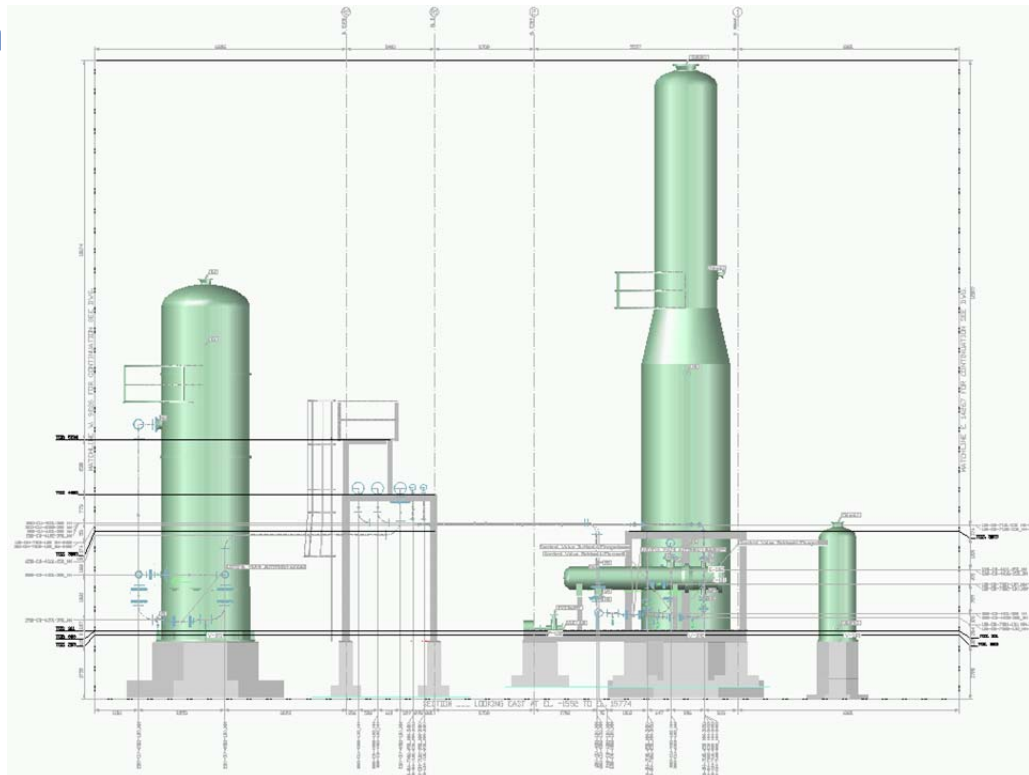




## Drawing Production Using OrthoGen<sup>®</sup>

# Introduction

- This guide is intended to help demonstrate the capabilities of OrthoGen for CADWorx. It is not intended to be an exhaustive guide of OrthoGen's complete capabilities; instead it aims to cover aspects of the product and to give a good overview of the capabilities of the application



# Opening OrthoGen



- Start OrthoGen (Double click OrthoGen.exe or use OrthoGen shortcut)

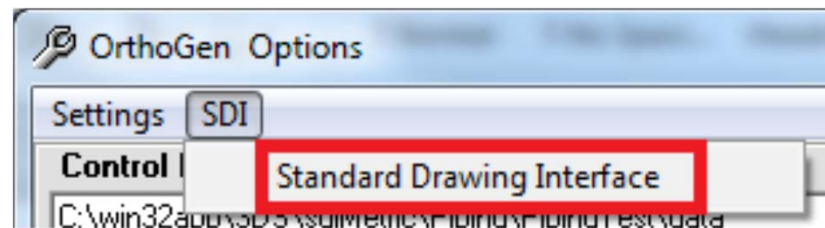


- The first form (starting on the left) is the OrthoGen “Main” form. This is where drawing selection and main discipline labelling options are located.
- The middle form, is the “Options” form. This is where commonly used discipline options are located.
- The third form, is called the “SDI” (Standard Drawing Interface) form. This is where the user can select the standard drawing style that will be used to annotate the drawing.

# SDI Form and Folder Structure



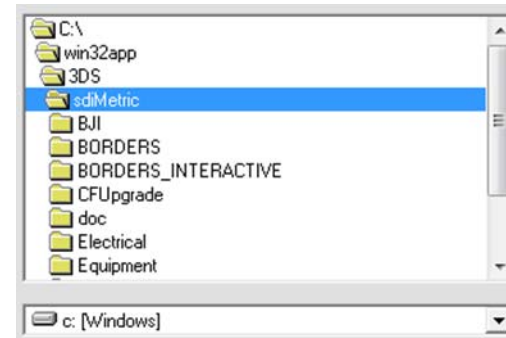
- When OrthoGen starts it will also start the Standard Drawing Interface (SDI) form. If you close the SDI form and need to restart, you must select "SDI" from the top of the OrthoGen Options form.



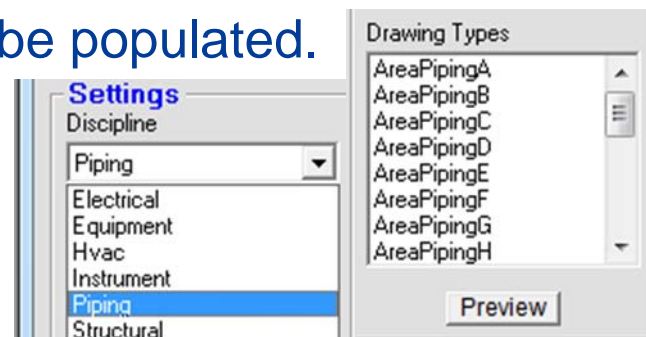
# SDI Form and Folder Structure (cont.)



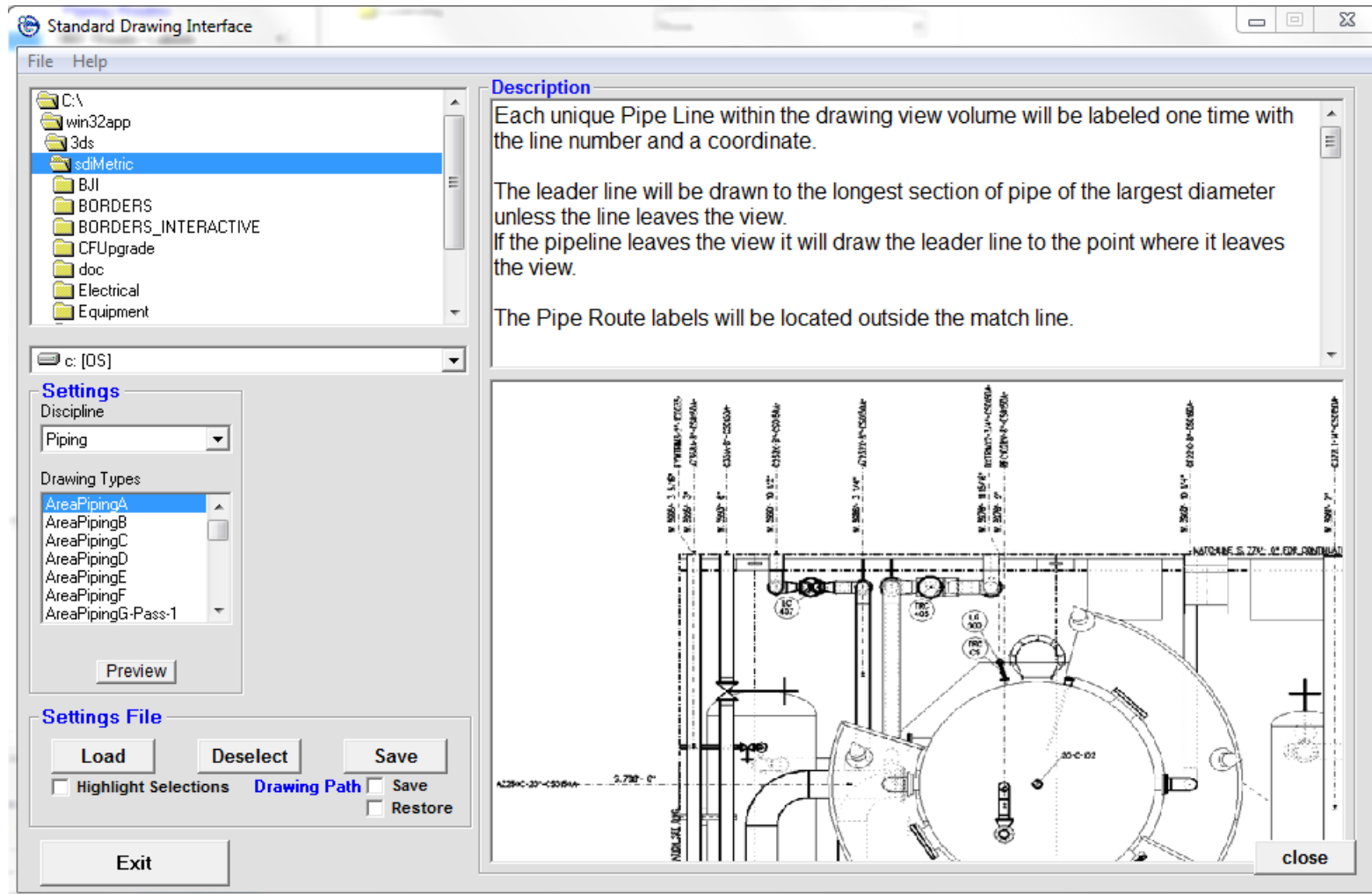
- In order to use the Standard Drawing Interface, first navigate to an SDI folder. By default, this folder is delivered to c:\win32app\3ds\sdiEnglish or c:\win32app\3DS\sdiMetric but can be moved to any location by the user.



- Once you have browsed to a valid SDI folder the Discipline and Drawing Types lists will be populated.



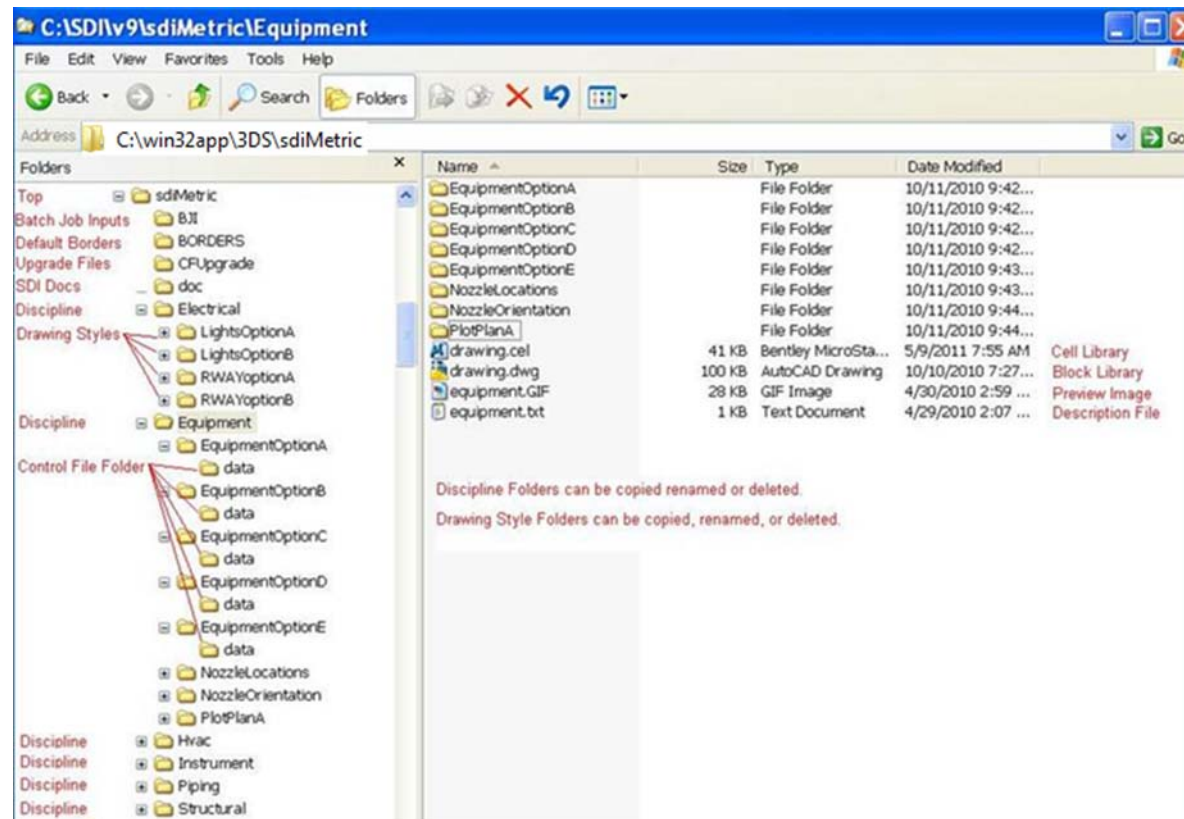
# SDI Form and Folder Structure



# SDI Form and Folder Structure (cont.)



- Open Windows Explorer and navigate to the install folder for sdiMetric or sdiImperial.

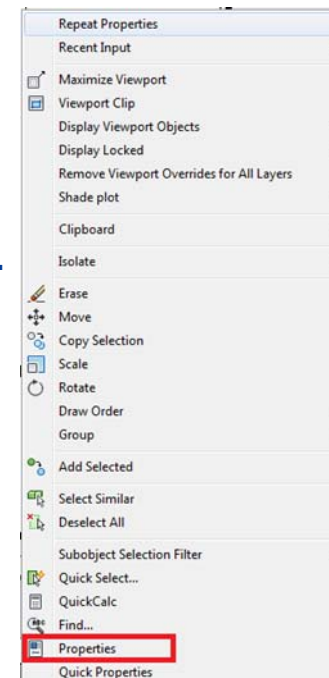




# Create Drawing View(s)



- Open the drawing “3DS\_Practice.dwg”
  - Navigate to the drawing folder on the OrthoGen “Main” form
  - Select the drawing. Select “Open/Edit” on the menu.
  
- Create the Viewport using the MVIEW command.
  - Switch to the layout tab.
  - Type in “MVIEW” command.
  - Define two points.
  - Select the viewport. Right click “Properties”.

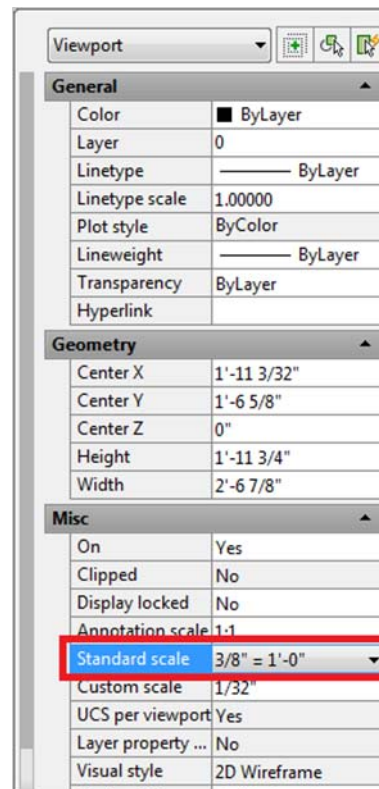




# Create Drawing View(s) (cont.)



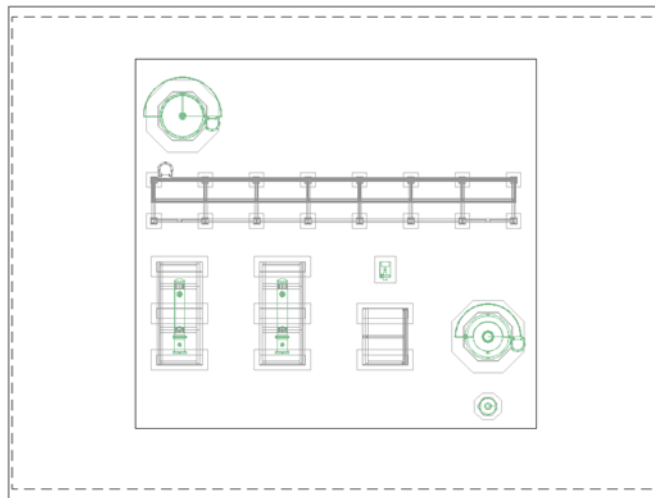
- Set the “STANDARD SCALE” on the viewport 1-30 for metric or 3/8” for English



# Create Drawing View(s) (cont.)



- Position your viewport on your drawing sheet.

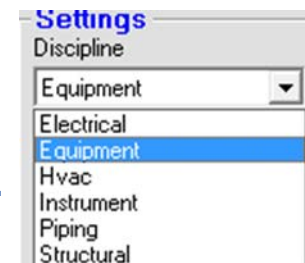
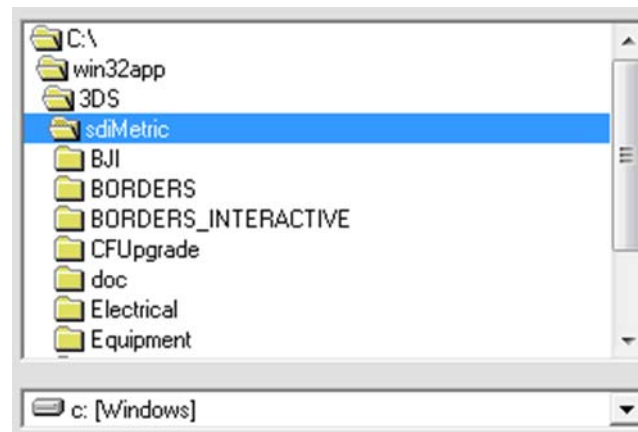


- Save and Close the Drawing.

# OrthoGen: Equipment Drawings



- Select the desired Drawing Style. For this first run, use “EquipmentOptionA”.
  - On the SDI Form, browse to the install folder of sdiMetric or sdiEnglish. The default folder is c:\win32app\3ds\sdiMetric or c:\win32app\3ds\sdiEnglish. Once selected, the Discipline and Drawing Types populate.

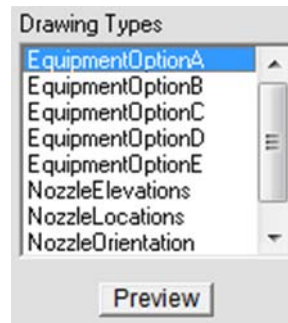


- Select “Equipment” from the Discipline drop down list.

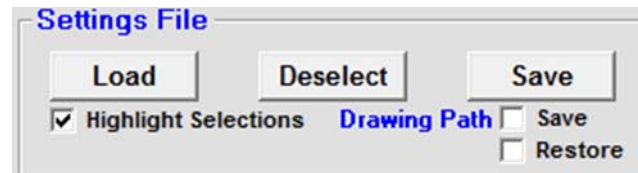
# OrthoGen: Equipment Drawings (cont.)



- Select “EquipmentOptionA” from the “Drawing Types”.



- Select “Highlight Selections” and then click “Load”.

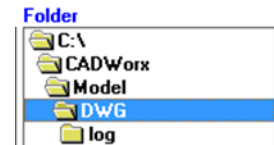


# OrthoGen: Equipment Drawings (cont.)



## ■ Process the drawing.

- ☐ Navigate to your drawing folder on the OrthoGen Main form.
- ☐ Select your drawing from the Drawing List.
- ☐ Turn on Debug if it is not turned on. This creates a log file in the log folder where the drawing is located. Version number and any errors are found inside the log file.



File Extension Filter: \*.dwg

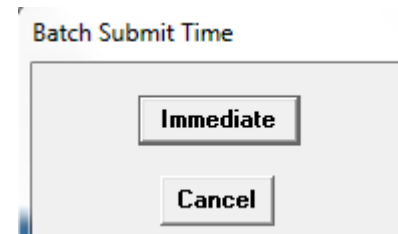
Delete Previous: None

Debugging: ☒ Debug On

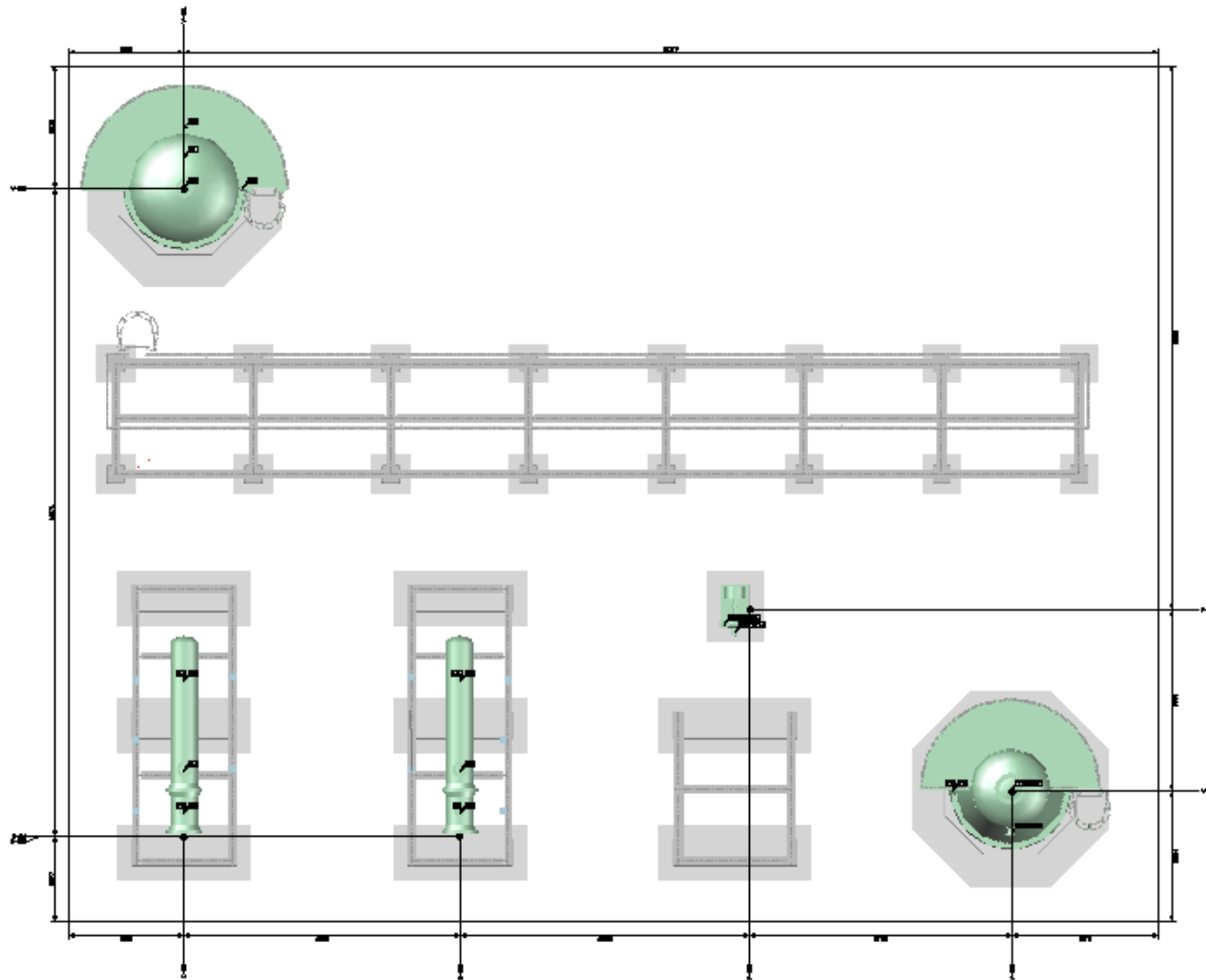
One Pass: ☐ Match Lines

Exit Submit

- ☐ Click “Submit” on the OrthoGen Main form. Then select “Immediate”



# OrthoGen: Equipment Drawings (cont.)



# OrthoGen: Delete Previous



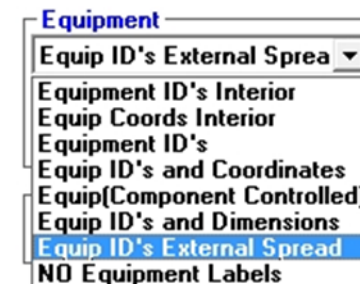
- Delete Previous is a drop down list with 4 options; Visible Edges & Labels, Visible Edges Only, Labels Only, and None. Select the appropriate one before processing. A new drawing does not require selection of any of these options, whereas a drawing that has been previously created and annotated could require selection of any one of the three options.
- “Labels” refer to any text, blocks, or leader lines created by any OrthoGen annotation run other than a "One Pass" labeler.
  - Annotations, dimensions, etc. placed by the user are NOT deleted by the Delete Previous command.
- Visible Edges refers to graphics created by the CADWorx 2D Representation (2D Rep).
  - OrthoGen does not yet support deleting and regenerating 2D Rep as part of the Batch process. Users must manage this themselves.



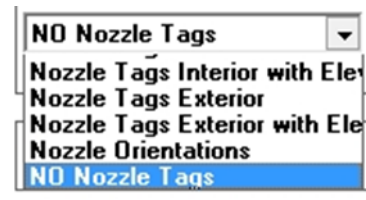
# OrthoGen: Equipment & Nozzle Options



- Equipment Options on OrthoGen Main form



- Nozzle Options



- **Exercise:** Annotate the drawing "3DS\_Practice.dwg" multiple times using two or three different Equipment Styles from the SDI form.
- Edit Labels
  - "Interior" labels placed using the "Interior White Space", "Fixed Offsets", "Nozzle Tags Interior", or the "Equipment ID's Interior" options can be re-positioned using AutoCAD move and rotate commands.

# OrthoGen: Equipment & Nozzle Options (cont.)



## ■ Label Update Cases:

- ☐ Object deleted from the model: Labels are deleted.
- ☐ Object moved in model: Labels are re-white spaced (moved).
- ☐ Object at same location in model but the label has been moved with AutoCAD move command: Label stays where user moved it.
- ☐ Labels edited by AutoCAD Program edit: Labels are put back to what is in the model.
- ☐ Labels rotated by AutoCAD Program rotate command: Rotation is preserved.

- **Exercise:** Annotate EquipmentPlan.dwg using an Equipment Style that has nozzles tagged interior. Use AutoCAD to move and/or rotate the interior nozzle tags. Re-run the drawing and notice how the labels did not move.

# OrthoGen: Equipment & Nozzle Options (cont.)



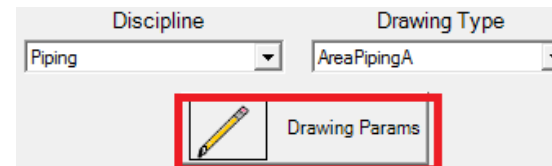
- **2D Representation:** The OrthoGen whitespace search currently does not function against model geometry. If you run “2DREP” it creates profile graphics (edges) in the drawing paper space that OG uses for white space searching.
- Even if you do not use the 2DREP for your final drawing, you should consider running 2DREP so that OrthoGen can find a better location for the label. OrthoGen labels also have masking set, so they do not have to have a completely clear location to be legible.

# OrthoGen: Piping Drawings

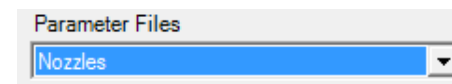


- Parameter Files: Parameter files are ASCII files modified using the SDIconfig utility that store the settings for all graphics generated by OrthoGen. The OrthoGen annotation engine reads the settings from these files. Each drawing type selection on the SDIconfig->Drawing Parameters uses a different parameter file.
- Define Piping diameter units.

- ☐ Using “Windows Explorer”, navigate to your SDI folder. Double click “SDIconfig.exe”
- ☐ Open the Drawing Parameters for Drawing Type “AreaPipingA” and then select “Drawing Params”



- ☐ Select “Nozzles” from the Parameter Files drop down list.



# OrthoGen: Piping Drawings (cont.)



- Make sure the “Master Unit” and “Subunits” in the Coordinate Readouts box is set to mm.

Coordinate Readouts

East Prefix	E._
North Prefix	N._
Elevation Prefix	EL._
Master Unit	mm
Subunits	

Coordinate Readouts

East Prefix	E._
North Prefix	N._
Elevation Prefix	EL._
Master Unit	"
Subunits	

# OrthoGen: Piping Drawings (cont.)



## ■ Define Line Number Uniqueness

- When running the Route labeller in “Longest Largest Leaving mode”, OrthoGen can place one label for every unique pipeline that exists within the view volume. This guarantees that every unique line number in the view is labelled.
- In order to determine uniqueness, OrthoGen needs to know the DIAMETER, COUNT, and SERVICE of each pipeline. At this time OrthoGen reads the entire line number from the CADWorx model and the user must define where the DIAMETER, COUNT, and SERVICE are positioned in the full line number.

- In every “Control File Folder” (data) there is an ACSII file named “lineNumberParse.dat”. Using this file you can tell OrthoGen how to extract these values from the full line number.

# OrthoGen: Piping Drawings (cont.)



- ❑ Open Windows Explorer and Navigate to  
c:\win32app\3ds\sdiMetric\Piping\AreaPipingA\data
- ❑ Open the file “lineNumberParse.dat” in notepad and modify it with the following information.

```
lineNumberParse.dat - Notepad
File Edit Format View Help
;line number search key positions. Positions are separated by a space or a dash.
8      ;char position of beginning of label (always 8 for SP3D)
1      ;Piping Diameter ( parse position )
2      ;Service ( parse position )
3      ;Count ( parse position )
```

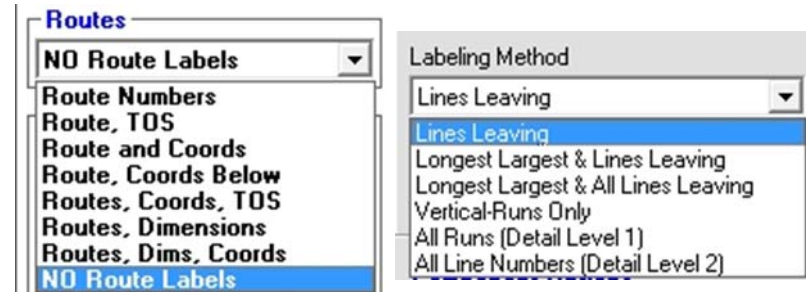
- ❑ For this Project these are the Values to Enter:
  - 1       ;diameter
  - 2       ;service
  - 3       ;count
- ❑ Save and close lineNumberParse.dat



# OrthoGen: Piping Drawings (cont.)



## ■ Piping Labeling Options



- **Exercise:** Annotate “PipingPlan.dwg” using the SDI type “AreaPipingB”. After you have completed this first piping run, Annotate the drawing PipingPlan.dwg multiple times using 2-3 different Piping Styles from the SDI form.

# OrthoGen: Automatic Grid Labels

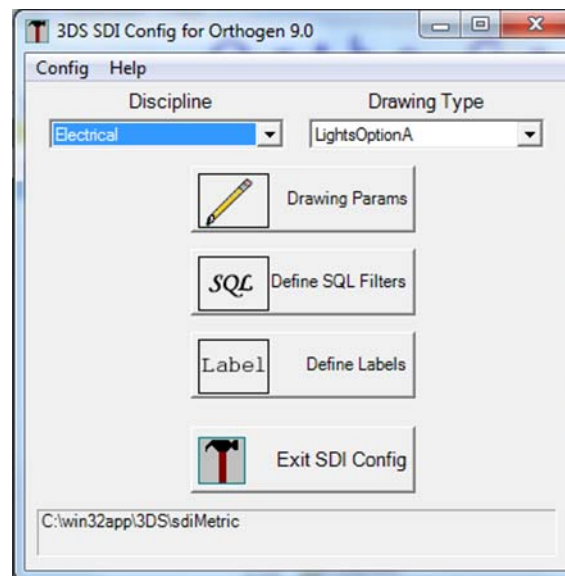


- OrthoGen for CADWorx can automatically place column grid labels on drawings. These labels are extracted from a grid model at run time. The grid model graphics should not be used as part of the drawing. The grids labels are generated from the grid model. The grid model must be attached but you can turn off the layer(s) for the grid model graphics so that they do not show up on plots.
- **Naming:** Grid models MUST contain the word “grid” somewhere in the name. This name triggers OrthoGen to generate grid labels.
- **Graphics:** Grids can be drawn as lines on any layer. Draw your grid lines and place the label as a text string on one end of the line. The Z value for grid graphics is recommended to be at grade. If the grid graphics do not fall within your view volume OrthoGen still finds them and generates the labels.
- Be sure and place the grid graphics on a layer(s) that can be turned off. You do NOT want to plot any of these graphics with your drawing.

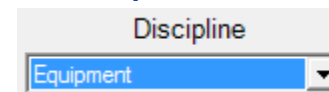
# Modifying Annotation Parameters



- Open the SDIConfig utility.
  - Using “Windows Explorer”, navigate to your SDI folder. Double click “SDIconfig.exe”



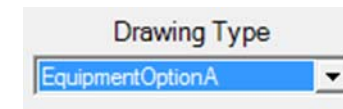
- Open the Drawing Parameters for “EquipmentOptionA”
  - Select “Equipment” from the Discipline drop down list.



# Modifying Annotation Parameters (cont.)



- Select “EquipmentOptionA” from the DrawingType drop down list.

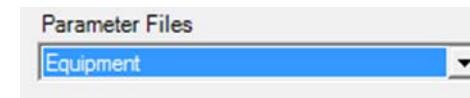


- Click on the “Drawing Params” icon.

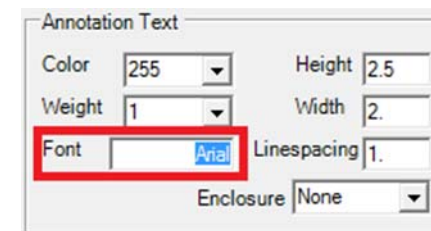


## ■ Change the Equipment font to “Arial”

- Select “Equipment” from the “Parameters Files” drop down list.



- In the “Annotation Text” box change the Font parameter to “Arial”.



# Modifying Annotation Parameters (cont.)



- Change the Equipment Text and leader line colors.
  - In the “Annotation Text” box, change the color parameter to “1”.

A screenshot of the 'Annotation Text' dialog box. The 'Color' dropdown menu is highlighted with a red rectangle and shows the value '1'. Other parameters include Height (2.5), Width (2), Font (1), Linespacing (1), and Enclosure (None).

- In the “Leader Lines” box, change the color parameter to “1”.

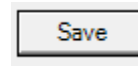
A screenshot of the 'Leader Lines' dialog box. The 'Color' dropdown menu shows the value '1'. Other parameters include Weight (0), Style (0), Bubble Radius (4.5), and Terminator (EARROW).

# Modifying Annotation Parameters (cont.)



- Save the changes and close the form.

- Click “Save” on the SDIConfig form.



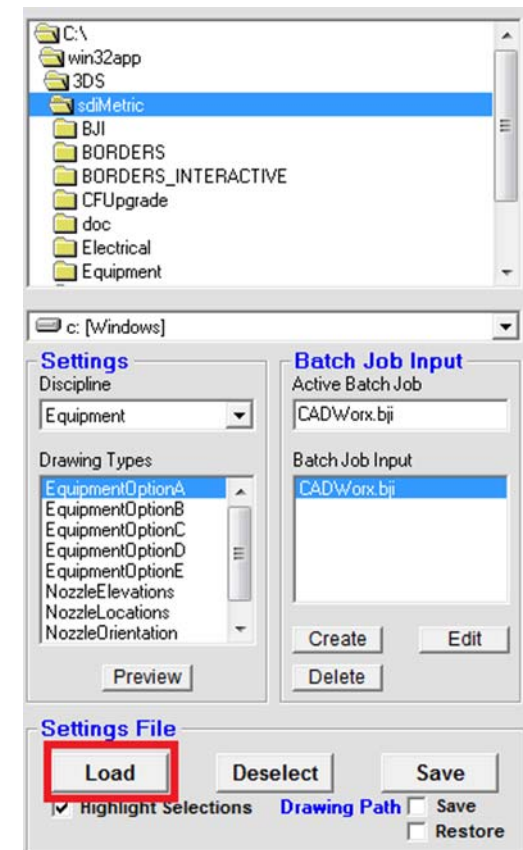
- Click the red “X” in the upper right hand corner or click “Cancel”.



# Modifying Annotation Parameters (cont.)



- In order to see the changes on the Drawing, the designer needs to re-annotate the drawing.
  - Load the EquipmentOptionA from the SDI form.

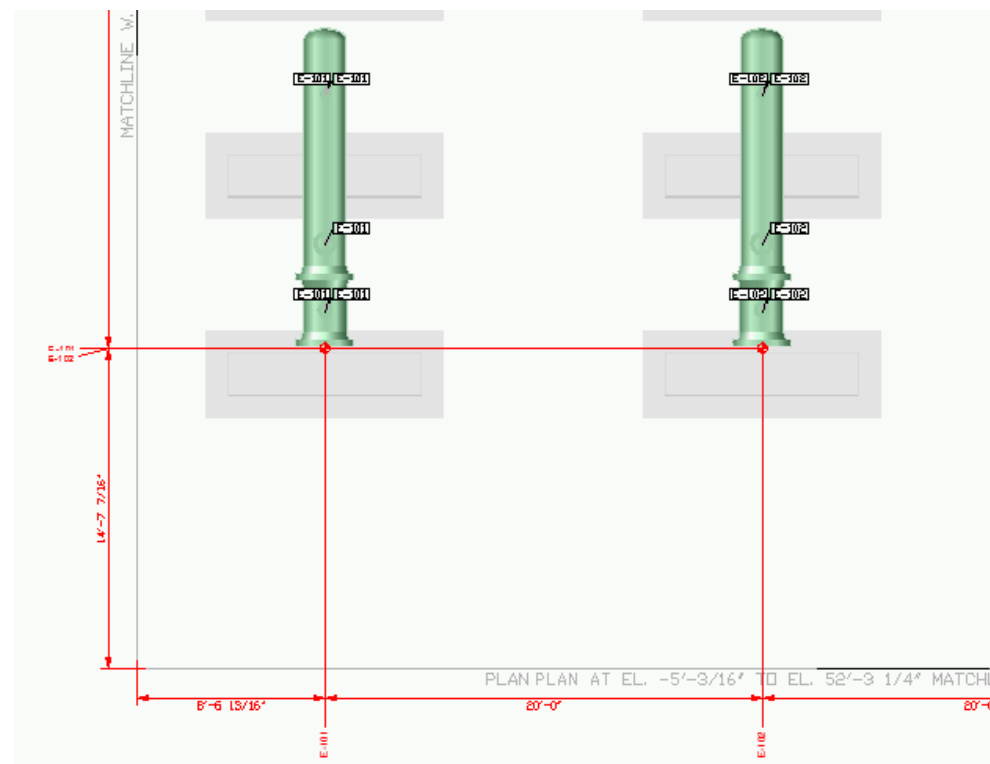




# Modifying Annotation Parameters (cont.)



- Click “Submit” from the OrthoGen Main form and review the drawing.

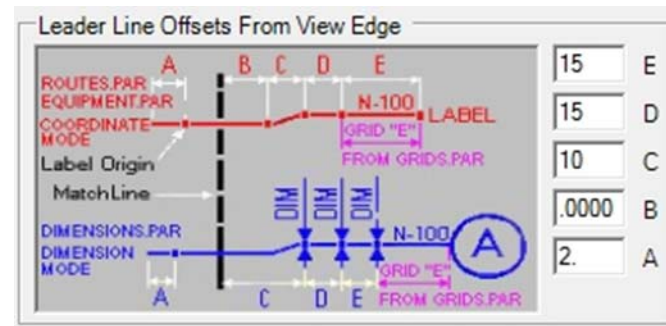


- **Exercise:** Change the Font and Color of text and leader lines for Piping in AreaPipingA.

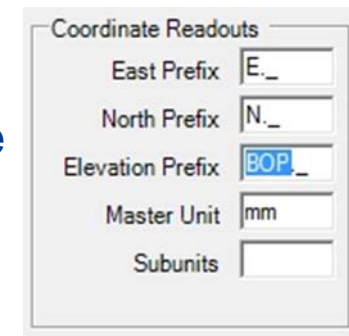
# Modifying Annotation Parameters (cont.)



- Changing the Annotation text distance from the drawing view edge.
  - Open the Drawing Parameters for “AreaPipingB”.
  - Choose “Routes” in the “Parameters Files” drop down list.
  - Change the value of “D” in the “Leader Line Offsets” box to 15.



- Configuring Bottom of Pipe (BOP)
  - Change the “Elevation Prefix” to “BOP.\_” in the “Coordinate Readouts” box.



# Modifying Annotation Parameters (cont.)



- ☐ Save and Exit SDI Config form.
- ☐ Process the drawing

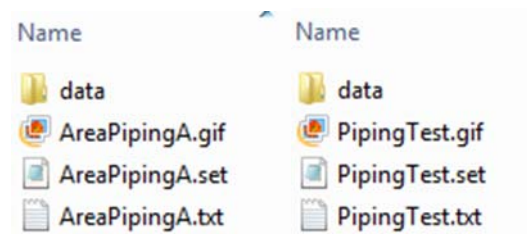


- ☐ **Exercise:** Modify the Leader Line Offsets for drawing type "AreaPipingD". Change elevation prefix to Centerlines (CL). Process Drawing.

# Create a new Standard Drawing Type



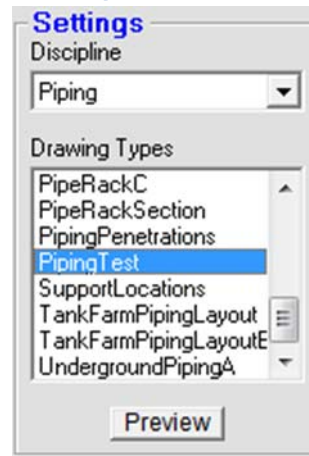
- Open Windows Explorer and navigate to the Piping folder in sdiMetric or sdImperial.
- Copy and rename AreaPipingA into the Piping folder to “PipingTest”
- Rename the files AreaPipingA.gif, AreaPipingA.set, and AreaPipingA.txt to PipingTest .gif, .set, and .txt.



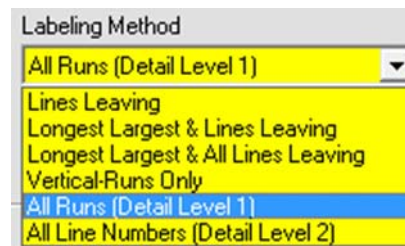
# Create a new Standard Drawing Type (cont.)



- Select and Load “PipingTest” from the Drawing Types on the SDI form



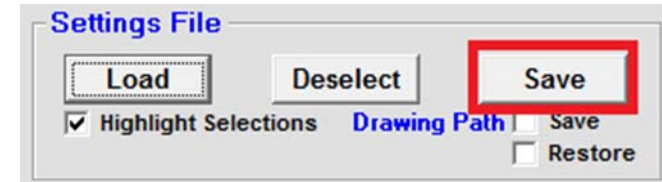
- Select “All Runs (Detail Level 1)” in the Labelling Method dropdown list on the OrthoGen Options form.



# Create a new Standard Drawing Type (cont.)



- Click on “Save” on the OrthoGen SDI form.



- Click on “Deselect” on the OrthoGen SDI form.



- Load the “PipingTest” drawing from the OrthoGen SDI form.
- You now see the piping option selected that was saved.

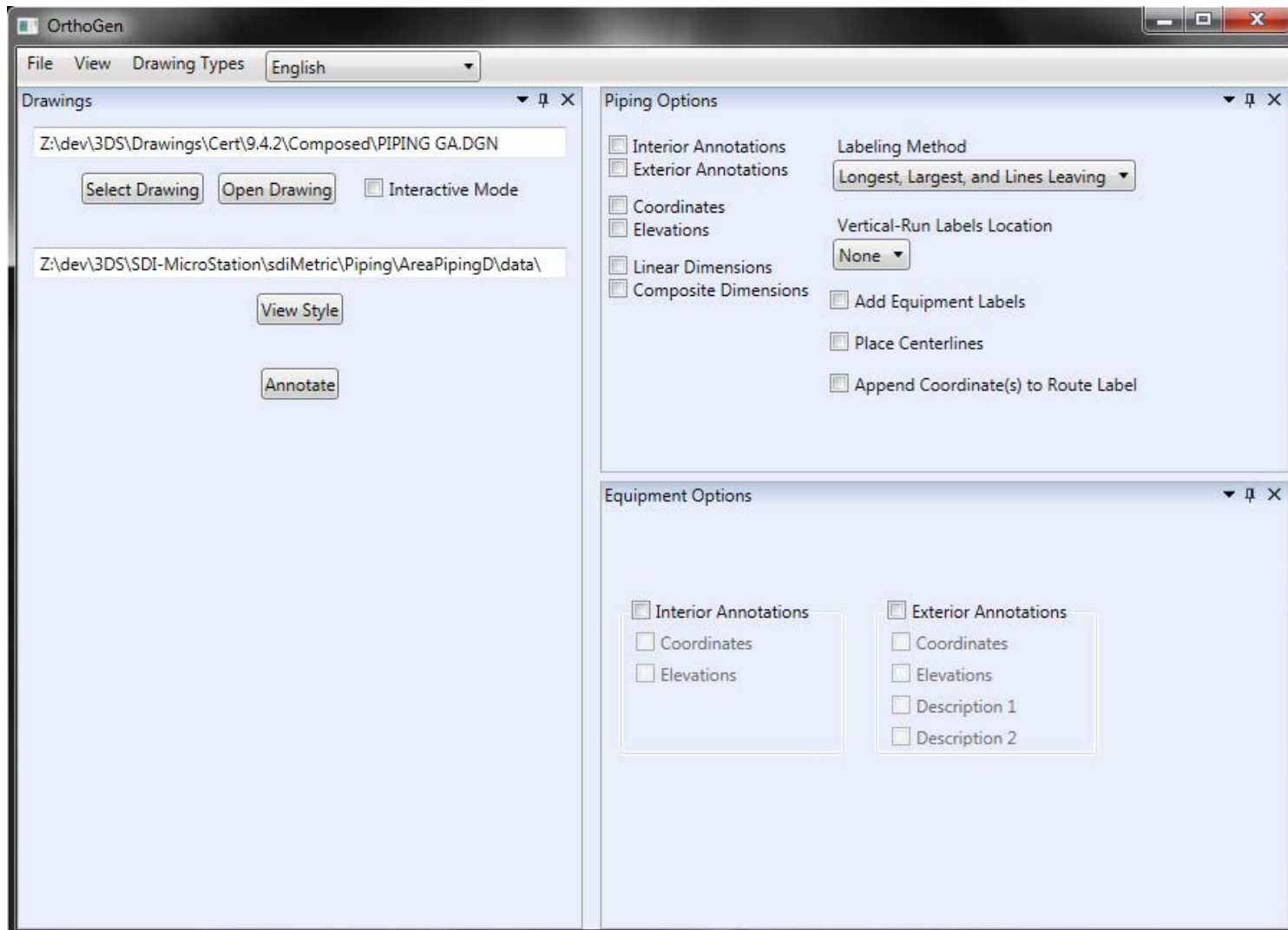
# In Development



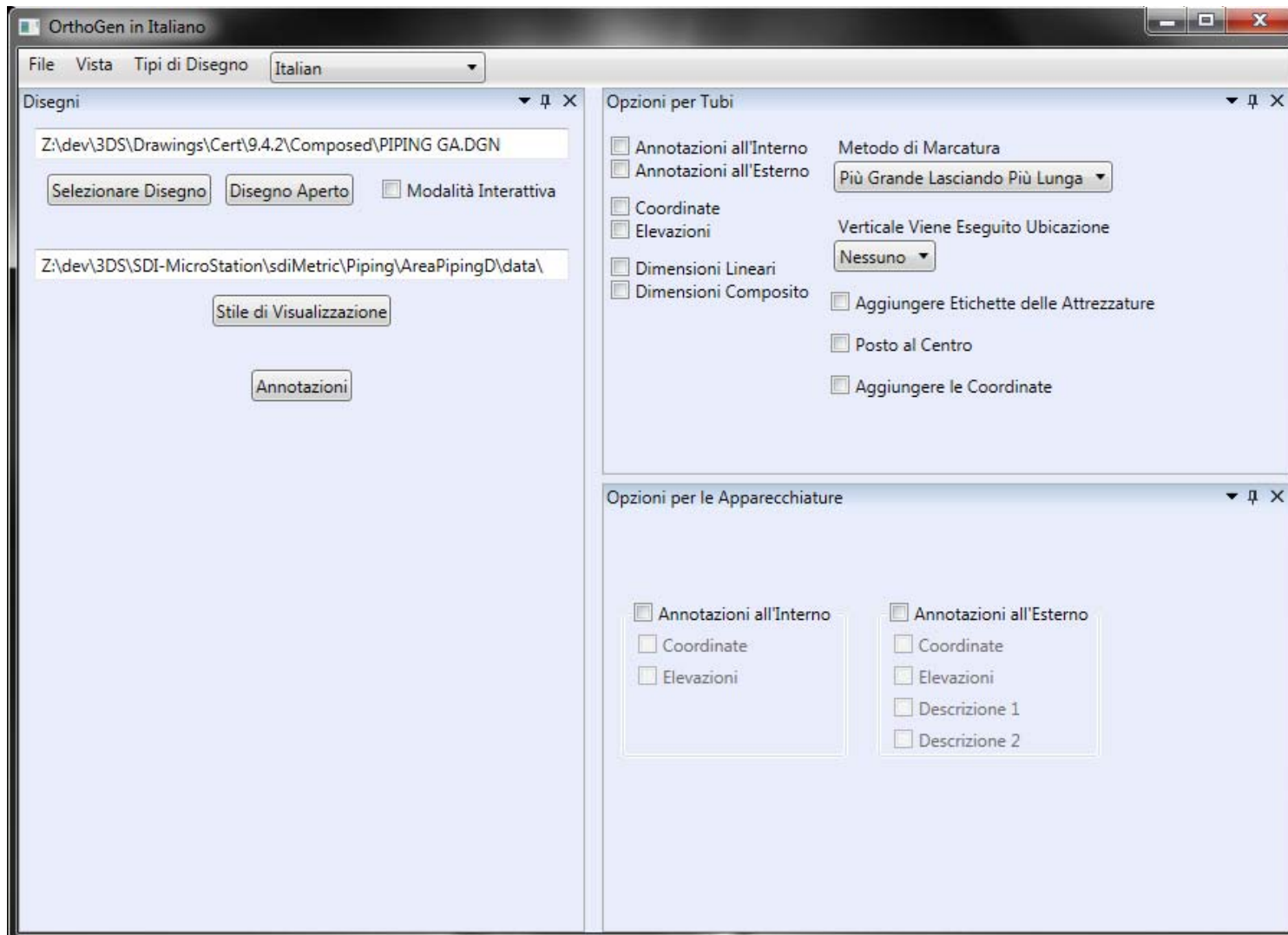
- New Interface
- Working Interactively with AutoCAD, eliminating the need for batch and script files.
- Multi Language
- Combined options and information from Parameter Files into one .ini file
- Enclosures



# In Development



# In Development



# In Development





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Tech Zone*