## <u>Cheat Sheet – Pressure Pipes – 2015</u>

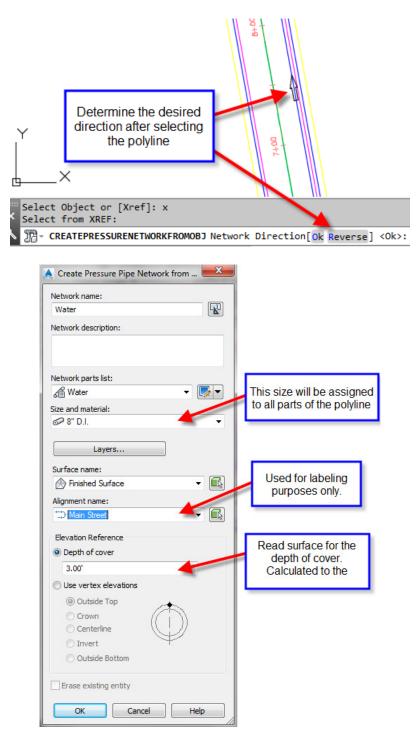
1. Edit the feature settings for the pressure network. Under the settings tab, right-click on "Pressure Network" and then select "Edit Feature Settings".

| Property   | Value   | Override | Child Over | Lock |   |
|--|---|----------|------------|------|---|
| 🗄 📑 General                                      |   |          |            |      | - |
| Degree of Curvature                              |   |          |            |      |   |
| 🗄 🕒 Labeling                                     |   |          |            |      |   |
| 🗄 🗋 Time   |   |          |            |      |   |
| 🗉 🎢 Default Styles                               |   |          |            |      |   |
| Appurtenance Default Style                       | Valve   |          |            | 8    |   |
| Fitting Default Style                            | Fitting   |          |            | 8    |   |
| Pressure Pipe Default Style                      | Centerline (Water)  |          |            | 8    |   |
| Fitting Plan Label Style                         | Nominal Diameter Bend Angle and Material                      | ]        |            | a    |   |
| Appurtenance Plan Label Style                    | Nominal Diameter Valve Type                                   |          |            | 8    |   |
| Pressure Pipe Plan Label Style                   | Nominal Diameter and Material                                 |          |            | 8    |   |
| Fitting Profile Label Style                      | Nominal Diameter Bend Angle and Material                      |          |            | 8    |   |
| Default Parts List                               | Water   |          |            | 1    |   |
| Appurtenance Profile Label Style                 | Nominal Diameter Valve Type                                   |          |            | 8    |   |
| Pressure Pipe Profile Label Style                | Nominal Diameter and Material                                 |          |            | 8    |   |
| Render Material                                  | _GLOBAL_  |          | Ŷ          | 8    |   |
| 🗉 🎢 Default Name Format                          |   |          |            |      |   |
| Appurtenance Name Template                       | Appurtenance - (<[Next Counter(CP)]>)                         |          |            | 8    |   |
| Fitting Name Template                            | Fitting - (<[Next Counter(CP)]>)                              |          |            | -    |   |
| Pressure Pipe Network Name Template              | Pressure Network - (<[Next Counter(CP)]>)                     |          |            | 8    | 1 |
| Pressure Pipe Name Template                      | Pressure Pipe - (<[Next Counter(CP)]>)                        |          |            | 8    |   |
| Alignment From Pressure Network Name Template    | Alignment - (<[Pressure Pipe Network Name(CP)]>) - (<[Next Co |          |            | 8    |   |
| 🗆 🎢 Default Profile Label Placement              |   |          |            |      |   |
| Dimension anchor option for pressure pipes       | Fixed   |          |            | 8    |   |
| Dimension anchor elevation value for pressure pi | 0.00'   |          |            | a    |   |
| Dimension anchor option for fittings             | Fixed   |          |            | 7    |   |
| Dimension anchor elevation value for fittings    | 0.00'   |          |            | æ    |   |
| Dimension anchor option for appurtenances        | Fixed   |          |            | a    |   |
| Dimension anchor elevation for appurtenances     | 0.00'   |          |            | 8    |   |

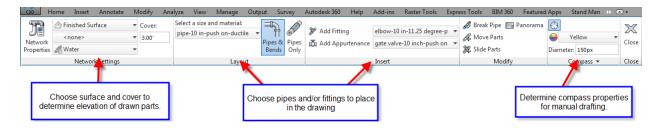
2. Right-click the part list you wish to use and select the edit button.

| ormation Pressure Pipes Fittings | Appurtenances Summary |                 |   |          |       |
|----------------------------------|-----------------------|-----------------|---|----------|-------|
| Name                             | Style                 | Render Material |   | Pay Item |       |
| ⊡- 🔏 Water                       |                       |                 |   |          |       |
| 🗄 🔏 ductile iron                 |                       | Ę               | ę |          | 100 B |
| - 🔏 10" D.I.                     | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   |       |
| 🔏 12" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   | 2.    |
| - 🔏 16" D.I.                     | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   | 2.    |
| 🔏 6" D.I.                        | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   |       |
| 🔏 4" D.I.                        | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   |       |
| 🔏 8" D.I.                        | Centerline (Water)    | 🛷 ByLayer       | ۲ | [none]   | 2.    |
| 🔏 14" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | 0 | [none]   |       |
| 🔏 18" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | 0 | [none]   |       |
| 🔏 20" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | 0 | [none]   |       |
| 🔏 24" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | 0 | [none]   | 26    |
| 🔏 30" D.I.                       | Centerline (Water)    | 🛷 ByLayer       | 0 | [none]   | 96    |
| 36" D.I.                         | Centerline (Water)    | 🔗 ByLayer       | 0 | [none]   | 24    |

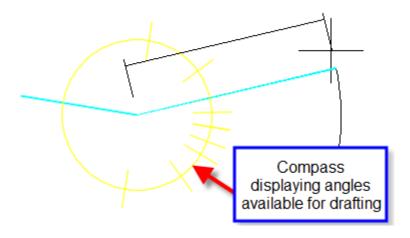
- 3. Two choices for creating a pressure pipe network: (a) Create from Object, (b) Pressure Network Creation Tools
  - a. "Home" ribbon tab > Pipe Network > Create Pressure Network from Object



b. "Home" ribbon tab > Pipe Network > Pressure Network Creation Tools



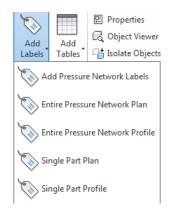
During the drawing process, the compass will guide you with only angles that the parts list has.



4. "Modify" ribbon tab > Pressure Pipe Network > Network Tools > Draw Parts in Profile

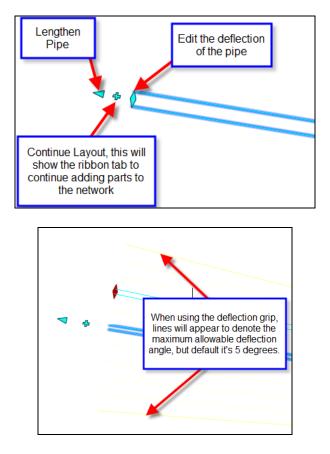
Either select the entire pipe network or select the parts you wish to show in the profile view. You can also click on a part, then right-click and choose add part to profile view. This is also available in the right-click menu after selecting a part. Alternatively, use the Pipe Network tab of the Profile View Properties to turn pipes on and off.

5. "Pressure Network" ribbon tab > Add Labels ... or "Home" tab > Add Labels



## 1. Using Grips

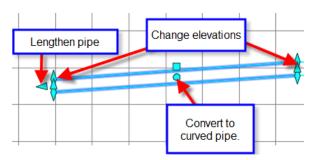
a. Plan View



You can edit the allowable deflection in the parts list by editing a particular pipe.

| formation P | ressure Pipes | Fittings Appurtena   | Appurtenances Summary |               |                 |           |          |  |  |  |  |
|-------------|---------------|----------------------|-----------------------|---------------|-----------------|-----------|----------|--|--|--|--|
| Name        |               |                      | Style                 |               | Render Material |           | Pay Item |  |  |  |  |
|             |               |                      |                       |               |                 |           |          |  |  |  |  |
|             | ductile iror  |                      |                       | ę             |                 | ę         |          |  |  |  |  |
|             |               | in-push on-ductile   |                       |               | ByLayer         | $\otimes$ | [none]   |  |  |  |  |
|             | f pipe        | in nuch an ductila   | Double Line AA        | Inter) B.     | Pulawor         |           | [nono]   |  |  |  |  |
|             | 🔏 pip 💧       | pipe-4 in-push on-   | ductile iron-350      | psi-AWWA C149 |                 |           |          |  |  |  |  |
|             | Ca pip        | -                    |                       |               |                 |           |          |  |  |  |  |
|             | f pip         | Property             |                       | Value         |                 | Unit      |          |  |  |  |  |
|             | f pip         | Nominal Diameter     |                       | 4.000000      |                 | in        |          |  |  |  |  |
|             | f pip         | Inner Diameter       |                       | 4.000000      |                 | in        |          |  |  |  |  |
|             | f pip         | Outer Diameter       |                       | 4.800000      |                 | in        |          |  |  |  |  |
|             | f pip         | Wall Thickness       |                       | 0.400000      |                 | in        |          |  |  |  |  |
|             | f pip         | Cut Length           |                       | 18.000000     |                 | ft        |          |  |  |  |  |
|             | f pip         | Allowable Deflection | л <b>(</b>            | 5.000000      |                 | deg       |          |  |  |  |  |
|             | f pip         | Minimum Flex Radi    | JS                    | 0.000000      |                 | ft        |          |  |  |  |  |
|             |               |                      |                       |               |                 |           |          |  |  |  |  |
|             |               |                      |                       |               |                 |           |          |  |  |  |  |
|             |               | L                    |                       | 1.<br>22.     |                 |           |          |  |  |  |  |

b. Profile View – You can hot grip the invert, centerline, or crown of a pipe. You can also multihot-grip grips by holding down shift while selecting the grip.



2. Using the pressure part properties

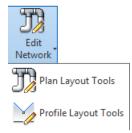
| essure Pipe Properties |           | Value   |
|------------------------|-----------|---|
| General                |           |   |
| Reference Surface      |           | Finished Surface                                  |
| Reference Alignment    |           | <none></none>                                     |
| Geometry               |           |   |
| Start Part             |           |   |
| End Part               |           | Fitting - (1)                                     |
| Bearing                |           | S80° 42' 04''E                                    |
| Start Station          |           |   |
| End Station            |           |   |
| Start Offset           |           |   |
| End Offset             |           |   |
| Slope                  |           | -0.65%  |
| Pipe Start Easting     |           | 1655969.5002'                                     |
| Pipe Start Northing    |           | 174642.1404'                                      |
| Pipe End Easting       |           | 1656144.9052'                                     |
| Pipe End Northing      |           | 174613.4205'                                      |
| Start Centerline Eleva |           | 38.78'  |
| End Centerline Elevat  | ion       | 39.93'  |
| Start Invert Elevation |           | 38.36'  |
| End Invert Elevation   |           | 39.52'  |
| Start Outside Crown B  | Bevation  | 39.24'  |
| End Outside Crown E    | evation   | 40.40'  |
| 2D Length              |           | 177.74'   |
| 3D Length              |           | 177.74'   |
| Minimum Cover          |           | 2.92'   |
| Maximum Cover          |           | 3.84'   |
| Part Data              |           |   |
| Part Family Name       |           | pipe-push on-ductile iron-350 psi                 |
| Description            |           | pipe-10 in-push on-ductile iron-350 psi-AWWA C151 |
| Cut Length             |           | 18.00'  |
| Diameter Inside        |           |   |
| Diameter Outside       |           | 11.100"   |
| Type Description       |           | standard  |
| Minimum Flex Radius    |           | 0.00'   |
| Thickness              |           | 0.550"  |
| Nominal Diameter De    | scription | 10 in x 10 in                                     |
| ld Coating Inside      |           |   |
| ld Coating Outside     |           |   |
| ld Material            |           | ductile iron                                      |
| Pressure Class         |           | 350psi  |
| Maximum Pressure       |           |   |
| Schedule               |           |   |
| SDR                    |           |   |
| Series                 |           |   |
| Strength Class         |           |   |
| Thickness Class        |           |   |
| Compatible Standard    |           | AWWA C151   |
| Connection Point Cou   | nt        | 2   |
| Fid Manufacturer       |           |   |
| Model Name             |           |   |
| Version Number         |           |   |

| Fitti | ng Properties              | Value  | Ľ |
|-------|----------------------------|--|---|
| ⊟ (   | General                    |  | 1 |
|       | Reference Surface          | Finished Surface                                     |   |
|       | Reference Alignment        | <none></none>  |   |
| ⊟ (   | Geometry                   |  |   |
|       | Insertion Point Easting    | 1656145.2752'  | : |
|       | Insertion Point Northing   | 174613.3599'   |   |
|       | Insertion Point Elevation  | 39.94'   |   |
|       | Insertion Point Station    |  |   |
|       | Insertion Point Offset     |  |   |
|       | Resultant Horizontal Angle | 22.4960 (d)  | ŀ |
|       | Resultant Vertical Angle   | 0.4318 (d)   |   |
|       | Part Data                  |  |   |
|       | Pressure Part Type         | Elbow  |   |
|       | Part Family Name           | elbow-22.5 degree-push on-ductile iron-350 psi       |   |
|       | Description                | elbow-10 in-22.5 degree-push on-ductile iron-350 psi |   |
|       | Angle                      | 22.5000 (d)  |   |
|       | Curve Radius               |  |   |
|       | Cutback Angle              |  |   |
|       | Type Description           | elbow  | • |

3. Using the Edit Pipe Network Vista.

| Pressure   Double Line   ByLayer   10 in x10 in   Finished Surface   3.00   3.00   2.33   3.15   165  |            | Descripti | Style       | Render  | Nominal       | Referenc | Reference Surface | Start Stat | Start Offs | End Stati | End Offset | Start Cover | End Cover | Minimu | Maximu | Sta |
|---|------------|-----------|-------------|---------|---------------|----------|-------------------|------------|------------|-----------|------------|-------------|-----------|--------|--------|-----|
| Pressure Double Line ByLayer 10 in x10 in Finished Surface 3.00' 2.99' 2.50' 3.06' 16'   Image: Second Se  | Pressure   |           | Double Line | ByLayer | 10 in x 10 in |          | Finished Surface  |            |            |           |            | 3.00'       | 3.01'     | 2.92'  | 3.84'  | 165 |
| Image: Constraint of the second se | Pressure 🖗 |           | Double Line | ByLayer | 10 in x 10 in |          | Finished Surface  |            |            |           |            | 3.00'       | 3.00'     | 2.33'  | 3.15'  | 165 |
|   | Pressure 🖗 |           | Double Line | ByLayer | 10 in x 10 in |          | Finished Surface  |            |            |           |            | 3.00'       | 2.99'     | 2.50'  | 3.06'  | 16  |
|   |            |           |             |         |               |          |                   |            |            |           |            |             |           |        |        | /   |
|   |            |           |             |         |               |          |                   |            |            |           |            |             |           |        | 12     |     |
|   |            |           |             |         |               |          |                   |            |            |           |            |             |           |        |        |     |

4. Pressure networks allow for plan and profile layout tools during editing.



- Plan layout tools are the same commands described above in this document under pressure pipe layout tools.
- Profile layout tools allow the user to add additional parts as well as change values not allowed in the part properties, such as slope.

| T          | 💮 Finished Surface | Ŧ | =12j    | ⊿ Add Pressure Pipe | pipe-10 in-push on-ductile |        |              | 🔏 Break Pipe  | $\mathbb{X}$         |       |
|------------|--------------------|---|---------|---------------------|----------------------------|--------|--------------|---------------|----------------------|-------|
| Network    | <none></none>      | Ŧ | Pipes & | 🐉 Add Bend 🛛        | elbow-10 in-11.25 degree-p | •      |              | 🖧 Delete Part | t 🥻 Change Elevation | Close |
| Properties | A Water            | • |         | 🕅 Add Appurtenance  | gate valve-10 inch-push on | ٠      | Pipe Surface | Panorama      |                      |       |
|            | Network Settings   |   |         | Layo                | out                        | Modify |              |               |                      |       |

- 5. Other Tips, Tricks, and Limitations
  - a. Pressure pipes does not allow the user to change the part after drawn. You must delete the part and draw it again. For example, changing a pipe size from 10" to 12" is not allowed.
  - b. The follow surface command in profile layout tools creates additional vertices to follow the surface more closely. The program does not allow the user to remove those vertices later, the user would have to delete the pipe and draw it again.
  - c. Use Design Check and Depth Check to analyze the pressure network for open connections and cover violations.
  - d. Drawing pipes and bends in the profile layout tools creates an efficient way to create these vertical bends.

http://tinyurl.com/pwldy4m

© 2014 CAD Masters, Inc. All rights reserved.

