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Tying It All Together with AutoCAD Plant 3D and AutoCAD P&ID

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Autodesk

Learning Objectives

- Navigate how to navigate successfully through AutoCAD P&ID object mapping
- Learn how to link LineNumberTag between AutoCAD P&ID and AutoCAD Plant 3D
- Learn about the AutoCAD P&ID Line List
- Learn how to use Validate Settings to make sure you are synchronized correctly

Description

Are you lost when you are tasked with merging your AutoCAD Plant 3D model drawings with your AutoCAD P&ID drawings? If you have found yourself in this situation, then this is the class you need to sign up for. In this class I will lead you through the steps to map items in AutoCAD P&ID drawings to objects in AutoCAD Plant 3D. We will navigate through AutoCAD P&ID Object Mapping so that you can successfully select AutoCAD P&ID properties to AutoCAD Plant 3D properties.

Speaker



Professional 3D Computer Aided Design Specialist with a solid understanding of process plant design utilizing 3D modeling software and piping and instrumentation diagrams. Quentin has worked for Autodesk since 2012 and an expert for AutoCAD, Plant 3D and P&ID. He has trained/instructed Computer Aided Design in educational/work environments.

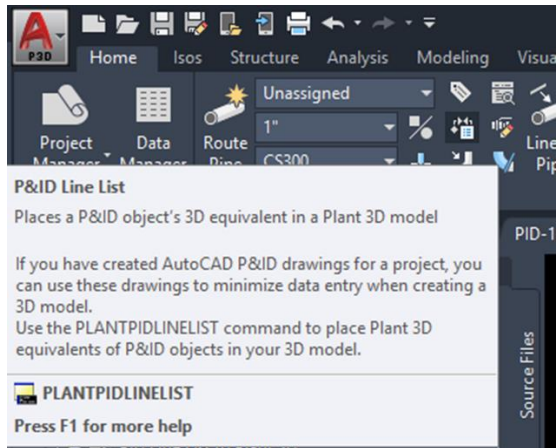
Are you lost when you are tasked with merging your AutoCAD Plant 3D model drawings with your AutoCAD P&ID drawings?

Let's view the workflow on how this works and how it can benefit the workflow you might already have in place.

Navigate through AutoCAD P&ID Object Mapping so that you can successfully select AutoCAD P&ID properties to AutoCAD Plant 3D properties.

Navigate how to navigate successfully through AutoCAD P&ID object mapping

Learn about the AutoCAD P&ID Line List



The P&ID Line List window displays all line segments and associated fittings, valves, and inline components in a P&ID drawing.

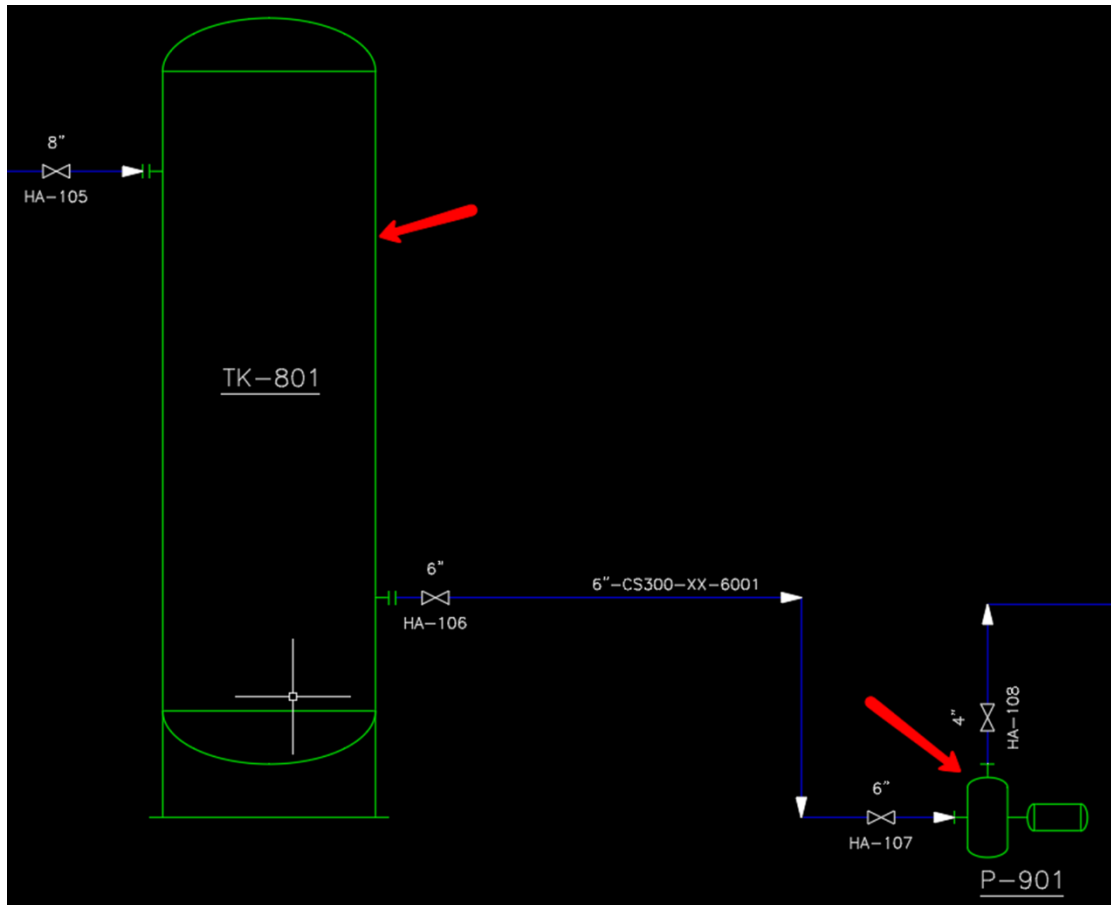
Pipe line group number (tag) determines the order of lines.

From the Line List, you can select any available P&ID object and place its mapped Plant 3D counterpart in the Plant 3D model.

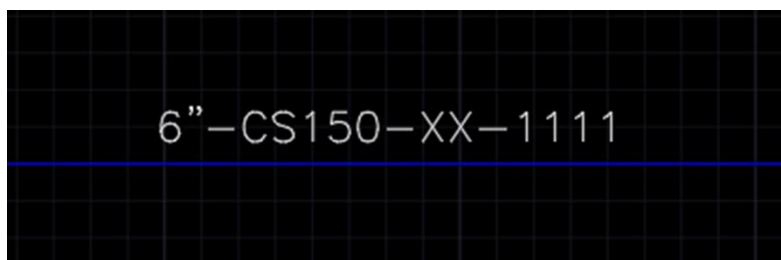
The property values of the P&ID object are copied to the Plant 3D model.

A P&ID object must be mapped to a Plant 3D object before you can place an equivalent Plant 3D object in the model.

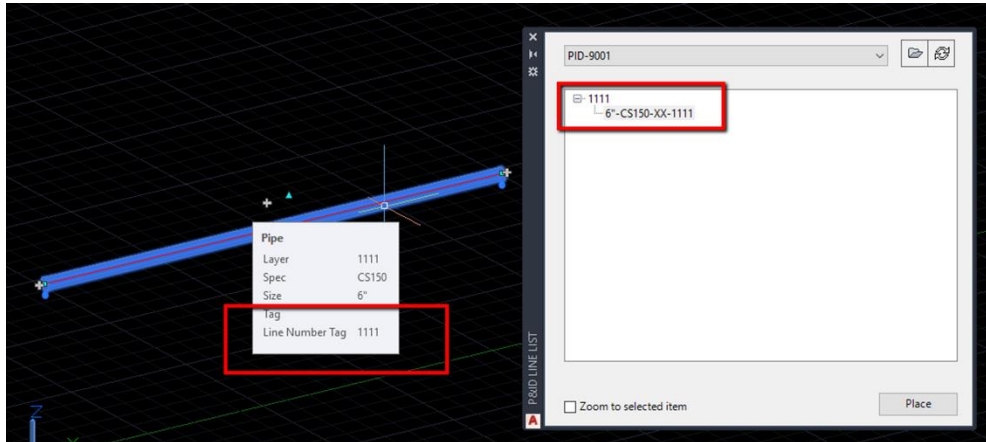
In the list, unmapped items are unavailable for placement. (Equipment)



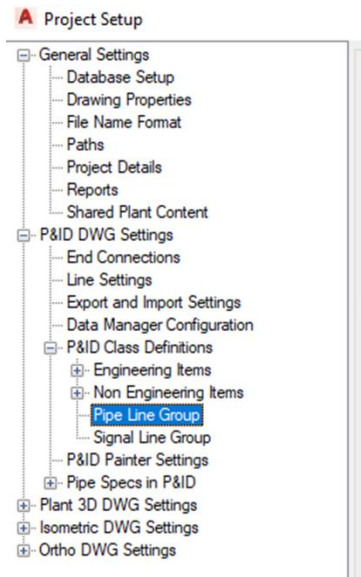
Out of the box the AutoCAD P&ID and Plant 3D line and pipe tags are not setup to match when using P&ID Line List.



You can make simple modifications to adjust the tags to match.

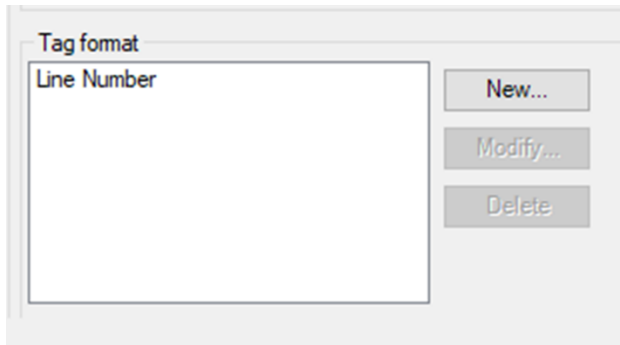


In the Project Setup dialog box tree on the left, expand and select the following:



P&ID DWG Settings > P&ID Class Definitions > Pipe Line Group

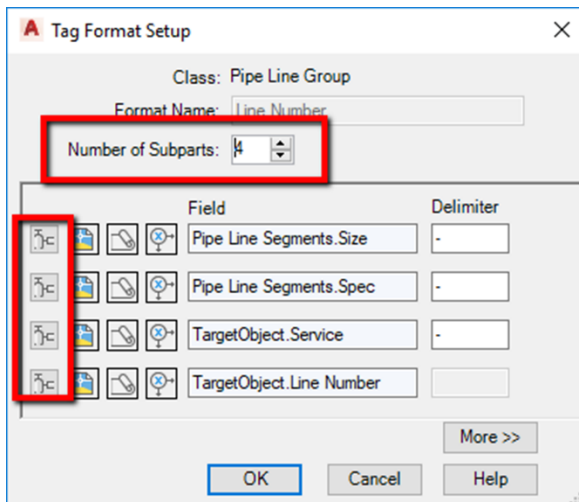
In the Main Window of the dialog box under Tag Format select Line Number then click on the Modify button.



In the Tag Format Setup set the Number of Subparts to “4”.

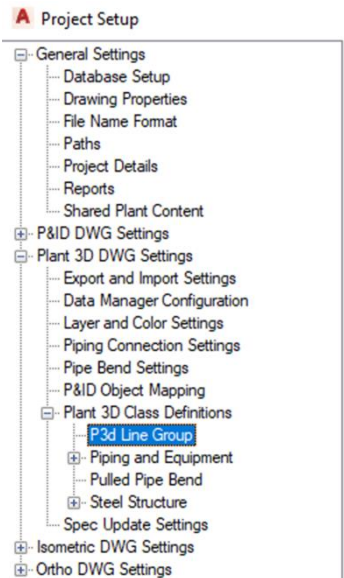
Click the “Select Class Properties” button for each subpart

Change the first one to Pipe Line Segments.Size
Change the second one to Pipe Line Segments.Spec
Change the third one to TargetObject.Line Service
Change the fourth one to TargetObject.Line Number.

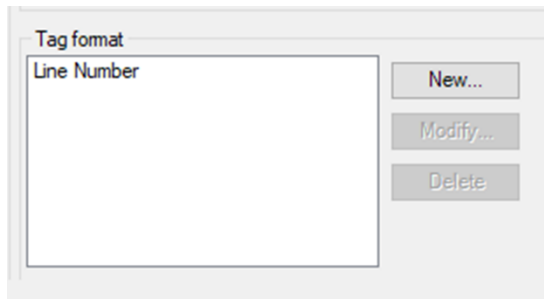


In the Project Setup dialog box tree on the left, expand and select the following:

Plant 3D DWG Settings > Plant 3D Class Definitions > P3D Line Group



In the Main Window of the dialog box under Tag Format select Line Number then click on the Modify button.

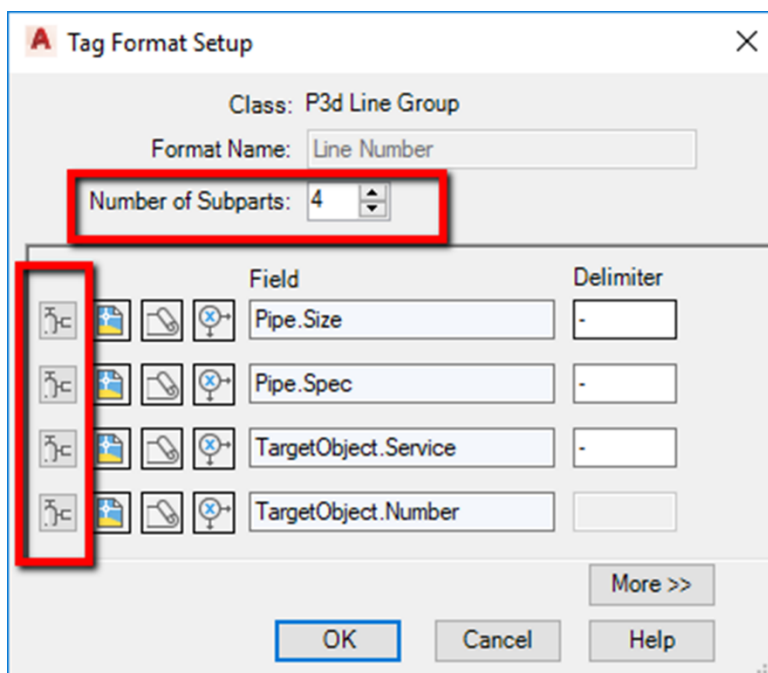


In the Tag Format Setup set the Number of Subparts to “4”.

Click the “Select Class Properties” button for each subpart

Change the first one to Pipe Line Segments.Size
Change the second one to Pipe Line Segments.Spec
Change the third one to TargetObject.Line Service
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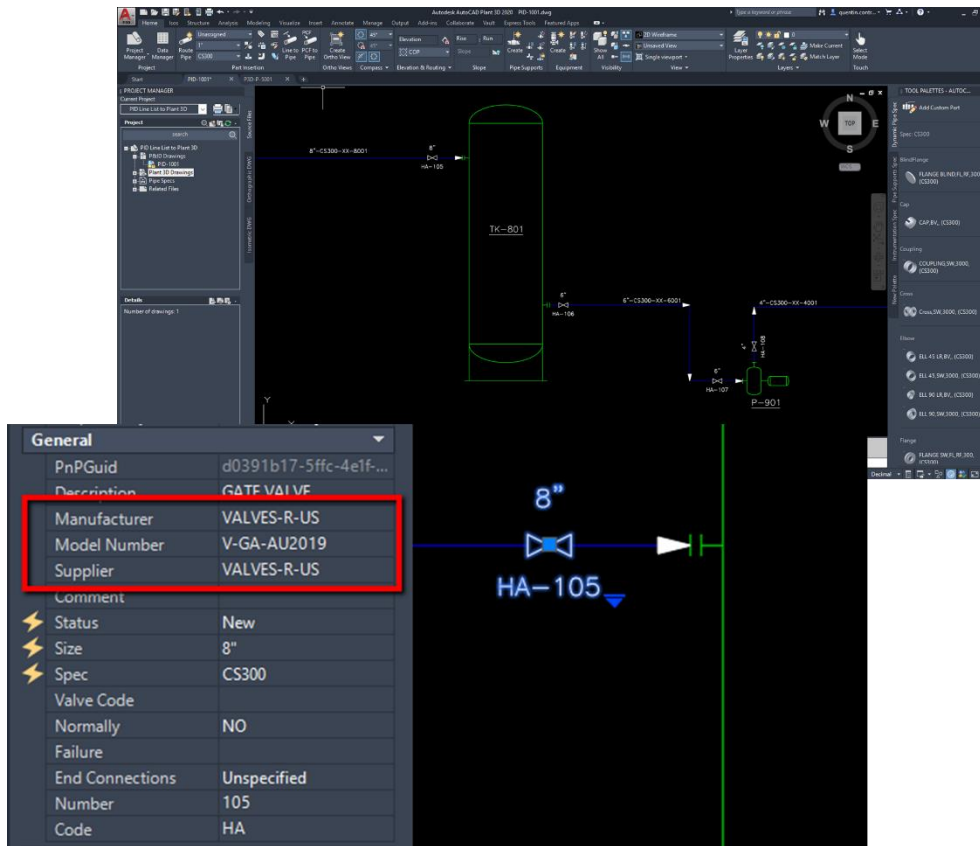
Click OK but do not exit the Project Setup.



Navigate how to navigate successfully through AutoCAD P&ID object mapping

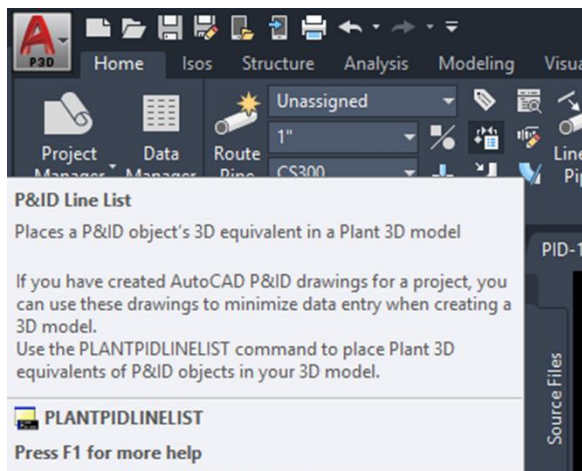
With the tagging format updated for The P&ID Line Group and P3D Line Group, you are ready to access the P&ID Line List Tool.

First, a P&ID drawing(s) should have been completed and any additional property information added to line segments and associated fittings, valves, and inline components.



Open an existing or create a new AutoCAD Plant 3D to where you want to create the piping model based of the P&ID drawing.

Then from the Home tab ribbon select the P&ID Line List icon or type PLANTPIDLINELIST from the command prompt.



The P&ID Line List window will allow you to select the P&ID drawing number where you want to place components from.

It will list the Pipe Line Number by tag number assigned and can be routed in the Plant 3D drawing

After placing the pipe components on that specific line number can be place.

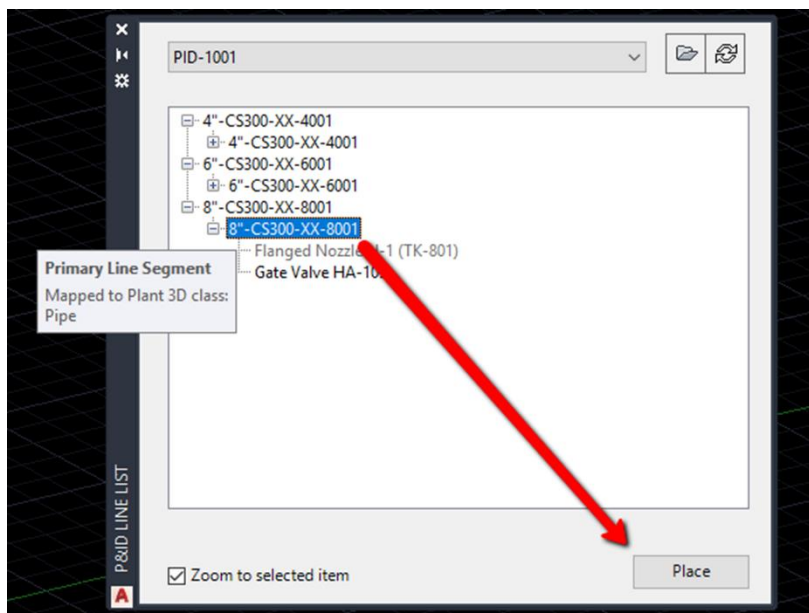
- Items that have ghosted text cannot be placed.
- ONLY items in the displayed list can be placed.

Learn how to link LineNumberTag between AutoCAD P&ID and AutoCAD Plant 3D

From the P&ID Line List select the tag of the pipeline you wish to place first.

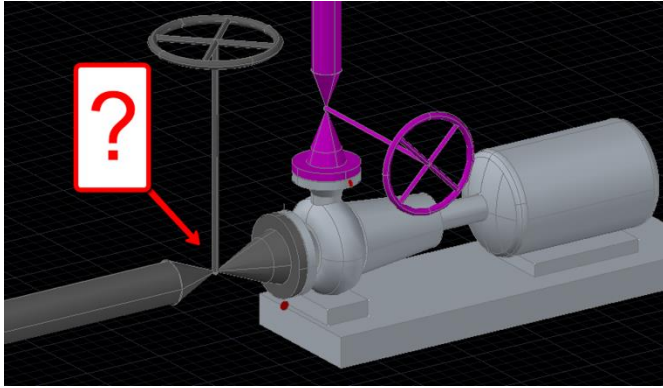
Once the pipe is placed add any additional components from the list that are associated to this pipe run.

At the bottom of the P&ID Line List select Place.



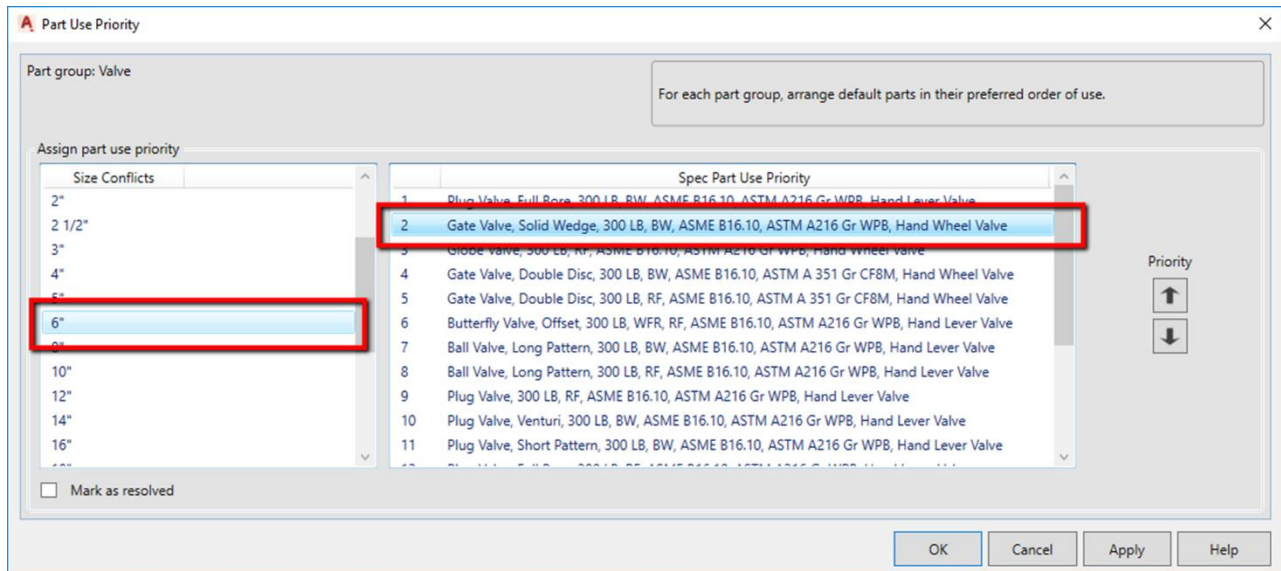
When placing a component like a Gate Valve from the P&D Line List you might not get the desired Gate Valve.

This is due to Part Use Priority for the spec you might be using. The spec is placing the first Gate Valve listed in the spec.

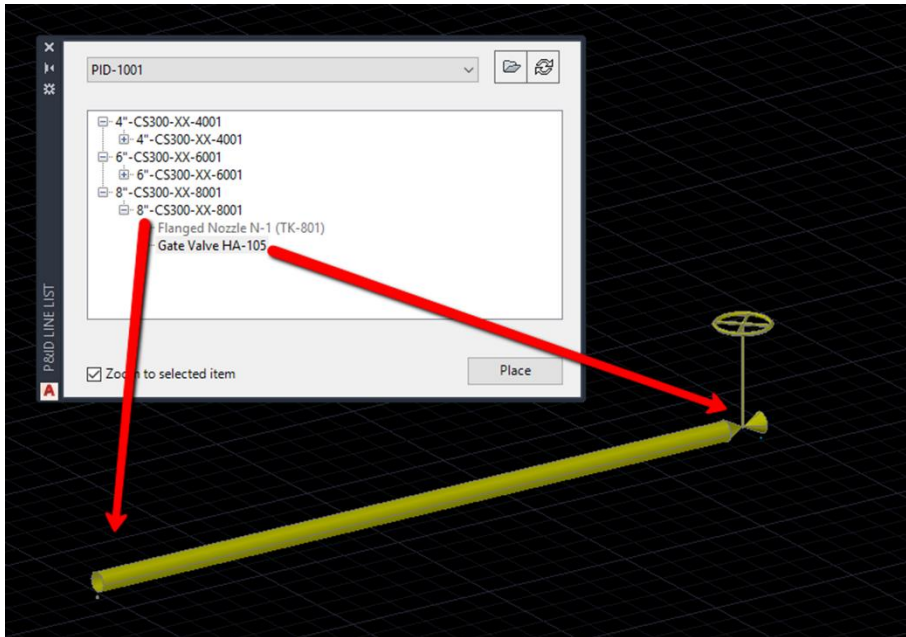


To change Part Use Priority:

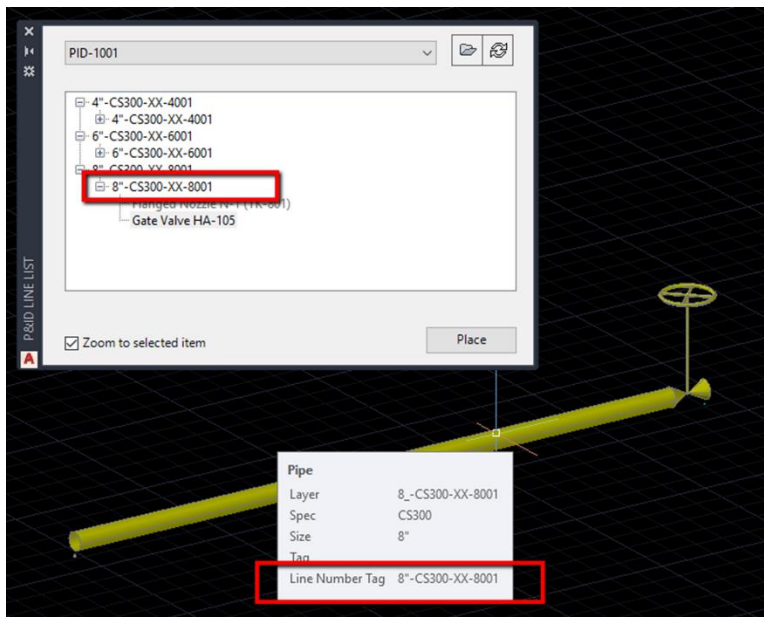
- Open the affected spec of your project via Spec Editor
- Switch to the group where you want to specify which component should be used
- Double-click the symbol of the column 'Part Use Priority' (a small green point or a yellow triangle with a black exclamation mark)
- For each size set the priority of the component. The component at the top of the list of a specific size will be used for this size. Check the box 'Mark as resolved' for each size
- Re-open your project
- The component will be inserted by using PLANTPIDLINELIST which was set with the highest priority for the specific size of the component.



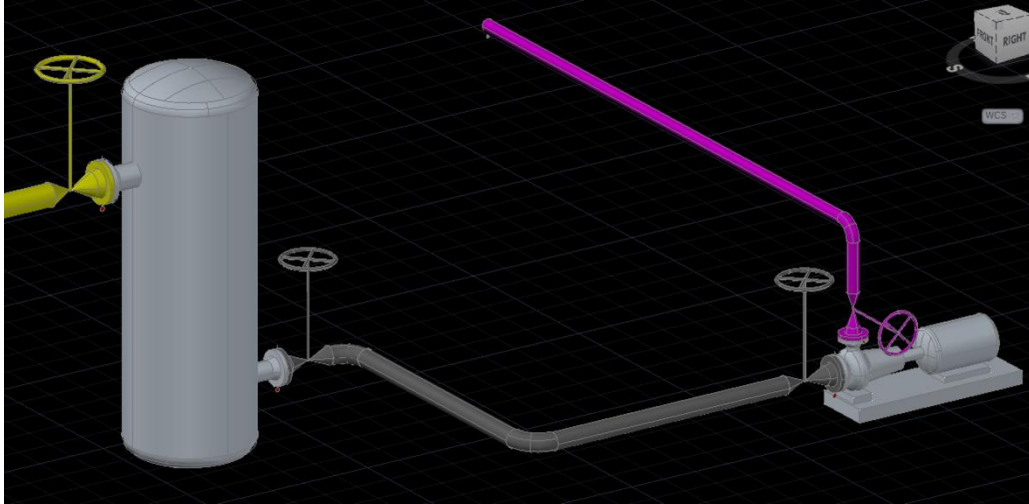
Routing a single pipe run would look something like this.



The pipe that is now placed in the model will place a tag matching to the P&ID drawing tag. This is due to the changes that were previously made in the Project Setup.



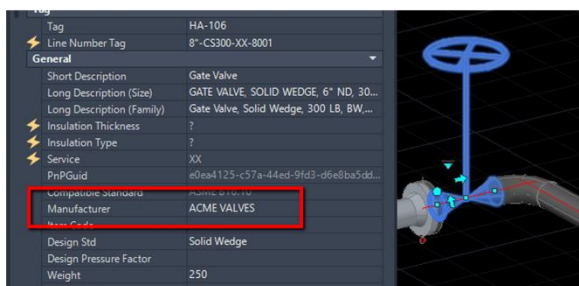
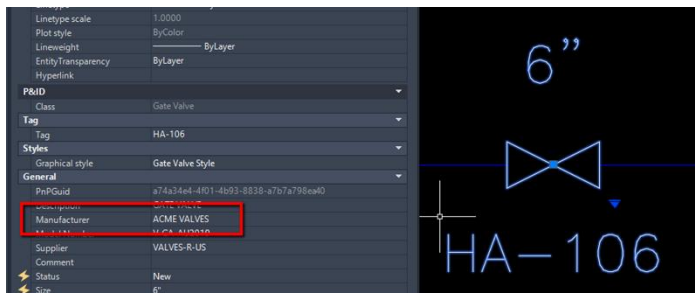
From the remaining items of this P&ID drawing from the list, the rest of the place parts would look like this.



In addition to the items placed from the P&ID Line List, some of the components will carry over some of the property information that was part of the P&ID symbols.

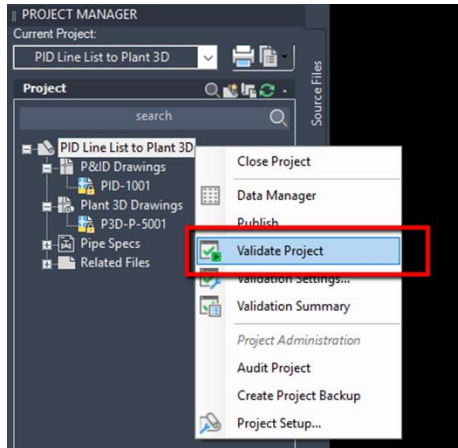
Note:

- Property values have to match between the P&ID and Plant 3D properties.
- Equipment cannot be placed from the P&ID Line List and will have to be manually placed.

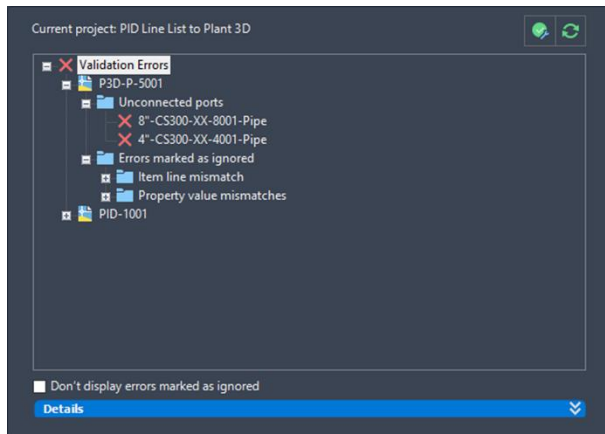


Learn how to use Validate Settings to make sure you are synchronized correctly

Right click on the project name will allow you to select to run.



Validation Project will go through the project and show any items that are not within the parameters of the Validation Settings.



Right clicking on the project name will allow you to select the Validation Settings.

You can then select what exactly you want the validation process to go through as it checks between your P&ID and Plant 3D drawings.

