Walk-in Slide: AU 2014 Social Media Feed

1. Click on the link below, this will open your web browser

http://aucache.autodesk.com/social/visualization.html

2. Use “Extended Display” to project the website on screen if you plan to work on your computer. Use “Duplicate” to display same image on screen and computer.

Going With The Flow with Inventor® Tube & Pipe

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http://cadtipstricks.wordpress.com/

Introduction

- This class will be a brief look at some Inventor Tube & Pipe techniques, tips and tricks. It is not intended to be a full tutorial on using Tube & Pipe, but rather a look at more specific elements of the module.
- The advice given is from my own experience, and may not be the only correct way to perform these actions in Tube & Pipe

About Me:

Chris Benner

- CAD Supervisor @ Powell Fabrication & Manufacturing, Inc. St. Louis, MI USA
- 20 Plus years CAD experience
- 6 years with Inventor® Tube & Pipe
- Autodesk Expert Elite, blogger, social media.
- Dad, husband. Fan of American football, music, craft beer, good scotch and an occasional cigar.

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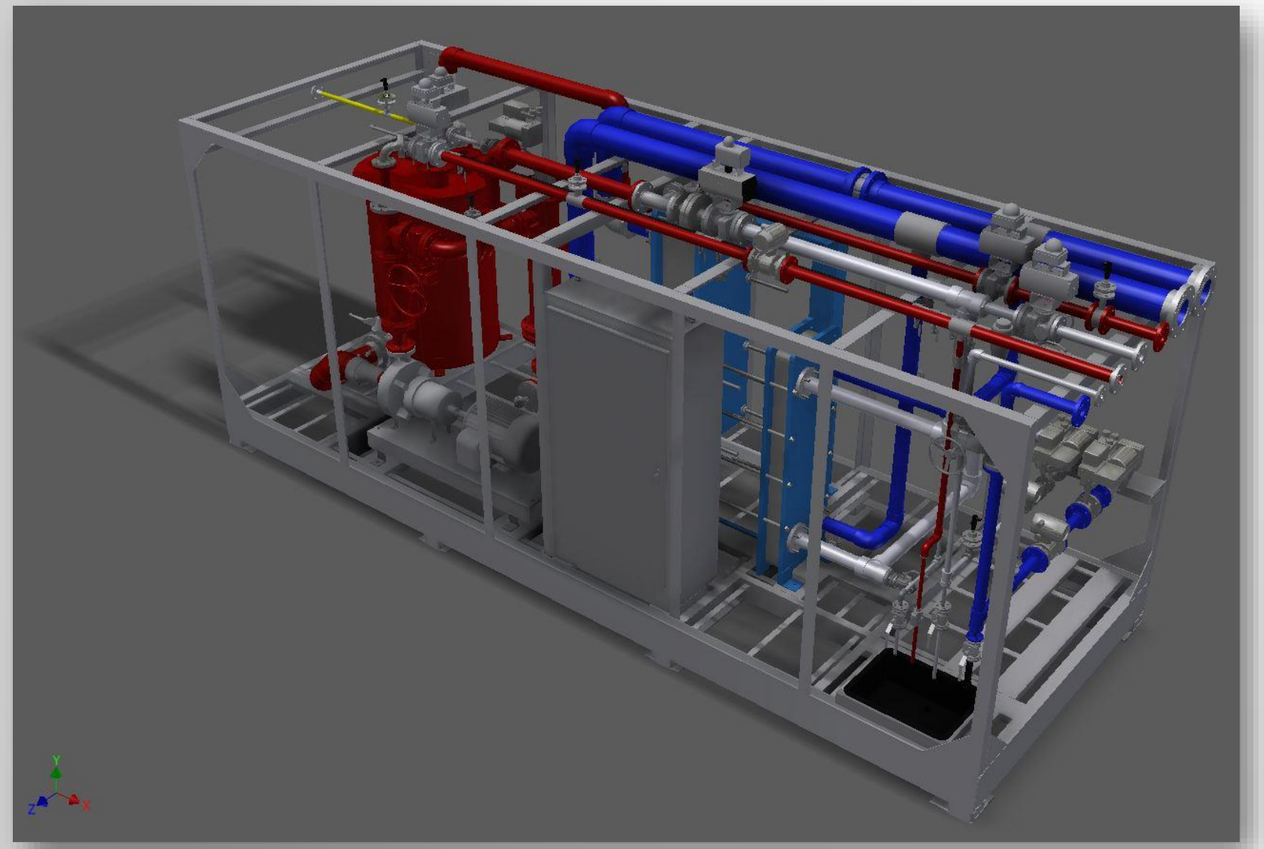
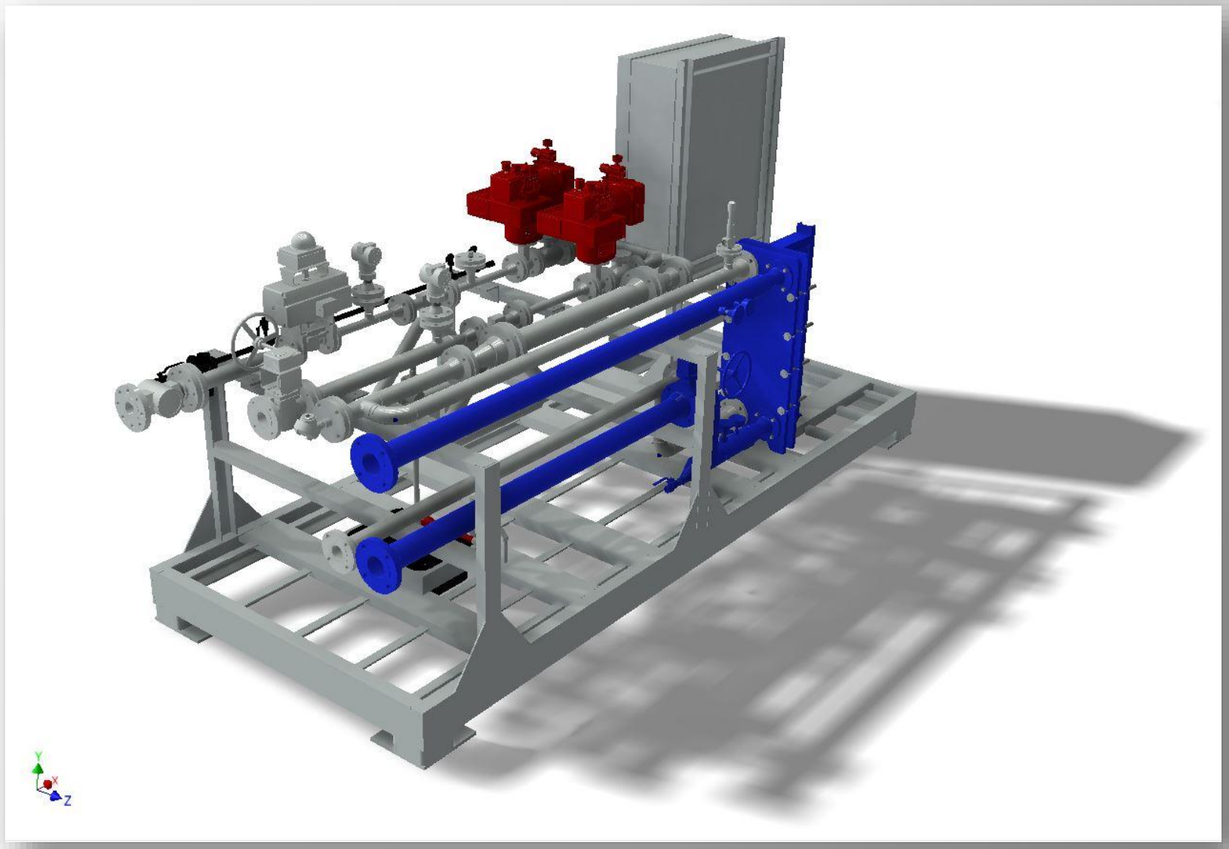
Home…

About Powell Fabrication & Manufacturing, Inc.
www.powellfab.com





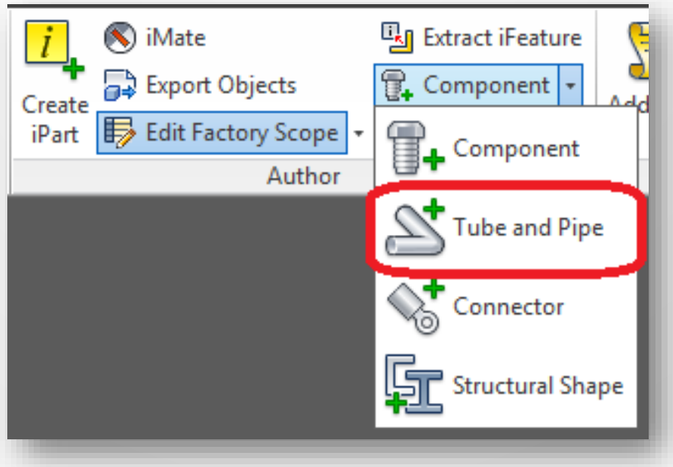
Objectives

- Overview of Authoring & Publishing Fittings
- Basics of Tube & Pipe Styles
- Using Geometry to Constrain Routes
- Productivity Tips, Tricks

Authoring & Publishing Fittings

Authoring Parts as Fittings or Conduit

- Authoring fittings sets them up for use with Tube & Pipe.
- Establishes connections and rotational axes.
- Authoring tool found on Manage tab, Author Panel



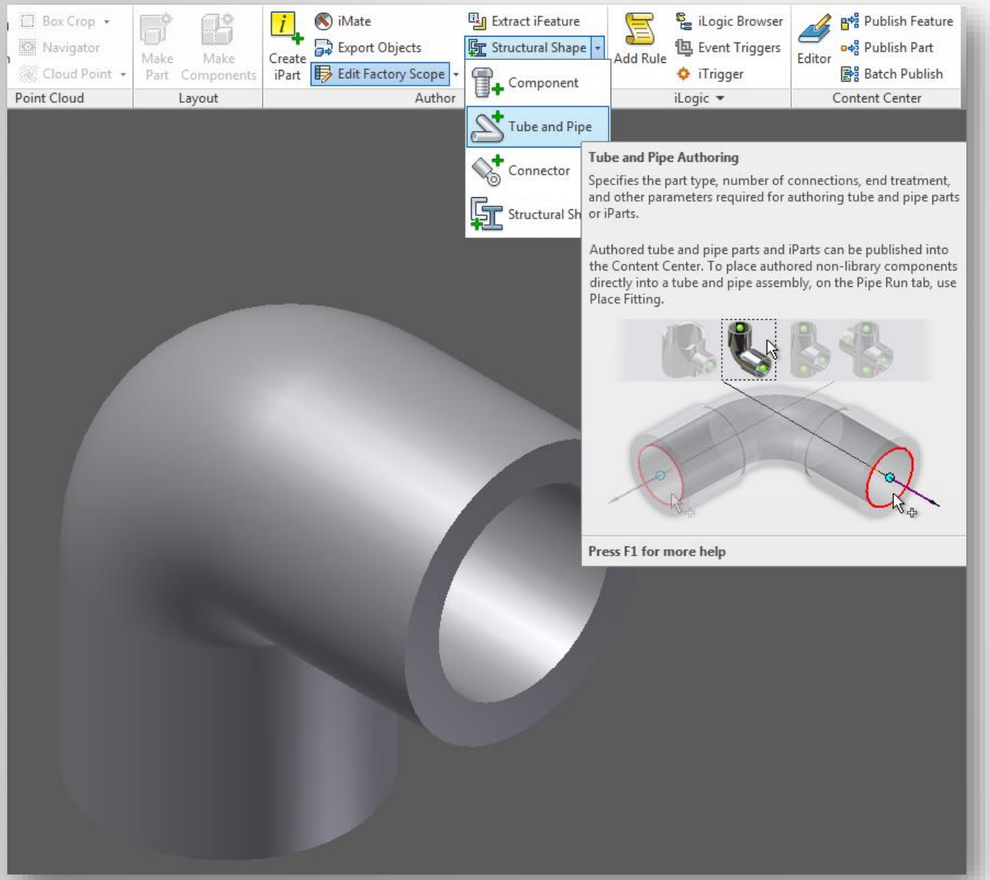
iParts as Pipes or Fittings

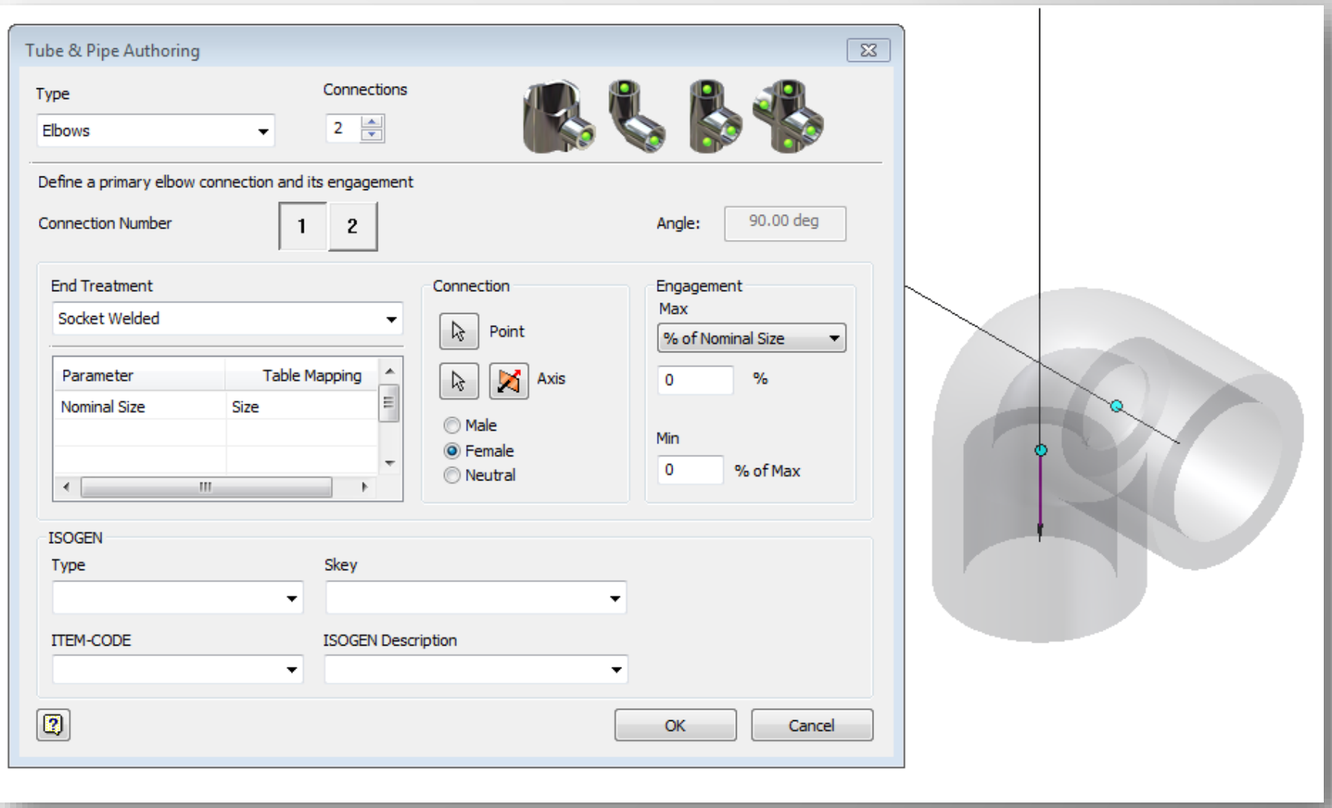
- Connection Number
- End Treatment
- Parameter and iPart mapping
- Connection point & axis, for branches; mating point & axis for second connection
- Engagement, for branches; cut profile for mating pipe
- ISOGEN Properties for fittings

Normal part only as fittings

- Connection Number
- End Treatment
- Fixed Nominal Size
- Connection point & axis, for branches; mating point & axis for second connection
- Engagement, for branches; cut profile for mating pipe
- ISOGEN Properties for fittings

Authoring an Elbow from an iPart



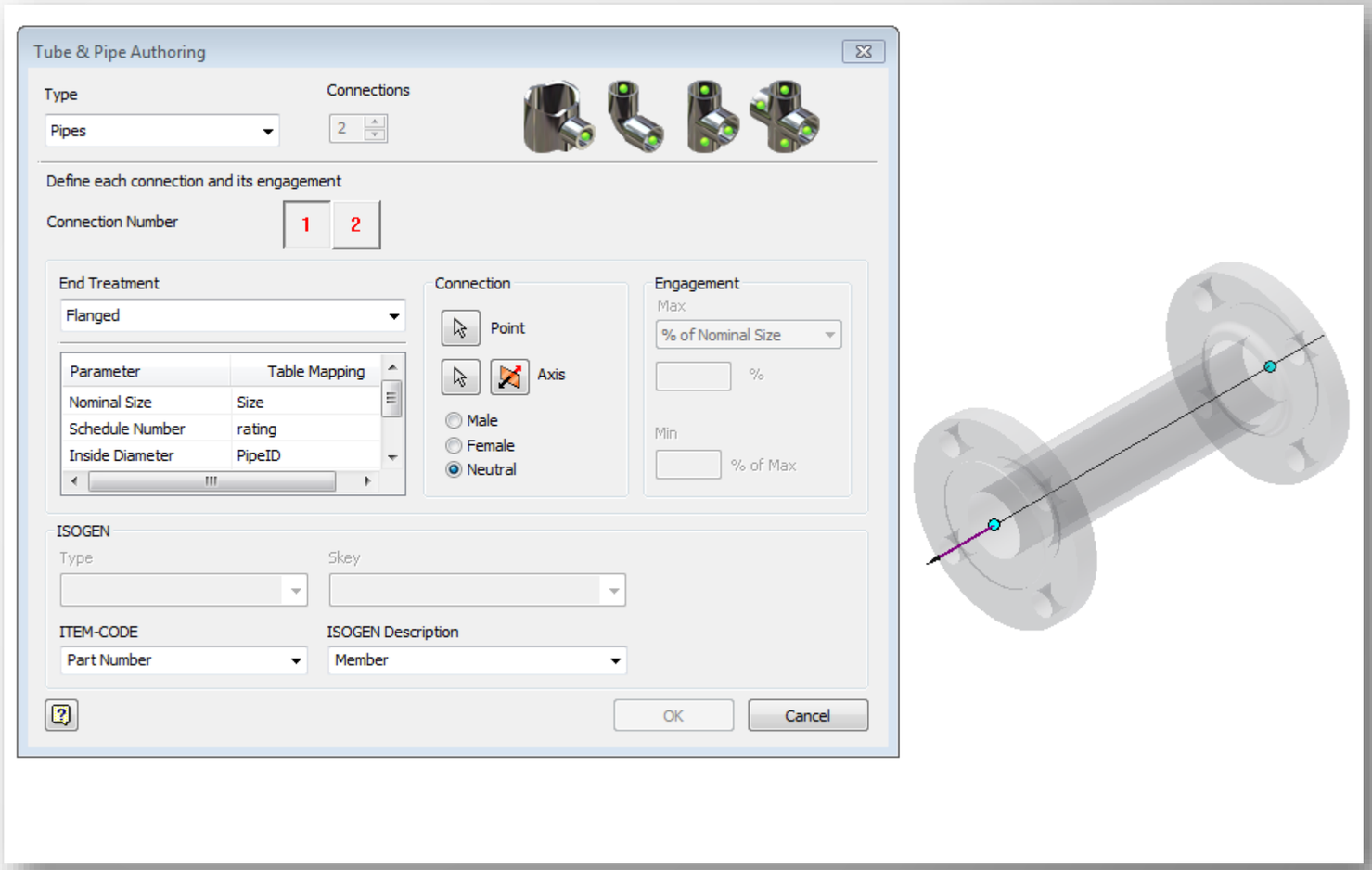


Tip: If you are authoring a fitting that either does not fit into one of the types listed, or which you want to publish to a custom Content Center folder, choose *Other* from the “Type” pull down. This allows you to specify where it goes when the part is published.

Tip: Only part files may be authored for Tube & Pipe. Assemblies must first be derived to a part before they can be authored.

Authoring Pipe Conduit - Parameters

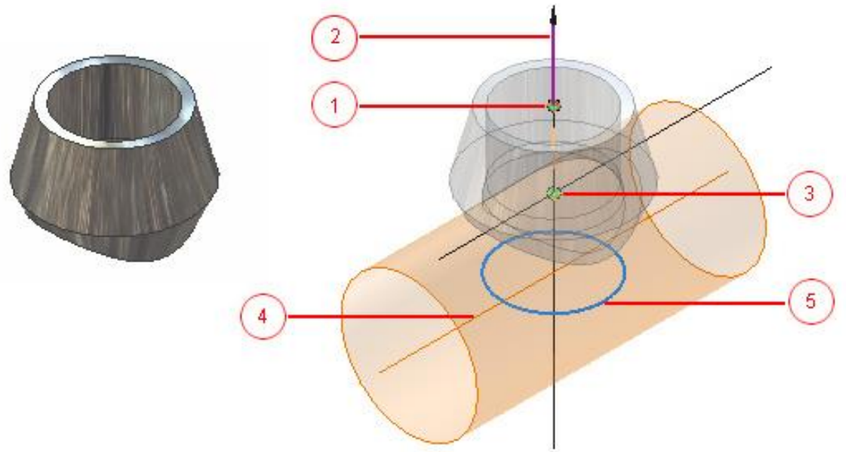
- Nominal Size
- Schedule Number
- Inside Diameter
- Outside Diameter
- Pipe Length



Authoring Branch Fittings - Parameters

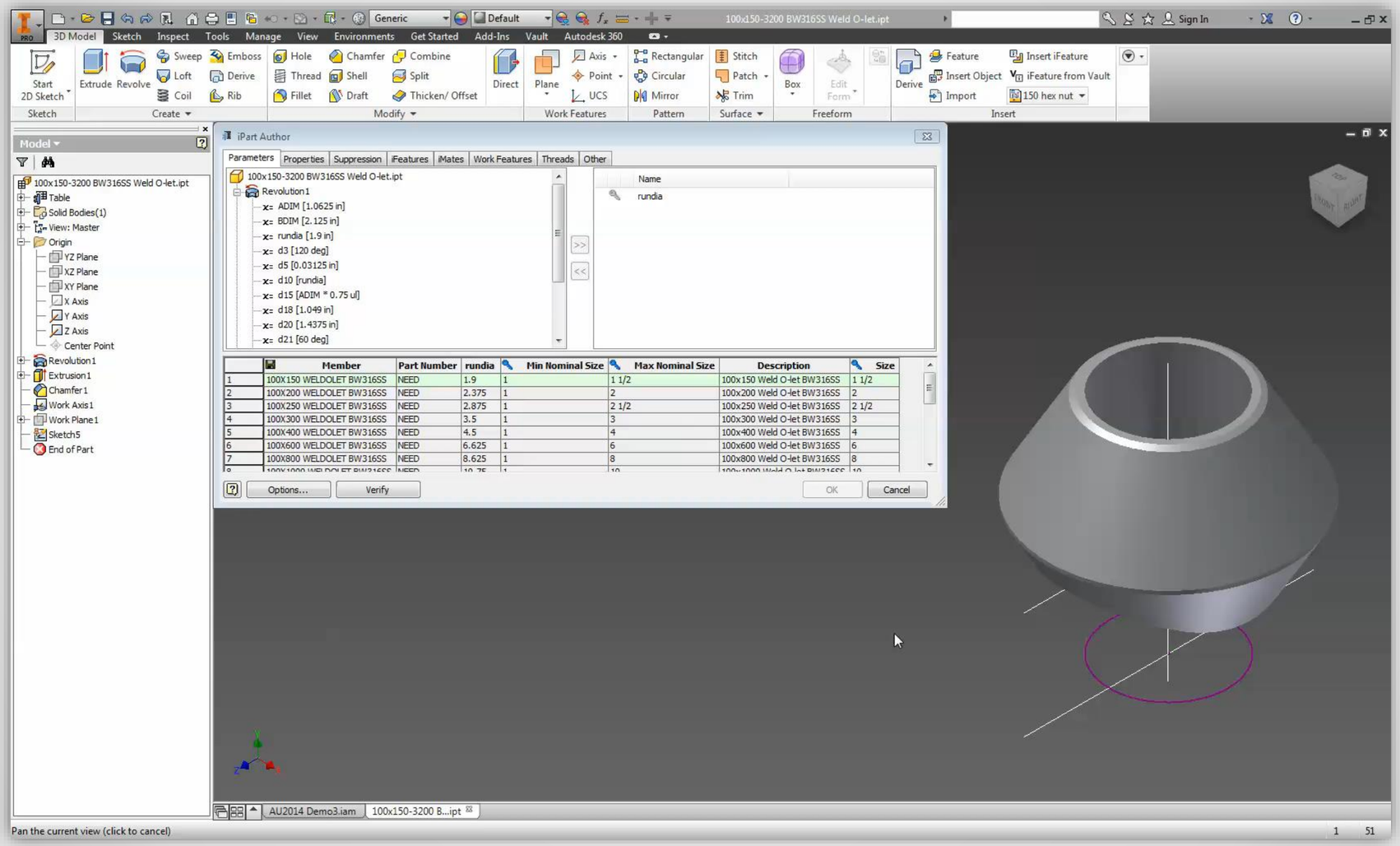
- Min Nominal Size-Pipe Size of the Branch Fitting
- Max Nominal Size-Pipe Size of the conduit being connected to.

The following images illustrate the key parameters for authoring a sample branch fitting:



1 - Connection point for Connection Number 1; **2** - Connection axis for Connection Number 1; **3** - Mating Point for Connection Number 2; **4** - Pipe Axis for Connection Number 2; **5** - Cut Profile

Branch Authoring Video

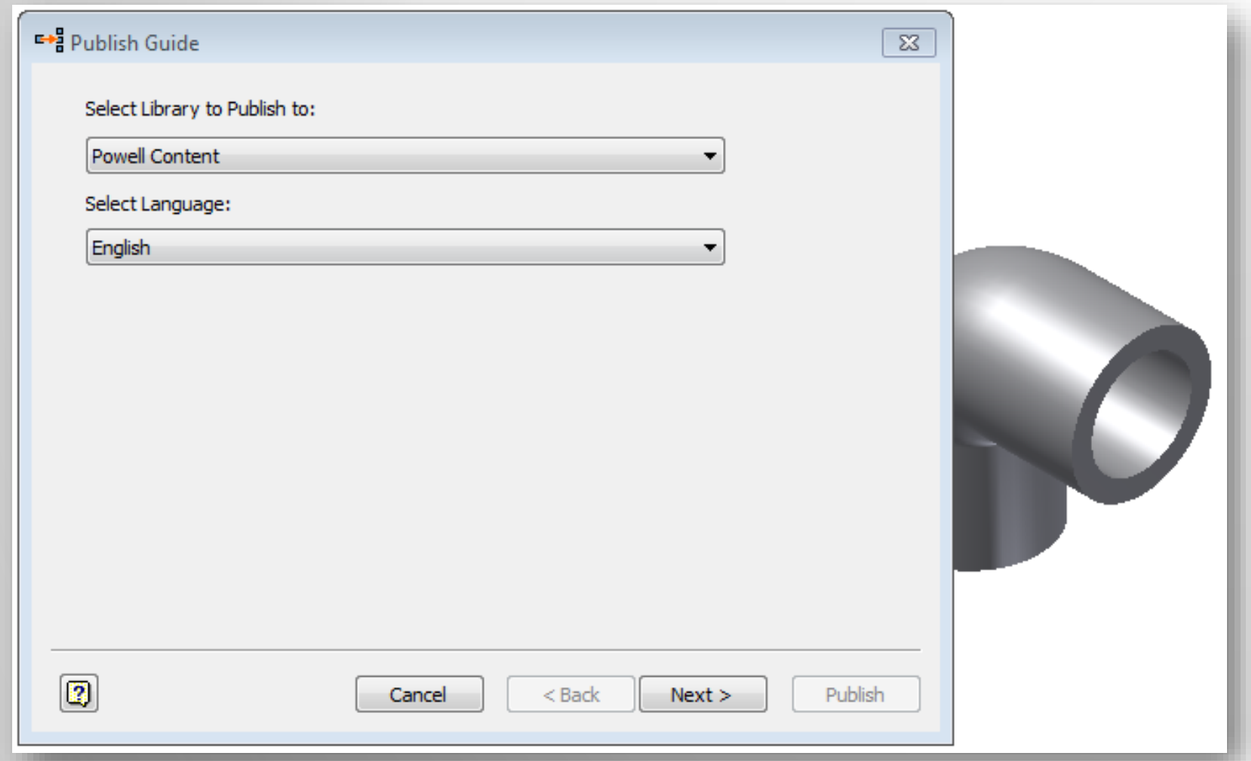


Publishing Fittings to Content Center

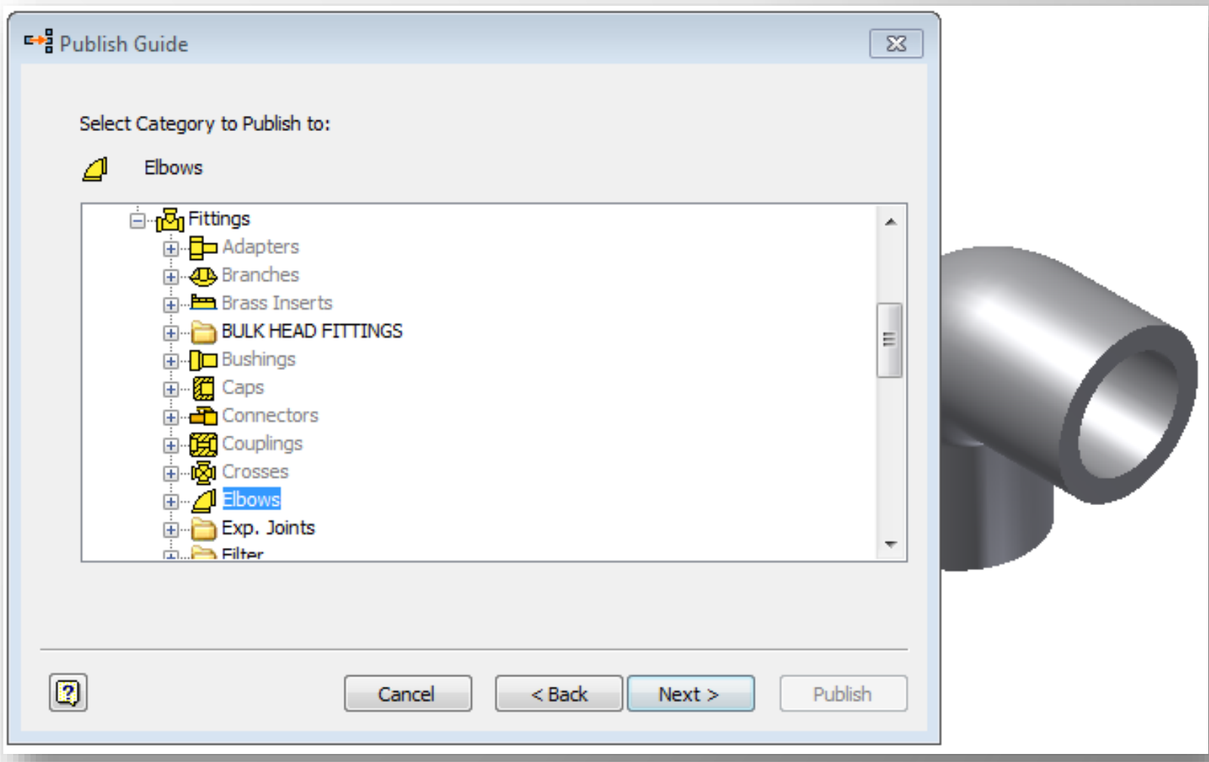
- Must have Read / Write Library Available
- Can be Published to Custom Categories, but They Must be Created Before Publishing
- Publish Found on Manage Tab – Content Center Panel
- Fill Out Needed Information on the Following Screens:

Publishing Content

- Screen #1 – Specify Library

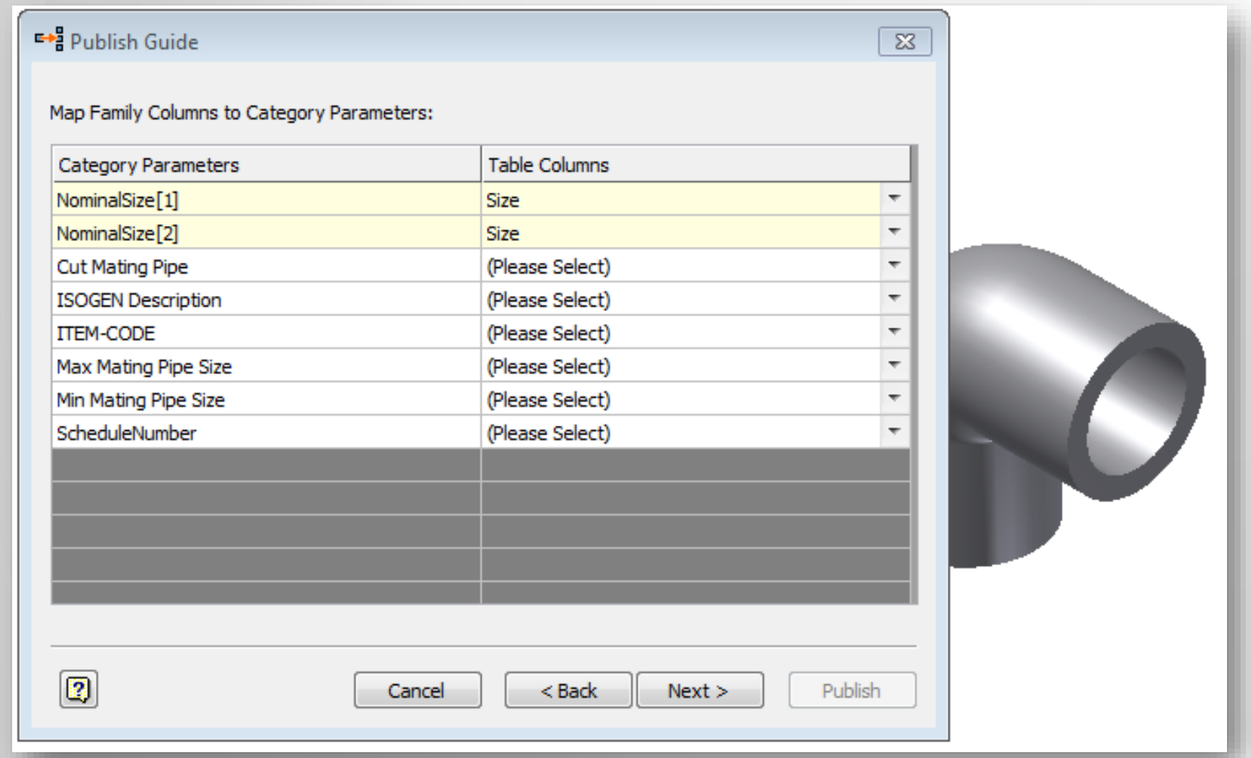


- Screen #2 – Specify Category

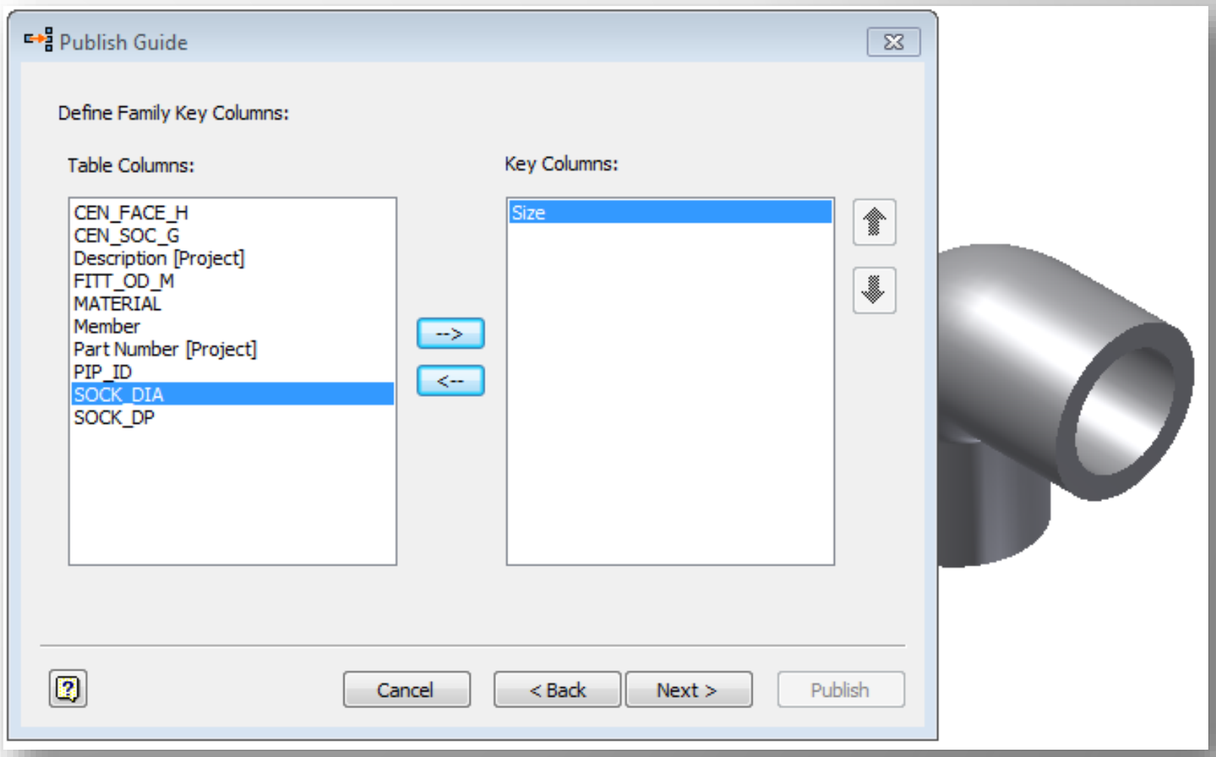


Publishing Content

- Screen #3 – Map Parameters

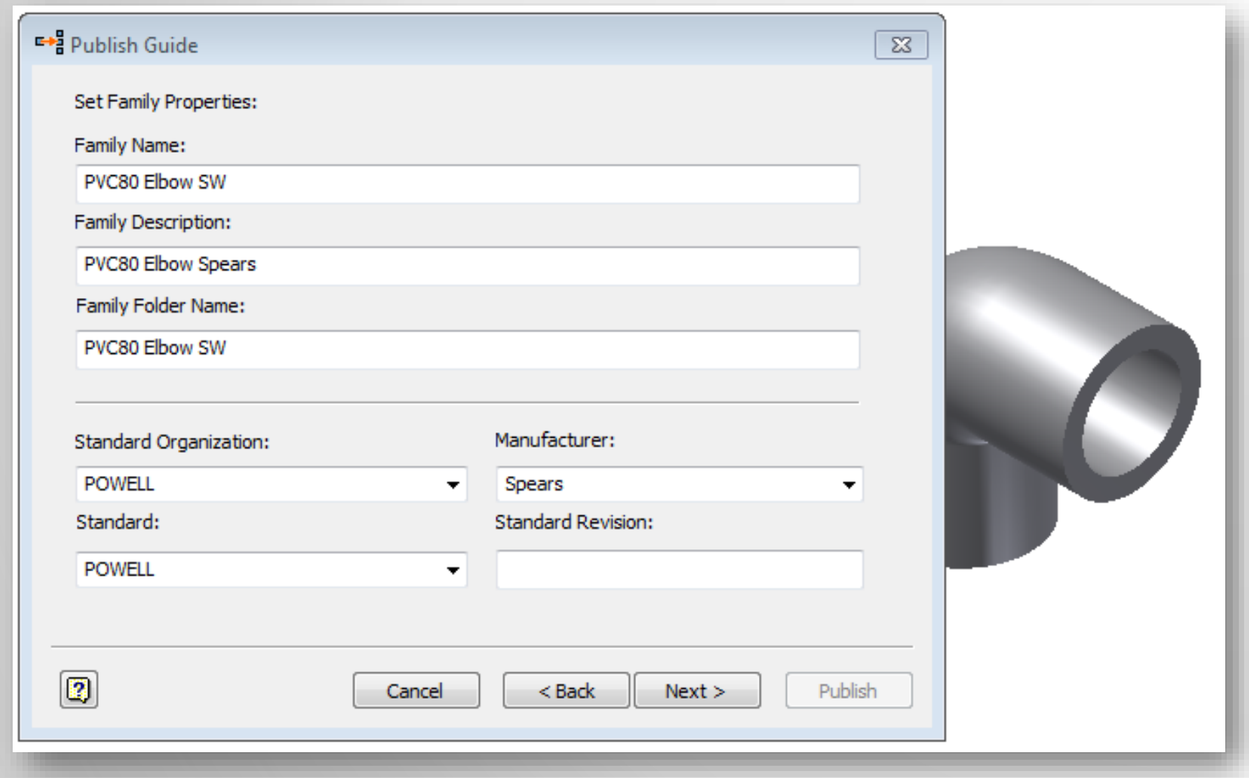


- Screen #4 – Define Key Columns

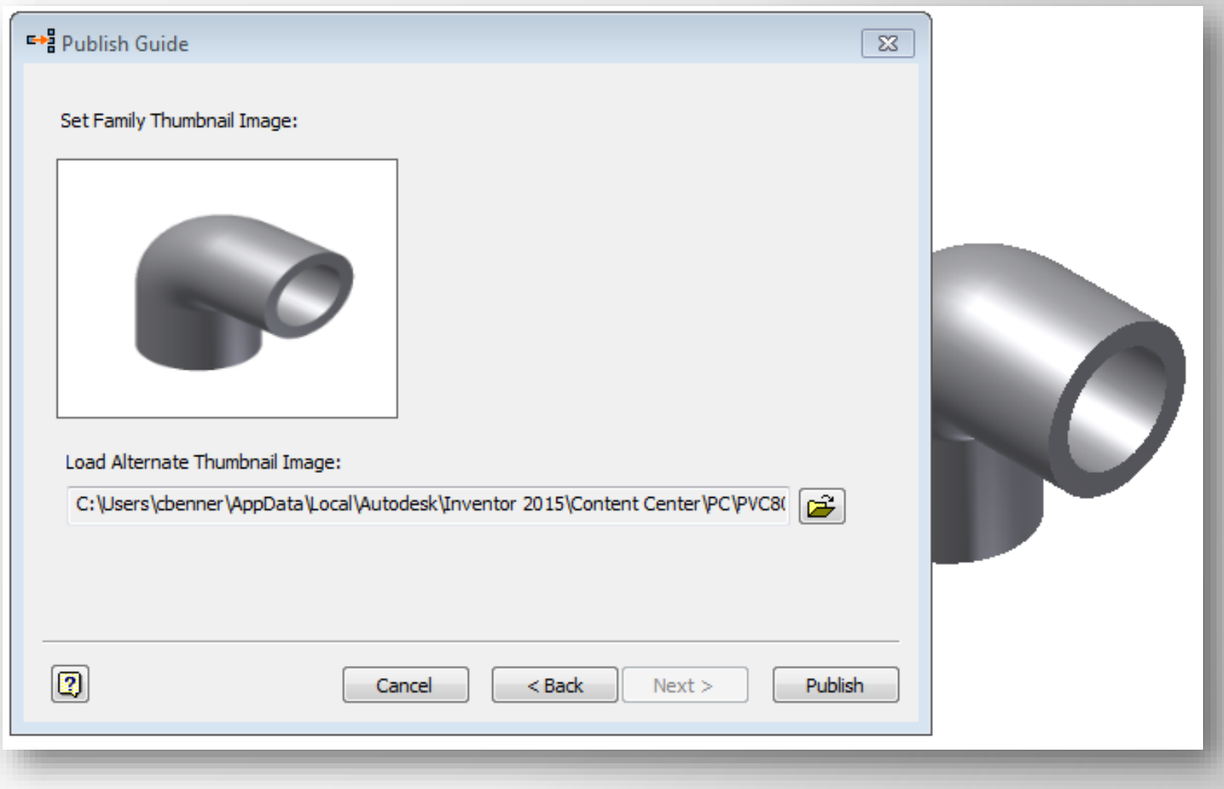


Publishing Content

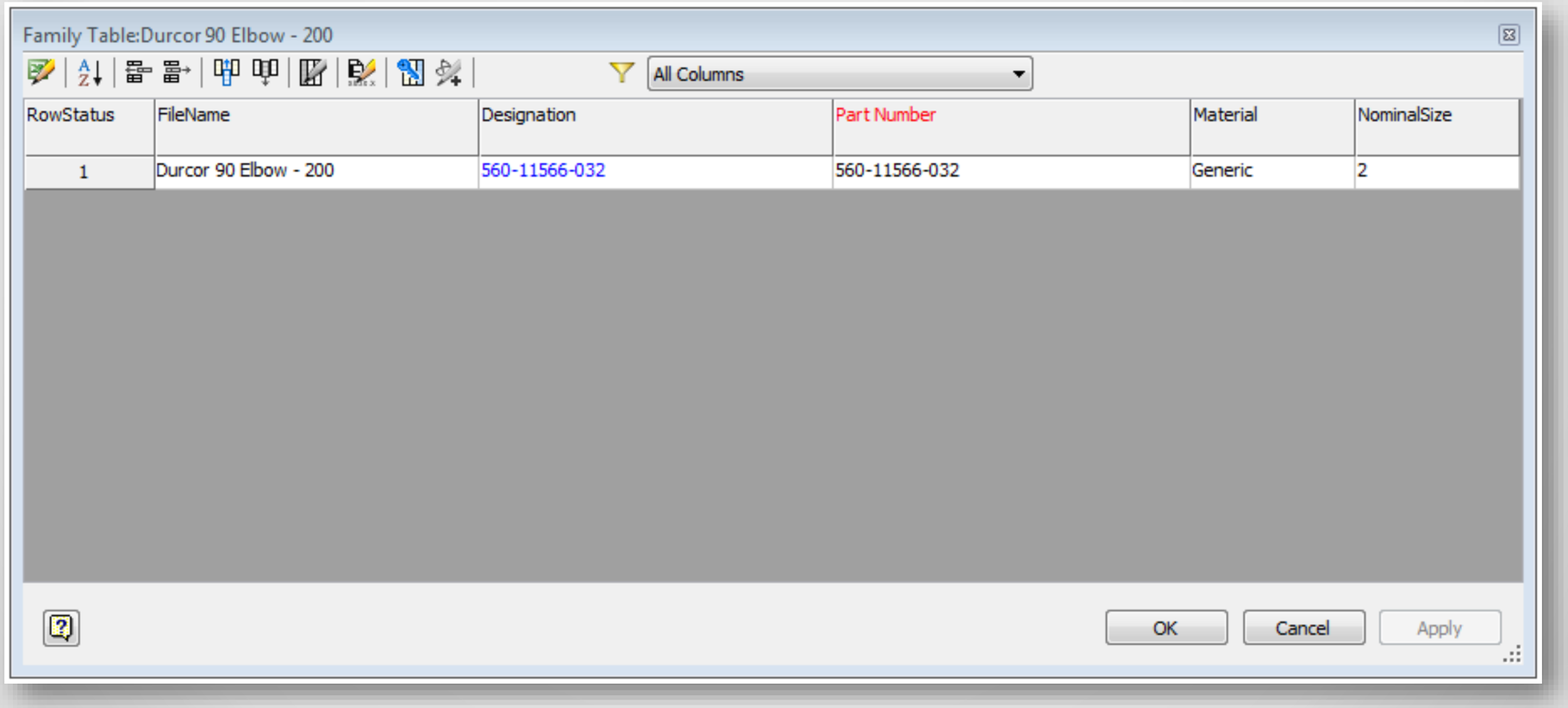
- Screen #5 – Family Name, Description etc.



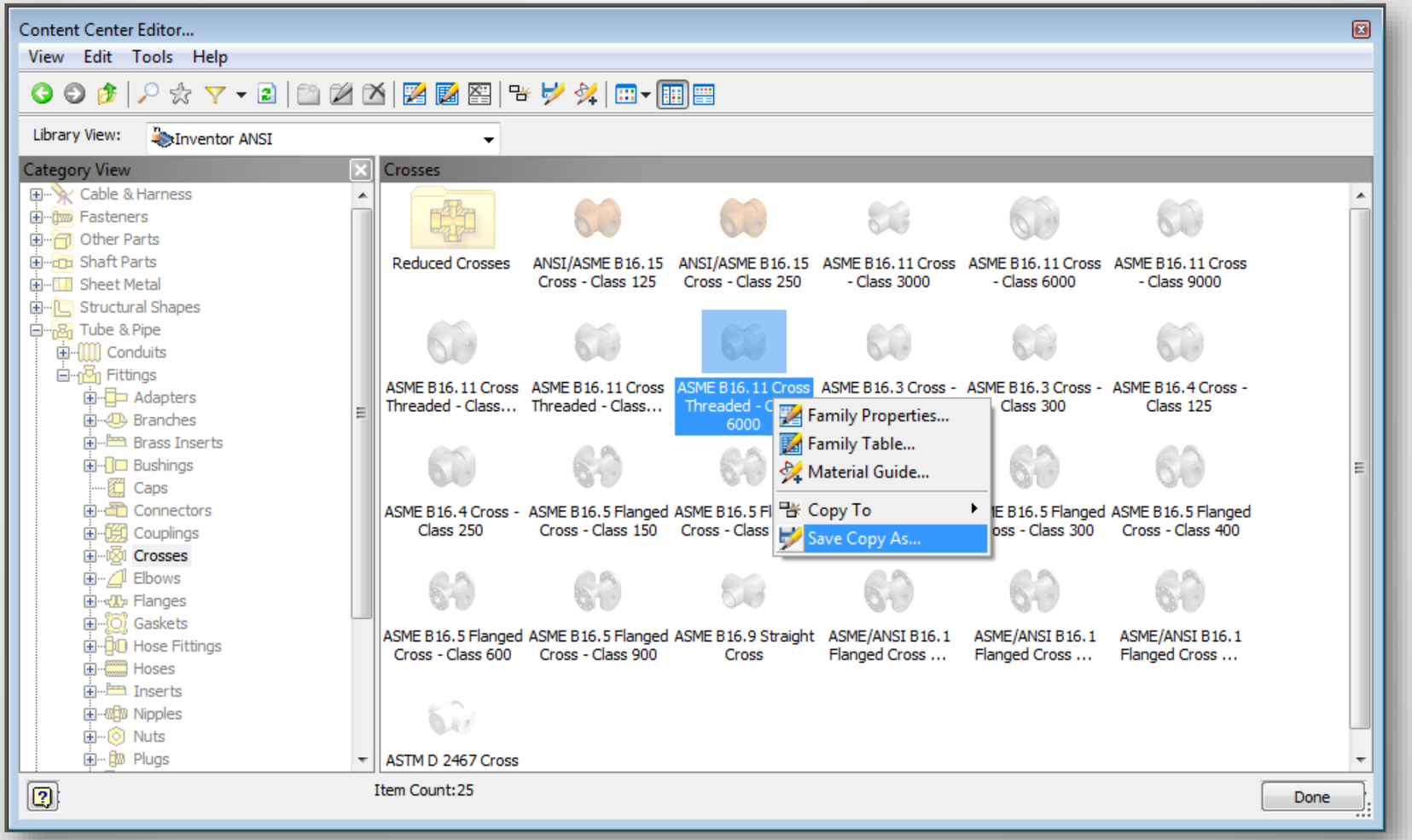
- Screen #6 – Accept the Information



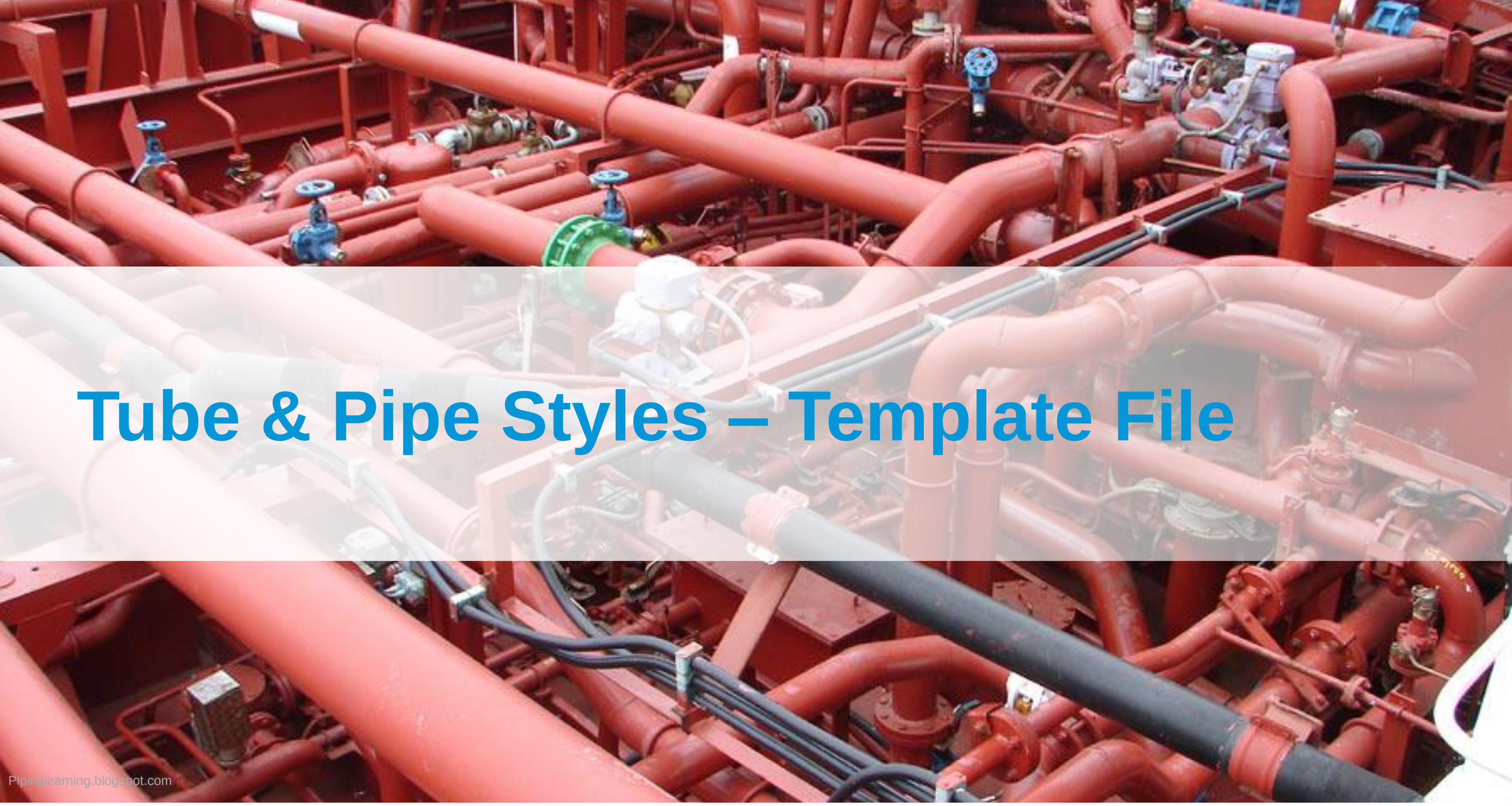
Be sure to check Content Center Family Table for accuracy before using published Content



Standard Read Only Libraries may be Copied to a Read/Write Library & Edited



Live Demo.....



Tube & Pipe Styles – Template File

Tube & Pipe Template File

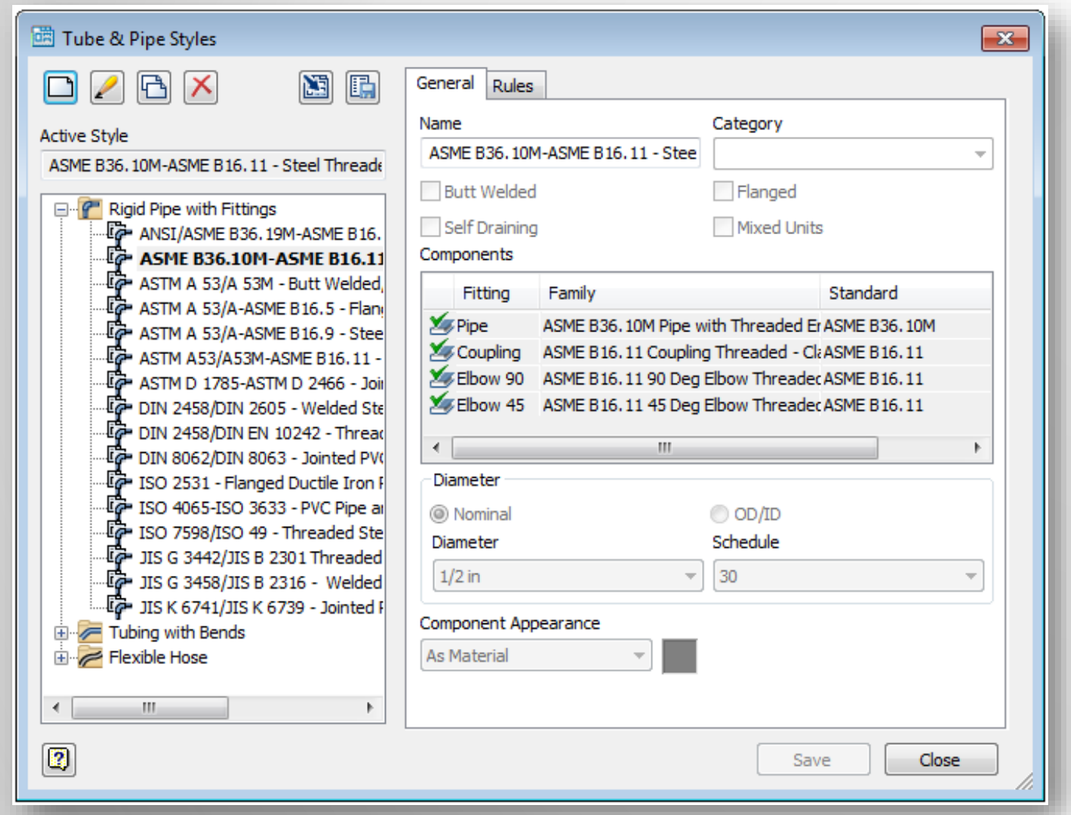
- Piping Runs.iam
- In Design Data\Tube & Pipe folder
- Metric & English versions available
- Can be placed in a Shared Directory
- Create Tube & Pipe Styles here to have Available for Future Designs.
- Used to Create Master Run Assembly

Tube & Pipe Styles

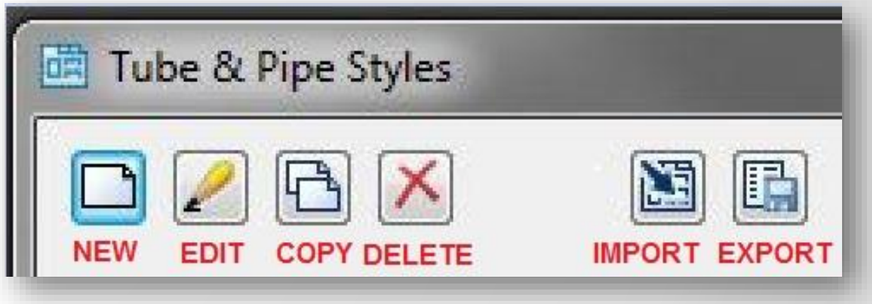
- Individual Piping Specs
- Specify Pipe, Fittings, Min & Max Length and Increment
- One for Each Size of Each Spec
- Grouped in Categories
- Used to Populate Routes, Additional Fittings Added Later
- May be Exported & Imported

Tube & Pipe Styles

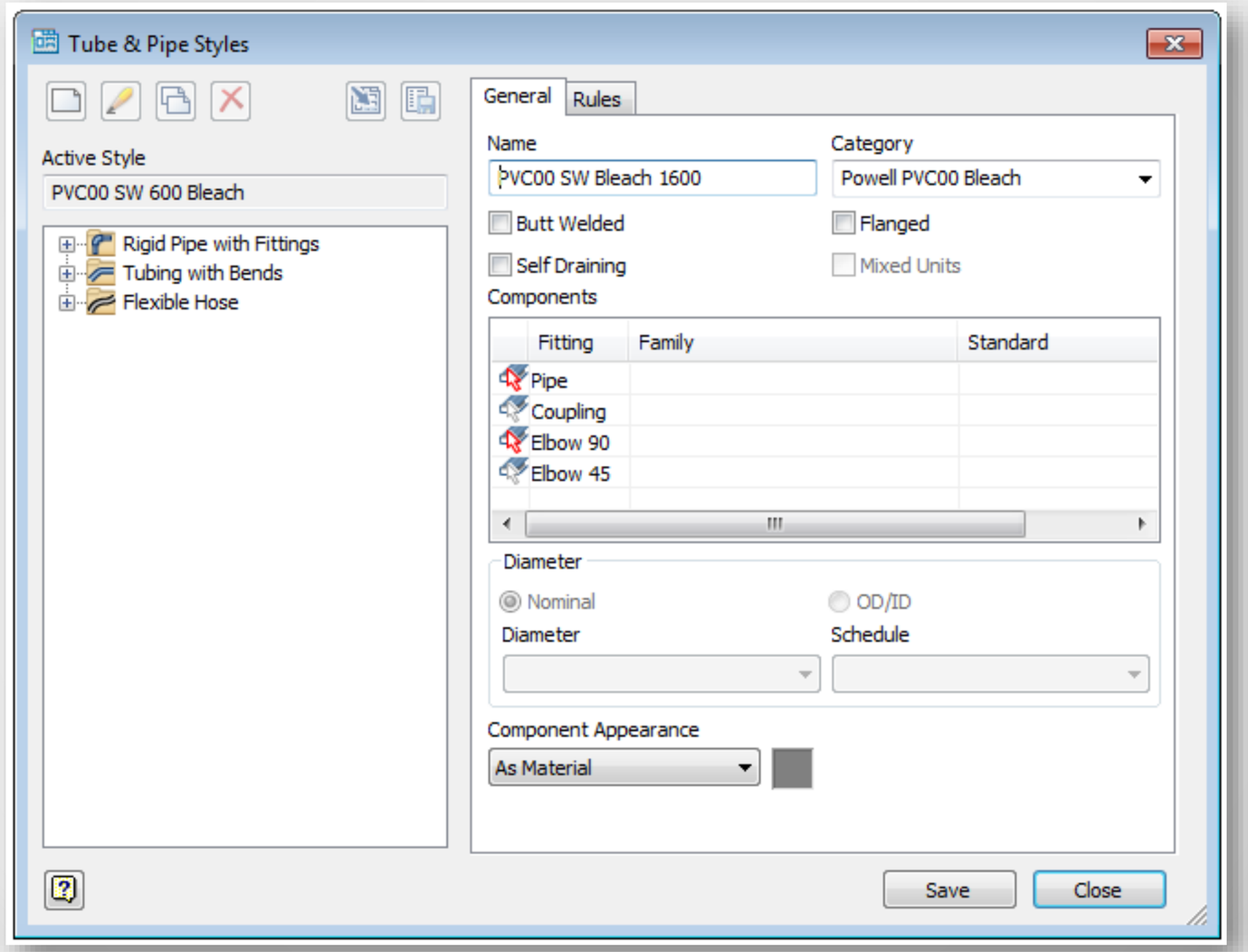
- Out of The Box Styles



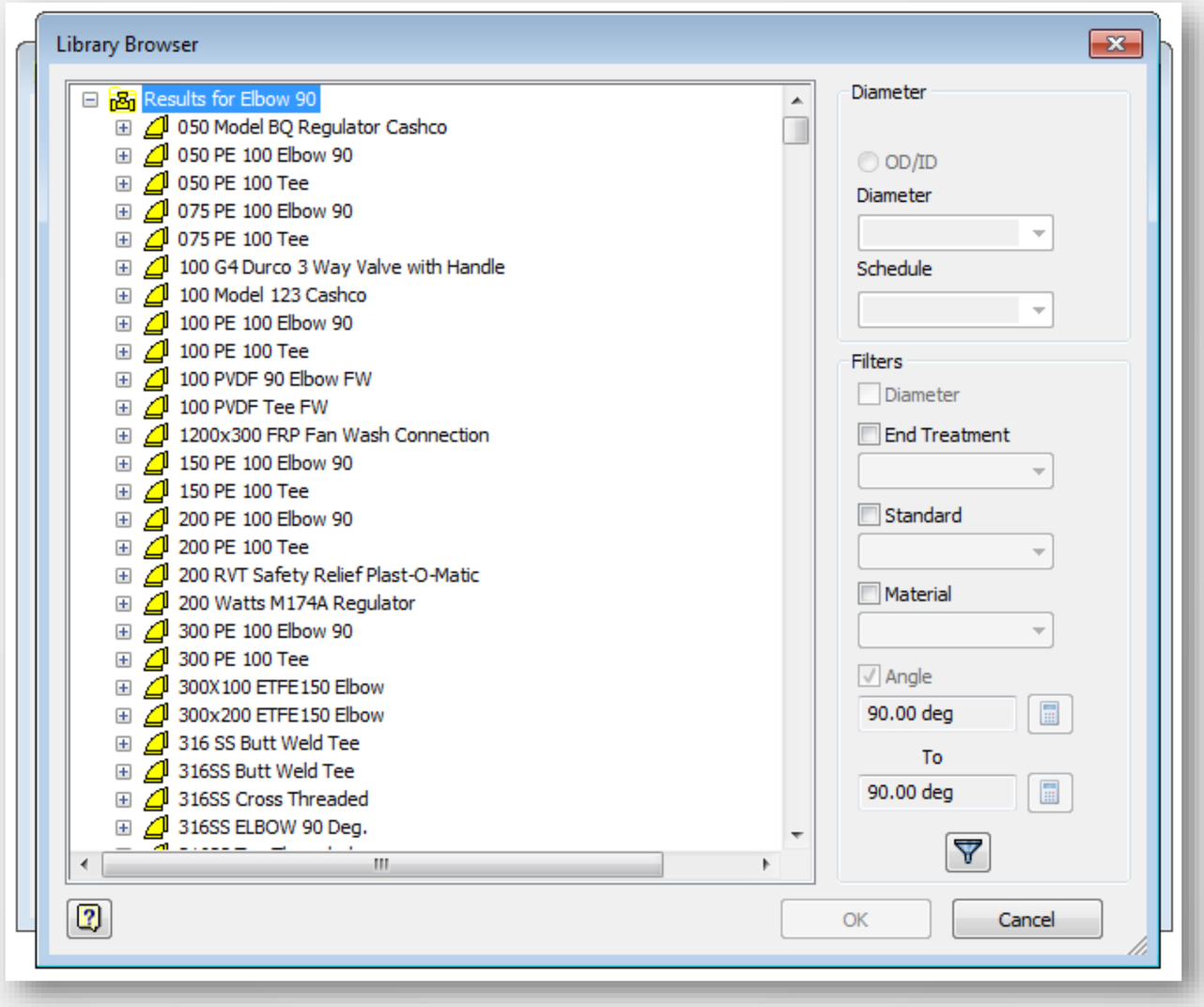
- Tube & Pipe Styles Toolbar



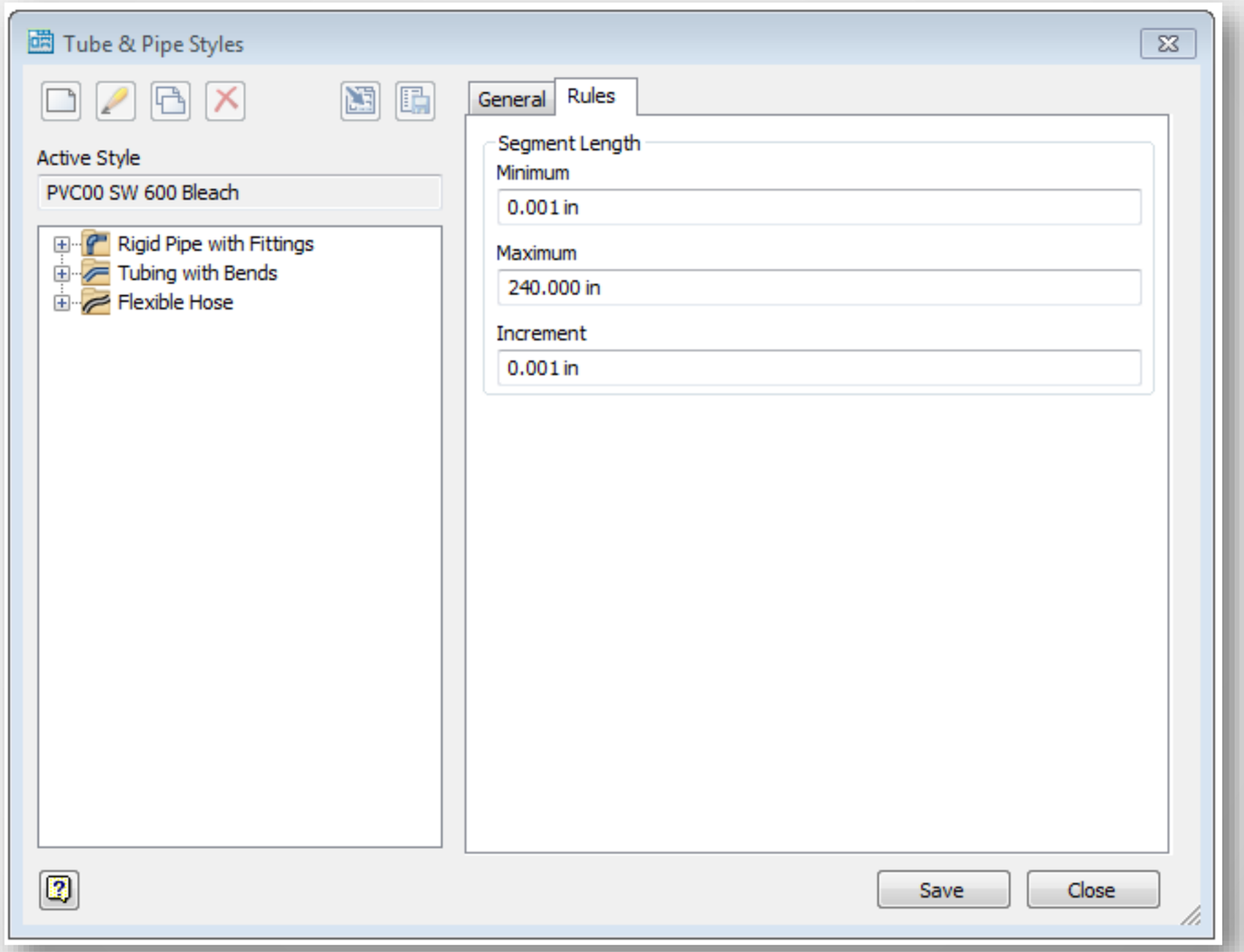
New Tube & Pipe Style



New Tube & Pipe Style – Library Browser

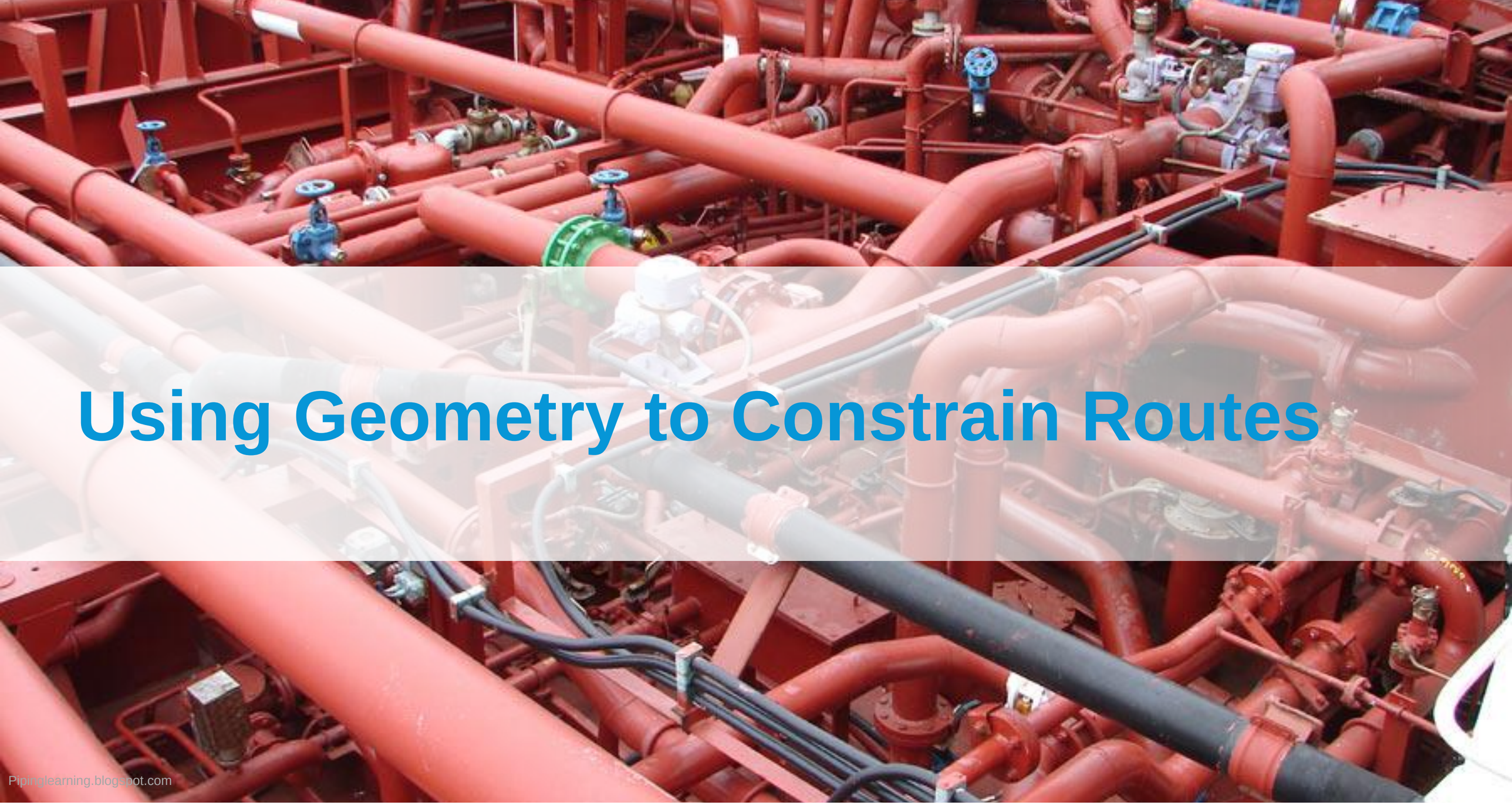


New Tube & Pipe Style



- ***Tip***: For Minimum use .001". This allows extremely small gaps between fittings. Maximum is usually dictated by the longest length of tube or pipe that you can buy. Increment specifies the increment by which your pipe lengths can grow. Set this to .001 so pipes can be whatever length they need based on equipment layouts.

Live Demo.....



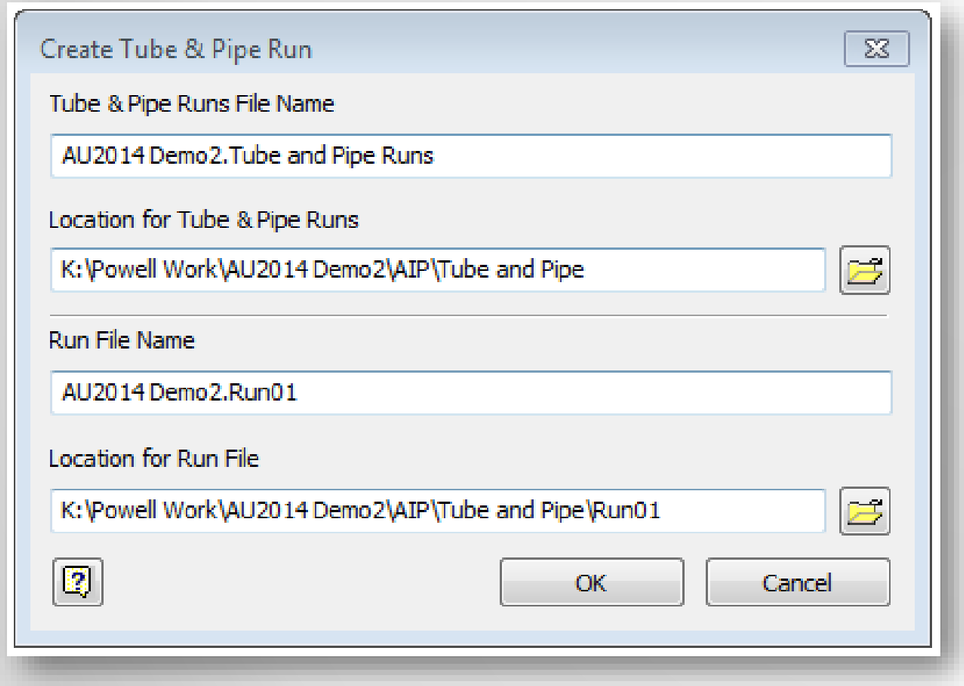
Using Geometry to Constrain Routes

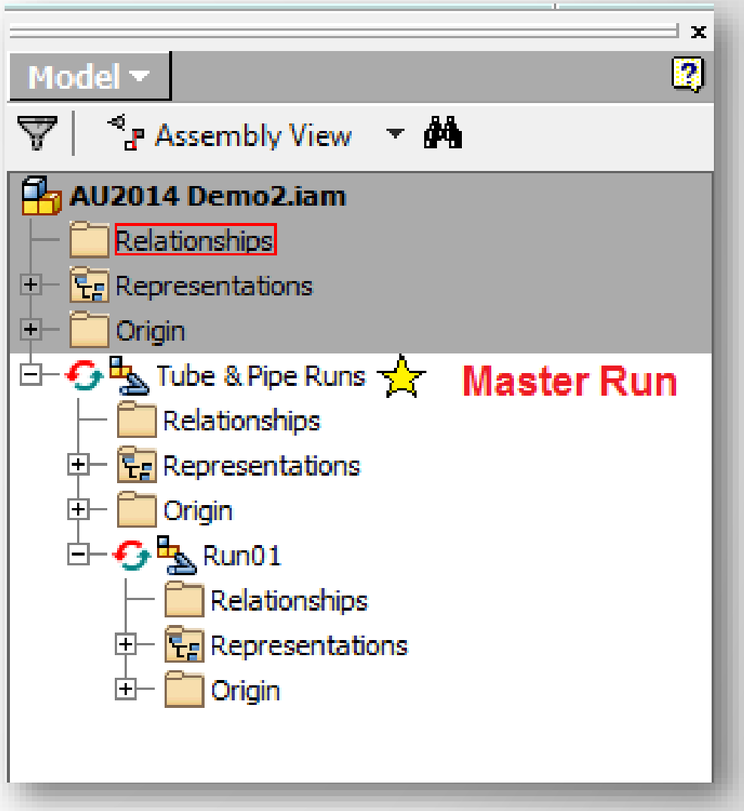
Before You Get Started…

- Select Tube & Pipe from Environments tab on Ribbon
- Create Master Run Assembly & First Pipe Run
- Master Run default – *Tube & Pipe Runs.iam*
- First Pipe Run default - *Run01*
- If *Run01* is renamed, Location window must be clicked to update.

- ***Tip***: Once Master Run and first pipe run are created; return to top level of assembly. Constrain Master Run to Top Level using Flush constraints on all three origin planes.
- For each individual Pipe Run, constrain to Master Run using Flush constraints on all three origin planes.
- This will “ground” everything, making it impossible to accidentally drag a pipe run and cause it to fail horribly.

Before You Get Started…

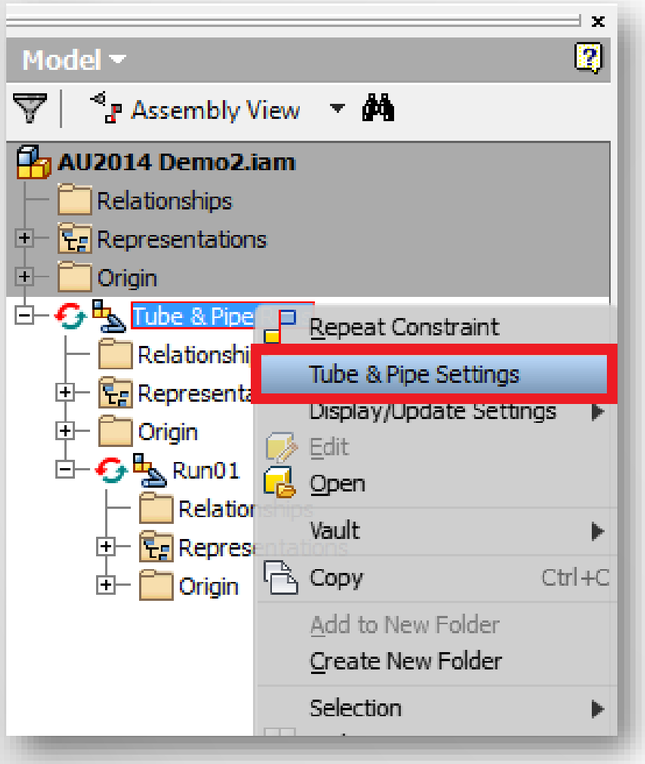


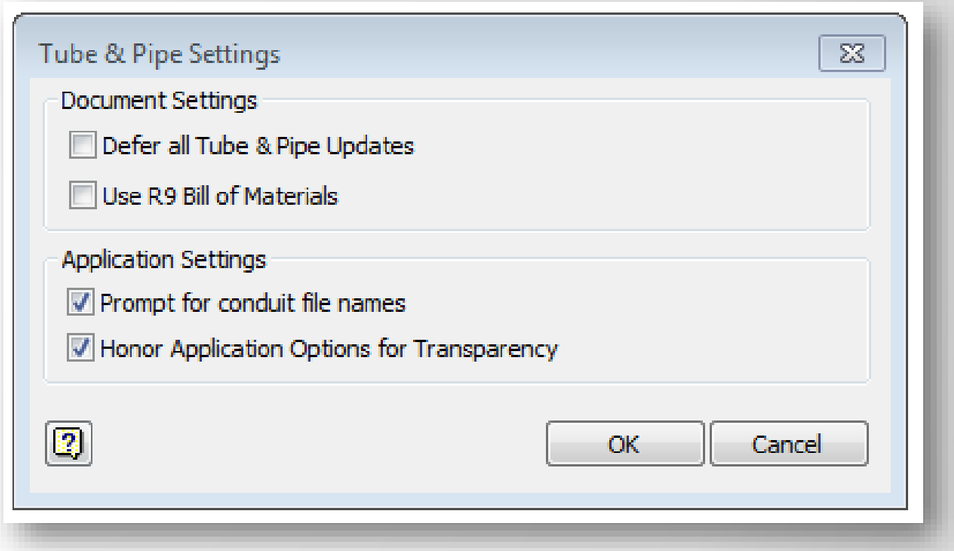


Before You Get Started…

- Tube & Pipe Settings
- Prompt for conduit file names
- Honor Application Options for Transparency

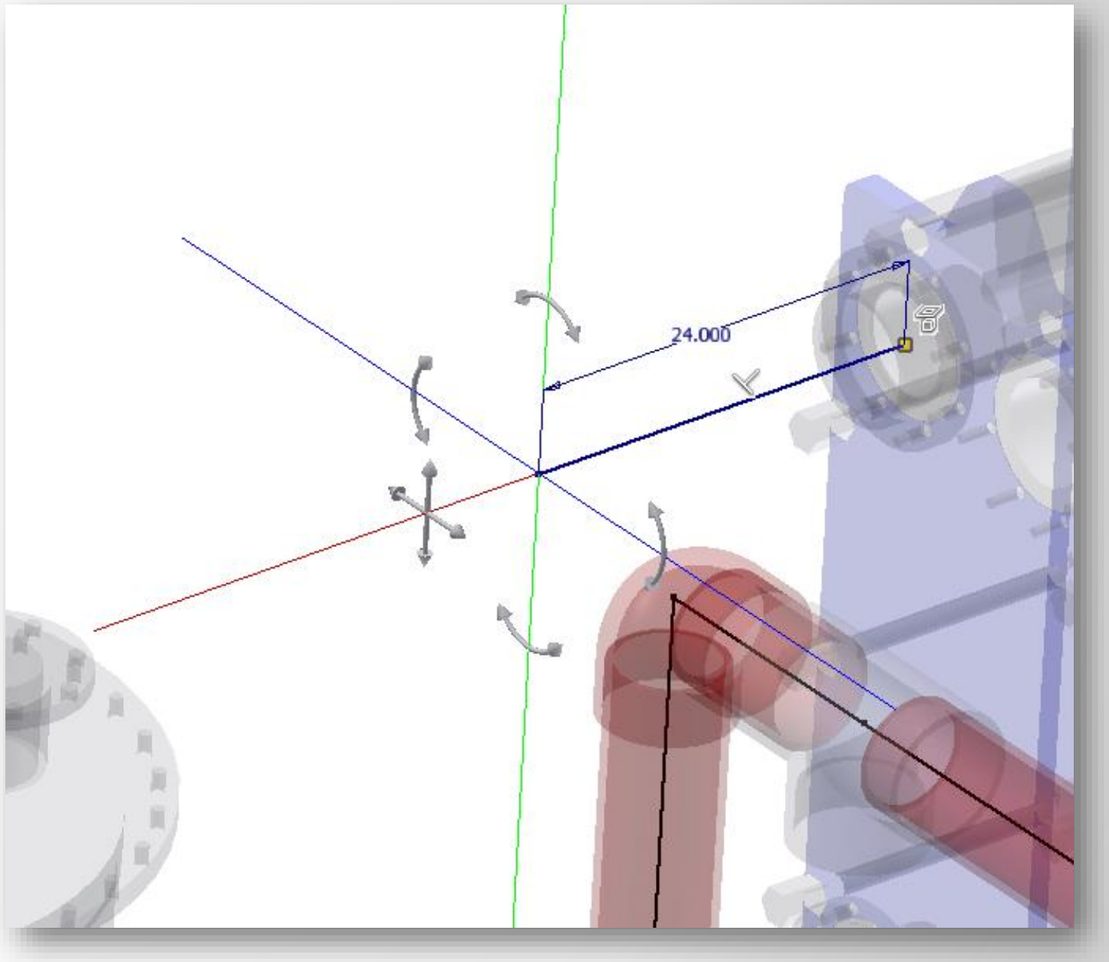
Before You Get Started…



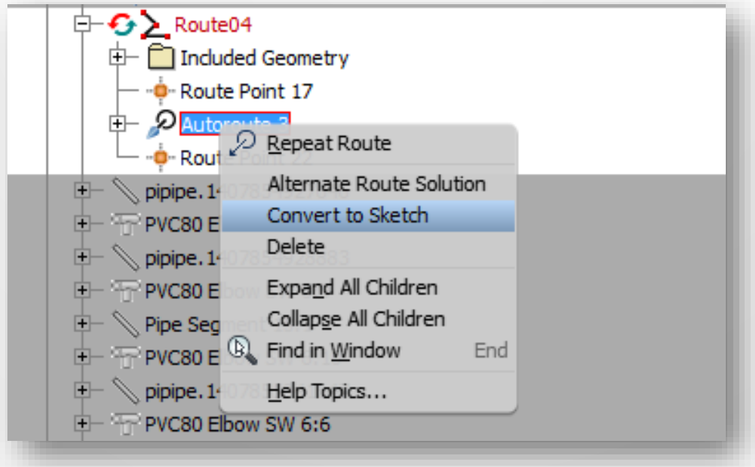


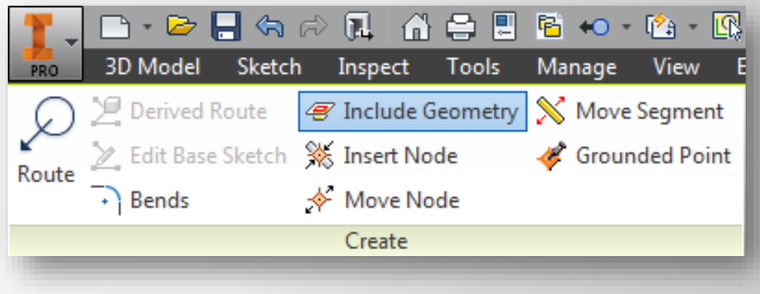
Basics of Routing Pipe

- Route is a 3D Sketch
- Orthogonal Route Tool
- Auto Route Feature

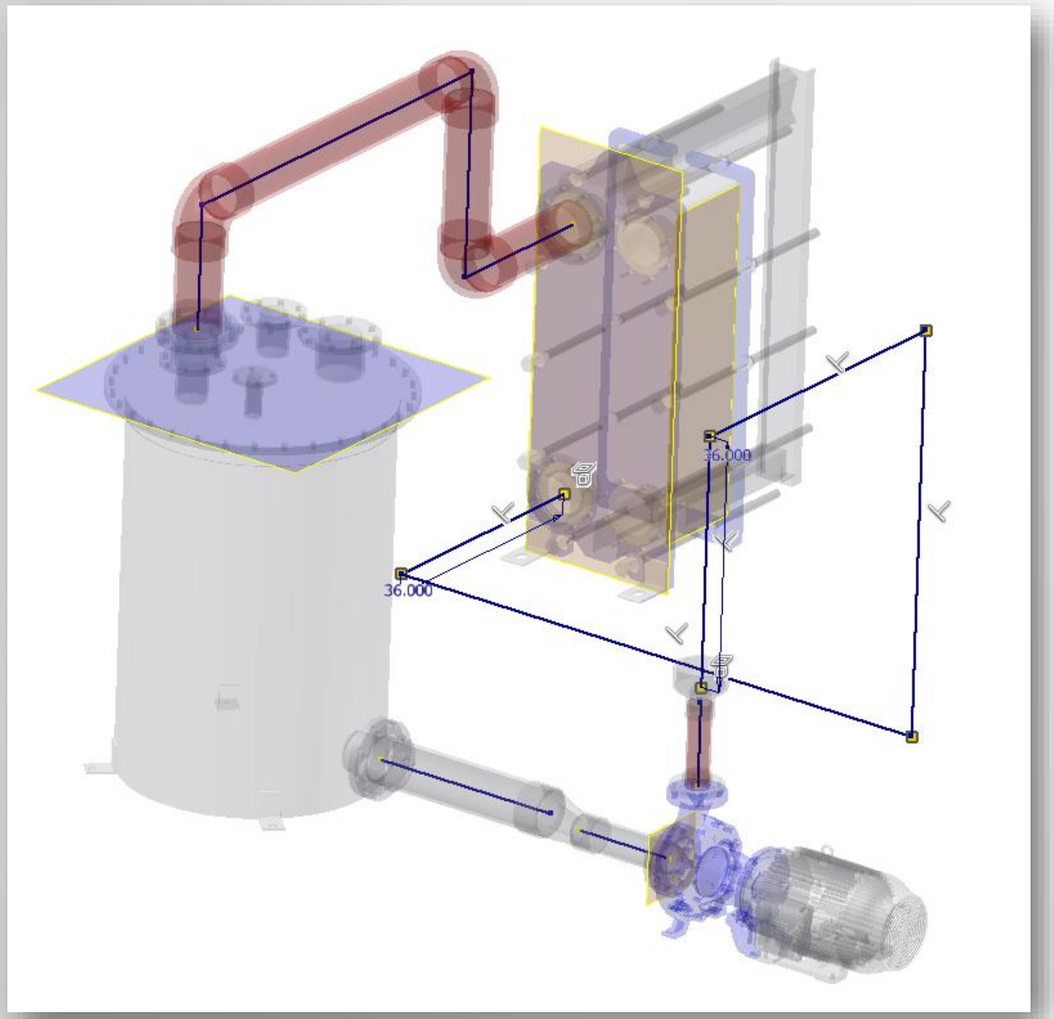


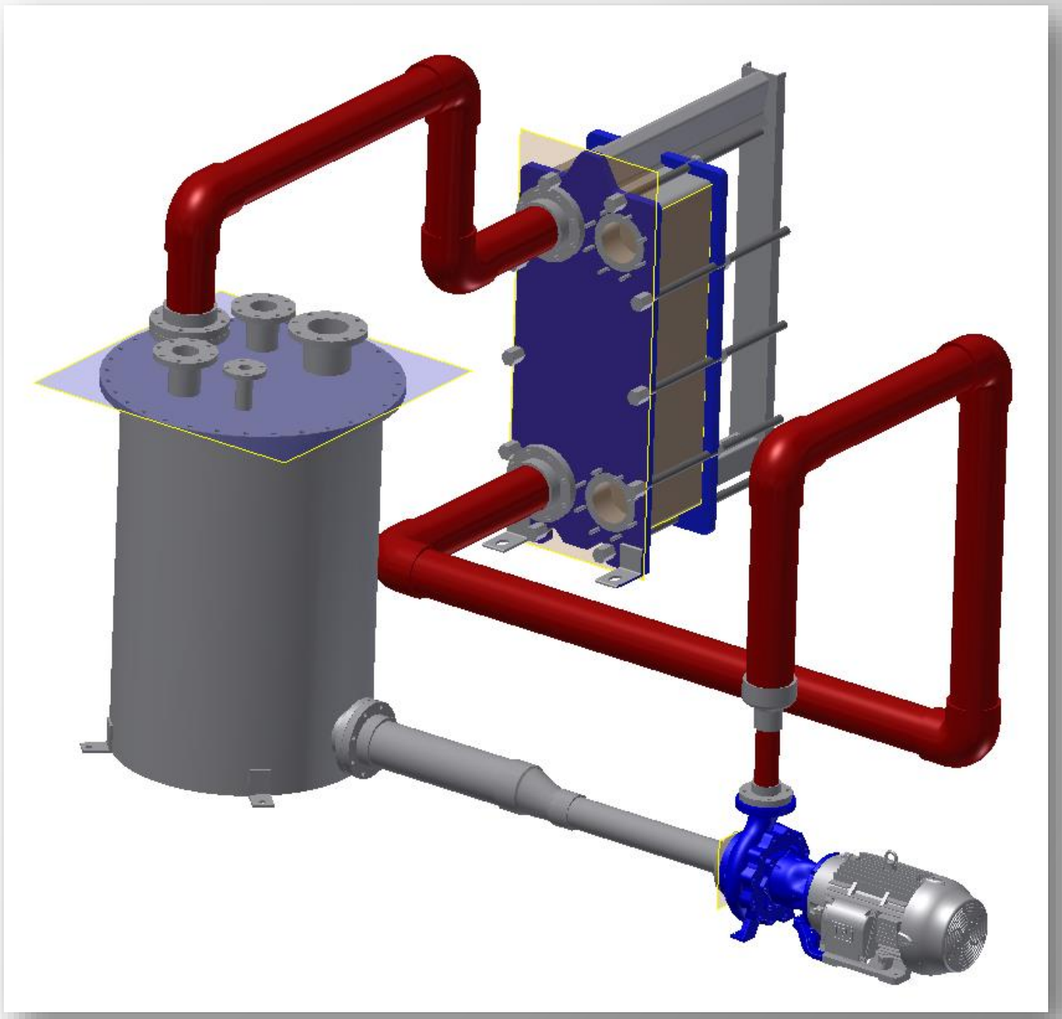
- ***Tip***: Convert Auto Route to a sketch. Remove dimensions and constraints placed by the system. Include Geometry to add work planes from surrounding geometry. Then add your own dimensions and constraints to leave some flexibility and room for growth or shrinkage to your routes.





Convert Auto Route to Sketch





- ***Tip***: Constrained pipe routes may lose constraints or dimensions you placed after adding fittings to them. Double check constraints after adding fittings, replace as needed.
- Idea Station item.
- http://forums.autodesk.com/t5/inventor-ideastation

Live Demo....

Productivity Tips & Tricks

- ***Tip***: Filling gaps in a pipe run. Sometimes editing pipe runs can leave you with a situation where you need to create or repair a small (or large) gap. I have seen this where 2 different specs meet, or where there are a lot of fitting to fitting connections. Sometimes when the “Insert” option will not work. The reasons can vary, but the solution is fairly simple.

- ***Tip***: Quick placement of pipe fittings, without having to search Content Center. If a fitting is already in use in your design, even in another pipe run, you can use this to quickly place another instance of that fitting. Either find it on the screen or in your model browser, and use Place Fitting. Never, ever, ever copy & paste pipe fittings…. Ever.
- Using Place Fitting and placing over the top of existing fitting, will replace existing fitting. Example, changing an elbow to a tee.

- ***Tip***: Tube & Pipe currently does not have a branch routing option. How do you make sure two separate runs line up perfectly so you can route between them? This tip will use some of the “include geometry” we looked at earlier to perfectly line up fittings in two runs, so a route can be placed between them.

Line Up Fittings

- Dimension points from common geometry.
- Assures perfect alignment, Inventor is not very forgiving.
- Can be done within a run, or across different runs.
- This is also an Idea Station item, “under Consideration” by Autodesk.

Live Demo....

That’s All Folks!

- Thank you very much for taking the time to come see my class, I hope there was something in this that you found useful.

Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time

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