beforehand. Refer to "Extracting Planes and Pipes" in "[Elysium InfiPoints Operation Manual Vol.1. Data Pre-processing](#)" for details.



### 2.1. Plane Element

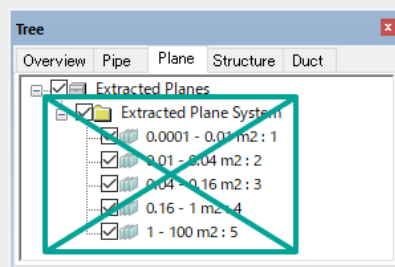
Perform plane modeling based on the automatically extracted plane.

Please refer to "Plane Modeling" in "[Elysium InfiPoints Operation Manual Vol.3. Point Cloud Utilization: Modeling](#)" for details.



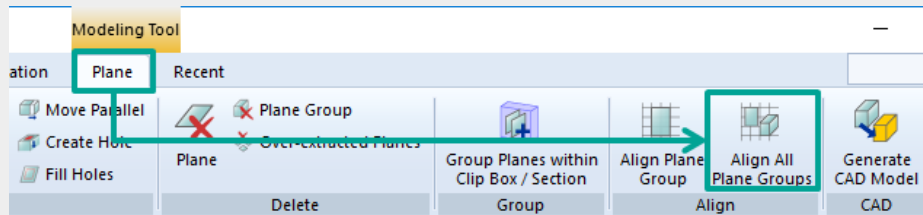
### Caution

- Automatically extracted planes cannot be converted to Revit®. So make sure to perform plane modeling for the planes you want to convert.



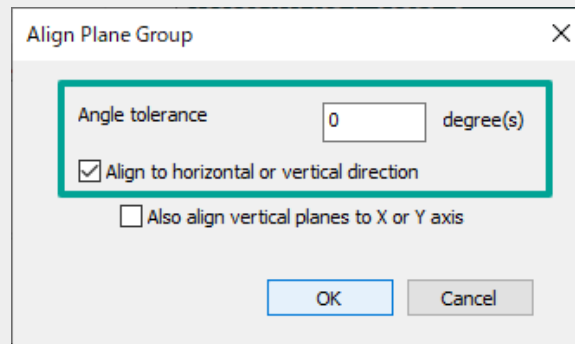
- Only the planes created in InfiPoints (excluding auto-extracted planes) that are rectangular in shape and have four sides can be converted to Revit®.
  - \* Although the geometry of the plane is close to a rectangle, if the plane has more than four sides, such as five or six sides, the plane will not be converted to Revit®.
  - \* When the name of the plane is either "Floor" or "Ceiling," even though the shape is not rectangular, the plane will be converted to Revit®.


- Unaligned planes cannot be converted to Revit®. Please ensure the planes you want to convert to Revit® are aligned vertically or horizontally along the world coordinates.

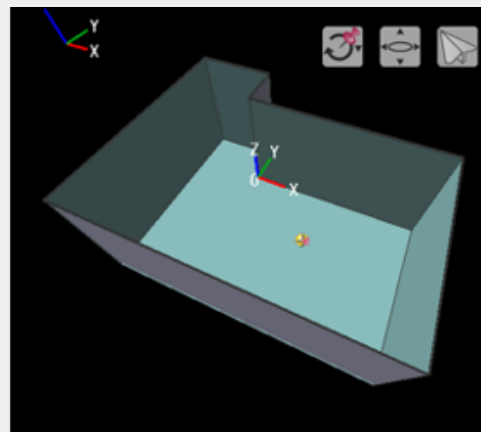
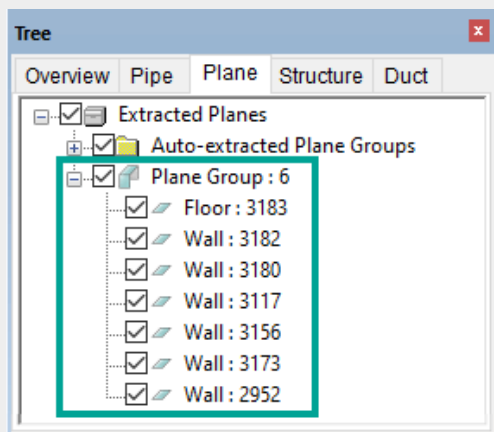


Please refer to [Plane Modeling] > [Aligning Planes] > [Aligning the entire planes within a plane group] in "[Elysium InfiPoints Operation Manual Vol.3 Point Cloud Utilization: Modeling](#)" for details.

\* Enable "Align to horizontal or vertical direction" in the dialog when executing alignment.



- Plane element named "Plane" in the [Tree (Plane)] panel is converted to Revit® as a general model.  
When converting planes as walls and floors to Revit®, it's necessary to connect them beforehand. Select [Plane] tab > [Edit] > [Connect] > [Compose Wall] (  ) in InfiPoints to connect the walls and floors.  
\* Plane named "Ceiling" will be converted as a floor.

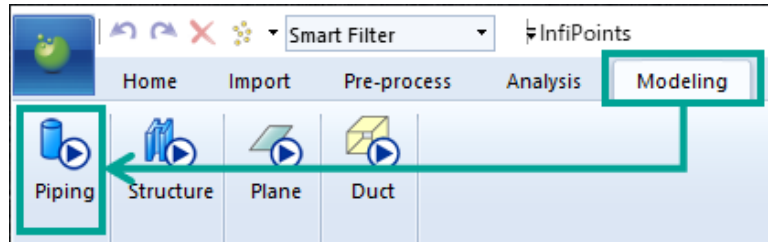


Please refer to [Plane Modeling] > [Editing Planes] > [Connecting Planes (by Composing Wall)] in "[Elysium InfiPoints Operation Manual Vol.3 Point Cloud Utilization: Modeling](#)" for details.

## 2.2. Piping Element

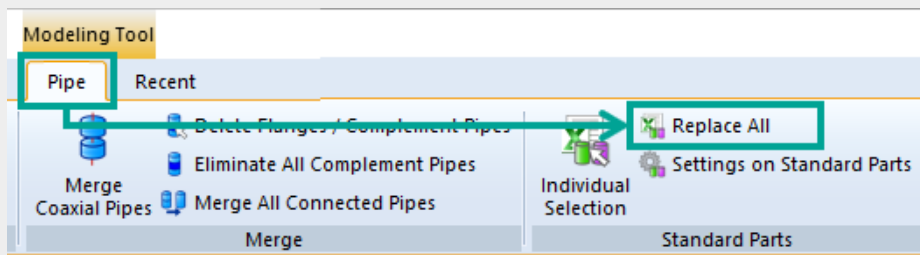
Perform modeling based on automatically extracted piping.

Please refer to "Pipe Modeling" in "[Elysium InfiPoints Operation Manual Vol.3 Point Cloud Utilization: Modeling](#)" for details.



### Caution

- It is recommended to replace the piping elements you want to convert to Revit® with standard parts. Piping elements that have not been replaced with standard parts may not be converted correctly to Revit®.

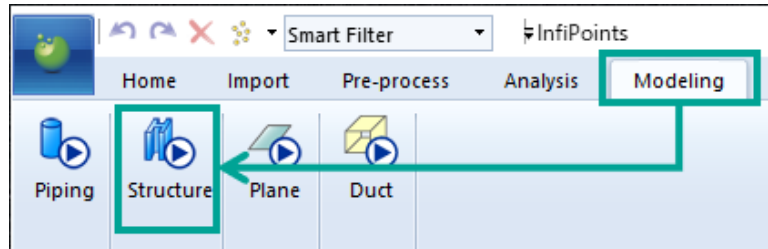


- When the inclination angle of reducer, hopper, elbow, etc. is too steep, an error may occur when importing into Revit®.
- Joint parts and boxes are converted on to Revit separately without any connections. Therefore, even if their positions change on Revit, the position of other parts are not adjusted accordingly.

## 2.3. Structural Element

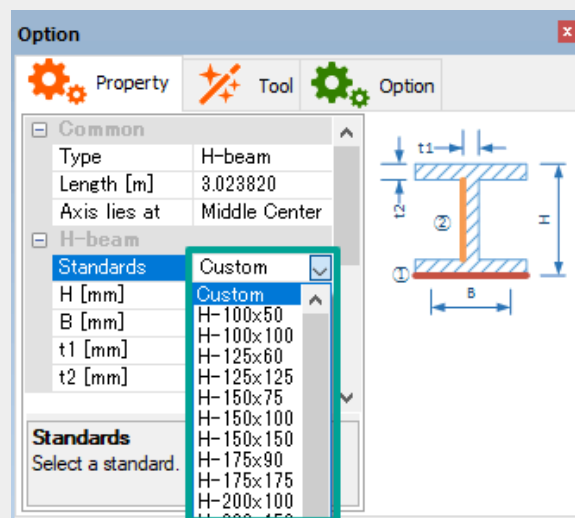
Perform modeling by specifying planes and points to create a structure.

Please refer to "Structure Modeling" in "[Elysium InfiPoints Operation Manual Vol.3 Point Cloud Utilization: Modeling](#)" for details.



### Caution

- It is recommended to replace the structural elements you want to convert to Revit® with standard parts. Structural elements that have not been replaced with standard parts may not be converted correctly to Revit®.



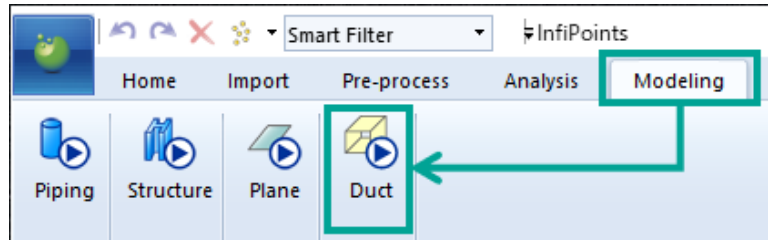
- Please note that user-defined structures are not converted to Revit®.



## 2.4. Duct Element

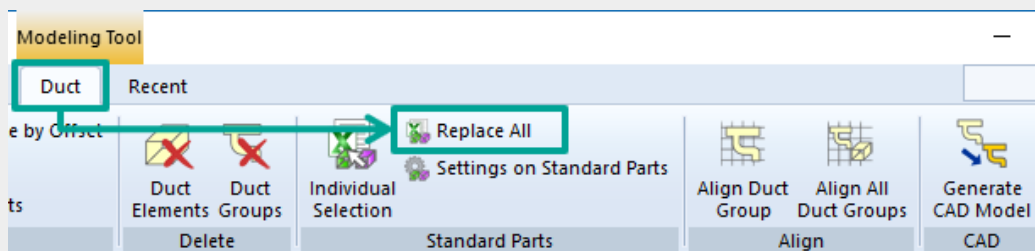
Create a duct based on a plane by modeling.

Please refer to "Duct Modeling" in "[Elysium InfiPoints Operation Manual Vol.3 Point Cloud Utilization: Modeling](#)" for details.



### Caution

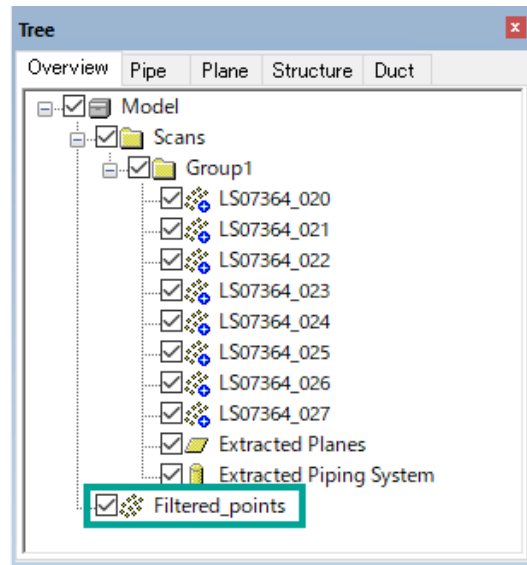
- It is recommended to replace the duct elements you want to convert to Revit® with standard parts. Duct elements that have not been replaced with standard parts may not be converted correctly to Revit®.



## 3. Creating and Editing Texture

Texture images can be created from the point clouds for planes and pipes. You can significantly reduce the view operation of InfiPoints by only displaying the texture without displaying the point cloud.

When using this function, it is recommended to use filtered point cloud data. Please note that if point clouds other than filtered point cloud data are displayed, processing may take a considerable amount of time.



Please Refer to "Extracting Planes and Pipes" in "[Elysium InfiPoints Operation Manual Vol.1. Data Pre-processing](#)" > [Creating Point Cloud Data Optimized for Visualization] for details about creating filtered point cloud data.

### 3.1. Creating Texture Images

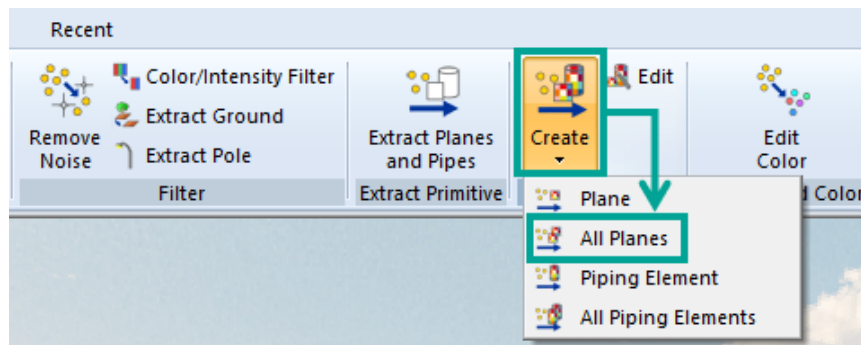
It is possible to create texture images from the point clouds for planes or pipes.

#### 3.1.1. Creating Texture Image from Planes

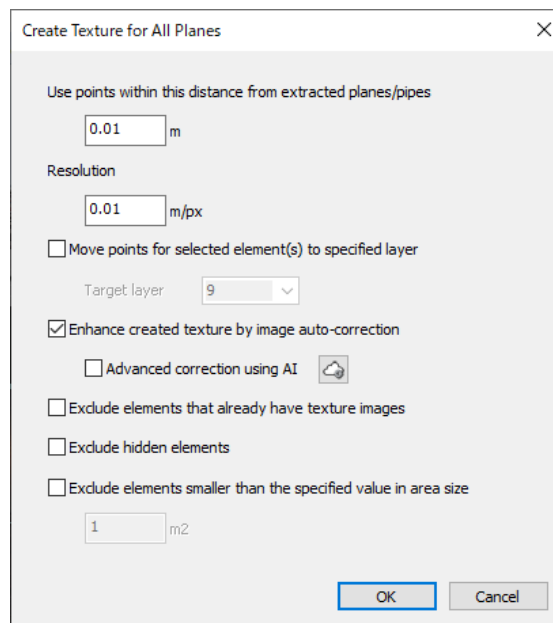


Only "Wall / Floor / Ceiling" of plane texture will be shown when using Revit®.

1. Select [Pre-process] tab > [Texture] > [Create] > [All Planes] (  ).



2. "Create Texture for All Planes" dialog will appear. Specify options such as clearance and resolution, and click [OK].

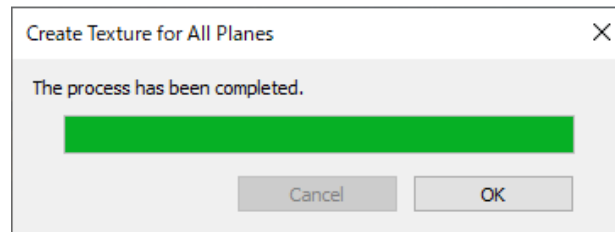
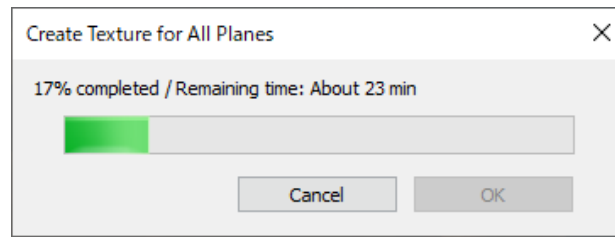


- With clearance, you can specify which area of the point cloud from the plane to use when creating a texture image.
- With resolution, you can specify the actual length that corresponds per pixel of the texture image (detail texture) to be created. The smaller the actual length corresponding per pixel, the higher the resolution.
  - Resolution 0.01 m/px (Left) and 0.001 m/px (Right)

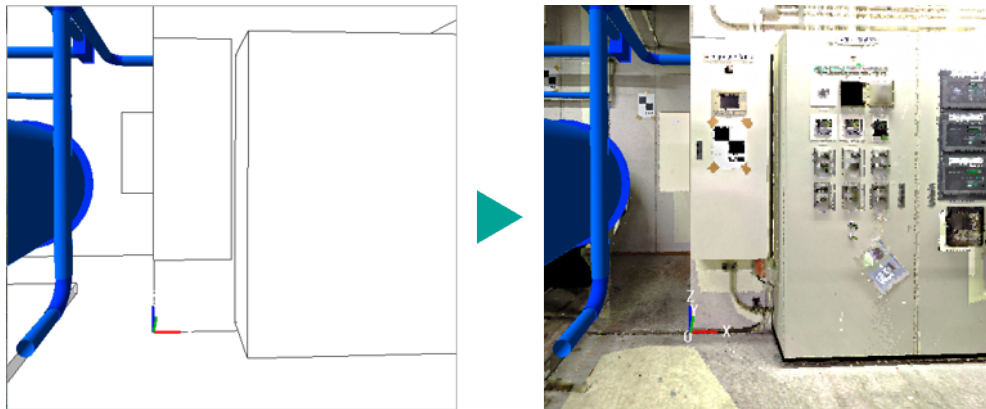



- When "Enhance created texture by image auto-correction" is enabled, the quality of the texture image can be improved automatically. This is effective for areas with low point density.



The process to create texture will start. Required time can be seen in the progress bar. When you are done, click [OK].

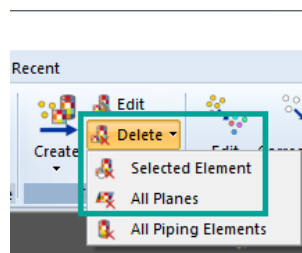


Texture images are created for all the plane elements.




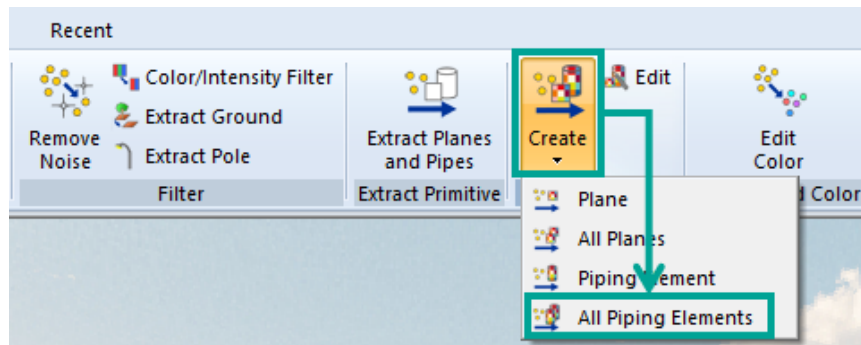
Please note that when you create texture only for the plane element specified in [Plane] (  ) and switch to [Texture], the plane element without texture will be shown in white.

Texture images created on plane elements can be deleted with [Delete] > [All Planes] (  ) or [Selected Element] (  ).

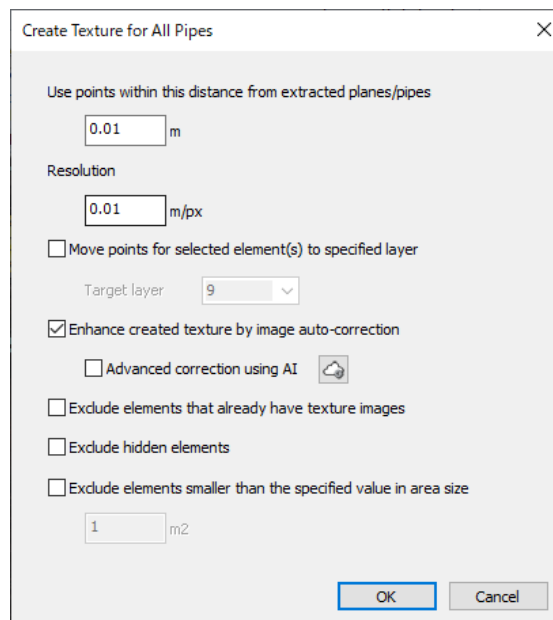


### 3.1.2. Creating Texture Image from Pipes

1. Select [Pre-process] tab > [Texture] > [Create] > [All Piping Elements] (  ).



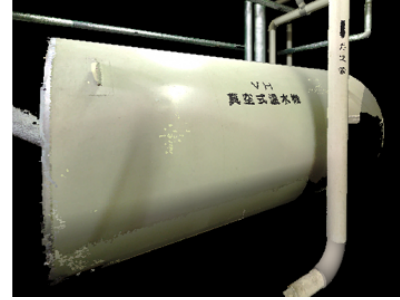
2. "Create Texture for All Pipes" dialog will appear. Specify options such as clearance and resolution, and click [OK].





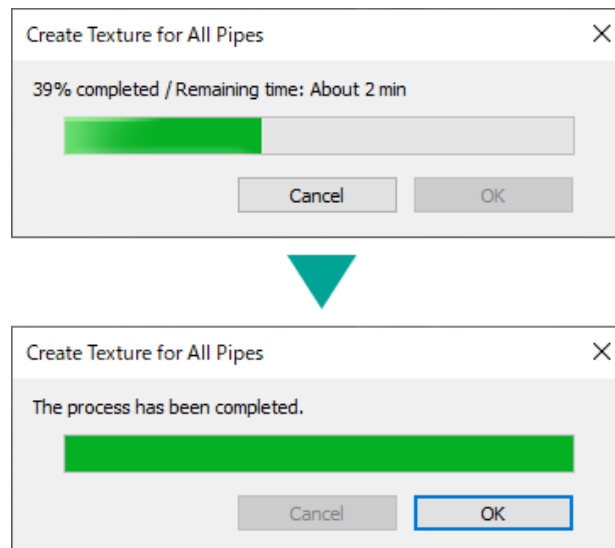
- With clearance, you can specify which area of the point cloud from the pipe's surface to use when creating a texture image.
- With resolution, you can specify the actual length that corresponds per pixel of the texture image (detail texture) to be created. The smaller the actual length corresponding per pixel, the higher the resolution.

- Resolution 0.01 m/px (Left) and 0.001 m/px (Right)

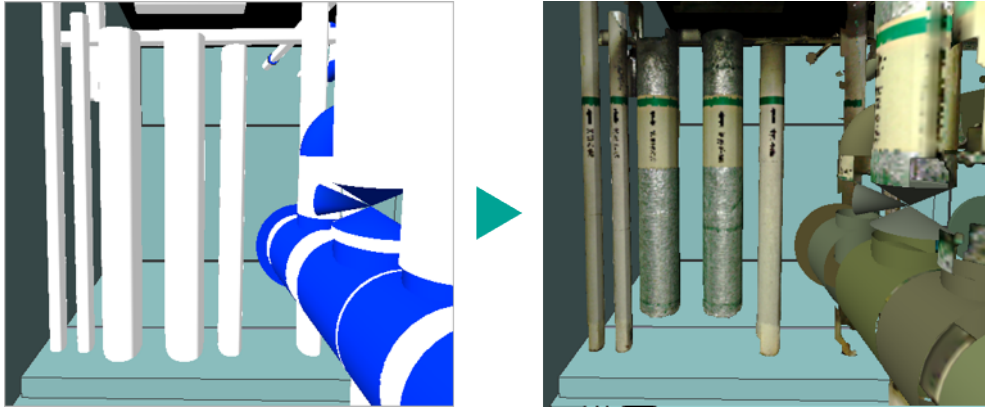


- When "Enhance created texture by image auto-correction" is enabled, the quality of the texture image can be improved automatically. This is effective for areas with low point density.

The process to create texture will start. Required time can be seen in the progress bar. When you are done, click [OK].

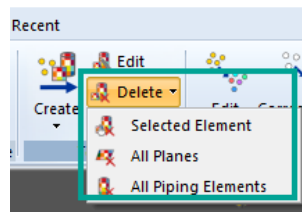


Texture images are created for all the piping elements.



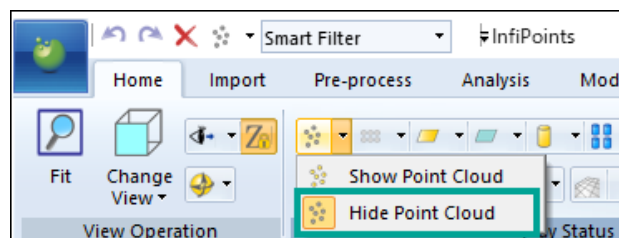
- Please note that "Straight pipe" is the only selection available in [Piping Element] ( ). Specifying only the connection element is not available; however, when you create texture on a straight pipe, adjacent connecting elements will be displayed in a single color similar to the texture of the straight pipe.
- Please note that when you create texture only for the pipe element specified in [Piping Element] ( ) and switch to [Texture], the pipe element without texture will be displayed in white.

Texture images created on pipe elements can be deleted with [Delete] > [All Piping Elements] ( ) or [Selected Element] ( ).

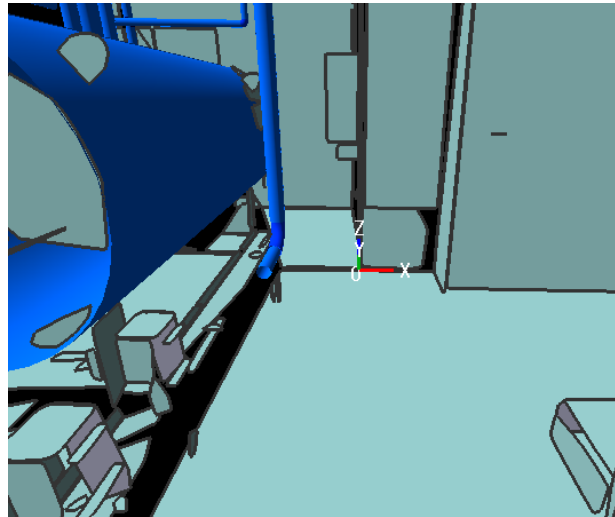


### 3.1.3. Toggling between Default Color and Texture

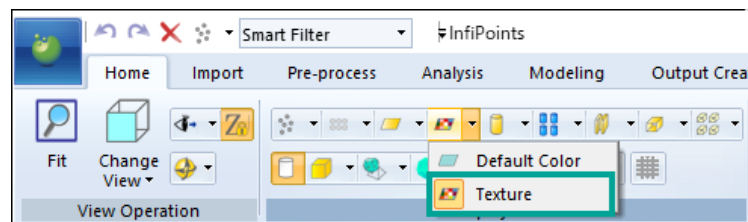
1. Select [Home] tab > [Show / Hide Point Cloud] and click [Hide Point Cloud] ( ).



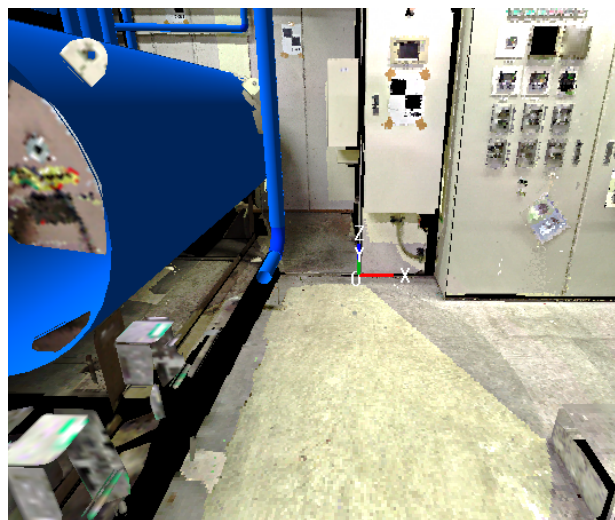
Point cloud will be hidden. At this point, the planes and pipes are shown in the state of default.



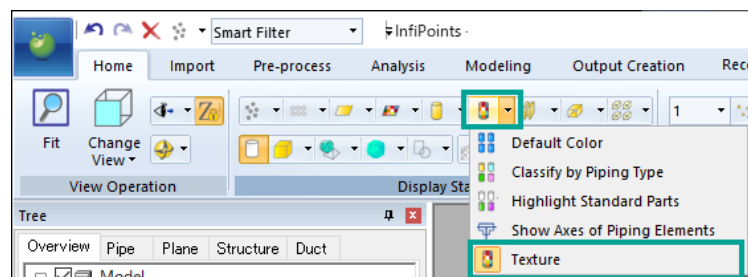
2. Select [Home] tab > [Display Status] > [Display Method of Plane Elements] and click [Texture] (  ).



The plane on which the texture image is being created switches to texture display.

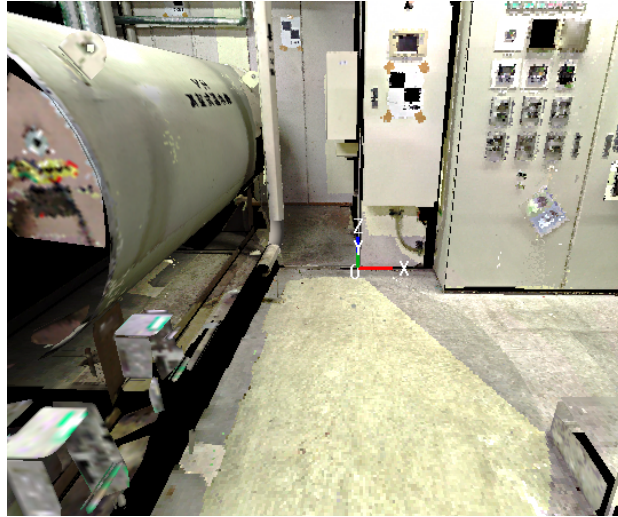


3. Select [Home] tab > [Display Status] > [Display Method of Piping Elements] and click [Texture] (  ).






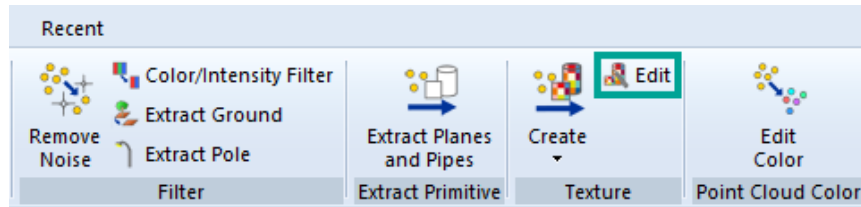
The pipe on which the texture image is being created switches to texture display.




## 3.2. Editing Texture Color

It is possible to correct the hue of texture images created on planes and pipes.

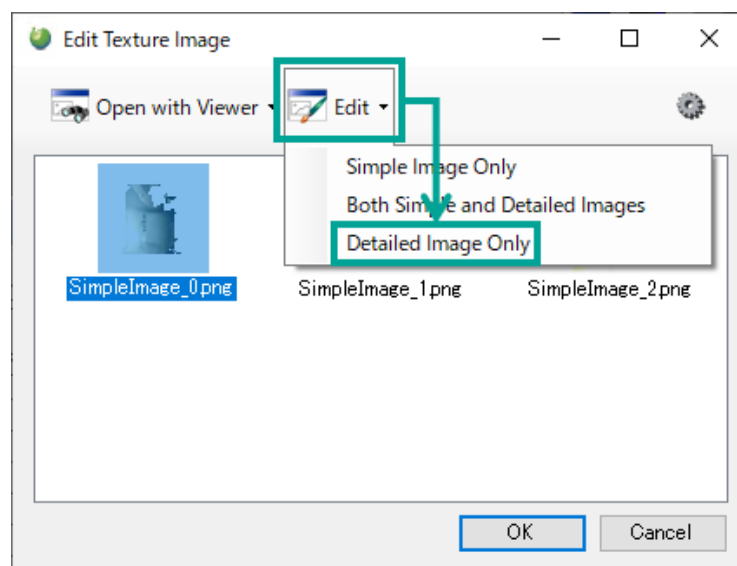
1. Select [Pre-process] tab > [Texture] > [Edit] (  ).





2. On "3D View" window, select a plane element or a piping element whose texture image you want to edit and press [Done] (  ).

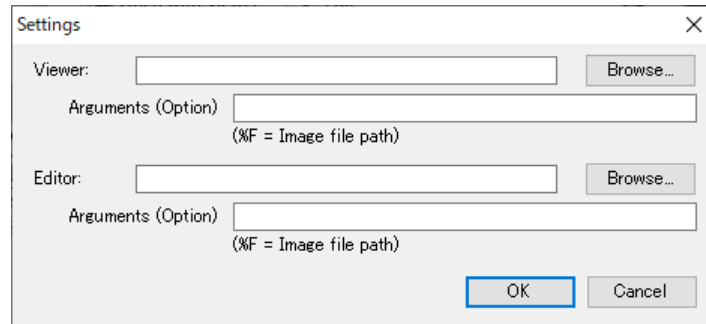


3. "Edit Texture Image" dialog will appear. Specify the preferred image to edit, then select [Edit] > [Detailed Image Only]. To select multiple images, select the images while holding down [Ctrl] or [Shift] key.

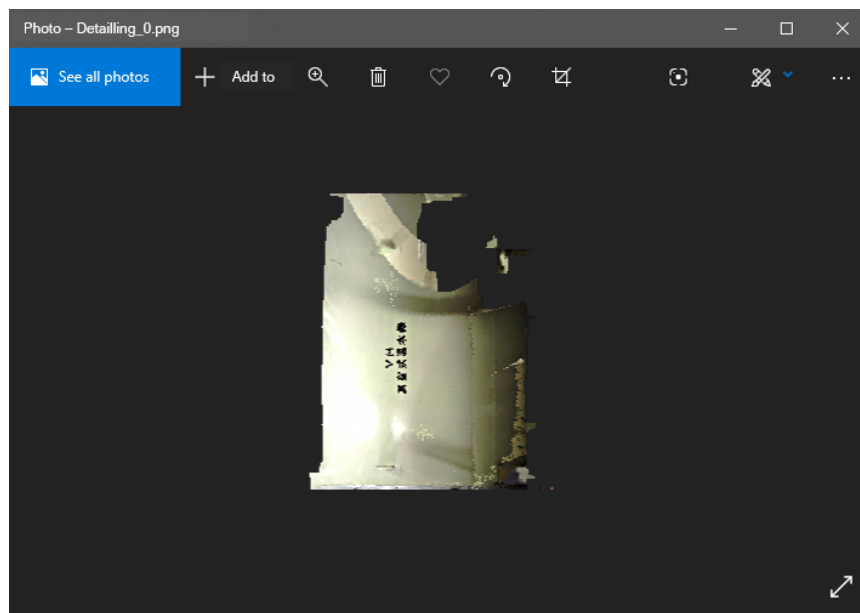




- Confirm the image with the Viewer either by double-clicking the image on the list, or by specifying the image and select [Open with Viewer] (  ).
- Viewer / Editor applications can be changed from [Settings] (  ) at the top right of "Edit Color in Images" dialog.

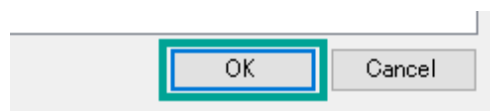


4. Editor will be launched and the image will be displayed. Overwrite the image after correcting the image color.

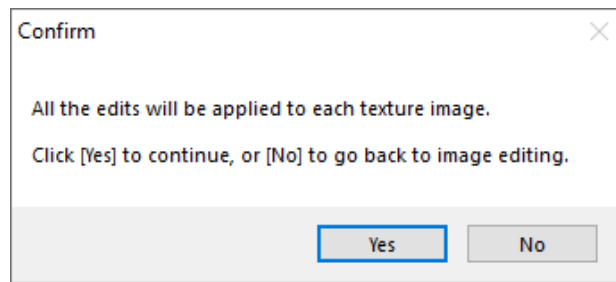


Please ensure to update the edited images by saving them.

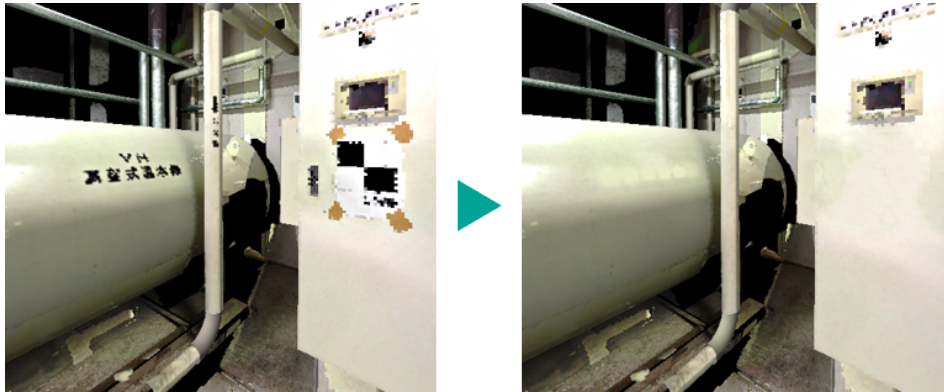
5. In "Edit Texture Image" dialog, click [OK].



6. A "Confirmation" dialog will appear. Click [Yes] to update the texture color to match the color of the edited image.



- Example of removing unnecessary parts from an image




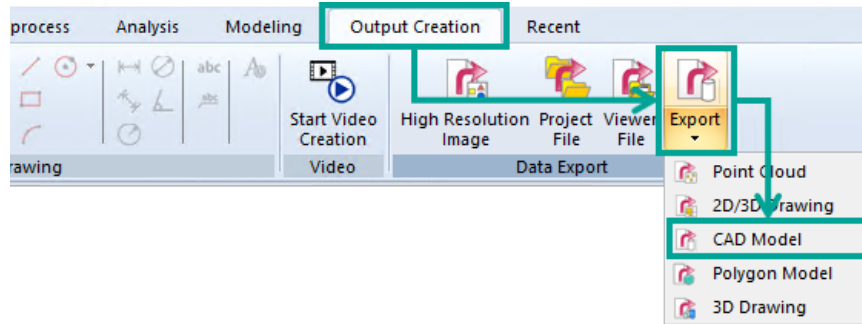
## 4. Creating Intermediate Revit® File

Modeling elements can be exported in an intermediate Revit® file format (\*.iprvt).

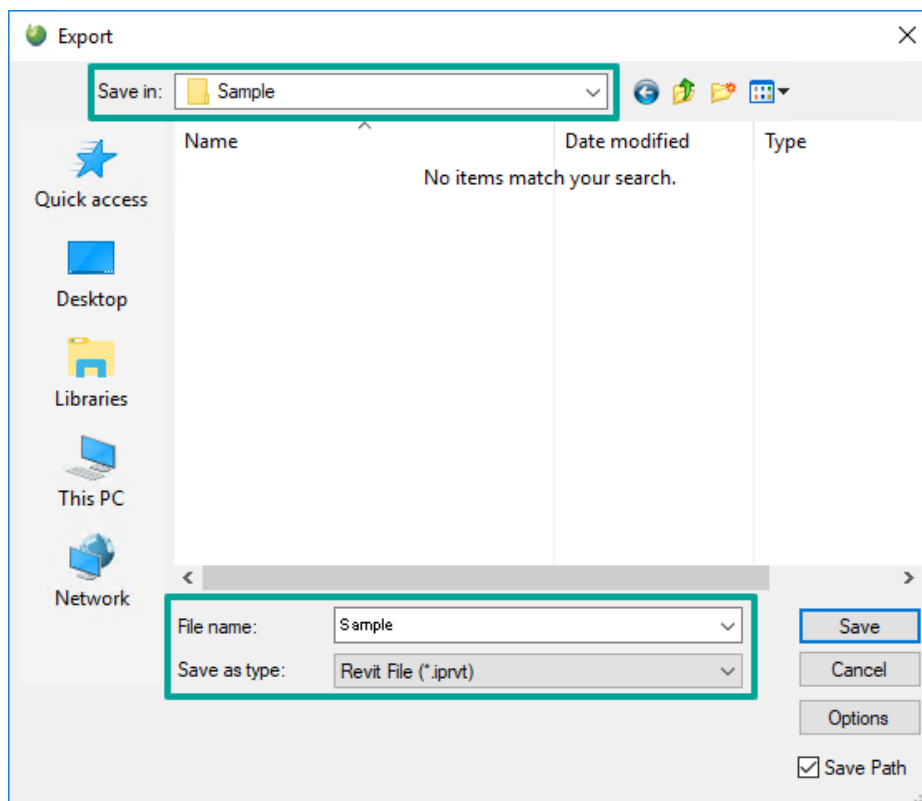


Please note that a standard license and a Revit® Plug-in option license is required to create an intermediate Revit® file.

1. Select [Output Creation] tab > [Export] > [CAD Model] (  ) from the Ribbon menu.

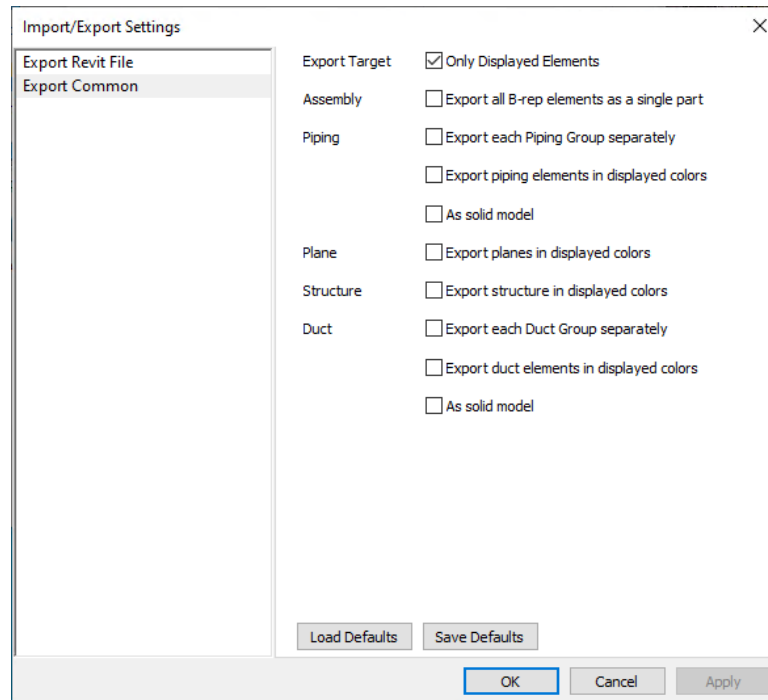


2. "Export" dialog will appear. Specify "Save in", "File name", and "Save as type" as "Revit® File (\*.iprvt)".

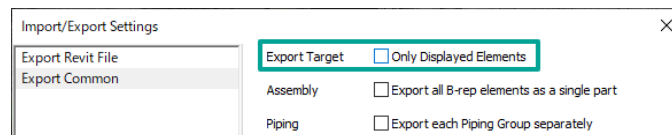


- In "Export" dialog, click [Options] and "Import/Export Settings" dialog will appear.

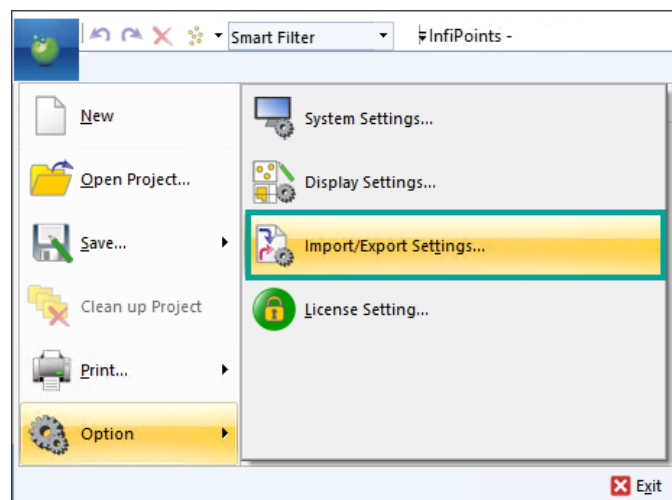
In [Export Common] tab, you can configure export options for each modeling element.



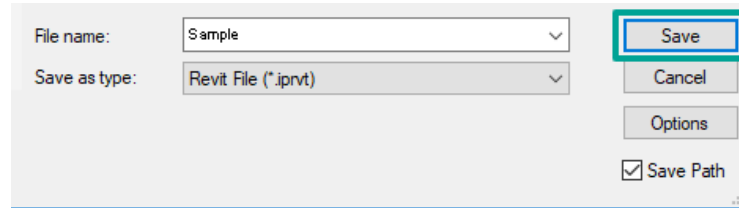
- To export hidden elements to an intermediate file, disable "Only Displayed Elements" option of export target.



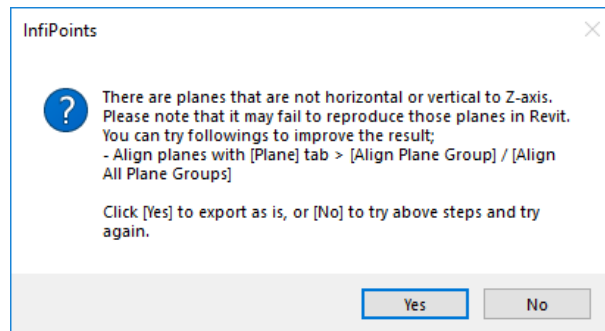
- Options are also configurable from [Application Menu] > [Option] > [Import/Export Settings].



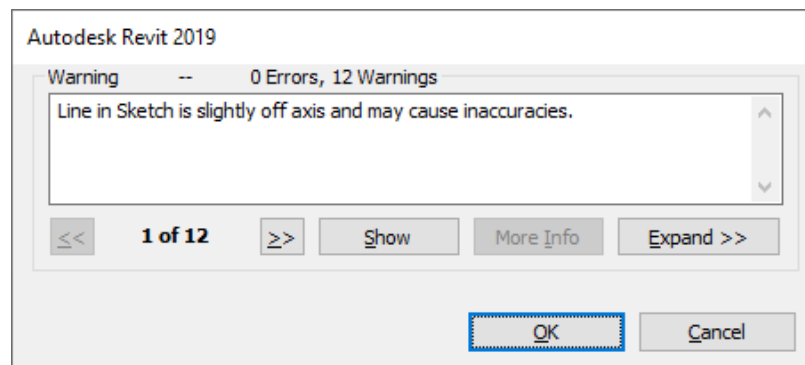
3. In "Export" dialog, click [Save] to export the intermediate Revit® file (\*.iprvt format).



If the following warning dialog appears, it means that the exported planes contain those that are not aligned horizontally or vertically. Please ensure the planes you want to convert to Revit® are aligned. \* Click [Yes] if all the planes to be exported are aligned. Intermediate file will be created as is.



When importing an intermediate Revit® file (\*.iprvt) into Revit®, a warning dialog may appear if the imported file contains elements that cannot be displayed in Revit®. \*Different dialog other than the one below may appear.



## 5. Frequently Asked Questions

### **Q1 : When an intermediate Revit® file (\*.iprvt) cannot be exported from InfiPoints**

- License for export may not be registered. Please double-check and ensure that the InfiPoints for Revit license is registered to the license server.

### **Q2 : Type of unit applied when importing an intermediate Revit® files into Revit**

- When you import an intermediate Revit® file into Revit, the Revit project unit system will be applied.

### **Q3 : The effects of errors output while importing an intermediate Revit® file**

- When failing to import ducts, structures, or piping, IFC elements may be inserted instead of the original elements. IFC elements will be in-place families in Revit and cannot be changed parametrically. Planes do not support IFC output, and IFC elements will not be inserted even if an error occurs.

### **Q4 : How to change the system type or system name of the straight pipes**

- Please change them by using the Revit functionalities.

### **Q5 : How to edit InfiPoints family files**

- Do not edit InfiPoints family files. Such operation is not supported.



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