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# Under Pressure – Pressure Networks in AutoCAD Civil 3D

Brian J. Hailey, P.E.

CAD Manager – GEI Consultants



# Under Pressure – Pressure Networks in AutoCAD Civil 3D

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# CLASS SUMMARY

Modeling a water distribution system has always been a tedious process. Autodesk AutoCAD Civil 3D software offers tools that will greatly assist you with this process. For horizontal layout as well as vertical layout, Civil 3D can model just about any situation you will run into. In this class, we see how to create a 3D model of our water distribution system, edit the system to account for those design changes, and analyze it for design errors. Note that this class does not get into hydraulic analysis.

# KEY LEARNING OBJECTIVES

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

- Explain the different parts of a pressure network in Civil 3D
- Lay out a pressure network both horizontally and vertically
- Edit pressure networks to account for design changes such as crossing utilities
- Analyze the pressure network to find faults in the layout of the model





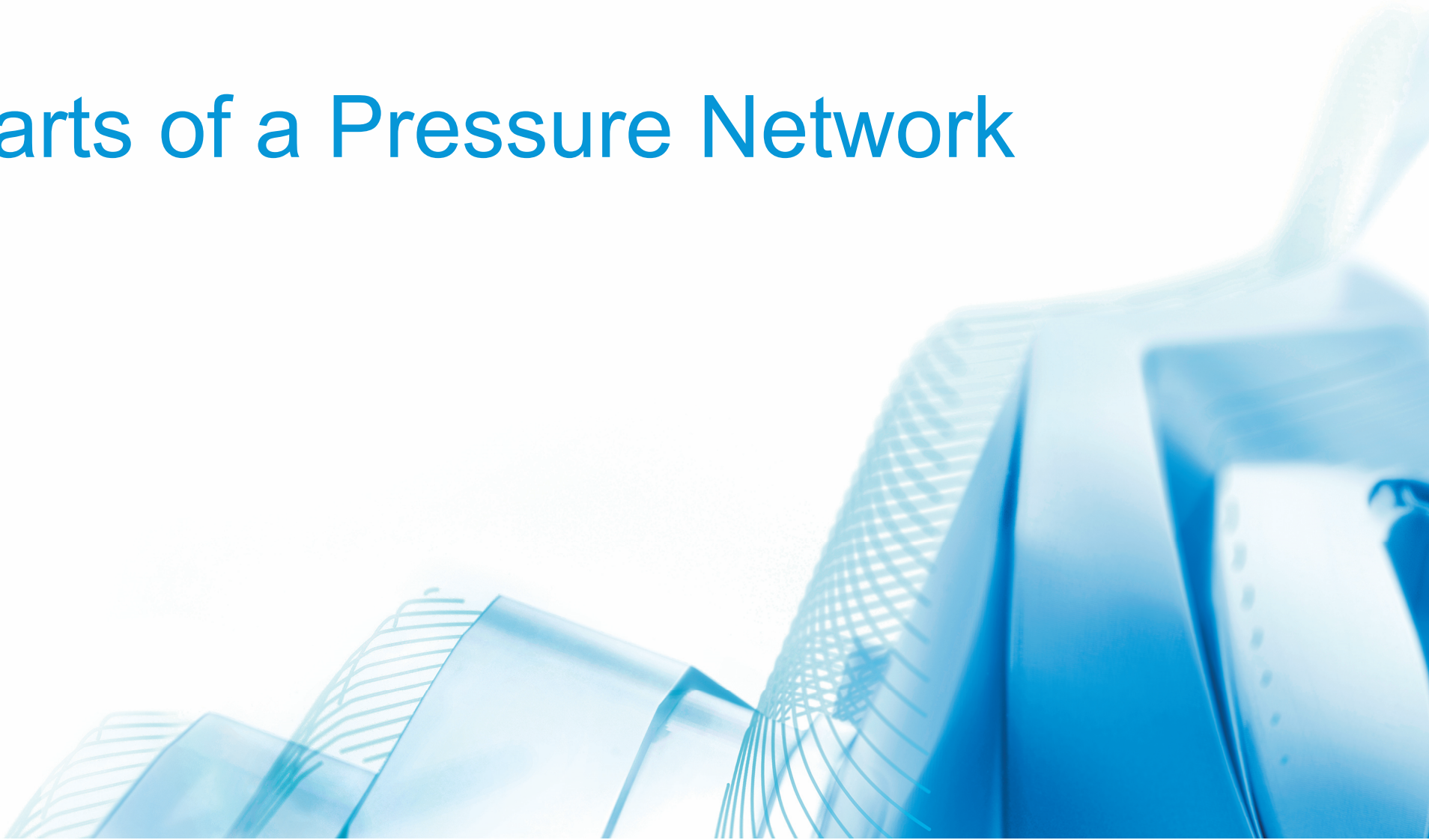
## Brian J. Hailey, P.E.

- CAD Manager – GEI Consultants
- Professional Engineer in the State of Colorado
- Autodesk Expert Elite
- Award Winning AU Presenter
- TOP DAUG winner 2011

What was the first city in the US  
to use full scale water chlorination?



# Parts of a Pressure Network





# Pressure Networks

## Parts of the Network

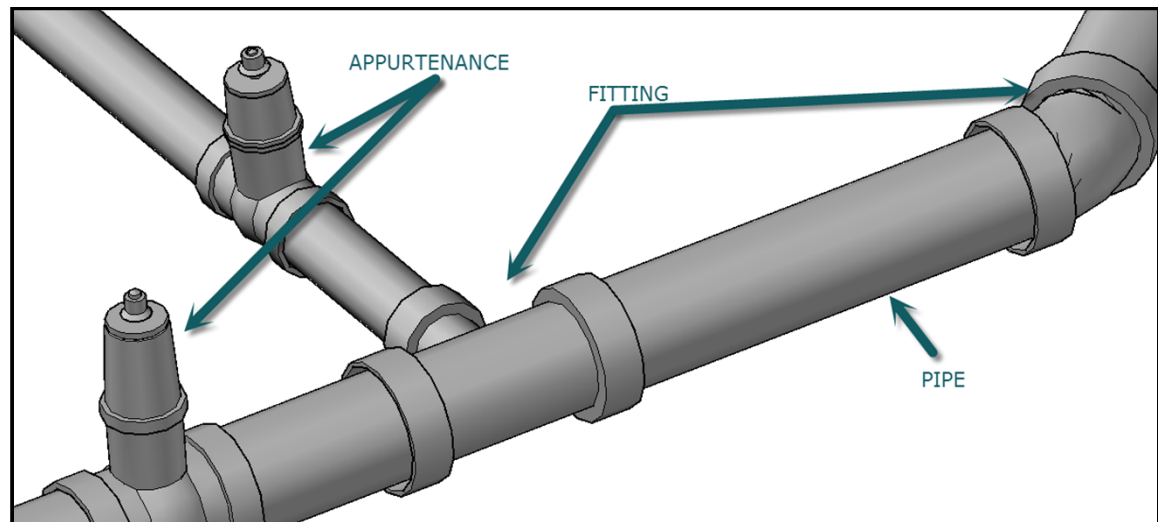
- Pipes
- Fittings
- Appurtenances




# Pressure Networks

## Parts of the Network

- Pipes
- Fittings
- Appurtenances



# Pressure Networks – Catal

**AMERICAN**  
THE RIGHT WAY

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PRODUCT ALERT INFORMATION FOR WATERWORKS

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SEARCH

PRODUCTS INFO PORTALS CUSTOMER TOOLS CONTACTS ABOUT U.S. PIPE INDUSTRY LINKS JOBS TERMS & CONDITIONS OF SALE/PURCHASE

## MODERN CASTING

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Friendly Foreign Aid The Virtue of Sewer

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Select Product »

#### PRODUCTS

**DUCTILE IRON PIPE**

**JOINT RESTRAINT**

**DUCTILE IRON FITTINGS**

**OTHER**

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## Metalcaster of the Year

### U.S. Pipe's Marvel City Mini Mill

### Modern Casting

Metalcaster of the Year

Modern Casting names U.S. Pipe's Marvel City Mini Mill the Metalcaster of the Year.

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# Pressure Networks – Catalogs

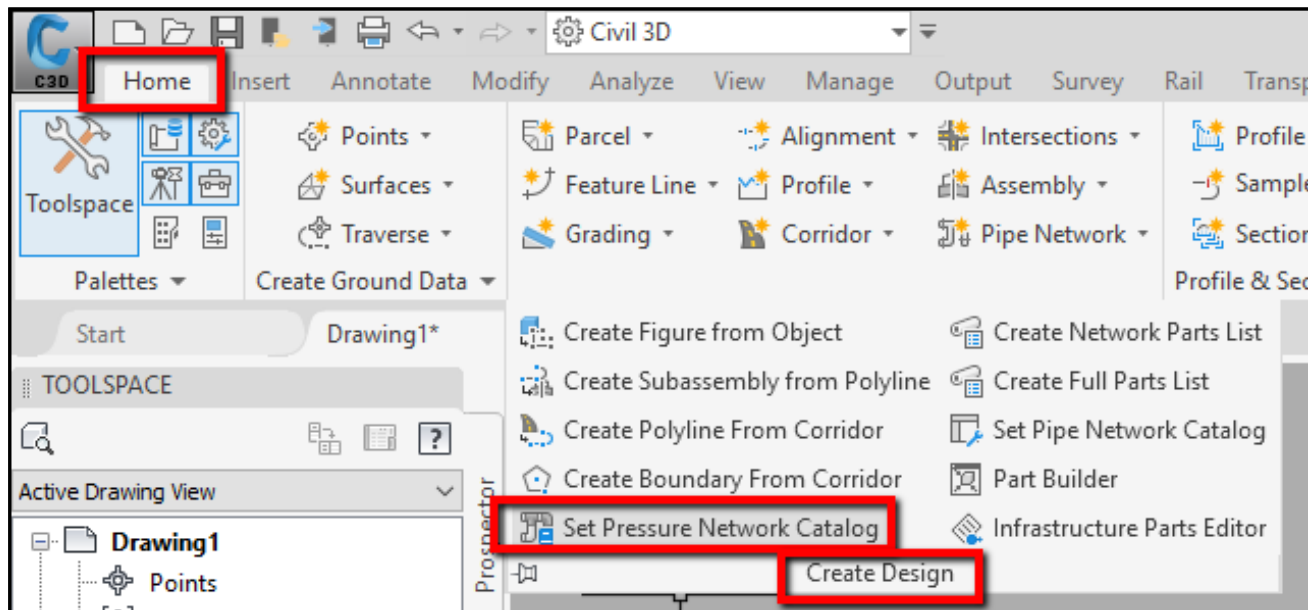
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	Imperial_AWWA_HDPE	10/30/2019 5:25 PM	File folder	
	Imperial_AWWA_Mechanical	10/30/2019 5:25 PM	File folder	
	Imperial_AWWA_PushOn	10/30/2019 5:25 PM	File folder	
	Imperial_AWWA_PVC	10/30/2019 5:25 PM	File folder	
	Imperial_AWWA_Steel	10/30/2019 5:25 PM	File folder	
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	Imperial_AWWA_Steel.sqlite	11/22/2017 10:16 ...	SQLite Spatial Dat...	5,792 KB

C:\ProgramData\Autodesk\C3D 2020\enu\Pressure Pipes Catalog\Imperial

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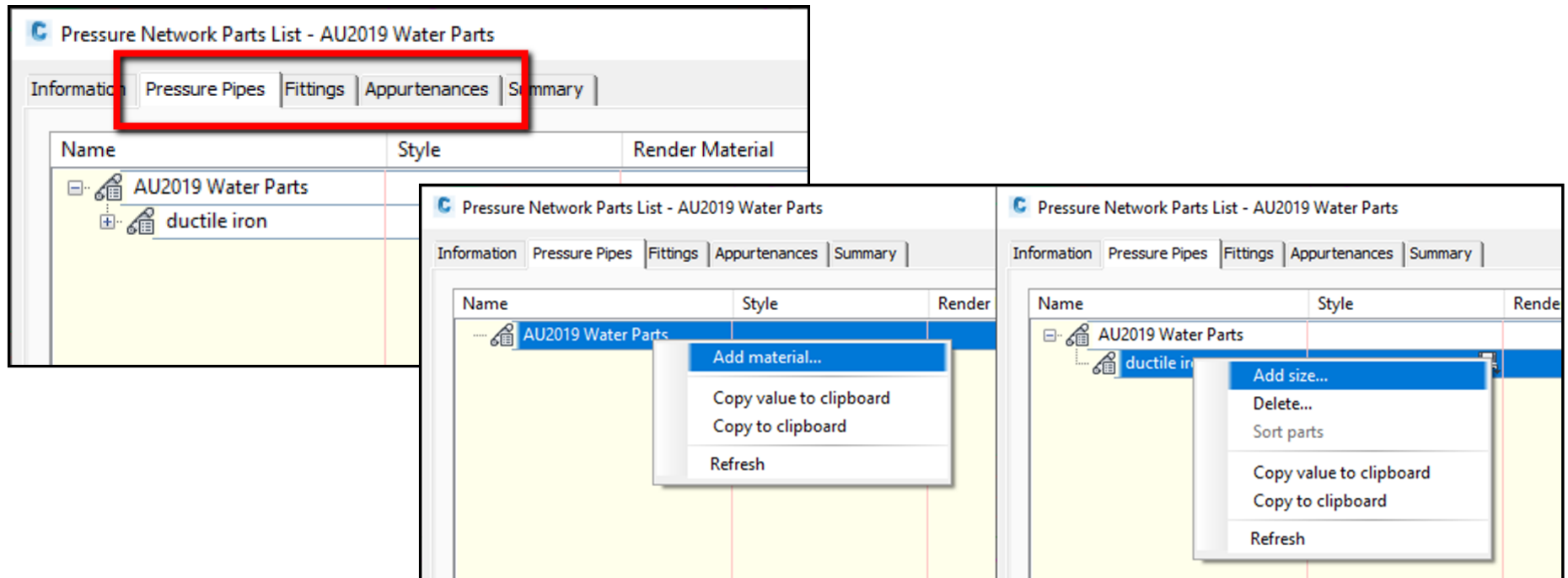
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# Pressure Networks – Catalogs

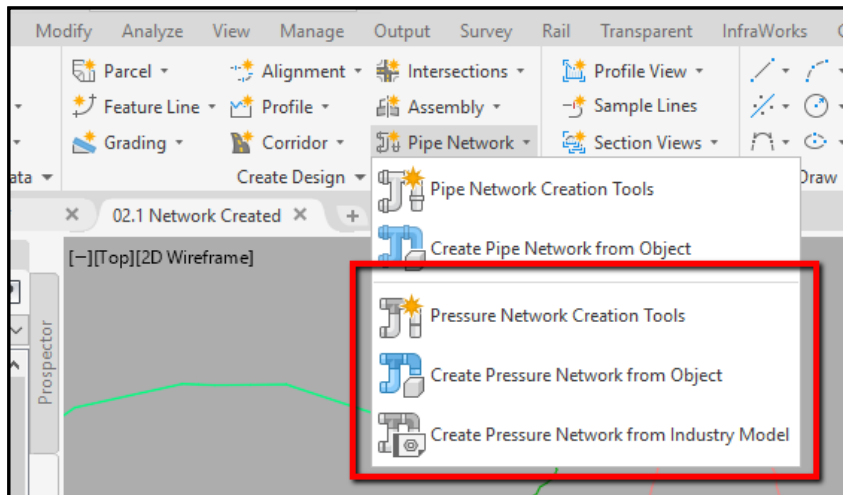




# Pressure Networks – Parts Lists



# Pressure Networks – Parts Lists



**Create Pressure Pipe Network**

Network name:  
Pressure Network - (<[Next Counter(CP)]>)

Network description:

Parts List  
AU2019 Water Parts

Layers...

Surface name:  
<none>

Alignment name:  
<none>

Pressure Pipe Label Style:  
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Fitting Label Style:  
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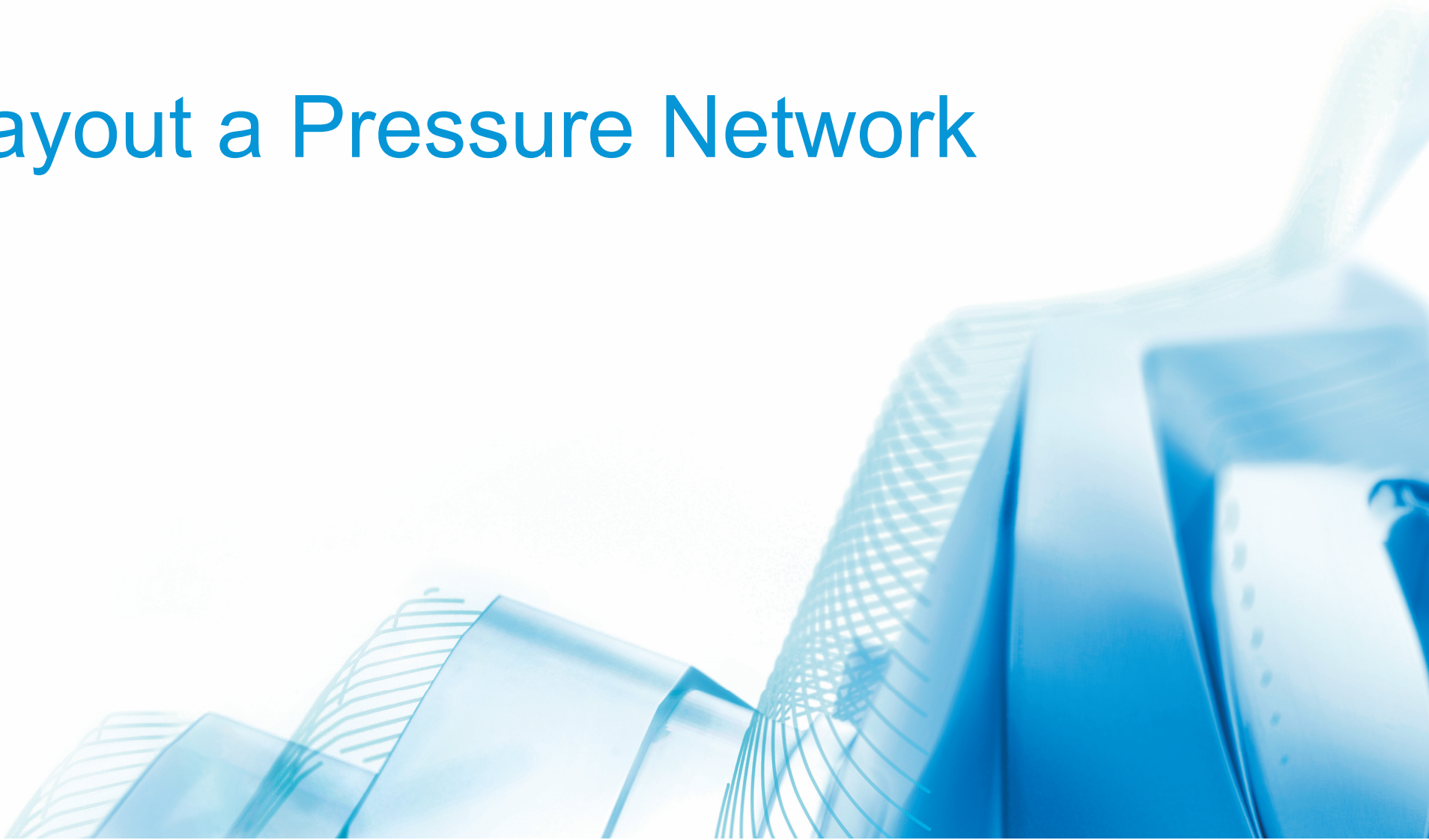
Appurtenance Label Style:  
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OK Cancel Help

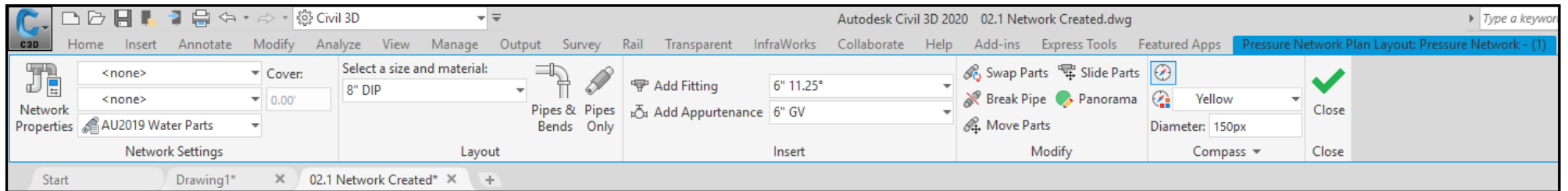
# DEMONSTRATION



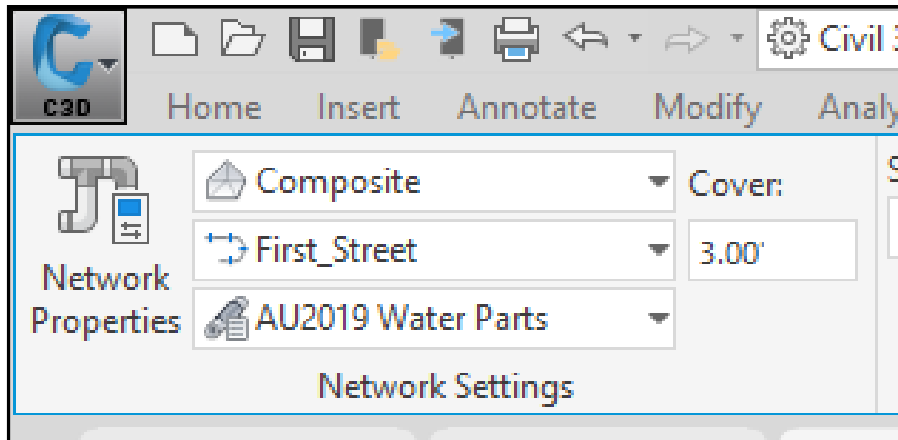
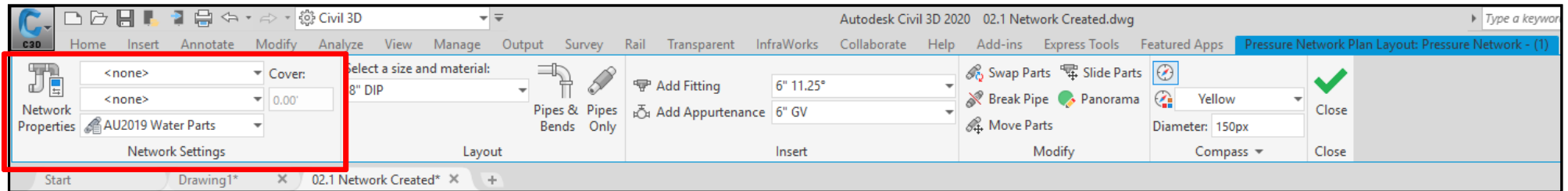
# Layout a Pressure Network



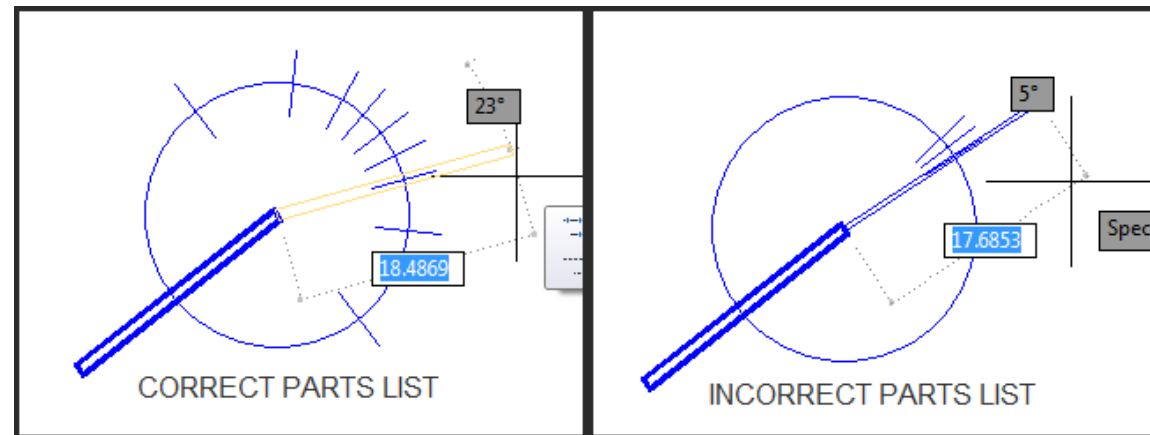
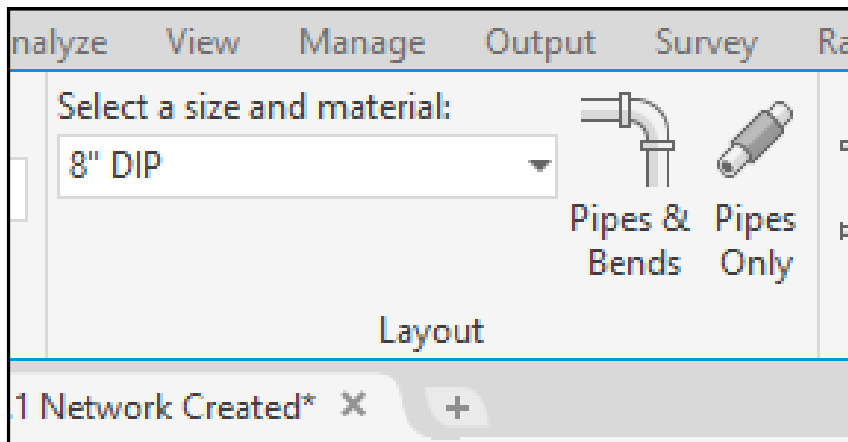
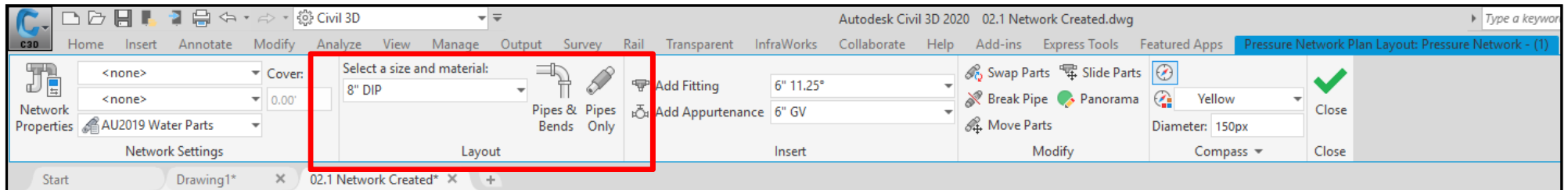
# Pressure Networks – Plan Layout Tools



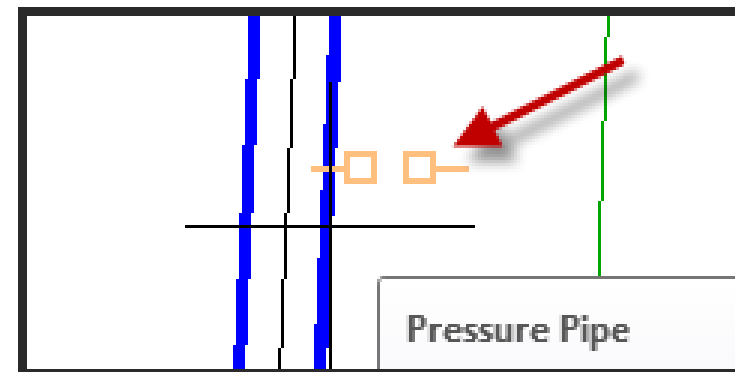
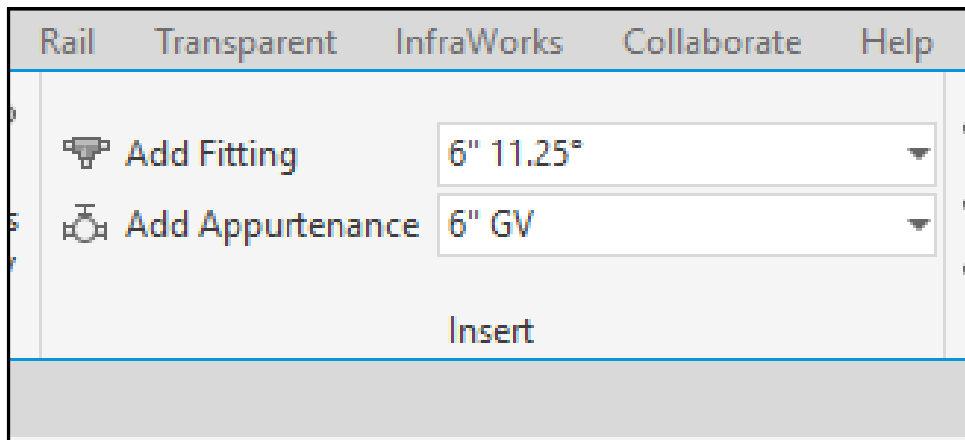
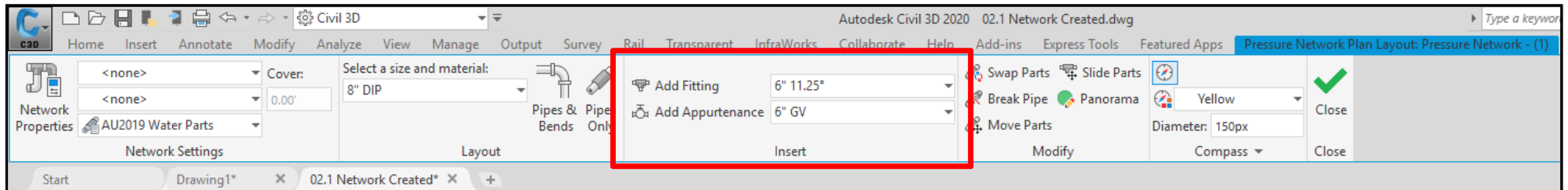
# Pressure Networks – Plan Layout Tools



# Pressure Networks – Plan Layout Tools

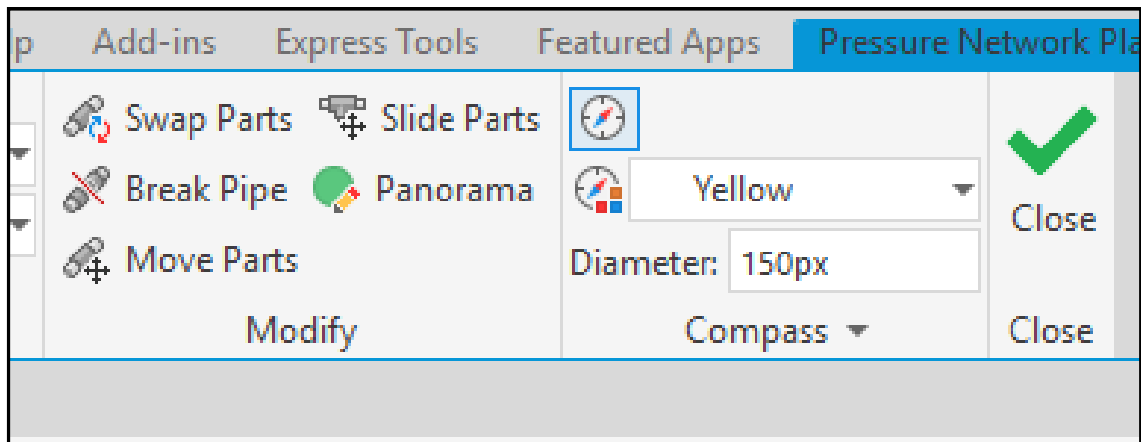
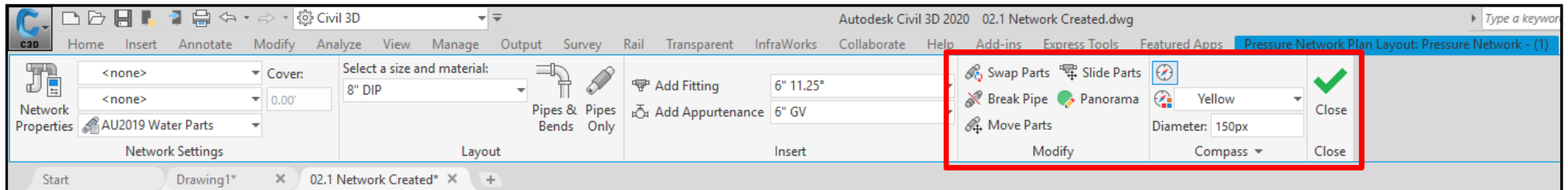


# Pressure Networks – Plan Layout Tools

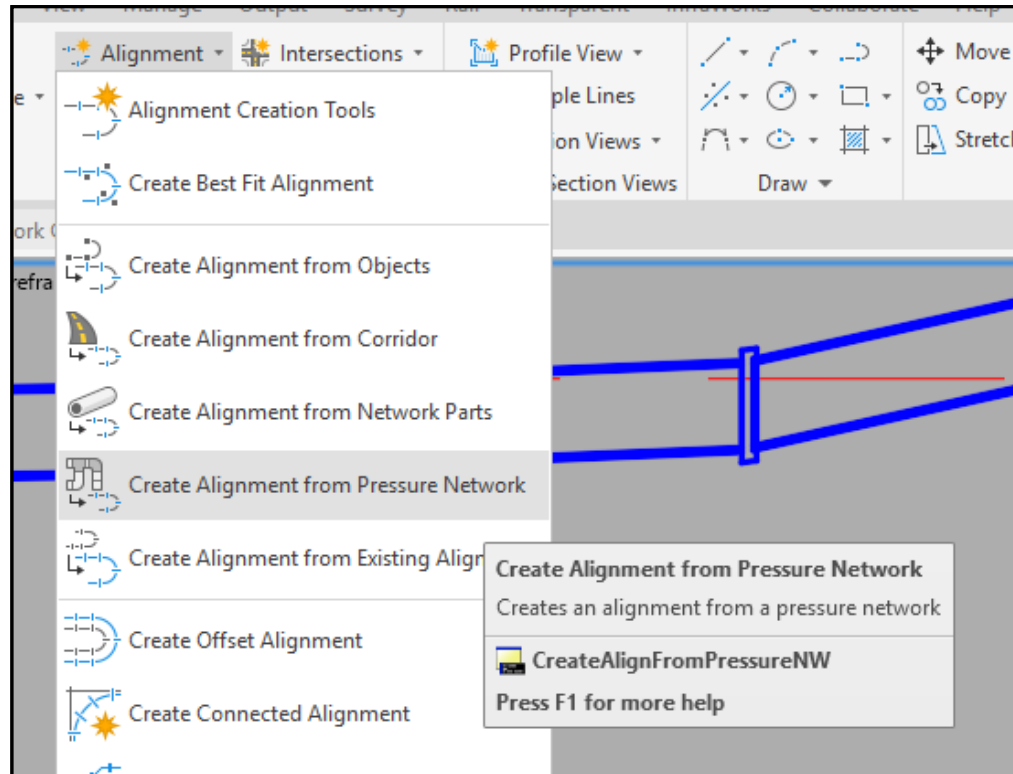




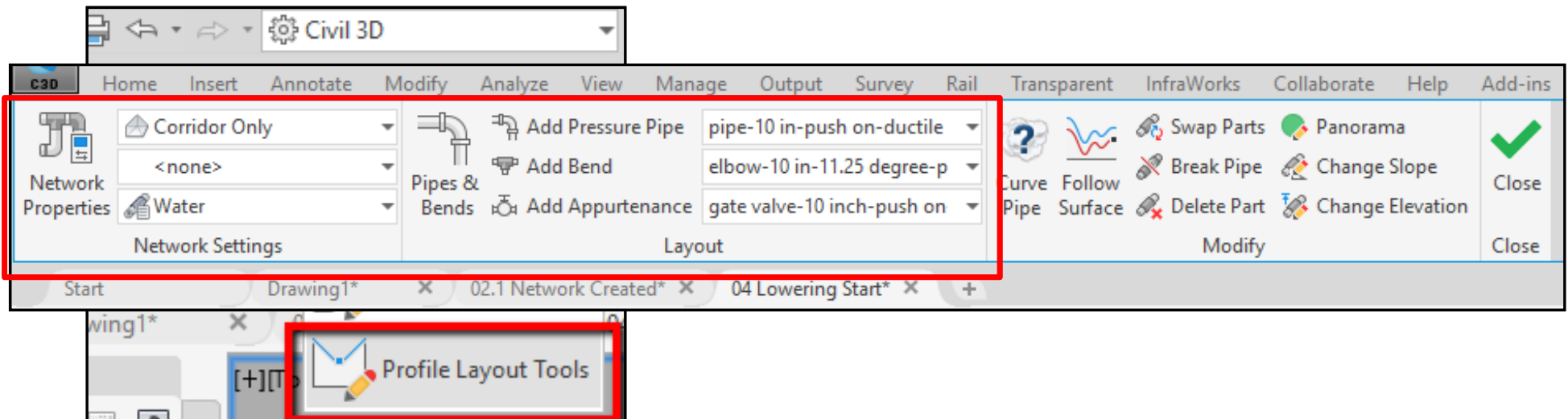
# Pressure Networks – Plan Layout Tools



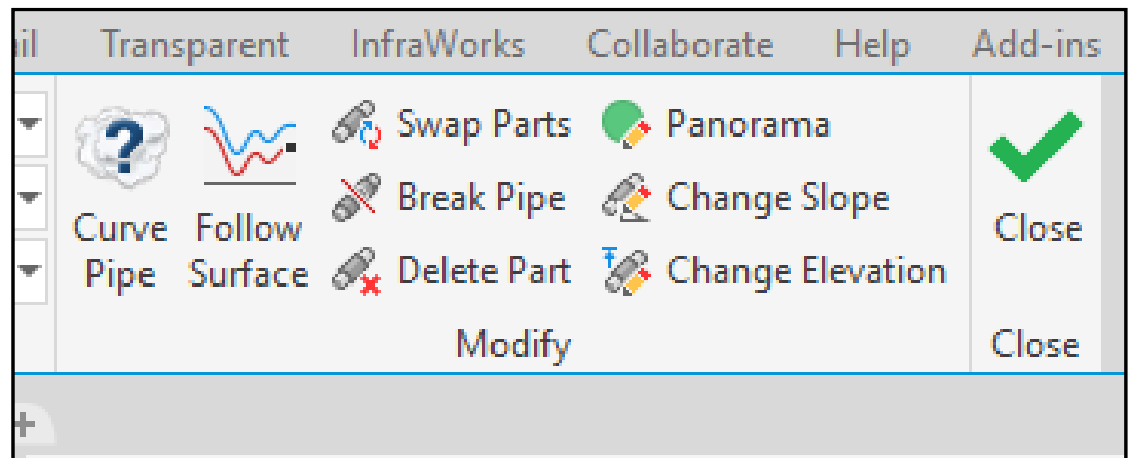
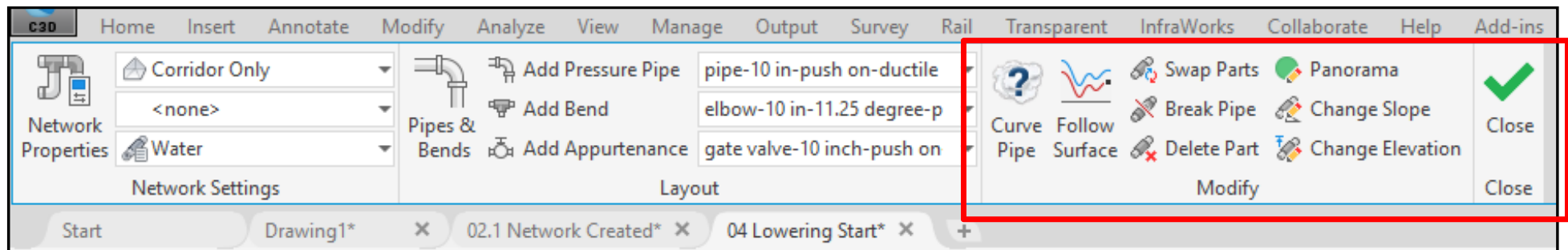
# Pressure Networks – Profile Layout Tools



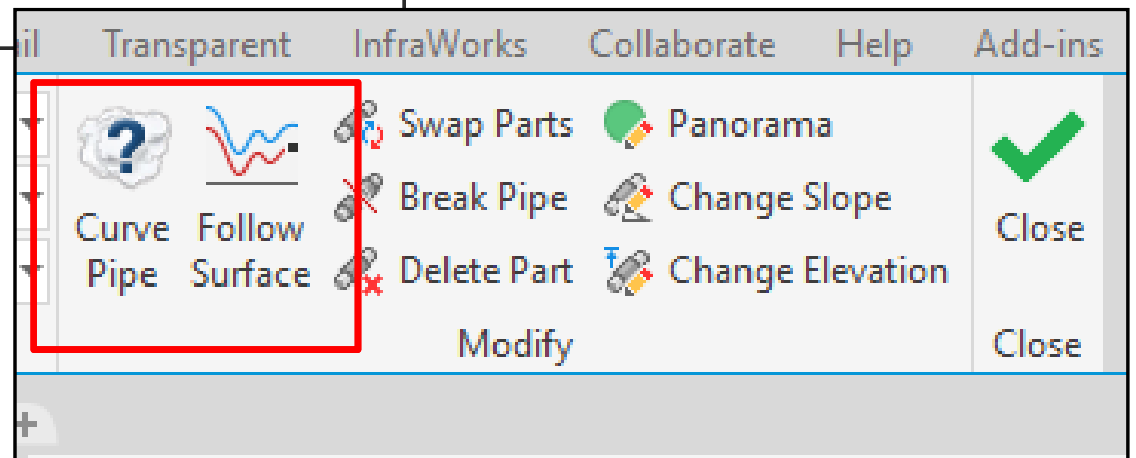
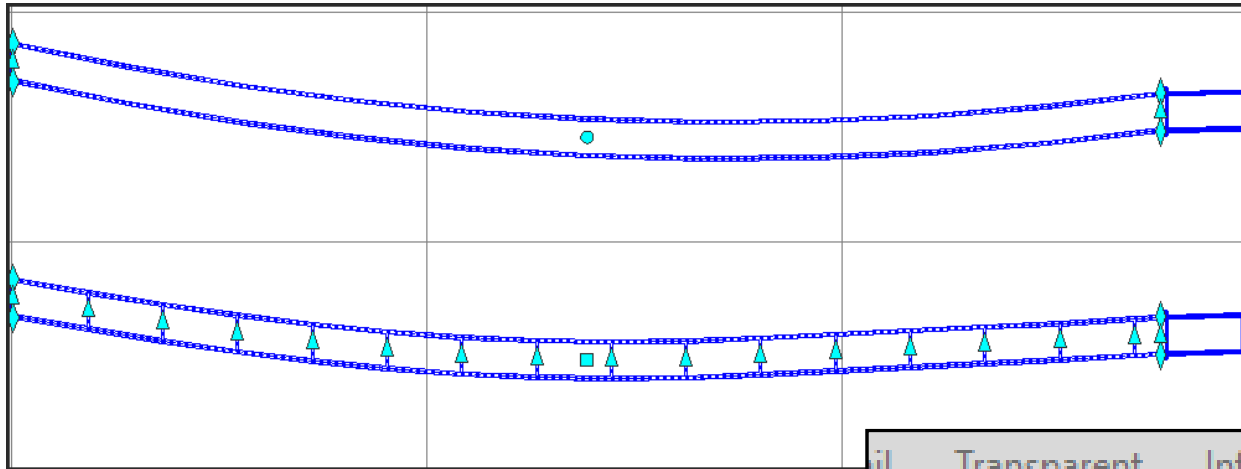
# Pressure Networks – Profile Layout Tools



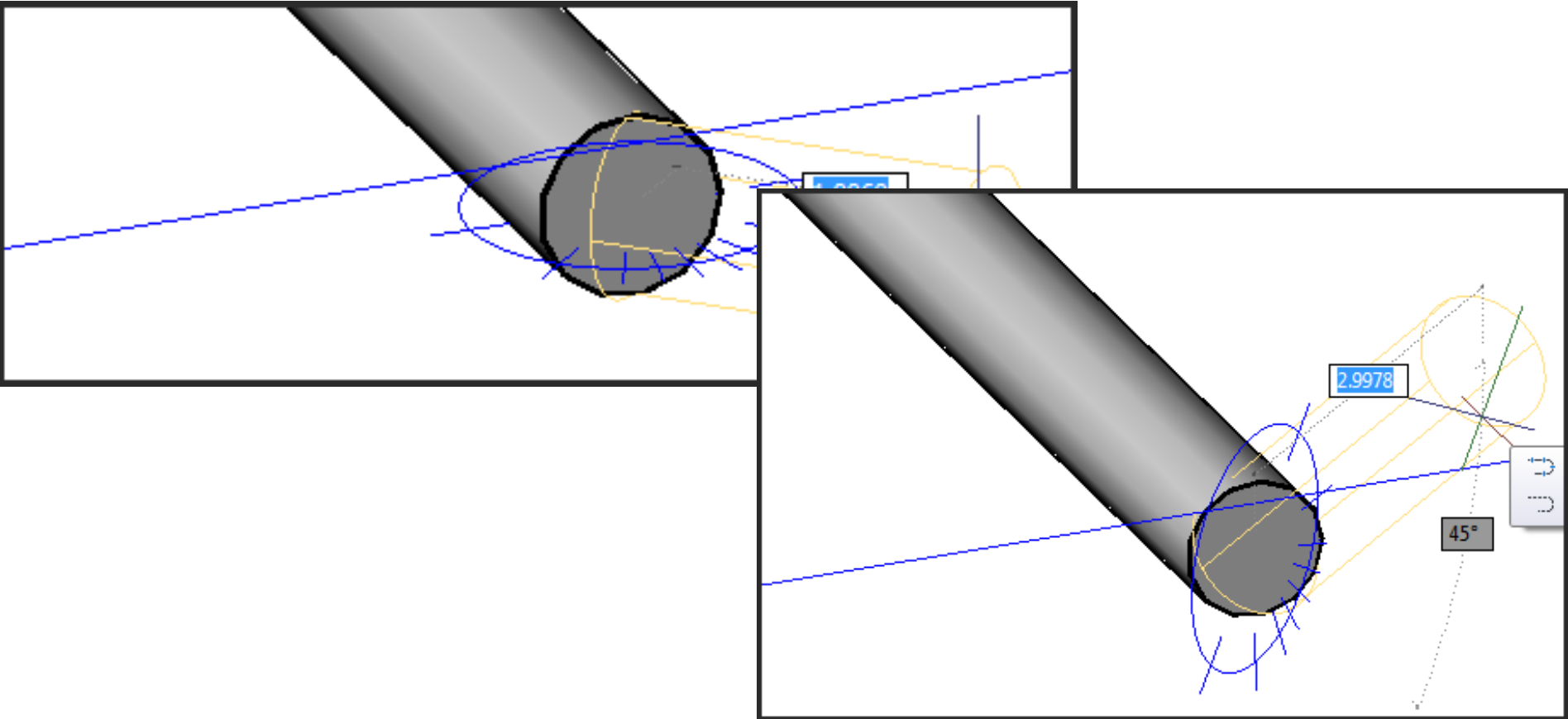
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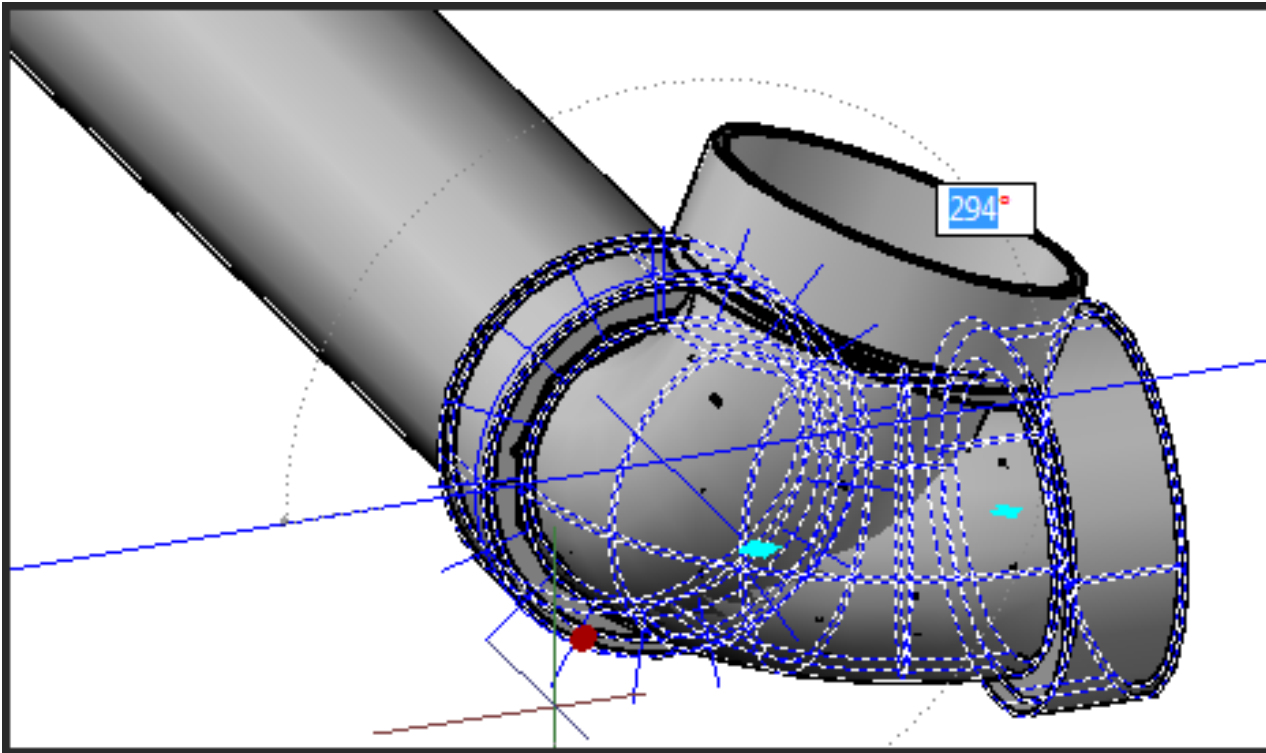
# Pressure Networks – Profile Layout Tools



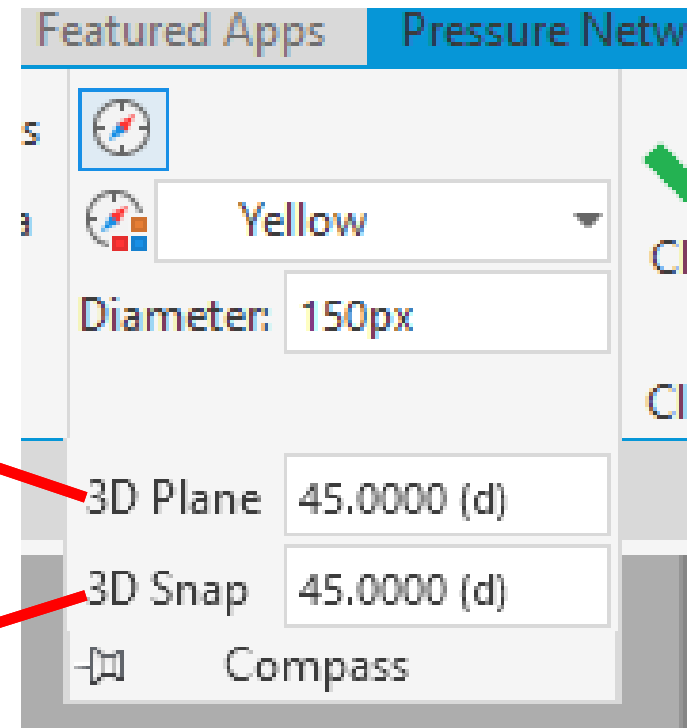
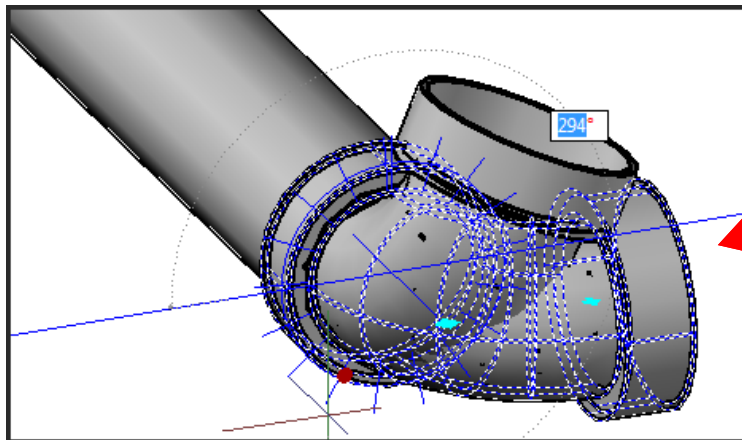
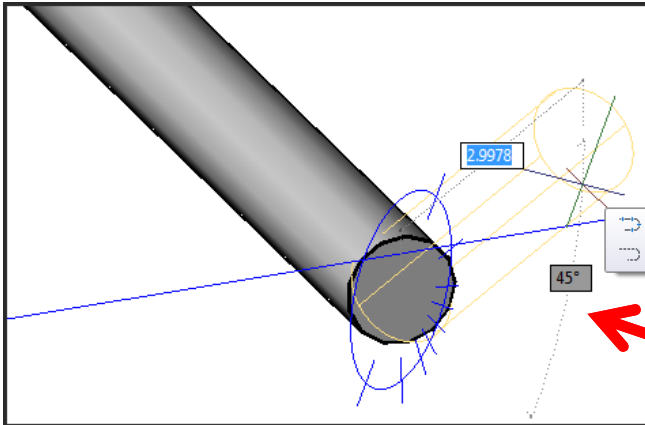
## Pressure Networks – Model Layout Tools



## Pressure Networks – Model Layout Tools



## Pressure Networks – Model Layout Tools

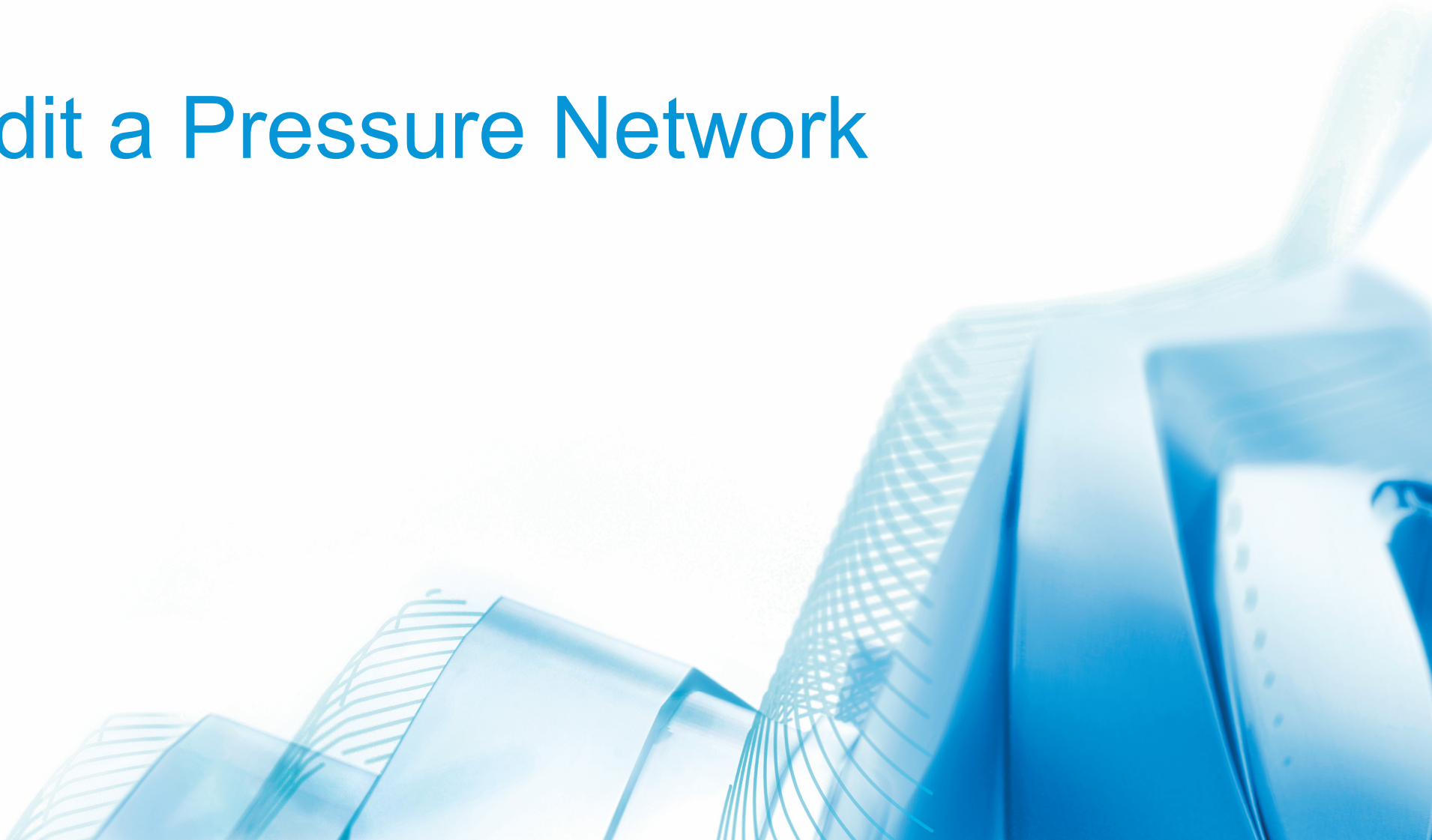




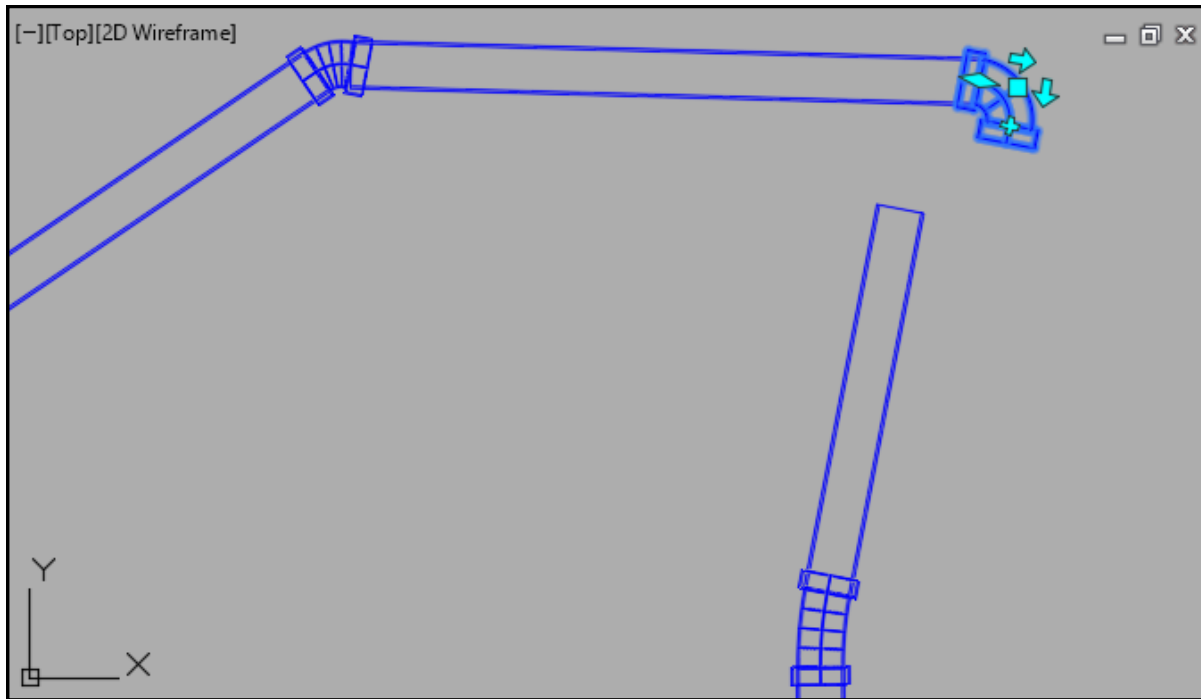
# DEMONSTRATION



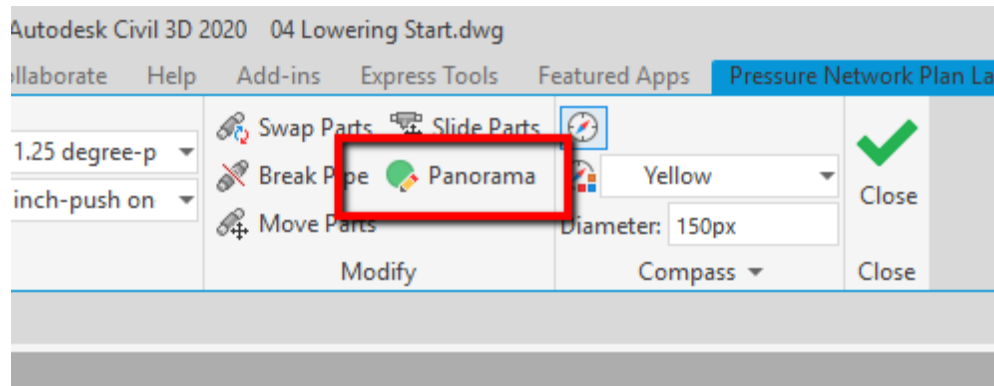
# Edit a Pressure Network



# Pressure Networks – Grip Editing

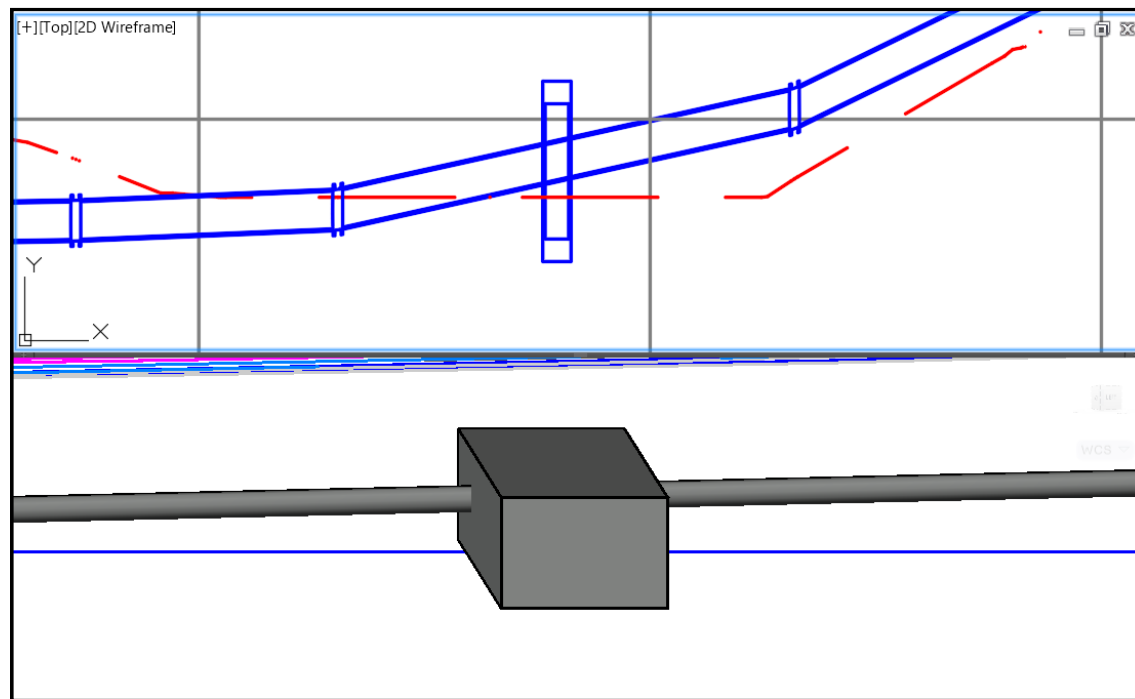


# Pressure Networks – Table Editing

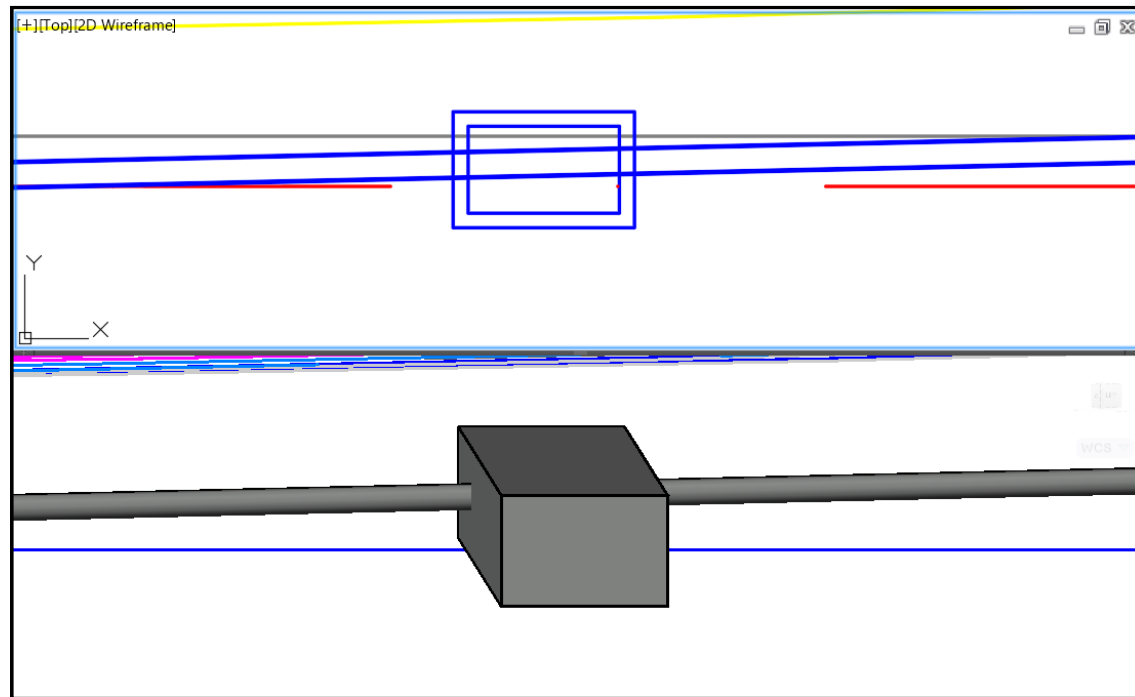


Name	Descripti...	Style	Render ...	Nominal ...	Referenc...	Referenc...	Start Stat...	Start Offs...	End Stati...	End Offset	Start Cover	End c
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					-0.46'	5.16'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.97'	4.36'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.35'	4.64'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.65'	4.93'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.94'	5.00'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.93'	4.96'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.97'	4.32'
Pressure		Standard	ByLayer	10 in x 10 in		Corridor Or					4.92'	4.98'

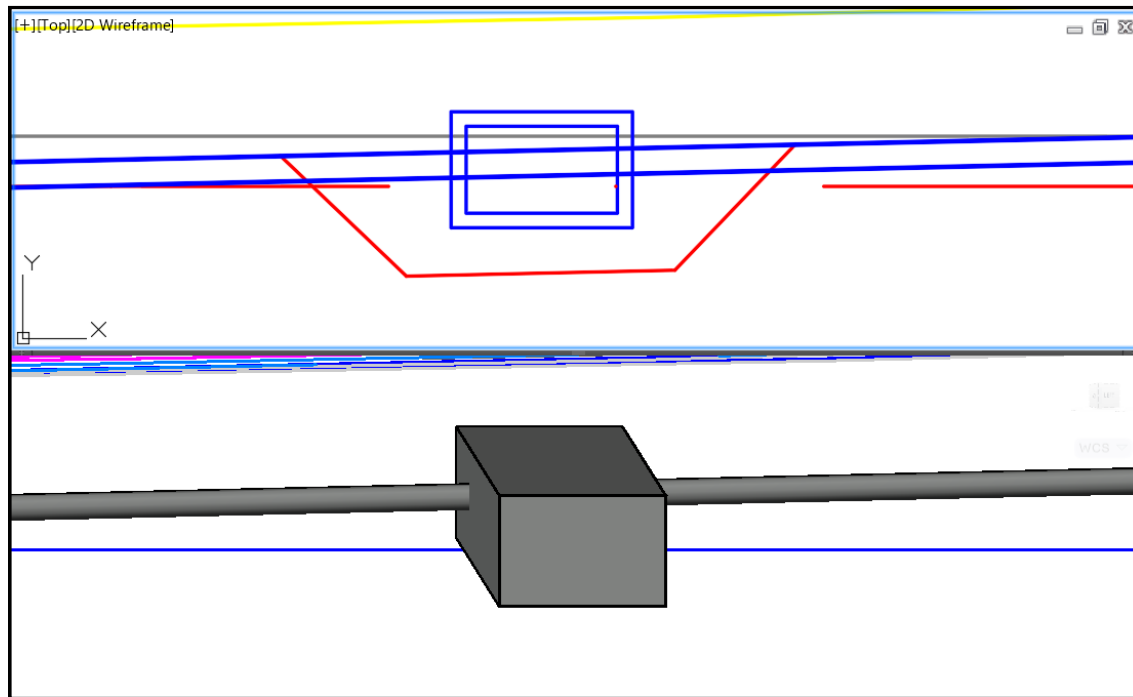
# Pressure Networks – Profile Editing



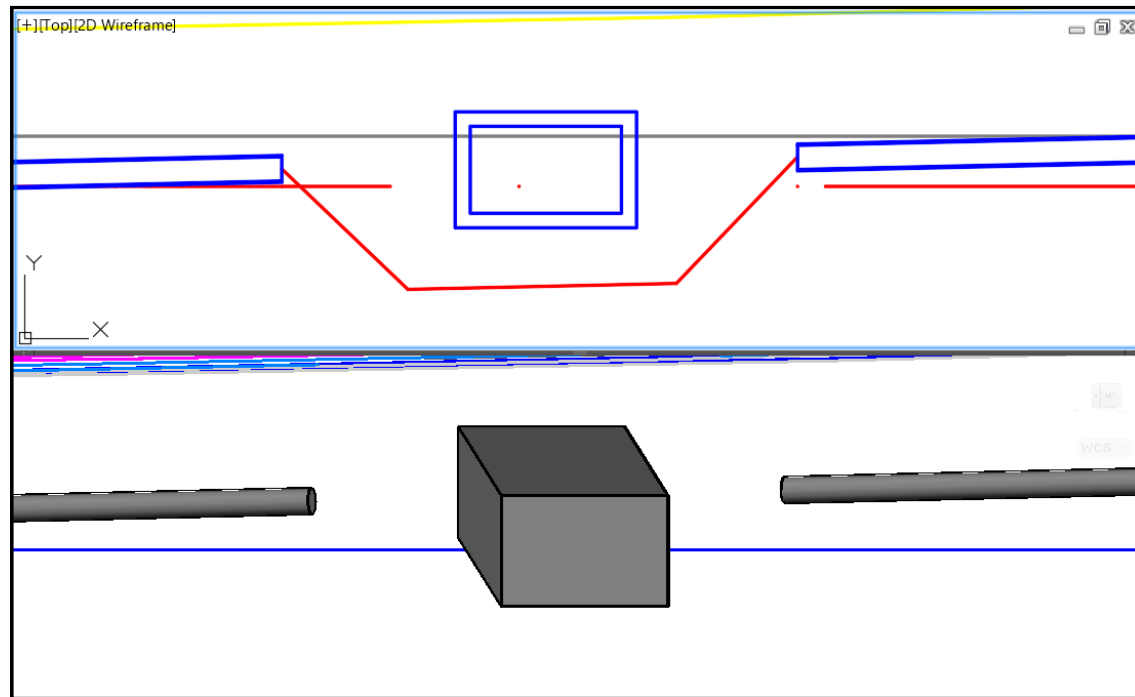
# Pressure Networks – Profile Editing



# Pressure Networks – Profile Editing

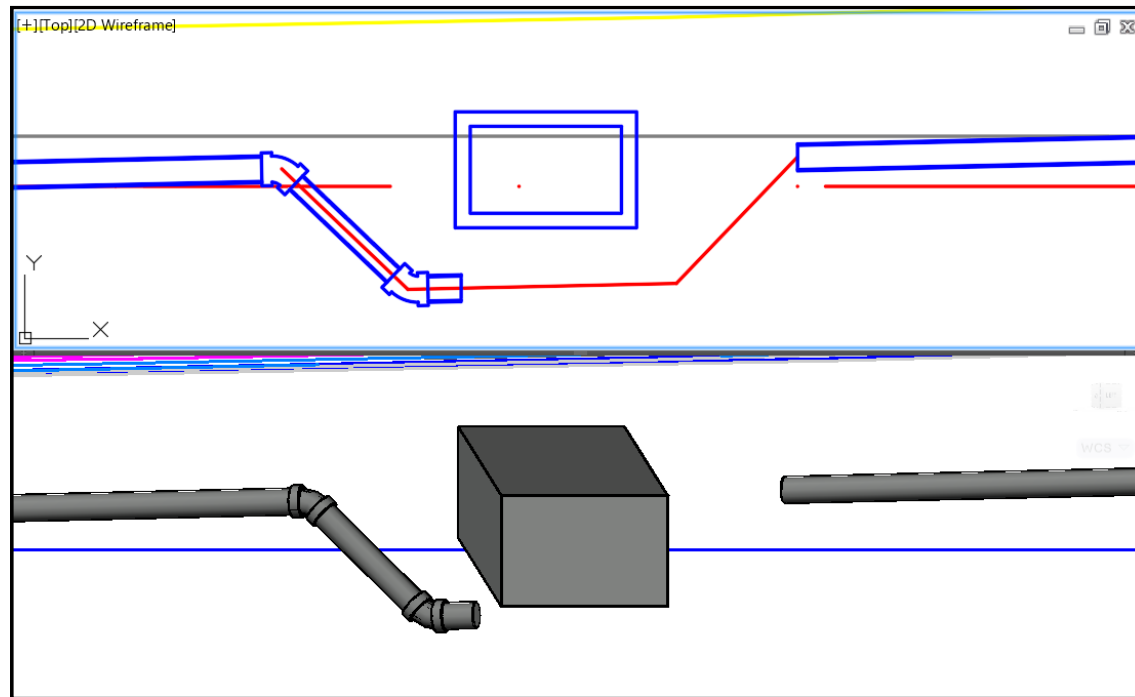


# Pressure Networks – Profile Editing

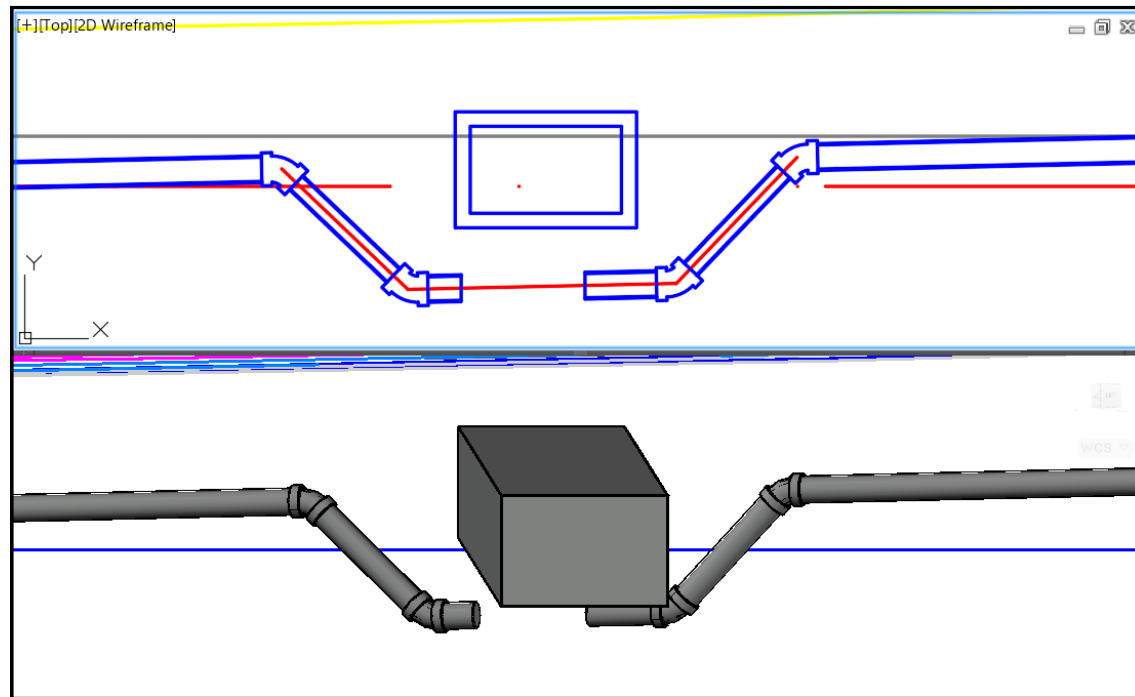




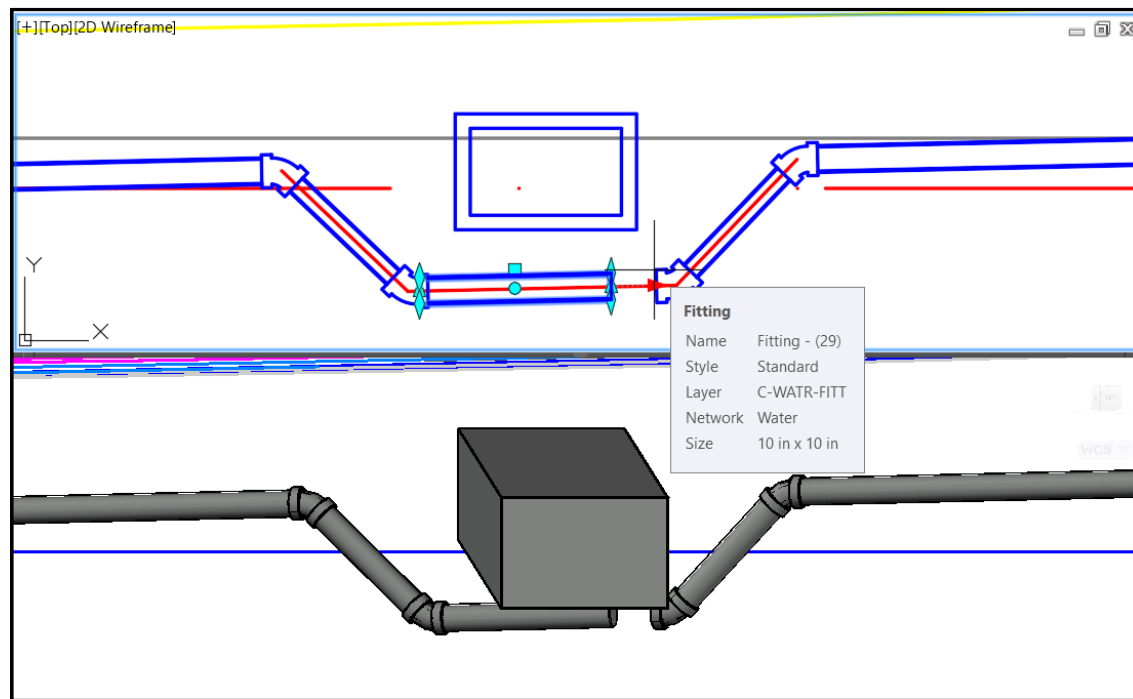
# Pressure Networks – Profile Editing



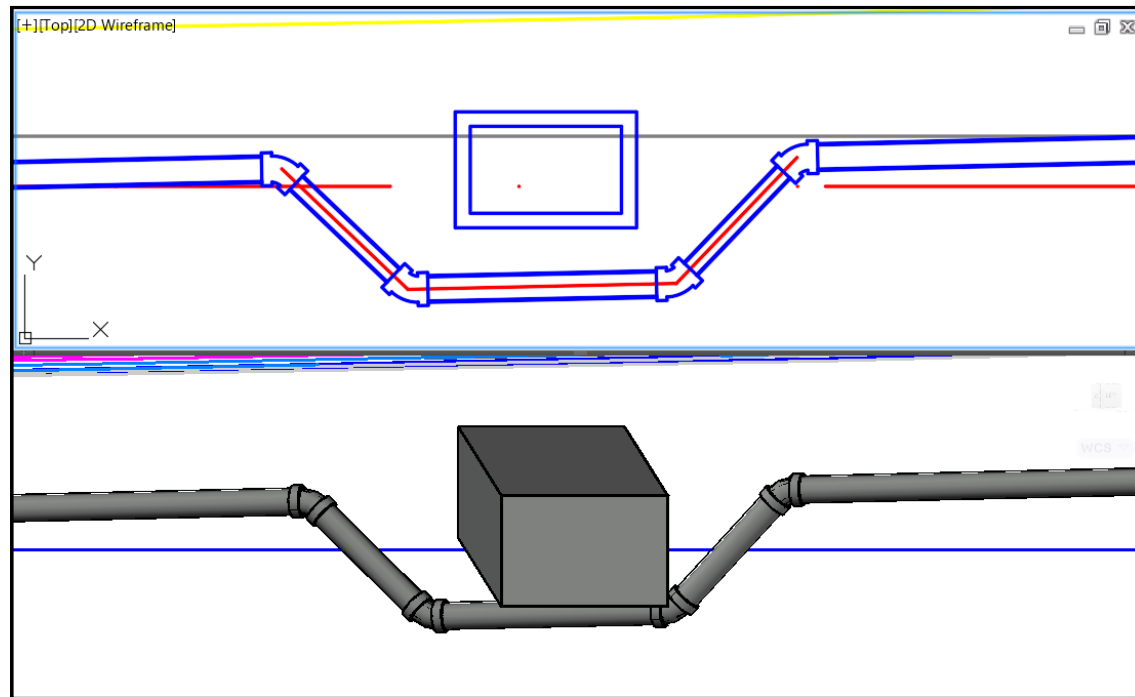
# Pressure Networks – Profile Editing



# Pressure Networks – Profile Editing



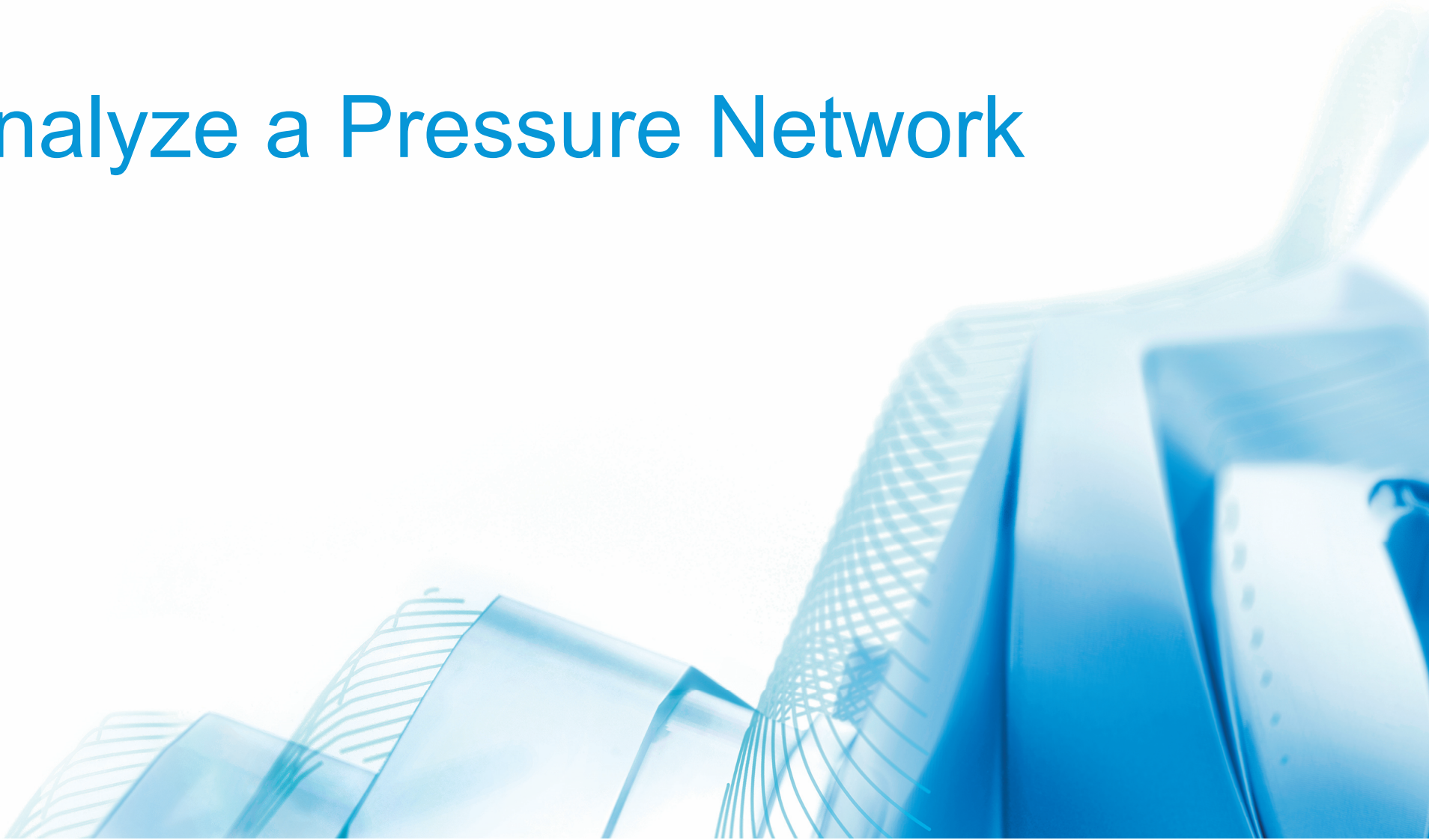
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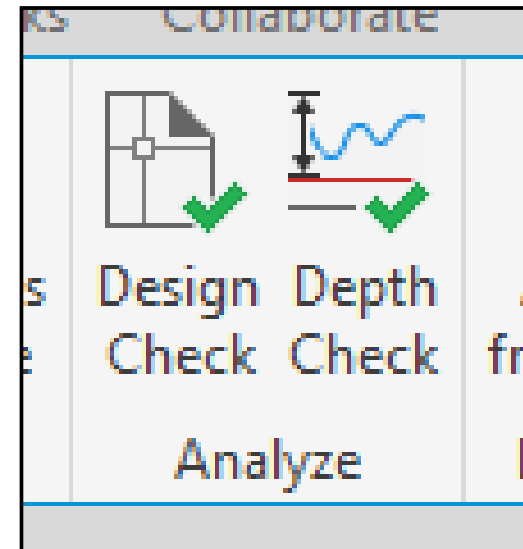
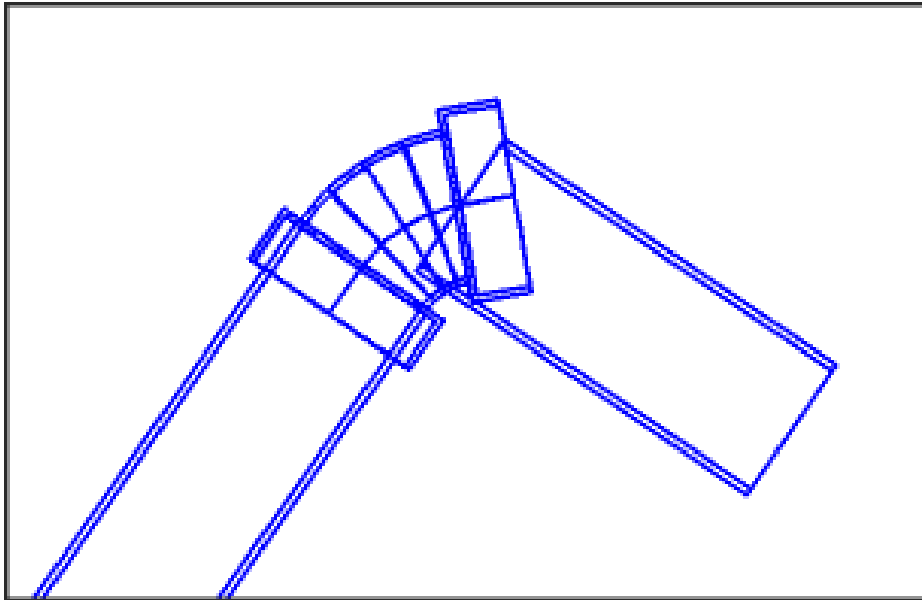
# DEMONSTRATION



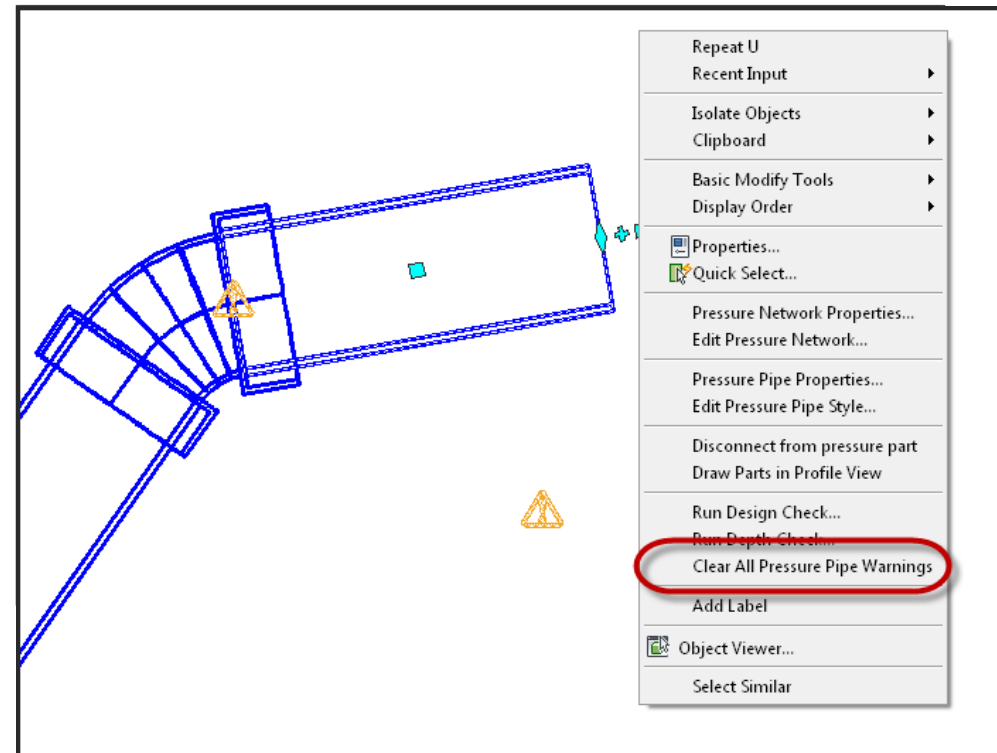
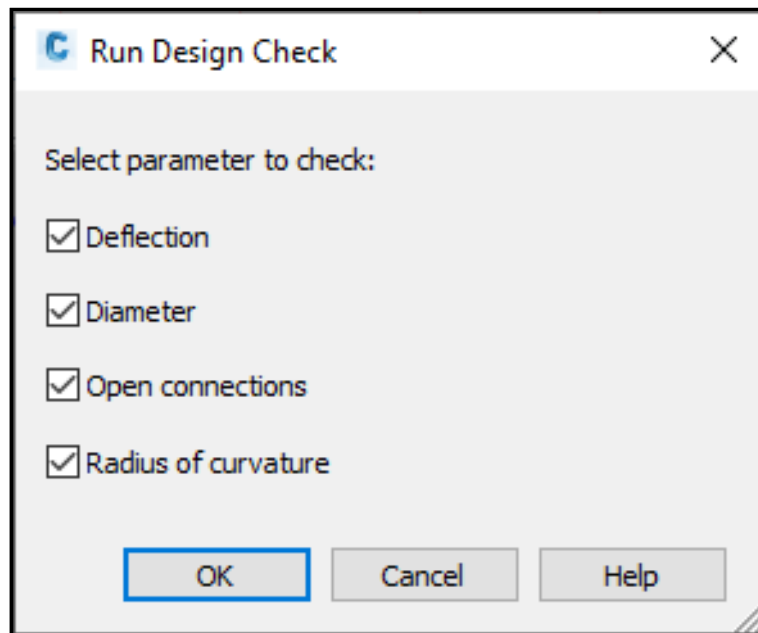
# Analyze a Pressure Network



## Pressure Networks – Design Checks

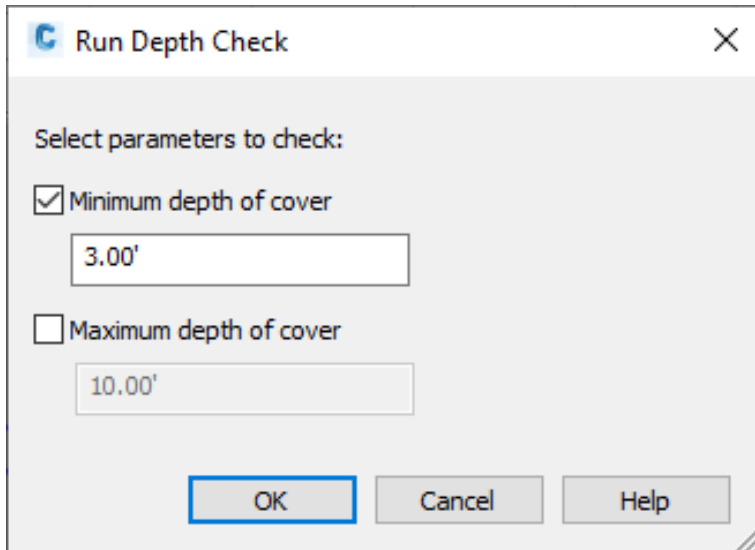


# Pressure Networks – Design Checks





# Pressure Networks – Design Checks



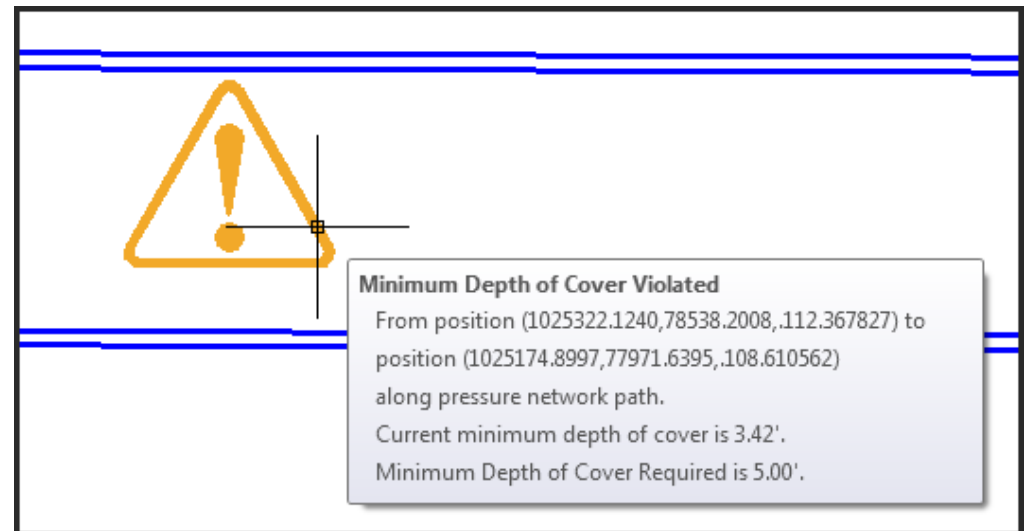
Run Depth Check

Select parameters to check:

☒ Minimum depth of cover  
3.00'

☐ Maximum depth of cover  
10.00'

OK Cancel Help



# DEMONSTRATION



# Wrap Up



# Wrap Up

Now you can:

- Explain the different parts of a pressure network in Civil 3D
- Lay out a pressure network both horizontally and vertically
- Edit pressure networks to account for design changes such as crossing utilities
- Analyze the pressure network to find faults in the layout of the model.





## Wrap Up



@c3dplus



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bhailey@geiconsultants.com



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