

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

Quentin Contreras

Autodesk Plant 3D Technical Support Specialist





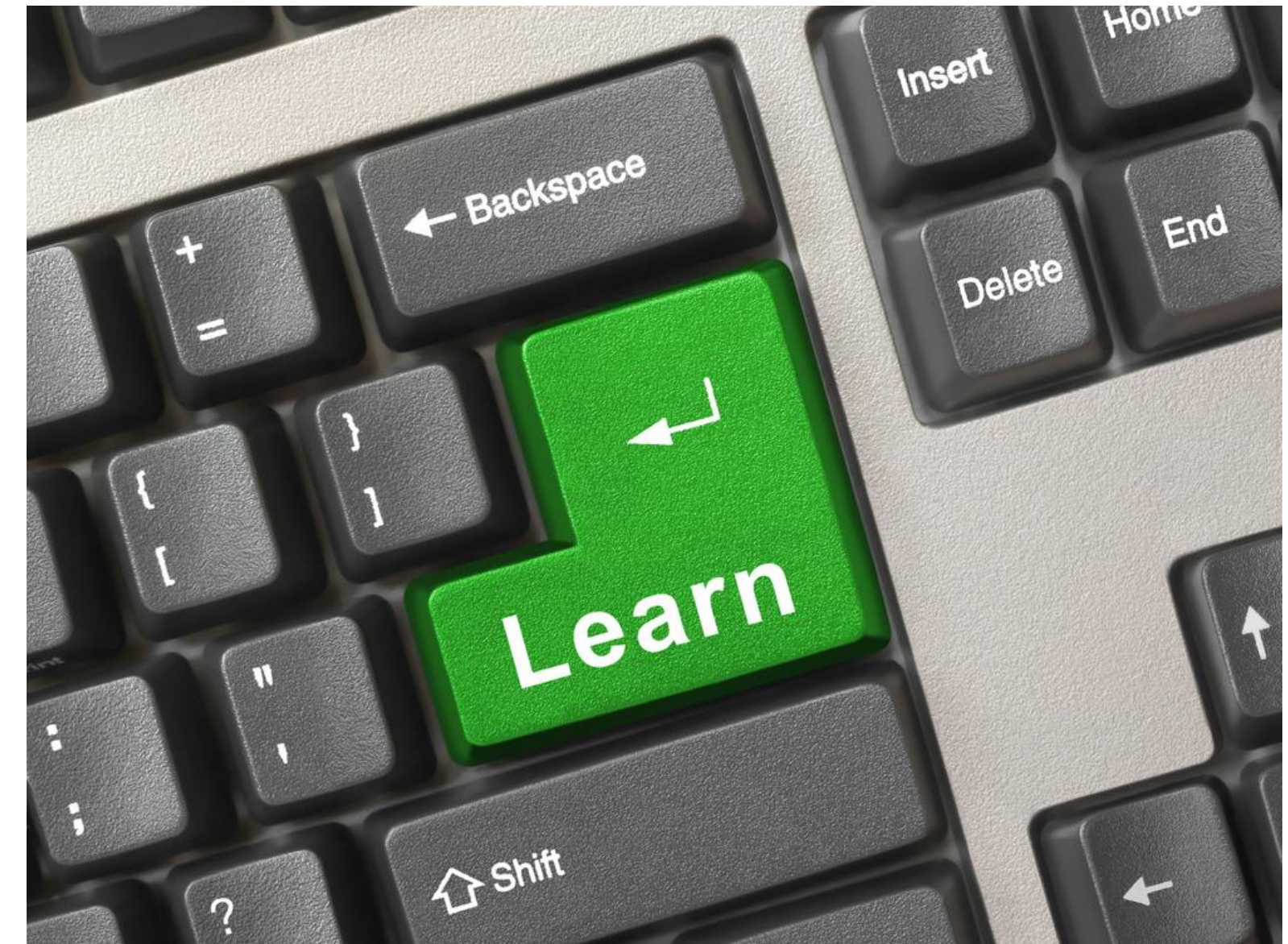
## About the speaker

### Quentin Contreras

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

# Learning Objectives

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



# Learning Objectives

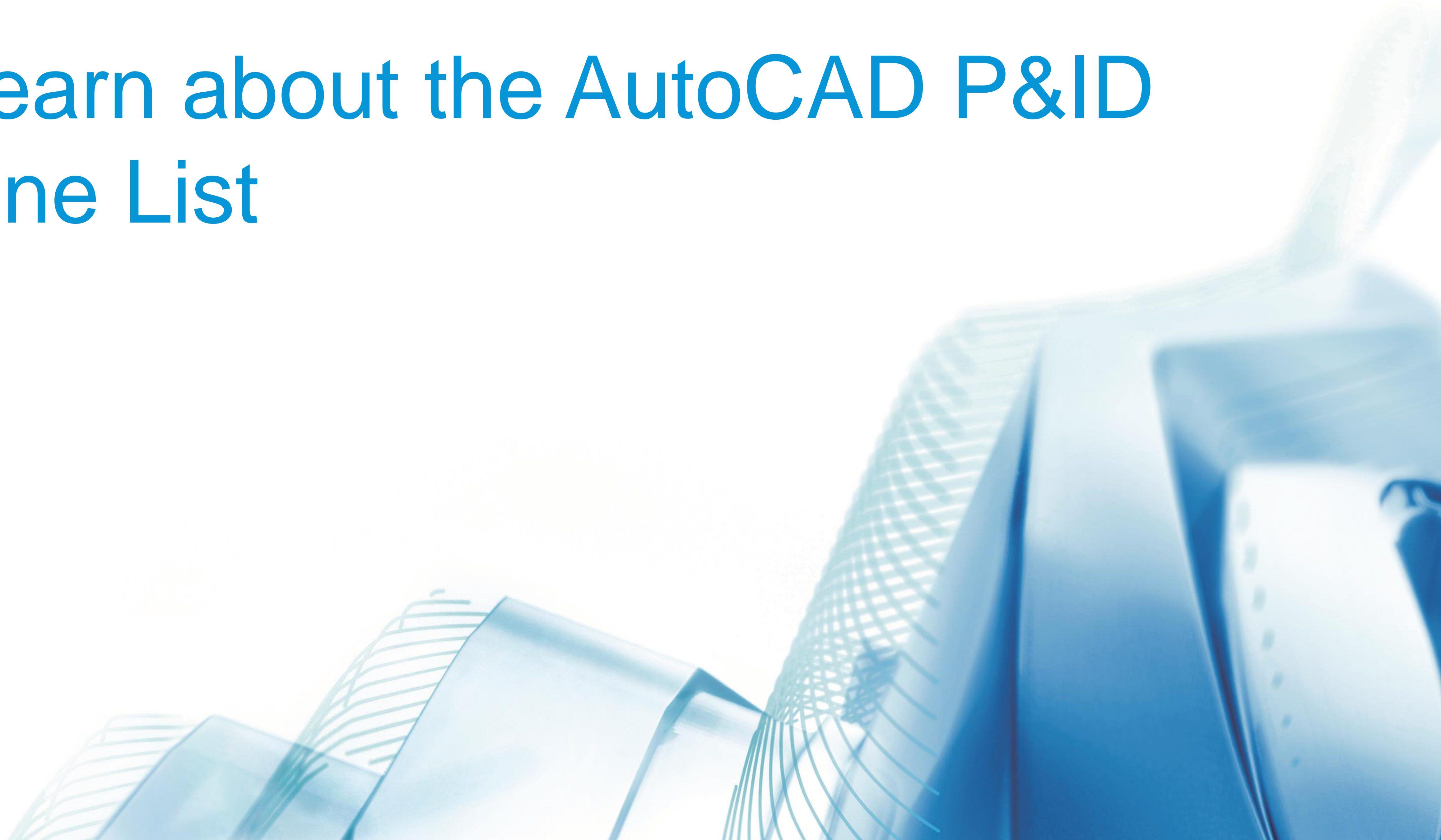
Are you lost when you are tasked with merging your AutoCAD Plant 3D model drawings with your AutoCAD P&ID drawings?

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.



# Learn about the AutoCAD P&ID Line List



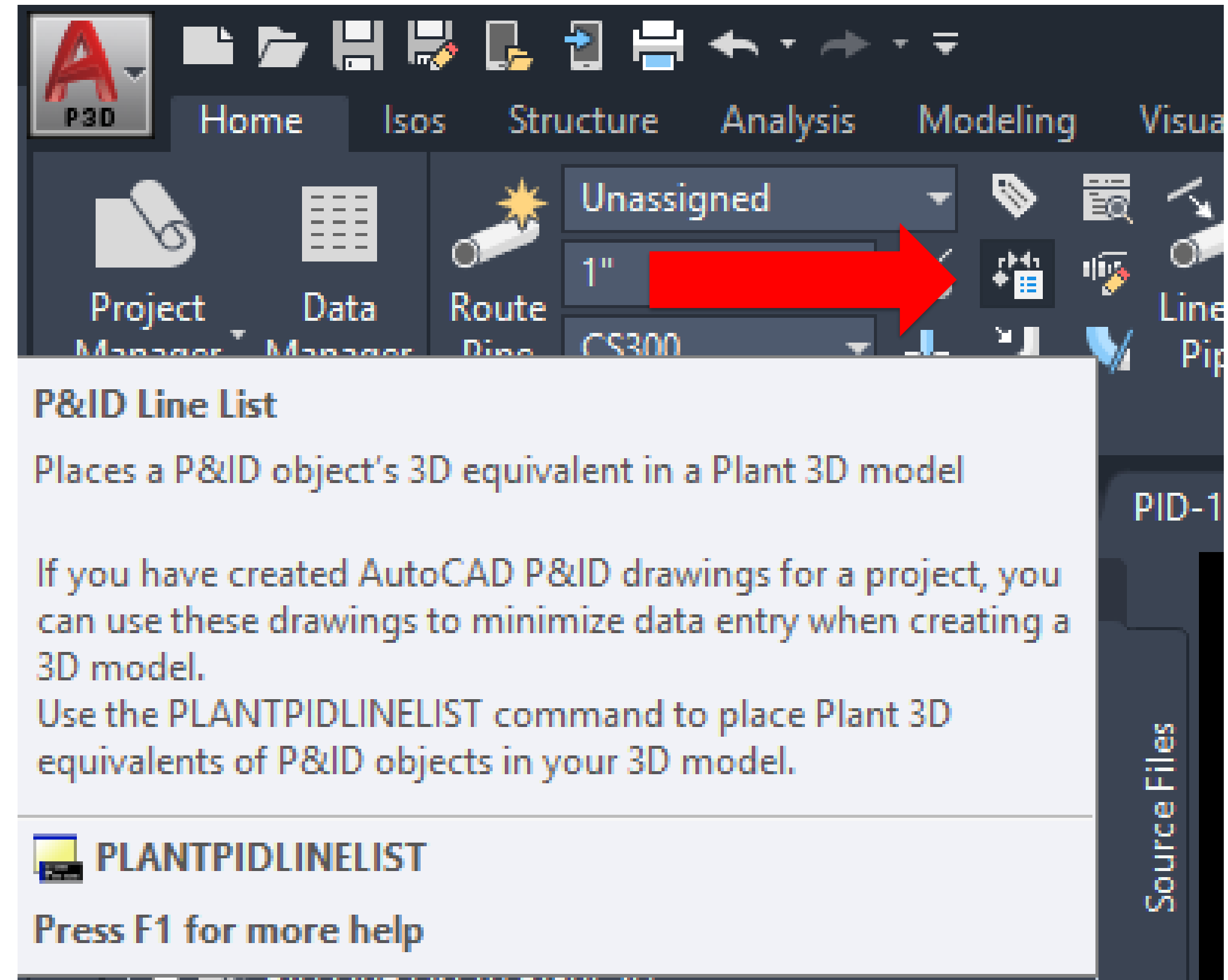
# The P&ID Line List

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.

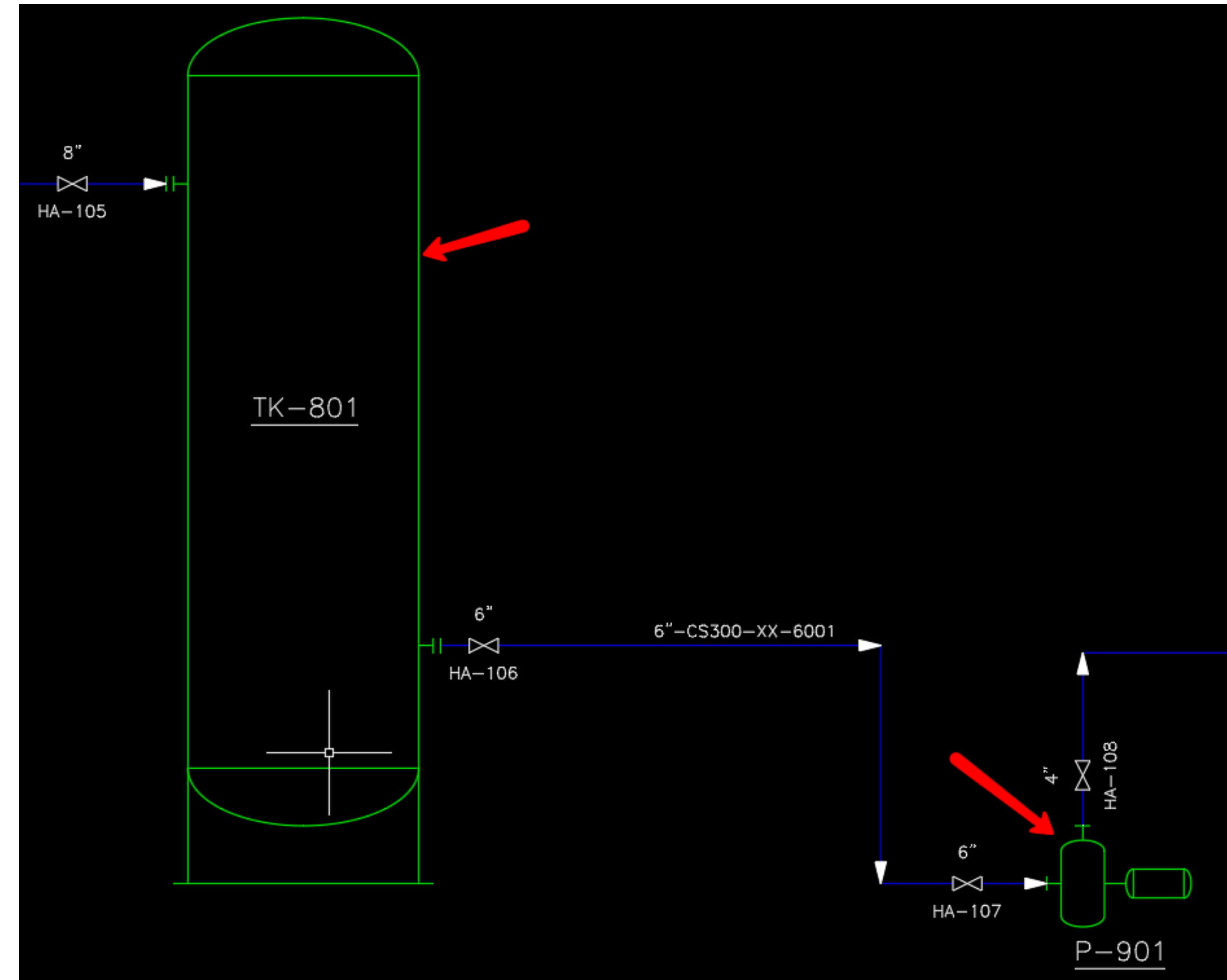
The property values of the P&ID object are copied to the Plant 3D model.



# The P&ID Line List

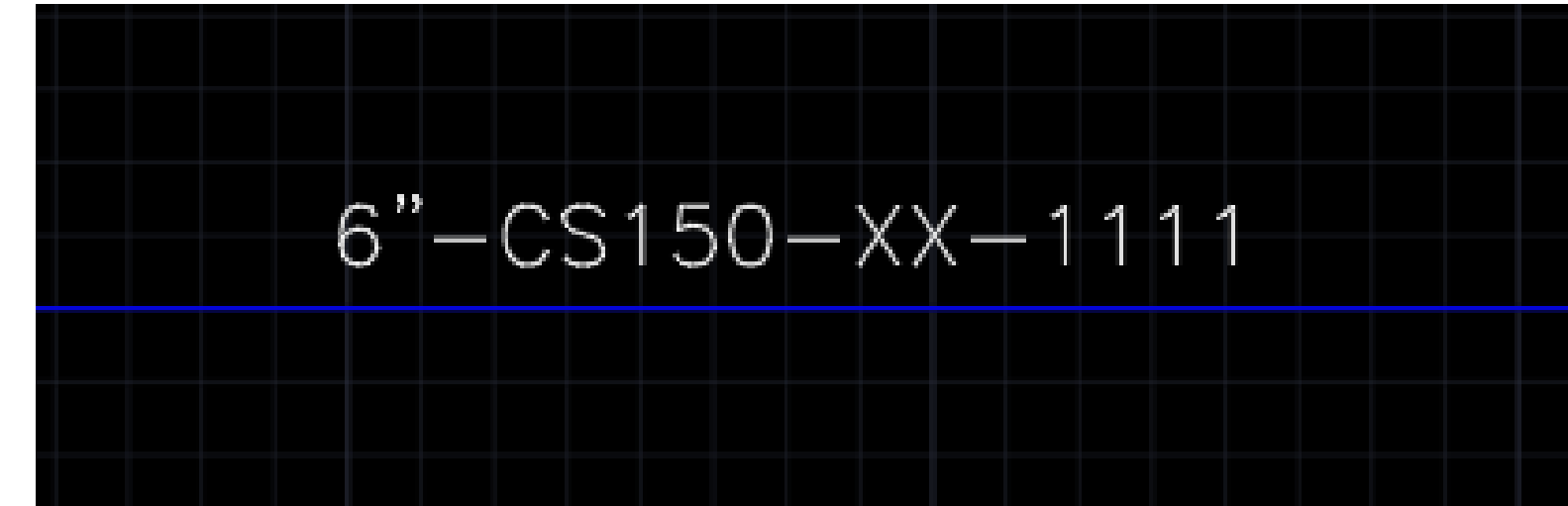
A P&ID object must be mapped to a Plant 3D object before you can place an equivalent Plant 3D object in the model.

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

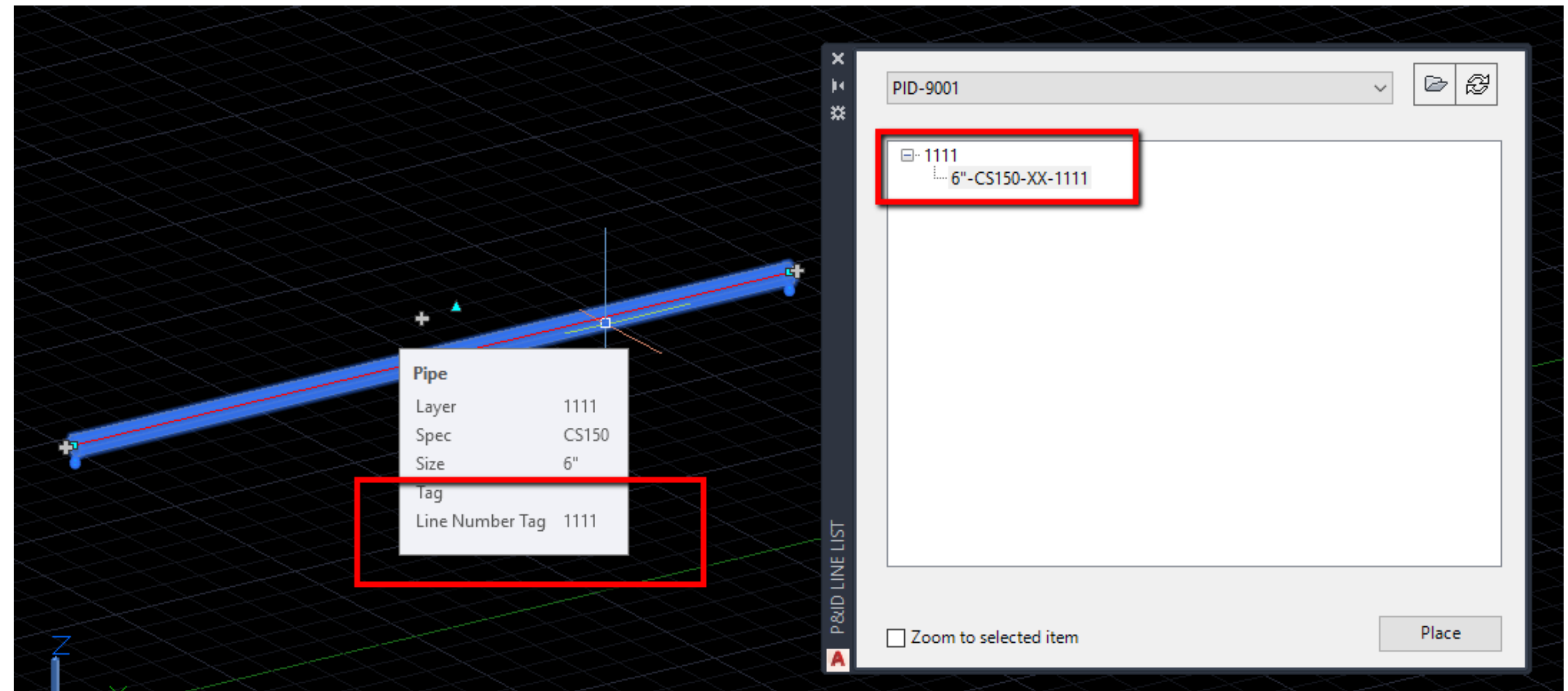


# AutoCAD P&ID and Plant 3D Tagging

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.



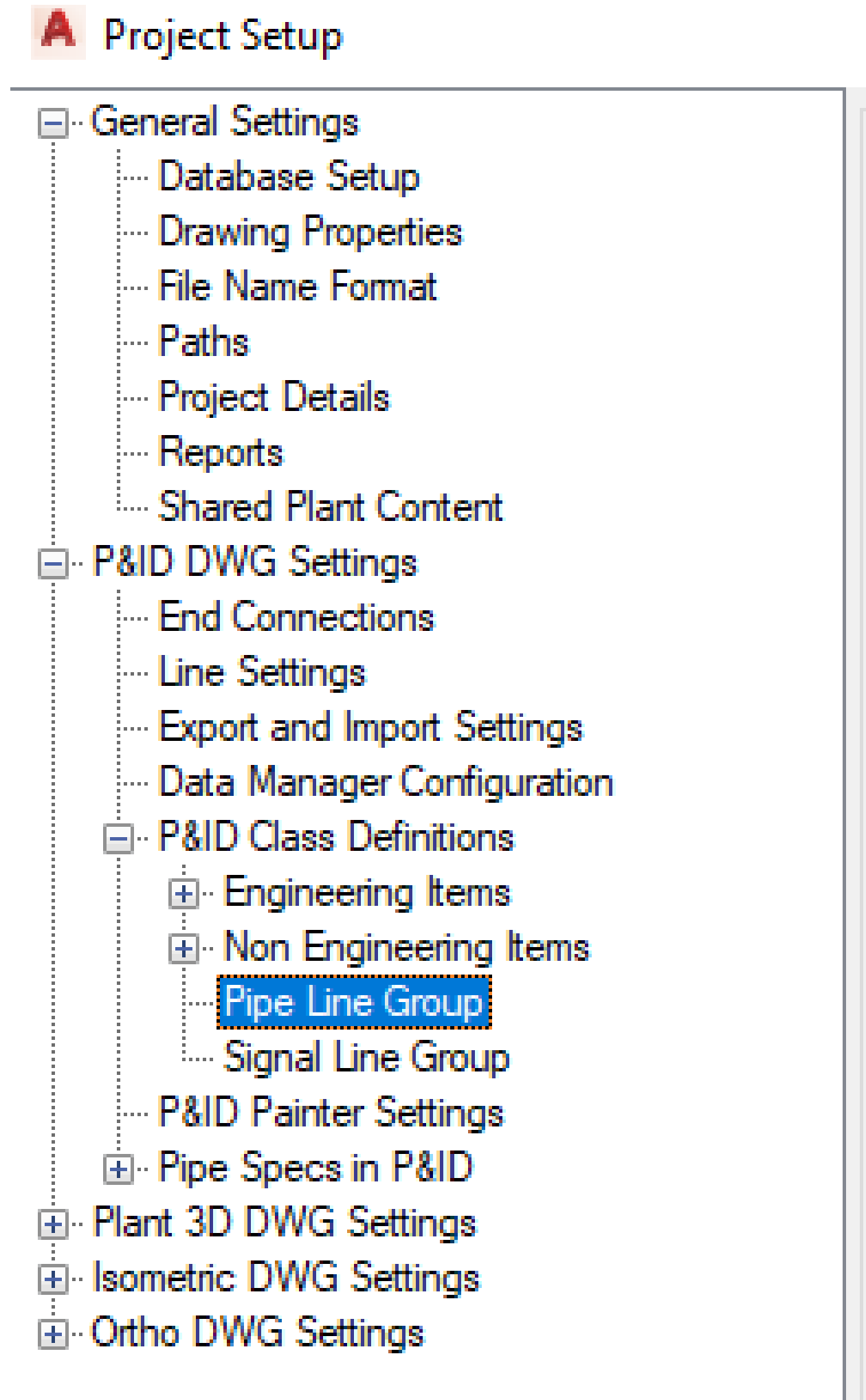
You can make simple modifications to adjust the tags to match.



# AutoCAD P&ID and Plant 3D Tagging

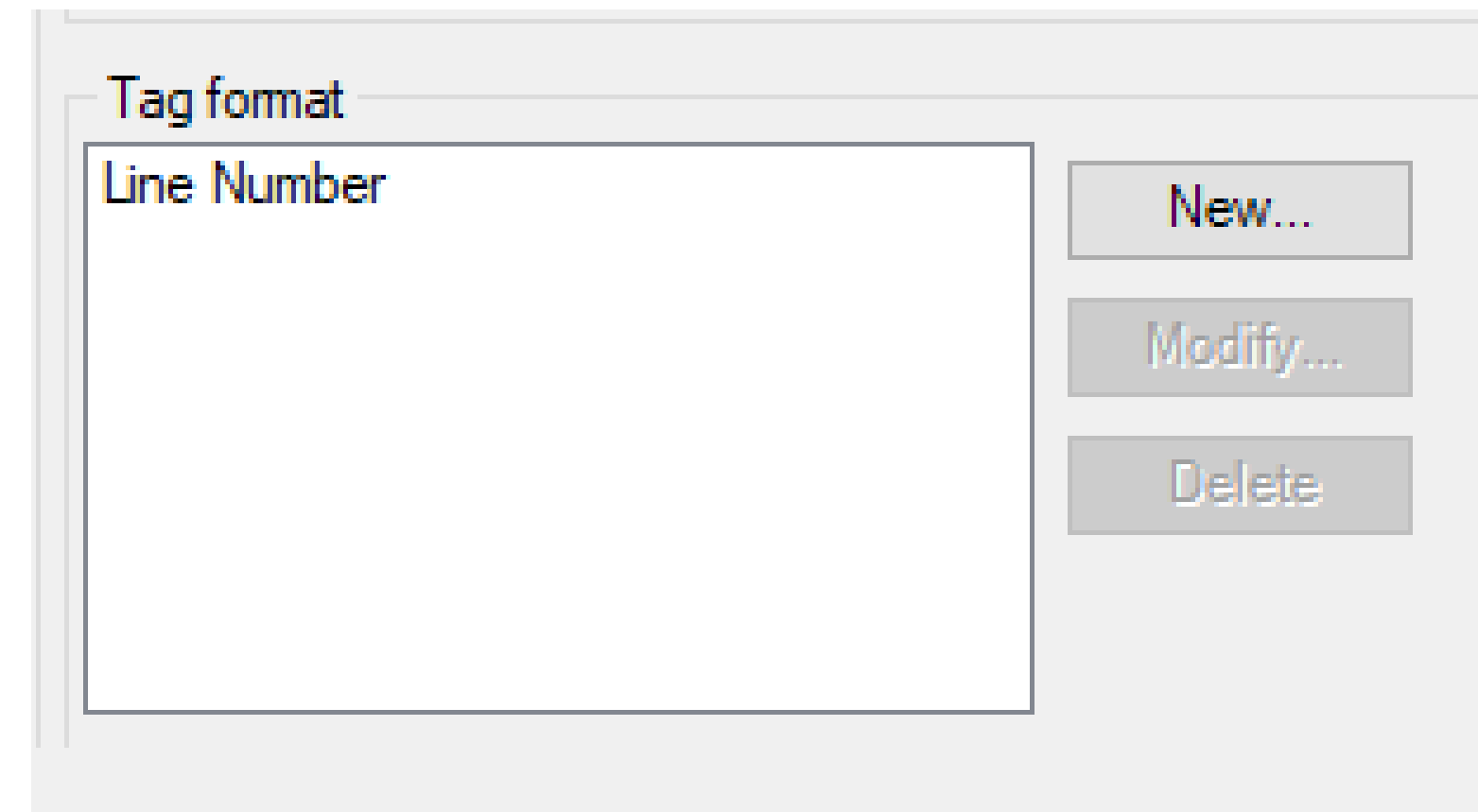
In the Project Setup dialog box tree on the left, expand and select the following:

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



# AutoCAD P&ID and Plant 3D Tagging

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



# AutoCAD P&ID and Plant 3D Tagging

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**.

Tag Format Setup

Class: Pipe Line Group

Format Name: Line Number

Number of Subparts: 4

	Field	Delimiter
	Pipe Line Segments.Size	-
	Pipe Line Segments.Spec	-
	TargetObject.Service	-
	TargetObject.Line Number	

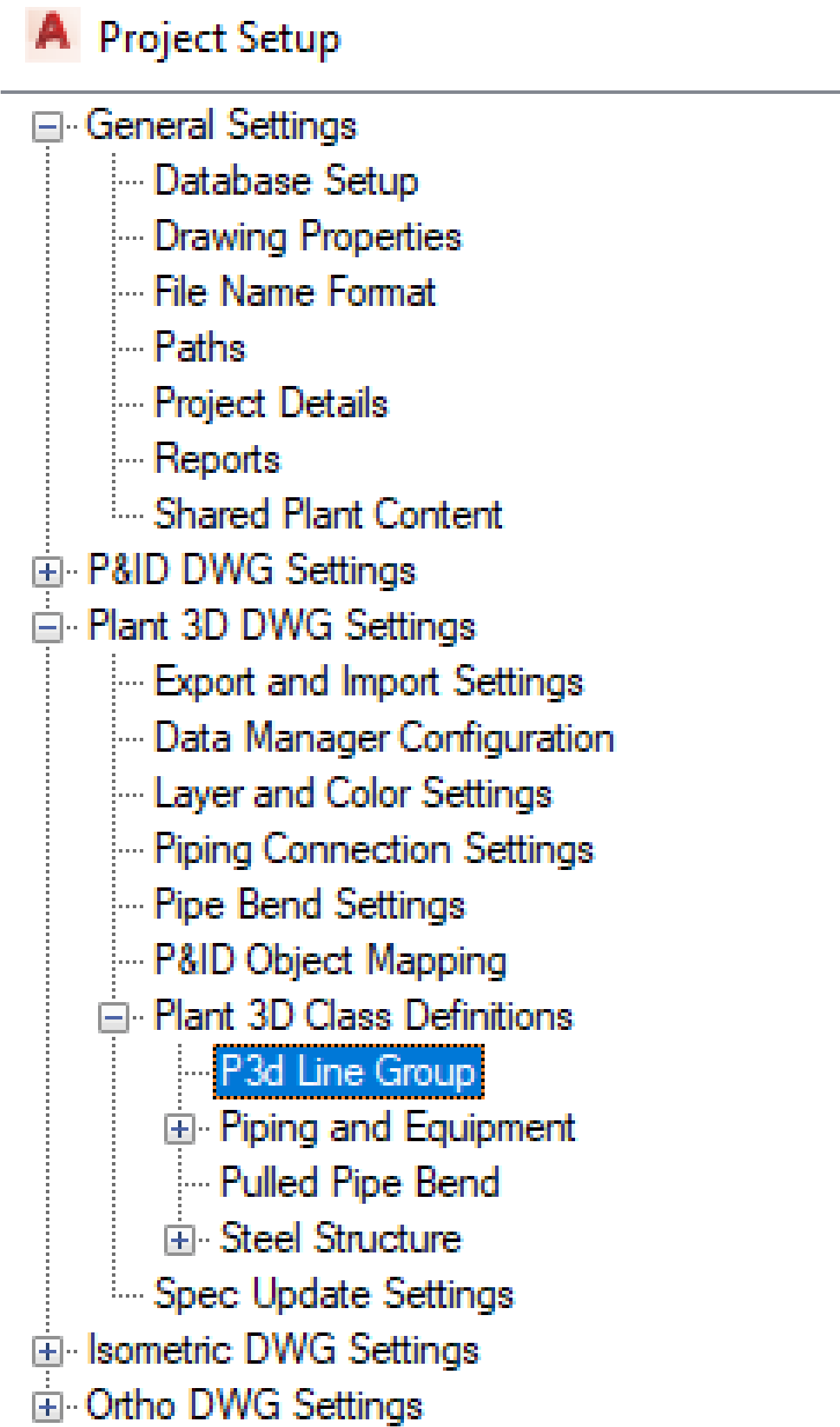
More >>

OK Cancel Help

# AutoCAD P&ID and Plant 3D Tagging

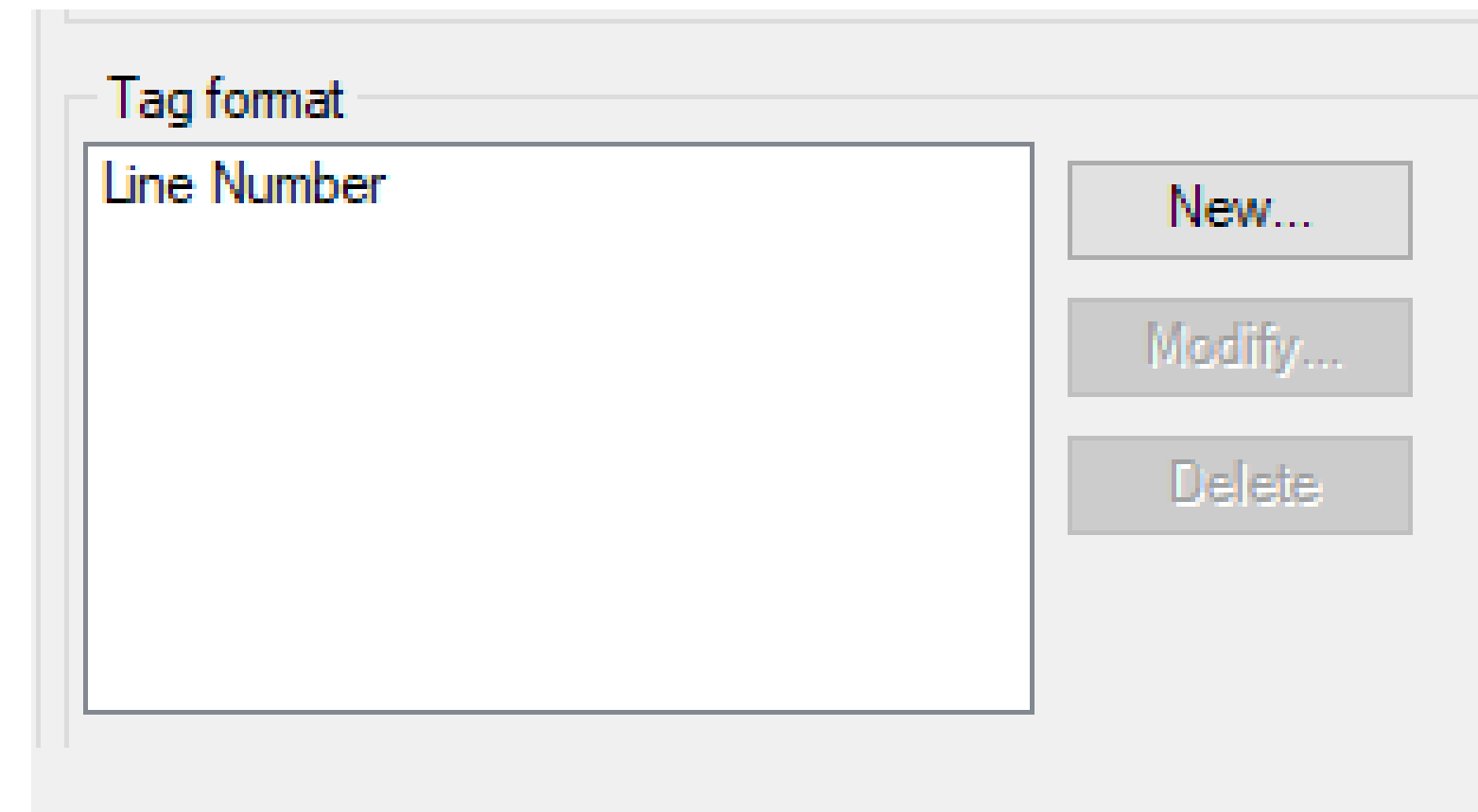
In the Project Setup dialog box tree on the left, expand and select the following:

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



# AutoCAD P&ID and Plant 3D Tagging

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



# AutoCAD P&ID and Plant 3D Tagging

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**.

Click OK but do not exit the Project Setup.

Tag Format Setup

Class: P3d Line Group

Format Name: Line Number

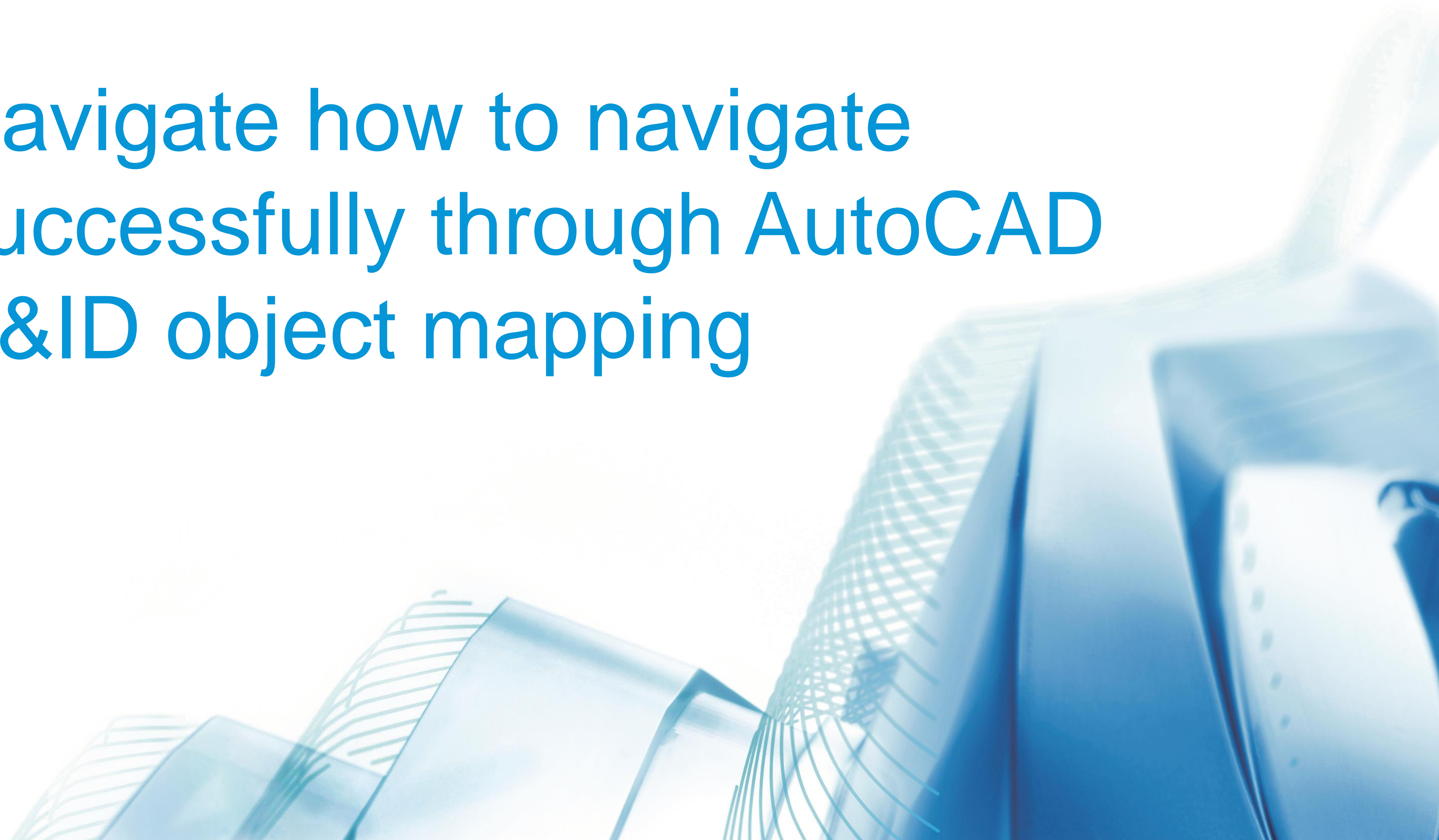
Number of Subparts: 4

	Field	Delimiter
	Pipe.Size	-
	Pipe.Spec	-
	TargetObject.Service	-
	TargetObject.Number	

More >>

OK Cancel Help

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



# Navigating P&ID Line List

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.

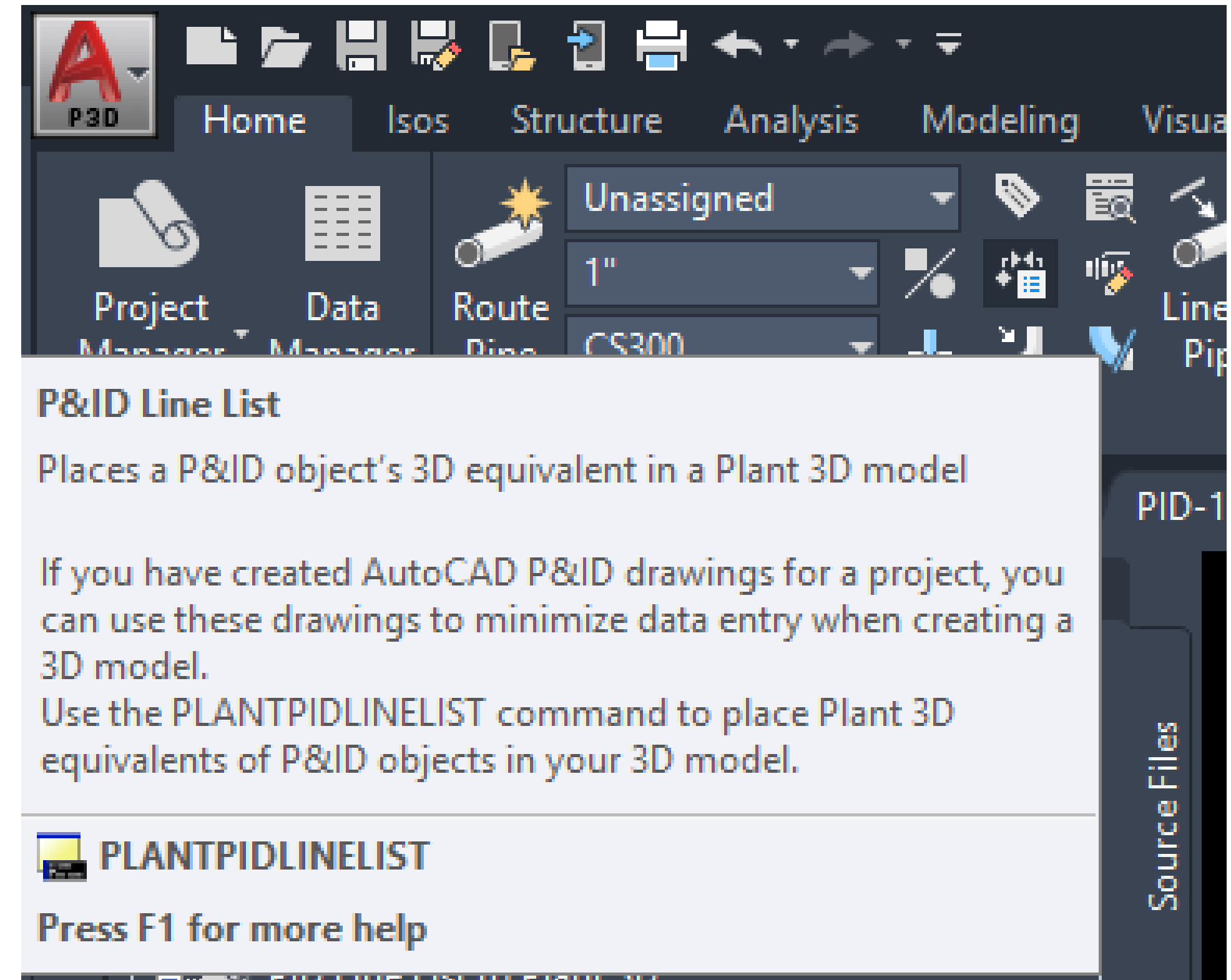
The screenshot shows the Autodesk AutoCAD Plant 3D interface. The main window displays a P&ID drawing with a tank labeled TK-801 and a valve labeled HA-105. The valve is highlighted with a red box. A property table is open in the foreground, showing the following details:

General	
PnP GUID	d0391b17-5ffc-4e1f-...
Description	GATE VALVE
Manufacturer	VALVES-R-US
Model Number	V-GA-AU2019
Supplier	VALVES-R-US
Comment	
Status	New
Size	8"
Spec	CS300
Valve Code	
Normally	NO
Failure	
End Connections	Unspecified
Number	105
Code	HA

# Navigating P&ID Line List

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.



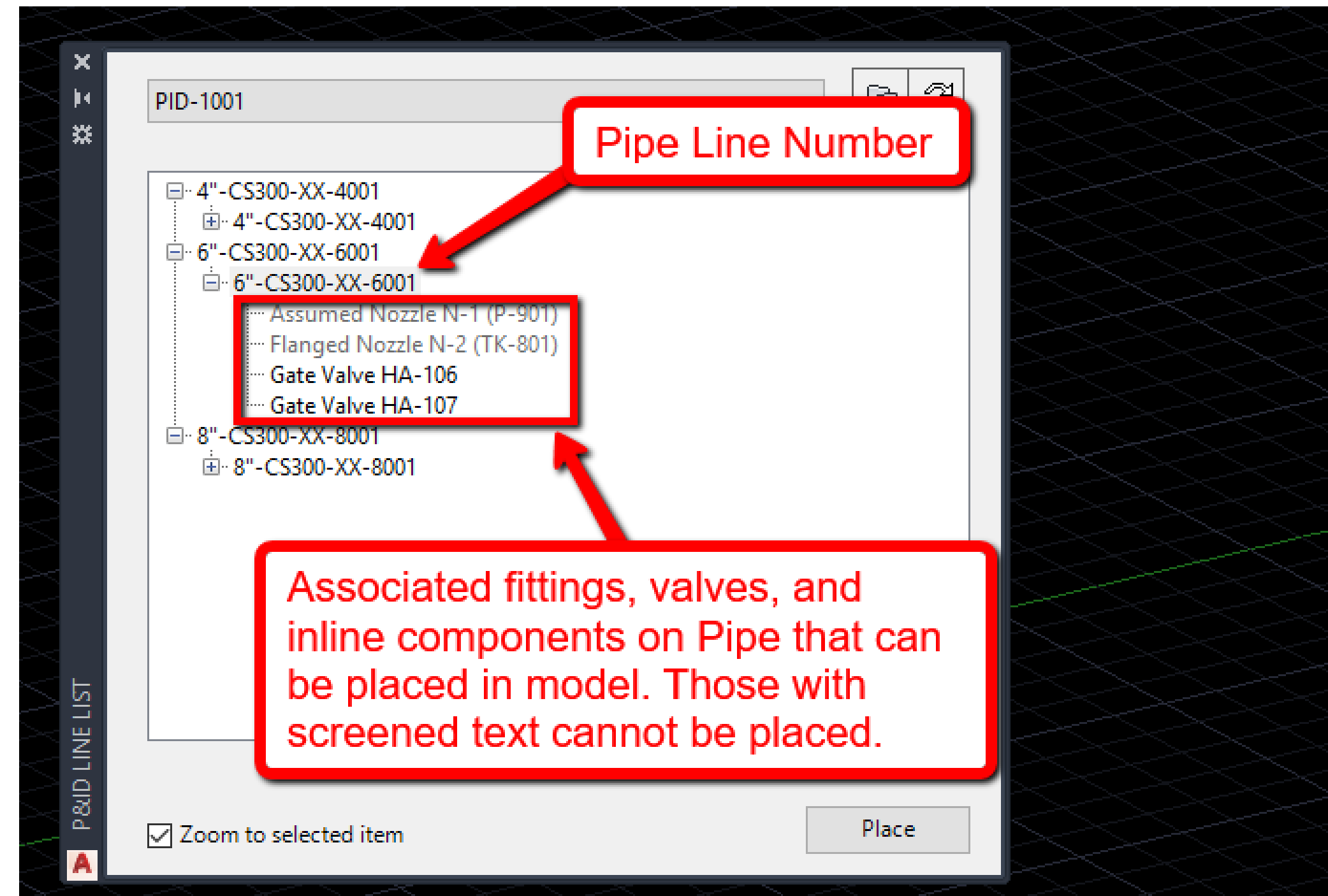
# Navigating P&ID Line List

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

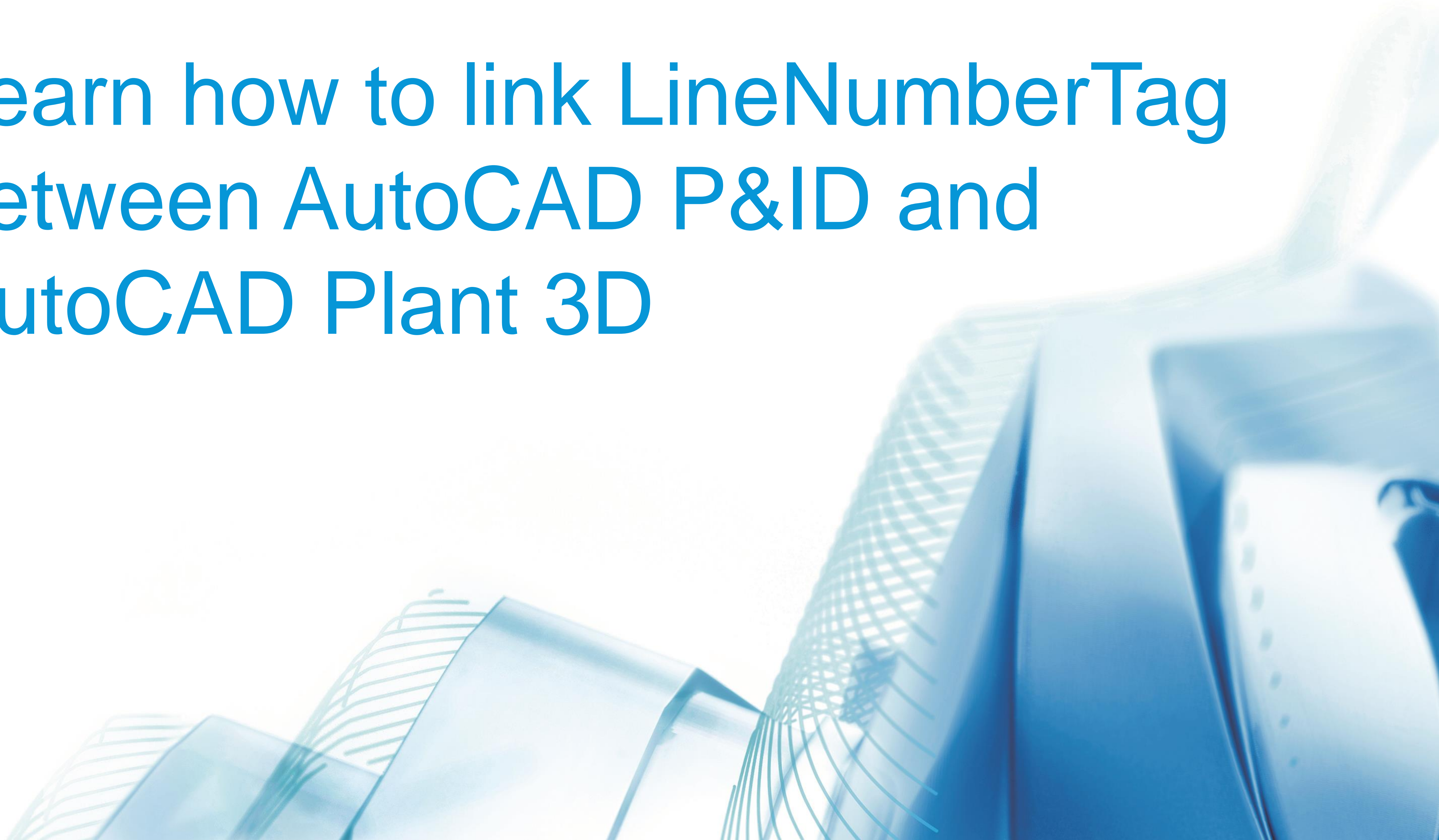
It will list the Pipe Line Number by tag number assigned and can be routed in the Plant 3D drawing

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

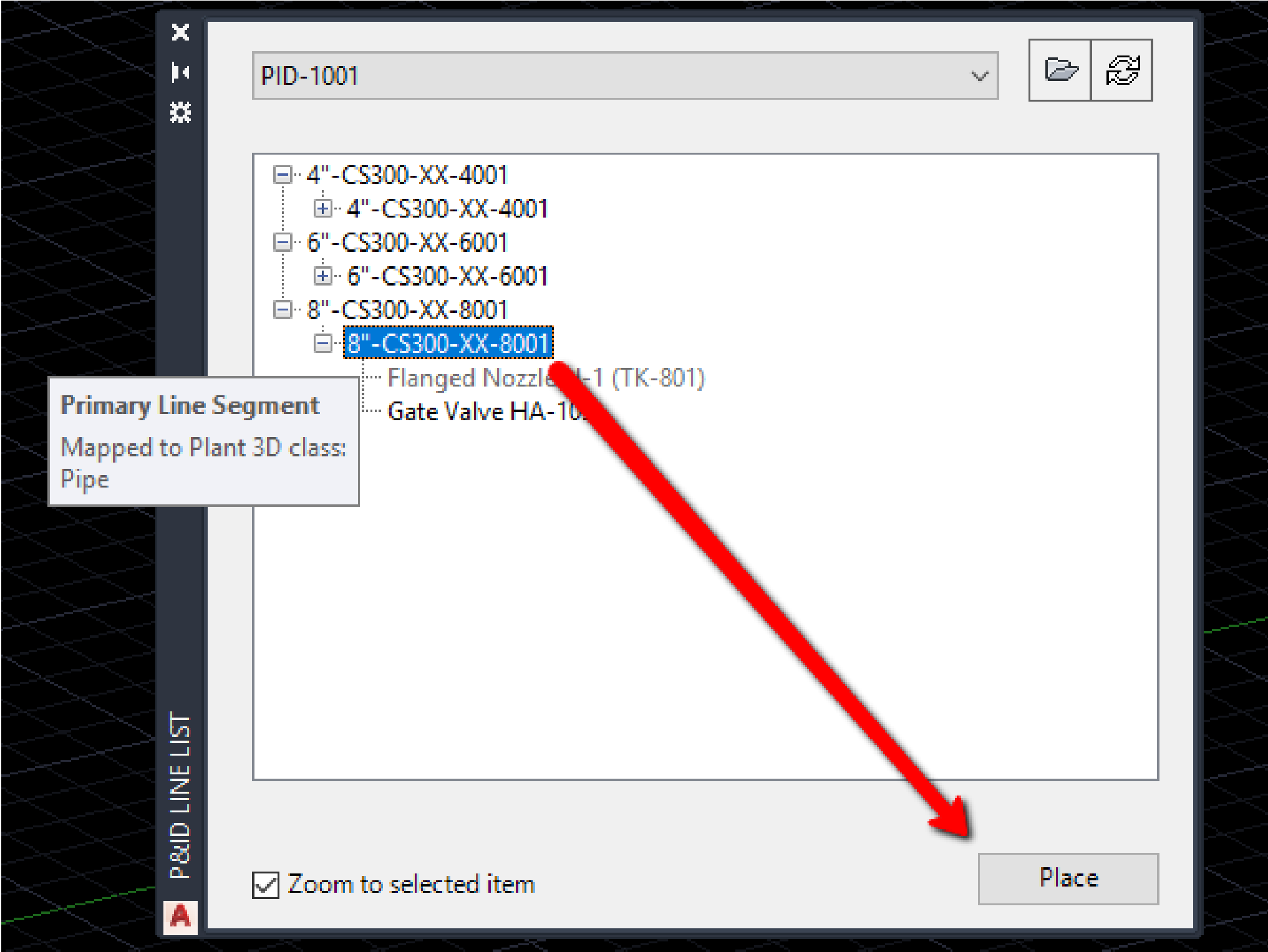


# Link LineNumberTag to Plant 3D Drawing

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.

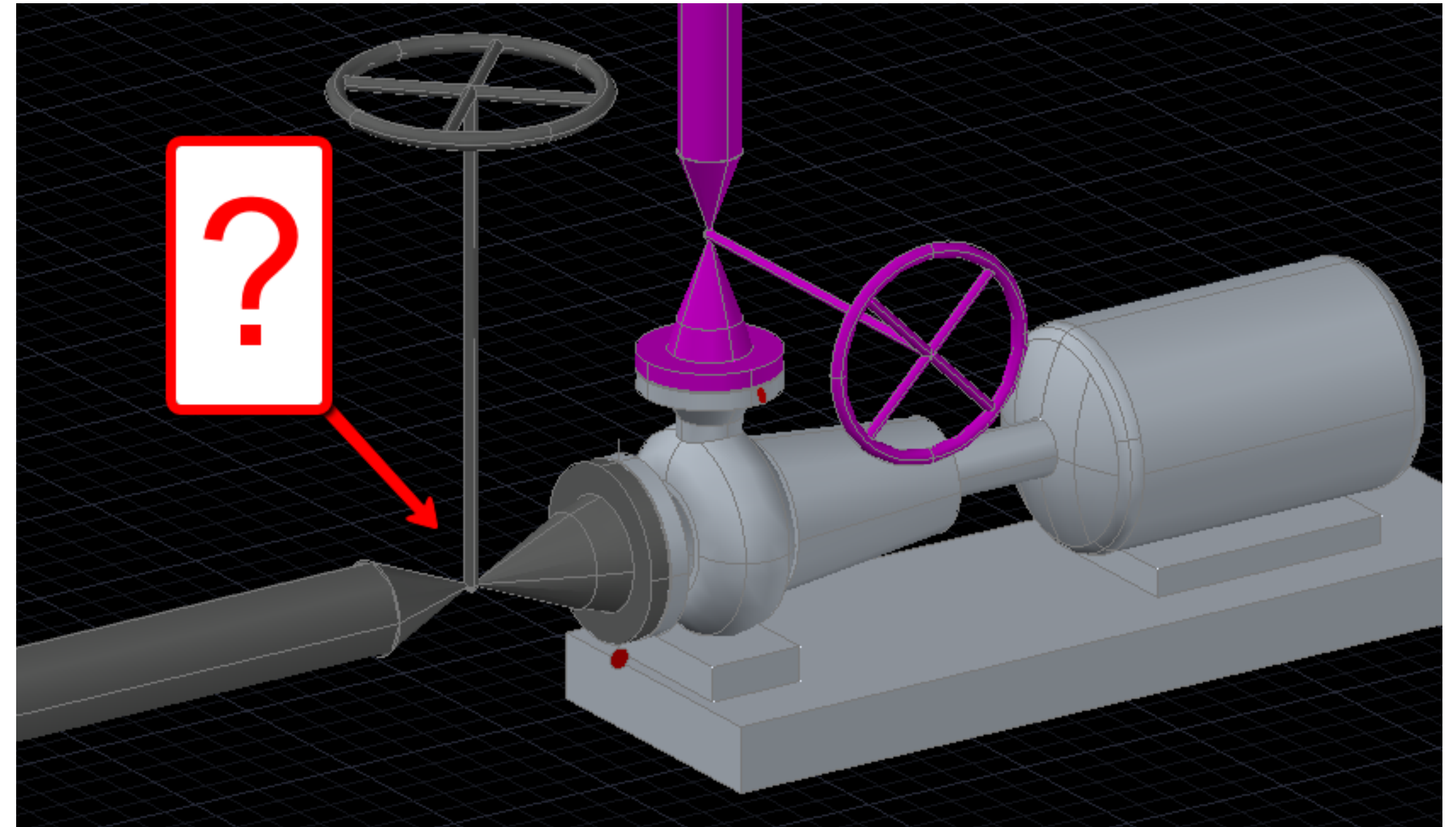
At the bottom of the P&ID Line List select Place.



# Link LineNumberTag to Plant 3D Drawing

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

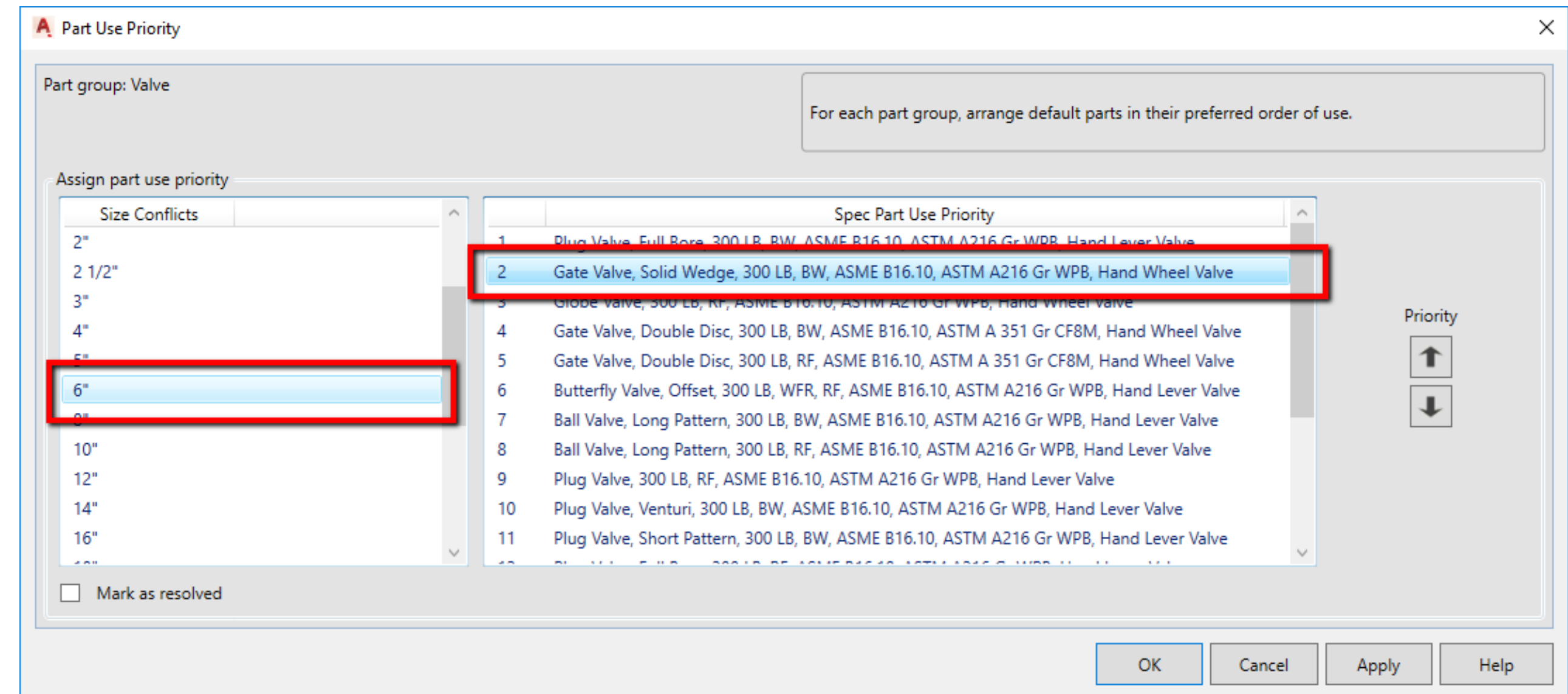
This is due to Part Use Priority for the spec you might be using. The spec is placing the first Gate Valve listed in the spec.



# Link LineNumberTag to Plant 3D Drawing

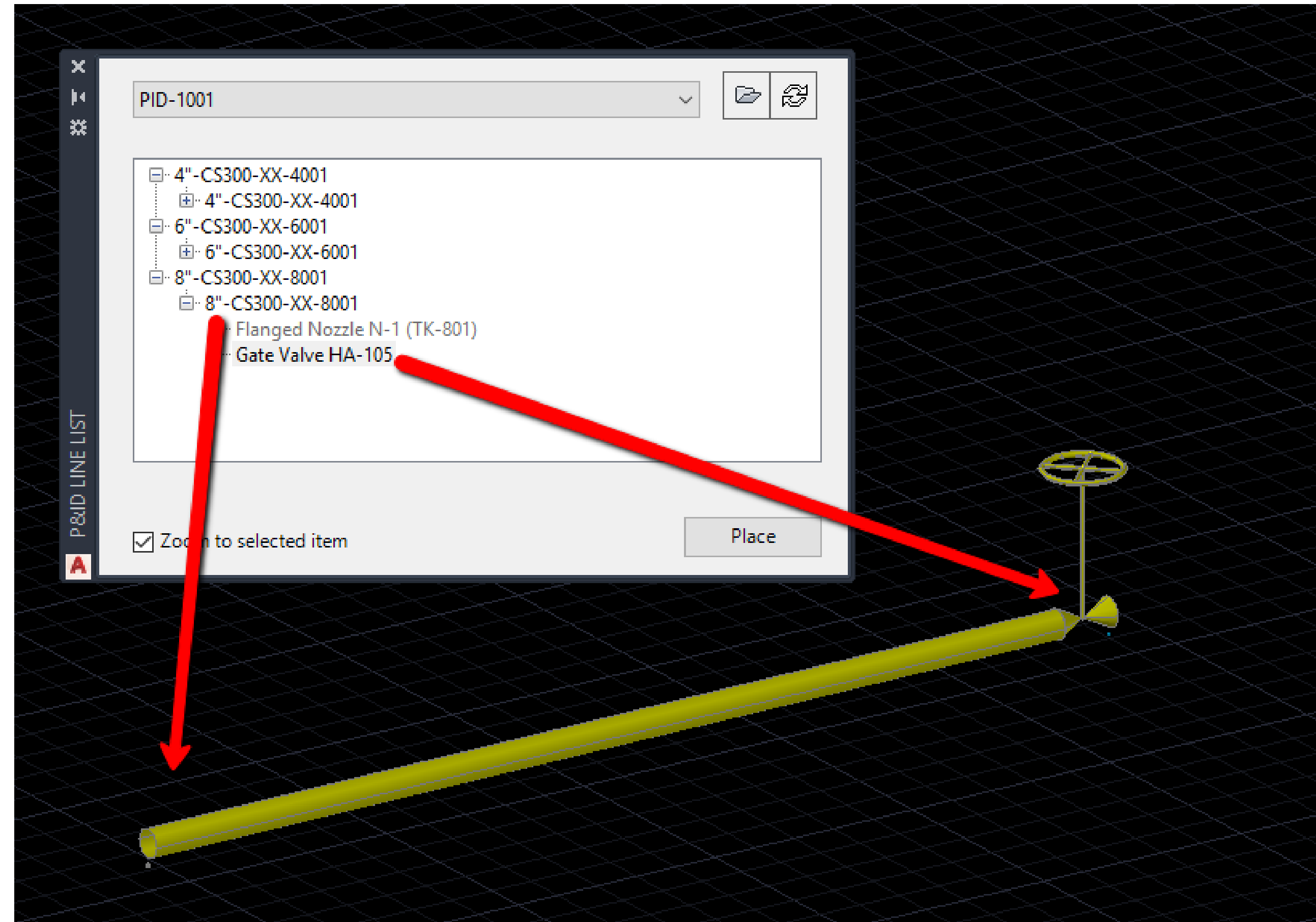
To change Part Use Priority:

- 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.



# Link LineNumberTag to Plant 3D Drawing

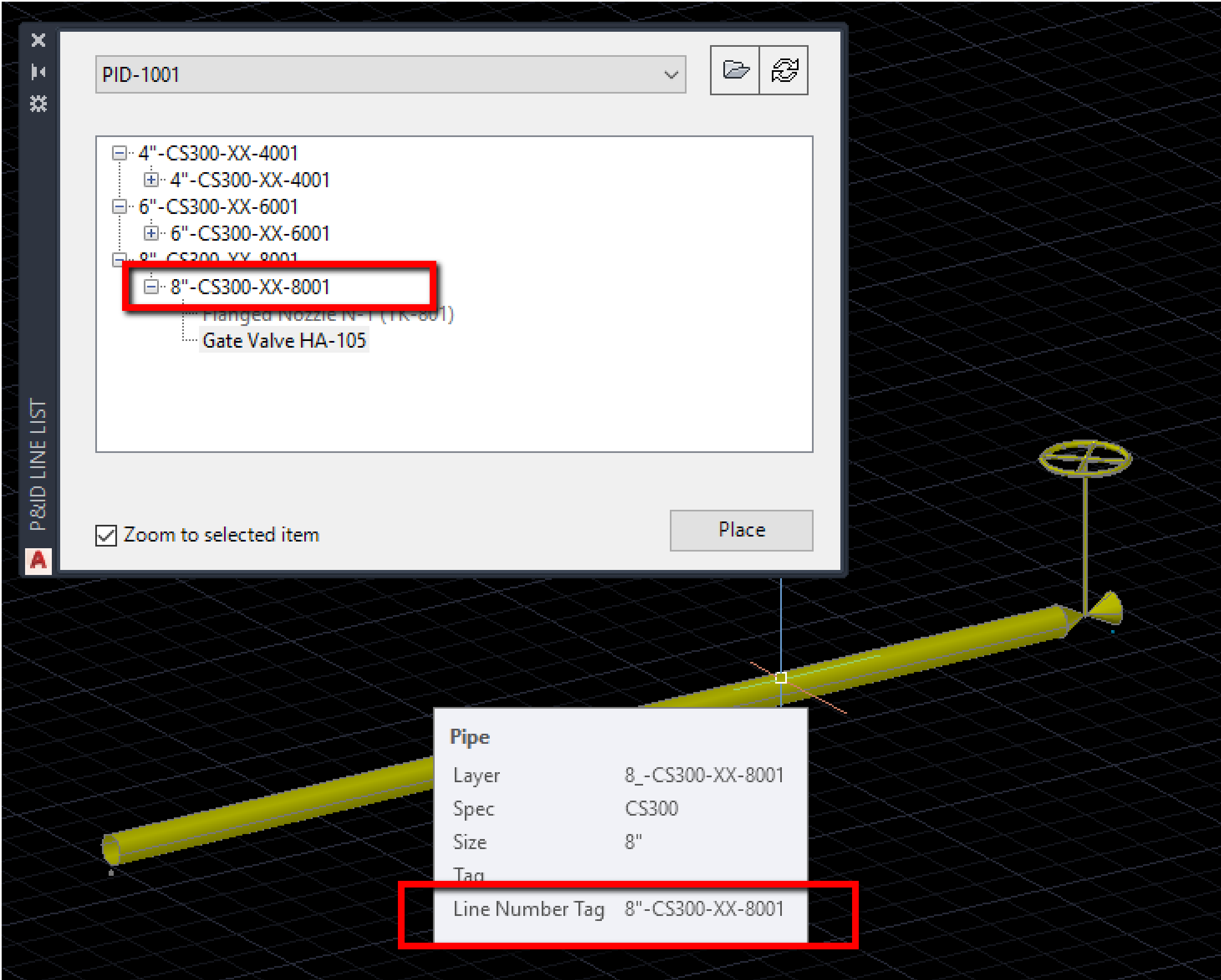
Routing a single pipe run would look something like this.



# Link LineNumberTag to Plant 3D Drawing

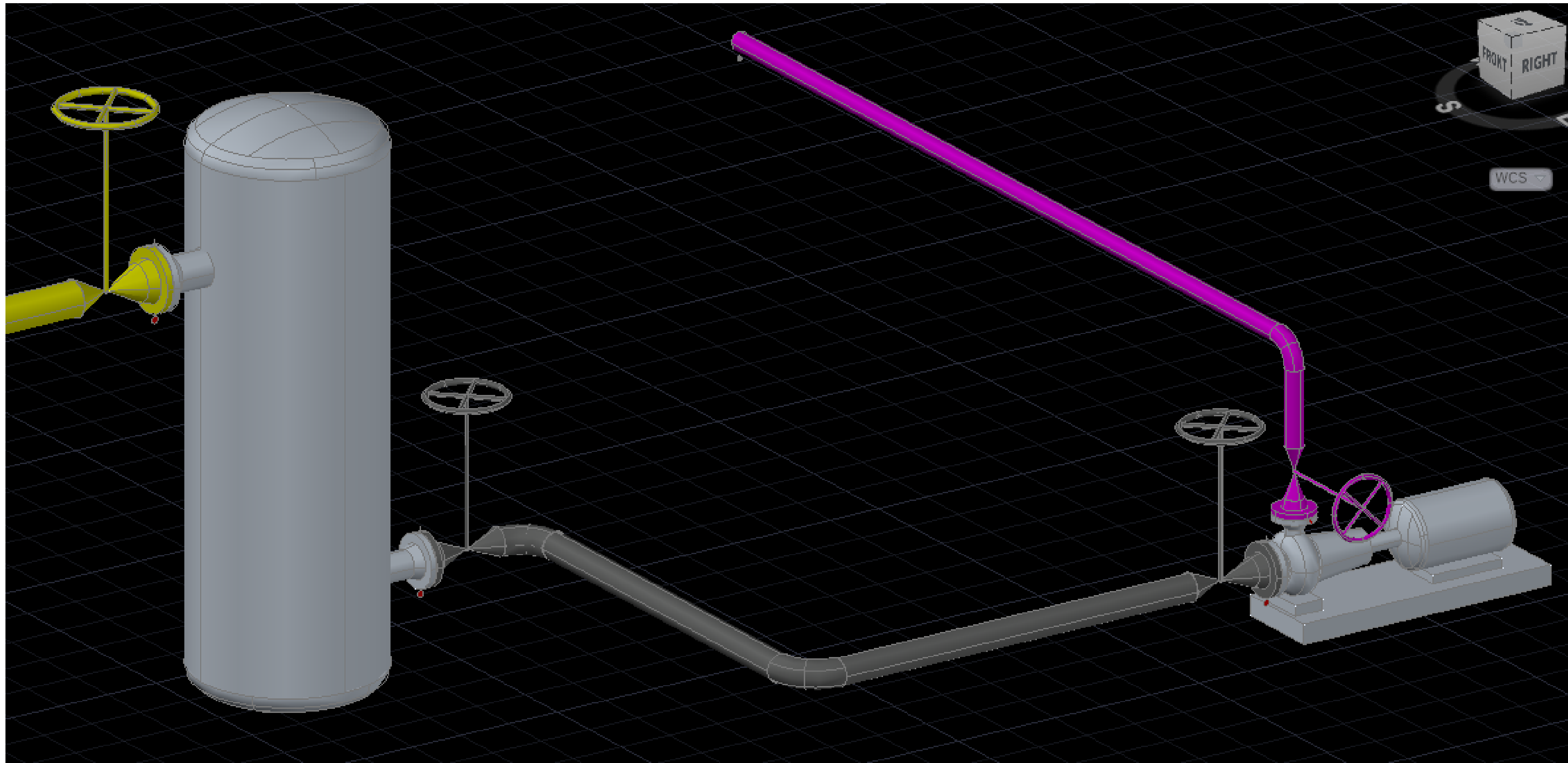
The pipe that is now placed in the model will place a tag matching to the P&ID drawing tag.

This is due to the changes that were previously made in the Project Setup.



# Link LineNumberTag to Plant 3D Drawing

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

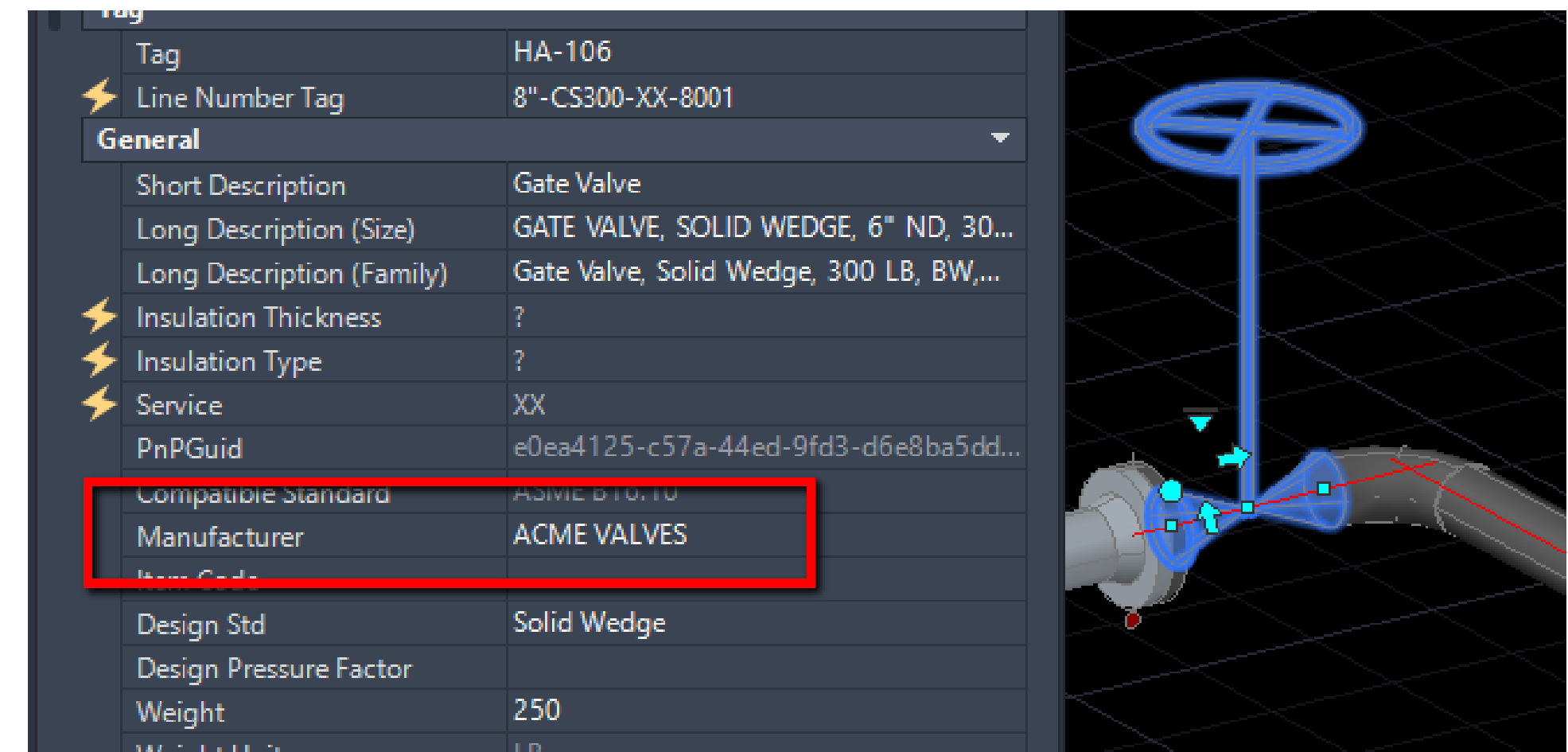
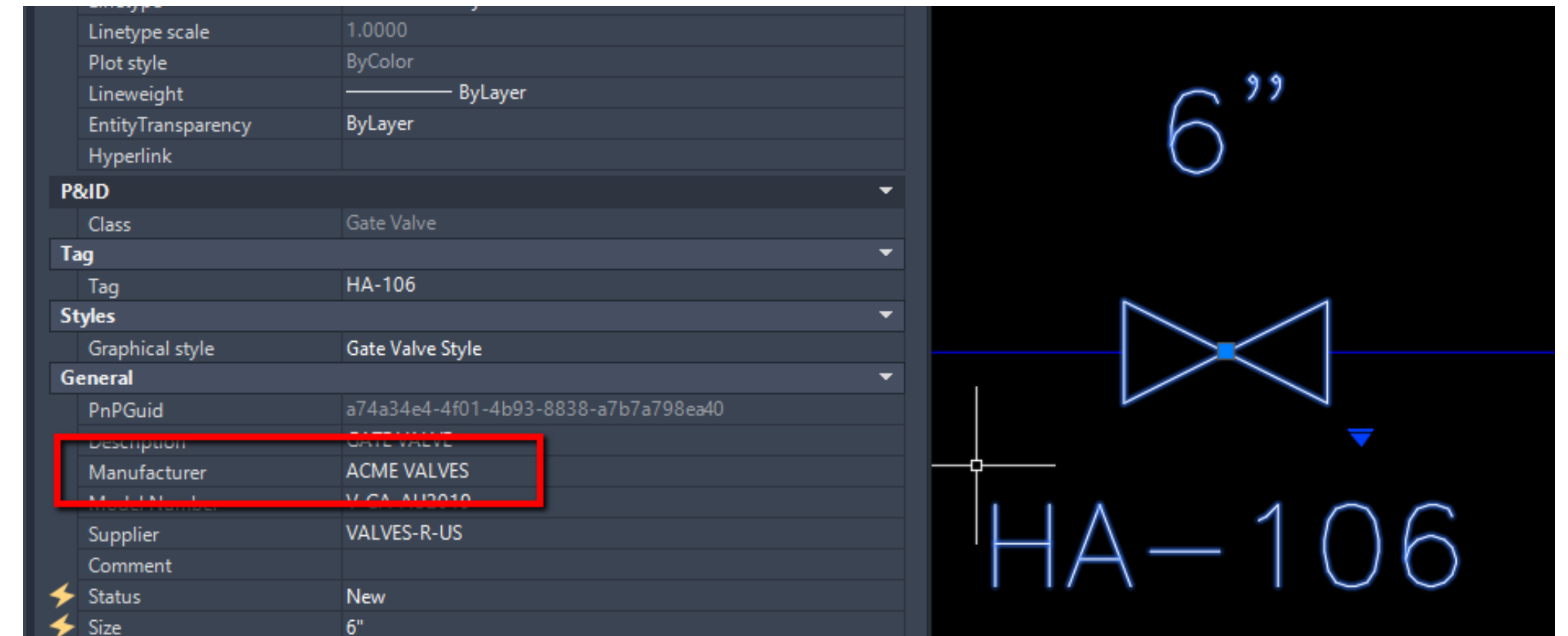


# Link LineNumberTag to Plant 3D Drawing


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.

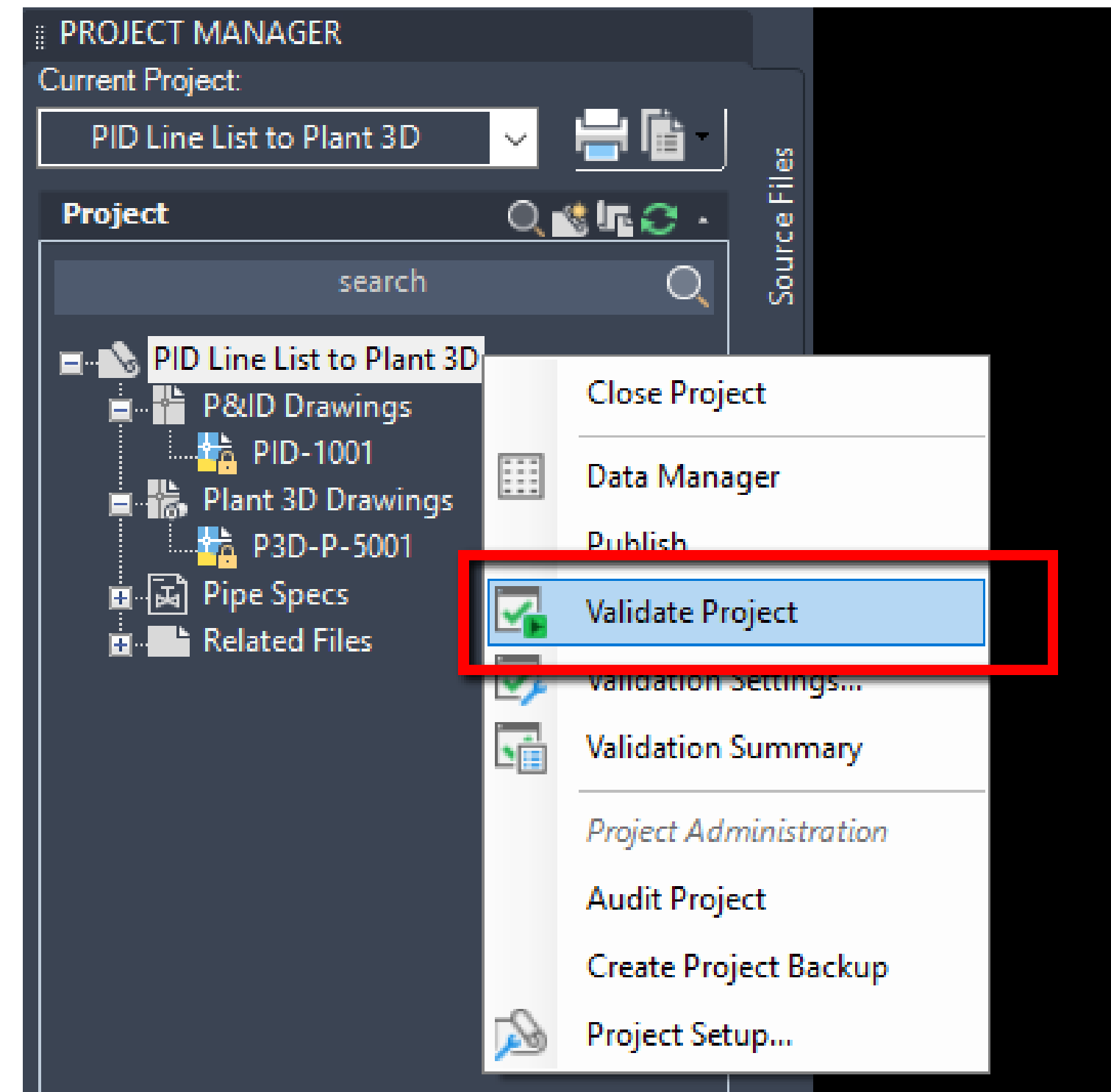


Learn how to use *Validate*  
Settings to make sure you are  
synchronized correctly

The background of the slide is a blue-tinted image. It shows a person's hand holding a pen, positioned as if about to write on a document. A grid pattern is overlaid on the scene, suggesting a technical or data-related context. The overall aesthetic is clean and professional.

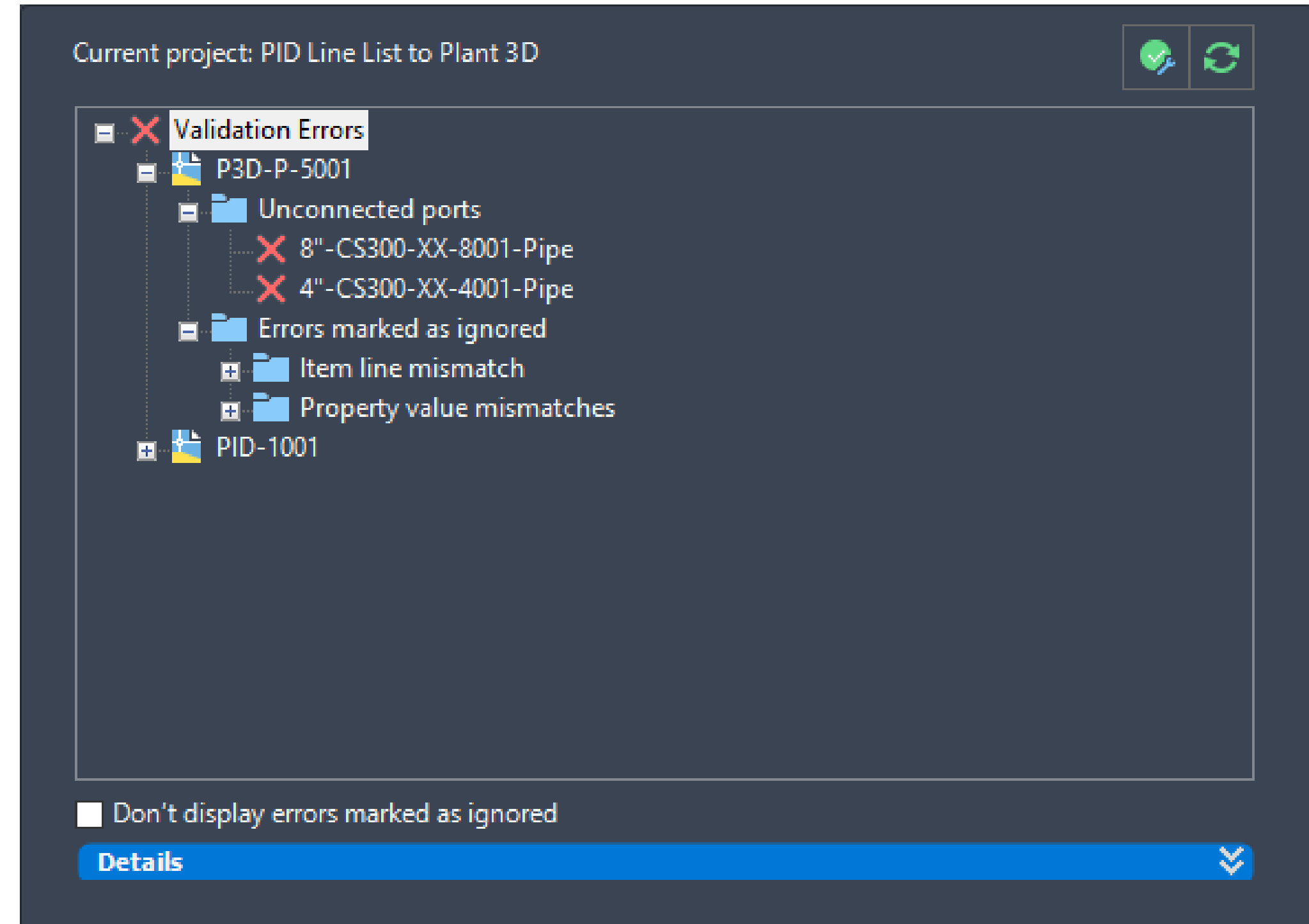
# Validation

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



# Validation

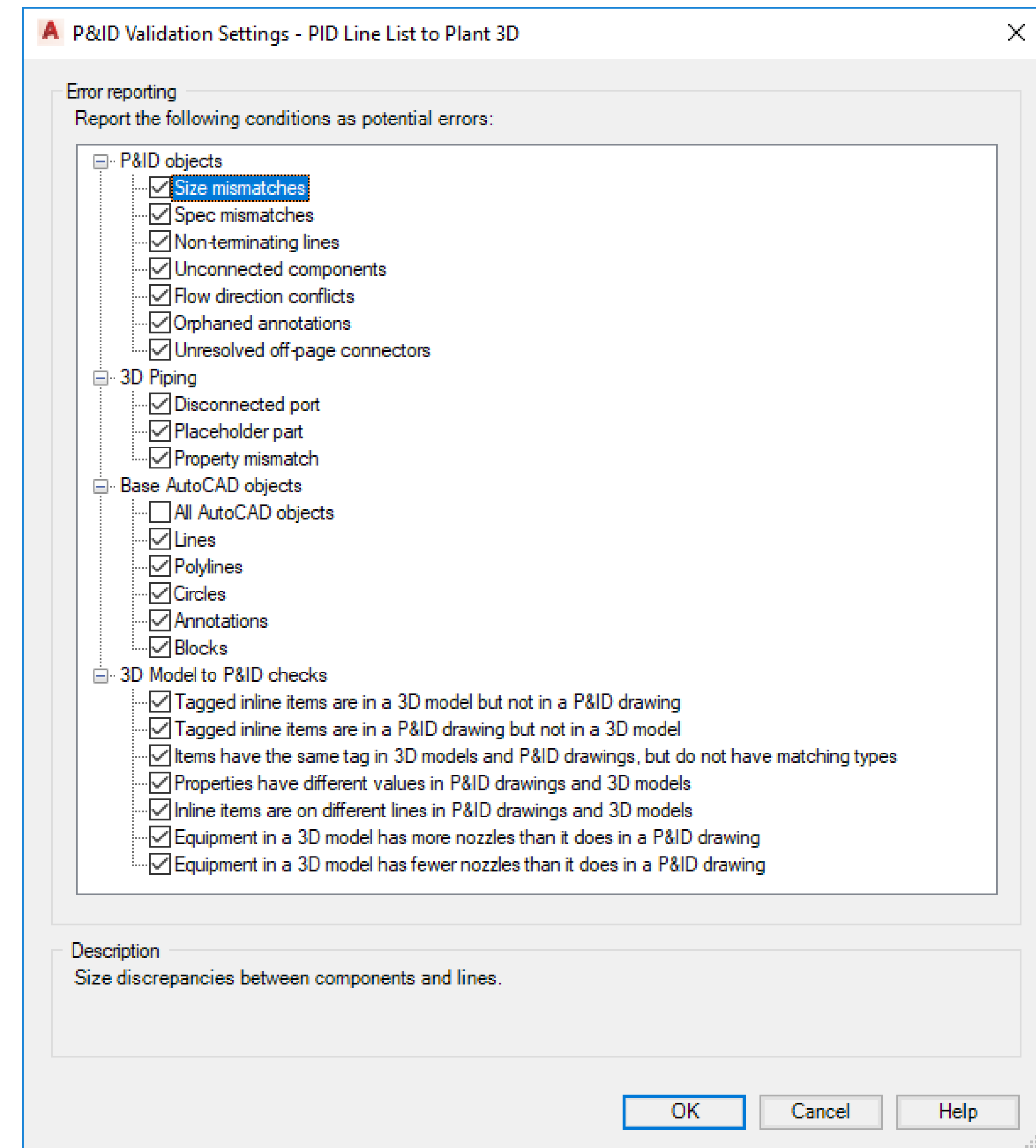
Validation Project will go through the project and show any items that are not within the parameters of the Validation Settings.



# Validation

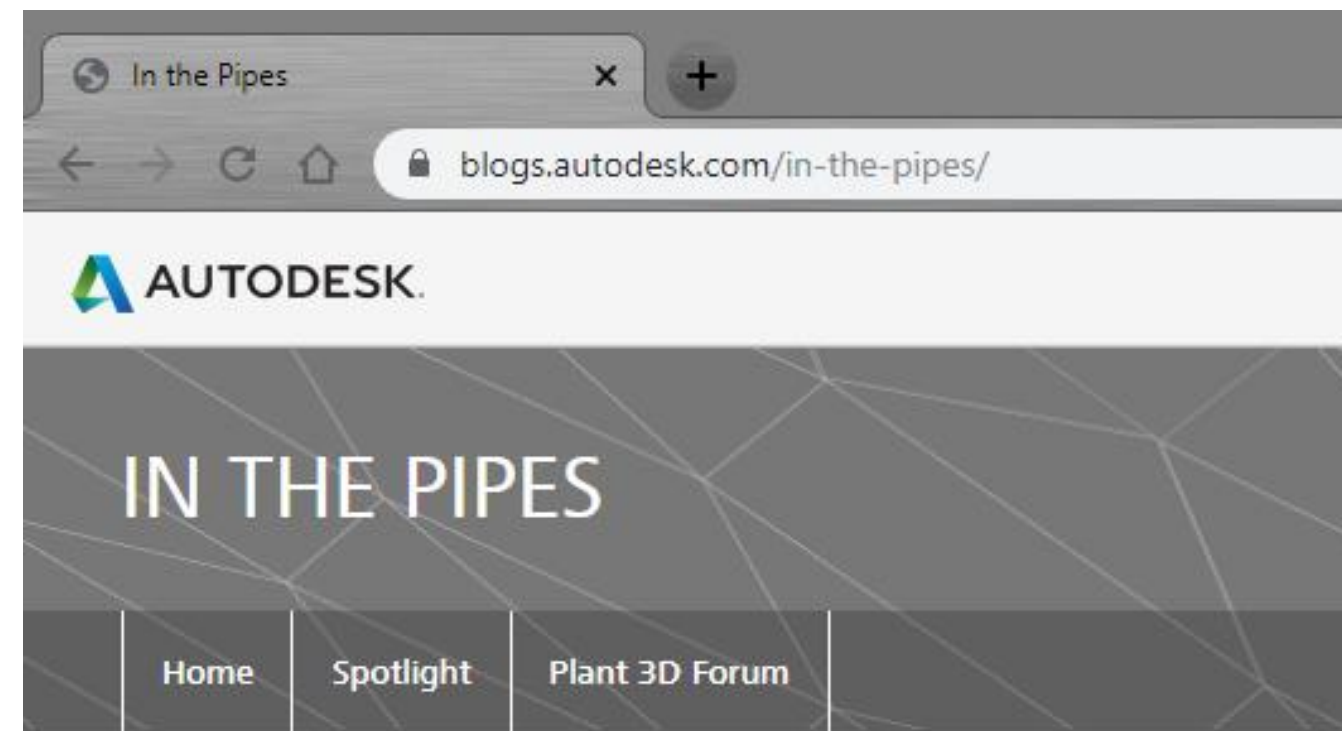
Right clicking on the project name will allow you to select the Validation Settings.

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.



# In The Pipes – Plant 3D Blog

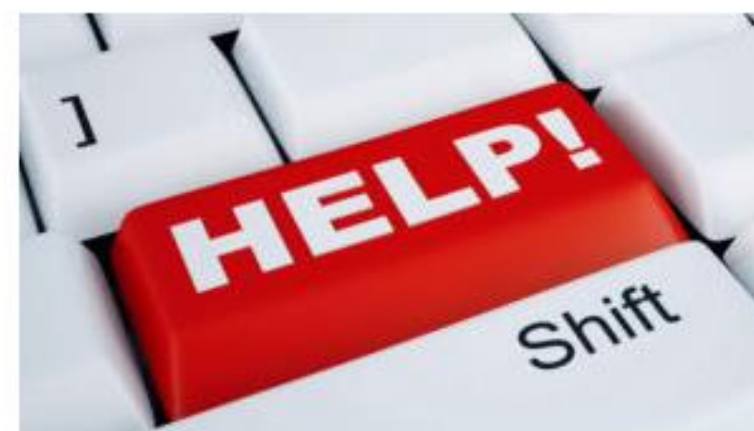
<https://blogs.autodesk.com/in-the-pipes/>



PLANT 3D

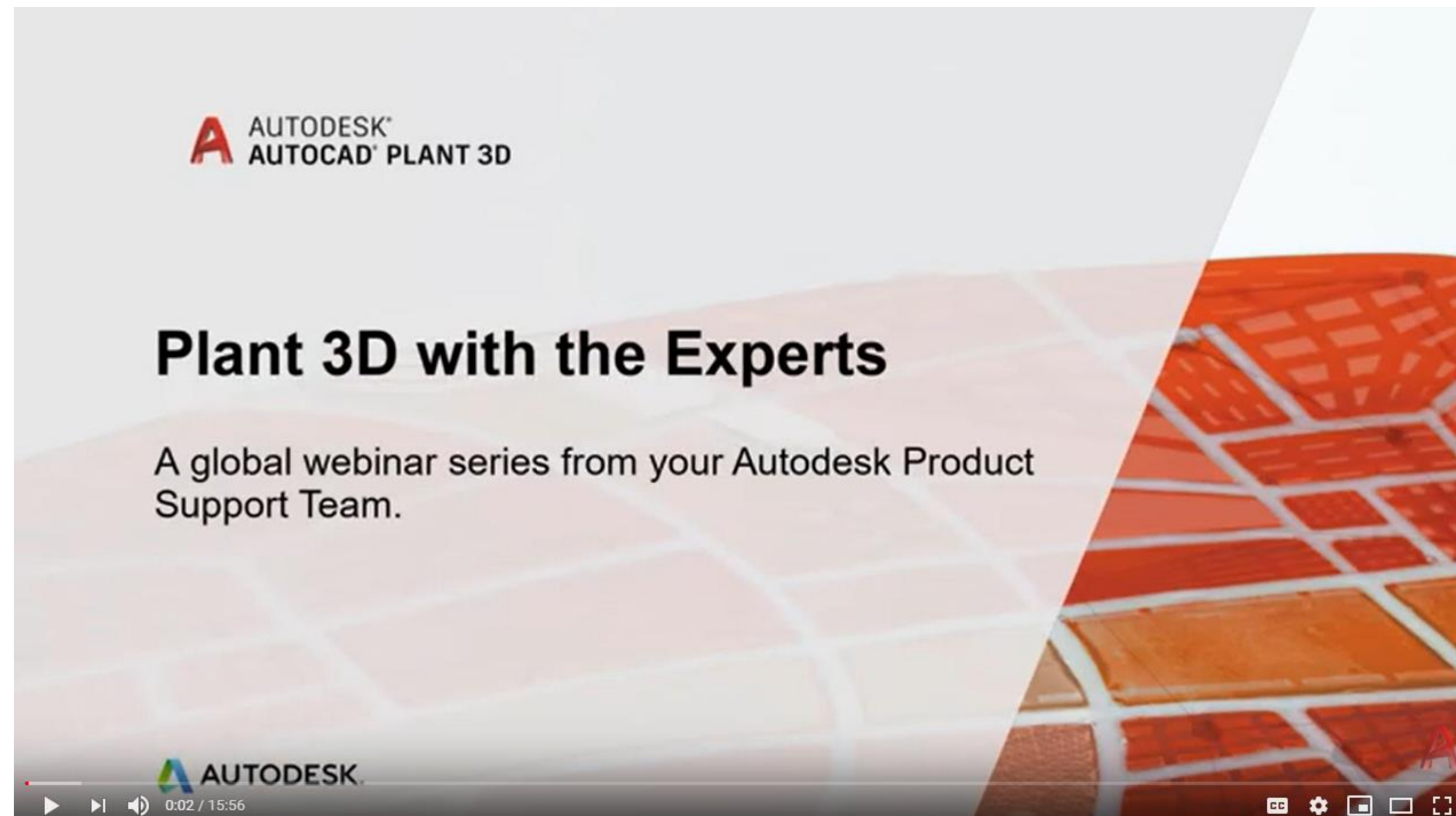
Where to get help for AutoCAD Plant 3D?

Quentin Contreras October 29, 2019



# AutoCAD YouTube Channel

<https://www.youtube.com/user/AutoCADExchange/search?query=plant+3d>





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