SmartPlant 3D
Piping Labs

Process, Power & Marine



INTERGRAPH

Version 6 July 2005

Copyright

Restricted Rights Legend

Intergraph Corporation
Huntsville, Alabama 35894-0001

Warranties and Liabilities

Trademarks

Table of Contents

Piping Labs

The following labs are not intended to be step-by-step mechanical workflows. The objectives for you are presented and it is up to you to determine how to combine various tools to achieve the pipe runs and features that are requested. In Lab 1, steps are given to aid you in the basic means of routing. Lab 2 builds on the knowledge gained in Lab 1. Lab 3 builds on Lab 1 and 2, and so on.

The instructor will have already demonstrated each functionality used here during the presentation. However, at any time, the instructor will be available to show how to pick working planes, constraint angles of routing, set the properties for the pipe run, etc. Your goal here is NOT to get through the lab as quickly as possible. Your goal is to experiment with the tools, see how they can be used in combination to achieve the described pipe run, and think about how these tools can be best utilized by you, the piping designer.

Before starting any of the piping labs, set your tooltips as follows:

Piping Runs – Tool tip Pipe Run

Piping Parts – Tool tip Pipe Component

Pipe Nozzle – Tool tip Nozzle ID

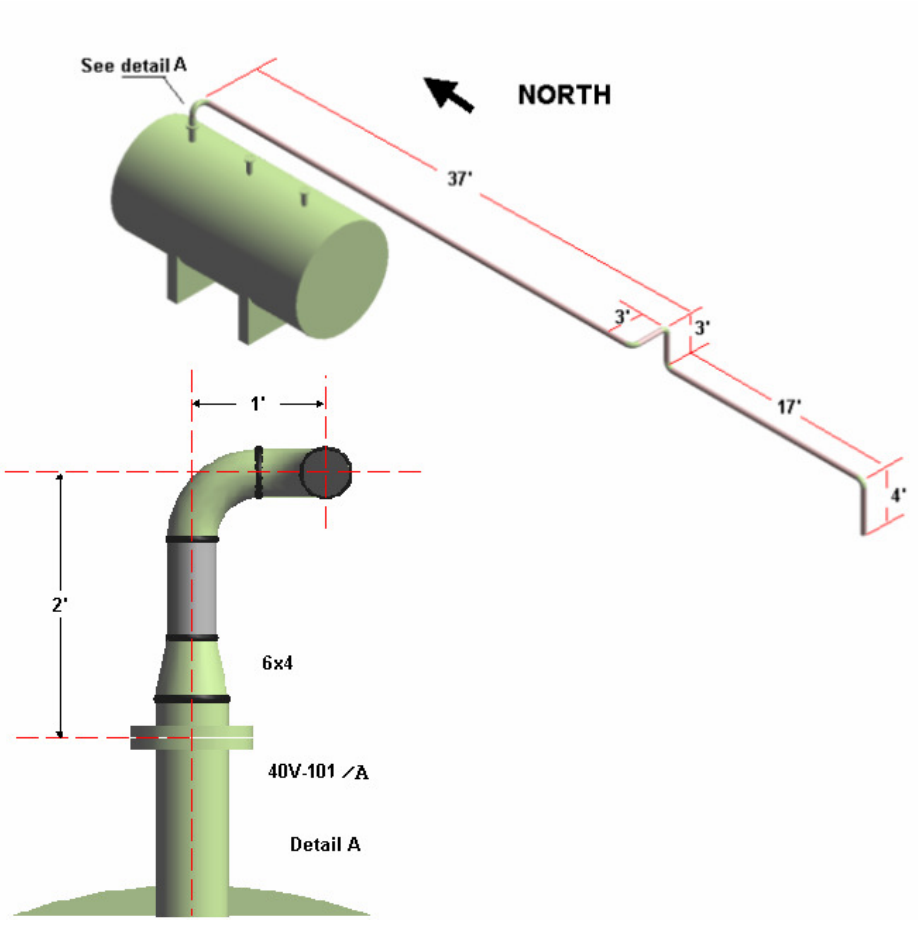
About the text:

General Hints are provided and you should try to work from them first – especially the more advanced users. Newer users to the software are encouraged to try the general hint, but when confronted with a problem they are unable to move past, refer to the **More detailed help** section(s).

Lab 1: Basic Routing

In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

Route pipeline 400-P from the equipment/nozzle 40V-101/A to its completion using SmartSketch and the Length Control tools learned in this section. Refer to the sketch below for detailed information.

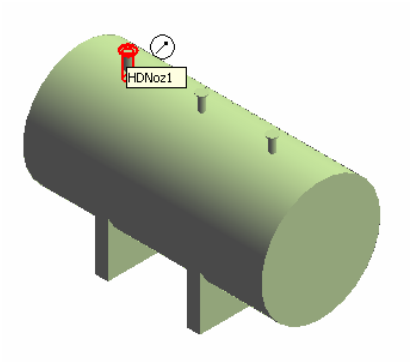


1. Open or create a session file and define an appropriate filter for your workspace.

Note: An *appropriate filter* for the workflow contains the items you will be routing from (in this case **40V-101/A**), and the systems you will be working in (Pipeline System **400P**), and any coordinate systems you will be using with Pinpoint/Point Along. In the following labs use a filter that is defined by the Amines Unit system and the Amines Coordinate system until advised otherwise.

2. Go to the Piping Task environment. Make sure the Active Permission Group is set to ***Piping***

3. Select **Route Pipe command** from the vertical toolbar and select the **40V-101/A** from which to start the pipe run.



Note: in the next step you will be selecting a Pipeline System where the piping you are about to route will be stored/located. The Pipeline System is not just a hierarchy container object, but also dictates what Specifications are available for routing.

4. The system opens the Create Pipe Run Dialog box. Select **&More** in the Pipeline property field to open the Select System dialog box.

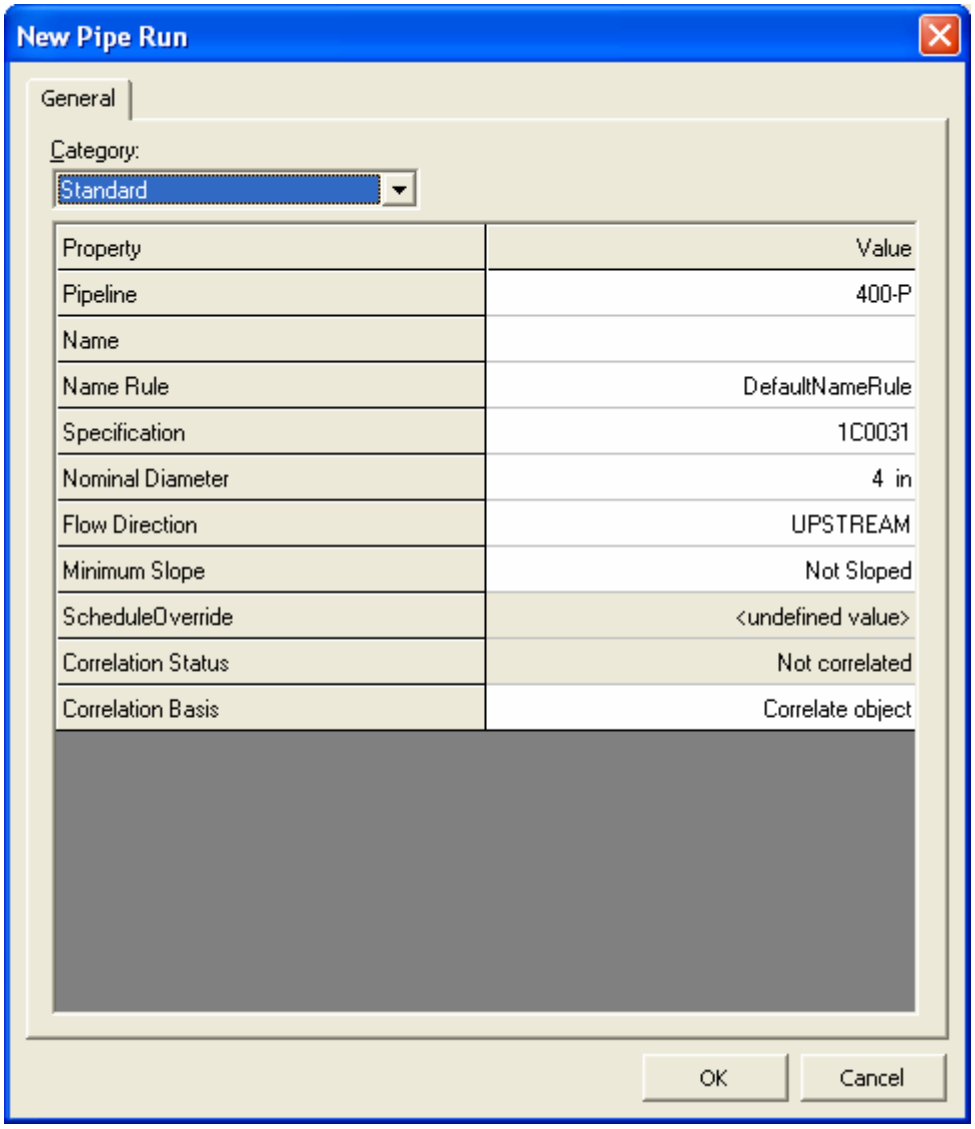
5. Navigate the system folder hierarchy and select **400-P** pipeline system. Next, Fill the following properties

Note: In Step 6,7,8 the inputs that we are providing allow the software to determine the exact piping we want. If the selection we make here are not within the scope of the Spec or Project Rules for the Piping Catalog, we will be notified of a catalog problem.

6. Specification = 1C0031

7. Nominal Diameter = 4 inch

8. Flow Direction = UpStream.



9. Click the **OK button.**

Note: The OK button returns you to the dynamic graphic display and we can see that our routing with start from our first commit point that we made back in step 3.

10. Go to the Pipe Route ribbon bar and key in 2 ft in the length box.

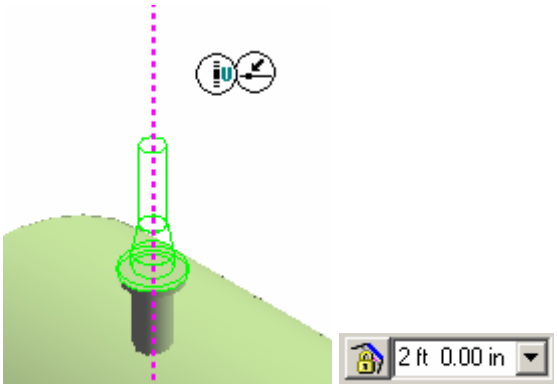
Recall that the length box values of 2ft will constrain the length of pipe to that value.

11. Position the cursor above the nozzle until the system returns the SmartSketch axis aligned indicator.

Note: This Smartsketch glyph is exampled in screenshot on the next page.

Recall: This glyph reminds is your key to knowing that your projection for the routing of the pipe is going in the vertical direction.

12. Left mouse click to accept the endpoint.



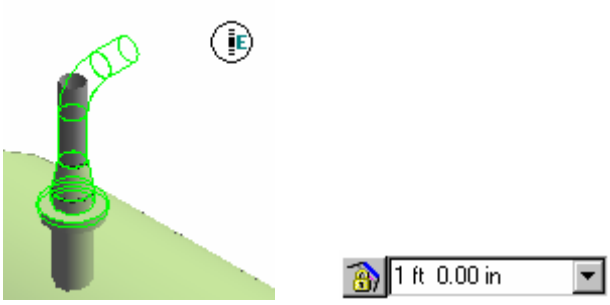
Accomplishment: You have now successfully placed the first pipe segment for this pipe run using the smart sketch glyphs to control direction. Now you will be continuing the run to route the next segment.

13. Go to the Pipe Route ribbon bar and key in 1 ft in the length box.

Think about what this does for you – do you understand how this helps you achieve your goal of routing the next segment? Observe as you complete the next segments how this repetitive workflow is used to complete the length of features that make up the pipe run.

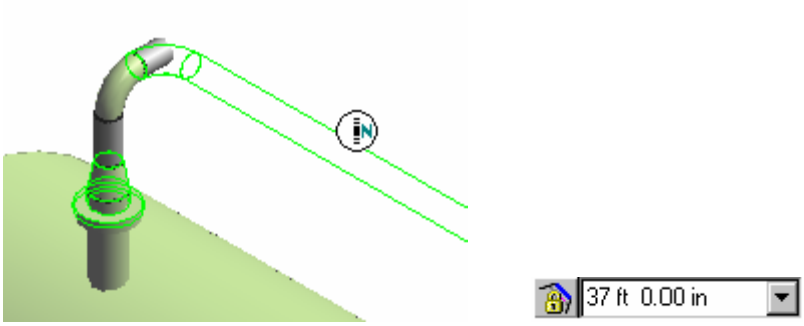
14. Position the cursor in the Easting direction until the system returns the SmartSketch axis aligned indicator.

15. Left mouse click to accept the endpoint.



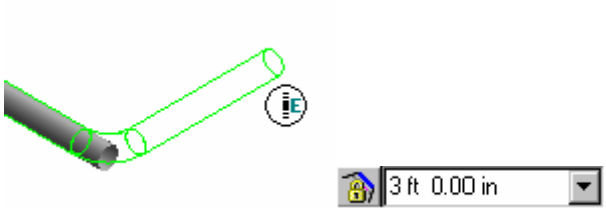
16. Go to the Pipe Route ribbon bar and key in 37‘ in the length box.

17. Position the cursor in the South direction until the system returns the SmartSketch axis aligned indicator. Left mouse click to accept the endpoint.



18. Go to the Pipe Route ribbon bar and key in 3’ in the length box.

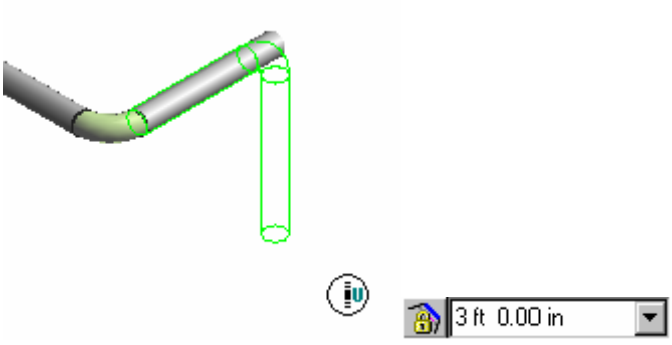
19. Position the cursor in the Easting direction until the system returns the SmartSketch axis aligned indicator. Left mouse click to accept the endpoint.



20. Go to the Pipe Route ribbon bar and key in 3’ in the length box.

21. Position the cursor down until the system returns the SmartSketch axis aligned indicator.

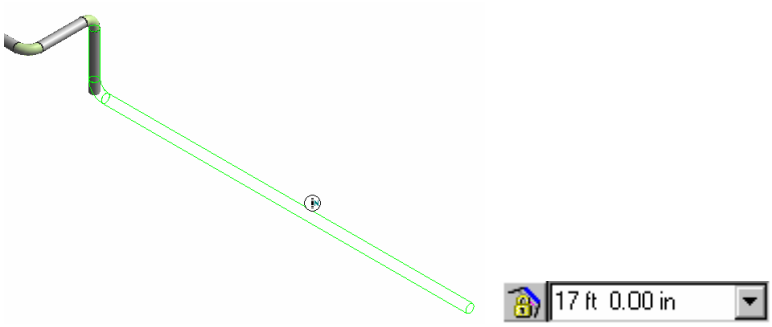
22. Left mouse click to accept the endpoint.



23. Go to the Pipe Route ribbon bar and key in 17’ in the length box.

24. Position the cursor in the South direction until the system returns the SmartSketch axis aligned indicator.

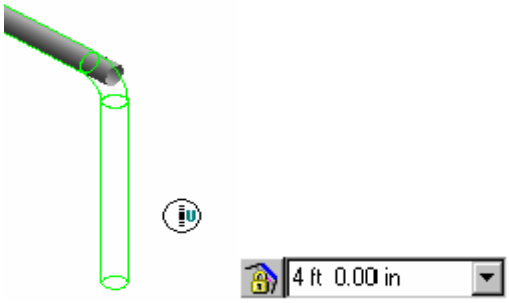
25. Left mouse click to accept the endpoint.



26. Go to the Pipe Route ribbon bar and key in 4’ in the length box.

27. Position the cursor down until the system returns the SmartSketch axis aligned indicator.

28. Left mouse click to accept the endpoint.



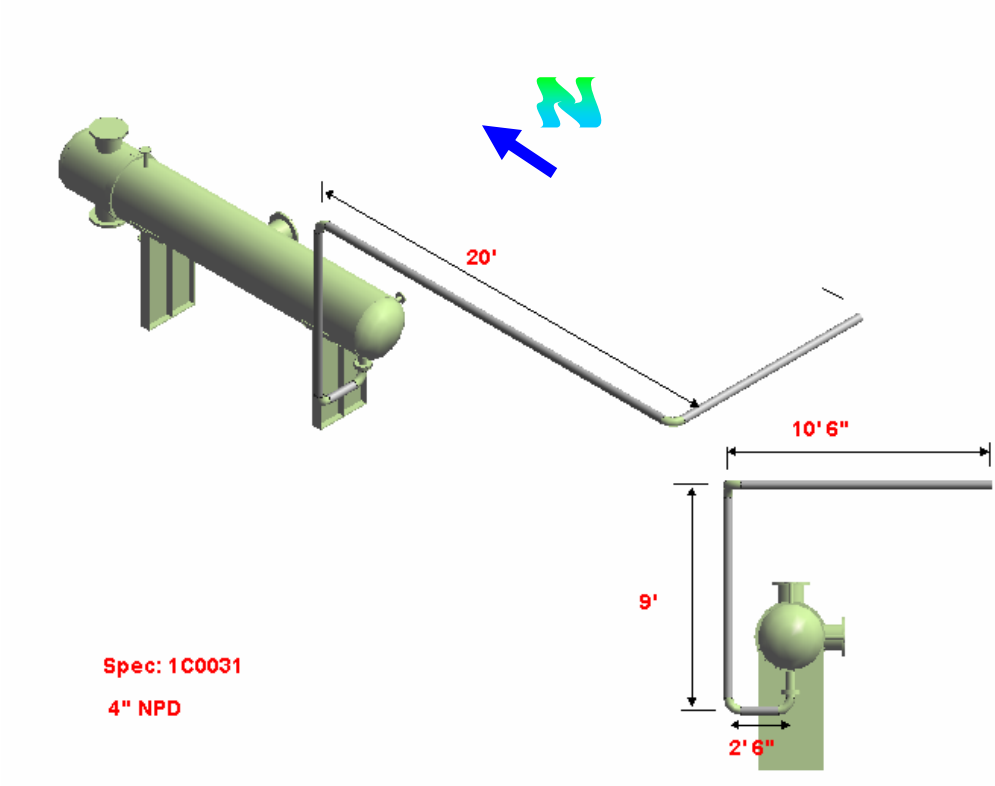
29. Right mouse click to terminate the Pipe Route command.

Repeat the lab: this time make sure to incorporate the use of locking plane in your workflow. The locking planes are not essential to completing this lab, but they will be used in future labs – practice using them on a pipe run you are already know how to route. Observe how they constrain your routing.

Lab 2: Basic Routing

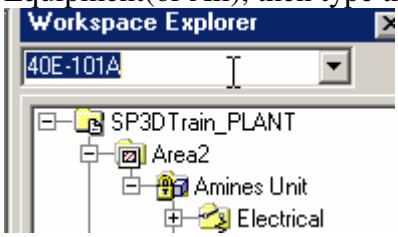
In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

Route pipeline 401-P from the equipment/nozzle 40E-101A/E1 to its completion using Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information.



Recall from Piping Lab 1: Selecting System for Routing, inputting spec and size, Locking length, Smartsketch glyph for N/E/U directions. With these already used tools the above routing example can be achieved. Again, experiment with how Working Plane Controls can be used in this workflow as well.

Hints: 1) To select an equipment whose name you know, set locate filter to Equipment(or All), then type the name in the search field of WSE and press Enter



Then fit and zoom out as desired.

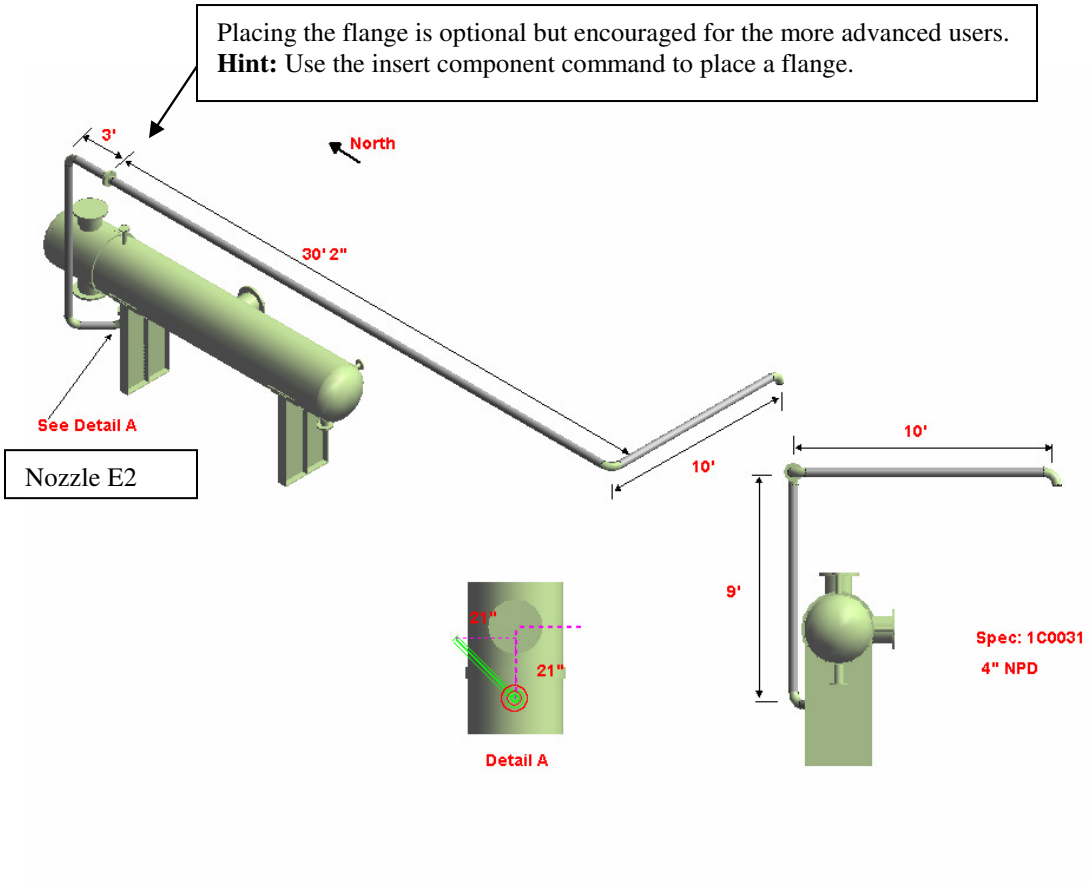
2) Start route pipe command, select nozzle as starting point and set Plan plane, 90 deg angle, 2'6" length and click when E glyph is shown, then release plan plane (set to no plane), route up 9', south 20' and east 10'6".

Note: Early versions of V6 had a problem with the above instruction 2. If you have a problem following those steps update to the latest service pack or work around the problem using working planes and pinpoint.

Lab 3: Route a Pipe Run with PinPoint

In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

Route pipeline 402-P from the equipment/nozzle 40E-101A/E2 to its completion using PinPoint, Relative Tracking, Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information.



Recall from Piping Lab 1 & 2: Selecting System for Routing, inputting spec and size, Locking length, Smartsketch glyph for N/E/U directions. These tools will need to be used to achieve the above routing example.

Hint:

Use Pinpoint's relative tracking functionality.

Start pinpoint and turn on relative tracking on before you start lab.

Start routing command, pick the nozzle and verify that target moves there and you see 0,0,0 on screen.

Then lock angle to 90 and enter E= -21", N = 21" in the pinpoint. WARNING: DO **NOT** LOCK "PLAN PLANE", MAKE SURE ITS set to "NO PLANE", else you get extra length of pipe. TR is filed for this. Rest is all using plan plane and locked 90 angle.

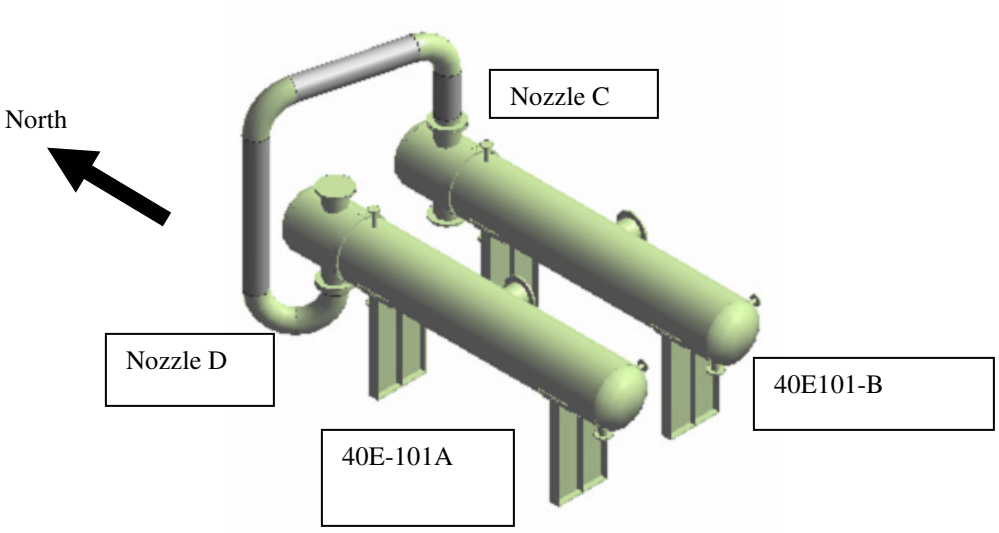
Inserting the flange at 3' is optional but encouraged for the more advanced users.

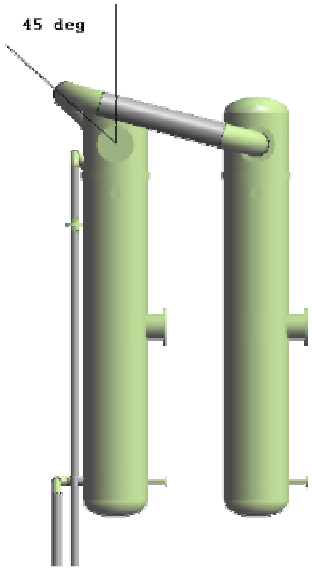
Achievement: You have successfully completed the workflow utilizing relative pinpoint in conjunction with locked planes. You have further reinforced the techniques taught in Lab 1 and Lab 2.

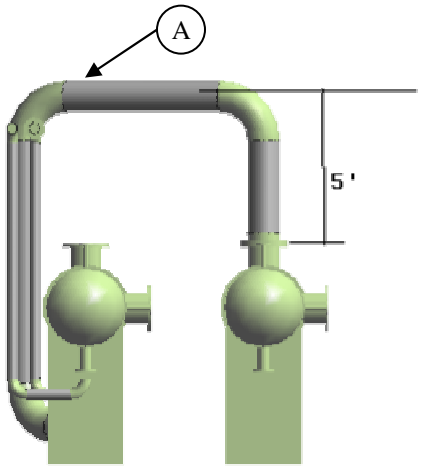
Lab 4: Routing To or From Equipment Nozzles

In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

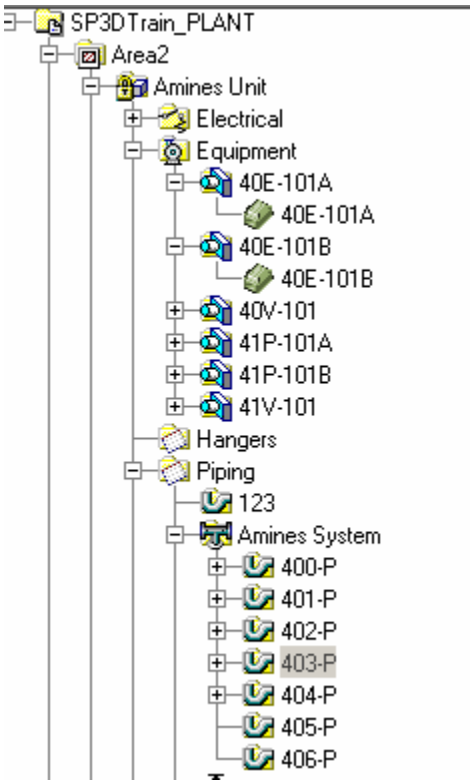
Route 12" NPD pipeline 403-P from the equipment/nozzle 40E-101A/D to equipment/nozzle 40E-101B/C using PinPoint, Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information. (Fitting to Fitting makeup at the bottom)







The pipeline you will be using is 403P. Reference the screenshot below to find it in the hierarchy.



General Hints (advanced users): 1) You can select Nozzle D on the equipment item 40E-101A above as your start point for your pipe run. Instead of placing a straight feature, immediately use the angle lock to force a 90degree elbow on the run. This will force the placement of a 90 degree elbow. **2)** When you are placing the "A" straight feature, try locking your angle to 90 degrees in combination with your working planes: then select the nozzle on the equipment.

More detailed help:

1) Fitting to Fitting placement:

Start with the insert component command at nozzle D.

System opens the new pipe run dialog box.

Select pipeline

Select spec

Select the NPD

Key in temp/pressure

Hit OK to close the piperun dialog box.

Select short code flange and hit finish

Select 90 deg direction change

Rotate the elbow by key in 135 deg

Hit finish to place the elbow.

Select 90 deg direction change

Hit finish to place the second elbow.

Select the route pipe command to switch automatically to route.

2) Pinpoint tool and control plane

Use pinpoint and relocate the target at the nozzle C.

Make sure the plane control is set to NO PLANE and key in 5’ in the EL pinpoint.

3) Smartsketch service

Use Smartsketch to make the SF straight up

Left mouse click to commit the SF.

Lock the plane control to PLAN and mouse the mouse to find the nozzle C.

Left mouse click to place the next pipe.

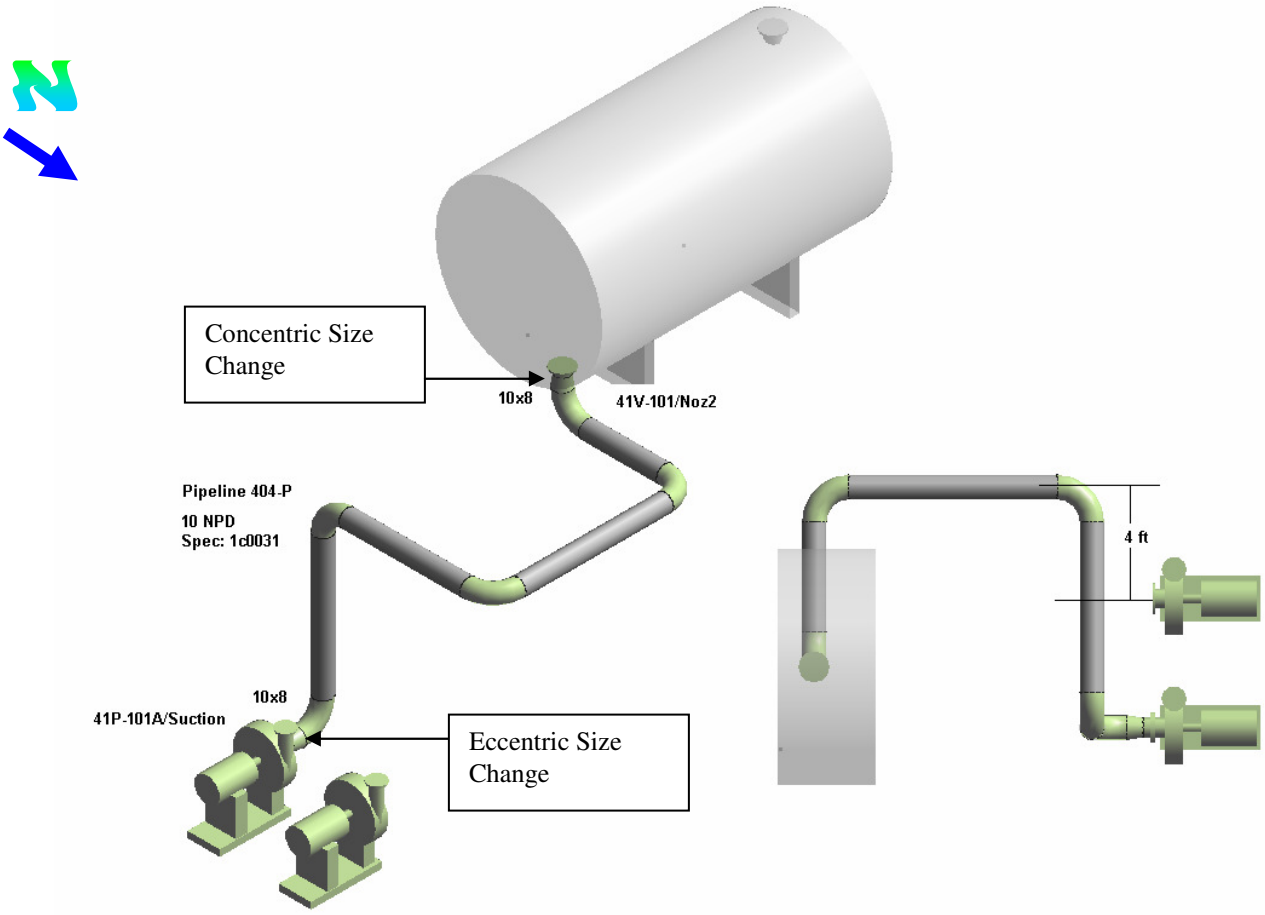
Unlock the Plan Plane and select the nozzle C again to finish route into nozzle C

Lab 5: Routing To or From Existing Pipe Runs

In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

Route 10” NPD pipeline 404-P from the Pump 41P-101A/Suction to Storage Tank 41V-101/Noz2 using Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information.

(Eccentric Size Change – FOT)



Recall all the techniques you have used in lab 1,2,3,4.

General Hints (advanced users): 1) If you set your pipe run to be 8” from the start then the 10x8 concentric size changes will need to be place using the insert component command. **2)** You can use Pinpoint (repositioning target to the equipment nozzle) to achieve the routing described by the right-hand screenshot above.

More detailed help:

1) Inserting the Concentric Reducer on the Tank

Start the route pipe command at the Tank Nozzle, complete the form, and ensure that you see the dynamic graphic associated with the 'to be placed' piping. DO NOT place the pipe, but instead start the insert component command.

Select the short code flange using NPD 8 to place the flange

Select the concentric size change and select 10 NPD to place the reducer.

After the concentric size change is placed stop the route command (one way to do this is to hit the select command).

2) Next, use a similar workflow to place an eccentric reducer on the pump nozzle.

Start the route pipe command.

Before you click your first commit point: In the Pipe Run pull down box, you can select the pipe run you made for the concentric reducer in the earlier workflow.

Start at the pump nozzle using the insert component command.

Select the short code "flange".

Select the short code "eccentric reducer".

Rotate 180 so that the flat side is at the top.

3) Route between

You should now be in dynamics ready to place pipe.

Select 90 deg direction change.

Select the route pipe command.

Use pinpoint to get the elevation.

Move the cursor on the port elbow located at the tank and hit F12 to lock the elevation.

Use SmartSketch to make the Straight Feature up.

Hit left mouse click.

Next Lock the Plane to North and lock the angle.

Move the cursor to the second pump nozzle to get the north coordinate and left mouse click to commit the second leg.

Unlock the angle and Use the length control and key in 4’ to finish placing the second leg.

Unlock the length and lock the plane to East.

Move the cursor to the elbow located in the tank to get the next coordinate.

Left mouse click to place the next leg.

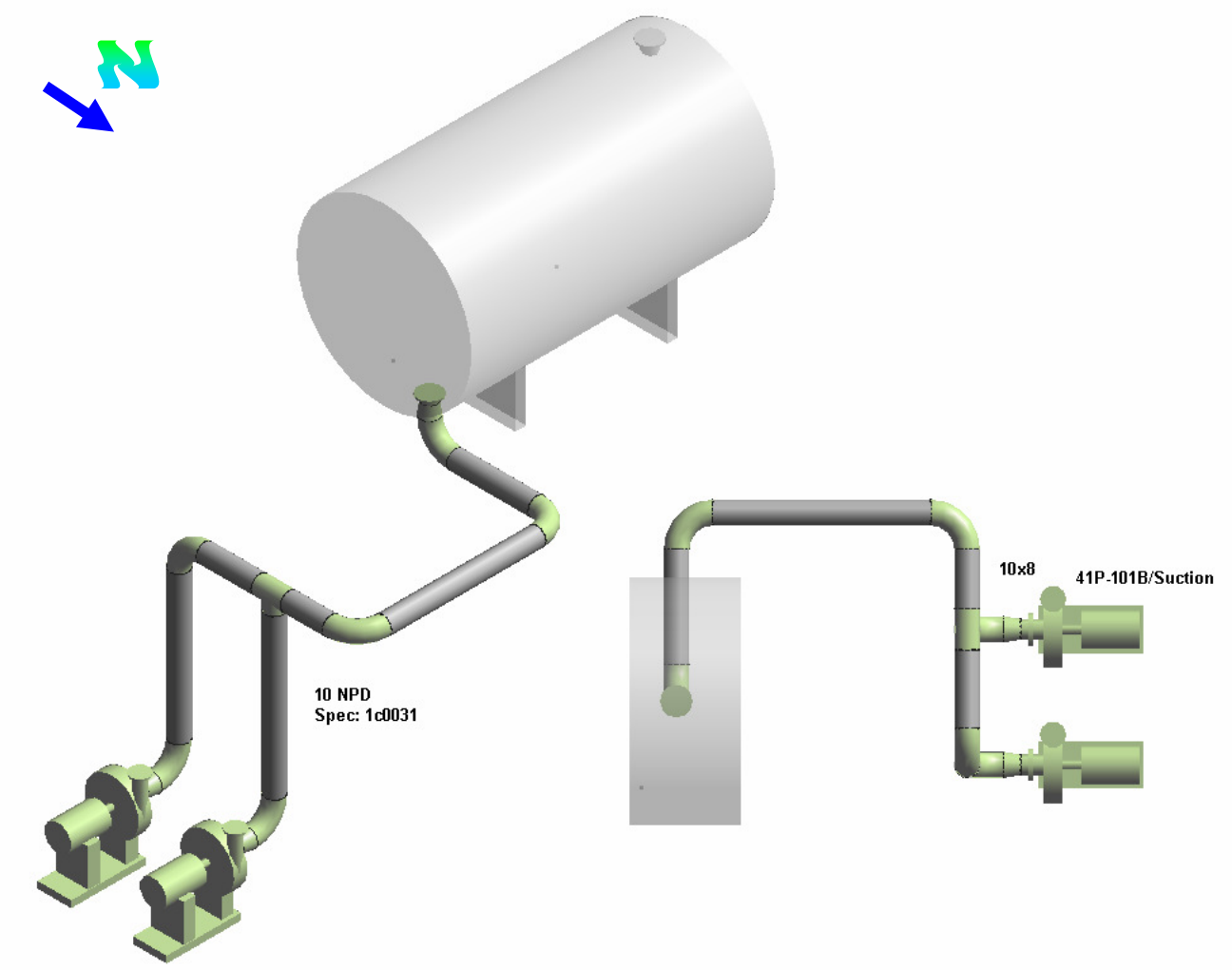
Lock the control plane to plane and move the cursor to the elbow to complete the pipeline.

Optional to the Advanced users: Repeat this lab, but place the reducer on the tank last, and try to use your tools to route back to the pump.

Lab 6: Routing To or From Straight Features

In the following lab, the goal of the workflow will be to achieve the piping layout exampled in the following screen shot and described in the following text:

Create the branch line by routing a 10” Pipe Run (Pipeline 404-P) from the Pump 41P-101B/Suction to the Pipeline 404-P using Working Plane Control and Angle Control tools learned in this section. Refer to the sketch below for detailed information.



General Hint(advanced users): Think about how inserting components like we did in the previous lab and and then using smartsketch glyphs would allow you to quickly route the piping exampled above.

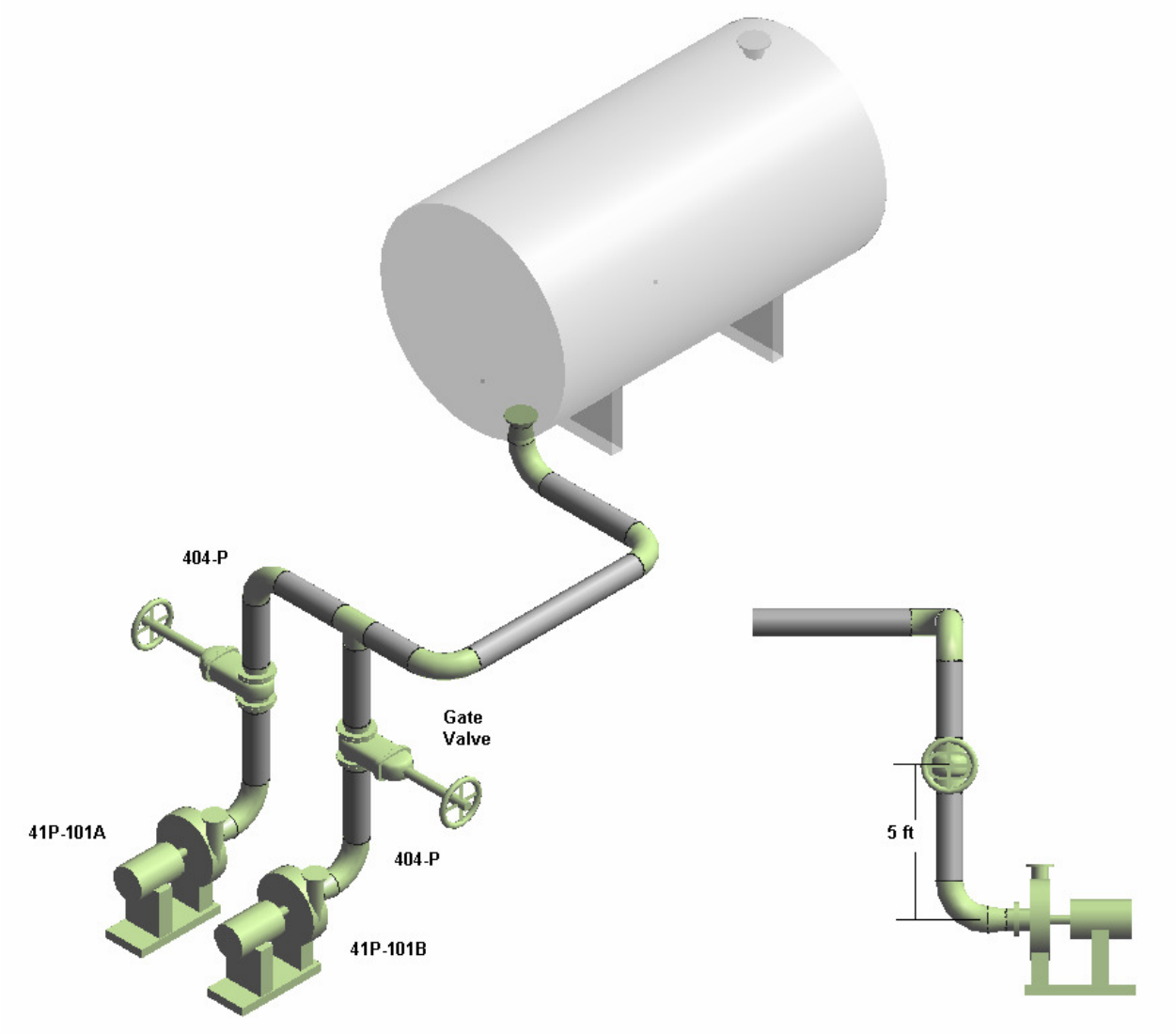
More detailed help:

Start routing at the pump using the insert component command and place the flange + eccentric reducer + 90 elbow

Switch to route and branch the line into the header. Hints unlock everything, use the middle mouse to lock to the header and use smartsketch to make the line straight up.

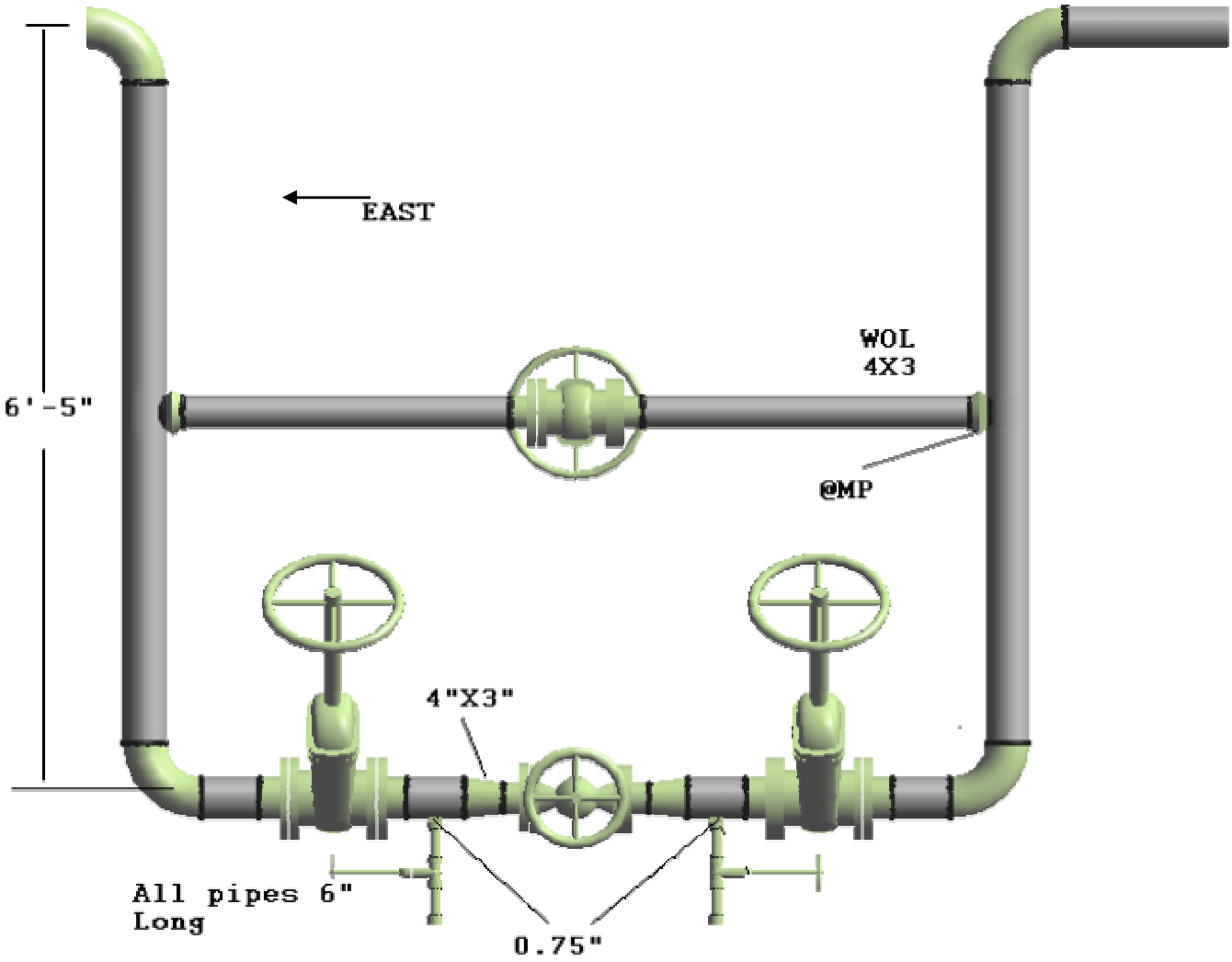
Lab 7: Placing Inline Components

Insert 150# Flanged Gate Valves into the Pump suction lines 404-P. Refer to the sketch below for detailed information.



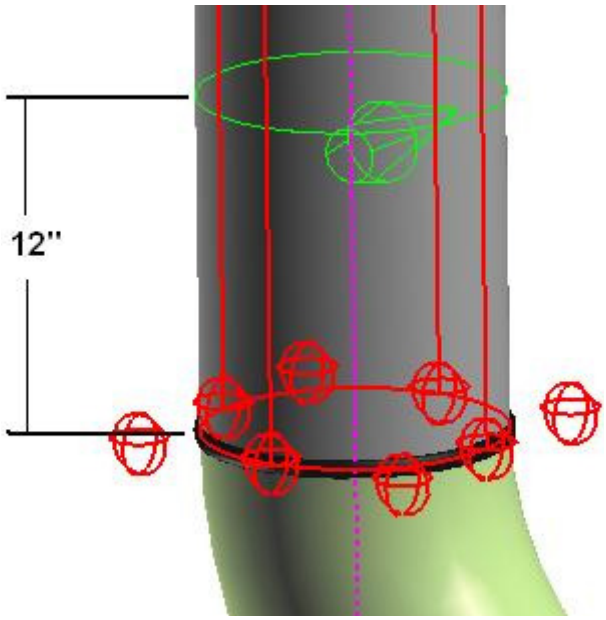
Lab 8: Control Valve Station

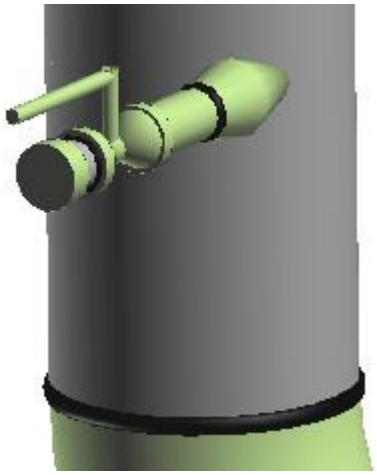
Continue route the pipeline 402-P using the commands learned in this section. Refer the sketch below for detailed information.



Lab 8A: Insert Tangential Branch

Use the Insert Component command to insert a 1-1/2” tangential branch on line 404-P, at 12” from pipe end, near either suction port.





General Hints:
Use the Workspace Explorer key-in field to enter line number 404-P and locate.
Use PinPoint to locate the point on pipe. Set the Target point at the base of the pipe and lock the elevation at 12 inches.
Select <New Pipe Run> from the Run menu to be able to select the new branch size.

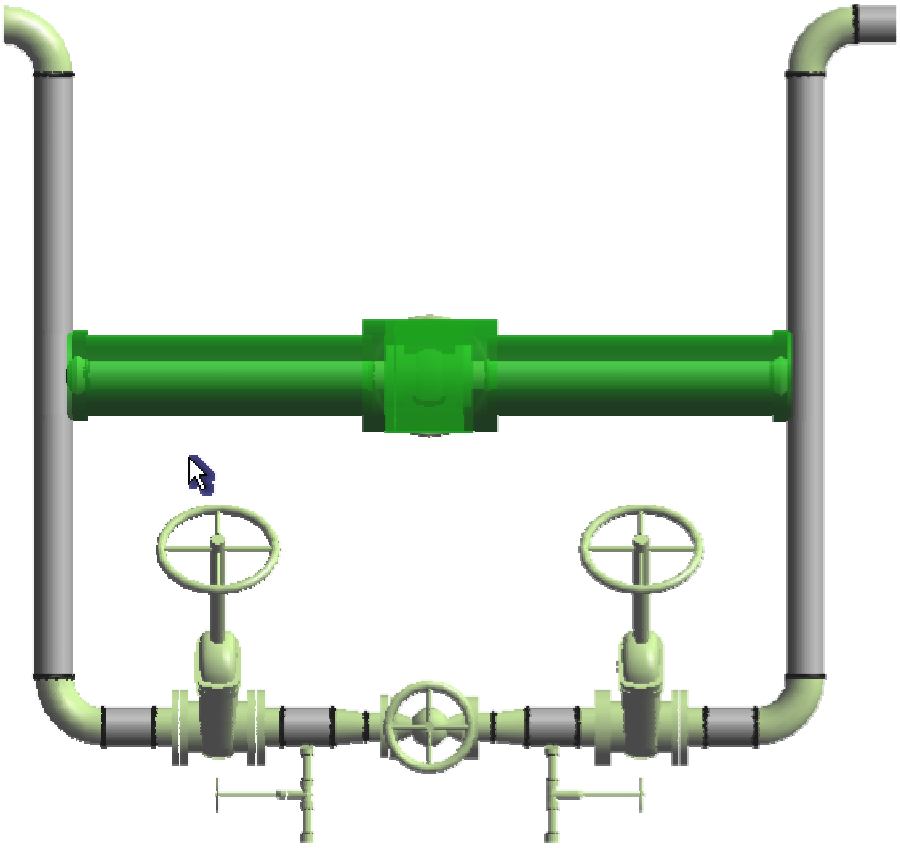
Lab 9: Editing Pipe Run properties

Define the Insulation for the by pass in pipeline 402-P using the commands learned in this section. Refer the sketch below for detailed information.

Select the By Pass of the Control Valve and key in the following information:

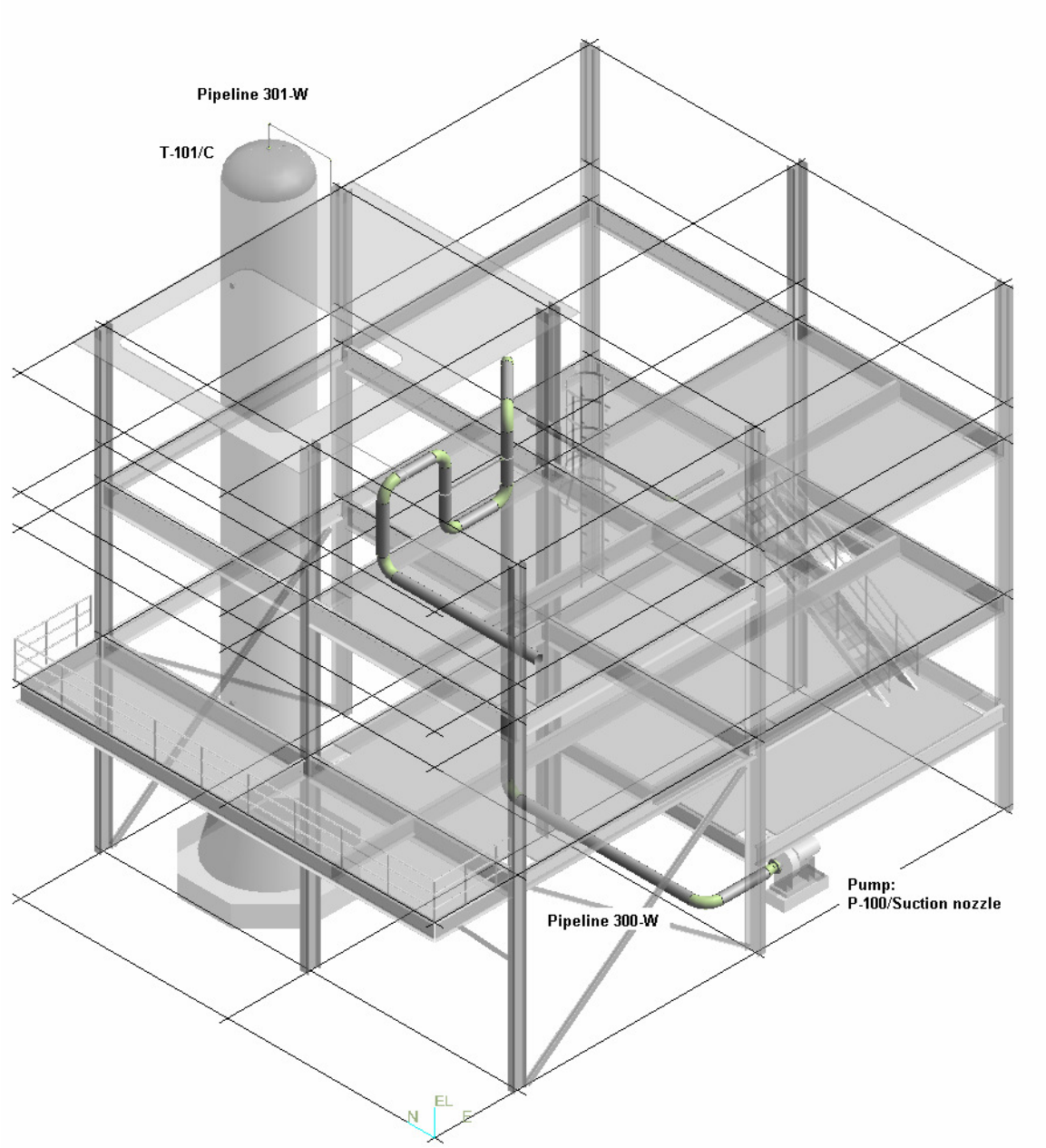
Insulation Specification: User Defined
Insulation Purpose: Heat Conservation
Insulation Material: Calcium Silicate (CS)
Insulation Thickness: 3 inches
Insulation Temperature: 200 F.

Create a Surface Style Rule to display the insulation graphic with transparent green style.

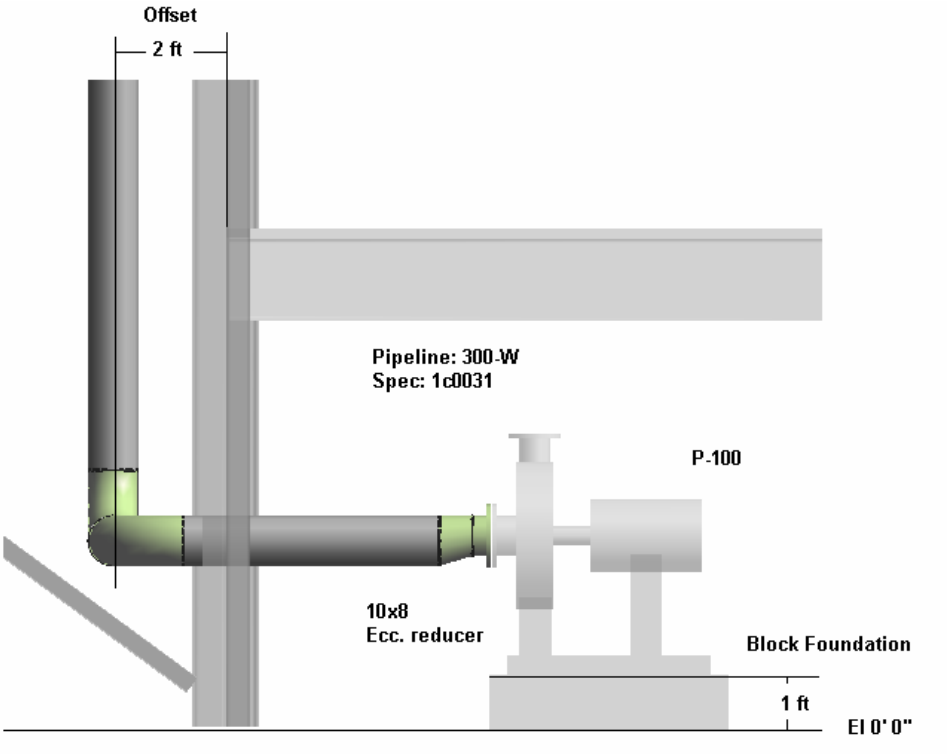


Lab 10: Route Pipe Runs with SmartSketch & PinPoint Tools

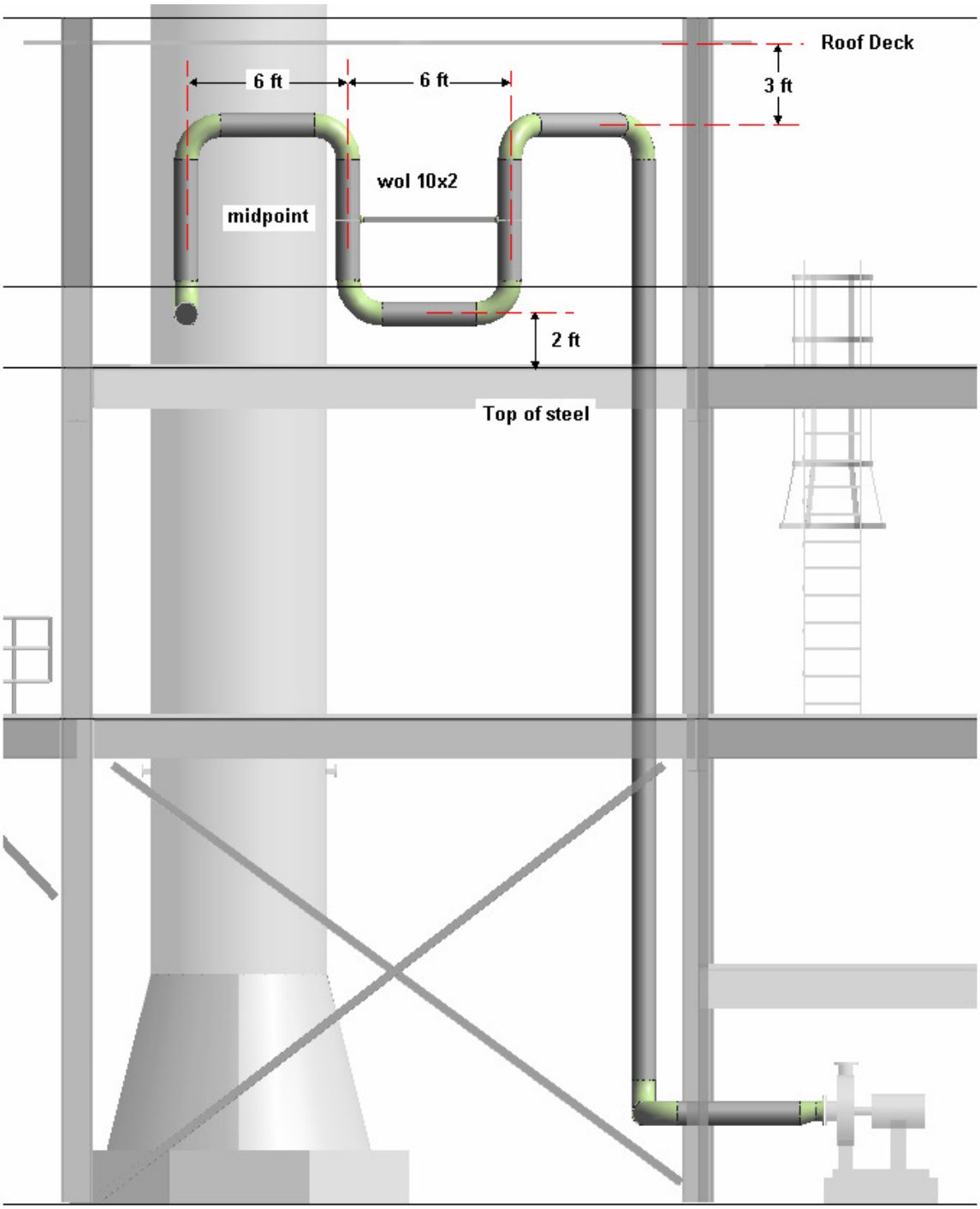
Route two Pipelines 300-W and 301-W from the Pump P-100/Suction nozzle to the Top of the Tower using the tools learned in this section. Refer to the sketch below for detailed information.



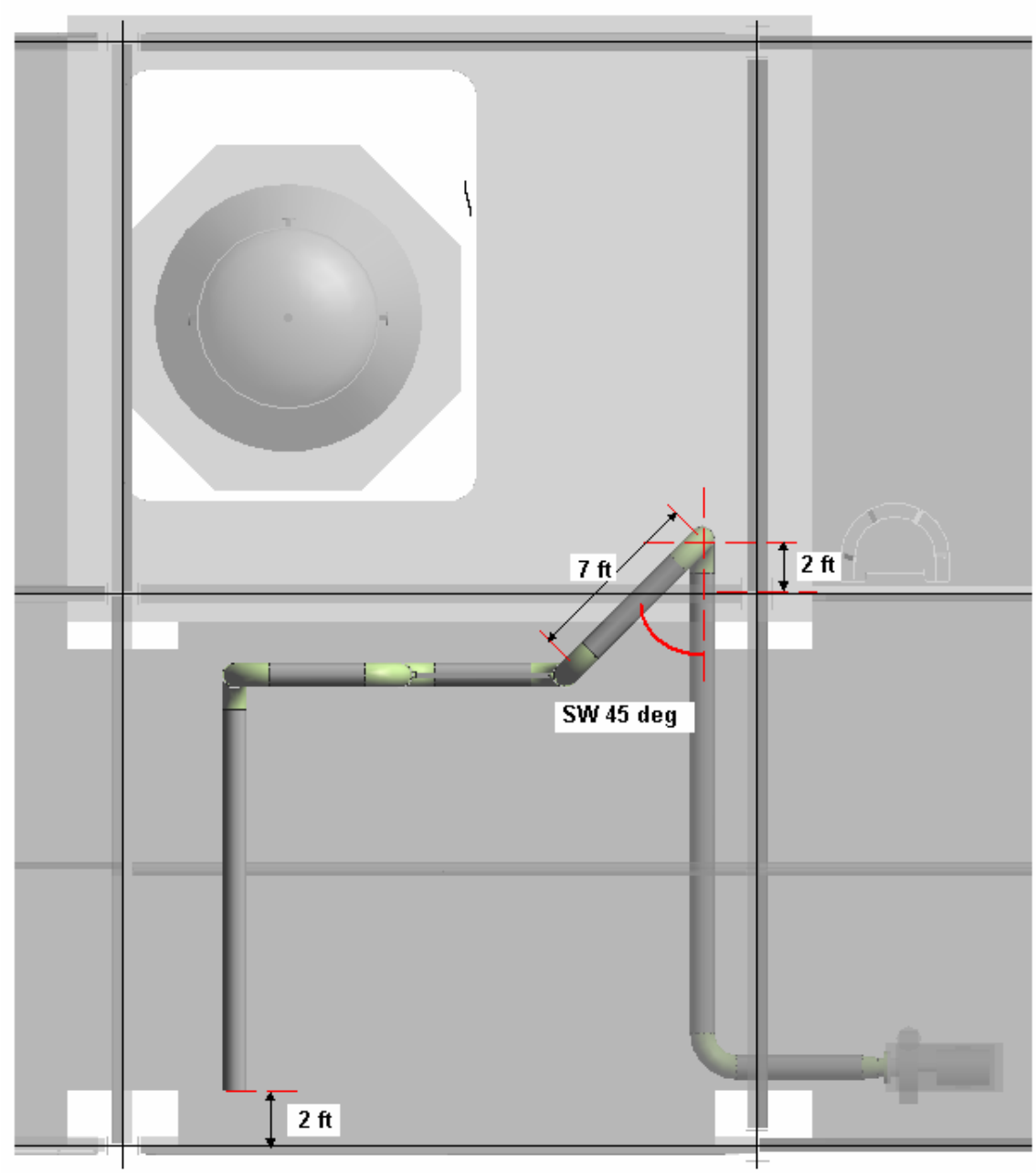
Go to the Piping Task. Make sure the Active Permission Group is set to ***Piping*.**
Start route from the suction nozzle using the following parameters:
Spec 1C0031
Pipeline 300-W



North View

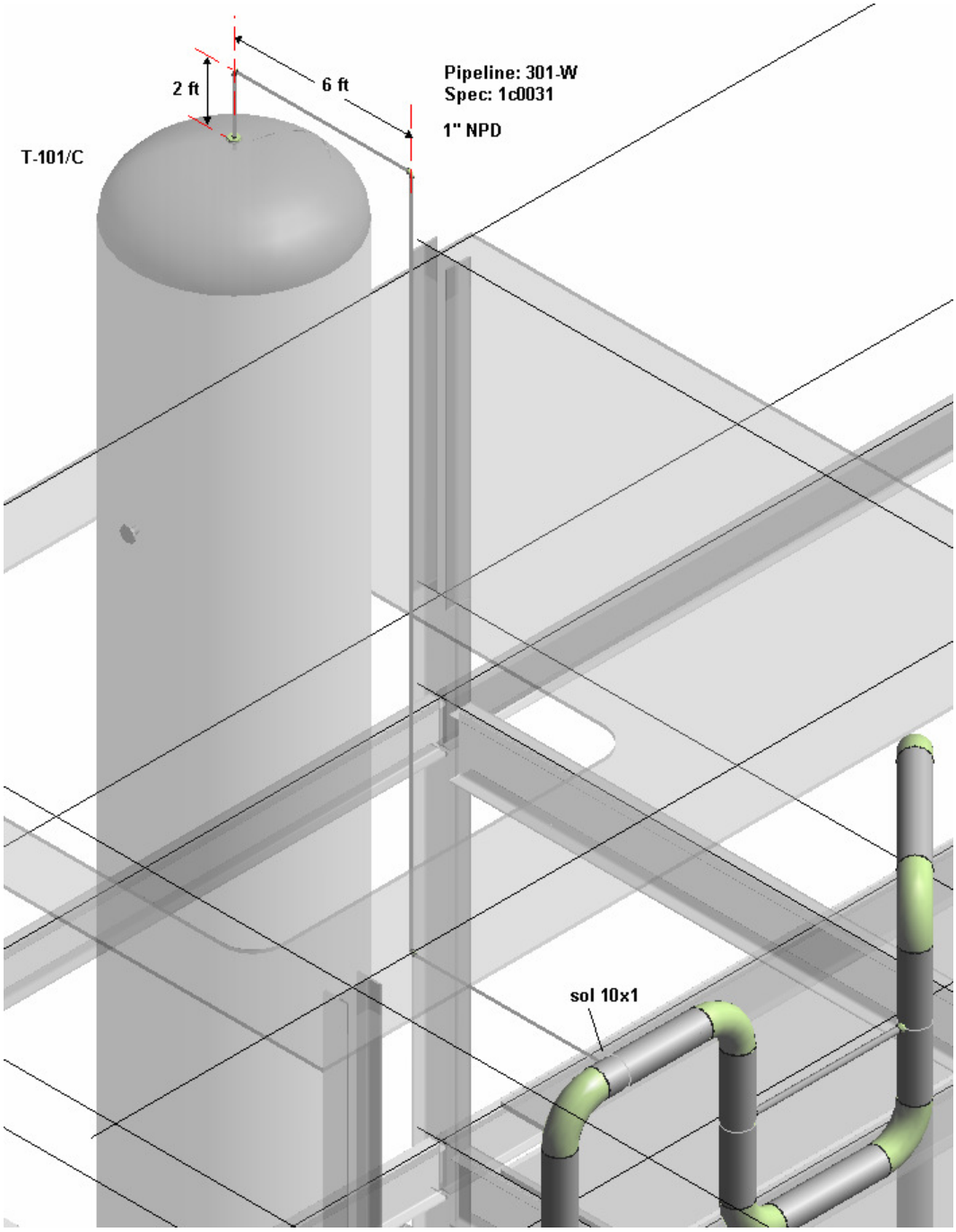


North View



Top View

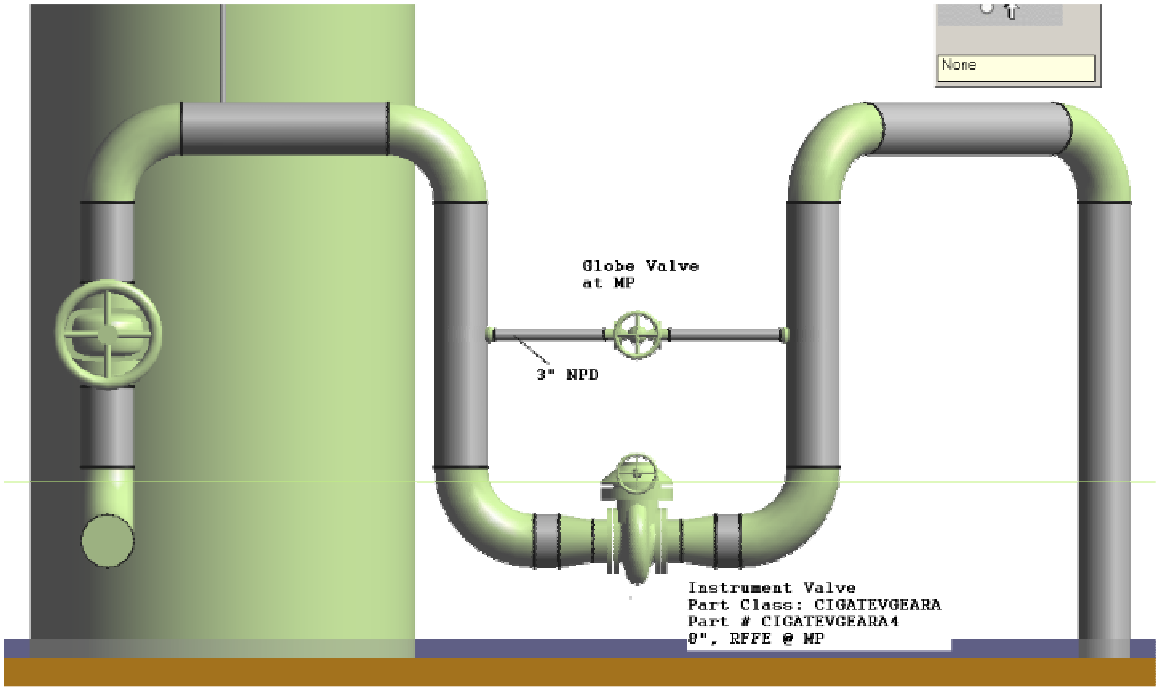
Start route from the Tower (T-101/ Nozzle C) using the following parameters:
Spec 1C0031
Pipeline 301-W

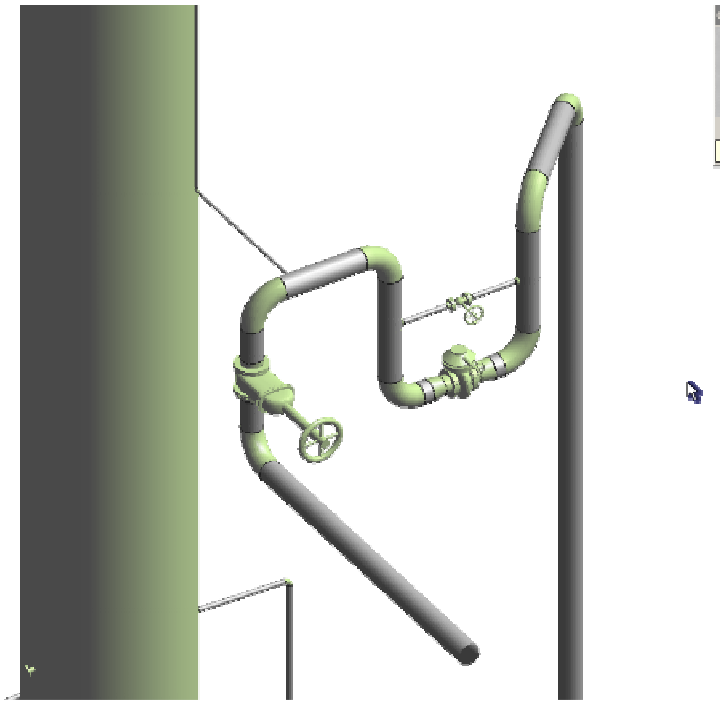


Iso View

Lab 11: Placing Instrument and Engineering Items

Insert valves along the pipeline 300-W. Refer to the sketch below for detailed information.



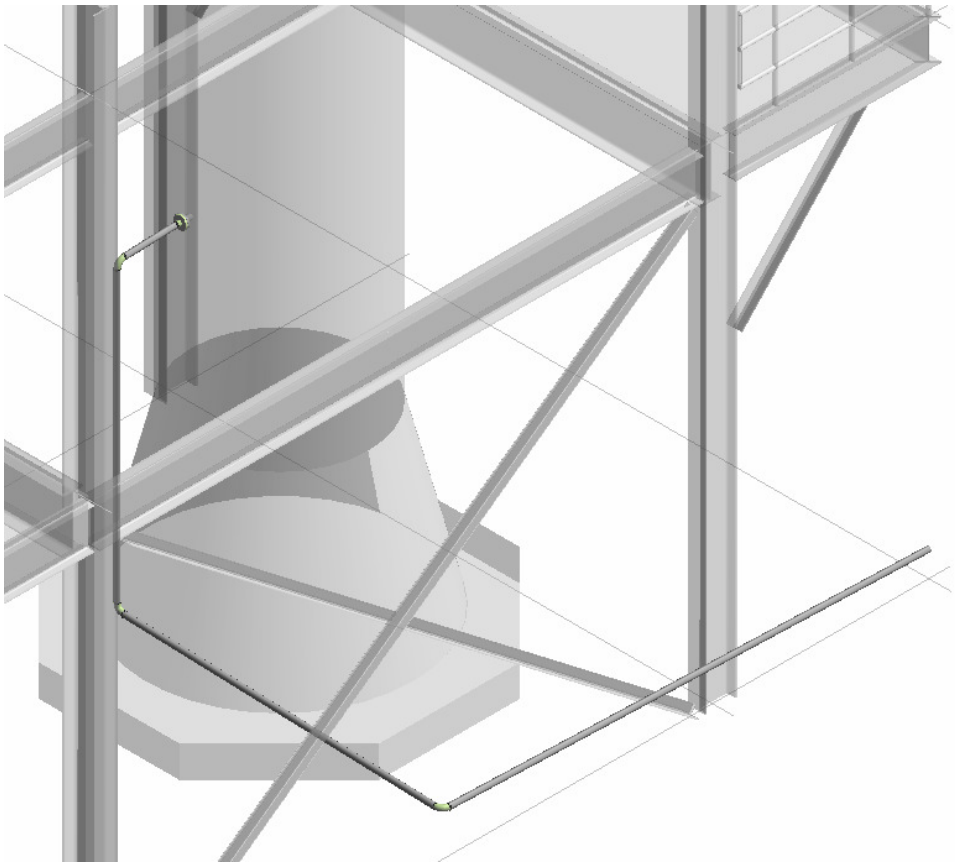


Lab 12: Route Sloped Pipe Runs

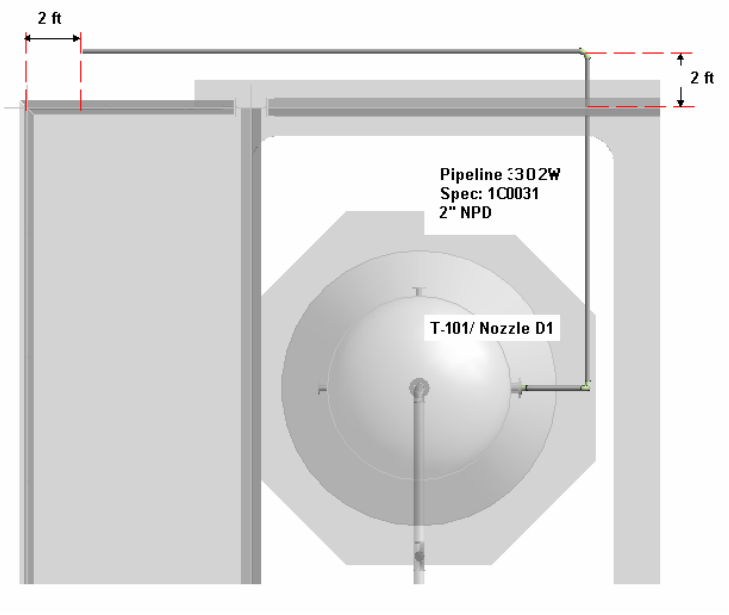
Route a Pipeline 302-W from the Tower T-101/Nozzle D1 using the tools learned in this section. Refer to the sketch below for detailed information.

Start route from the Tower T-101/nozzle D1 using the following parameters:

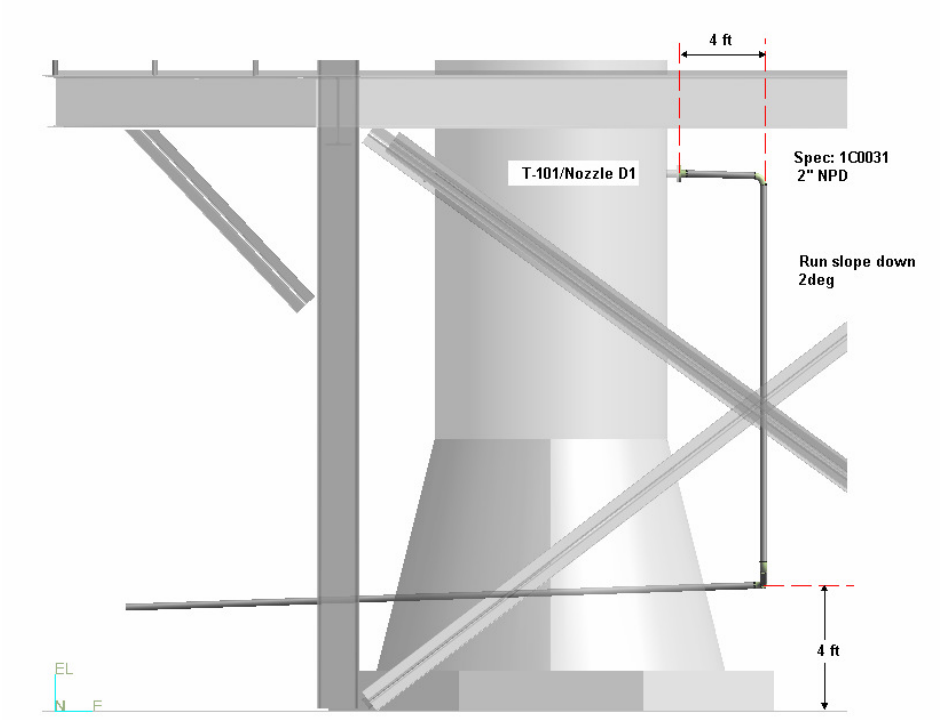
Spec 1C0031
Pipeline 302-W (Add this as pipeline system)
Slope enabled
Run slope down 2 deg



Iso View



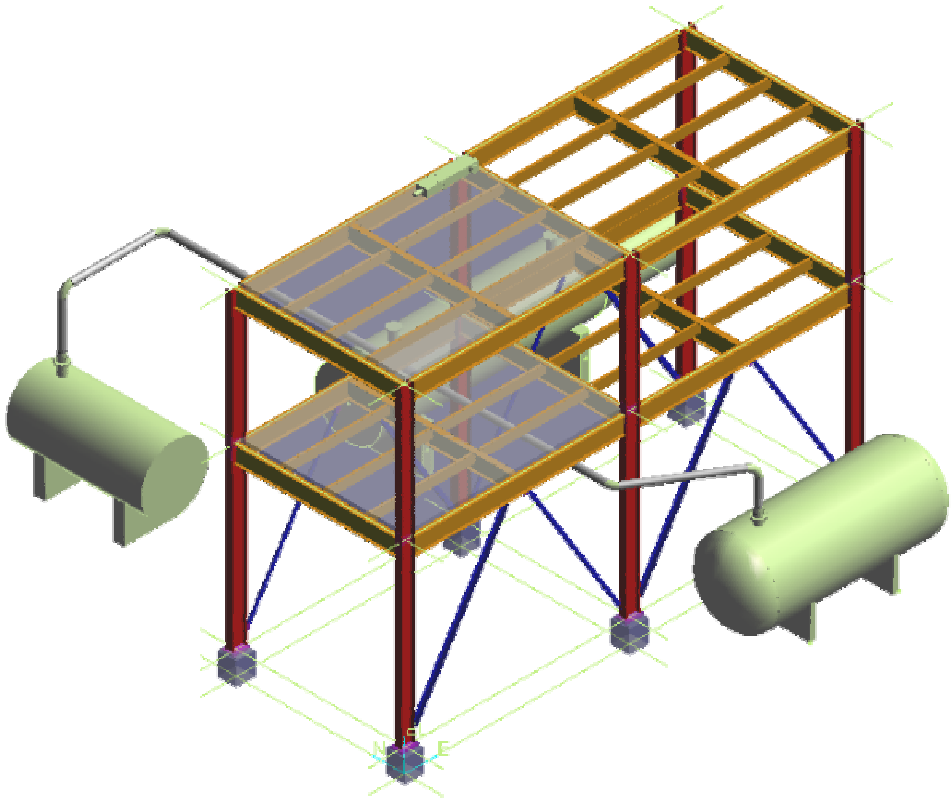
Plan View

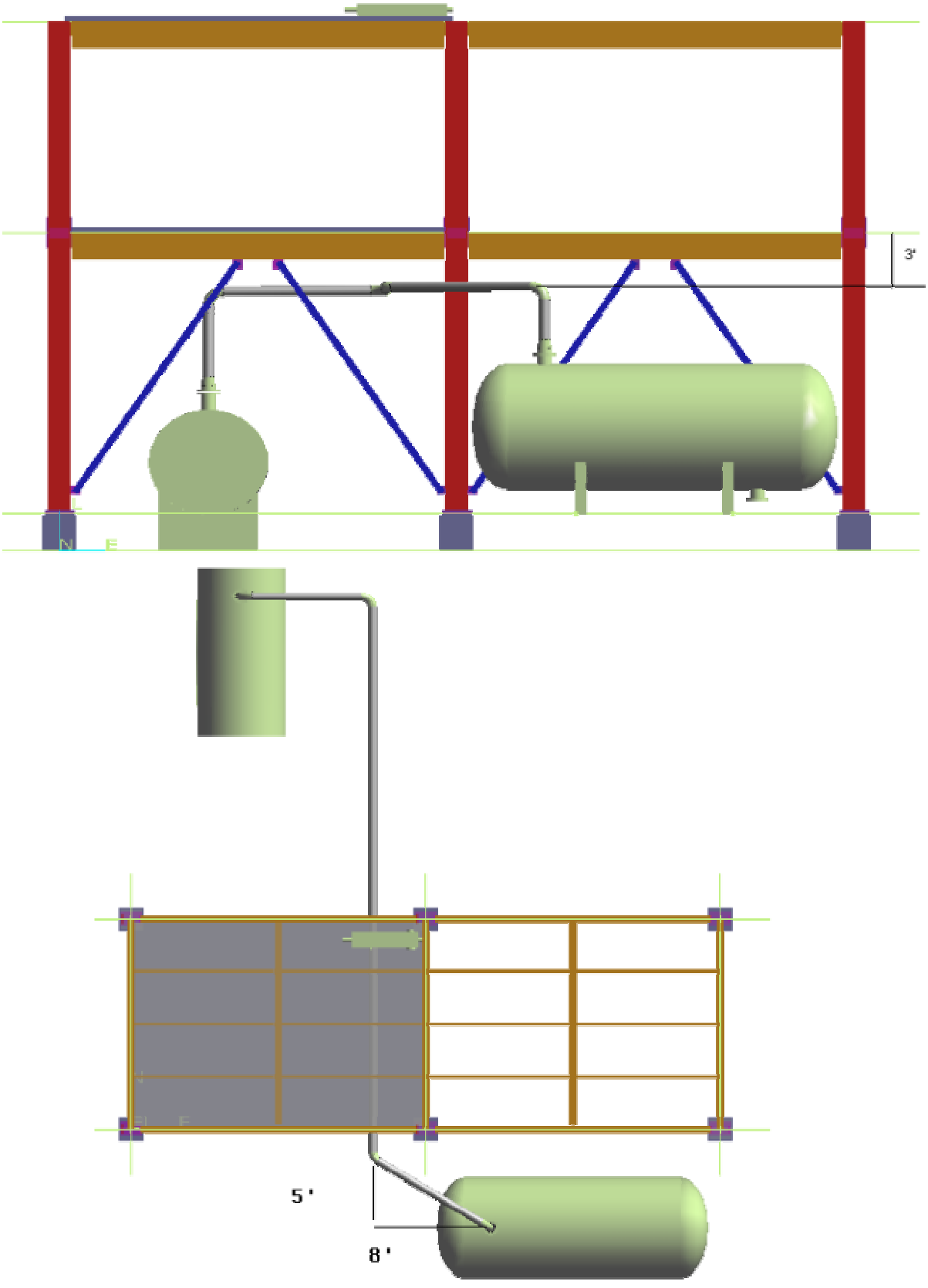


Elevation View

Route a Pipeline 2001-P (Unit 2) from TA-101/STNoz1 to DR-100/N1 using the tools learned in this section. Refer to the sketch below for detailed information.

Start route from the TA-101/STNoz1 using the following parameters:
Spec 1C0031
Pipeline 2001-P
Size 6”
Slope enabled
Run slope down 1/16” per 1’



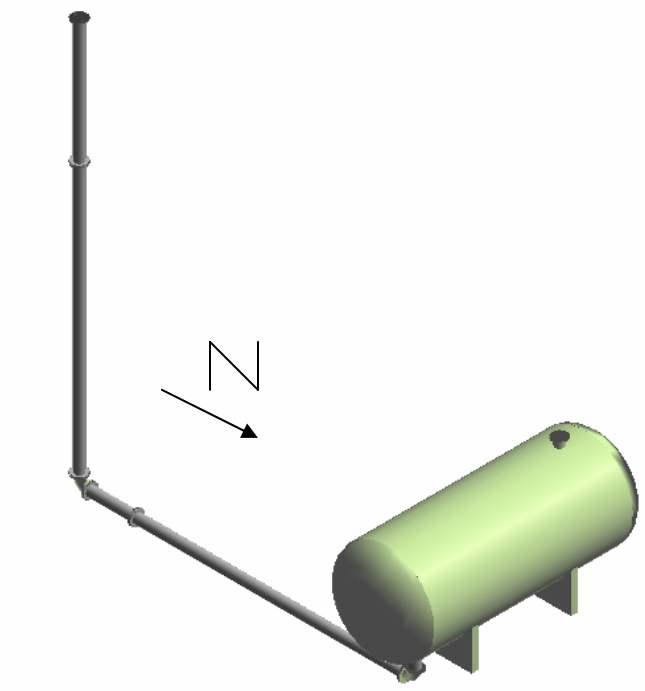

3'
5'
8'

Lab 13: Routing Flanged Pipes (Optional)

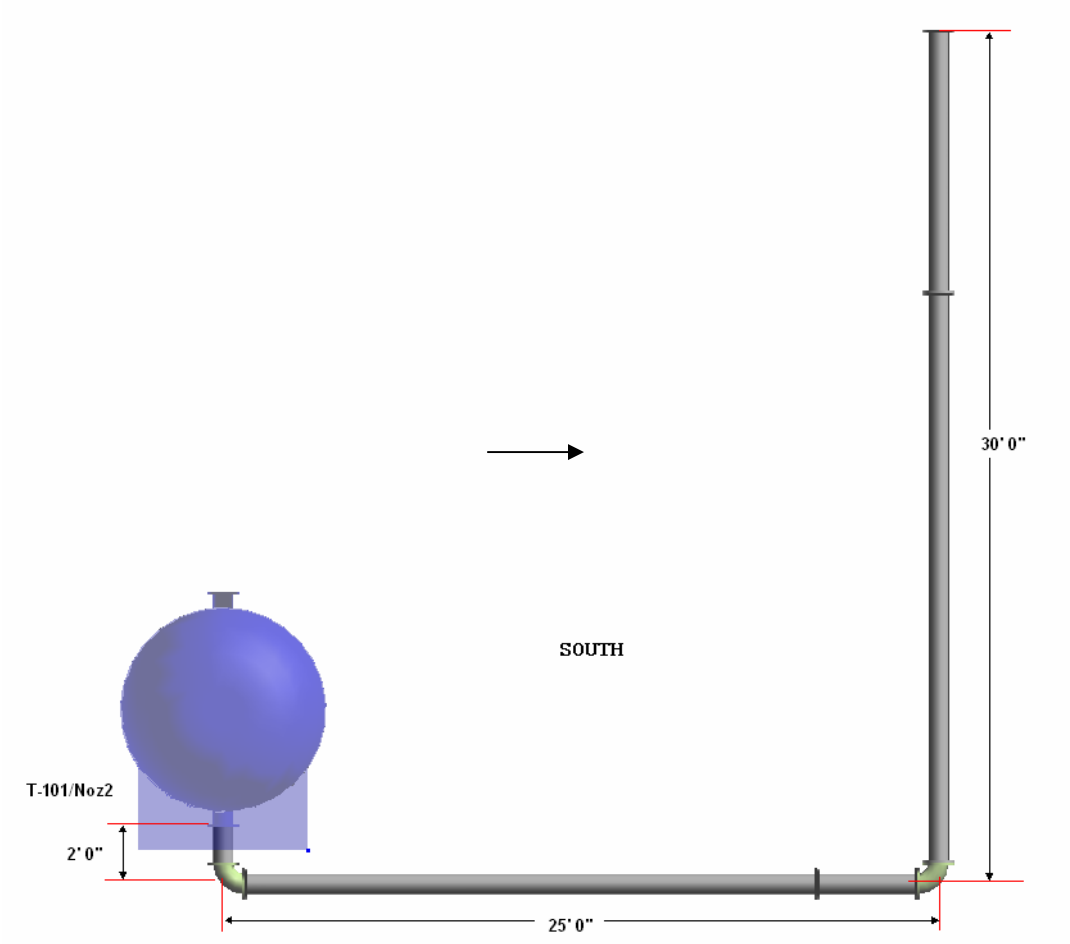
Route pipeline Unit 2 2002-P from the equipment/nozzle TA-101/StNoz2 to its completion using PinPoint, Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information. Notice the system uses the preferred pipe length defined in the reference data. Make sure the Active Permission Group is set to ***Piping.***

Use the following piping specification:

Pipeline:	2002-P
Pipe Spec:	1C0101
NPD:	8 in
Flow Direction:	DownStream
Minimum Slope:	Not Sloped

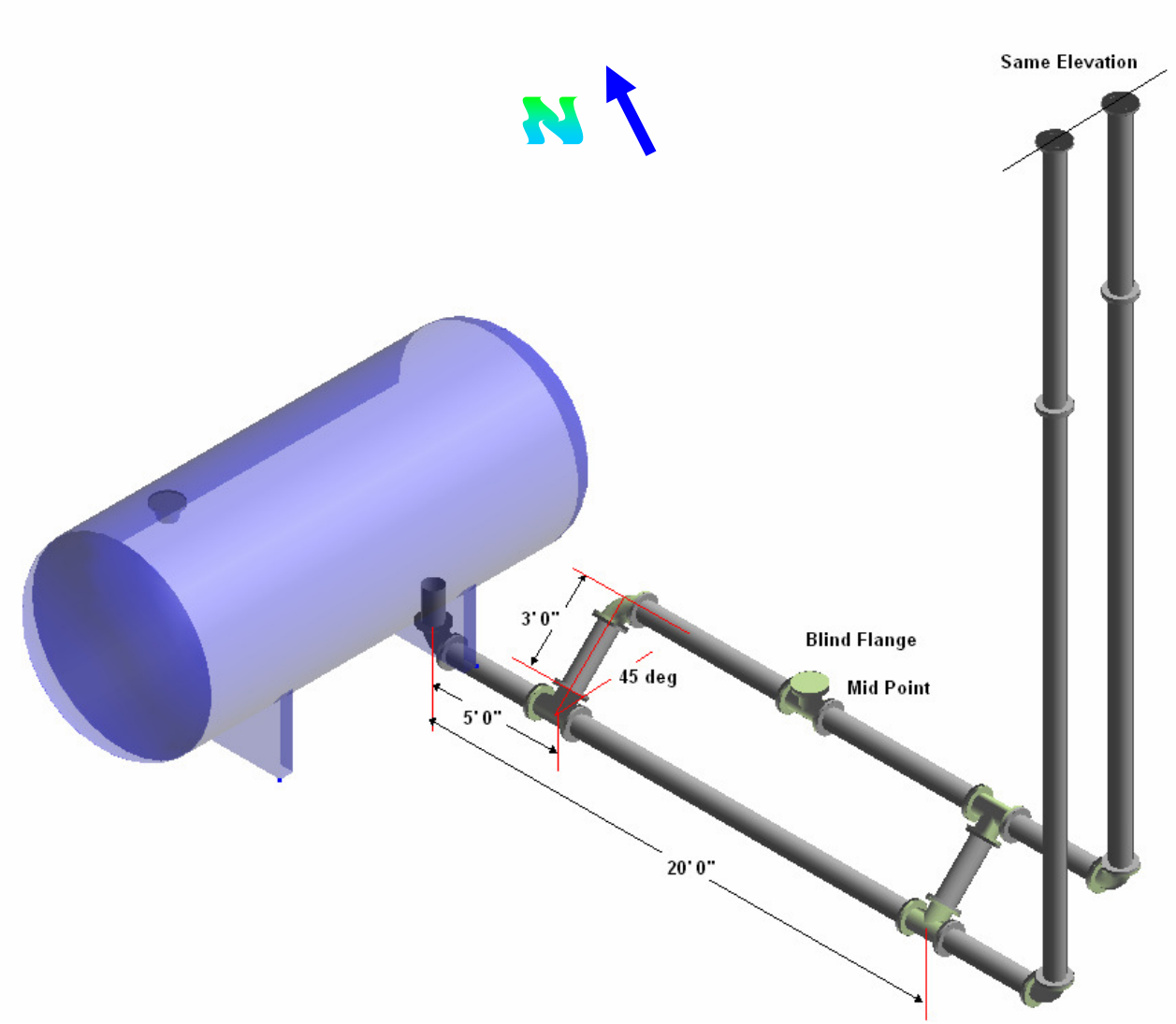


Isometric View of the pipeline 2201-P



Section View of the pipeline 2002-P

Use the insert component and the route pipe commands to continue building the piping arrangement as shown below:



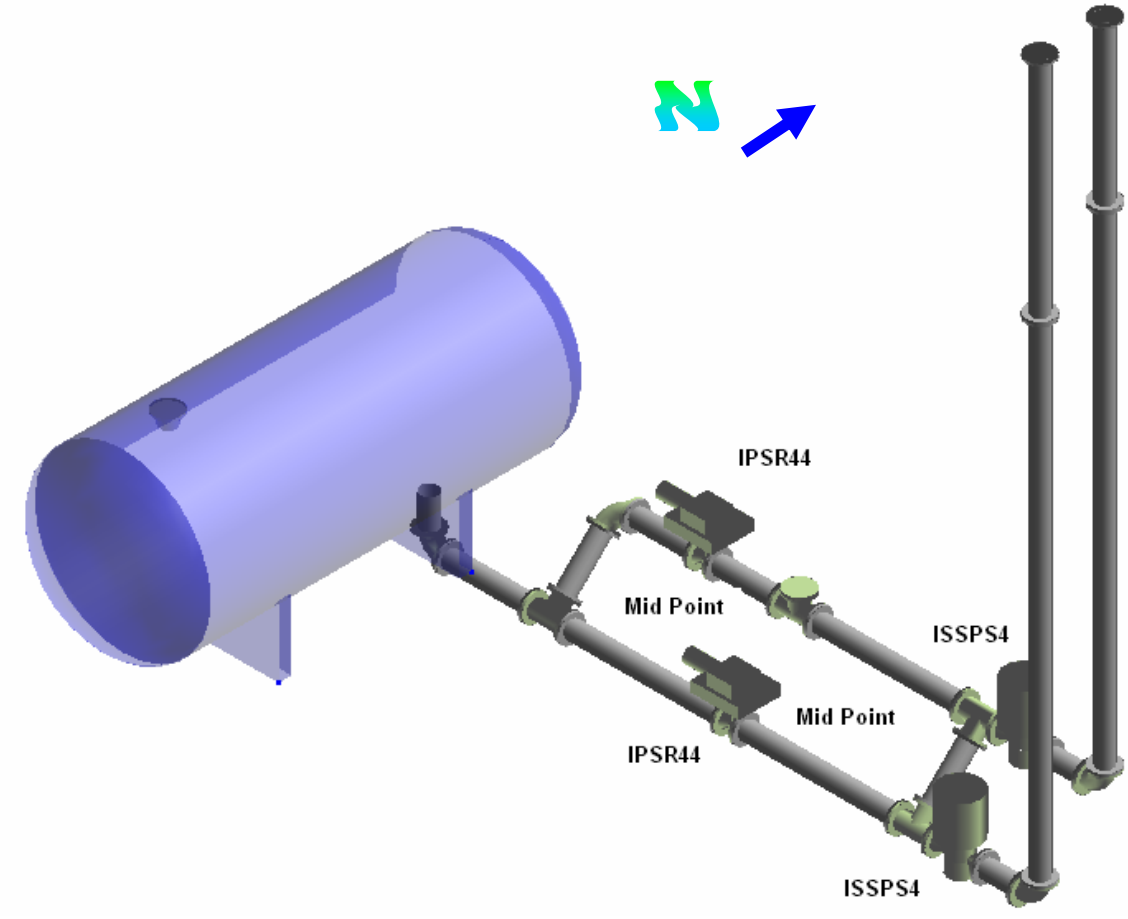
Isometric View of the pipeline 2002-P

Lab 14: Placing Instruments on the fly (Optional)

Insert Instruments on the fly into the lines 2002-P. Refer to the sketch below for detailed information.

Instrument Class	Part Number
Piston Actuator Valve	ISSPS4
Double Acting Fail Open Actuator Valve	IPSR44

Use the insert component command to insert the instruments in the piping arrangement as shown below:



Isometric View of the pipeline 2002-P

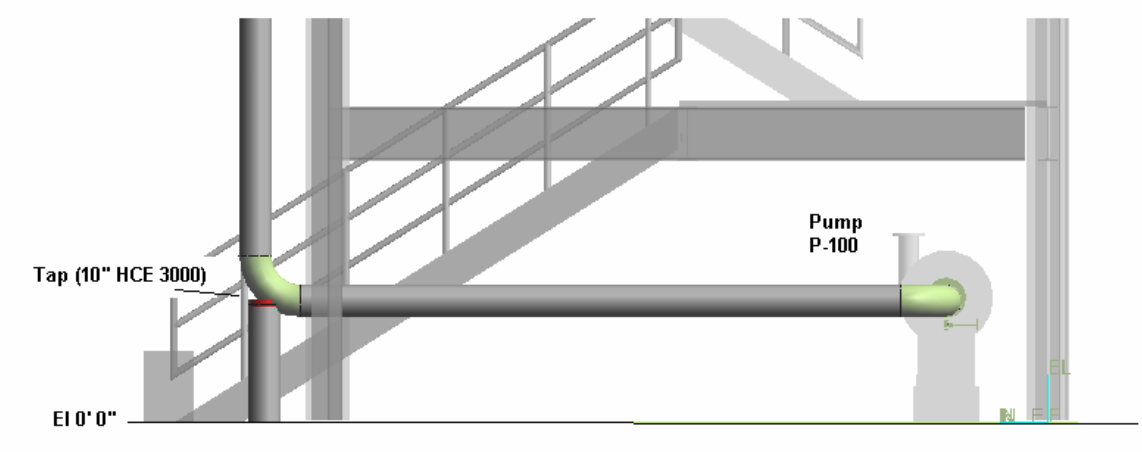
Lab 15: Placing Taps

After completing this lab, you will be able to:

- Use the Place Tap Command.

Insert a Tap at the elbow of the 300-W pipeline as shown below with the following parameters.

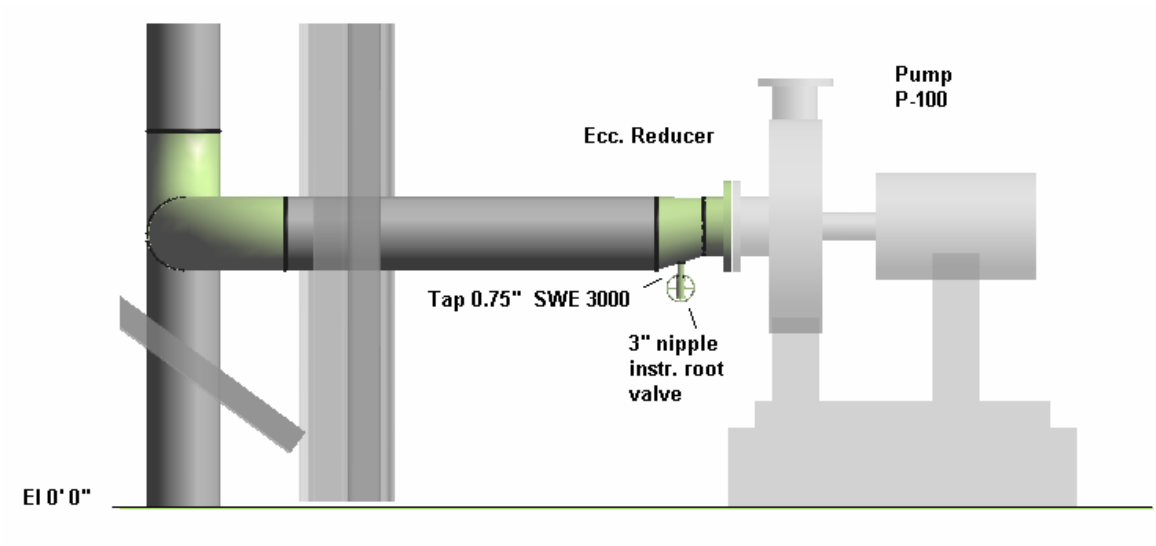
Select the tap port to route a pipe in order to support the pipe run.



East View

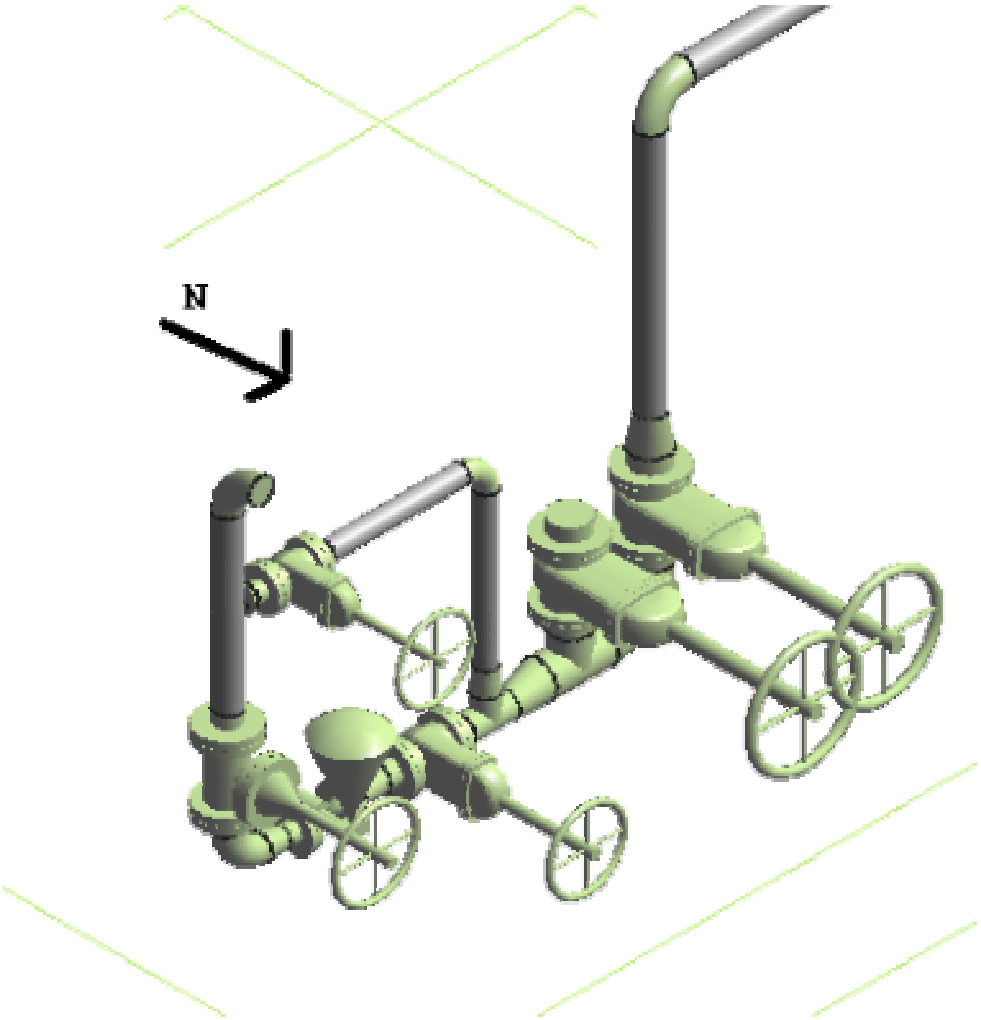
Insert a Tap at the Eccentric Reducer of the 300-W pipeline as shown below with the following parameters.

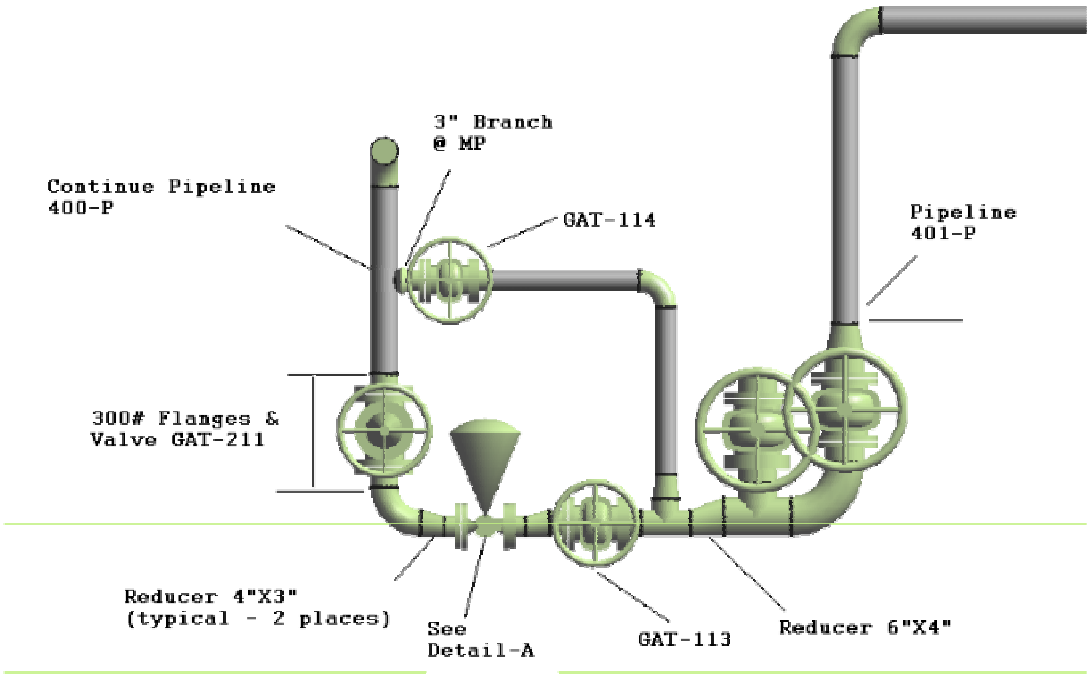
Select the tap port to insert a nipple and then an instrument root valve.

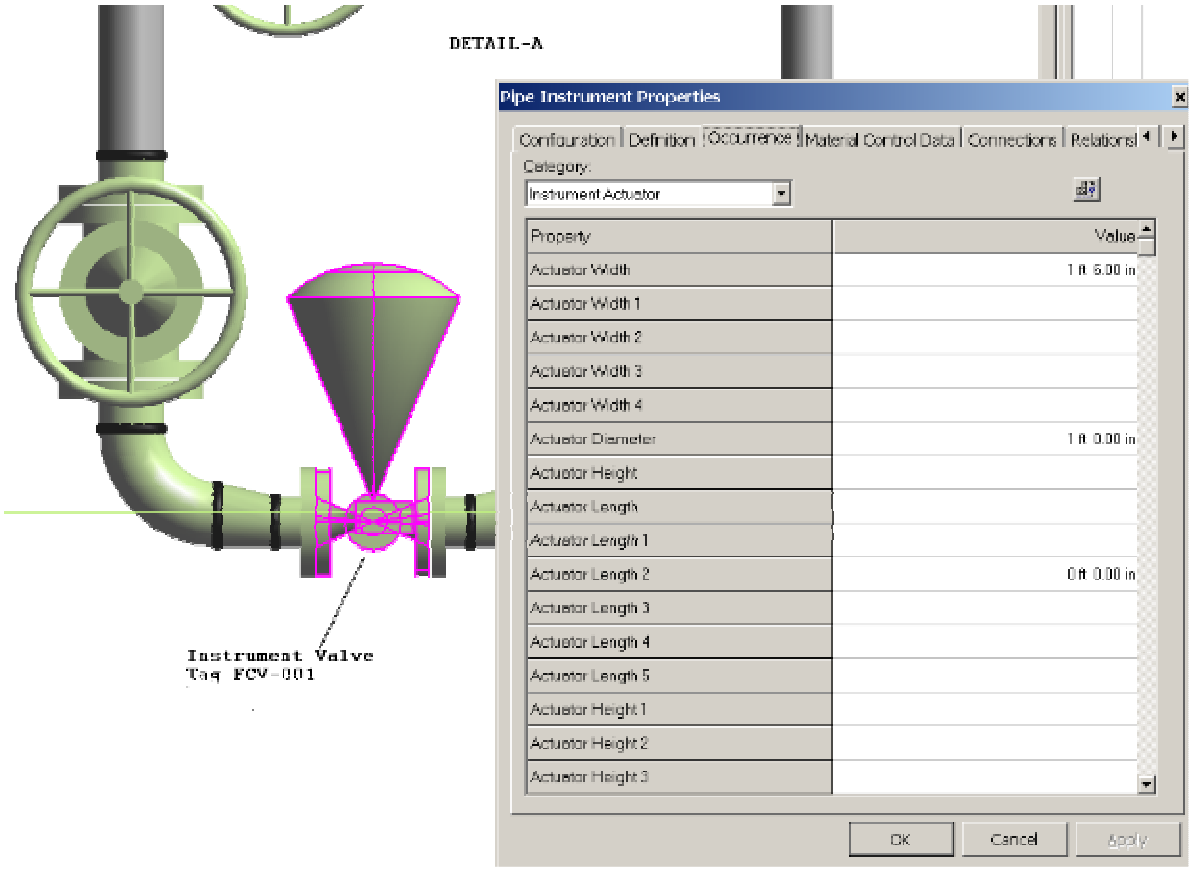


Lab 15A: Advanced Routing

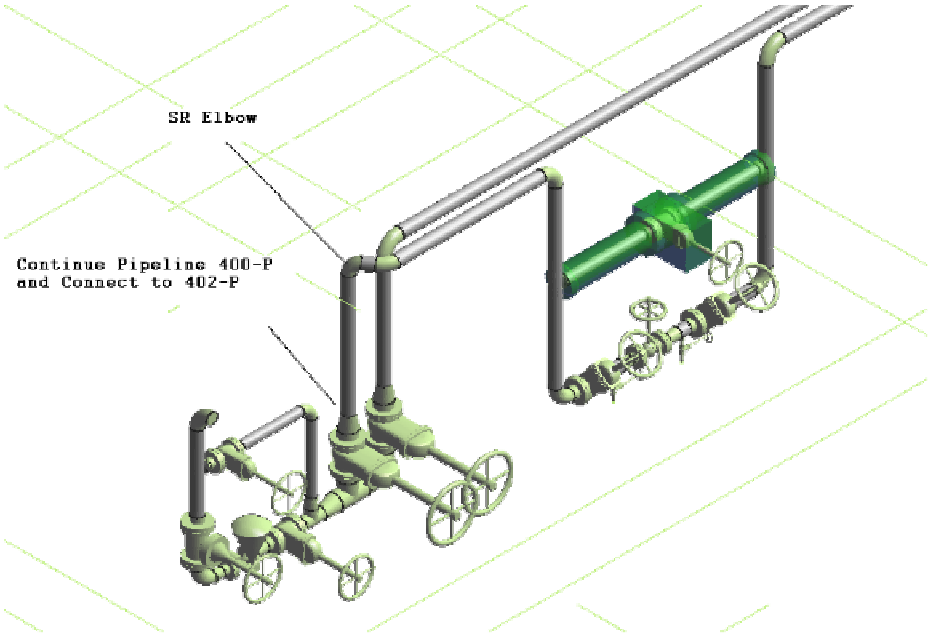
Continue Pipeline 400-P as shown and connect it to Pipeline 401-P




3" Branch
@ MP
Continue Pipeline
400-P
GAT-114
Pipeline
401-P
300# Flanges &
Valve GAT-211
Reducer 4"X3"
(typical - 2 places)
See
Detail-A
GAT-113
Reducer 6"X4"

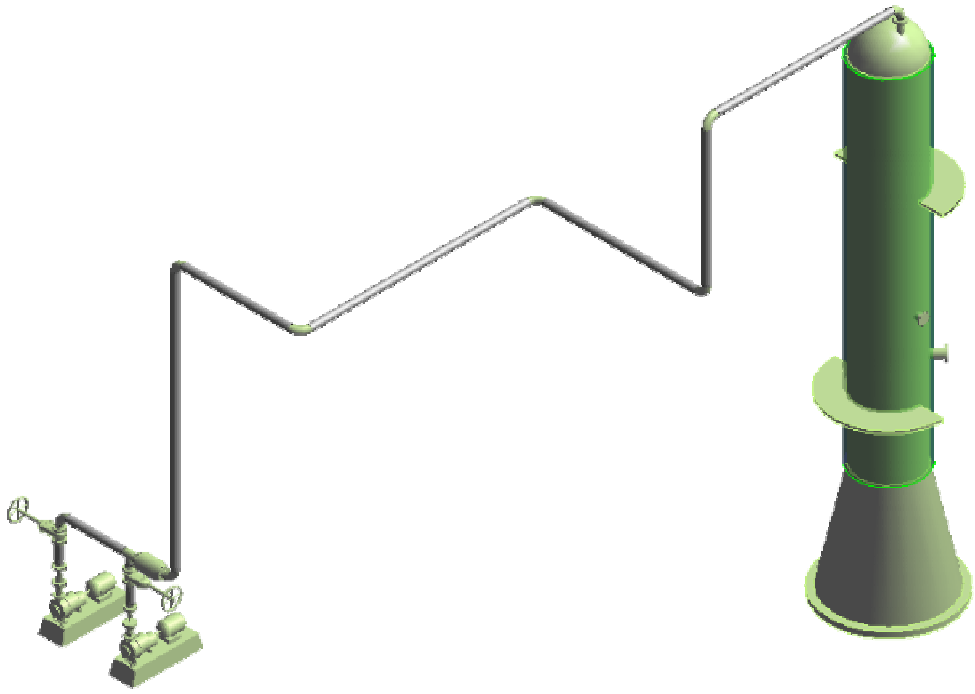


Instrument Valve: Valve with Rotary Diaphragm Actuator Position A 1

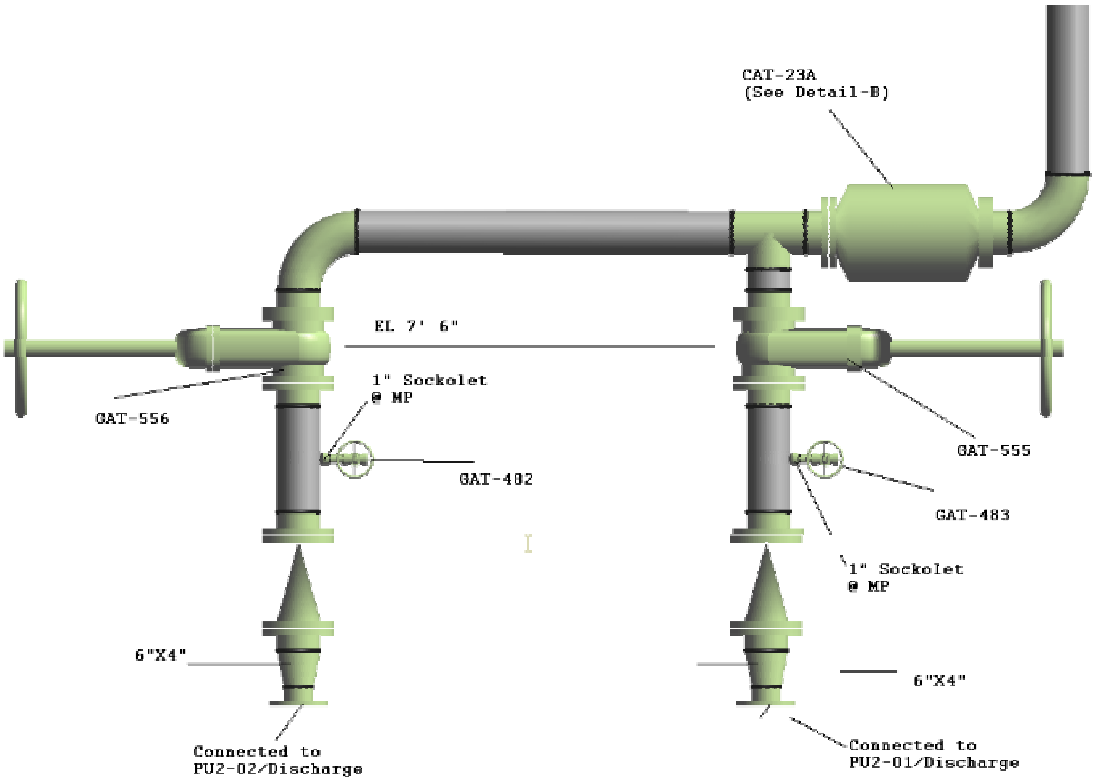


Lab 16: Routing with Specialty Components and Pipe Splits

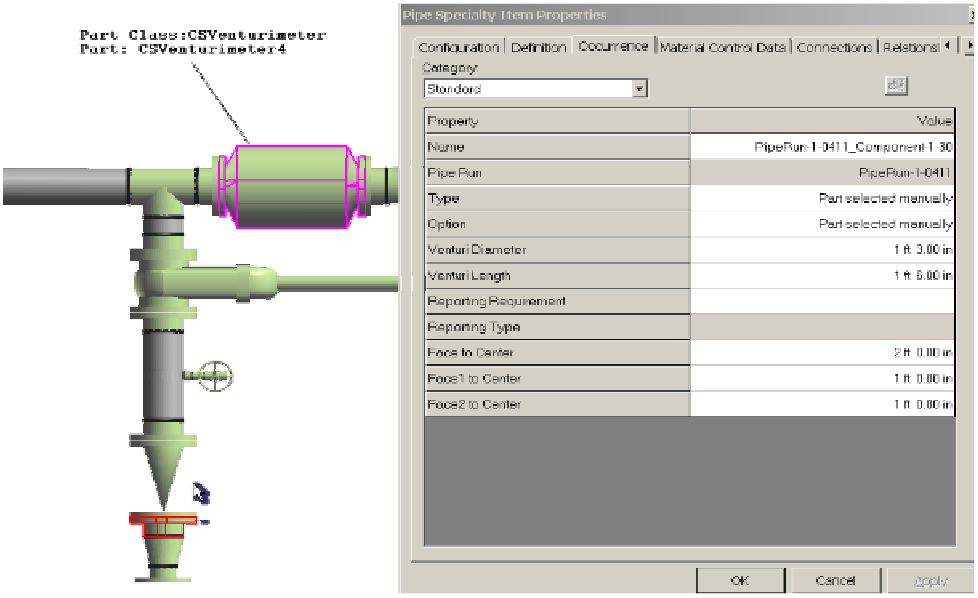
Route Pipeline 1003-P (Unit 2), from PU2-01, PU2-02 to VS-102

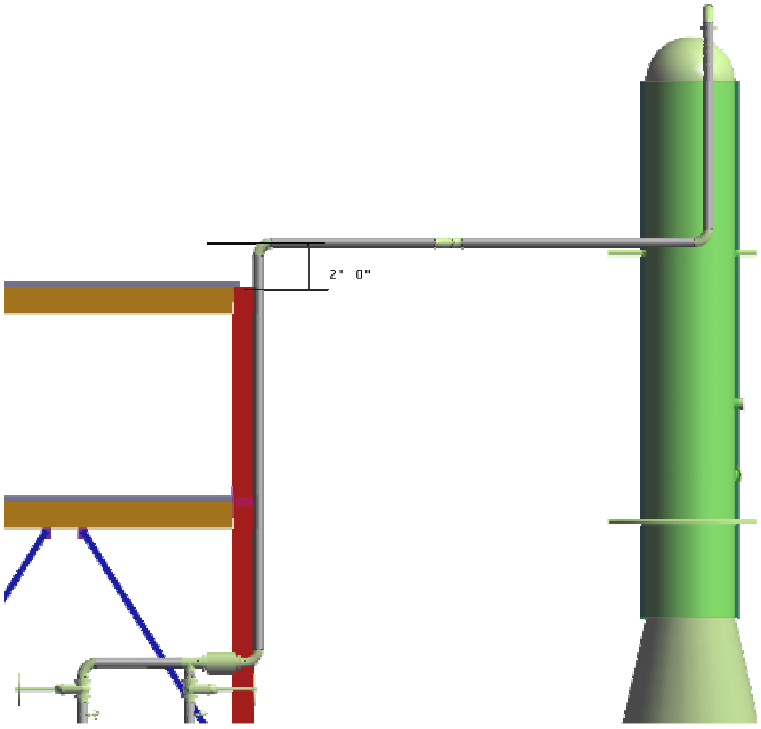


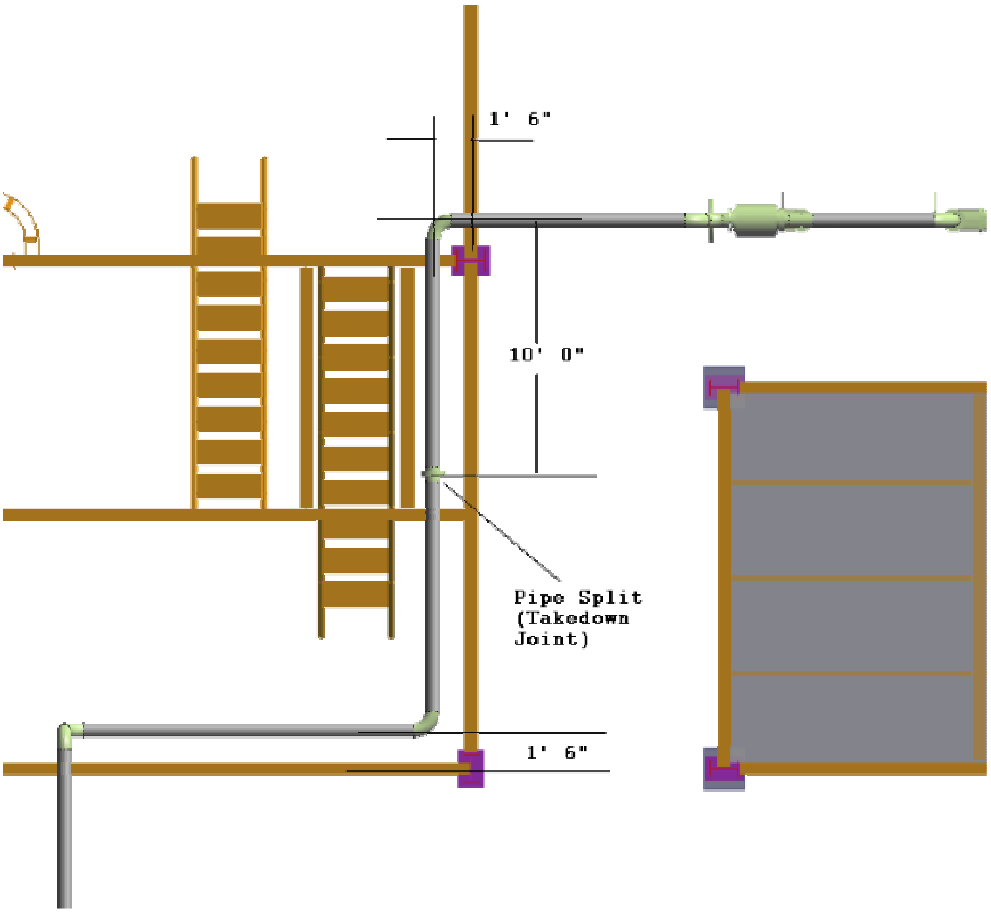
Spec: 1C0031
NPD: 6”



Piping Specialty Details: Detail – B

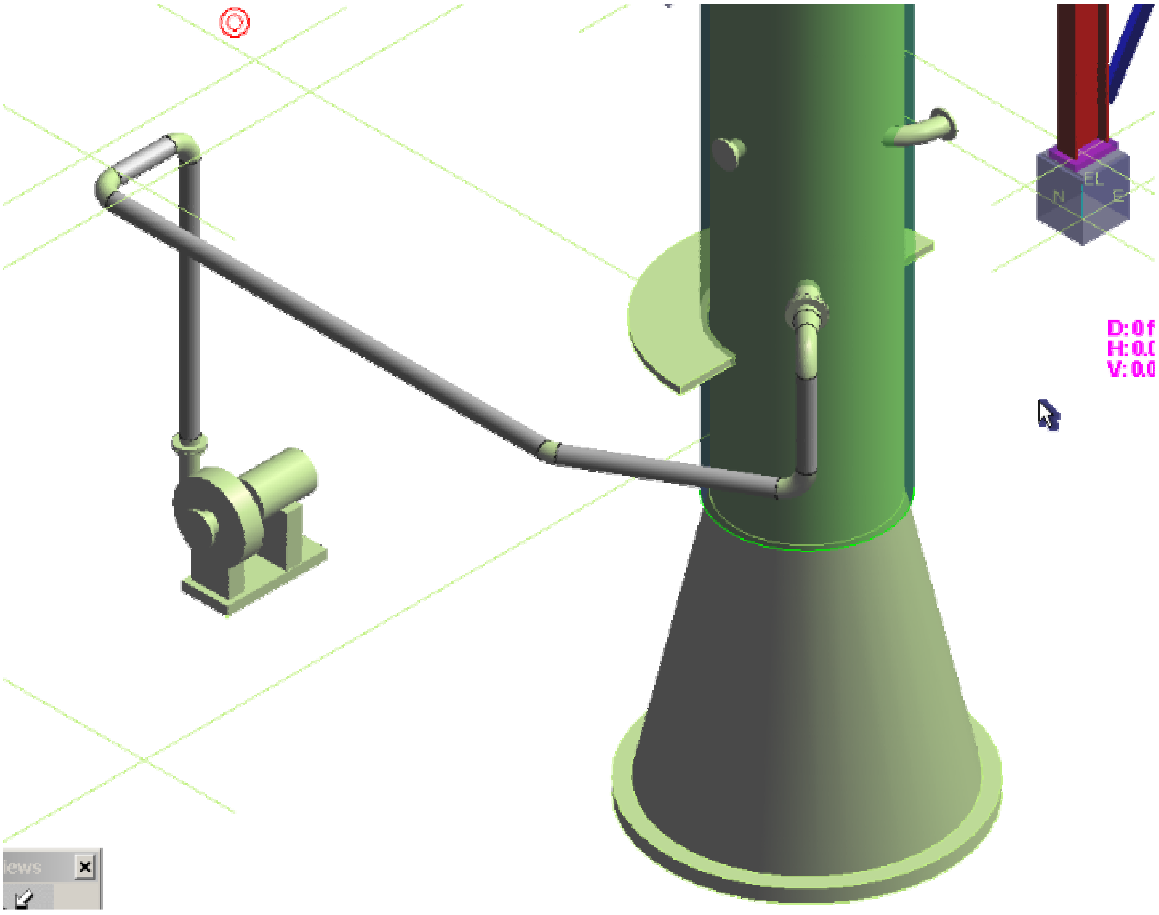



2' 0"

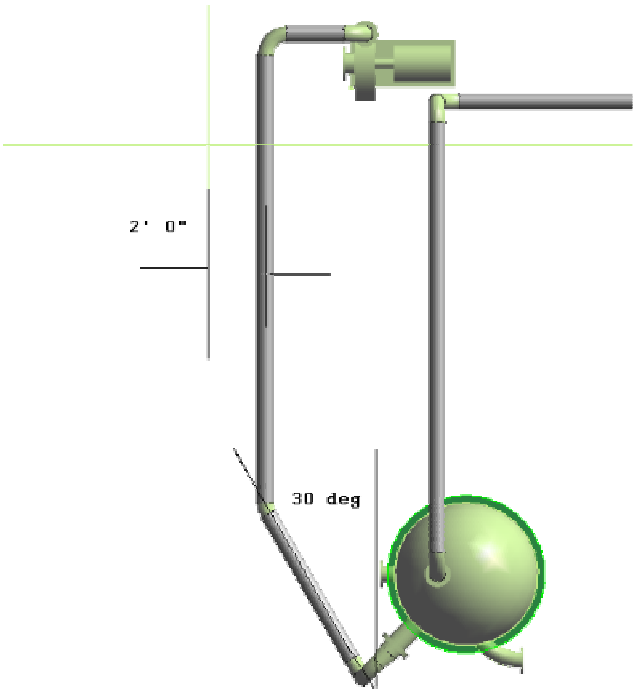

1' 6"
10' 0"
Pipe Split
(Takedown
Joint)
1' 6"

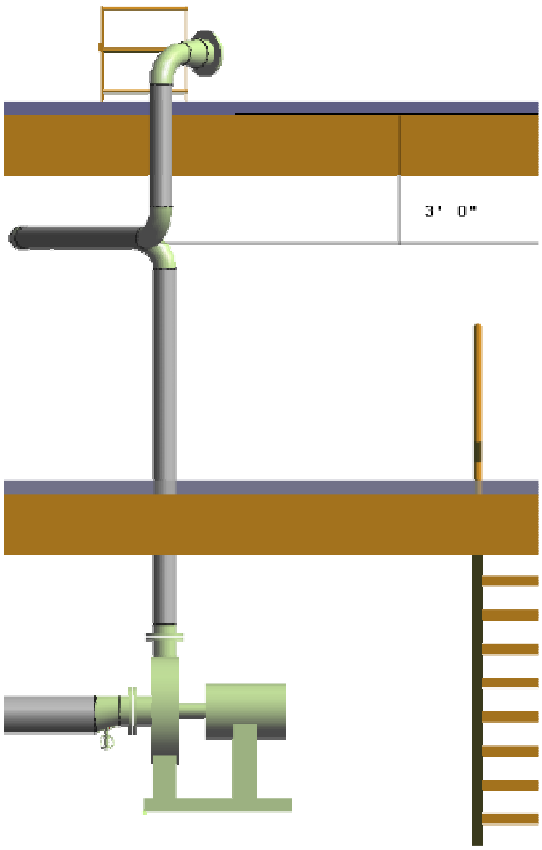
Lab 17: Routing Using Spherical Coordinates

Route Pipeline 303-W (Building-1), from P100 to VS-102



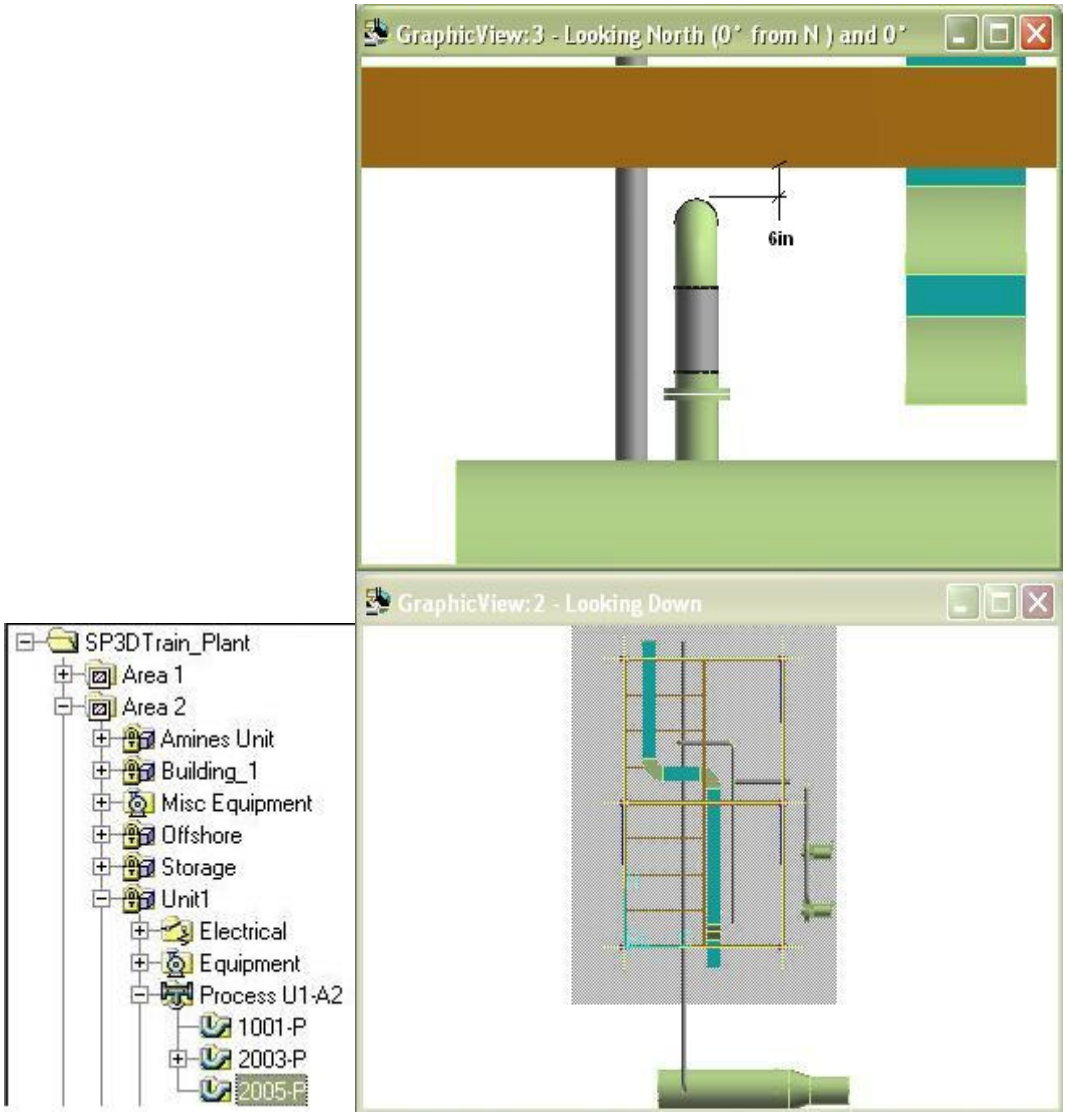
Spec 1C0031
NPD: 6”


2' 0"
30 deg


3' 0"

Lab 18: Routing Using Cardinal Points

Define new pipeline system 2005-P in Area 2, Unit 1 and route a piperun **by top of pipe 6" off from bottom of steel** as shown. Start routing from equipment E-102 nozzle N1 and finish it 2ft North from the last beam. Use spec 1C0031.



General Hints:
In Workspace Explorer right click on "Process U1-A2" to create new pipeline 2005-P.
Be sure to set SmartSketch "Edges on solids" option (Tools>Options) to on.
Use Set Offset form to define an External reference type at 6" from centerline to place the vertical run on E-W plane. Offsets are often more easily defined from orthogonal views. Next, before placing the 2005-P horizontal run, switch plane to Plan Plane and change the Offset reference type to Cardinal Point by top of pipe. **WARNING:** In early versions of v6 you must select the BOP or other cardinal point (trial-error) on the form to be able to route by TOP.

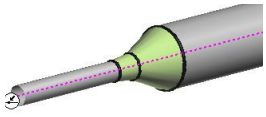
Lab 19: Attribute Break

Route a new 10-ft long pipe run from any free vertical nozzle, then use the Insert Split command to add personnel protection insulation up 84” from the nozzle connection.

General Hints:
Use pinpoint to locate the split point along pipe run.
Set the selection tool filter to Feature to select the split section of pipe and flange.
Use user defined insulation in the properties page to set Personnel Protection insulation.
Use Format>View to turn on the insulation on the views and Format>Surface Style Rules to change the display style to a translucent color.

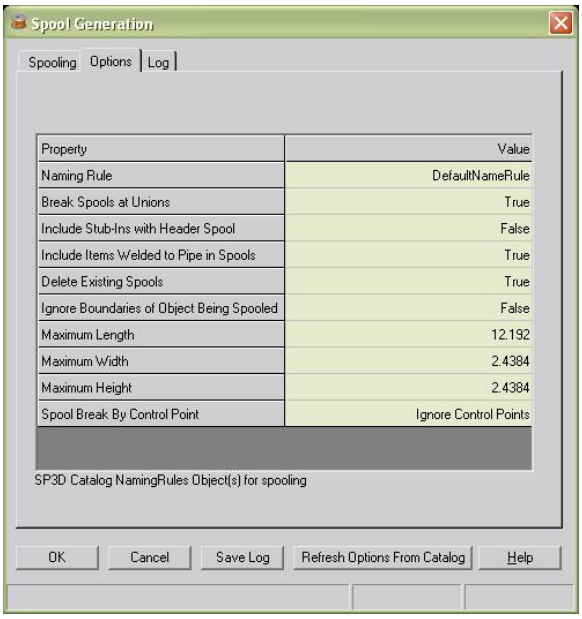
NPD Change

Locate the free end of pipeline 300-W. Use Route Pipe and <New Pipe Run> to change NPD to 8” and extend the line 4ft.
Use Route Pipe and <New Pipe Run> again to change NPD this time to 3”. Note as you extend the line that the system will automatically insert back to back reducers to accomplish the desired attribute change.



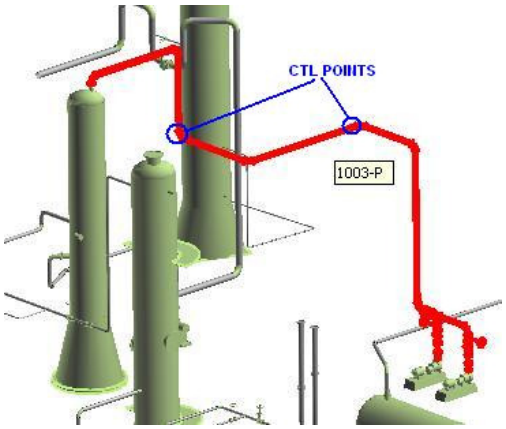
Lab 20: Spools

Start the Spool Generation command and locate pipeline 1003-P (Area 2, Unit 2).
Accept the default Options as shown.



Review the new spools in the Log tab. Make sure the ToDoList is empty.

Locate line 1003-P, place Control Points (Insert>Control Point) at the joints shown below and re-run Spooling with Spool Break By Control Point option set to Break at Control Points. Go to the Log tab and click on the new spools to highlight them in the view.



General Hints:
This will only work when the Control Points are linked to Connection objects. If Welds or Features are used the spooling process will ignore the Control Points. Use the QuickPick tool to find Connection objects at busy joints.

Lab 21: Sequence Objects

Set your selection tool to Welds and review a few welds' ID on pipeline 1003-P.

Start the Sequence Objects command and run it on line 1003-P using the following parameters:

Review the same welds' ID numbers.

OPTIONAL

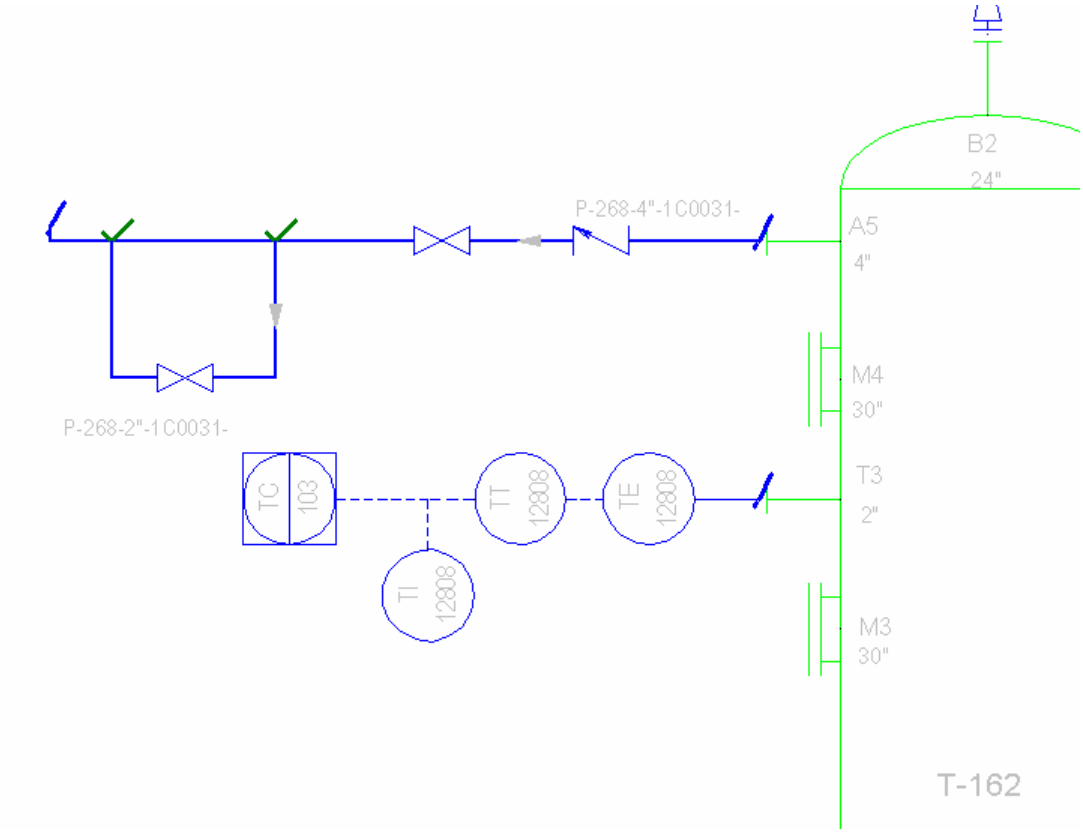
Create a branch anywhere on 1003-P with at least a tee and an elbow in the branch run. Review the weld numbers before and after the branch, as well as on the branch. Use the Sequence Objects command to generate weld numbers for the new run. Test different settings for Sequencing Type and Revision Control options.

Lab 22: Routing Using P&ID

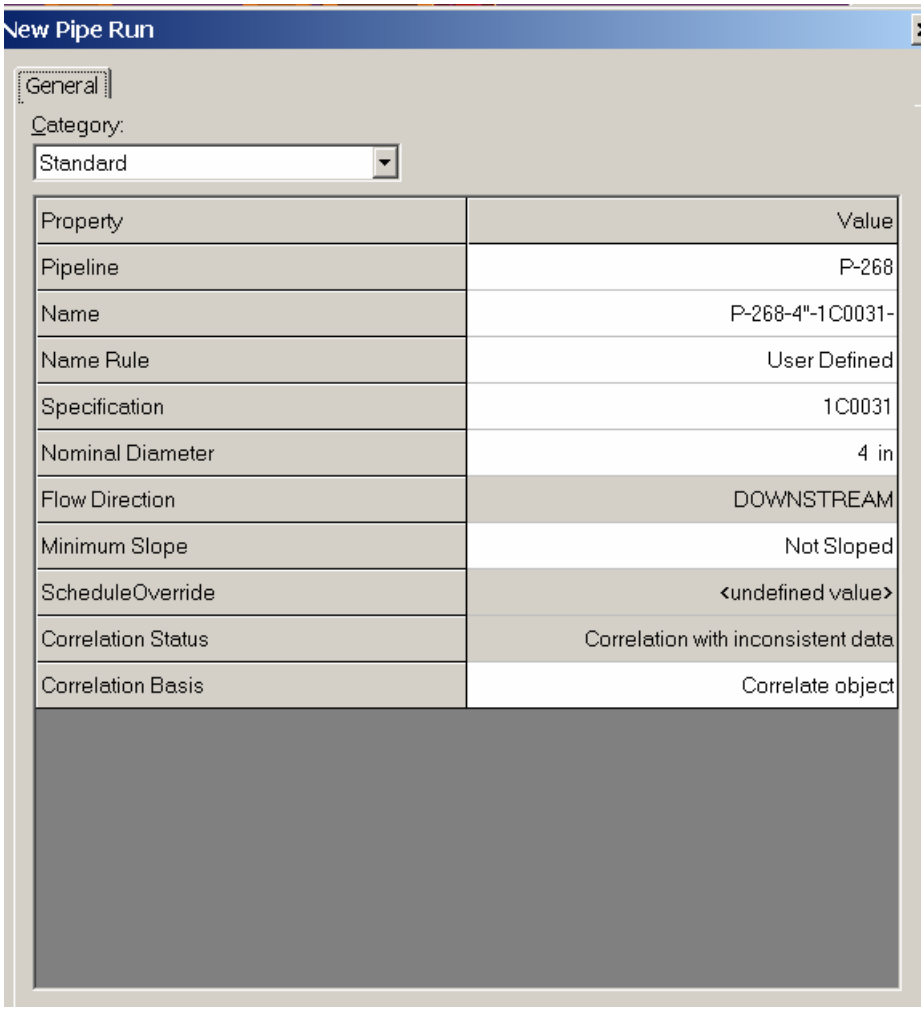
After completing this lab, you will be able to:

- Route Pipeline using P&ID

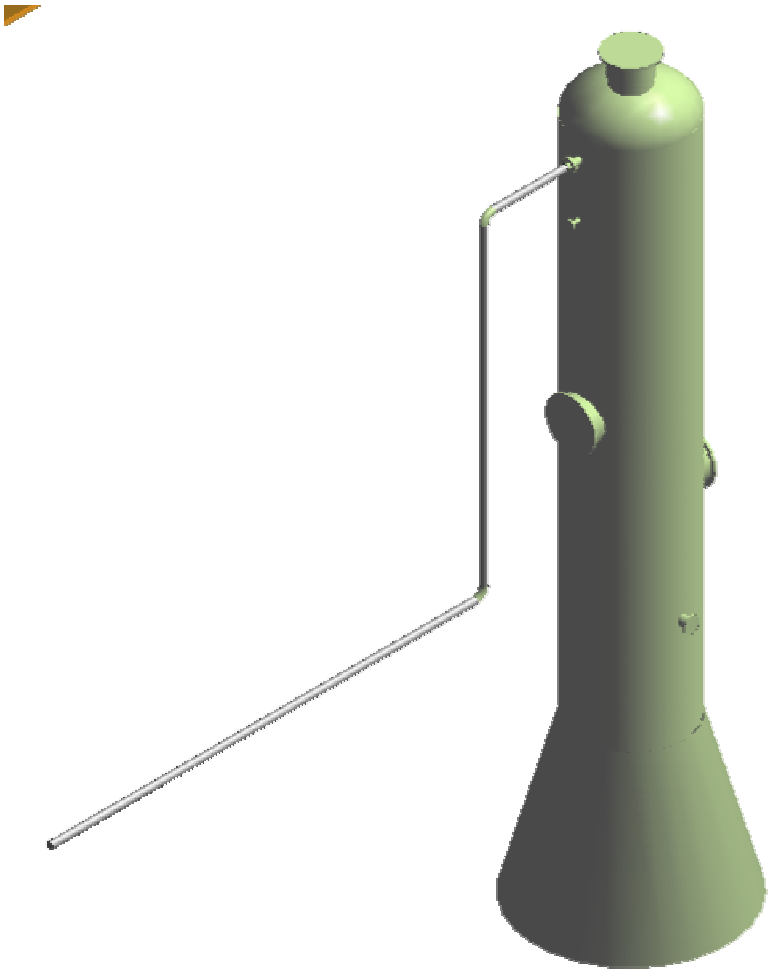
Define Appropriate filter for your workspace
Go to Framework > View P&ID
Select INT01 from the PID list, Select open button
PID Viewer opens up in a Window.
Window to Nozzle A5 and Pipe Run P-268-4”-1C0031-



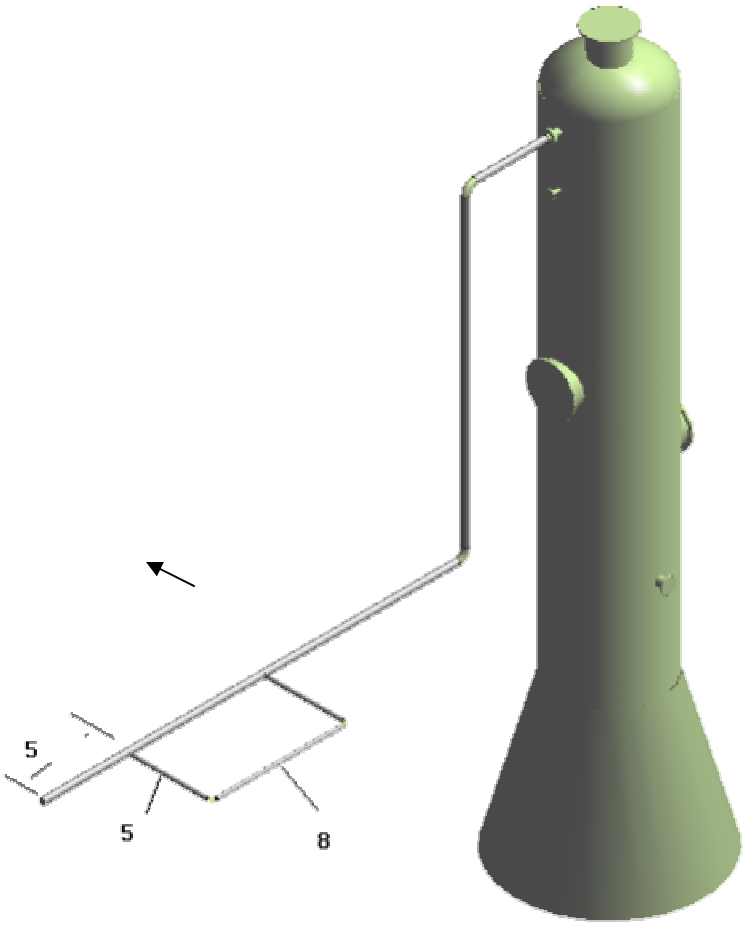
Select Route Pipe command.
Select T-162/A5 as starting point
System open up the New Pipe Run form with all the data already filled.



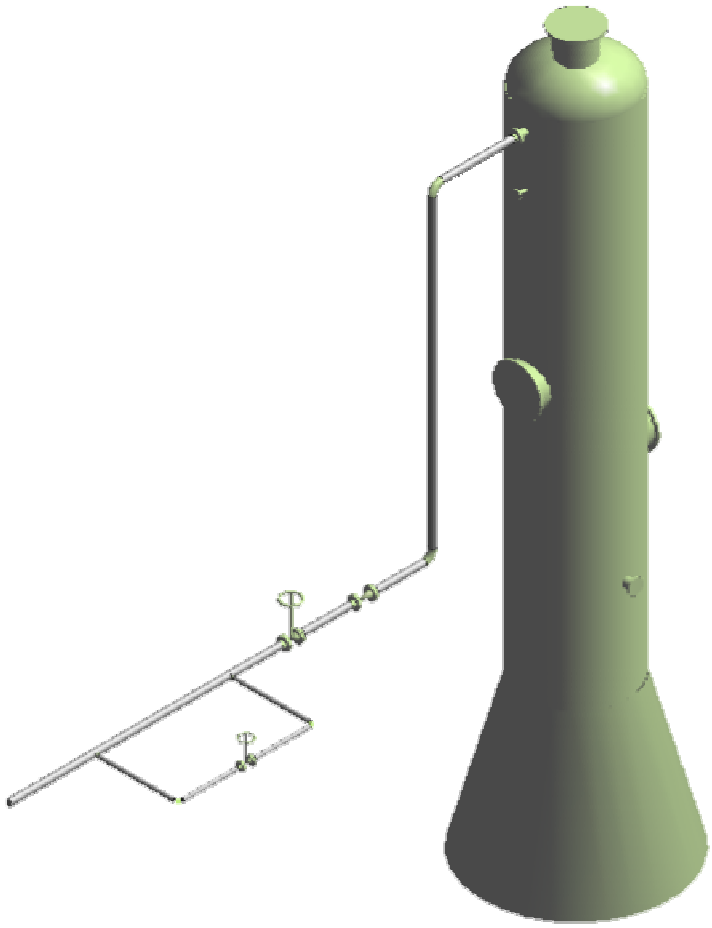
Ok on the form
Route West 5', Rout to Elevation 21', Route West 25'
Your Pipe Run should resemble this (only Tank and Pipe Run Shown – Rest of the objects are Hidden)



Select Route Pipe command. Define Starting point at 13’ East of free end of the Pipe Run placed above.
System Brings up the PI&D viewer. Select the BYPASS run from P&ID.
Software displays the New Pipe Run form with data already filled.
OK on the Form.
Route South 5’. Route West 8’. Connect to the Original Run to close Bypass.



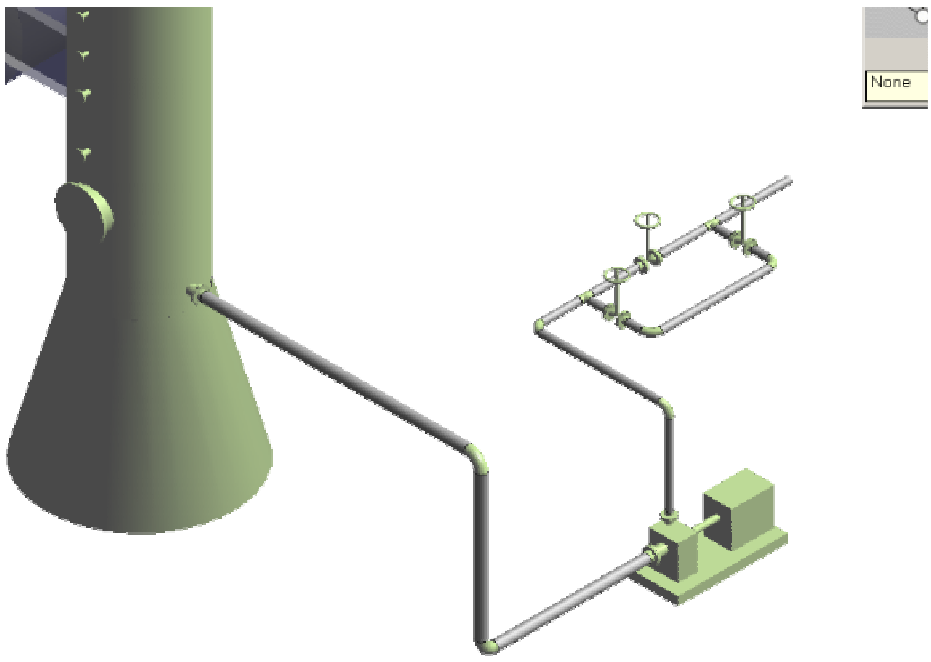
Select Insert Component Command
Select the Midpoint of East West Run on Bypass
Software Displays the P&ID viewer. Select the Valve from Bypass in the P&ID. Software will select the valve from Catalog and display it Dynamically in the model.
Locate the valve and select Finish.
Place other 2 valves in the same way.



When components are placed, they will change color(green) in P&ID.
Change the locate filter to Pipe Runs. Select The Bypass run.
Select Framework, Compare Design Basis. Software shows the Data in the model and P&ID. Go to Topology Tab and review all the components on the run. Select Update. Select Close button. This will change the run color to green in P&ID.
Update the data for Main Run Same way. When finished, Both Runs should turn green in P&ID.

Using P&ID viewer Route From T-162/B1 to Pump P-162/N1.
After Routing, Select Run and Compare Design Basis.
Then Route From P-162/N2, Route Up 10', North 10, and east 15'.
Then Route the Bypass and Insert components. When finished run Compare Design Basis.

Your View Should Resemble This.

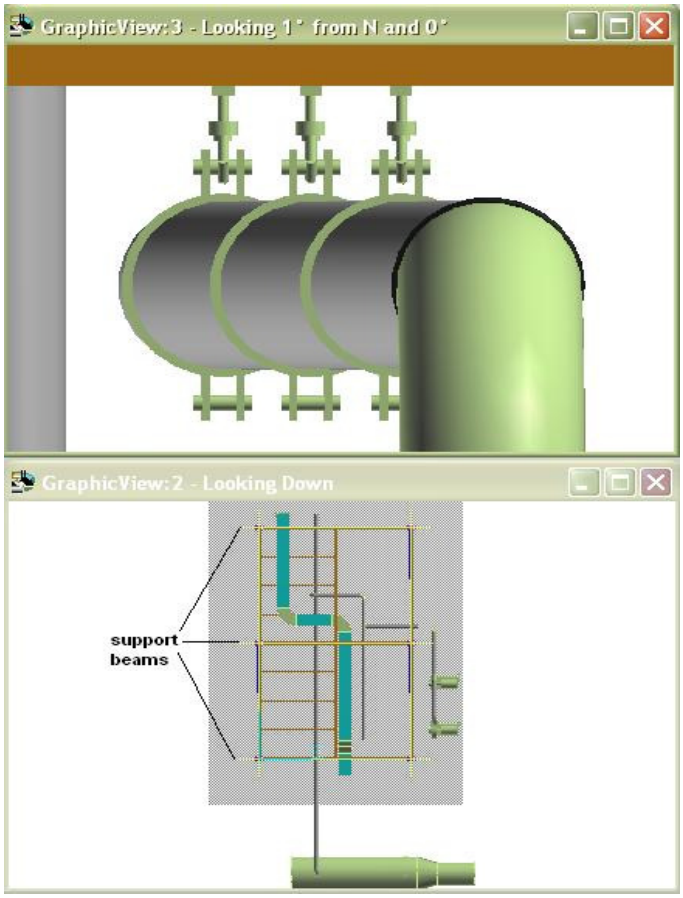


Optional: Place a 6X4 Reducer at the end of P-101-4"- and connect the Line to E-102/N2

Optional: Place a 6X4 Reducer at the end of P-268-4"-1C0031- and connect the Line to VS-102/N2

Lab 23: Pipe Supports

Add hangers to line 2005-P in Area 2 Unit 1, at the three support beams shown below.



Hints:

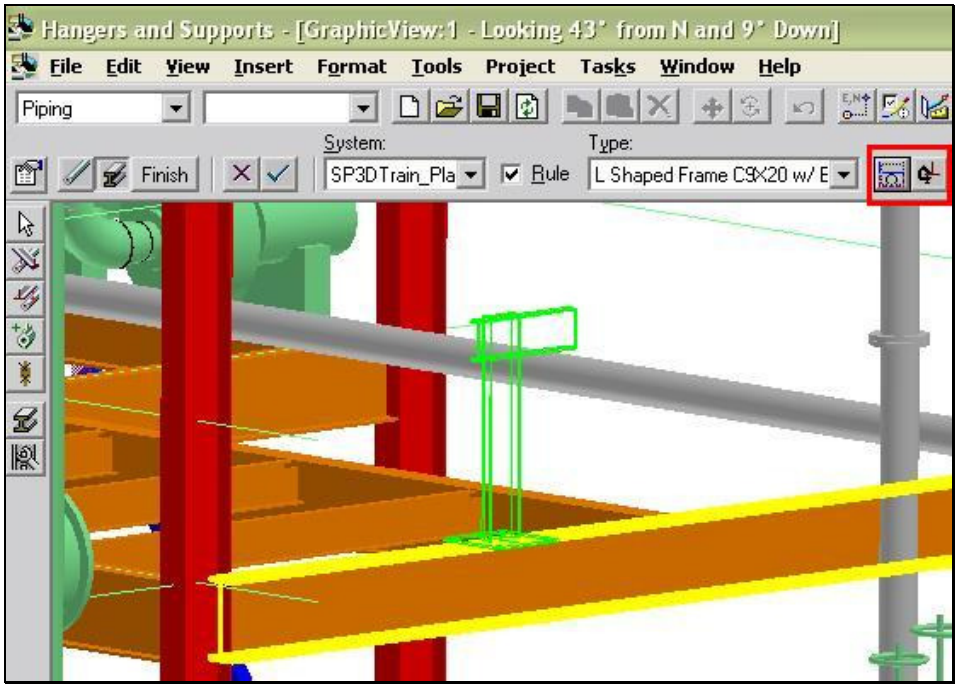
Switch to **Hangers and Supports** task and follow these steps:

1. Click **Place Support by Structure** on the vertical toolbar.
2. Select the feature to support.
3. Click **Accept (check mark on ribbon bar)** .
4. Select the supporting structure to use.
5. Click **Accept** .
6. Select the support type.
   Turn off the rule option
   Select Type>more…
   Navigate to HS Assembly>Rigid Rods>Assy_RR_SR_MD
   Pick Assy_RR_SR_MD_2 and OK
7. Click **Finish**.
8. Select the next supporting beam
9. Click **Accept.**
10. Click **Finish**.
11. Repeat for the remaining beam

OPTIONAL

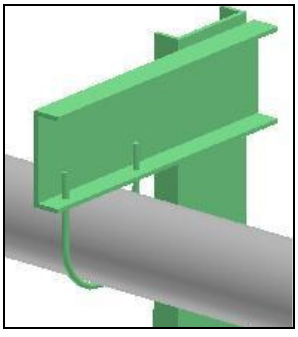
Route an 8" NPD piperun 3 FT above a structural beam.
Switch to **Hangers and Supports** task and follow these steps.

1. Select Place Support by Structure
2. Select the pipe above the beam and accept by selecting the green checkmark
3. Select the beam below the pipe. Notice prompt at bottom left of window is being followed.
4. System will display a tentative support selected by "Rule". Notice the base location
5. Use the placement location toggles to set the support to the left of pipe and attached to the top of beam



6. Click Finish to complete placement.
7. Return to the Piping Task
8. Select the pipe with the support, then move it up 1FT. Make sure the support follows
9. Move the same pipe down 7FT, (1+ ft below the beam). The support placement rule should adjust the type of support.
10. If needed, in Supports Task toggle the point of support attachment to structure location to a lower flange

Place a U bolt on the 8" NPD piperun using the Place Part command in the Hangers and Supports task. Select the 8-inch from catalog menu option "Parts\Anvil\Pipe Clamps\Anvil_FIG137". Follow the prompts and use pinpoint, function keys and rotate as needed to place the item as shown.



Lab 24: Reports

Extract a valve list from the model, sorted by NPD.

Piping Valves Sorted by NPD

Size	Size	Description	Approval Status	Quantity
10 in	10 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-W	Working	4
2 in	2 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-W	Working	1
3 in	3 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-W	Working	2
4 in	4 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-W	Working	7
6 in	6 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-W	Working	5
4 in	4 in	VAAAMABAHADEADAZZZZUS - Gate valve, CL300, RFFE, BB, OS&Y, ASTM-A216-W	Working	1
0.75 in	0.75 in	VADAQBVAHAHPABQZZZZUS - Gate valve, CL800, SWE, BB, OS&Y, ASTM-A105, t	Working	2
1 in	1 in	VADAQBVAHAHPABQZZZZUS - Gate valve, CL800, SWE, BB, OS&Y, ASTM-A105, t	Working	2
0.75 in	0.75 in	VADAQDHAHAHPABQZZZZUS - Gate valve, CL800, SWE/FTE, BB, OS&Y, ASTM-A1	Working	1
2 in	2 in	VALAHABAHACWADAZZZZUS - Globe valve, CL150, RFFE, BB, OS&Y, ASTM-A216	Working	1
3 in	3 in	VALAHABAHACWADAZZZZUS - Globe valve, CL150, RFFE, BB, OS&Y, ASTM-A216	Working	1
10 in	10 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-	Working	2
4 in	4 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-	Working	1
6 in	6 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-	Working	2

Extract a pipeline list, sorted by name.

Pipelines Sorted by Name

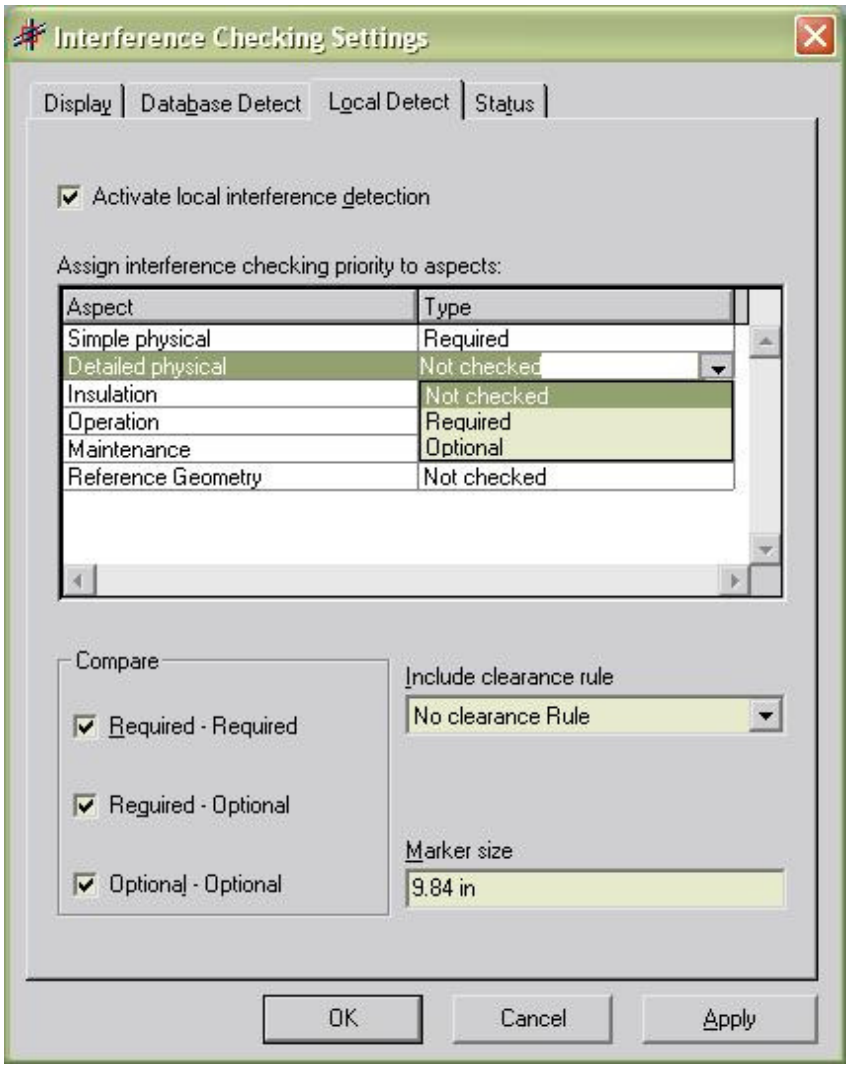
Line Number	Nominal Size	Pipe Spec / Paint Spec	Insulation / Ins Temperature F	Insulation Purpose / Insulation Material	Insulation Thickness ft in	Approval Status
P-101	8 in	N0	Not Insulated		0 ft 0 in	Working
1003-P	3 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	8 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	4 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	8 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	6 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	4 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	3 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	8 in	1C0031	Not Insulated		0 ft 0 in	Working
1003-P	6 in	1C0031	Not Insulated		0 ft 0 in	Working

General Hints:
In Piping Task, select Tools>Run Report to extract reports.
From the Run Report interface, select the Catalog Reports interface and navigate to the Piping report types to use standard delivered report formats.

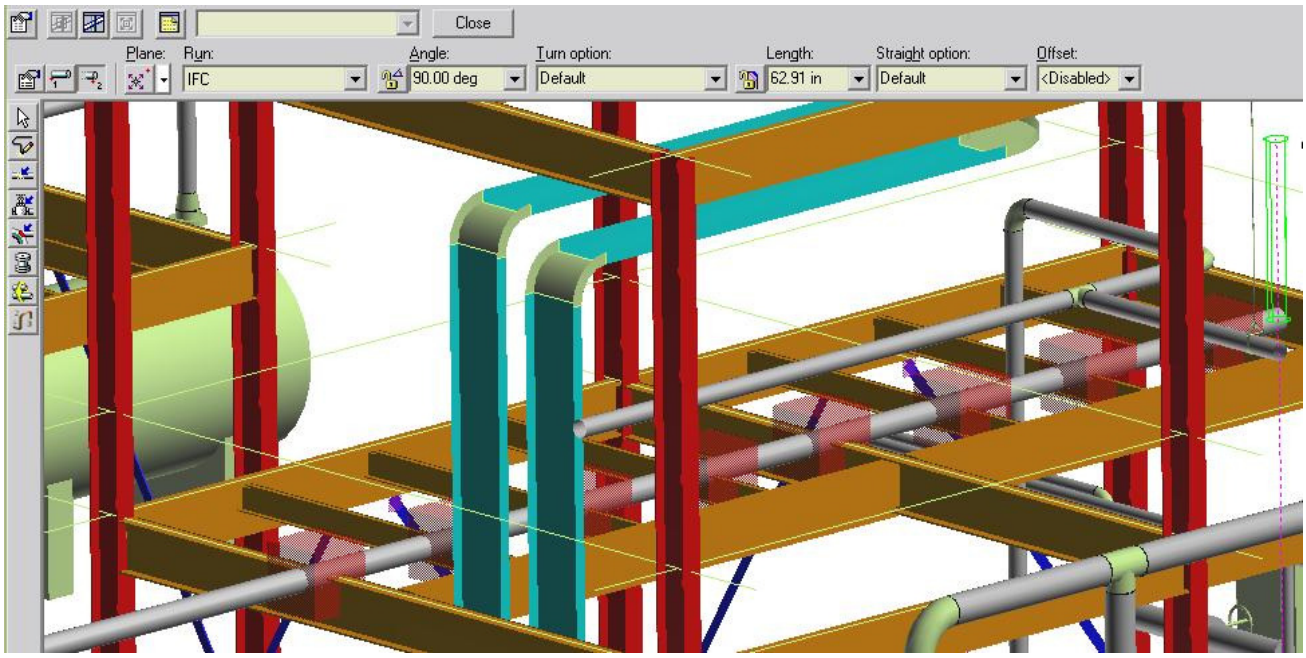
Lab 25: Interactive Clash Detection

.

Activate Local Detect clash detection to highlight Simple Physical and Detailed Physical interferences during routing. Set the marker size to 2ft.



Route a 10” NPD pipe across any structural steel members as shown.
Notice the clash markers added by the system.



General Hints:
Use Tools>Check Interference to activate detection. Select the Settings button on the ribbon bar that appears. Select the Local Detect tab to access and change the settings for local detection. Notice the bottom right of the SP3D window, it will show the percent progress of "IFC" detection during modeling.