Managing a complete site over multiple AutoCAD® Plant 3D Projects

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PD2653 Managing a complete site over multiple AutoCAD® Plant 3D Projects

Learning Objectives

At the end of this class, you will be able to:

- Set up an AutoCAD Plant 3D Project that is based on a complete site, with the intention of running a number of sub projects.
- Link other AutoCAD Plant 3D projects into main site project.
- Set sub project specific properties to not interfere with the main project.
- Set up reports based on the main project and the subprojects.

About the Speaker

Jarrod is an experienced piping designer, having spent most of his career in the dairy industry and geothermal industries in New Zealand. Currently, he is a Plant Solutions Consultant with Autodesk. He enjoys passing on his extensive knowledge to others and assisting in the success of companies utilizing Autodesk products, particularly with Autodesk Plant Design Suite. Jarrod also has vast knowledge of Autodesk Inventor and the advantages of using Inventor alongside AutoCAD Plant 3D.

Jarrod has experience with Autodesk products dating back to the early days of Mechanical Desktop, and has worked through the years implementing Vault, Inventor, AutoCAD, Plant3D and P&ID.
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Set up an AutoCAD Plant 3D Project that is based on a complete site, with the intention of running a number of subprojects.

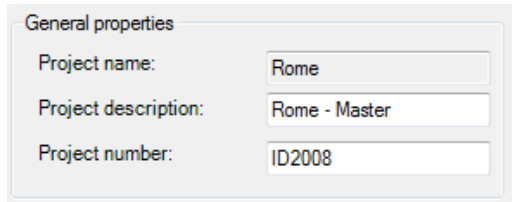### Setting up the main site project.
1. The initial set up of the main site project should be set up using the standard process.
2. The database system can be either SQLite or SQL Express Server
3. Do not use Vault at this stage, (currently not tested)
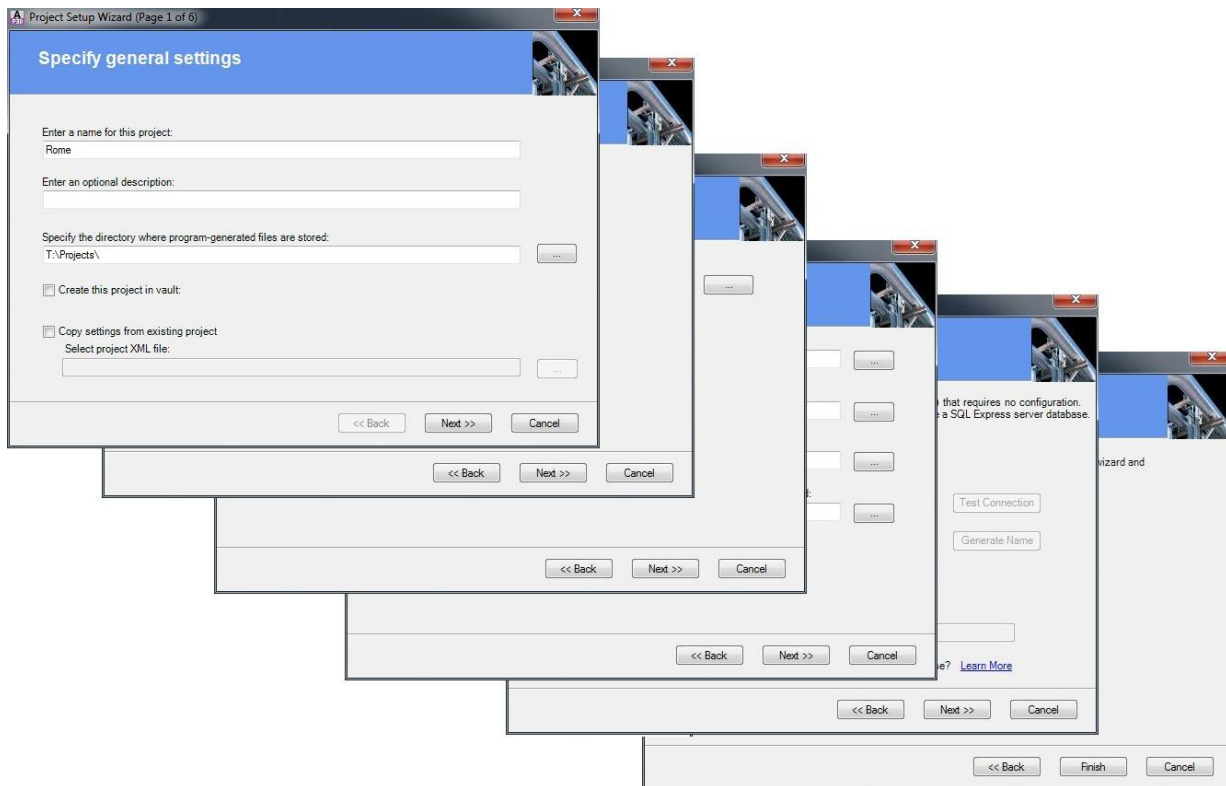
General Settings

Project Details

As the main site project is merely a container for the centralized model, the Project Number and Description can be used as an identifier of the site. Rather than leaving it blank or entering no relevant data such as 0000.
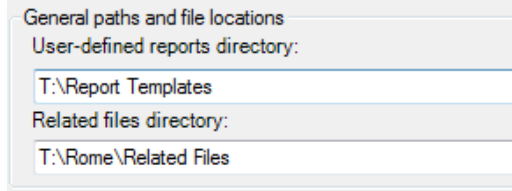
User-defined reports directory can be the reports that are used for all the subprojects. This is only if the reports throughout all projects are going to be consistent. Otherwise we will leave these within the project structure to avoid conflict and confusion.
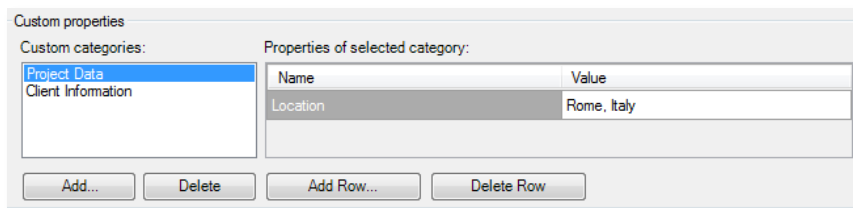
Related files can be used as required. Because the files that are generally in this location or links or non-Plant 3D associated files, there is no requirements regarding the location of the related files. However, it is possible to have a common folder for use with all subprojects.

Custom Properties should be ideally focused on the main site project. Any other properties that are to be project specific should be completed in the Sub Project.
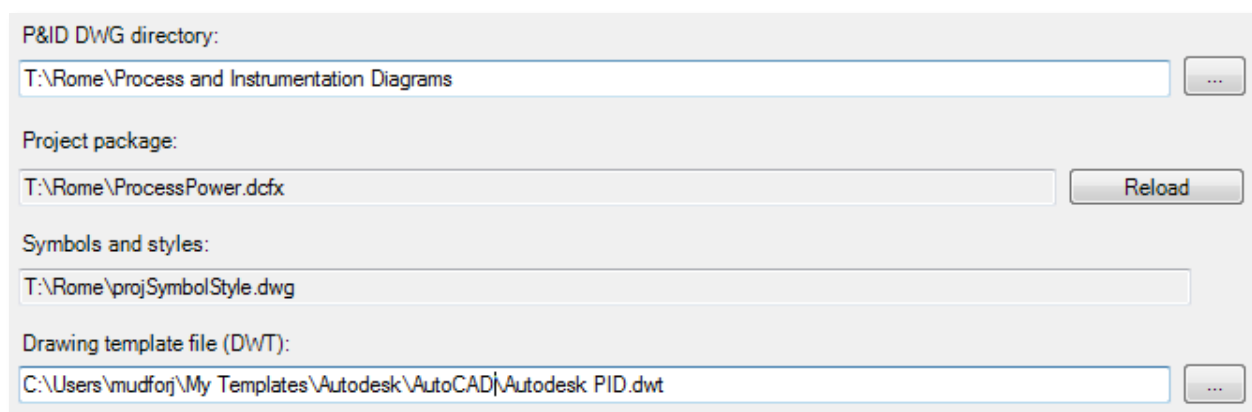

All other properties in this section are utilized as normal.

P&ID DWG Settings

The P&ID's are best managed under the main project, although not absolutely necessary. The P&ID's will work in the same way as the model will. What we have to be careful of here is differences between sub projects for the P&ID's, such as drawing templates, and variances in blocks that are published in the projects.

Paths

The P&ID DWG Directory can be left within the project structure or located in a more appropriate place if you desire. It will still need to be accessed by the sub projects so in a place that all users have read access to is required.

Export and Import Settings

The Export and Import Settings can be set up for the Central Project, but can only be used in this project, so setting these up as normal is required. The location of the Export and Import Settings .xml files cannot be centralized.

Data Manager Configuration

The Data Manager Configuration can be set to suit. Although this cannot be centralized for use with any subprojects.

P&ID Class Definitions

All the P&ID Class definitions need to be set as per any normal project, For P&ID's it is recommended to keep all design changes under this Central Project to prevent any errors with newly created symbols in a sub project.

Plant 3D DWG Settings

Export and Import Settings
The Export and Import Settings can be set up for the Central Project, but can only be used in this project, so setting these up as normal is required. The location of the Export and Import Settings .xml files cannot be centralized.

Paths
The Plant 3D model DWG directory can be contained within the Central Project structure or in a more appropriate location.
The Spec sheets directory is located as per normal…either centralized or within the project structure.
The orthographic output directory, can be either centralized or project specific. The options for each will be defined by whether there are overall plant layouts and sections, and also project specific Orthographic drawings.
All the other options can be set as desired.

Plant 3D path and file locations
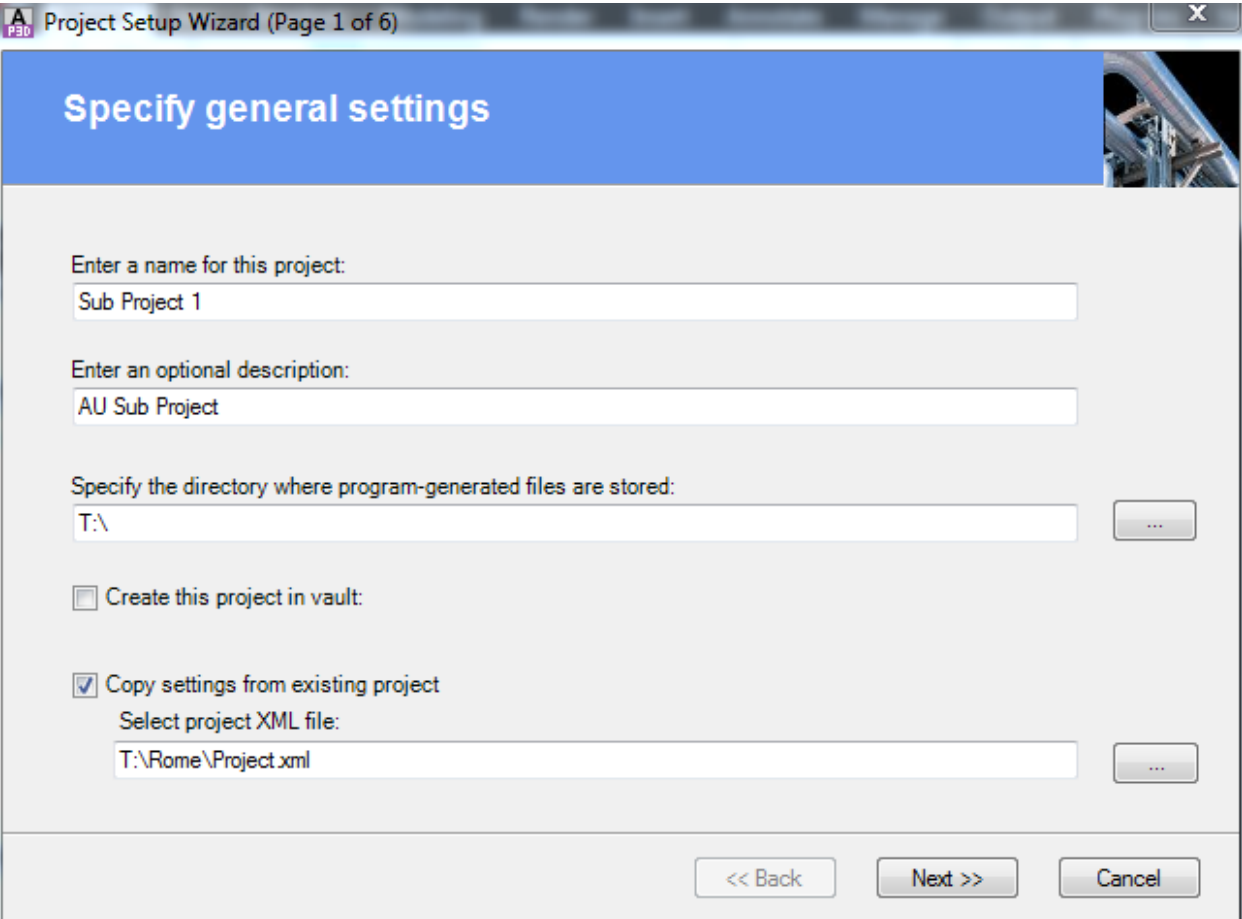
Plant 3D model DWG directory:

T:\Rome\3D Models

Spec sheets directory:

T:\Rome\Piping Specifications

Orthographic output directory (DWG):

T:\Rome\General Arrangements

Orthographic template file (DWT):

Ortho - D -Color Dependent Plot Styles.dwt

Equipment templates directory:

T:\Rome\Equipment Templates

Drawing template file (DWT):

Plant 3D ANSI -Color Dependent Plot Styles.dwt

Link other AutoCAD Plant 3D projects into main site project.

Creating the Sub Project

Project Setup Wizard (Page 1 of 6) – Specify General Settings
Here, we only have to remember to select "Copy settings from existing project", and select the Master Project.xml file for the settings.
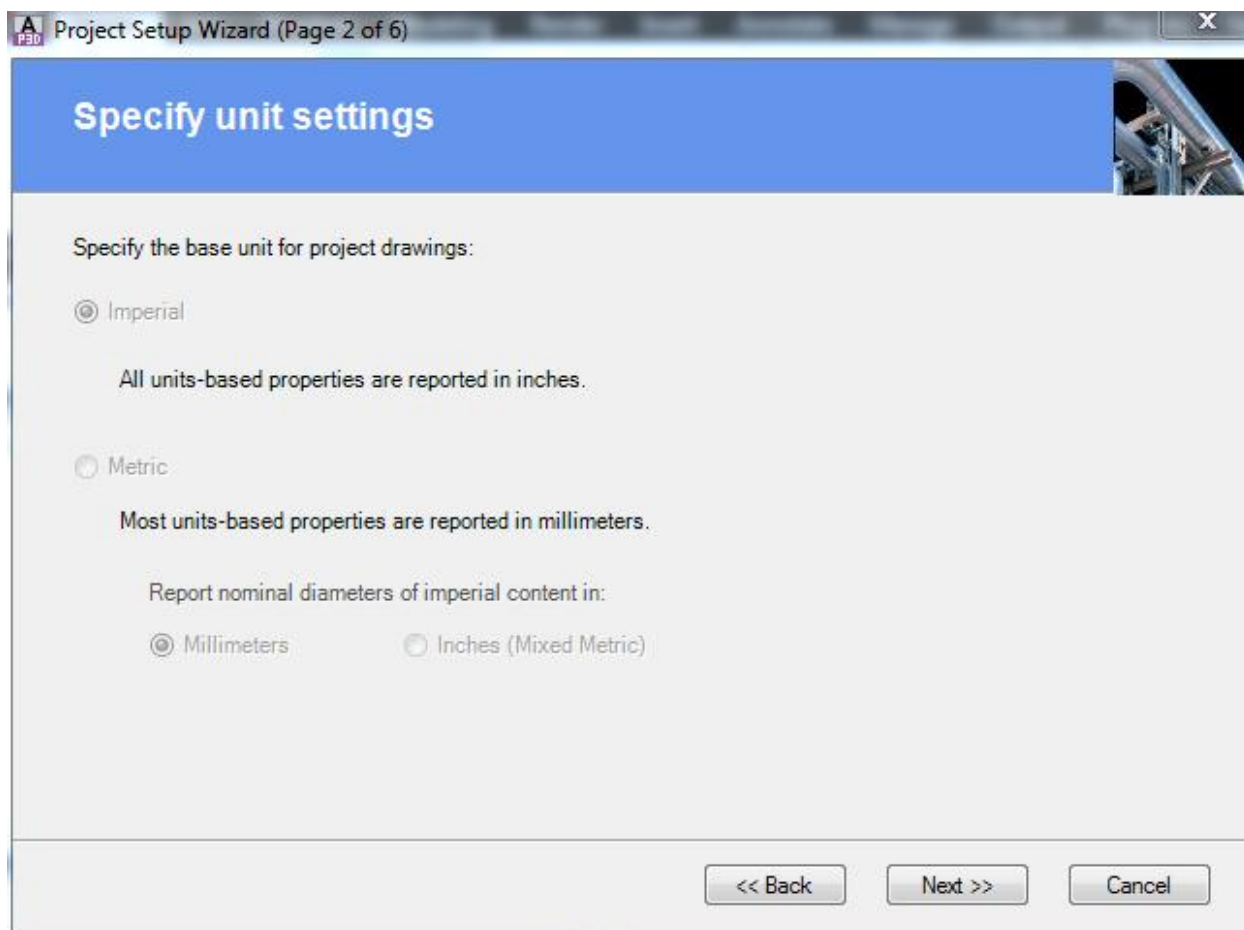
Project Setup Wizard (Page 2 of 6) – Specify Unit Settings
As normal we cannot select any different units than the Master Project.
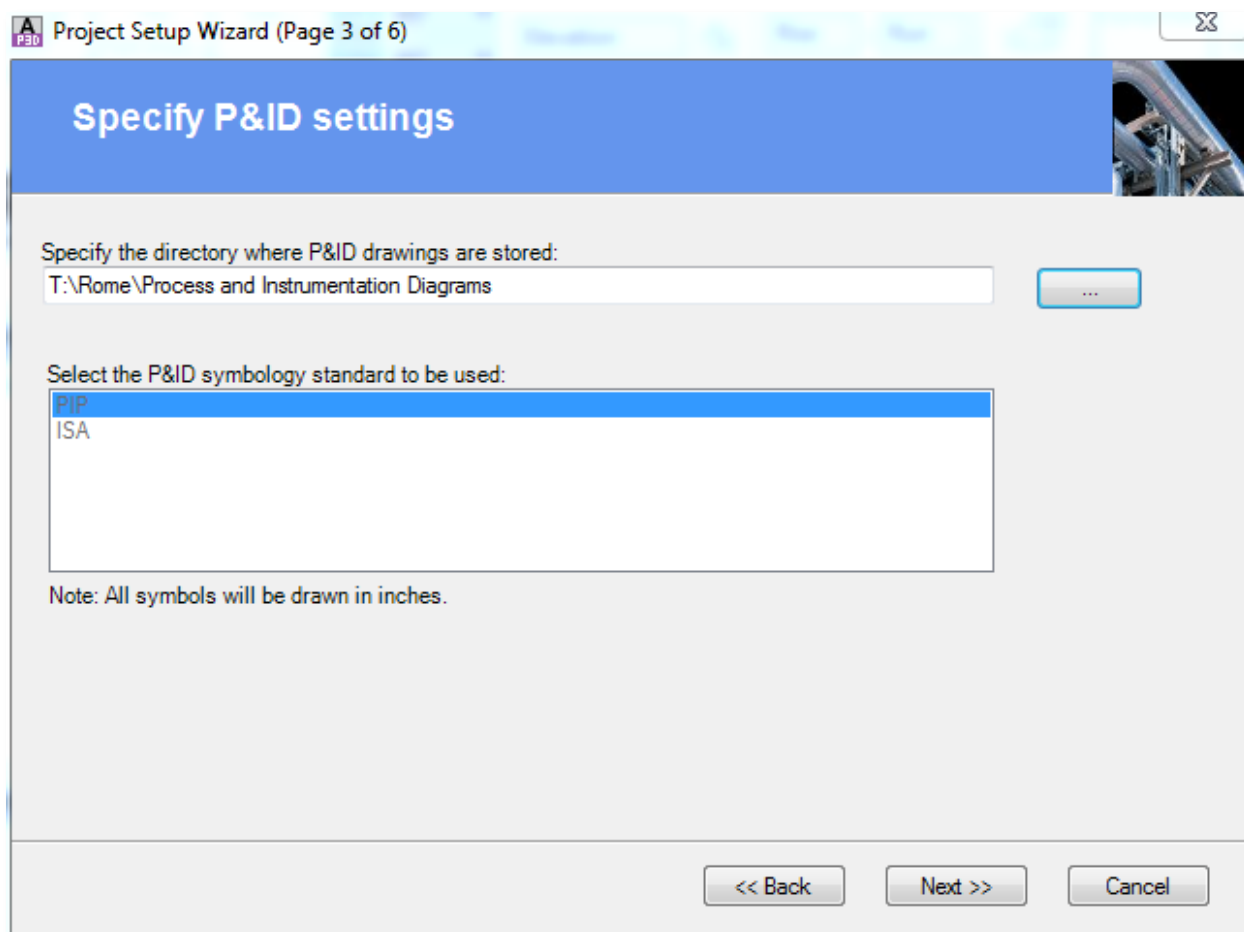
Project Setup Wizard (Page 3 of 6) – Specify P&ID Settings

For the location of the P&ID drawings, select the same folder as in the settings of the Master Project. This way here the P&ID's from the Master Project can be used to place 3D components.
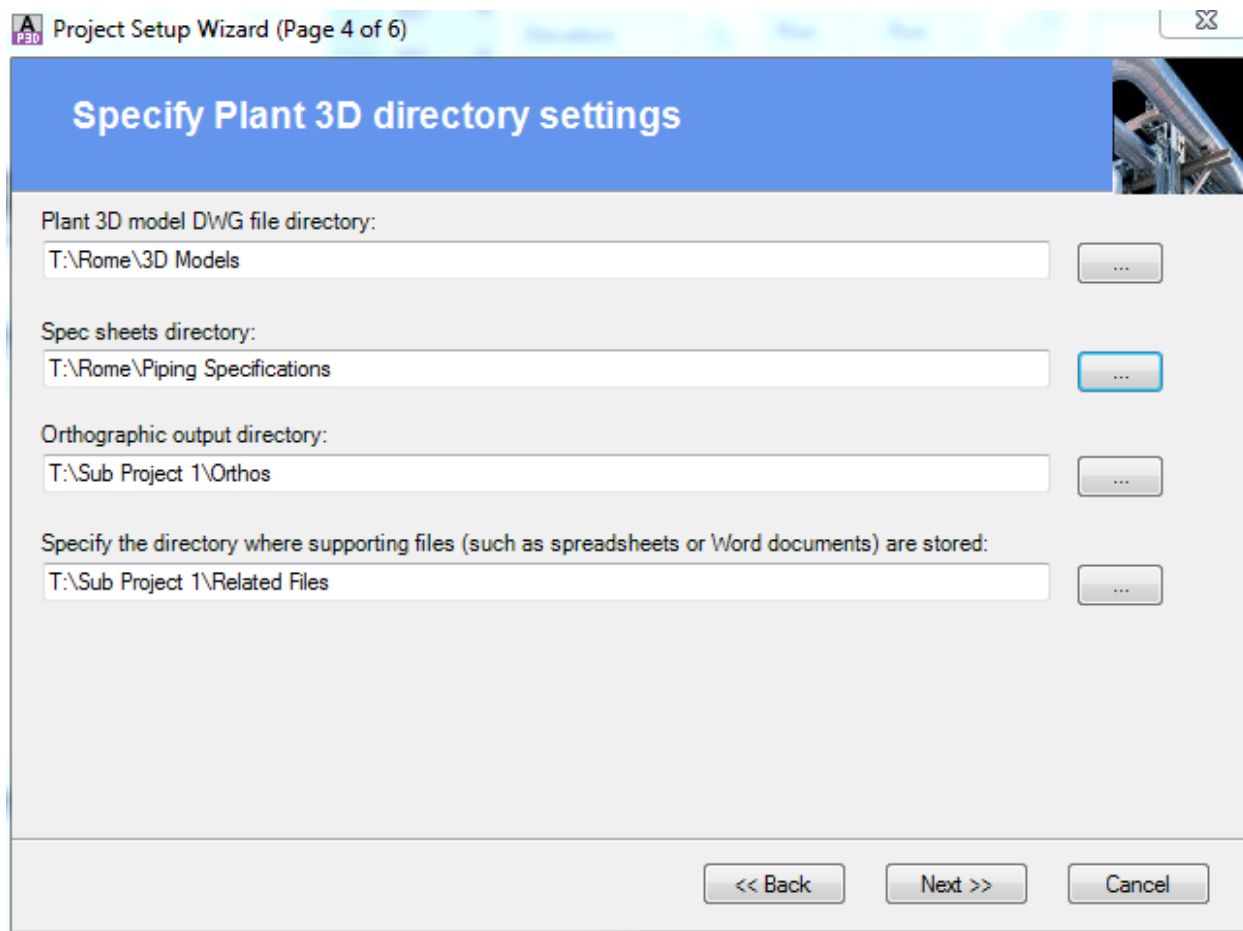
Project Setup Wizard (Page 4 of 6) – Specify Plant 3D directory settings
In this section we make the Plant 3D model DWG directory and the Spec sheets directory the same as the Master Project. This is to make use of the centralized 3D Model and Piping Specs.
With the Orthographic output directory, I have opted to leave this in the sub project to make sure I have project specific Orthographic drawings.

***Project Setup Wizard (Page 5 of 6) – Specify database settings***
Here we can select our database type and location if we opt to use the SQL Server. There are no issues with using either of the database types with the sub project. We complete the data in this section as per normal. The databases between the Master Project and the Sub Projects are never linked together. They are entirely standalone. The databases are built by what is in the model.
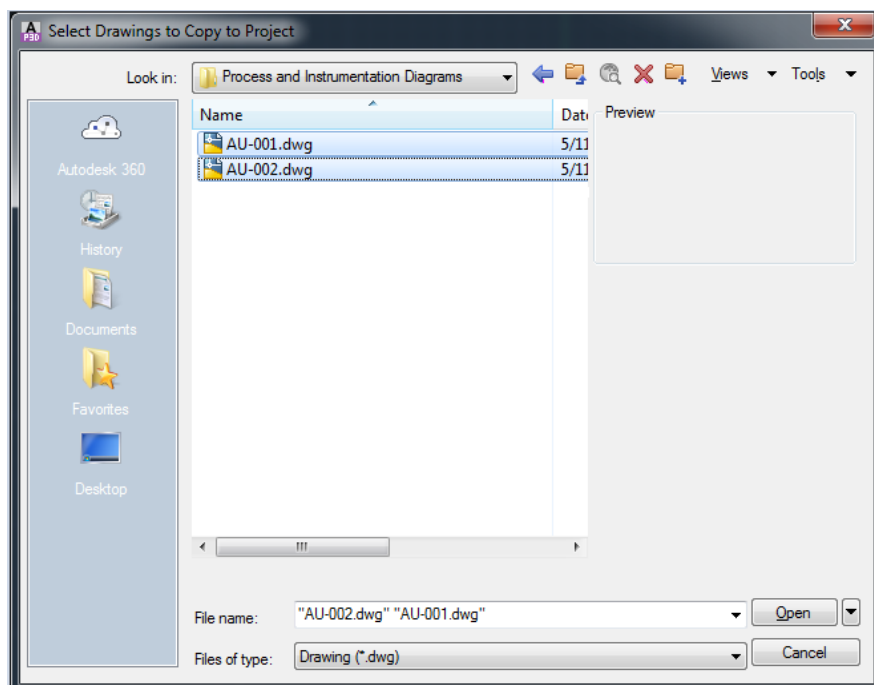
Project Setup Wizard (Page 6 of 6) – Finish
Select Finish.

Getting the P&ID's and Models into the Sub Project

Right mouse click and select Copy Drawing to Project…
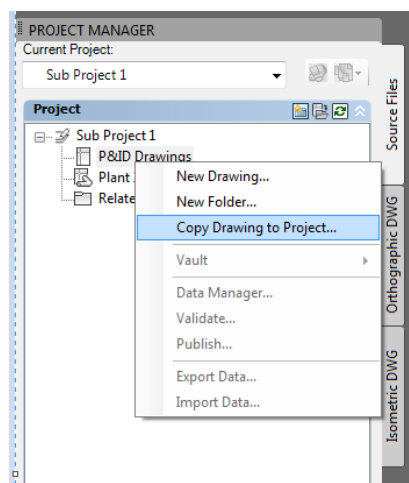
Select the P&ID's to add to the project. You may only need to add the P&ID's that are relevant to the Sub Project.

Repeat the process for the 3D Models, remembering to only take the files that are relevant to the Sub Project. Although all models can be added to the project with no problems, we are considering database size and simplicity of the Sub Project.
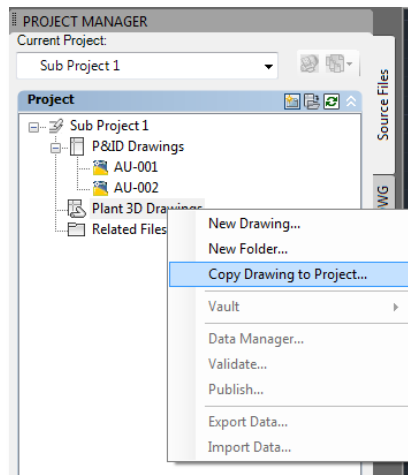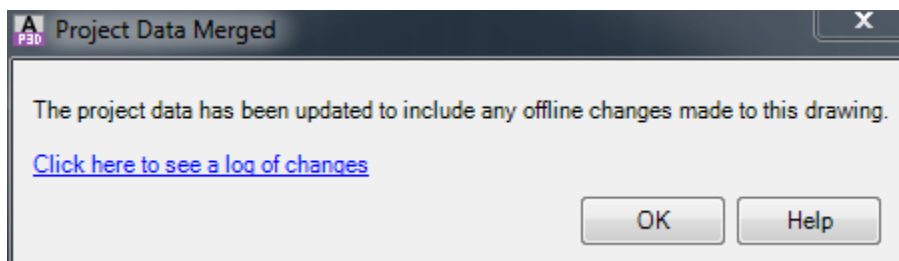

Any models that have External References will have a dialog box pop up. You **must** select the first option to add the external references to the project.
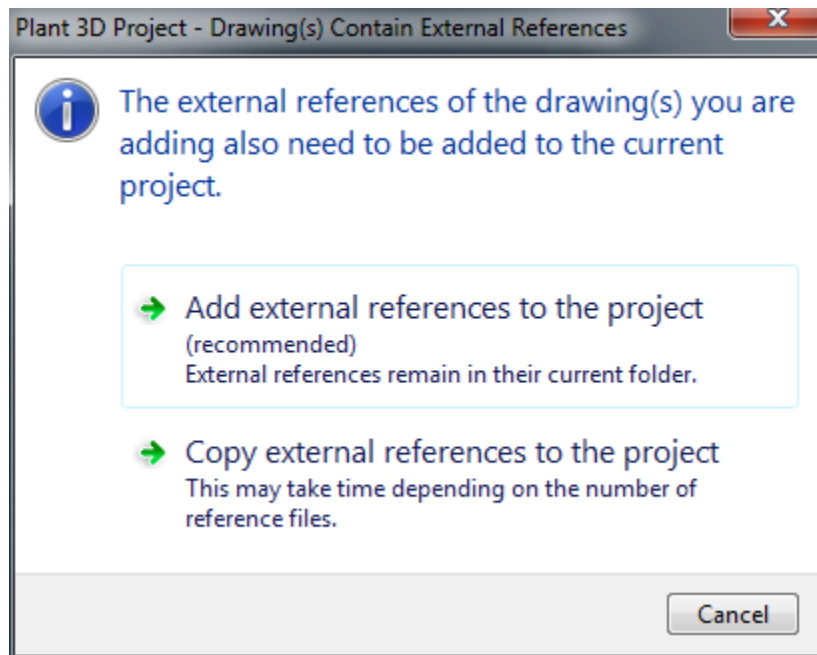
Some of the external references will show up in the following message box, just push OK. This can be ignored.
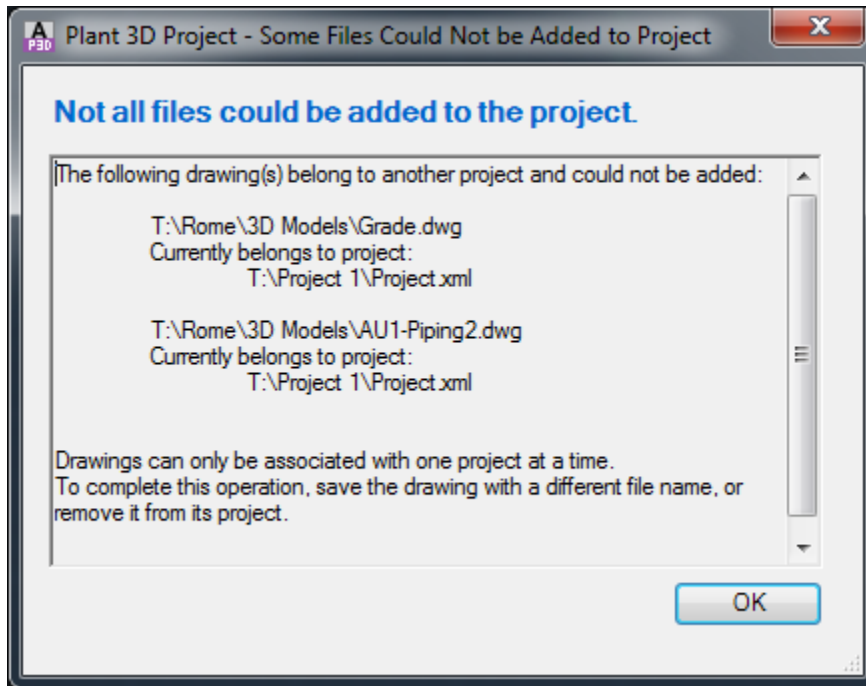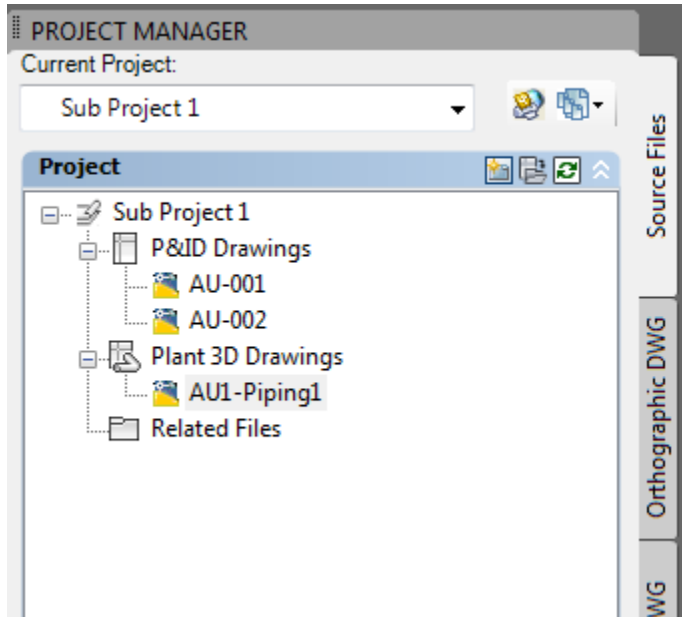

As with the following message, just push OK.

Now the project manager will show the files that you have selected to be in the Sub Project.

Set sub project specific properties to not interfere with the main project.

Project Details
Any of the Custom Properties in this section can be changed without any effect on the Master Project database, if you add any new properties; these will not appear in the Master Project or any other sub project. These properties remain project specific to enable the differences between the projects.

*Plant 3D Class Definitions Properties*
Any new properties that you add in the Sub Project under Plant 3D Class Definitions will not affect the Master Project, provided that the property is unique to the Sub Project. If the property name is the same, then it will make the property the same value for the Sub Project and the Master Project.

For example, the Status property, for everything in the Master Project is set to existing before any work is done in the Sub Project. Anything that is placed in the Sub Project is defaulted to New. That way the Master Project has the Status property for the same object as new.
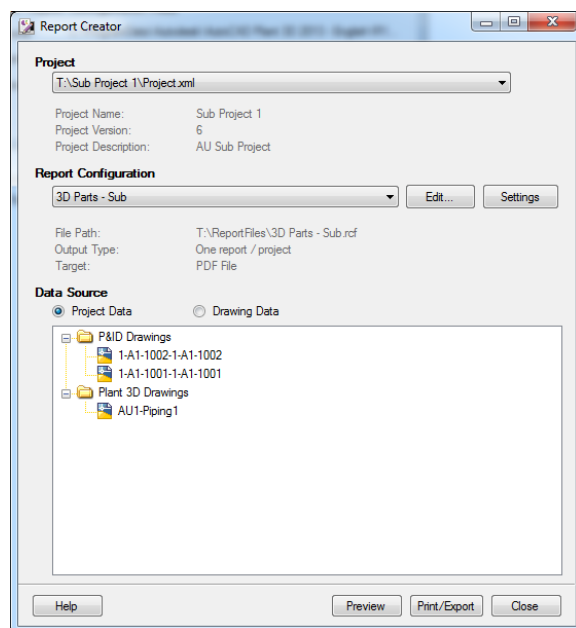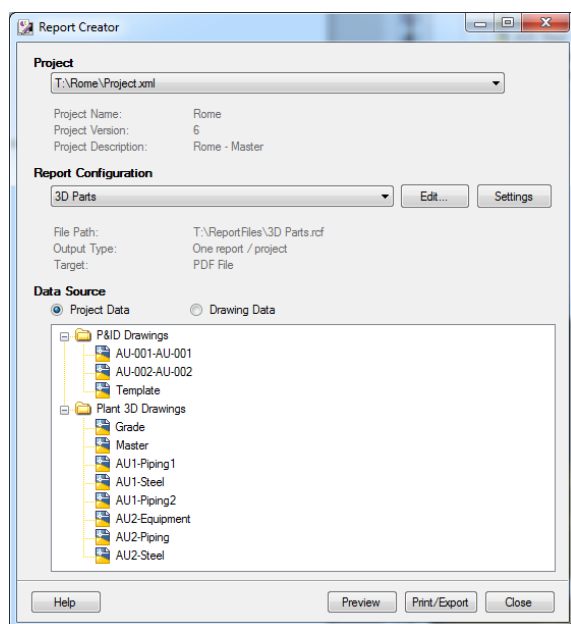
Set up reports based on the main project and the subprojects.

Report Settings
Reports are saved in a custom location so they can be accessed by any project.
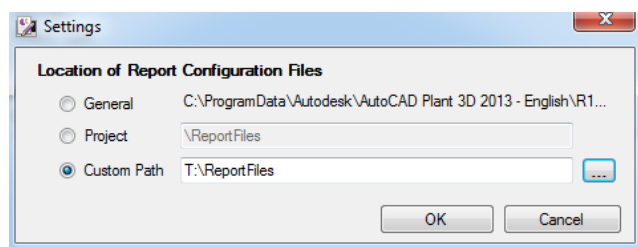
The names of the reports will need to be named to differentiate between a report that is for a sub project and a report for the Master Project.

Edit Query

To differentiate the reports between the Master Project and Sub Projects, use the filters on the properties. For example, Status ='Existing' in the Master Project and Status ='New' in the Sub Project.
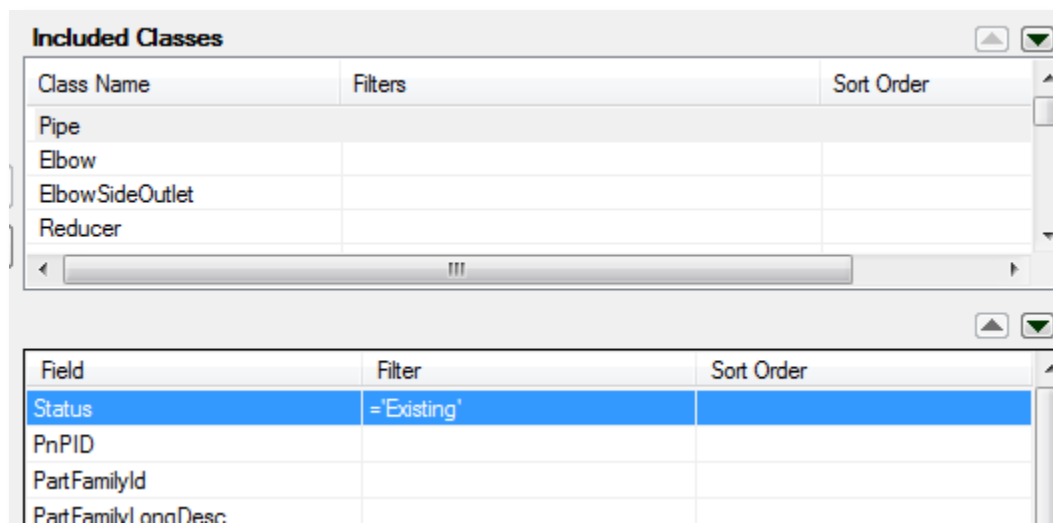
By using the filters in the reports for the Master Project or Sub Project you can achieve reports specific to the work that has been completed in the Sub Project.