

# SmartPlant 3D Piping v7

## *User Training Exercises*



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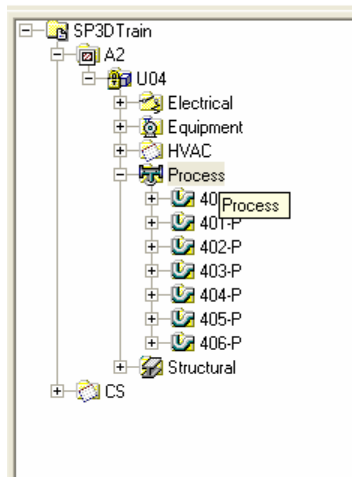
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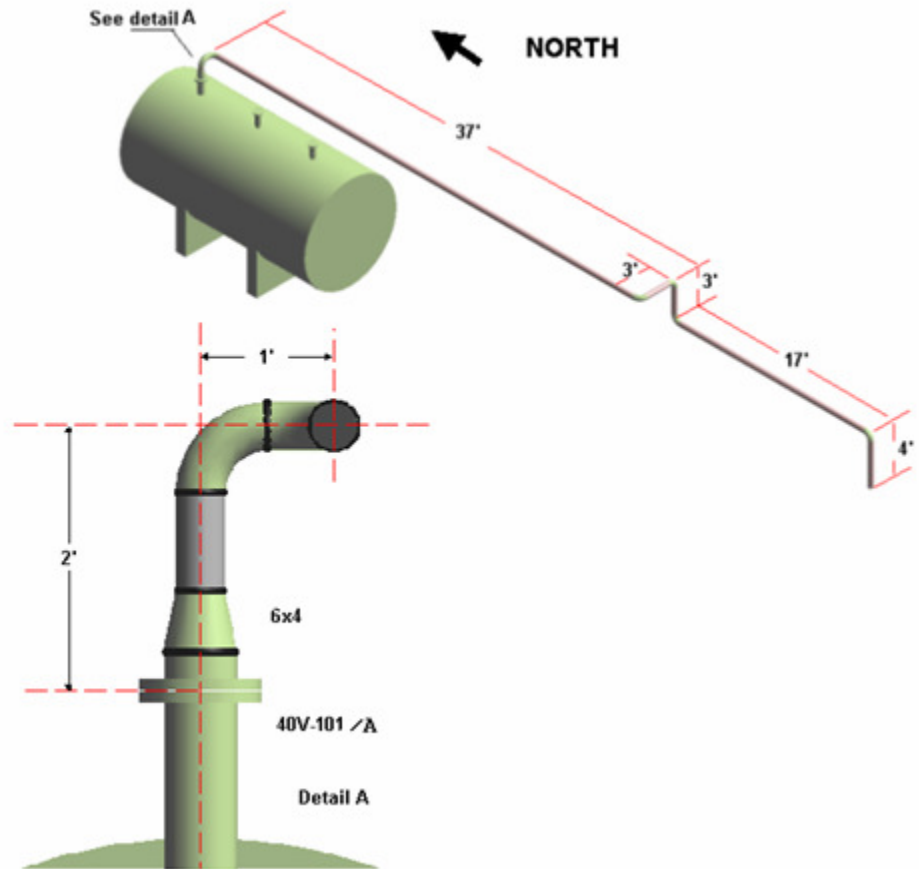
## LAB-1: Setting Default Properties

- 1 Open a Session file with Imperial Units and define Workspace to Display U04 and U04 CS
- 2 Select Task -> Piping
- 3 Make sure the Active Permission Group is set to **Piping**  
**Note:** Objects that you place directly in the model are assigned to the active permission group. Therefore, you are responsible of making sure the objects are assigned to the appropriate Permission Group.
- 4 Change the locate filter to All
- 5 Expand Workspace explorer and select Process under, A2 > U04

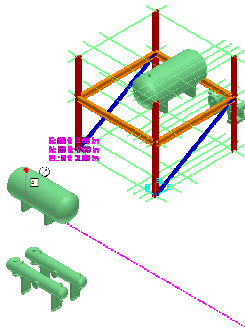


- 6 Open properties page for Process system (right click > properties)
- 7 From System Properties options, Switch to Default Properties Value Tab
- 8 Under Standard category, Set Specification to 1C0031
- 9 Change the Category to Temperature and Pressure
- 10 Define following Values  
Design Max Temperature: 100F (System will/might change the units to match units specified under Tools > Option, units tab)  
Design Max Pressure: 125PSI (System will/might change the units to match units specified under Tools > Option, units tab)
- 11 OK on the form
- 12 Save session file

## LAB-2: Basic Routing

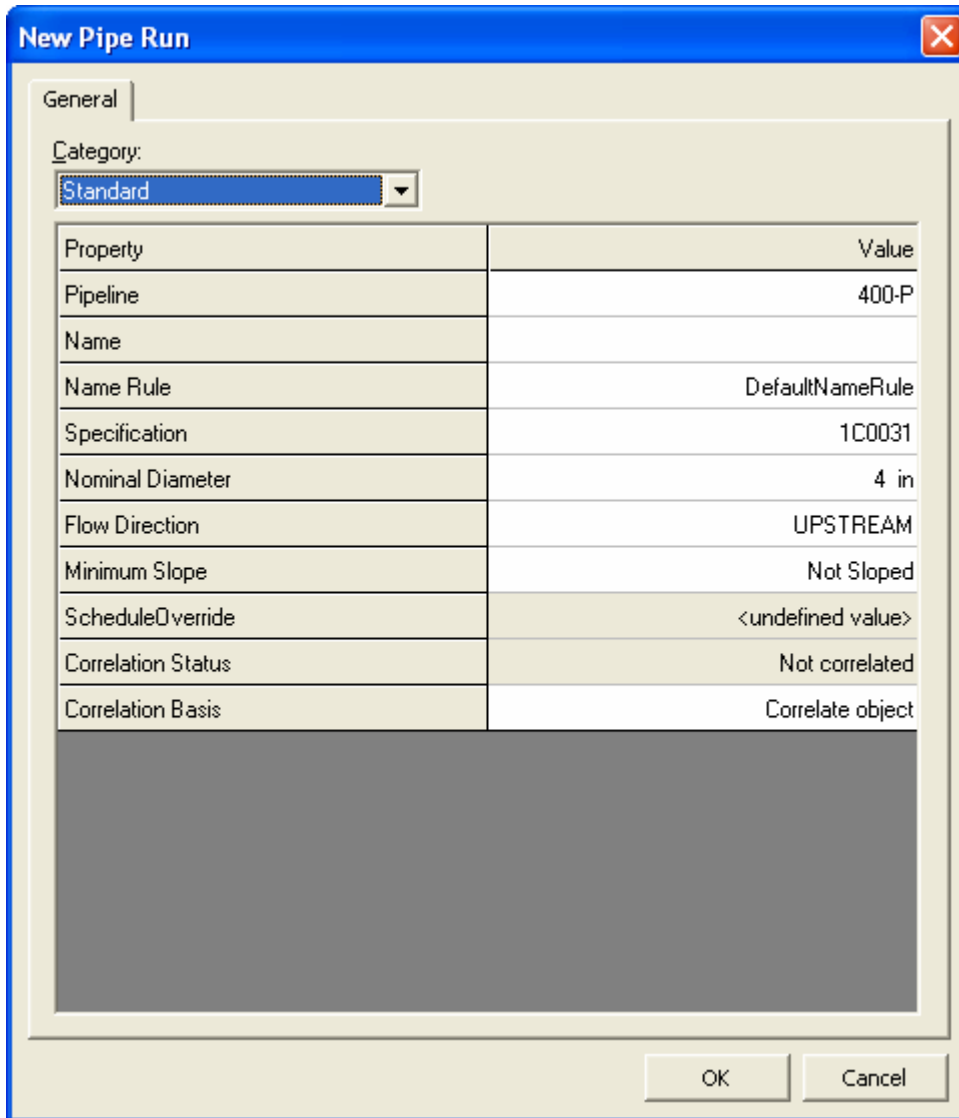


1. Select Route Pipe command
2. Select nozzle **40V-101/A** as the starting point  
**Hint:** To locate item, set the locate filter pulldown to Equipment and enter **40V-101** in the Workspace Explorer key-in field and press enter. The equipment highlights on the Workspace explorer and the view, select the Fit command to center the view(s) on this equipment item. Holding Shift-A as you click the Fit command will fit item in all available views.



**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 / defaults are available for routing.

3. The system opens the Create Pipe Run Dialog box. Select **&More** in the Pipeline property field to open the Select System dialog box.
4. Navigate the system folder hierarchy and select **400-P** pipeline system.
5. Software fills the specification defined at the parent system level ( Defined in Lab1)
6. Fill the following properties:  
Specification = 1C0031  
Nominal Diameter = 4 inch  
Flow Direction = UpStream



Property	Value
Pipeline	400-P
Name	
Name Rule	DefaultNameRule
Specification	1C0031
Nominal Diameter	4 in
Flow Direction	UPSTREAM
Minimum Slope	Not Sloped
ScheduleOverride	<undefined value>
Correlation Status	Not correlated
Correlation Basis	Correlate object

7. Switch to Temperature and Pressure Category
8. Verify that software has transferred Temperature and Pressure from parent system
9. OK on the form  
**Note:** The OK button returns you to the dynamic graphic display

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

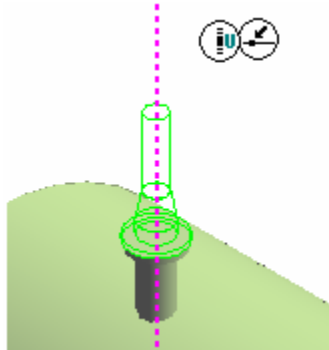
**Recall** that the length box values of 2ft will constrain the length of pipe to that value.

11. Position the cursor above the nozzle until the system returns the SmartSketch U-axis aligned indicator as shown



**Recall:** This glyph 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.



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

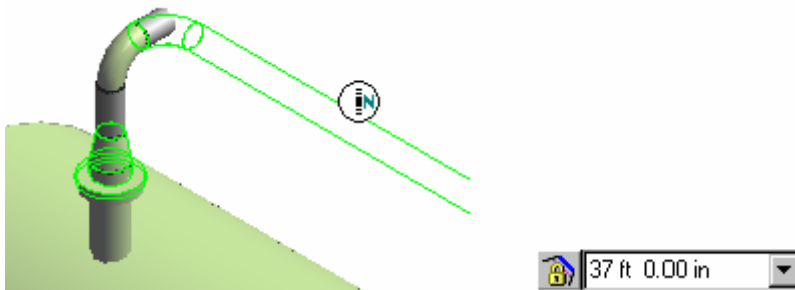
14. Position the cursor in the Easting direction until the system returns the SmartSketch E-axis aligned indicator.

15. Left mouse click to accept the endpoint.



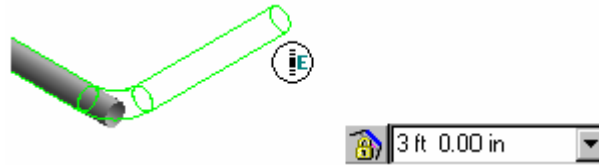
16. Go to the Pipe Route ribbon bar and key in 37' in the length box.

17. Position the cursor in the South direction until the system returns the SmartSketch N-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.

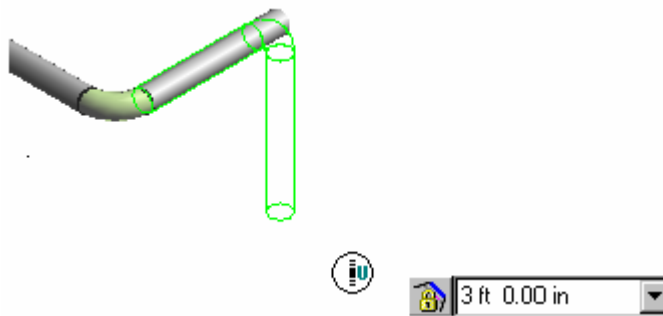
19. Position the cursor in the Easting direction until the system returns the SmartSketch axis aligned indicator. Left mouse click to accept the endpoint.



20. Keep 3' in the length box.

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

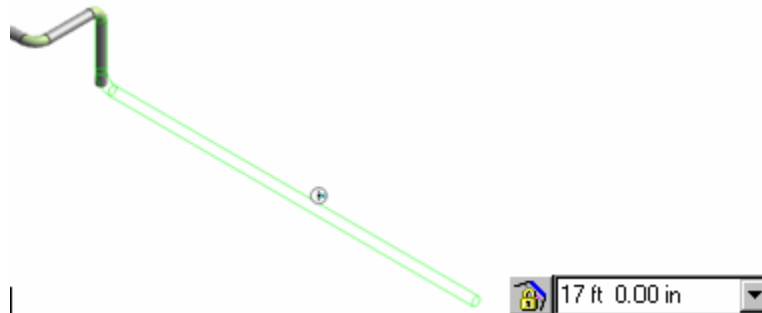
22. Left mouse click to accept the endpoint.



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 N-axis aligned indicator.

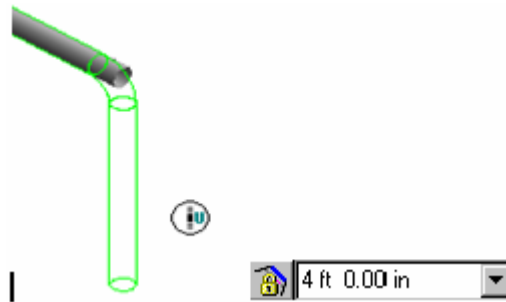
25. Left mouse click to accept the endpoint.



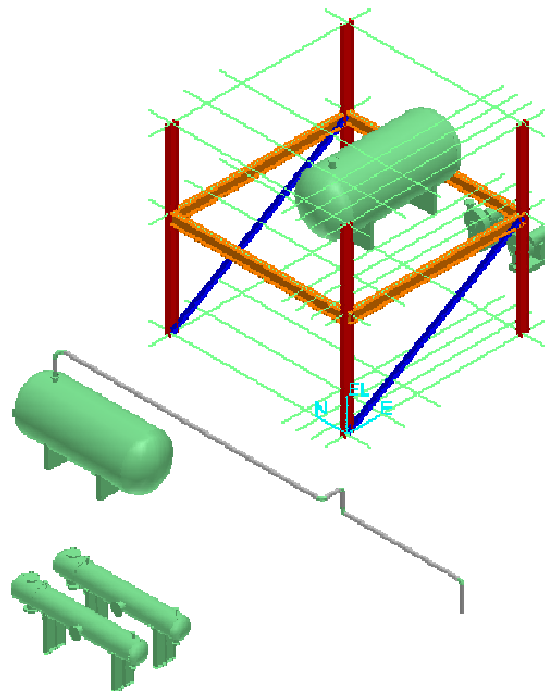
26. Go to the Pipe Route ribbon bar and key in 4' in the length box.

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

28. Left mouse click to accept the endpoint.

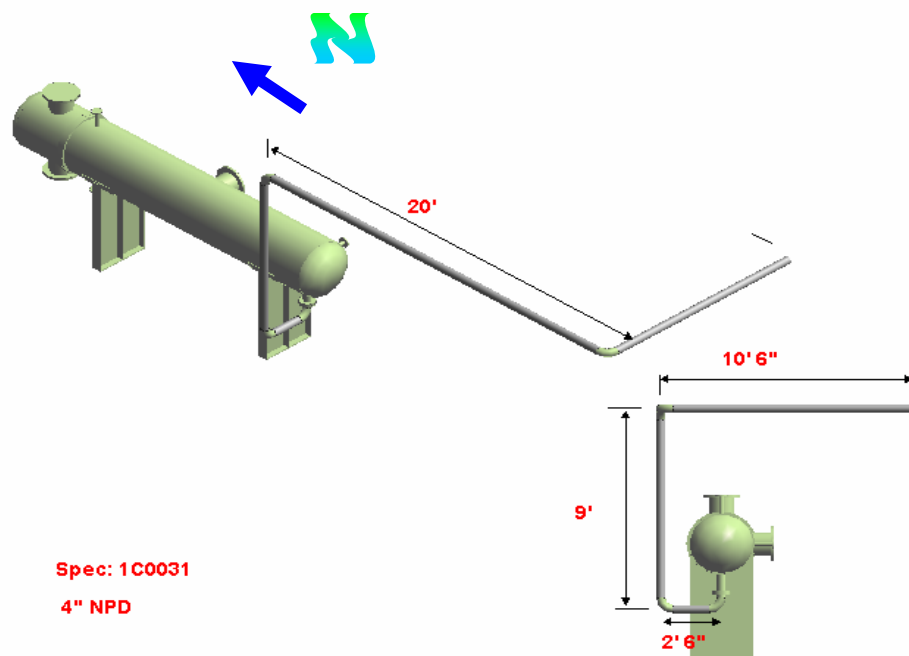


29. Right mouse click to terminate the Pipe Route command.



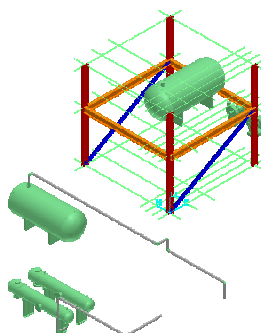
## LAB-3: Basic Routing - Using Angle Control and the Length Control tools

Route pipeline **401-P** from the equipment/nozzle **40E-101A/E1** to its completion. Refer to the sketch below for detailed information.



**Note:** Details steps are not given for this lab.

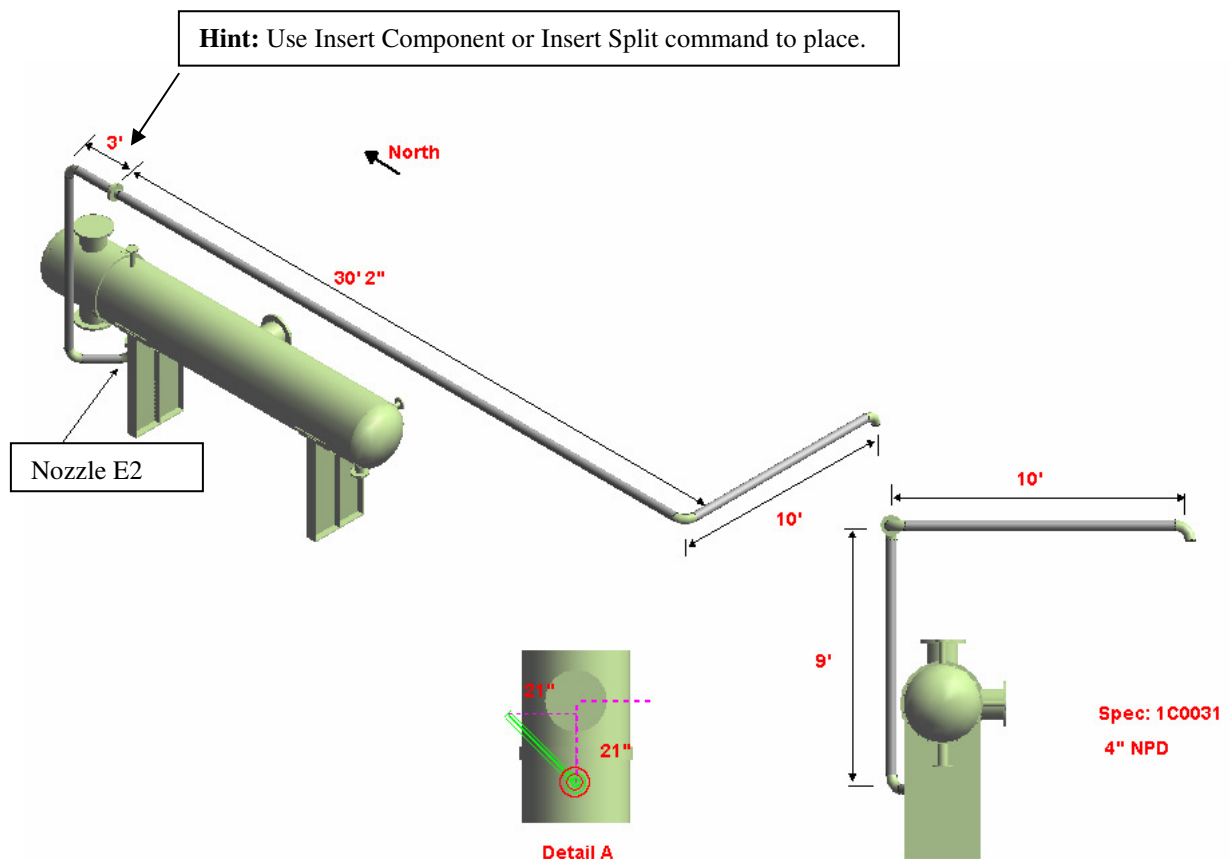
- 1 Start Route Pipe command, select nozzle E1 as the starting point
- 2 Define Run properties and select line number 401-P, OK on the form  
**Note:** When connected to component, software automatically locks the angle to keep the line straight. In this case, angle is locked at 0. Change angle to 90
- 3 Key in length lock 2' 6", move cursor West of nozzle, click when E glyph is shown
- 4 Route up 9', south 20' and east 10' 6".







## LAB-4: Basic Routing - Using PinPoint and Plane Control

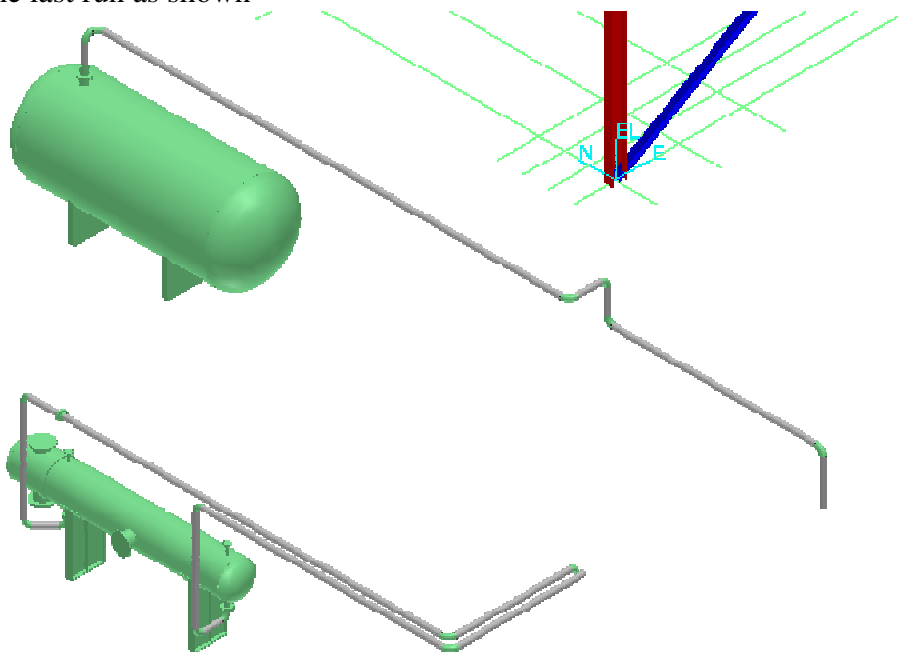
Route pipeline **402-P** from the equipment/nozzle **40E-101A/E2** to its completion using PinPoint, Relative Tracking, Working Plane Control, Angle Control and the Length

Refer to the sketch below for detailed information.



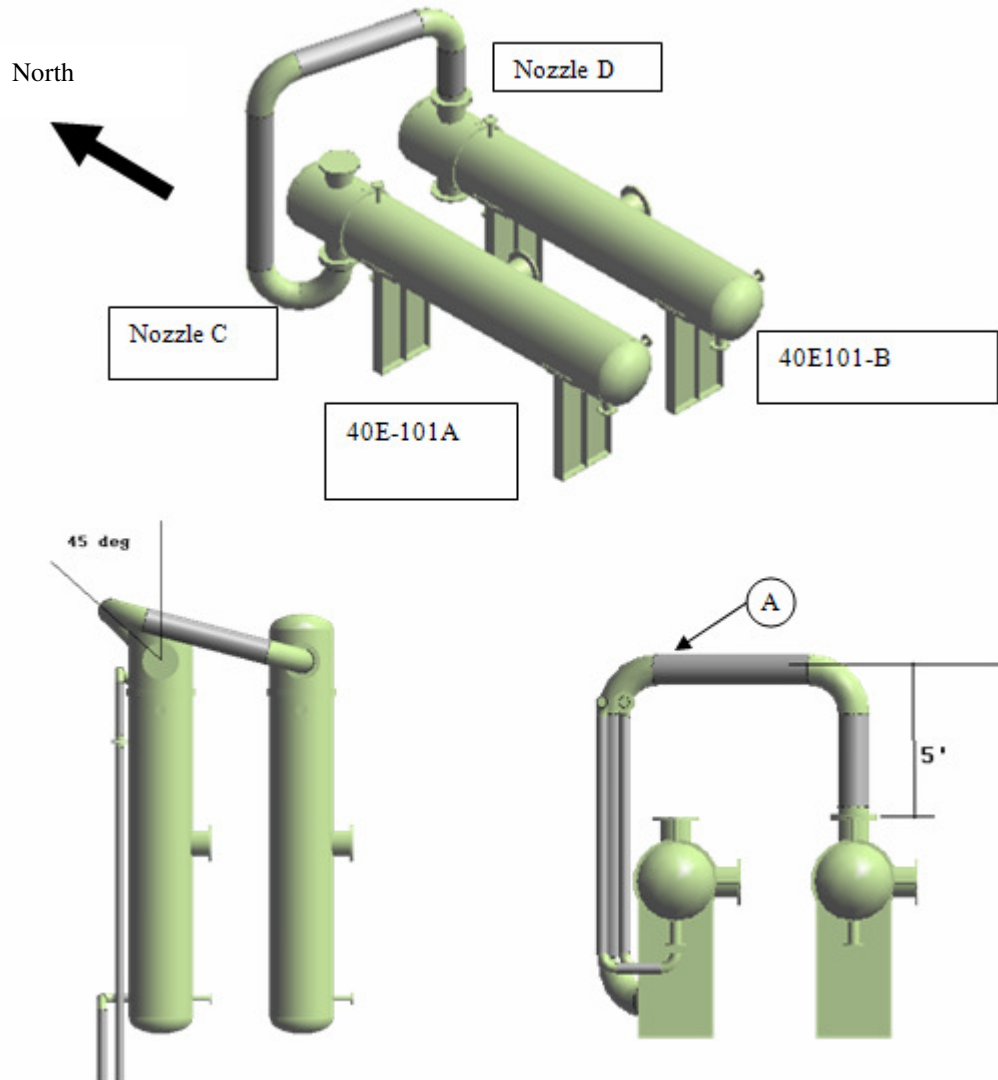
- 1 Activate Pinpoint if not already active 
- 2 Turn Relative tracking on  ( or reposition target to nozzle)

- 3 Start Route Pipe command, select nozzle as starting point  
(verify that target moves there and you see 0,0,0 on screen)
- 4 Define Run properties and select line number 402-P, OK the form  
**Note:** When connected to component, software automatically locks the angle to keep the line straight. In this case, angle is locked at 0, unlock the angle.
- 5 Set view orientation to Top/Plan
- 6 Lock the active plane to Plan Plane 
- 7 Select F6 (Easting) key and key in -21" (in the pinpoint toolbar)
- 8 Select the F7 (Northing) key and enter 21"
- 9 Unlock the active plane 
- 10 Lock the angle at 90deg and set the pipe length to 9'. Place the next run on the U axis
- 11 Place the rest of the runs (33' 2" S and 10' E)
- 12 Upon learning the insert split command, return and insert the flanges at 3' shown
- 13 Upon learning the insert component command, return and insert an elbow by origin at the end of the last run as shown



## LAB-5: Routing To or From Equipment Nozzle

Route 12" NPD pipeline **403-P** from the equipment/nozzle **40E-101A/C** to equipment/nozzle **40E-101B/D** using PinPoint, Working Plane Control and Angle Control tools (Use Fitting to Fitting makeup for the first 2 elbows). **Attempt to complete this first without reading the steps below.**



### Hints:

#### 1) Fitting to Fitting placement:

Start with the insert component command at nozzle C.

System opens the new pipe run dialog box.

Select Pipeline name 403-P

The NPD should already be correct from the nozzle data

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 “90deg Direction Change”

Hit finish to place the second elbow.

Select the Route Pipe command to switch to route.

## **2) Pinpoint tool and control plane**

Use Pinpoint and relocate the target at the nozzle D.

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 straight feature (SF) straight up

Left mouse click to commit the SF.

Lock the plane control to PLAN and move the mouse over the nozzle D.

Left mouse click to place the next pipe. Its end point is now directly above nozzle D

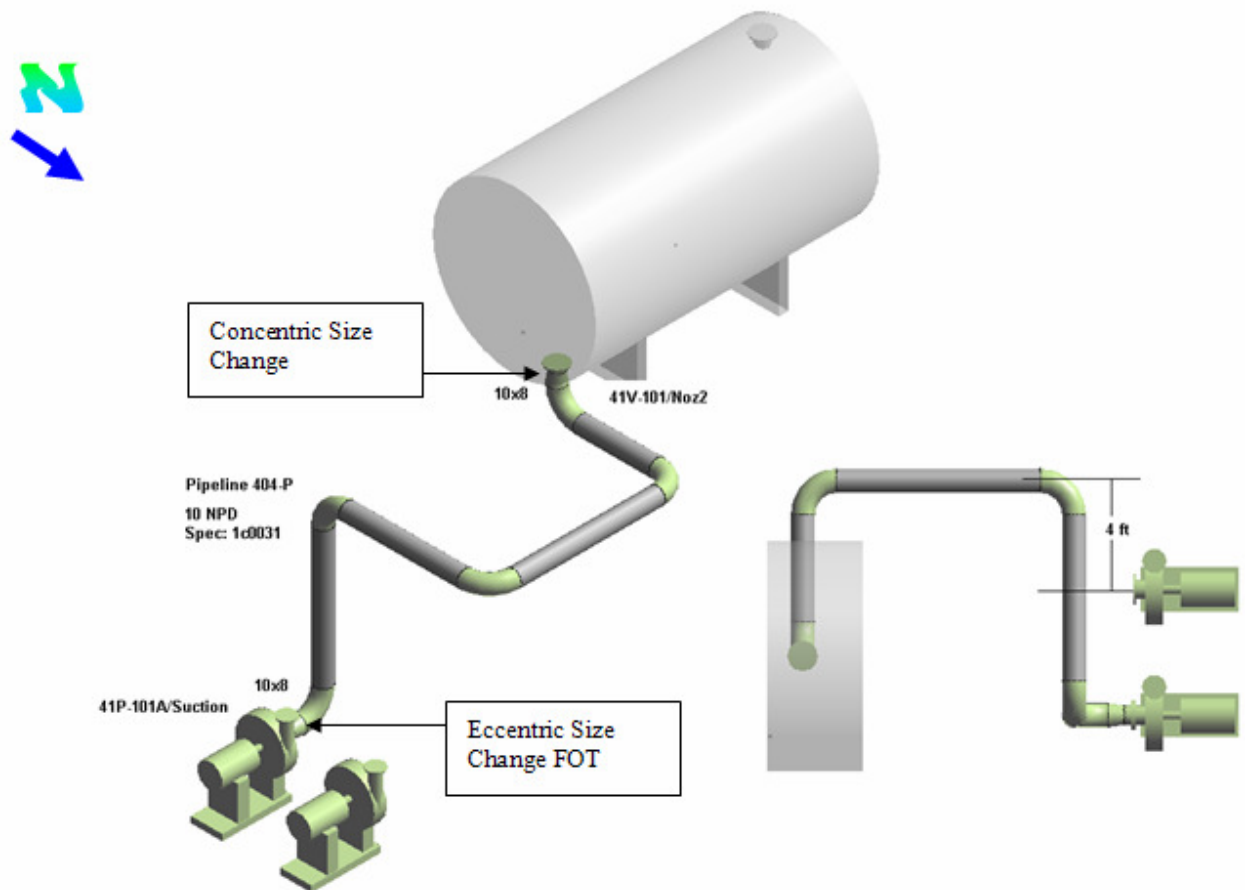
Unlock the Plan Plane and select the nozzle D again to finish routing into the nozzle



## Lab-6: Routing To or From Existing Pipe Runs

Route 10" NPD pipeline **404-P** from the Pump **41P-101A/Suction** to Storage Tank **41V-101/Noz2** using Working Plane Control, Angle Control, Pinpoint and the Length Control tools. Refer to the sketch below for detailed information. **Attempt to complete this first without reading the steps below.**

(Eccentric Size Change – Flat On Top)



### Hints:

#### 1) Inserting the Concentric Reducer on the Tank

Start the Insert Component command and pick nozzle Noz2

Verify spec is 1C0031, flow direction is DOWNSTREAM and set Nom Diameter to 10in, then OK

Select the “90 Degree Direction Change” from the menu, set Angle to 90 deg and select Finish. The piping task will place the flange, concentric reducer and elbow

Before anything else, take note of the Run number in the ribbon bar, it'll be needed shortly: \_\_\_\_\_

**2 ) Next, place an eccentric reducer on the pump nozzle.**

Start the Insert Component command and pick nozzle 41P-101A/Suction

Verify spec is 1C0031, flow direction is UPSTREAM and Nom Diameter is 8in, then OK (Eccentric reducers are not automatic, so it will be required to build the assembly component by component)

Select the short code “Flange” and Finish

Select the short code “Eccentric Size Change”. Then from the pull down menu for Runs, select the Run number from step 1 above. This ensures that these and the parts from part 1 above will all be treated as one single pipe run

Rotate reducer 180deg so that the flat side is at the top, then Finish

Select the “90 Degree Direction Change” from the menu and select Finish

Right after the elbow places, click on the Route Piping command (twice: first click exits insert component mode; second activates route pipe without disconnecting you from the end feature of the elbow)

**3) Route between**

While in Route mode and angle locked at 0deg, click on the elbow end placed in step 1 above to get the elevation to route up to

Reposition the Pinpoint target to Pump 41P-101B/Suction Nozzle

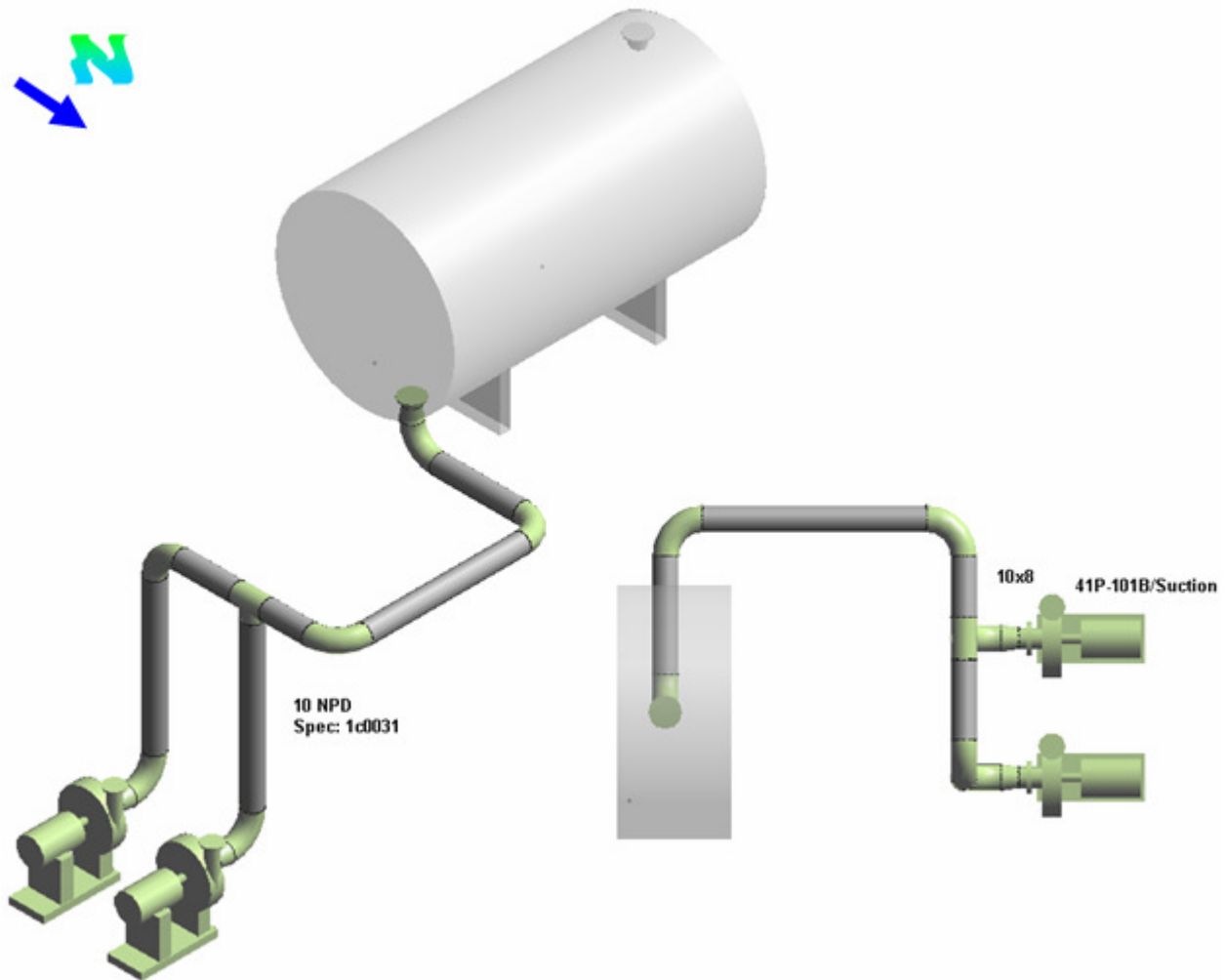
Make sure Angle lock is set to 90deg. Set Pinpoint North 4' and place the Straight pipe making sure the E glyph indicator is shown

Point the pipe in North direction, angle is locked at 90, click on the tank's elbow free end

Click on the tank's elbow free end again to complete the pipe run. Make sure the end point glyph appears by the elbow's end before you click to connect

## Lab-7: Routing To or From Straight Features

Create the branch line by routing a 10” Pipe Run from the Pump **41P-101B/Suction** to the Pipeline **404-P** using Working Plane Control and Angle Control tools.



### Hints:

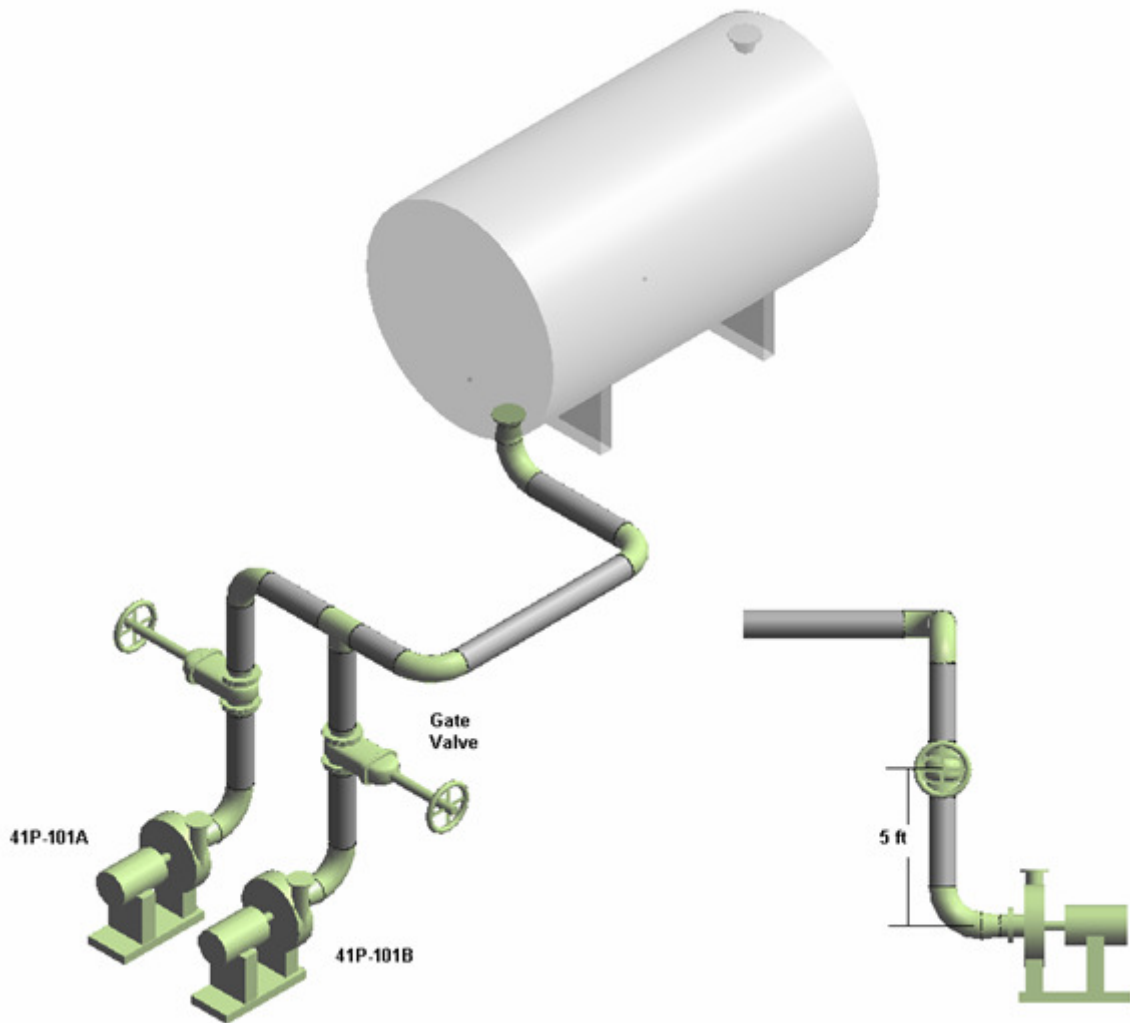
Start routing at the pump using the insert component command and place the flange + eccentric reducer + 90 elbow

Switch to route pipe command and branch the line into the header.

Note: The pipeline number 404-P can remain the same, but this branch's pipe run number **must not** be the same as the line it connects to

## Lab-8: Placing Inline Components

Insert 150# Flanged Gate Valves into the Pump suction line 404-P. Refer to the sketch below for detailed information (Valves won't look as detailed as those shown).

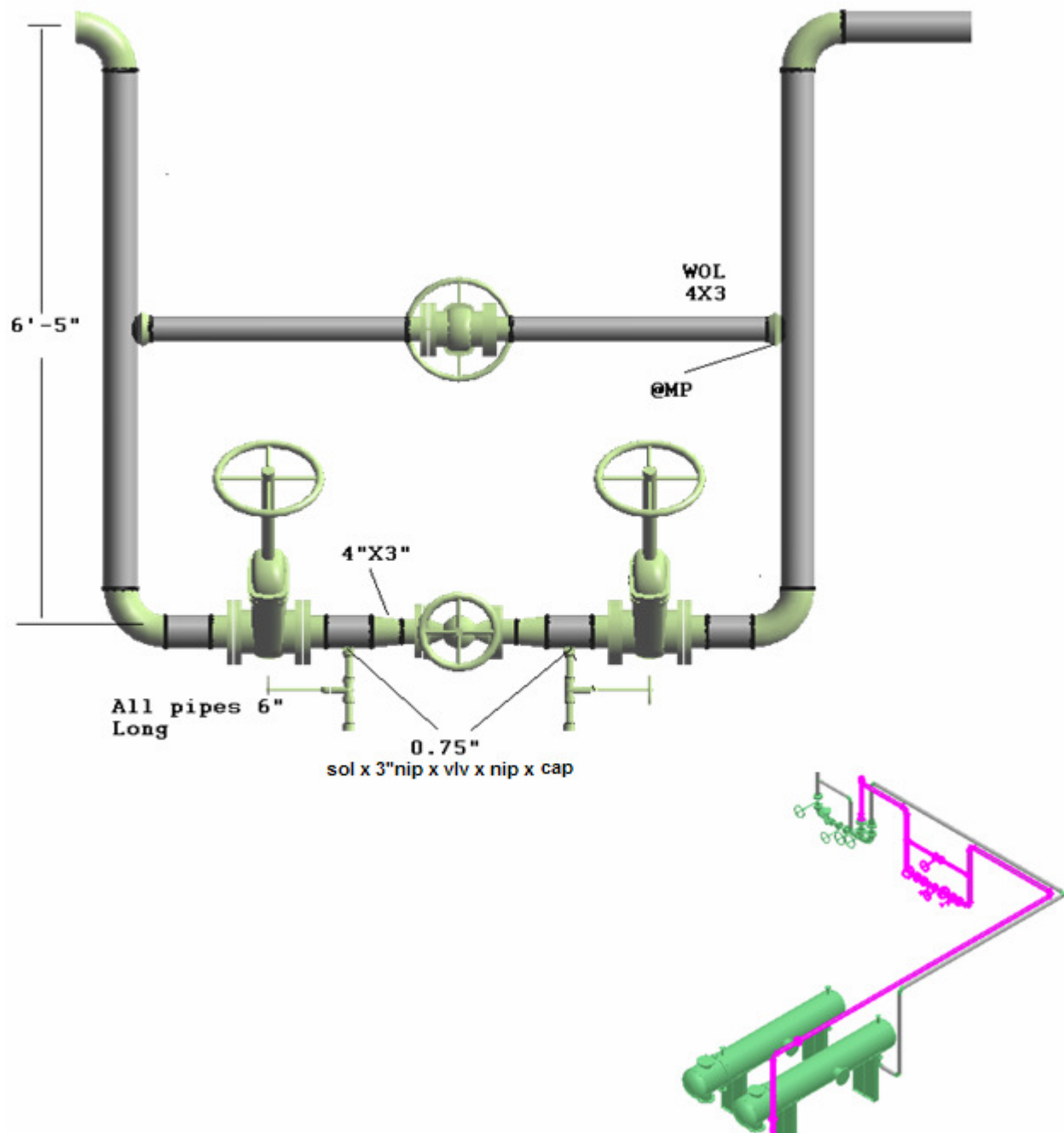


### Hints:

Use Pinpoint or Point Along command to locate the placement point on pipe prior to starting the Insert Component command

## Lab-9: Control Valve Station

Continue routing the pipeline **402-P** using the commands learned. Refer to the sketch below for detailed information.

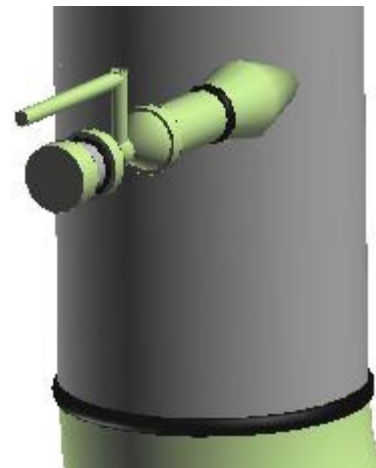
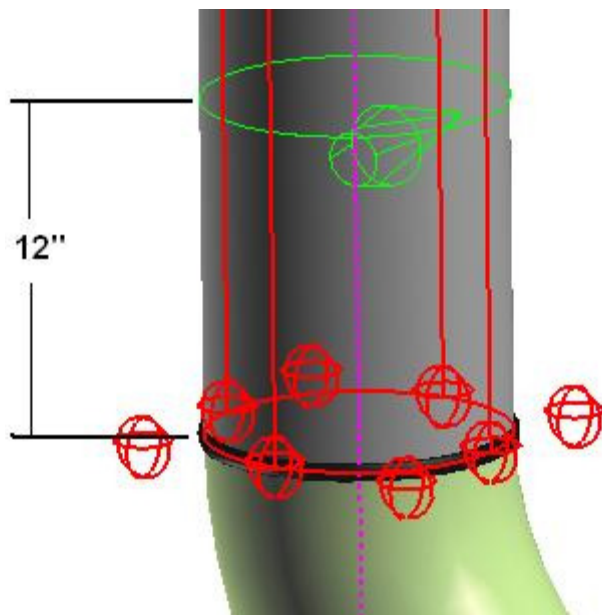


## Lab-10: Insert Tangential Branch

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.

Type:	Option:	Run:	Name:	Angle:	Branch Position:
Non Radial/Weldolet	Default	non-radial-demo		180.00 deg	Alt. Tangential
					Std. Tangential
					Alt. Tangential

Workspace Explorer



### Hints:

Set locate filter to Pipelines and 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.

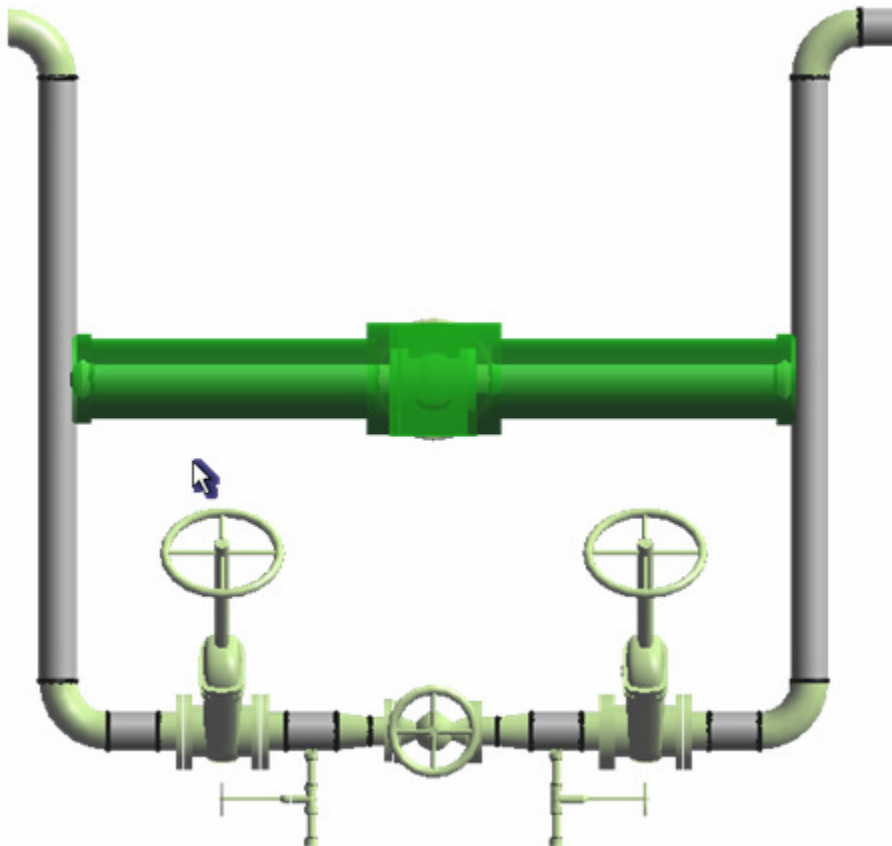
## Lab-11: Editing Pipe Run properties

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

Select the bypass run of the Control Valve and key in the following information:

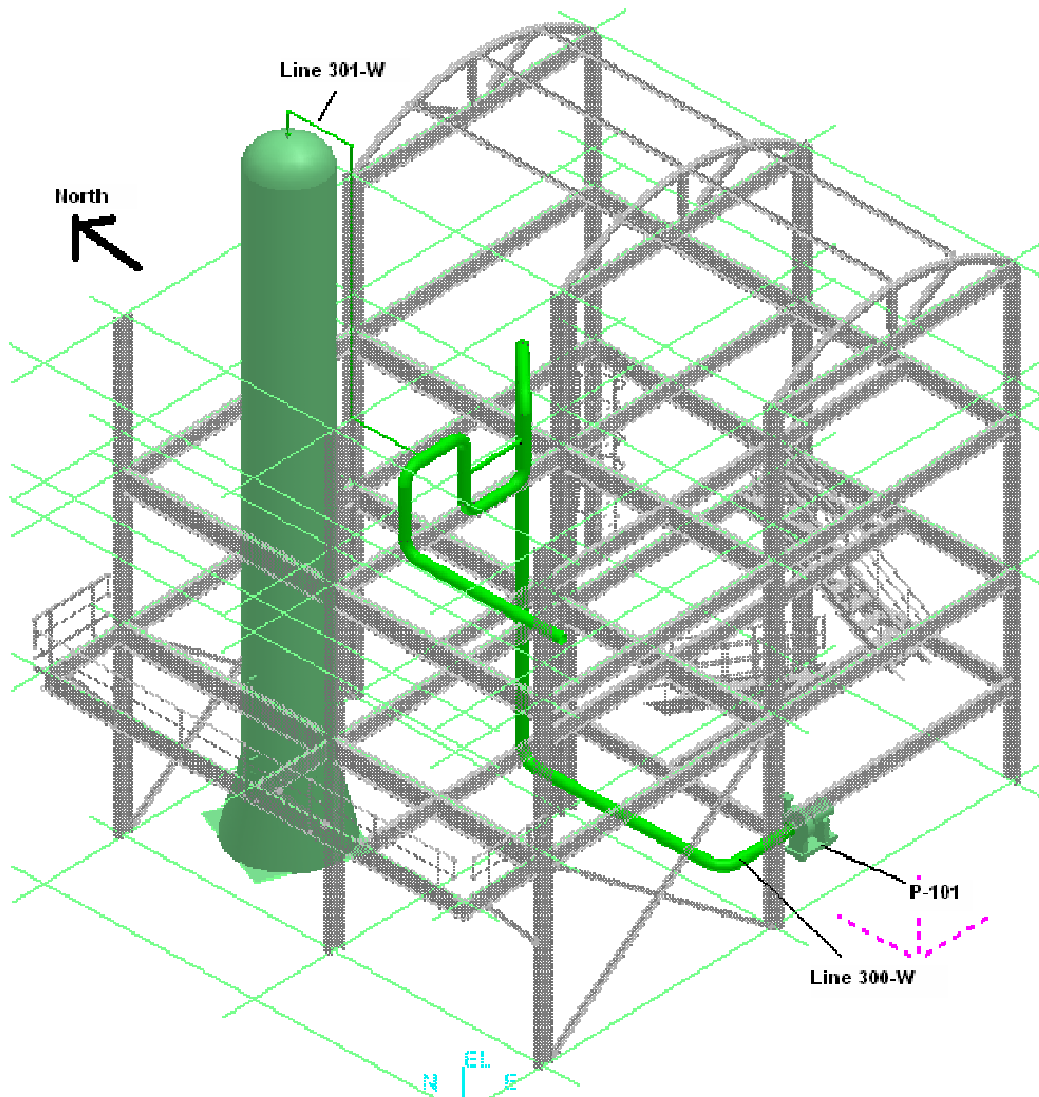
Insulation Specification: User Defined  
Insulation Purpose: Heat Conservation  
Insulation Material: Calcium Silicate (CS)  
Insulation Thickness: 3 inches  
Insulation Temperature: 200 F.

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



## Lab-12: Route Pipe Runs with SmartSketch & PinPoint Tools

Route two Pipelines **300-W** and **301-W** from the Pump **P-101/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**.

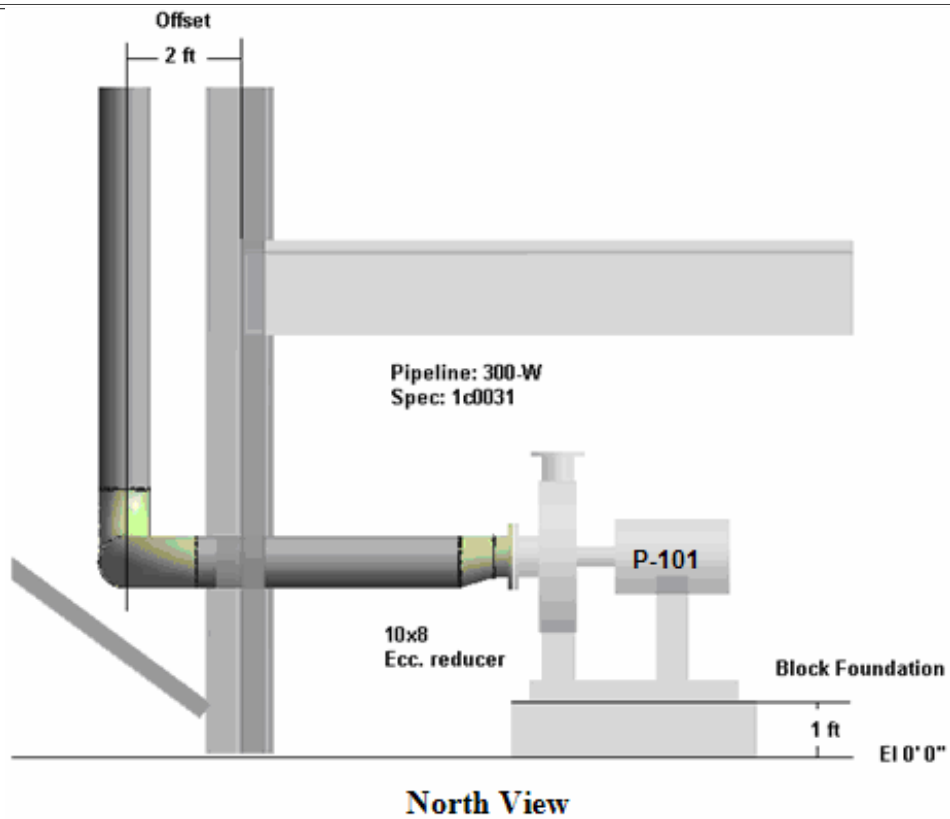
Start route from the suction nozzle using the following parameters:

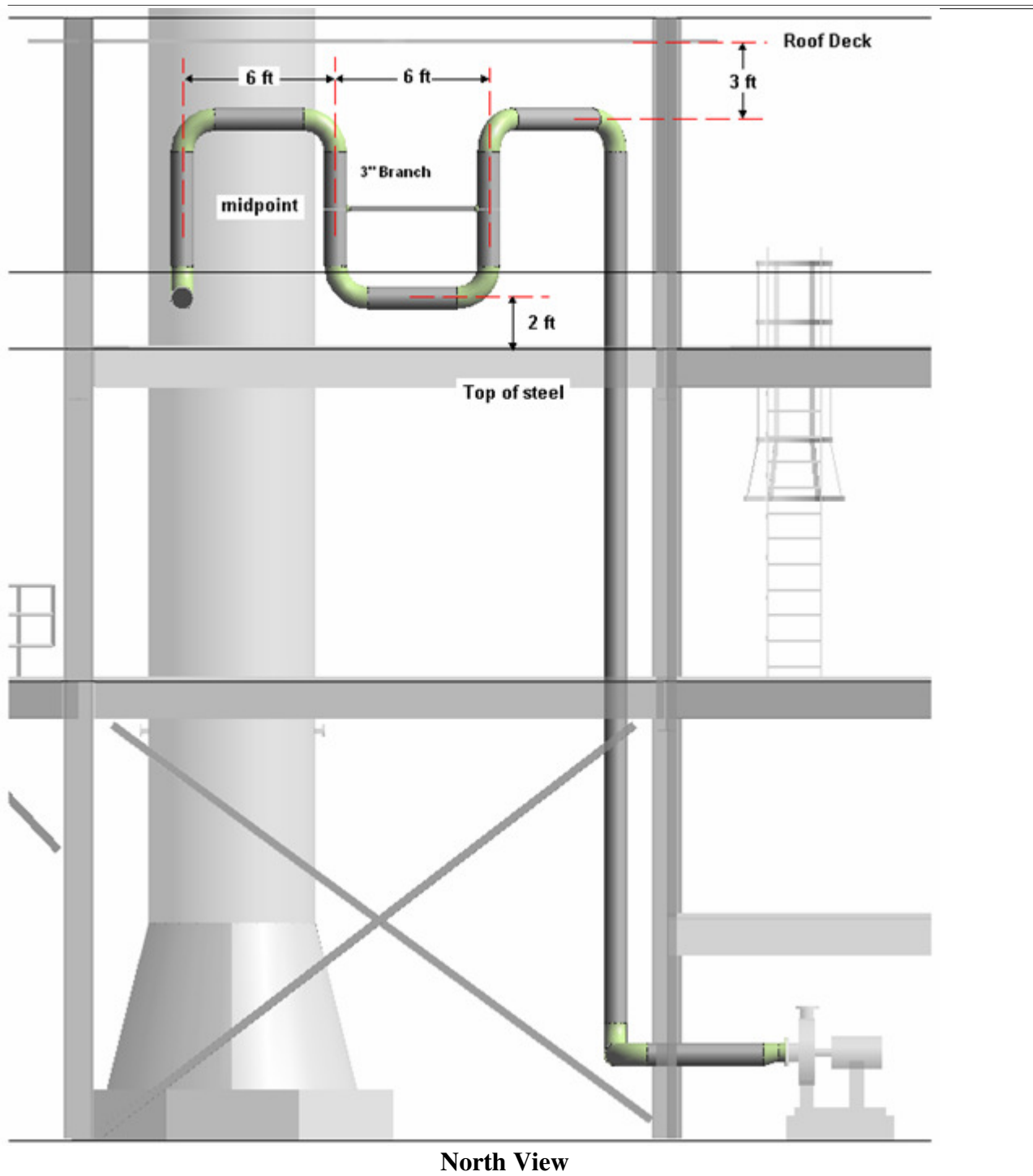
Spec 1C0031

Pipeline 300-W

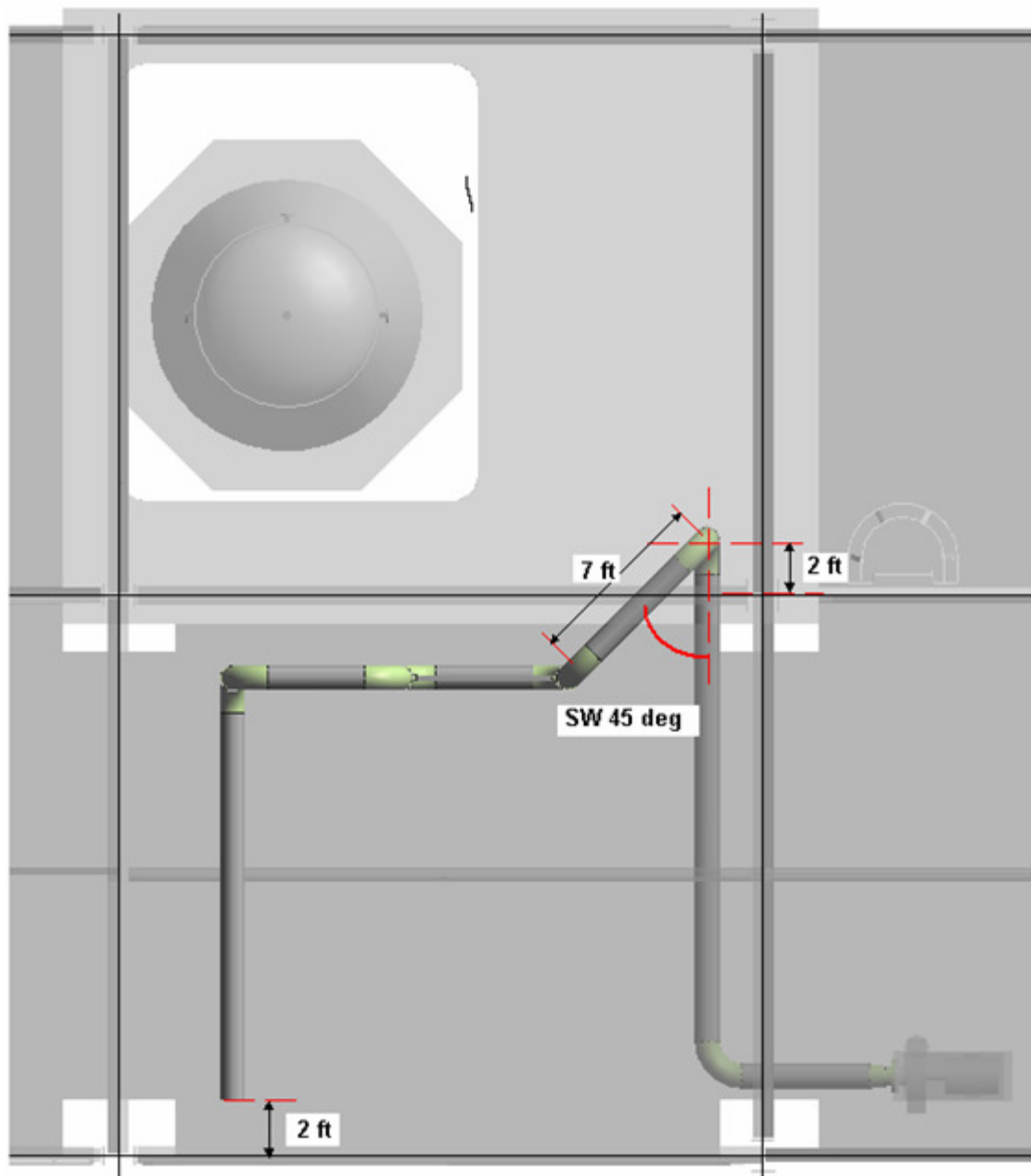
**Hint:** Start with Insert Component to place flange and eccentric reducer as seen below, then switch to Route Pipe to model the rest







**Hint:** Use Pinpoint Spherical Coordinates feature to route by distance (7ft) and direction (SW 45)

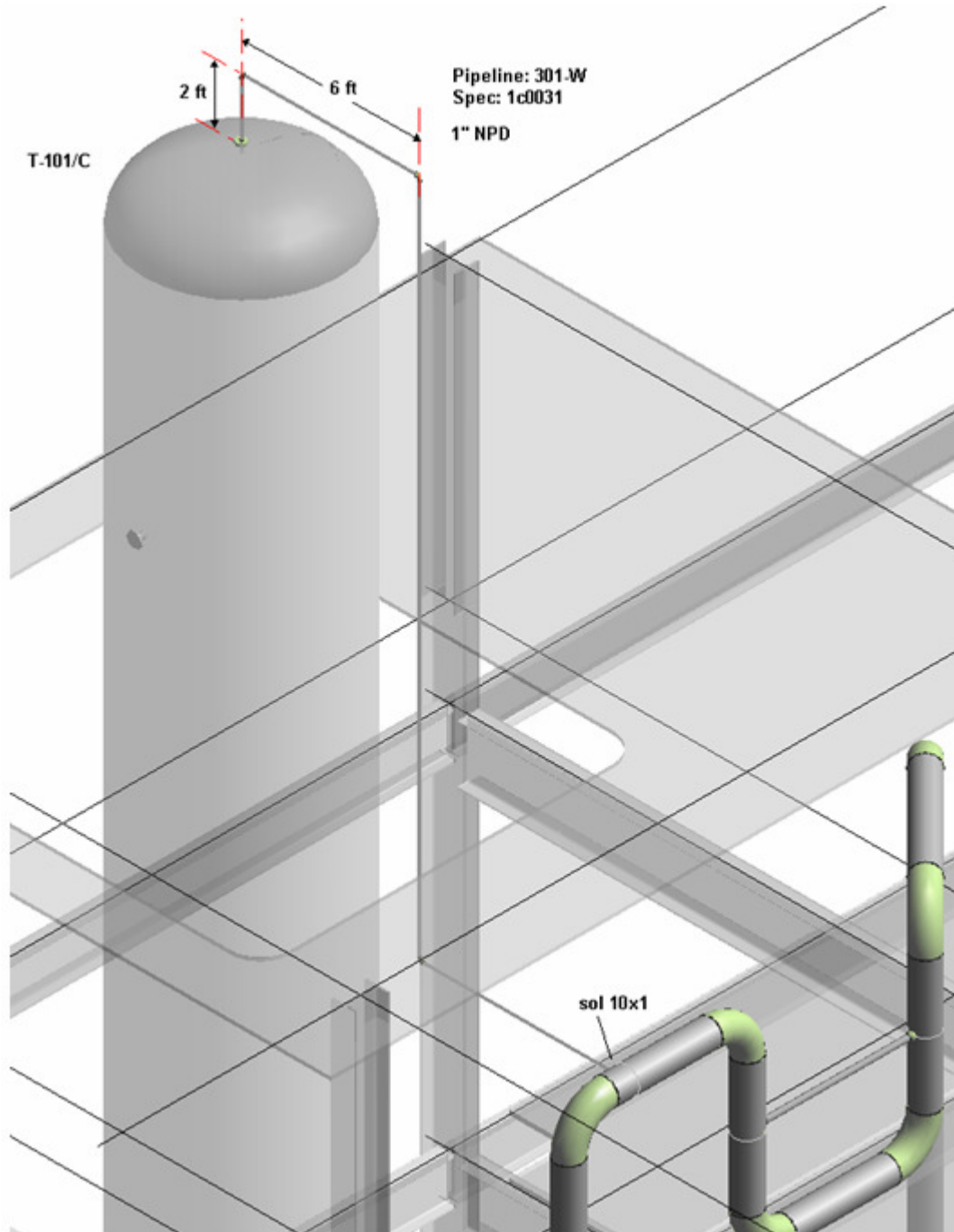


*Top View*

Start route from the Tower (**T-101/ Nozzle C**) using the following parameters:

Spec 1C0031

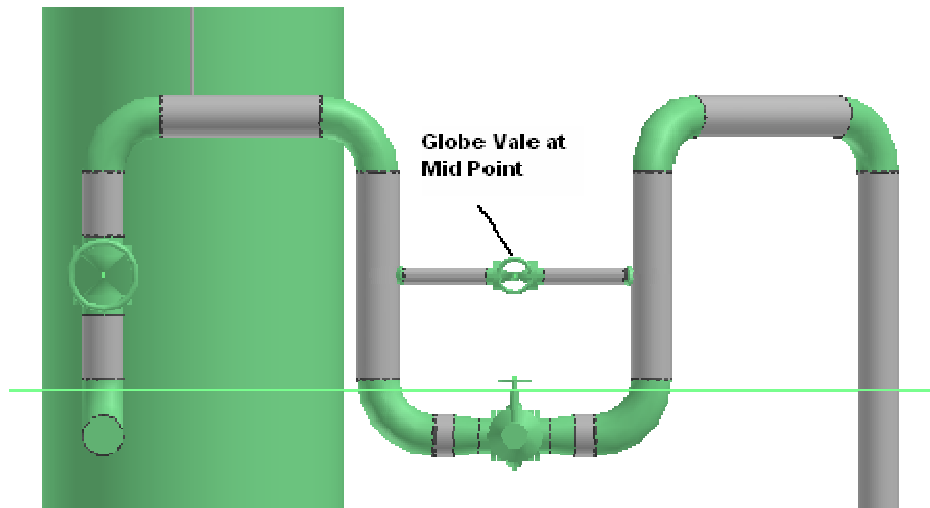
Pipeline 301-W



*Iso View*

## Lab-13: Placing Instrument and Engineering Items

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



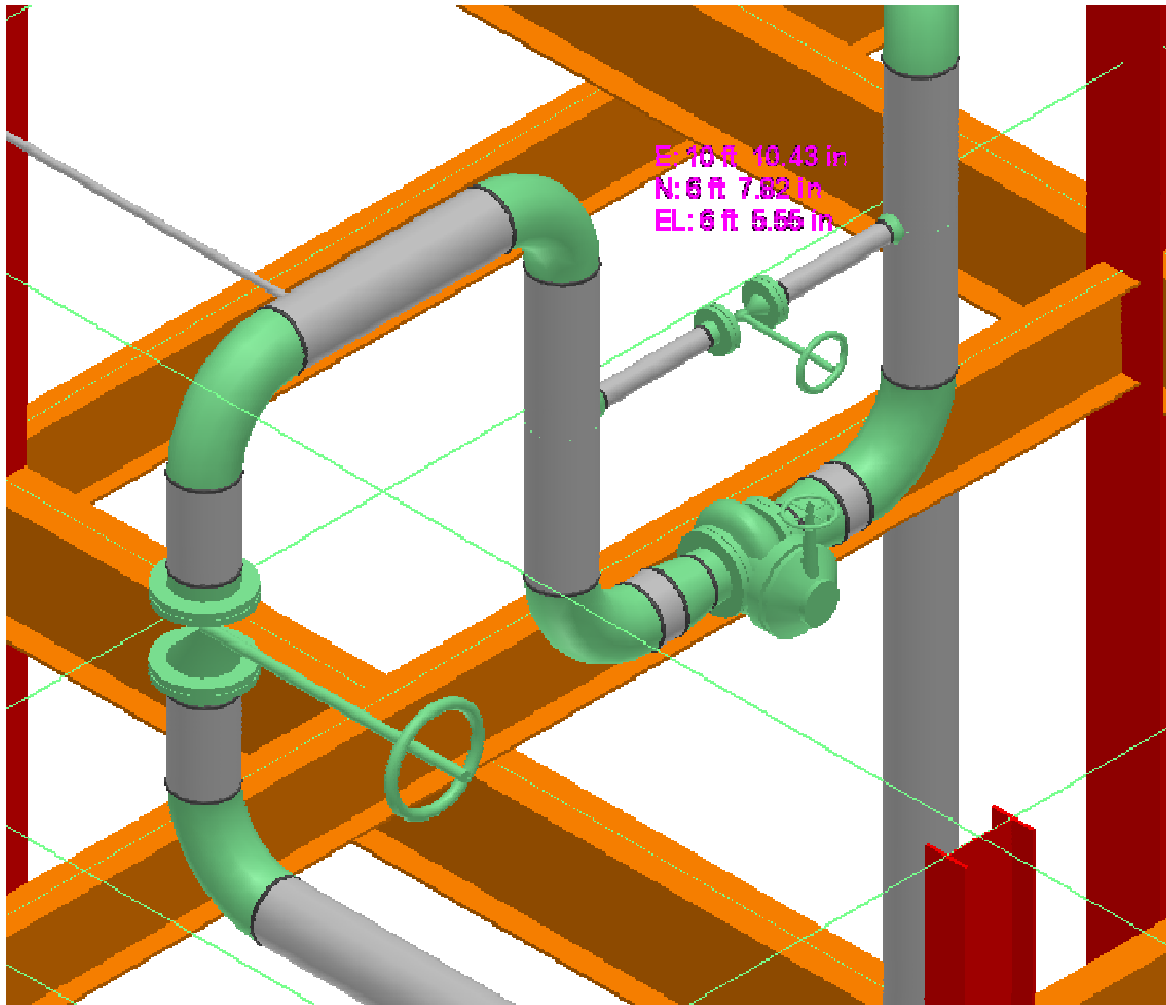
Instrument Details: Gate Valve Class 150 Gear Operated Mounted at variable angles

Part Class: CIGateVGearA4

Port 1 and Port 2 Details:

Property	Value
Port ID 1	
Nominal Diameter 1	8
NPD 1 Unit	in
Termination Class 1	Bolted
Termination Sub Class 1	Flanged
End Preparation 1	Raised-face flanged end
Schedule Practice 1	US Practice
Schedule Thickness 1	Standard Weight
End Practice 1	US Practice
End Standard 1	Default
Rating Practice 1	US Practice
Pressure Rating 1	CL150
Flow Direction 1	Flow may enter or leave this port
Piping Point Basis 1	<undefined value>

Note: The 8in nominal diameter will cause SmartPlant to automatically generate the concentric reducers. The Flanged termination types will cause SmartPlant to automatically generate the flanges at both ends. The valve, flanges and reducers become parts of one feature.



## Lab-14: Sloped Pipe Runs – Degree Slope

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.

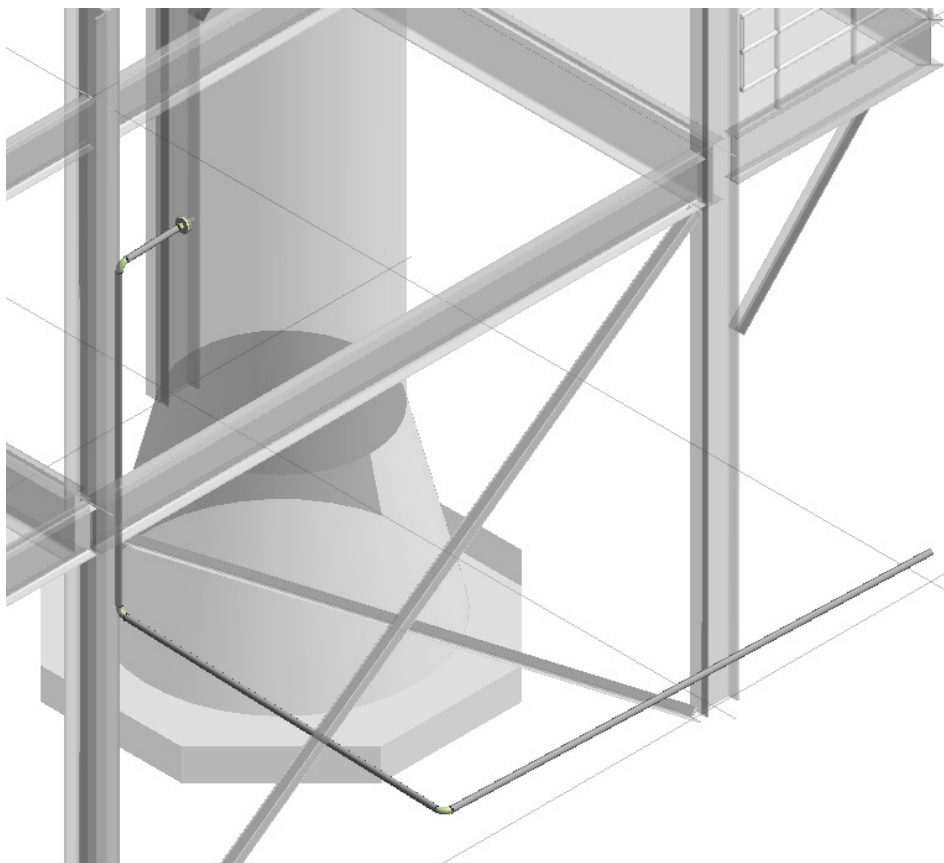
Start route from the Tower T-101/nozzle D1 using the following parameters:

Spec 1C0031

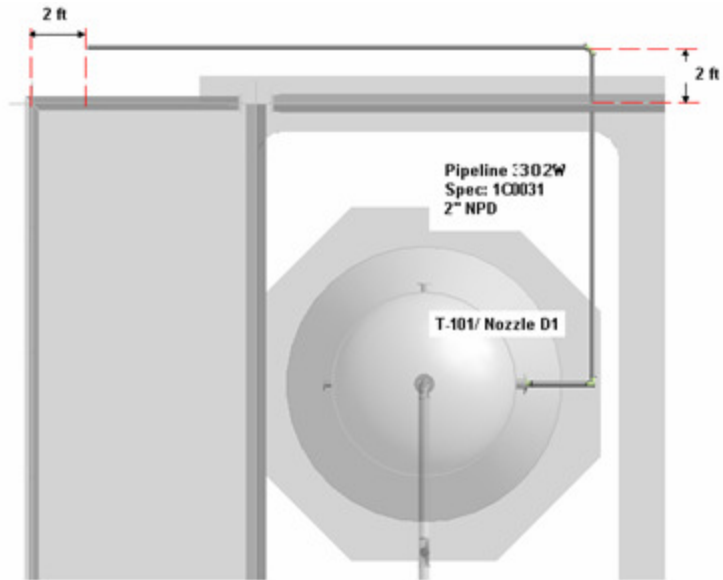
Pipeline 302-W

Slope enabled

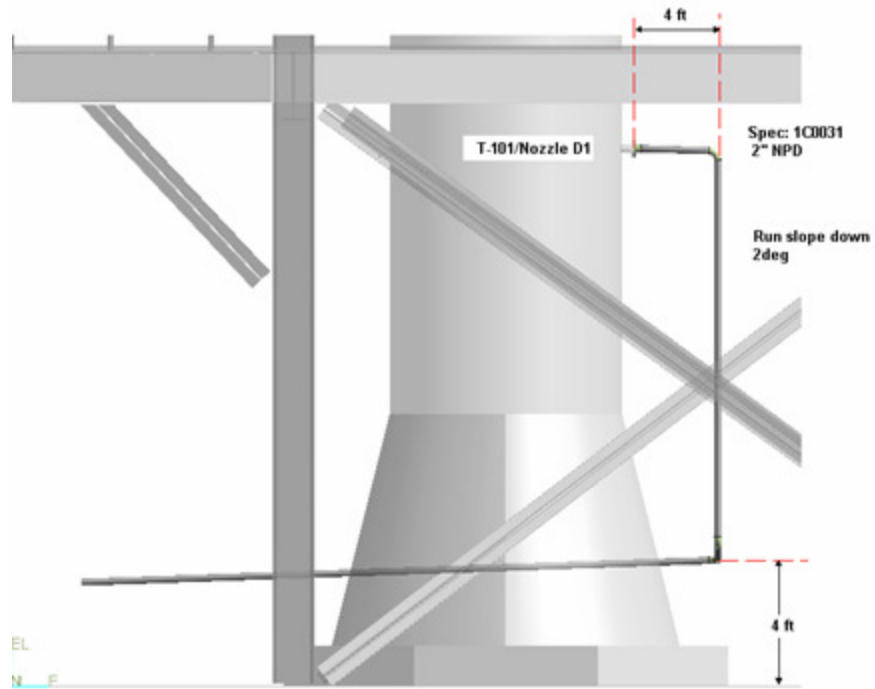
Run slope down 2 deg



**Iso View**



***Plan View***



**Hint:** Remember to turn off the active slope when routing a vertical leg

***Elevation View***



## Lab-15: Sloped Pipe Runs – Fraction Slope

Route Pipeline **2001-P** (U02) 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: 1/16" per 1'

Run slope down

**Specify Slope Direction**

Are you routing from high point or low point of the sloped Pipe run? Also, the box at bottom should be checked if the run will contain portions that slope up and others that slope down.

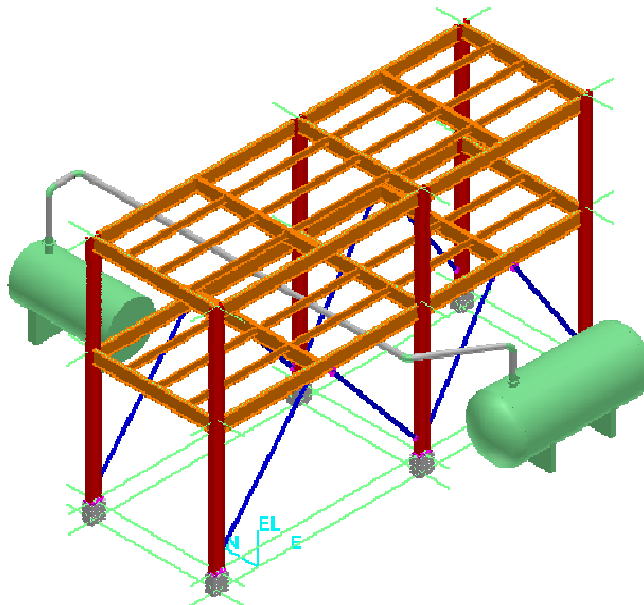
☒ High point (run slopes down)

☐ Low point (run slopes up)

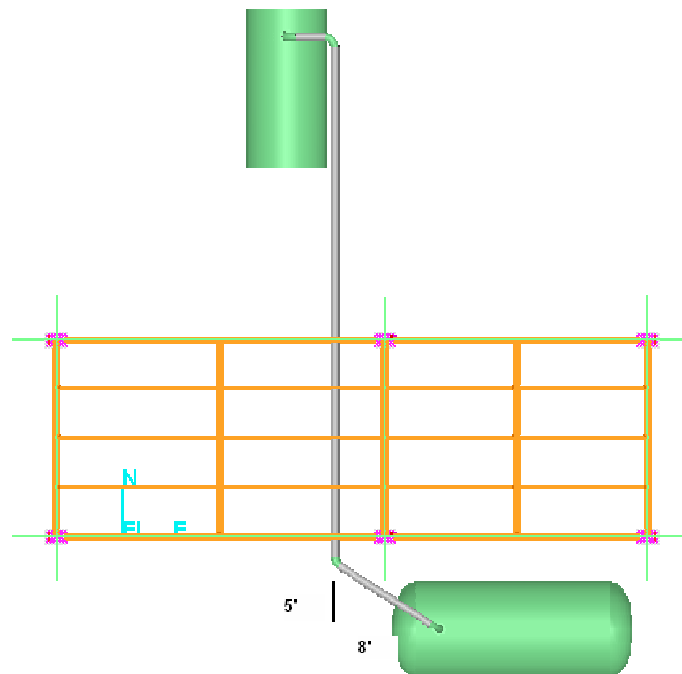
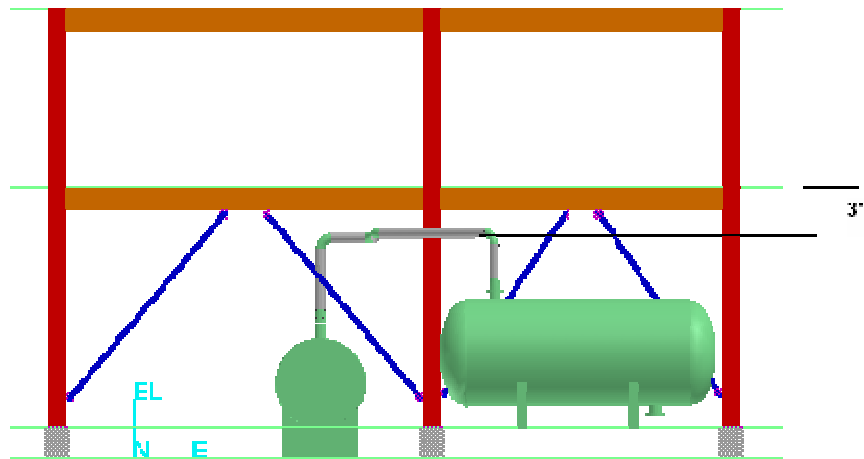
☐ Run contains multiple slope orientation

OK

Cancel



⋮



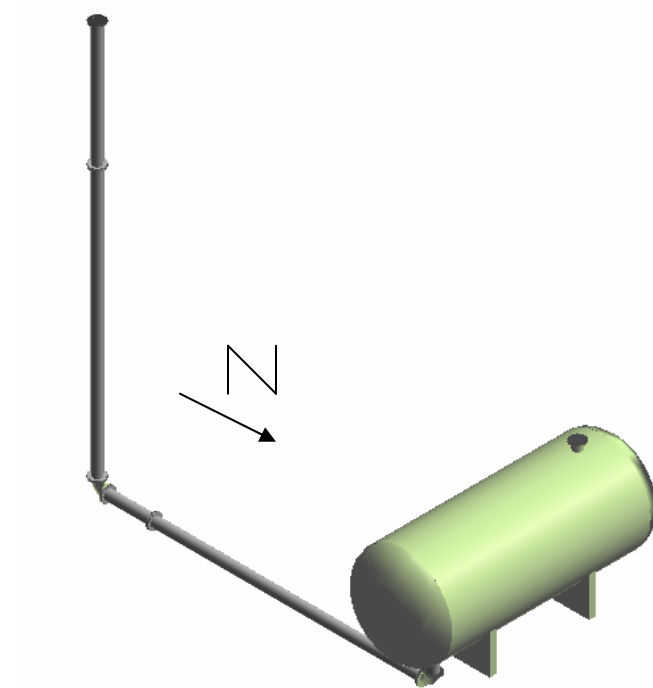
---

## Lab-16: Routing Flanged Pipes (Optional)

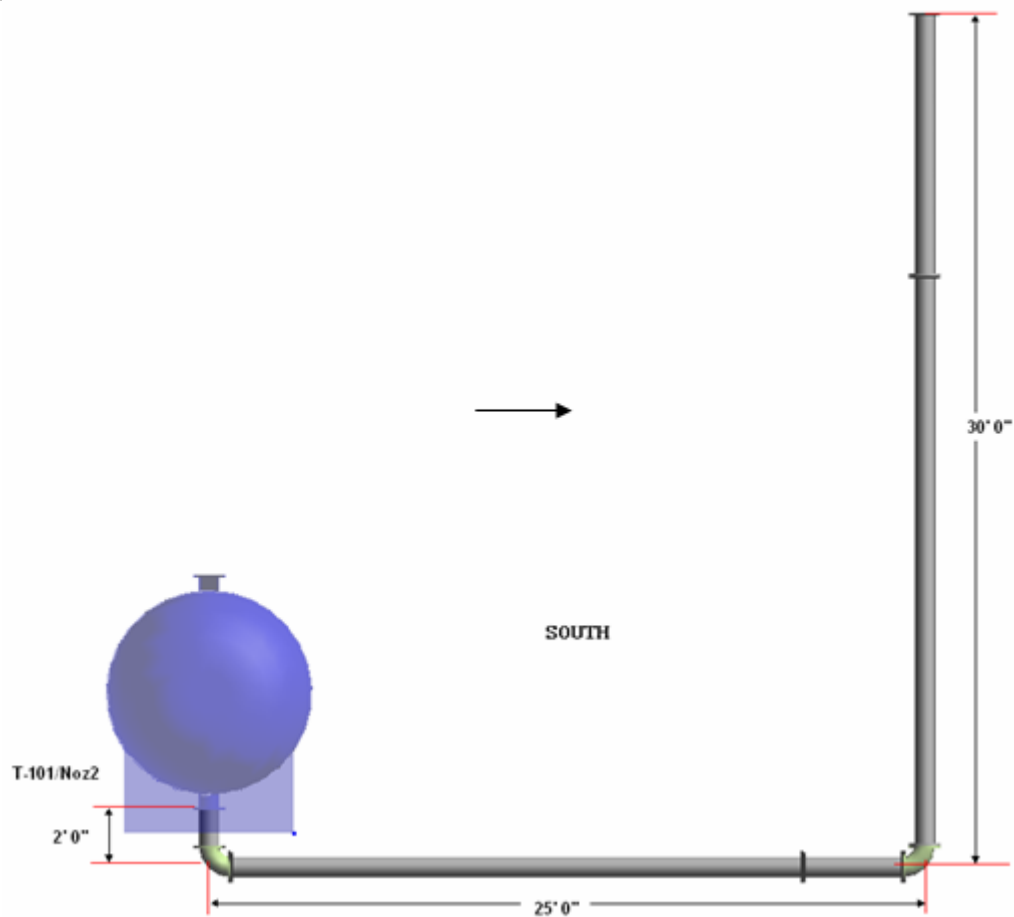
Route pipeline U02, 2002-P from the equipment/nozzle TA-101/StNoz2 to its completion using PinPoint, Working Plane Control, Angle Control and the Length Control tools learned in this section. Refer to the sketch below for detailed information. Notice the system uses the preferred pipe length defined 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

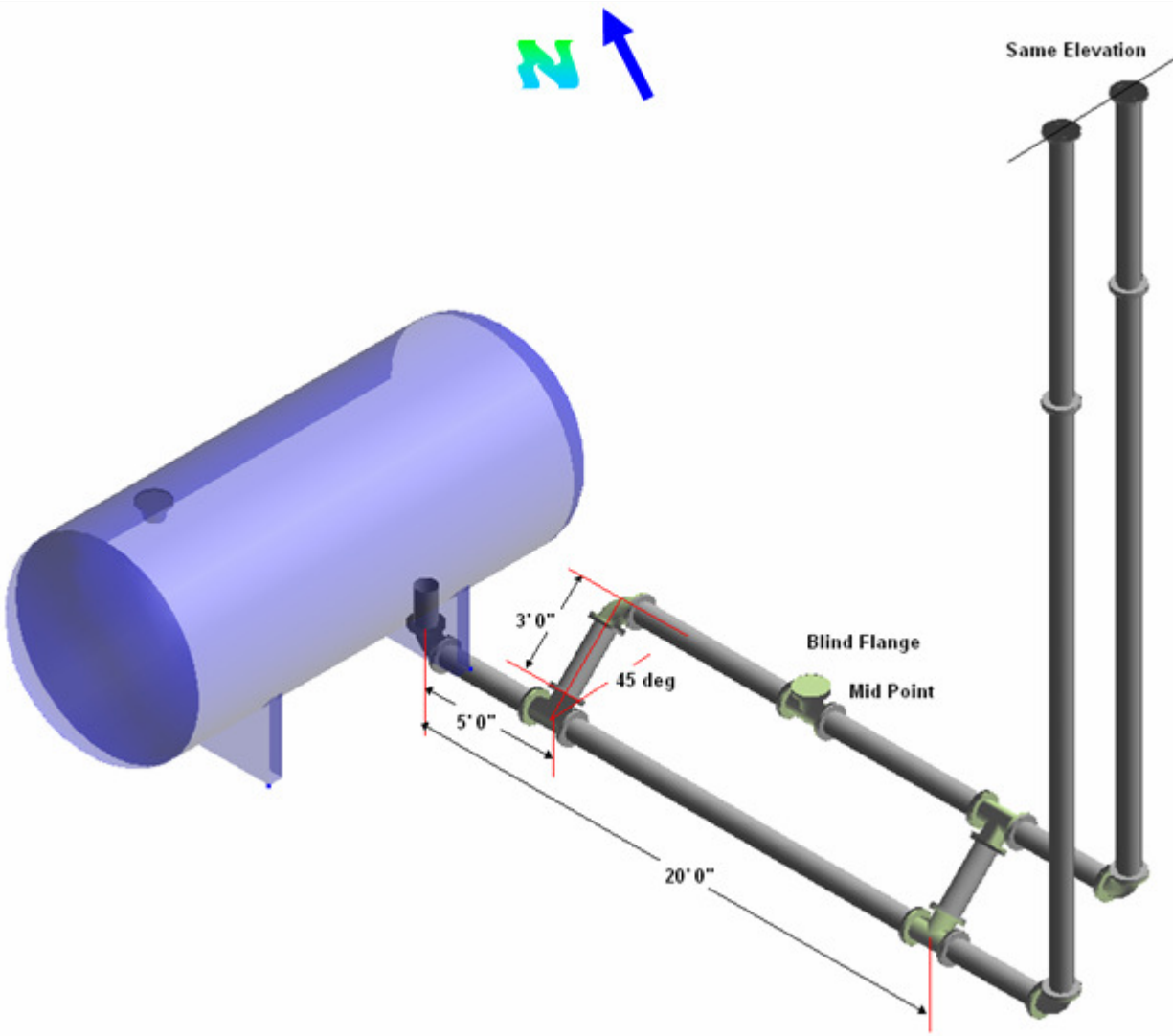


Isometric View of the pipeline 2002-P



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

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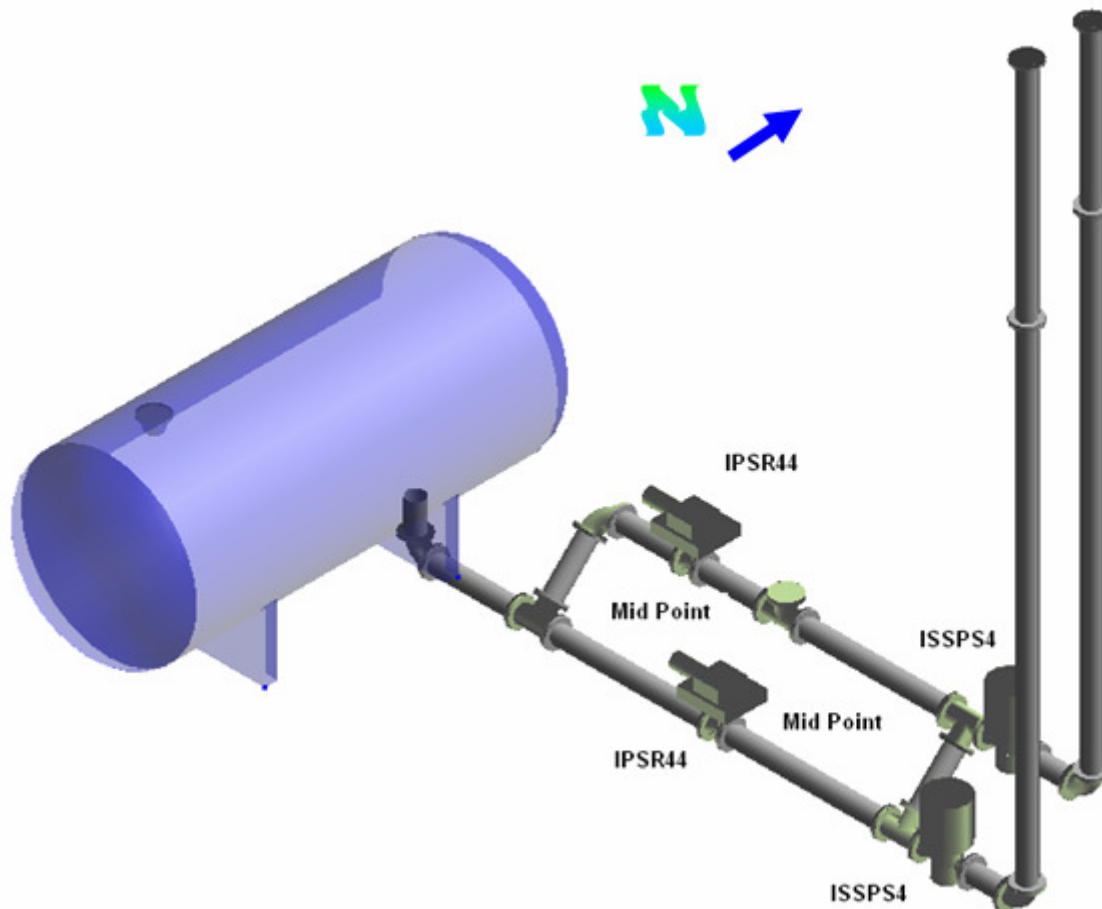
## Lab-17: Placing Instruments on the fly (Optional)

---

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-18: Placing Taps

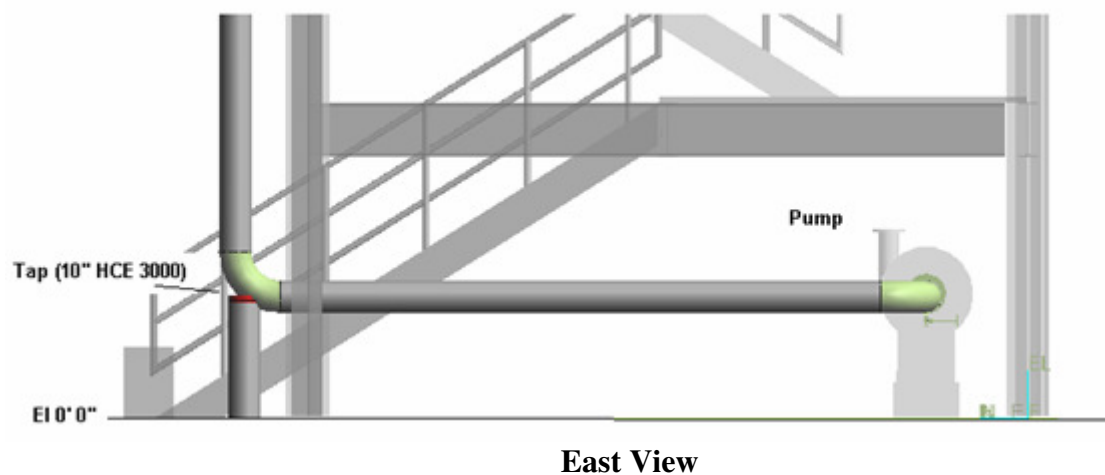
After completing this lab, you will be able to:

- Use the Place Tap Command.


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

Option:	Distance:	Reference position:	Angle:
 10in HCE 3000	1 ft 0.00 in	10in BE S-STD	0.00 deg
Finish			

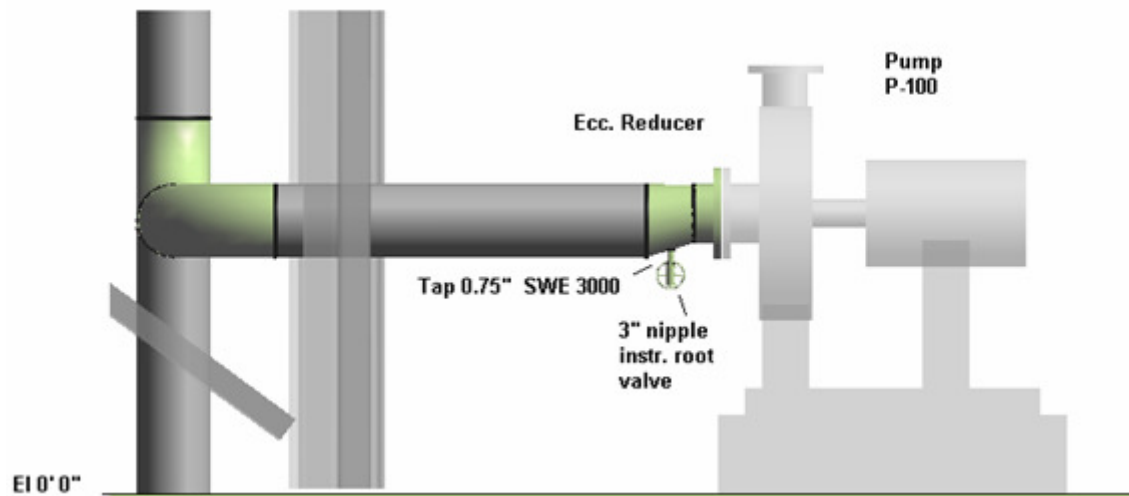
Select the tap port to route a pipe in order to support the pipe run.



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

Option:	Distance:	Reference position:	Angle:
0.75in SWE 3000 (Default)	0 ft 3.54 in	10in BE S-STD	 0.00 deg

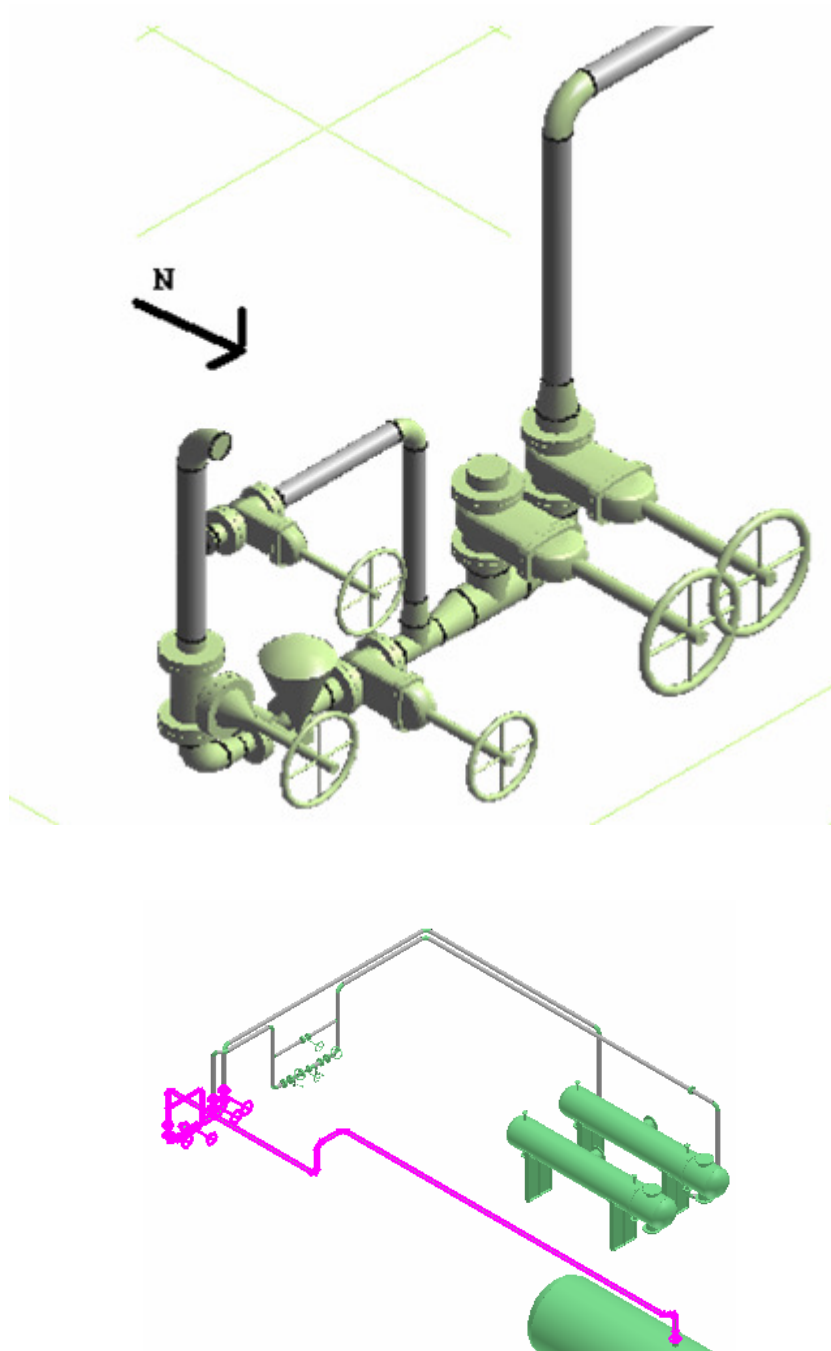
Select the tap port to insert a nipple and then an instrument root valve.

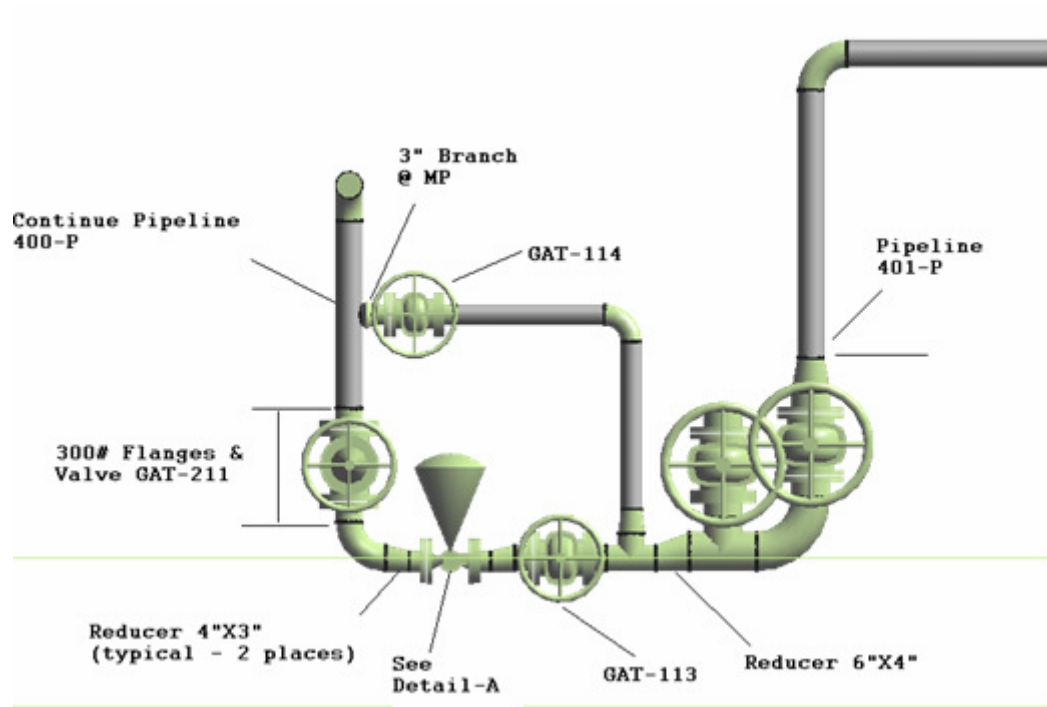


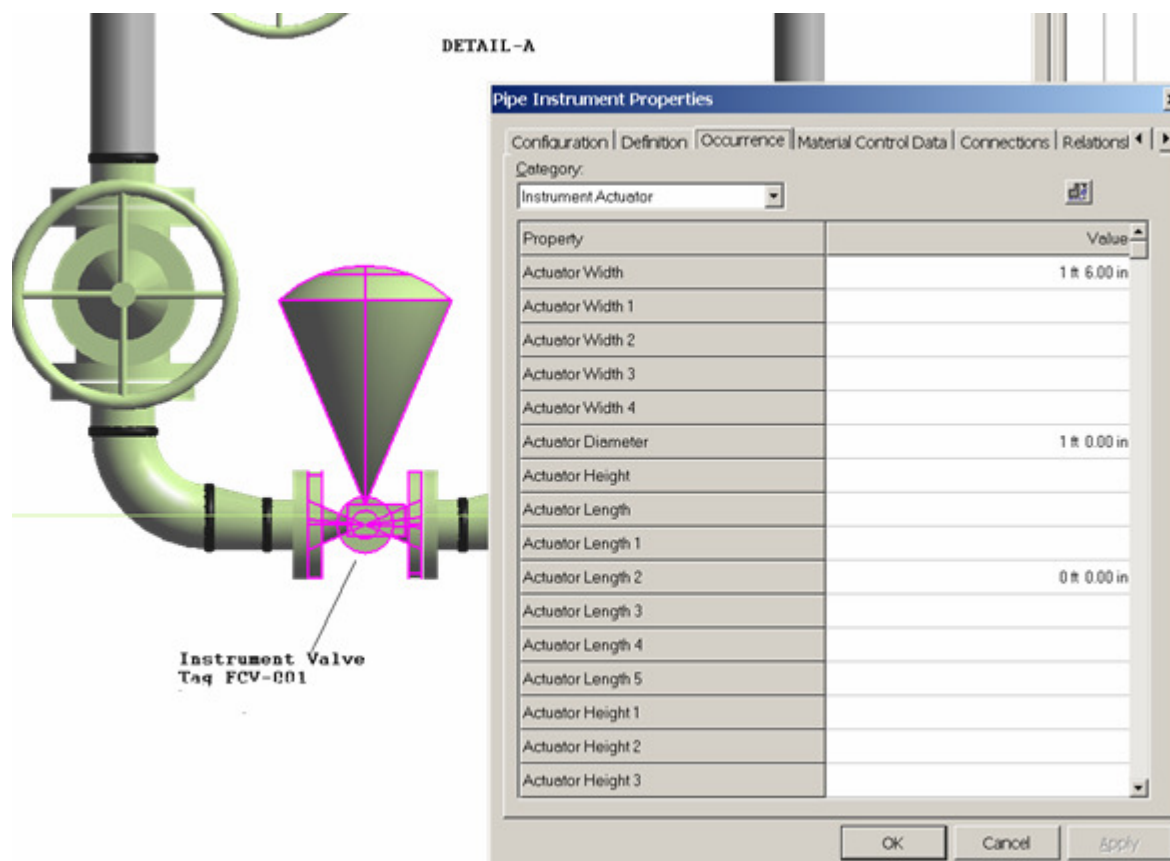


## Lab-19: Advanced Routing

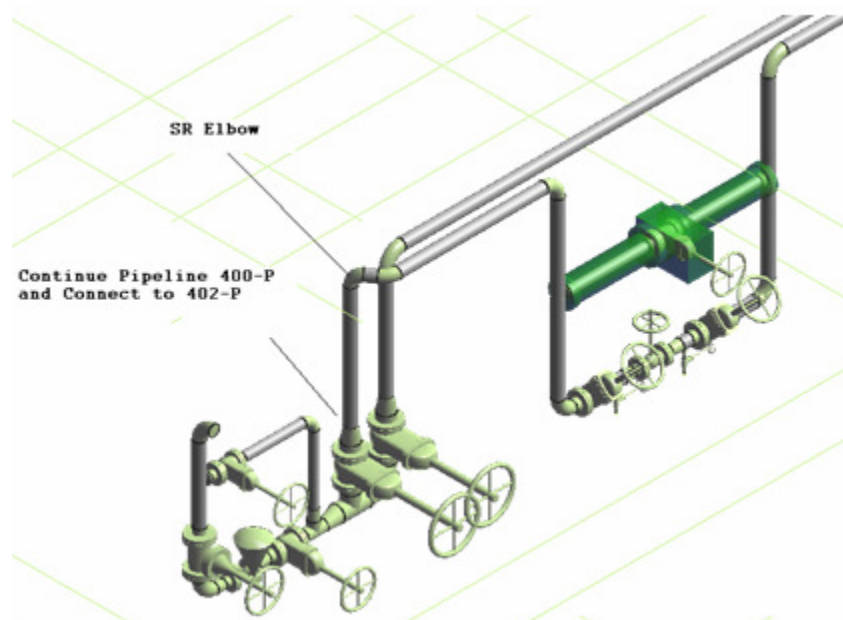
Continue Pipeline **400-P** as shown and connect it to Pipeline **401-P**







**Instrument Valve:** Valve with Rotary Diaphragm Actuator Position A 1

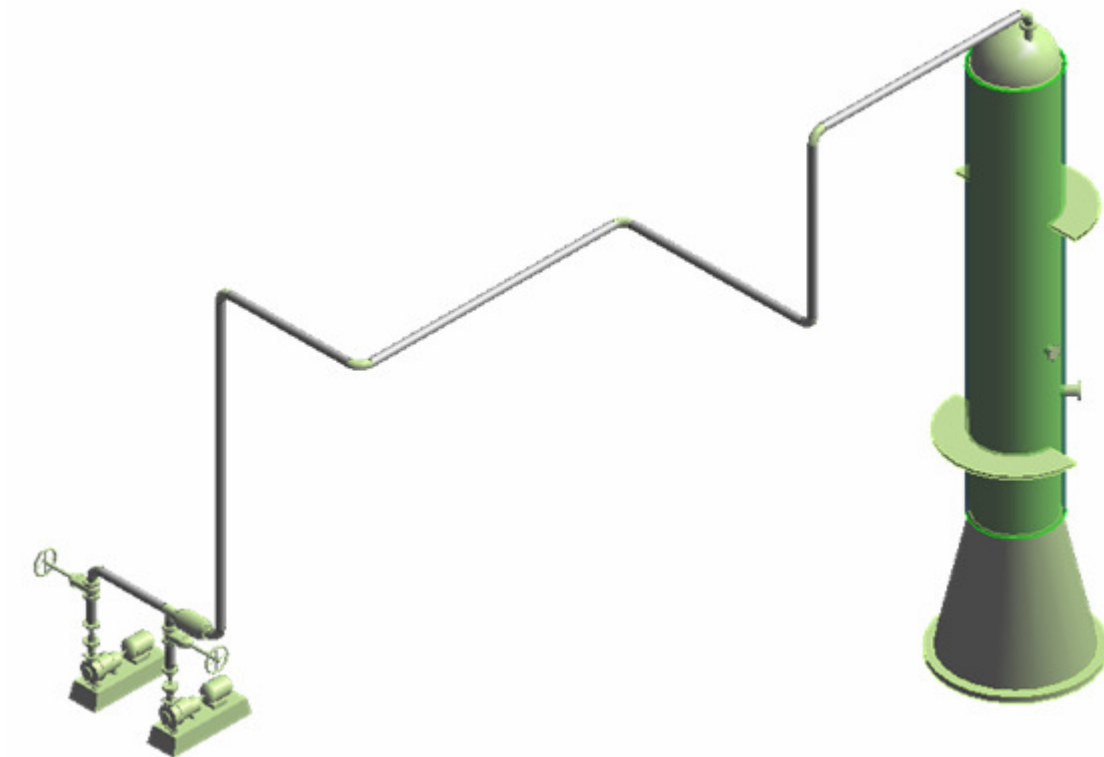


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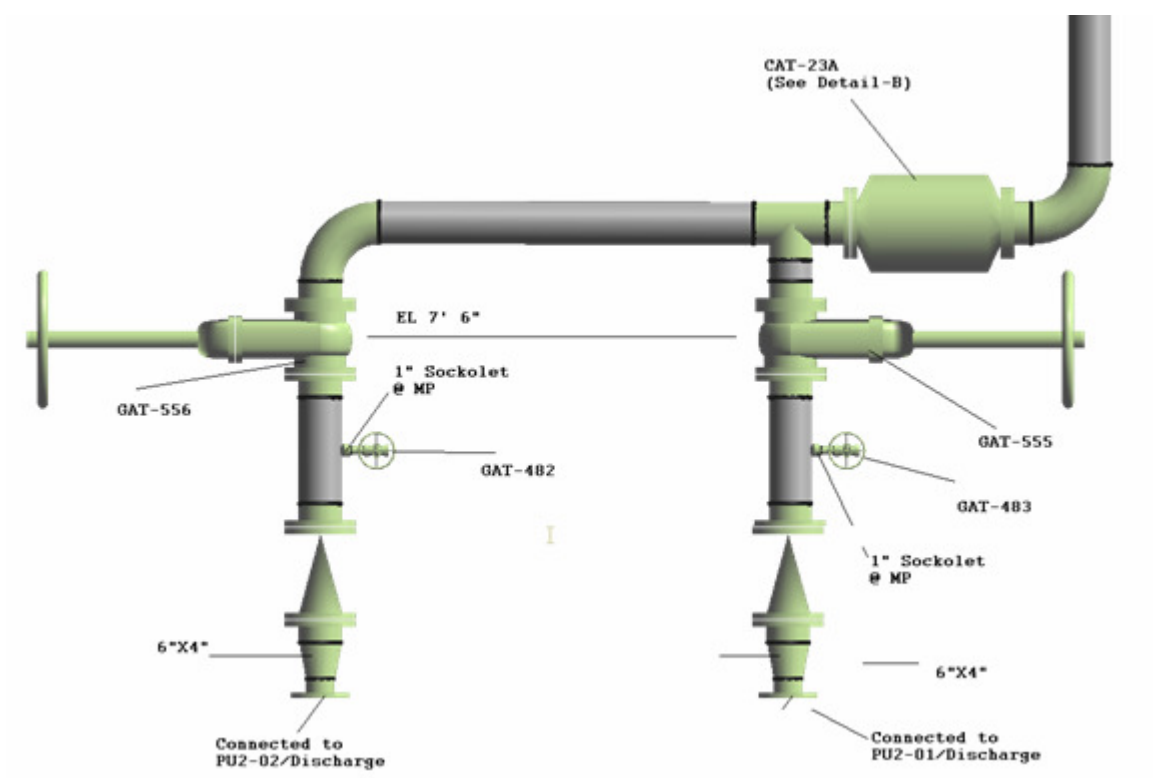
## Lab-20: Routing with Specialty Components and Pipe Splits

---

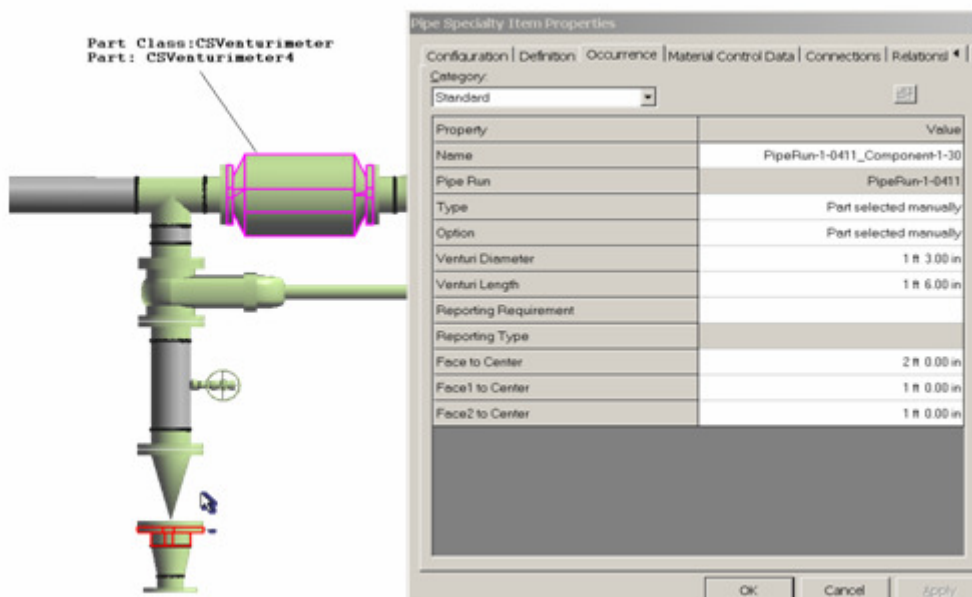
Route Pipeline **2003-P** (U02), from **PU2-02**, Line **2004-P** From **PU2-01** to **VS-102**

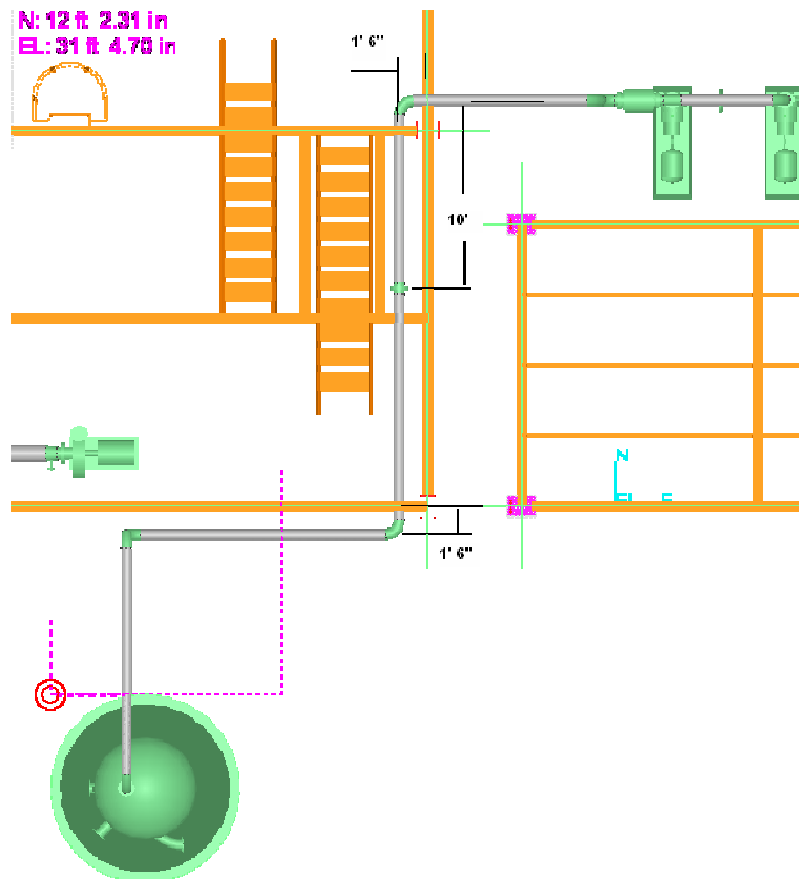
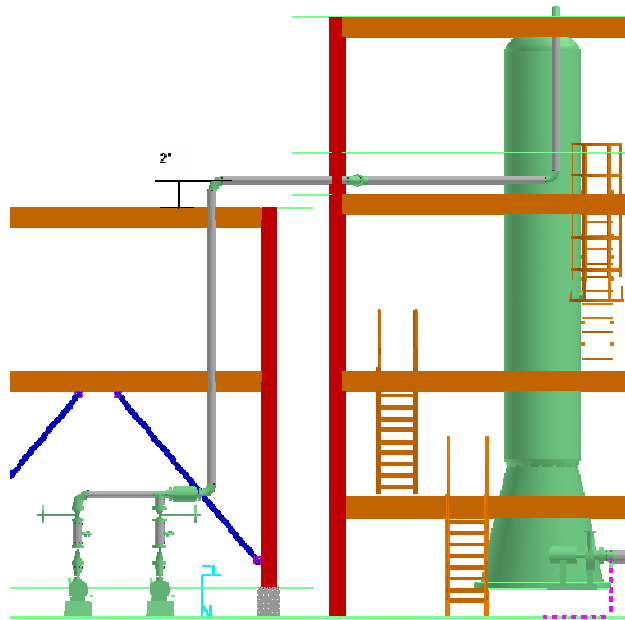


Spec: 1C0031  
NPD: 6"



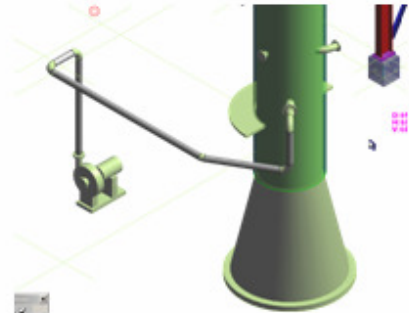
Piping Specialty Details: Detail – B



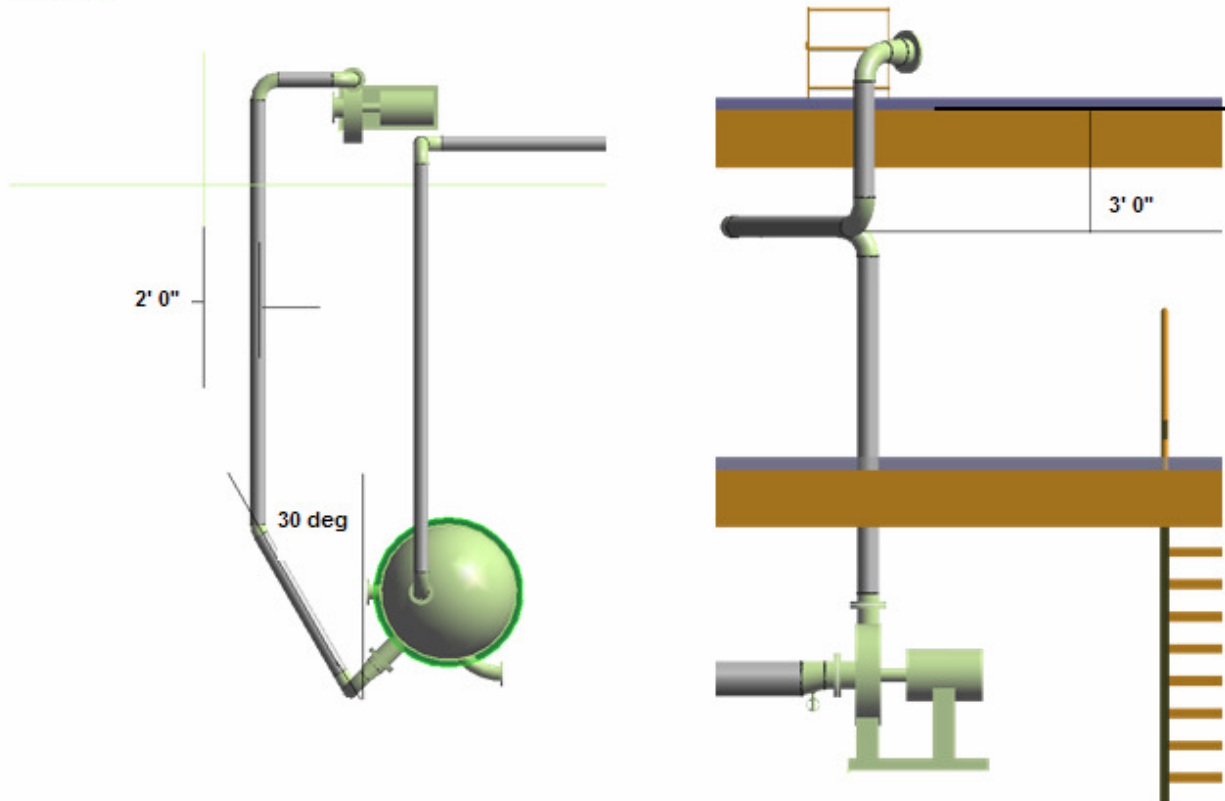


## Lab-21: Routing Using Spherical Coordinates

Route Pipeline 303-W (Building-1), from P101 to VS-102



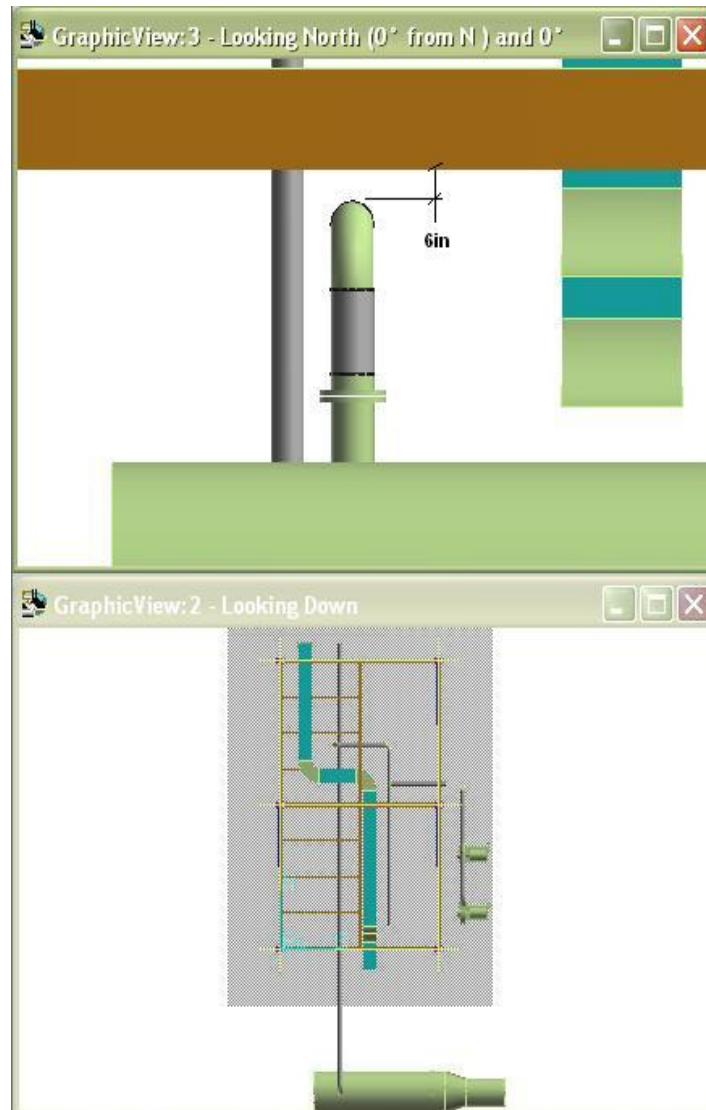
Spec 1C0031  
NPD: 6"



**Hints:** To find the location of the 45deg elbow, it helps to model part of the line from the pump up to roughly halfway the length of the pipe to be connected to the 45deg elbow. Then stop and start routing a line with the same piperun number from the vertical vessel out. Use the SmartSketch construction lines and spherical coordinates command to find the intersection for the two runs. The 45deg elbow will be automatic at the vertex where the two lines meet.

## Lab-22: Routing Using Cardinal Points

Define a new pipeline system **2005-P** in **A2, U01** 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.



### Hints:

In Workspace Explorer right click on “A2>U01>Process” to create new pipeline 2005-P.

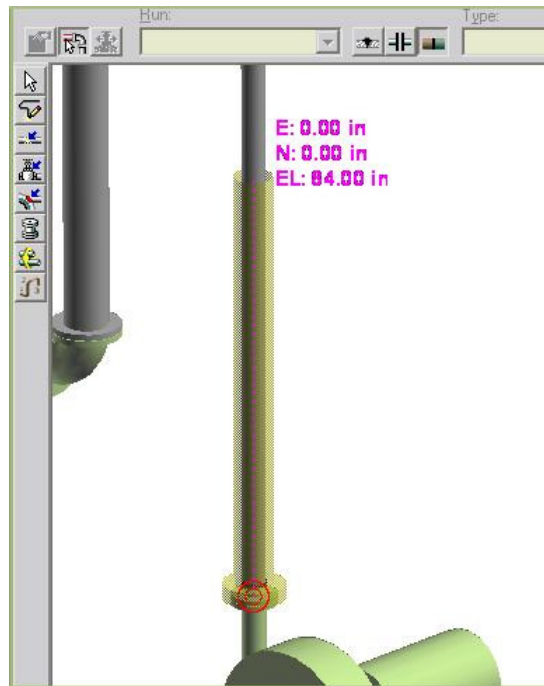
Be sure to set SmartSketch “Edges on solids” option (Tools>Options) to on.

Use Set Offset command 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:** You may need to select the BOP or other cardinal point (trial-error) on the form to be able to route by TOP in the desired direction.



## Lab-23: Attribute Break

Locate or route a 10ft+ 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.



### 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.

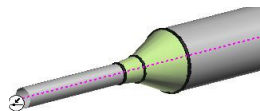
Use user defined insulation in the properties page to set Personnel Protection insulation.

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, as learned in common apps class.

### NPD Change

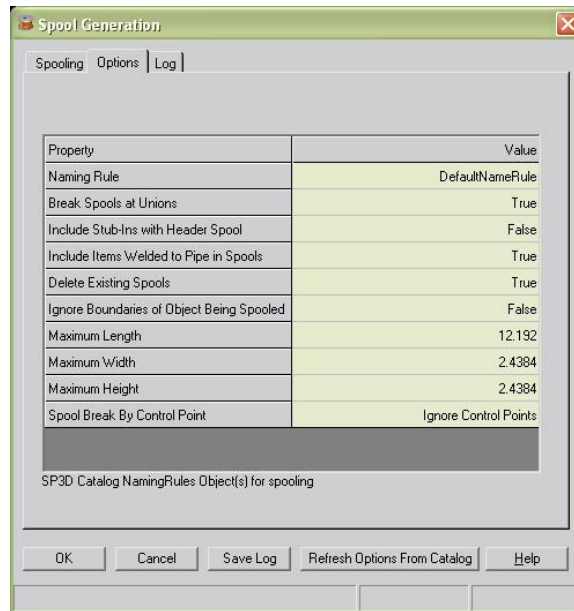
Locate the free end of pipeline 300-W. Use Route Pipe and <New Pipe Run> to change NPD to 8" and extend the line 4ft.

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 as defined per spec to accomplish the desired attribute change.



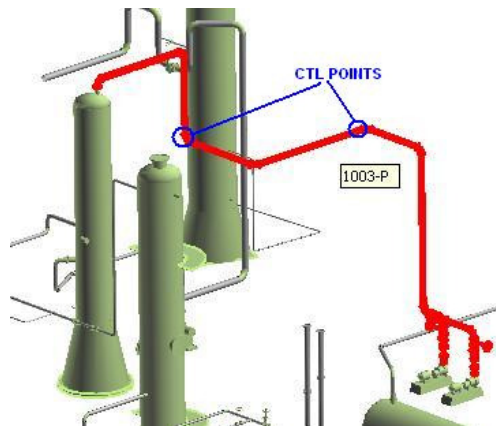
## Lab-24: Spools

Start the Spool Generation command and locate pipeline **1003-P** (A2, U02).  
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.



### 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 (look like spheres inside weld joints) at break points.

---

## Lab-25: 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:

Grouping/Sequencing Object Type		Target Object Type	Name Rule	Sequencing Type	Revision Control
Pipeline	<input type="button" value="X"/>	Pipe Weld	DefaultNameRule	Flow Direction	Generate new numbers

Review the same welds' ID numbers. A new sequential value should appear

## Lab-26: Routing Using P&ID

Route Pipeline using P&ID for line and component data

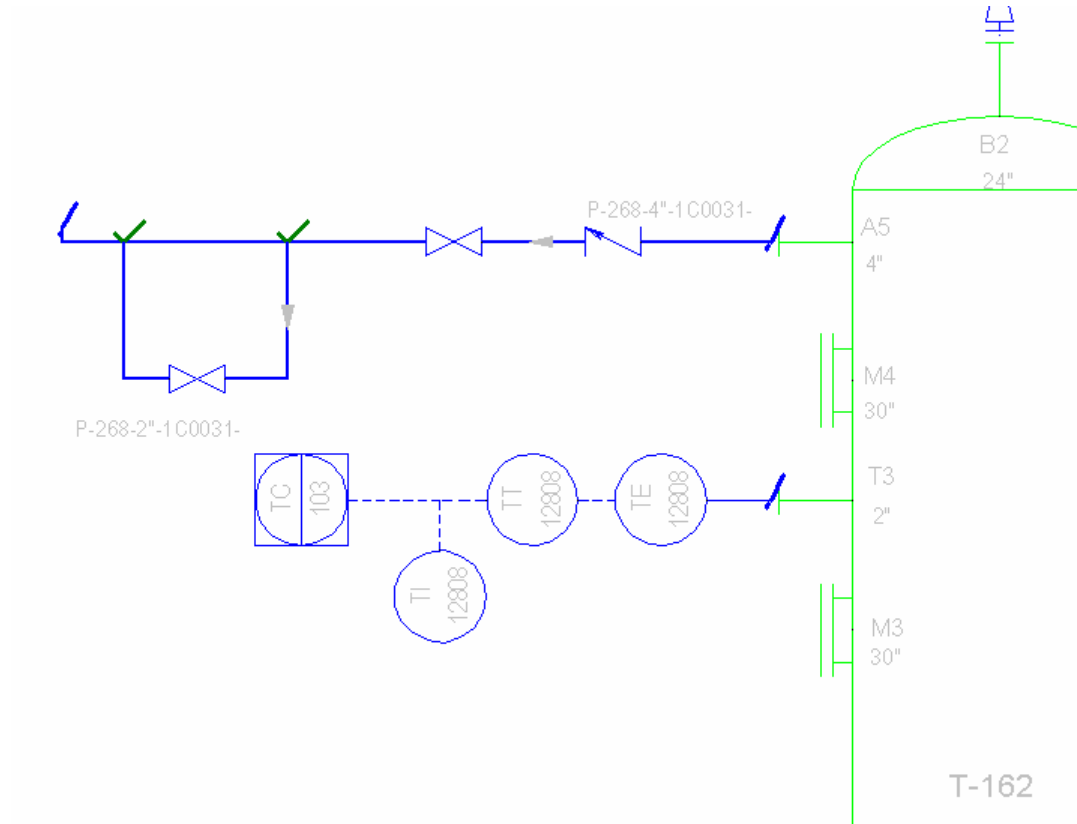
Define Appropriate filter for your workspace

Go to Smartplant > View P&ID

Select INT01 from the PID list, Select open button

PID Viewer opens up in a Window

Window to Nozzle A5



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.

**New Pipe Run**

General

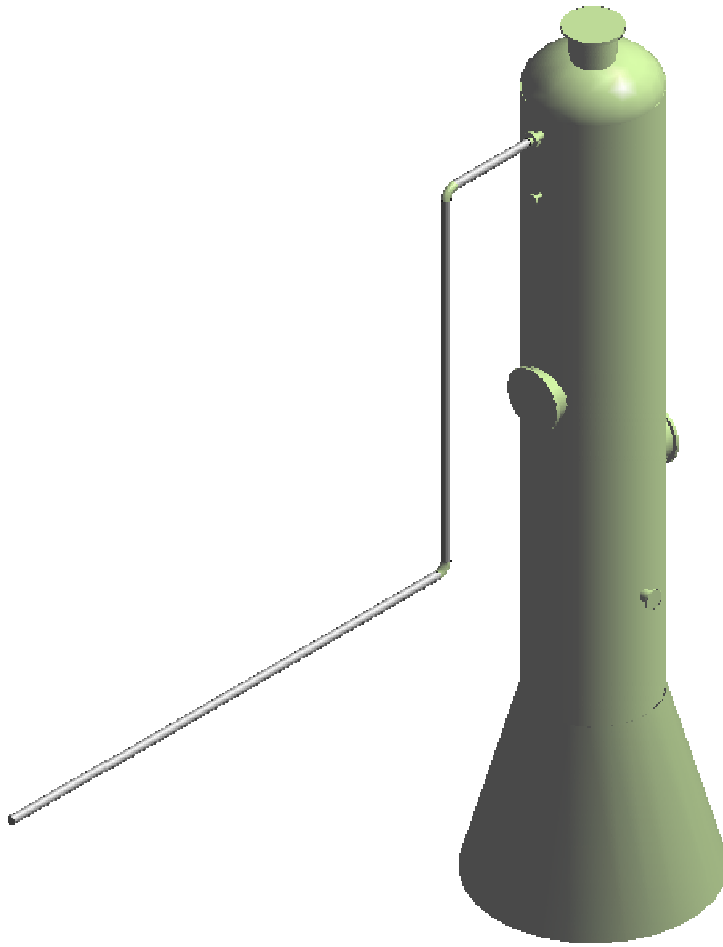
Category:  
Standard

Property	Value
Pipeline	P-268
Name	P-268-4"-1C0031-
Name Rule	User Defined
Specification	1C0031
Nominal Diameter	4 in
Flow Direction	DOWNSTREAM
Minimum Slope	Not Sloped
ScheduleOverride	<undefined value>
Correlation Status	Correlation with inconsistent data
Correlation Basis	Correlate object

Ok on the form

Route West 5', Route to Elevation 21', Route West 25'

Your Pipe Run should resemble this (only Tank and Pipe Run Shown – Rest of the objects are Hidden)



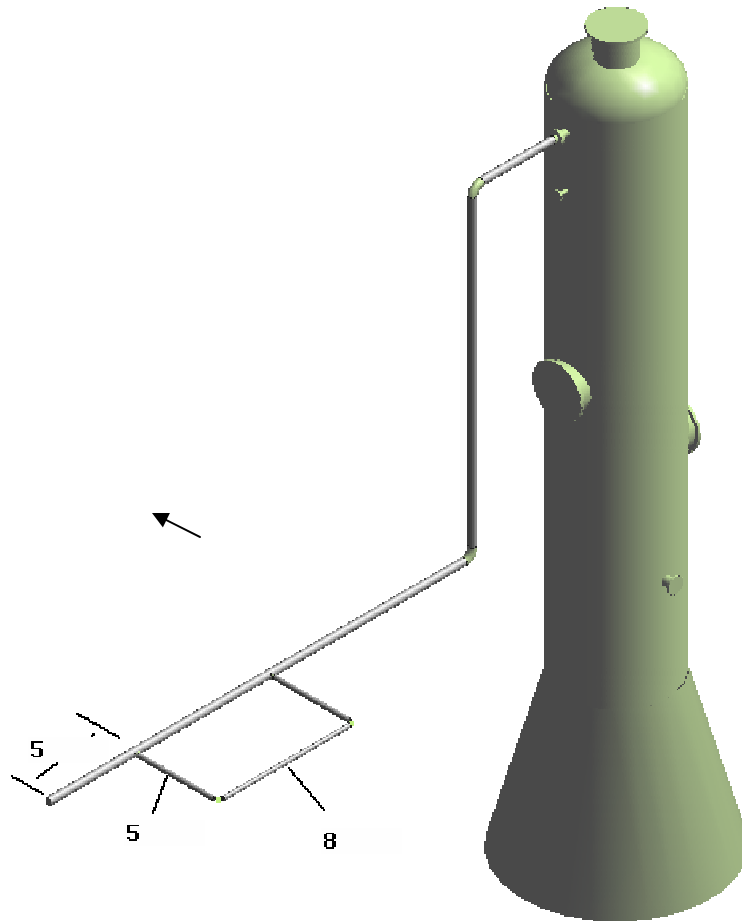
Select Route Pipe command. Define Starting point at 13' East of free end of the Pipe Run placed above.

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.



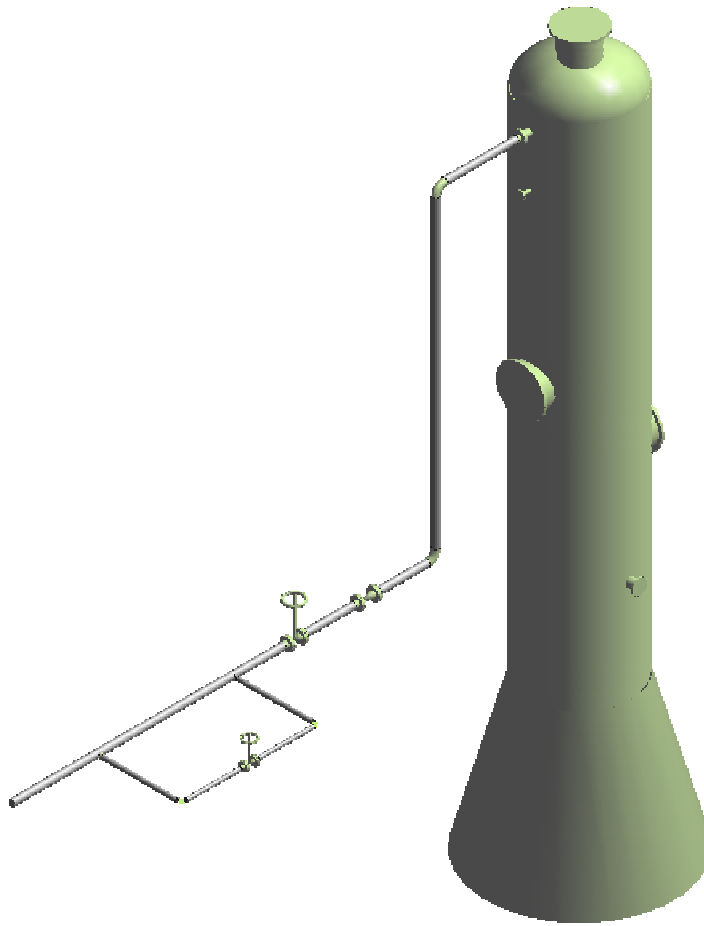
Select Insert Component Command

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.

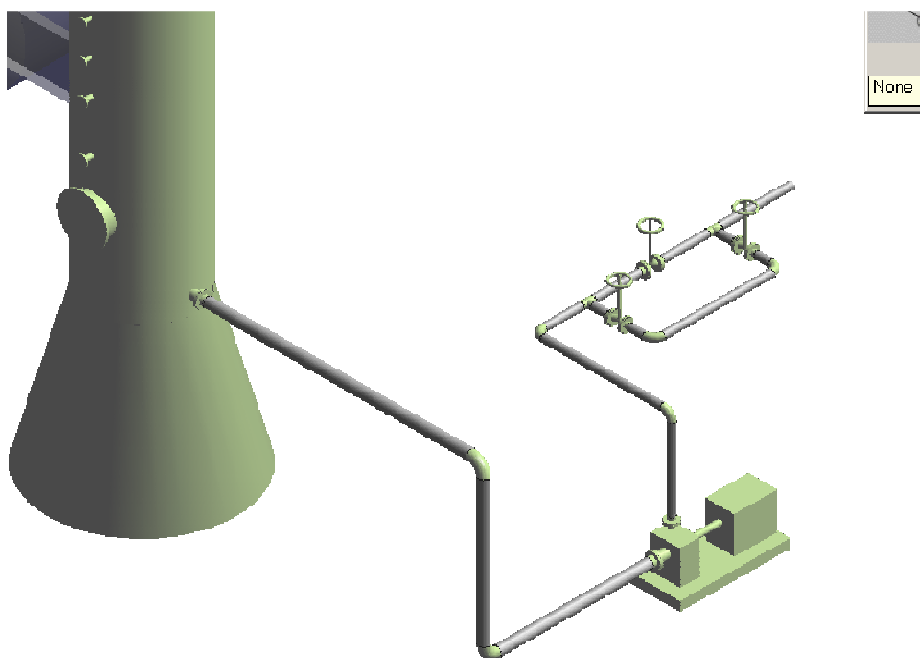
This will change the run color to green in P&ID.

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.

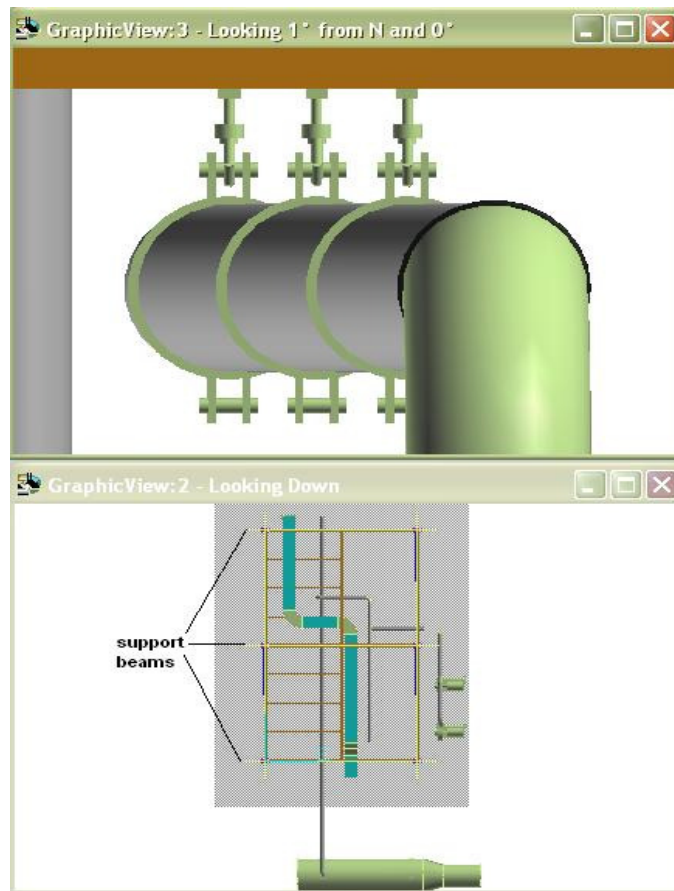


**Optional:** Place a 6X4 Reducer at the end of P-101-4"- and connect the Line to E-102/N2

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

## Lab-27: Pipe Supports

Add hangers to line **2005-P** in A2 U01, at the three support beams shown below.



### Hints:

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

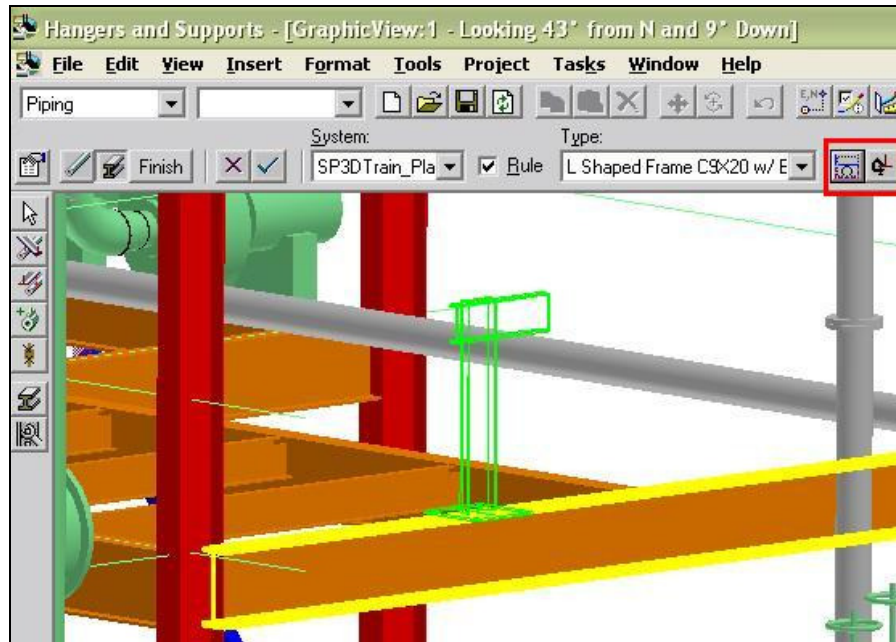
1. Click **Place Support by Structure** on the vertical toolbar.
2. Select the feature to support.
3. Click **Accept (check mark on ribbon bar)**.
4. Select the supporting structure to use.
5. Click **Accept**.
6. Select the support type.
  - Turn off the rule option
  - Select Type>more...
  - Navigate 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.

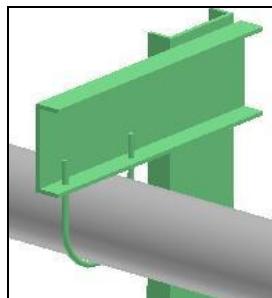
Switch to **Hangers and Supports** task and follow these steps.

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-28: 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-V	Working	4	
2 in	2 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	1	
3 in	3 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	2	
4 in	4 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	7	
6 in	6 in	VAAAHABAHADJADAZZZZUS - Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	5	
4 in	4 in	VAAAMABAHADEADAZZZZUS - Gate valve, CL300, RFFE, BB, OS&Y, ASTM-A216-V	Working	1	
0.75 in	0.75 in	VADAGBVAHHPABQZZZZUS - Gate valve, CL800, SWE, BB, OS&Y, ASTM-A105, t	Working	2	
1 in	1 in	VADAGBVAHHPABQZZZZUS - Gate valve, CL800, SWE, BB, OS&Y, ASTM-A105, t	Working	2	
0.75 in	0.75 in	VADAGDHAHAHPABQZZZZUS - Gate valve, CL800, SWE/FTE, BB, OS&Y, ASTM-A105, t	Working	1	
2 in	2 in	VALAHABAHACWADAZZZZUS - Globe valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	1	
3 in	3 in	VALAHABAHACWADAZZZZUS - Globe valve, CL150, RFFE, BB, OS&Y, ASTM-A216-V	Working	1	
10 in	10 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-V	Working	2	
4 in	4 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-V	Working	1	
6 in	6 in	VBGAHABAHAFEADAZZZZUS - Check valve, CL150, RFFE, BC, swing, ASTM-A216-V	Working	2	

Extract a pipeline list, sorted by name.

Pipelines Sorted by Name						
Line Number	Nominal Size		Pipe Spec	Insulation	Insulation Purpose	Approval Status
			Paint Spec	Ins Temperature F	Insulation Material	
P-101	8 in		N0	Not Insulated		Working
1003-P	3 in		1C0031	Not Insulated		Working
1003-P	8 in		1C0031	Not Insulated		Working
1003-P	4 in		1C0031	Not Insulated		Working
1003-P	8 in		1C0031	Not Insulated		Working
1003-P	6 in		1C0031	Not Insulated		Working
1003-P	4 in		1C0031	Not Insulated		Working
1003-P	3 in		1C0031	Not Insulated		Working
1003-P	8 in		1C0031	Not Insulated		Working
1003-P	6 in		1C0031	Not Insulated		Working

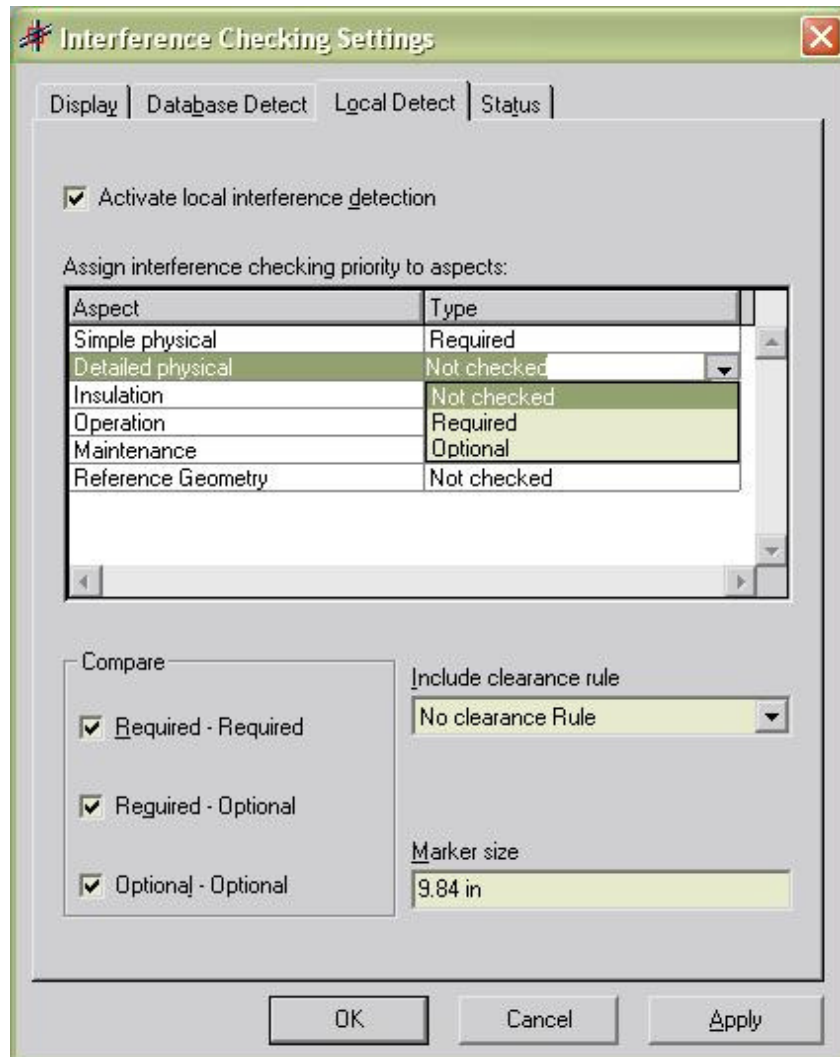
### Hints:

In Piping Task, select Tools>Run Report to extract reports.

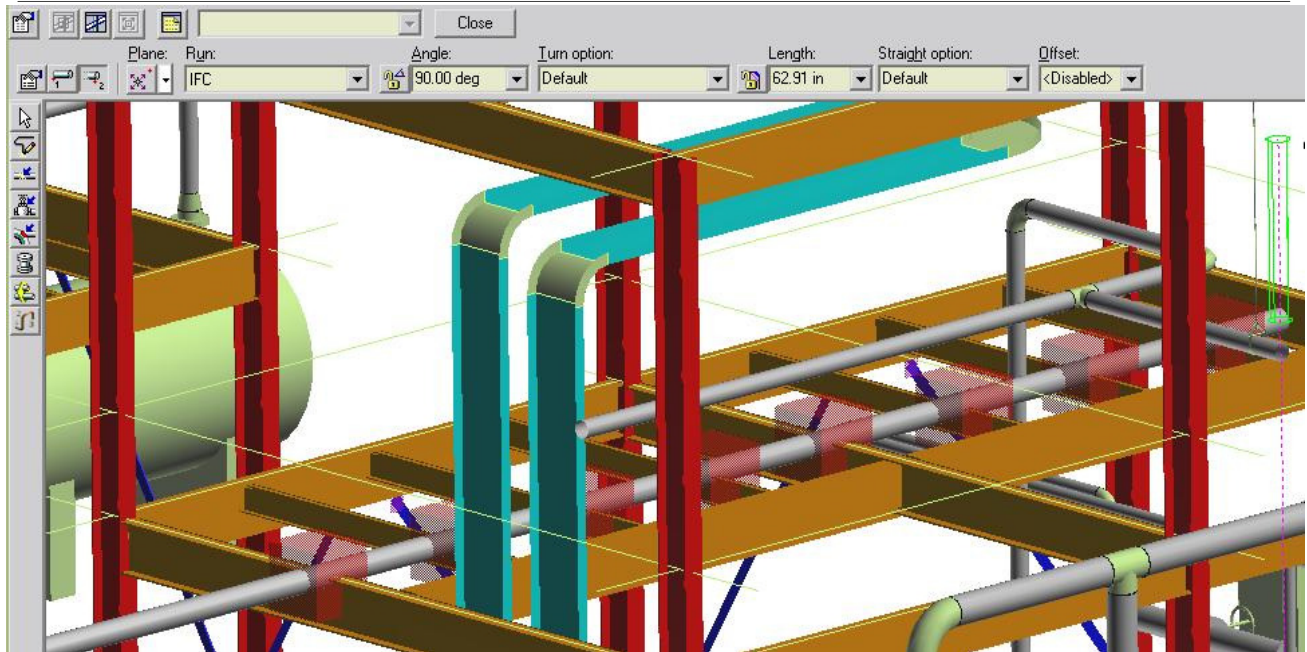
From the Run Report interface, select the Catalog Reports interface and navigate to the Piping report types to use standard delivered report formats.

## Lab-29: 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.



**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.