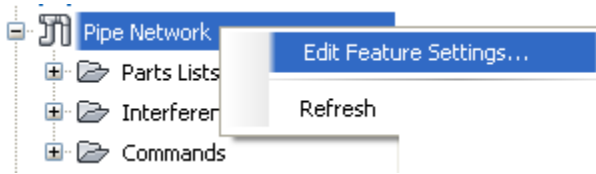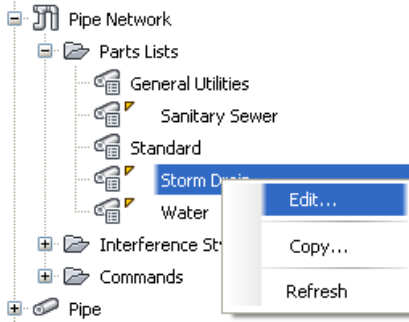# *Cheat Sheet – Gravity Pipes – 2020-2021*

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

Property	Value	Override	Child Overri
⊞ General			
⊞ Degree of Curvature			
⊞ Labeling			
⊞ Time			
⊟ Default Styles			
Interference Default Style	Basic		
Interference Render Material	_GLOBAL_		
Pipe Default Style	Single Line (Storm)		
Structure Default Style	CMI - Storm Manhole		
Structure Plan Label Style	Standard-Structure-Plan-SD		
Pipe Plan Label Style	Standard-Pipes-Plan-Boat-Right-SD		
Structure Profile Label Style	Standard-Structure-Profile-SD		
Pipe Profile Label Style	Standard-Profile-Pipe-SD		
Structure Section Label Style	Standard-Structure-Profile-SD		
Pipe Section Label Style	Name Only		
Default Parts List	CMI-Standard-SD		
Render Material	_GLOBAL_		
⊟ Default Name Format			
Interference Check Name Template	InterferenceCheck - (<[Next Counter(CP)]>)		
Interference Name Template	Interference - (<[Next Counter(CP)]>)		
Network Name Template	Network - (<[Next Counter(CP)]>)		
Alignment From Network Name Template	Alignment - (<[Pipe Network Name(CP)]>) - (<[Next Counter(CP)]>)		
Structure Name Template	SDMH#<[Next Counter]>		
Pipe Name Template	SDP<[Next Counter]>		
⊟ Pipe Network Defaults			
Use Size Name From Parts List As Description	Yes		
Use 3D Location During Pipe Network Layout	Yes		
Utility Type	Drainage		
⊟ Storm Sewers Migration Defaults			
Part Matching Defaults			
Parts List Used For Migration	CMI-Standard-SD		
Allow Part Family Swapping	Yes		
Use Imported Part Id for Part Family	No		
⊟ Default Profile Label Placement			
Dimension Anchor Option for Pipes	Fixed		
Dimension Anchor Elevation Value for Pipes	0.00'		
Dimension Anchor Plot Height Value for Pipes	0.0000"		
Dimension Anchor Option for Structures	Fixed		
Dimension Anchor Elevation Value for Structures	0.00'		
Dimension Anchor Plot Height Value for Structures	0.0000"		
Structure Label Placement	At Bottom of Structure		
⊟ Default Section Label Placement			
Dimension Anchor Option for Pipes	Fixed		
Dimension Anchor Elevation Value for Pipes	0.00'		
Dimension Anchor Plot Height Value for Pipes	0.0000"		
Dimension Anchor Option for Structures	Fixed		
Dimension Anchor Elevation Value for Structures	0.00'		
Dimension Anchor Plot Height Value for Structures	0.0000"		
Structure Label Placement	At Bottom of Structure		
Pipe Section Label Placement	At Bottom of Pipe		

2. Right-click the part list you wish to use and select the edit button. Add the appropriate families and part sizes to use the available parts for the pipe network.
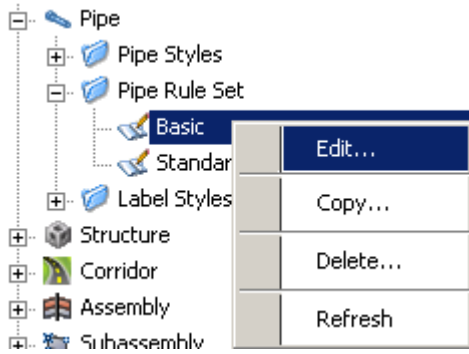
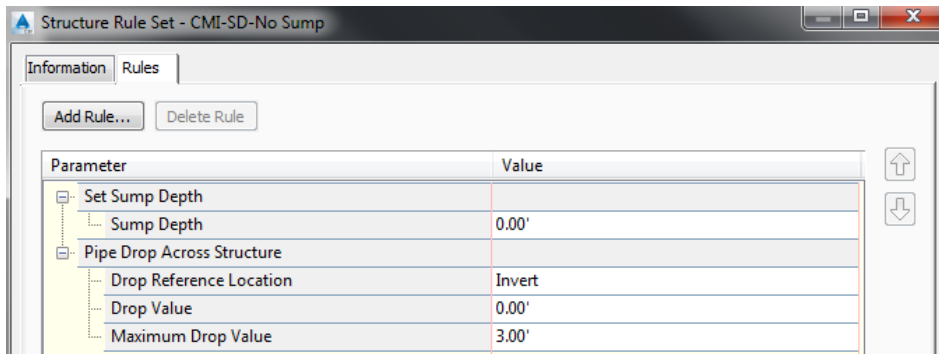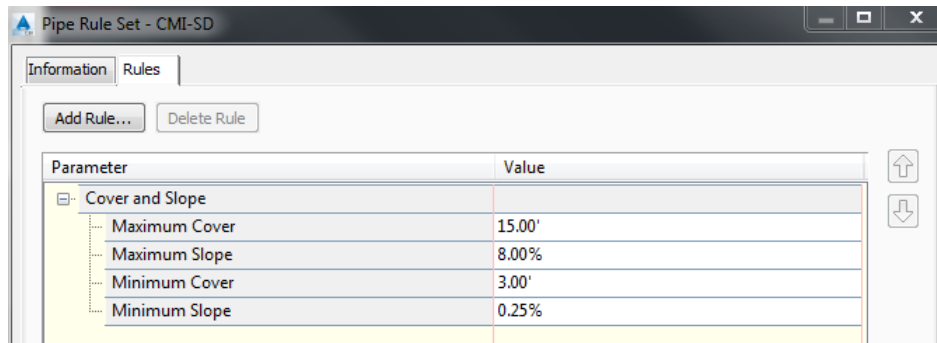3. Right-click an example rule set, and then select edit. For both pipes and structures. See the manual for a detailed explanation of each rule.

Add and delete the desired rules and change the order to determine how they react.

Note:
Always add the "Set Sump Depth" rule whether you have a sump or not for the project. If this rule is not present, the program will add a 2' sump by default.

This next step is to either draw the pipe run or convert a polyline to a pipe network. You should make a note to realize that structures and pipes can only be connected if they are in the same pipe network. Therefore, you can start with one polyline, but then you need to edit the network to add more objects to the pipe network. Also note that you can merge networks later if you want different pipe networks to join.

   a. **"Home" ribbon tab > Pipe Network > Create Pipe Network from Object**
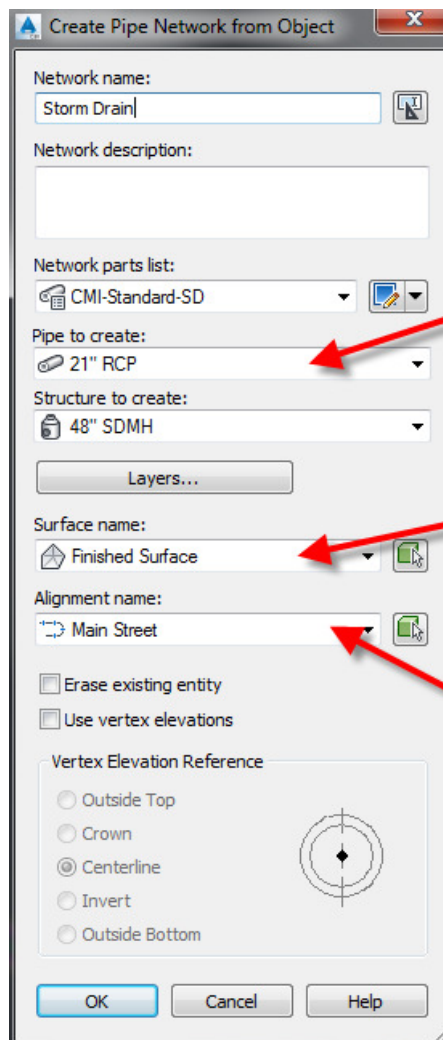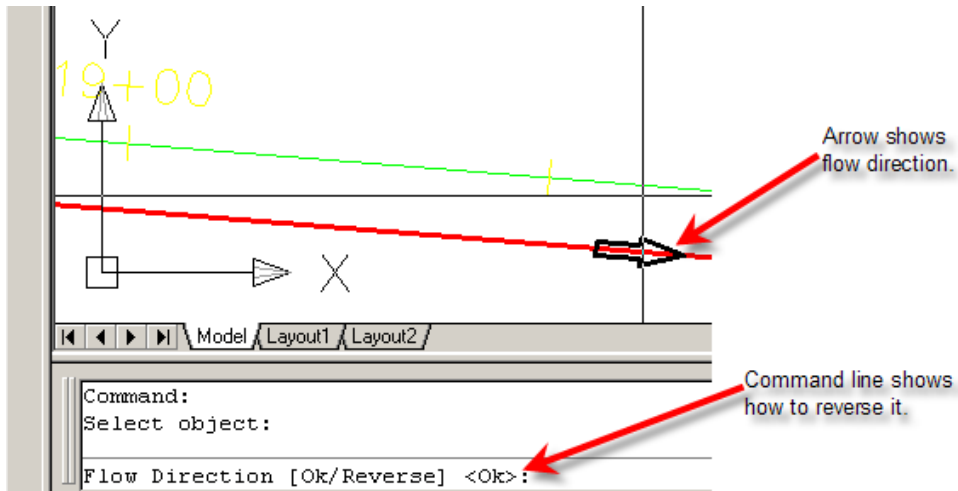
b. When editing a pipe network or creating a pipe network by **"Home" ribbon tab > Pipe Network > Create Pipe Network from Object**

Select alignment ro reference. This allows you to select different alignments reference the station and offset labels.

Surface selection for rim and rules calculations

Pipe Network

To reference a different parts list.

Sets the current structure when adding to the network.

Sets the current pipe size when adding to the network.

Pipe Network Vista. A spreadsheet interface to edit all aspects of the pipe network.

Choose to draw structures only, pipes only, or structures and pipes.

Change the flow direction, this only applies when drawing new pipes.

Deletes a network object, wither a pipe or a structure

4. **"Modify" ribbon tab > 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 part(s). Alternatively, use the Pipe Network tab of the Profile View Properties to turn pipes on and off.

5. **"Pipe Network" ribbon tab > Add Labels ... or "Home" tab > Add Labels**

Choose either "Entire Network Plan", "Entire Network Profile", "Single Part Plan", or "Single Part Profile". You may also click on a part, then right-click and choose add label.

Different Methods of Editing a Pipe Network

1. Using Grips

    a. Plan View – Hot gripping structures will pull all objects that are connected to it.

    Using the grip for a sturcture will also pull any connected object with it. Therefore all 3 pipes will move with the structure in this case.

    SO=21+24.41',20.220' (Main Street)
    SO=1+20.22',-7.867' (Parking Street)
    SO=11+37.18',-465.470' (Maple Lane)
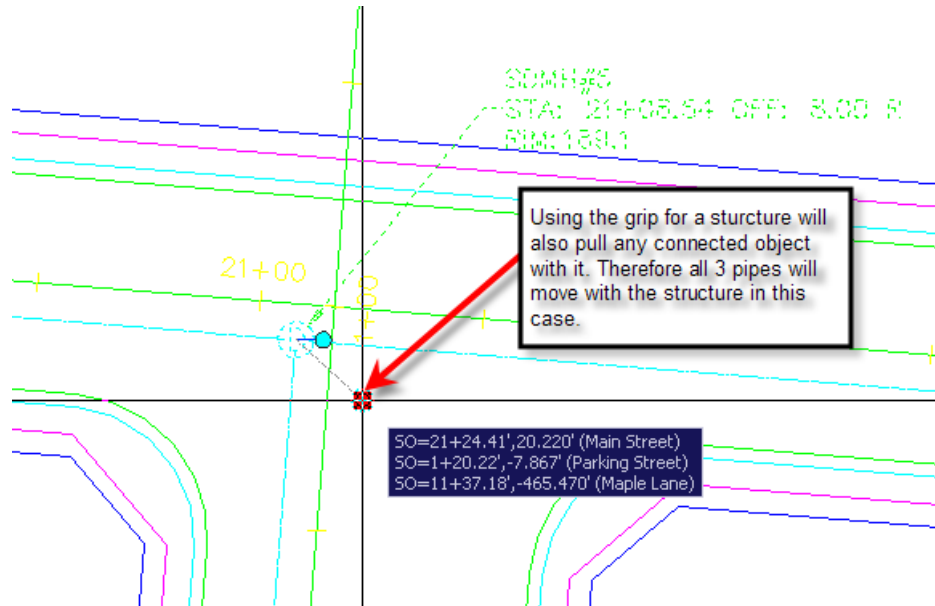
    b. Profile View – You can hot grip the invert, centerline, or crown of a pipe. You can also multi-hot-grip grips by holding down shift while selecting the grip.

    Selecting both grips with shift and move both pipes at the same time.

    SZ=8+75.85',178.13'

    Notice the other grips to use for individual pipes.
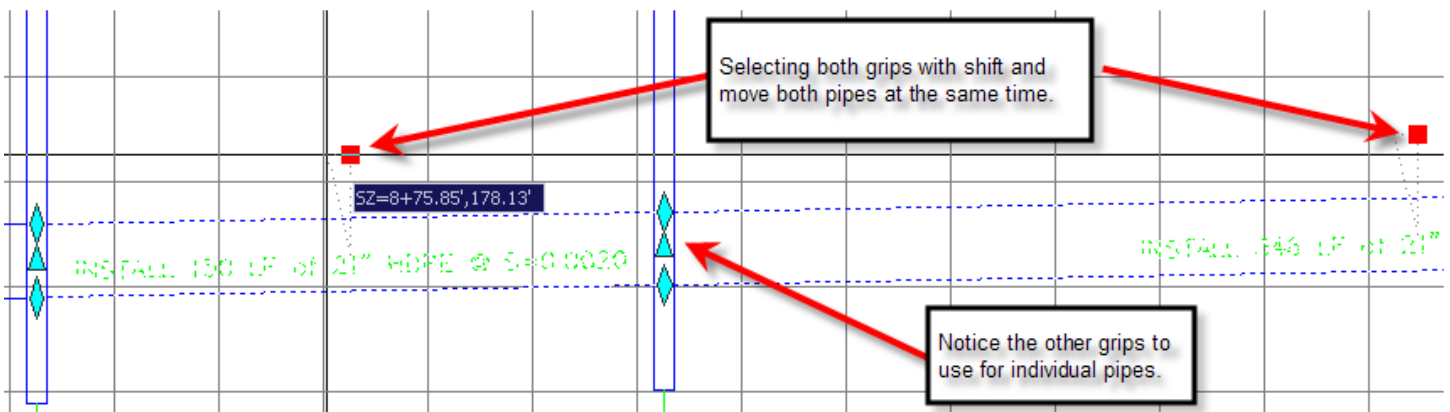
2. Using the part properties – one part at a time.
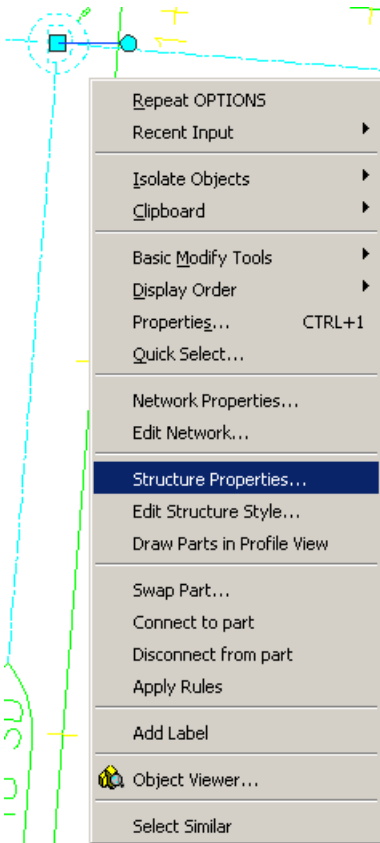
Click on a structure, right-click, and then choose "Structure Properties".

Menu (context menu):

Repeat OPTIONS
Recent Input ▶

Isolate Objects ▶
Clipboard ▶

Basic Modify Tools ▶
Display Order ▶
Properties... CTRL+1
Quick Select...

Network Properties...
Edit Network...

Structure Properties...
Edit Structure Style...
Draw Parts in Profile View

Swap Part...
Connect to part
Disconnect from part
Apply Rules

Add Label

Object Viewer...

Select Similar

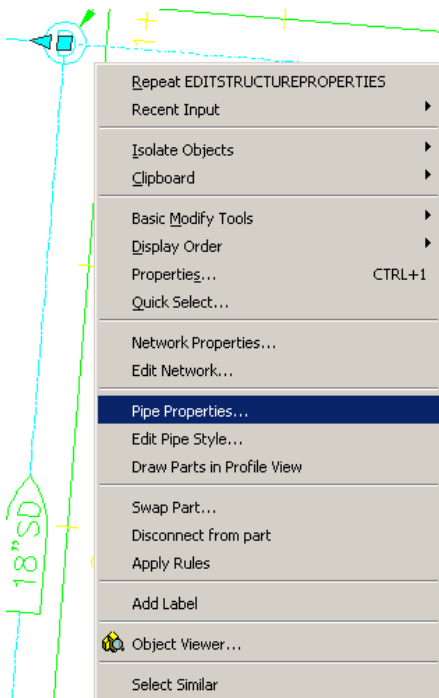| Structure Properties	Value
General	
Surface Elevation At Insertion Point	27.83'
Reference Surface	Finished Surface
Reference Alignment	Side Street
Geometry	
Structure Rotation Angle	0.0000 (d)
Structure Offset	12.00'
Structure Station	27+84.45'
Structure Northing	174158.3209'
Structure Easting	1657081.9394'
Connected Pipes	2
Insertion Rim Behavior	
Insertion Rim Elevation	27.83'
Surface Adjustment Value	0.00'
Automatic Surface Adjustment	True
Sump Behavior	
Sump Elevation	20.82'
Sump Depth	0.000
Control Sump By:	Depth
Hydraulic Properties	
Hydraulic Grade Line	0.00'
Energy Grade Line	0.00'
Known Capacity	0.000
Bypass Target	0
Inlet Location	On Grade
Part Data	
Part Type	Junction Structure
Part Subtype	Concentric
Part Description	Concentric Cylindrical Structure
Part Size Name	Concentric Structure 48 dia 24 frame 24 cone 5 wall 6 floor
Structure Shape	Cylinder
Vertical Pipe Clearance	34.000"
Rim to Sump Height	7.01'
Wall Thickness	5.000"
Floor Thickness	6.000"
Material	CONC
Frame	Standard
Grate	Standard
Cover	Standard
Frame Height	4.000"
Frame Diameter	24.000"
Frame Length	
Frame Width	
Barrel Height	
Barrel Pipe Clearance	6.000"
Cone Height	24.000"
Slab Thickness	
Inner Structure Diameter	48.000"
Structure Height	7.51'
Structure Diameter	58.000"

Click on a pipe, then right-click and choose "Pipe Properties".

Pipe Properties	Value
General	
Pipe Flow Direction Method	Start to End
Flow Direction	Start to End
Reference Surface	Finished Surface
Reference Alignment	Side Street
Geometry	
Start Structure	PKLOT-SDMH
End Structure	SDMH#19
Bearing	S23° 38' 16"W
Start Station	27+84.45'
End Station	27+84.45'
Start Offset	-125.92'
End Offset	12.00'
Pipe Slope (Hold Start)	-2.29%
Pipe Slope (Hold End)	2.29%
Slope	2.29%
Start Invert Elevation	24.24'
End Invert Elevation	21.07'
Start Crown Elevation	25.49'
End Crown Elevation	22.32'
Pipe Start Easting	1657137.2405'
Pipe Start Northing	174284.6724'
Pipe End Easting	1657081.9394'
Pipe End Northing	174158.3209'
Start Centerline Elevation	24.86'
End Centerline Elevation	21.70'
Minimum Cover	4.59'
Maximum Cover	6.11'
2D Length - Center to Center	137.92'
3D Length - Center to Center	137.96'
2D Length - To Inside Edges	133.92'
3D Length - To Inside Edges	133.99'
Start Cover	6.11'
End Cover	5.48'
Resize Behavior	
On Resize, Hold:	Invert
Hydraulic Properties	
Hydraulic Grade Line Up	0.00'
Hydraulic Grade Line Down	0.00'
Energy Grade Line Up	0.00'
Energy Grade Line Down	0.00'
Flow Rate	0.000 cubic feet per second
Junction Loss	0.000
Return Period	2
Part Data	
Part Type	Pipe
Part Subtype	Undefined
Part Description	PVC Pipe
Part Size Name	15.0 inch PVC Pipe
Cross Sectional Shape	Circular
Wall Thickness	0.320"
Material	PVC
Minimum Curve Radius	0.00'
Manning Coefficient	0.000
Hazen Williams Coefficient	0.000
Darcy Weisbach Factor	0.000
Inner Pipe Diameter	15.000"

3. Using the Edit Pipe Network Vista.
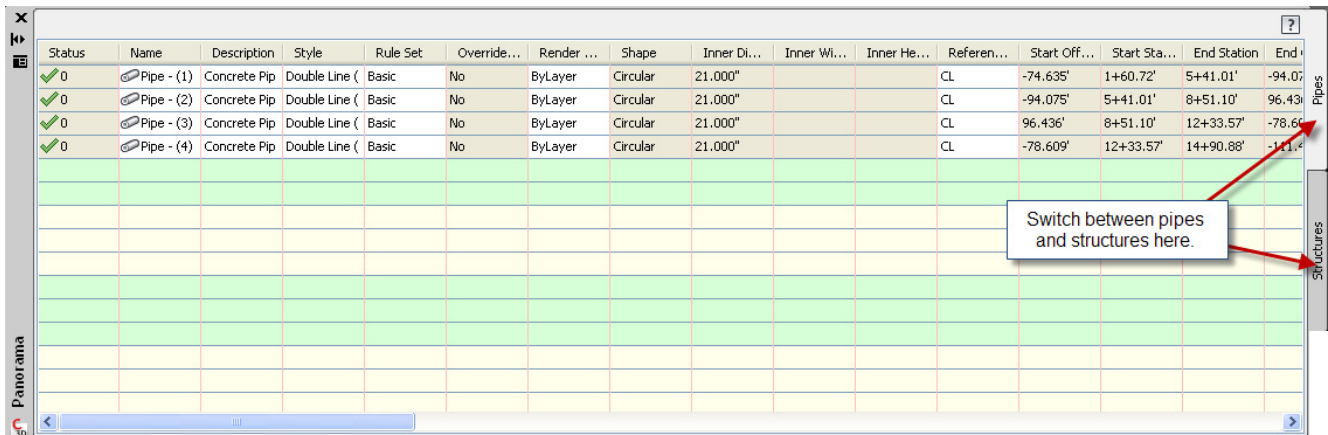
4. Other Tips and Ticks

   a. To change a manhole or pipe to different part, simply select the part, right-click and select *Swap Part*.

   b. To change a pipe network globally you can change the pipe or structure rules, and then use the command "*Pipe Network" ribbon tab > Apply Rules* to set the rules to the desired parts.

   c. Renaming and renumbering pipes and structures can be accomplished by running the command "*Pipe Network" ribbon tab > Rename Parts*.

   d. For Civil 3D 2021, there is a free tool (Project Explorer) that can be downloaded and used for reports and editing pipe networks easily.

      http://www.thecadmasters.com/2020/10/07/project-explorer-for-civil-3d/

   e. With multiple pipes going in and out of a structure, you match the elevation of one of the pipes. In structure properties, go to the Connected Pipes tab, highlight all the pipes you wish to modify and then right-click and choose the desired option. Highlight the desired pipe to match and choose the drop amount.

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