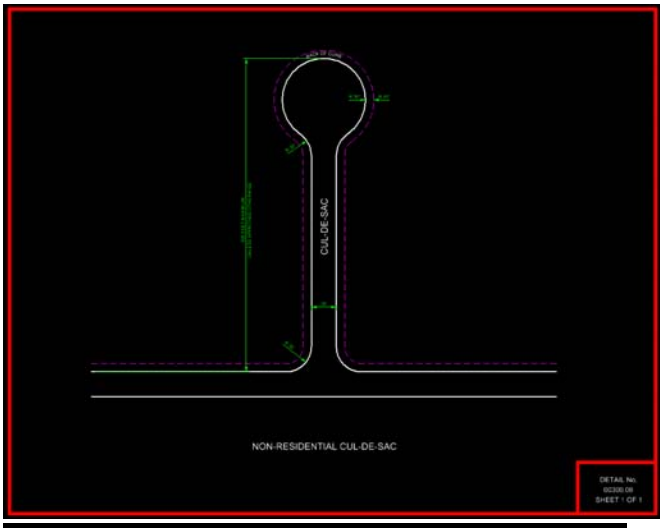
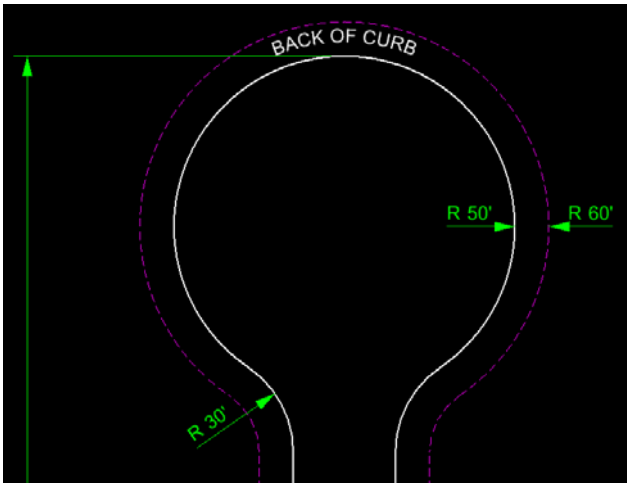
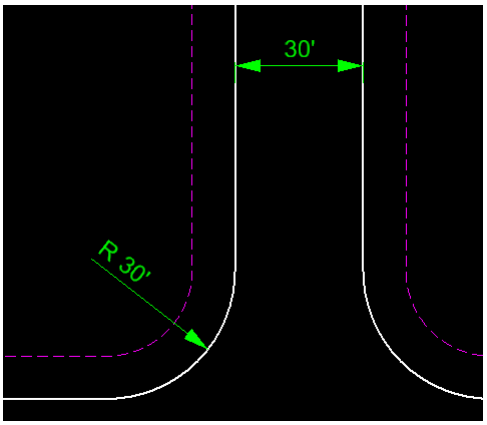
CUL-DE-SAC LAB

I will begin by showing an overall graphic of what the project is supposed to look like and then a few detail graphics that identify details so the student can understand what the project is intended to look like as you work your way through the project directive.

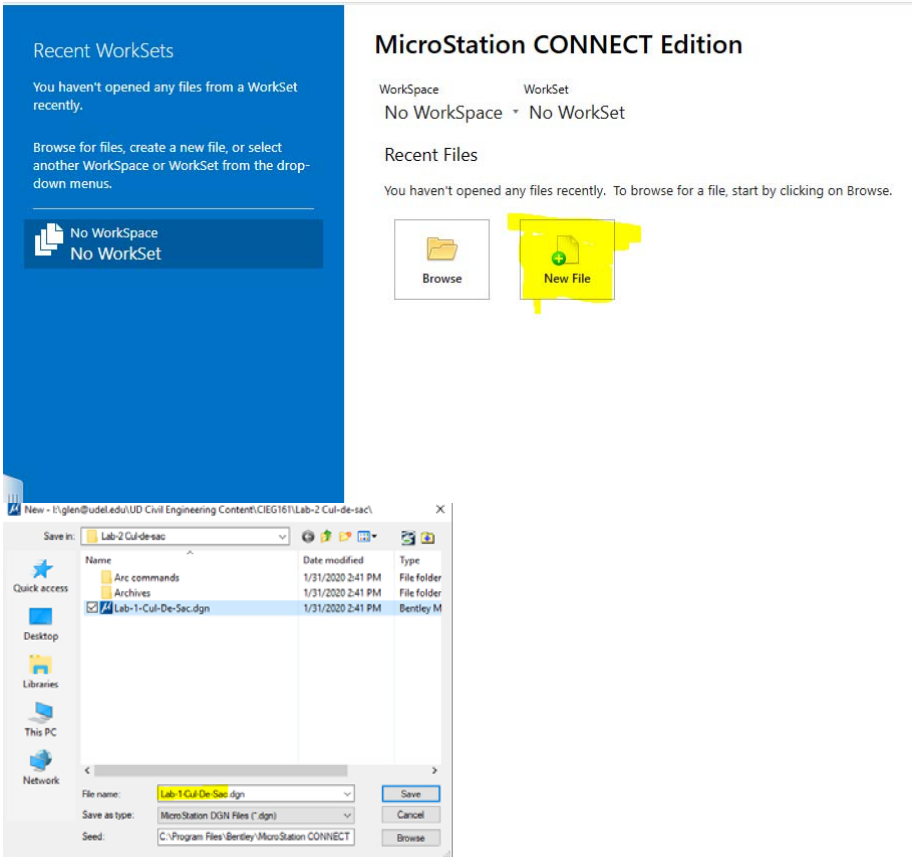




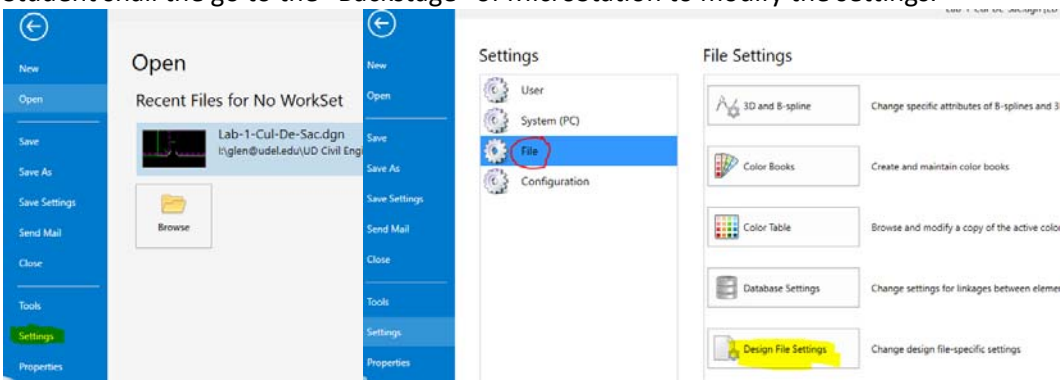


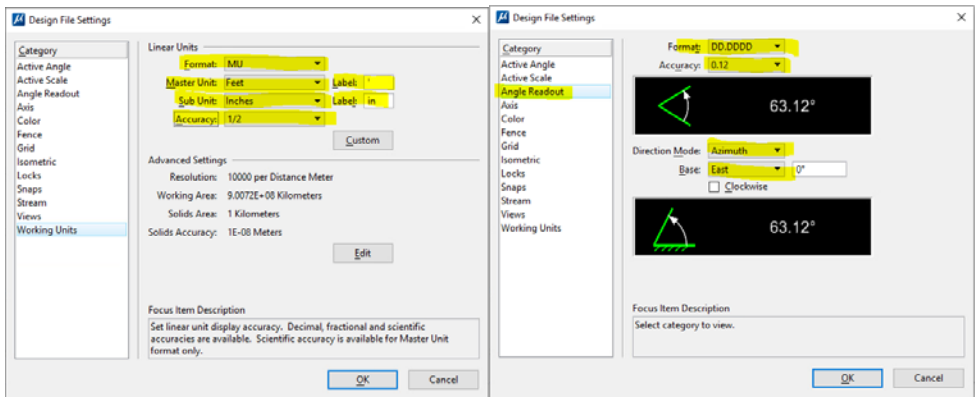
1) Create a new Design file:

a) The name of the file shall be Cul-De-Sac and saved to your Google Drive or some local location for later retrieval.



b) Student shall the go to the "Backstage" of MicroStation to modify the settings.



c) 

The below settings are representative of what you see in the graphics above.

(1) ***Working Units***

(a) *Format: MU*

(b) *Master Unit: <u>Feet</u> with label of <u>'</u>*

(c) *Sub Unit: <u>Inches</u> with label of <u>in</u>*

(d) *Accuracy: 1/2*

(2) ***Angle Readout***

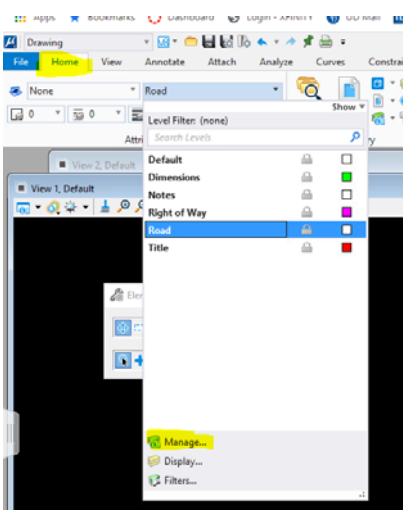
(a) *Format: DD.DDDD*

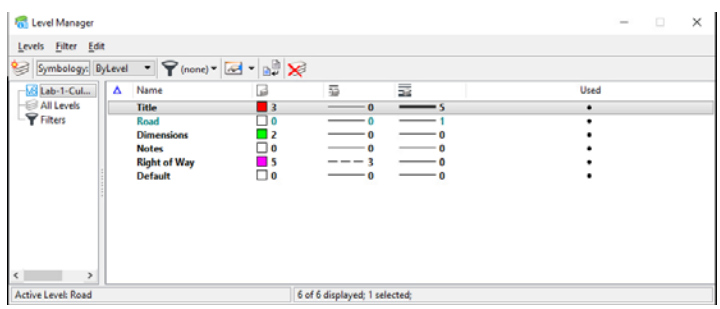
(b) *Accuracy: 1/2*

(c) *Direction Mode: Azimuth:*

(d) *Base: East 0^: All Labs*

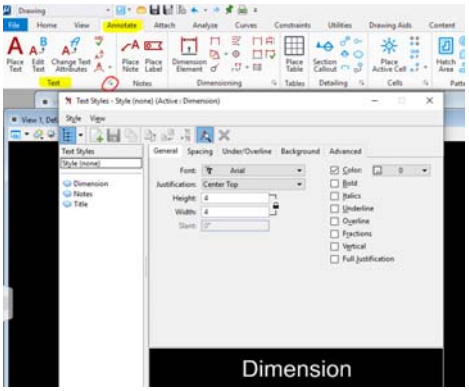
2) Creating Levels utilizing "Level Manager". The Levels called out on lines 1 through 5 below are created by utilizing the Level Manager Command found in the "home" tab on the ribbon as shown.





(1) **Title**: Border belongs on this level.
    (a) Color “3”, Line Style “0”, Line Weight “5”
(2) **Road**: Roadway belongs on this level.
    (a) Color “0”, Line Style “0”, Line Weight “1”
(3) **Dimensions**: All dimensions on this level.
    (a) Color “2”, Line Style “0”, Line Weight “0”
(4) **Notes**: Any note or text belongs on this level.
    (a) Color “0”, Line Style “0”, Line Weight “0”
(5) **Right of Way**: Dashed line outside of roadway belongs on this level.
    (a) Color “5”, Line Style “3”, Line Weight “0”

3) The following three **Text Styles** are to be created (Dimensions, Notes & Title) utilizing the Annotate Tab found in the Ribbon.



(1) **Dimensions:**

(a) General Tab

(i) Font: Arial

(ii) Height: 4.00

(iii) Width: 4.00

(iv) Justification: Center Top

(b) Spacing

(i) Line Spacing 1.00

(2) **Notes:**

(a) General Tab

(i) Font: Arial

(ii) Height: 8.00

(iii) Width: 8.00

(iv) Justification: Center Center

(b) Spacing

(i) Line Spacing 1.00

(3) **Title:**

(a) General Tab

(i) Font: Arial

(ii) Height: 6.00

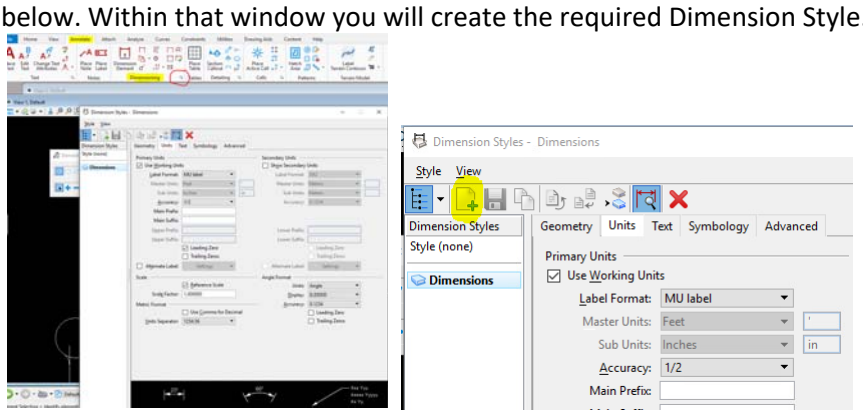
(iii) Width: 6.00

(iv) Justification: Center Center

(b) Spacing

(i) Line Spacing 1.00

4) Creating Dimension Style. A Dimension Style called Dimension is required to be created for this project. To get to the Command the student shall click on the Annotate tab of the Ribbon and then in the Dimension Tool bar portion click on the small drop down shown in the red circle in the graphic below. Within that window you will create the required Dimension Style.



a) When the button is clicked as shown above with the green plus sign the student will be able to create the new Dimension Style called Dimension. The tabs called out below in 1,2 & 3 is where students will make the required adjustments to the variables in the style being created and set the Text Style previously to be utilized the newly created Dimension Style.

(1) **Geometry**:

(a) Extension Lines: Enabled

(i) Offset: 1.00000

(ii) Extension: 1.0000

(b) Terminators:

(i) Arrowhead: Filled

(ii) Width: 1.5000

(iii) Height: .75000

(c) Fit Options:

(i) Text/Term. – Term. Inside

(2) **Units**:

(a) Primary Units:

(i) Check: "Use Working Units"

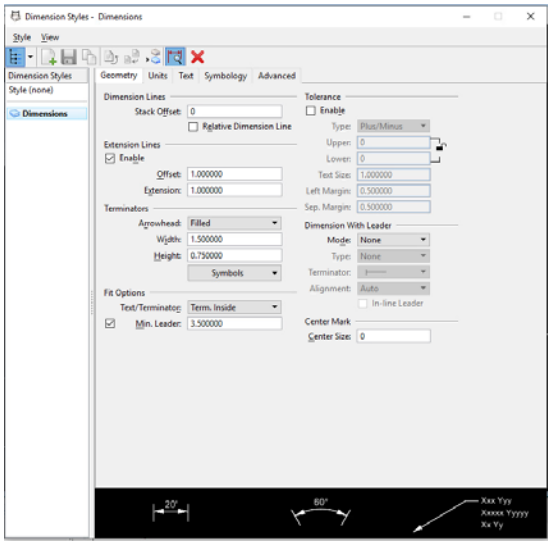
(ii) Label Format: MU Label

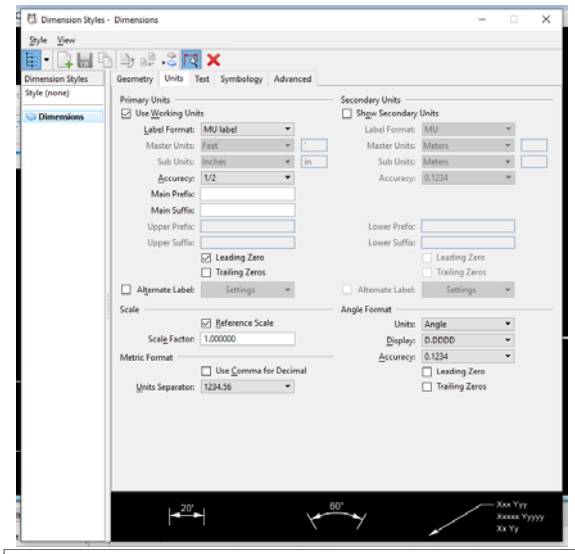
(iii) Accuracy: 0.12

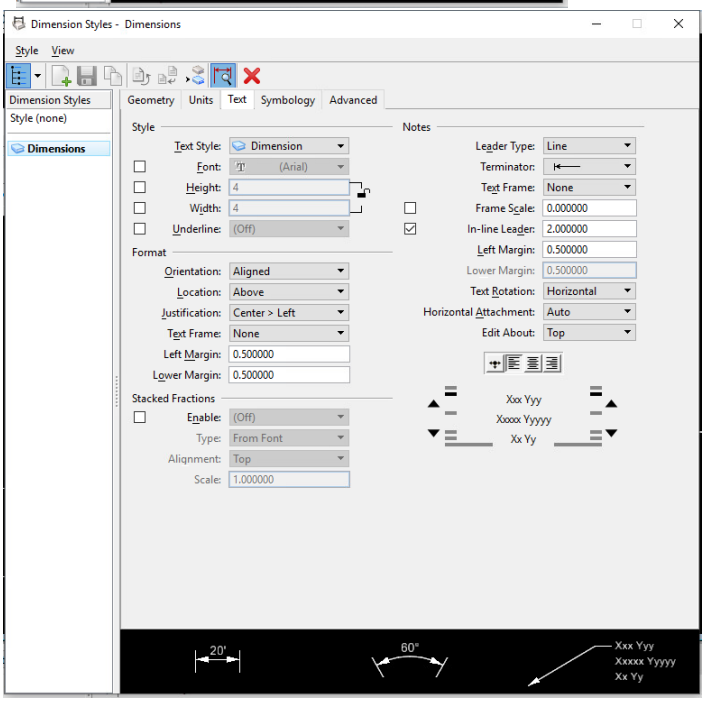
(3) **Text**:

(a) Text Style:

(i) Use drop down and pick "Dimension" text style that was created in previous section.





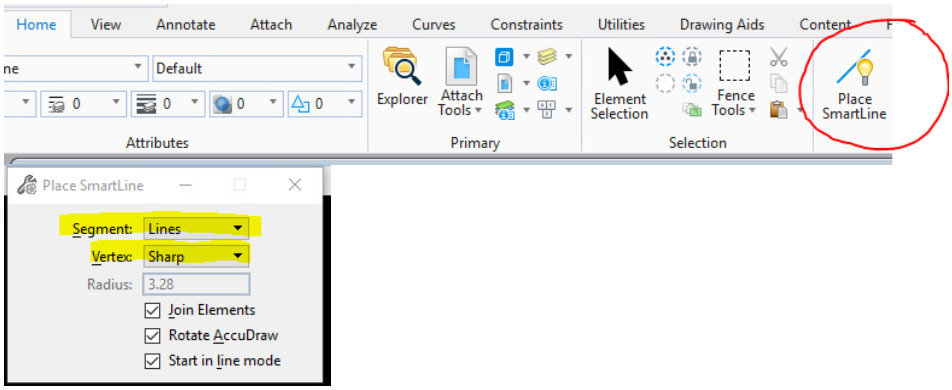


5) Student will then return to the blank graphics screen and begin utilizing commands to create the design file. The following commands the student needs to be utilize and begin mastering.

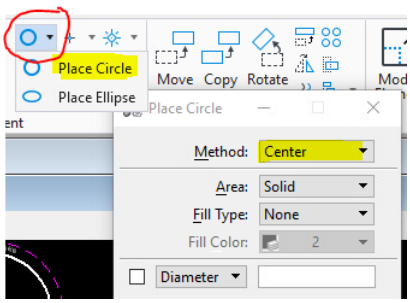
a) View Control Commands

1. Fit View
2. Pan View
3. Zoom in
4. Zoom out
5. Rotate view

b) Place Smart Line.



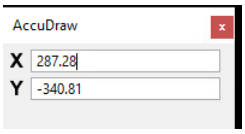
c) Place Circle Tool



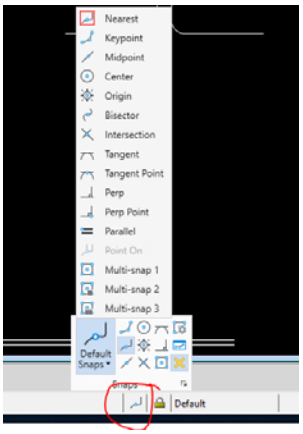
d) AccuDraw

1. When docked it can be found at the bottom of the graphics screen as shown here.

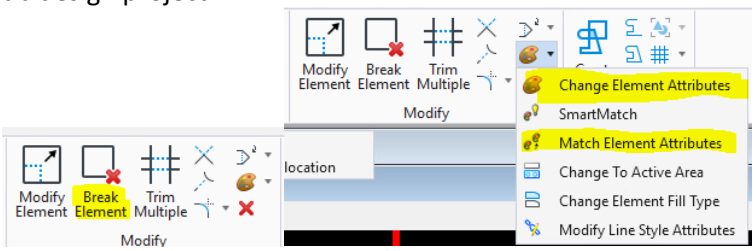
2. or when undocked it will appear in the graphics area as shown here.



e) AccuSnaps This tool allows for accuracy when creating objects and having entities connect or intersect as they should.

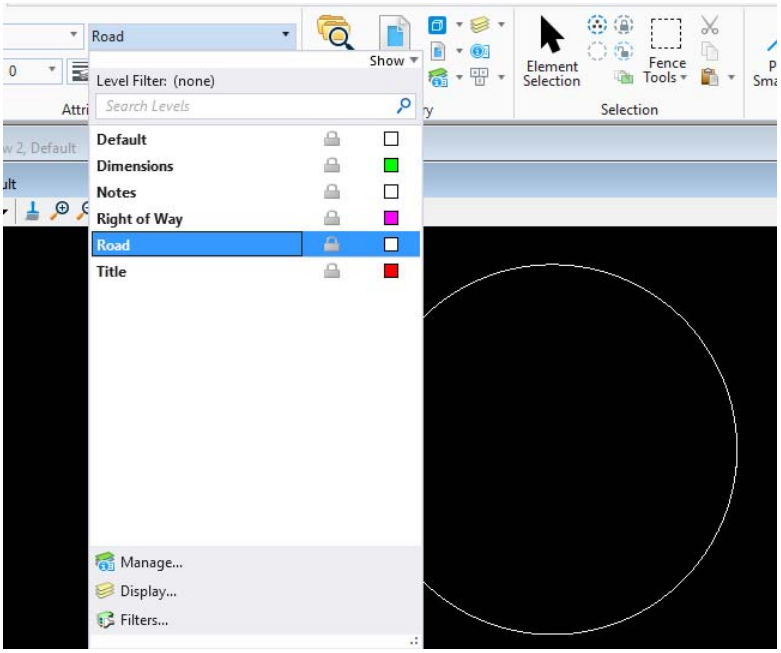


f) **Modify Tool Bar** The "Break Element" and "Change Attribute" Commands are very useful in this lab design project.

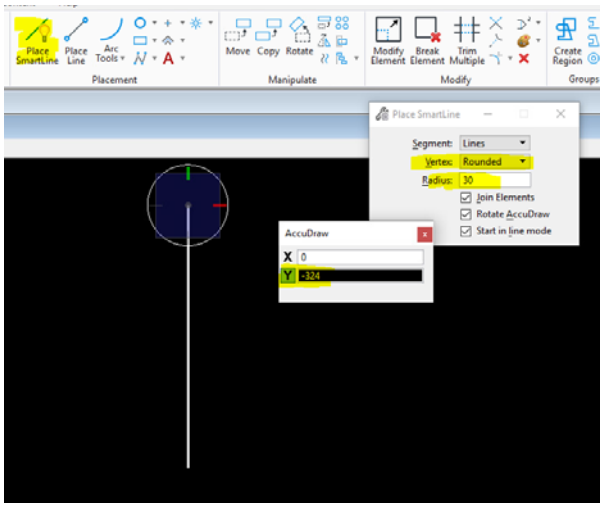


6) Creating the design file:

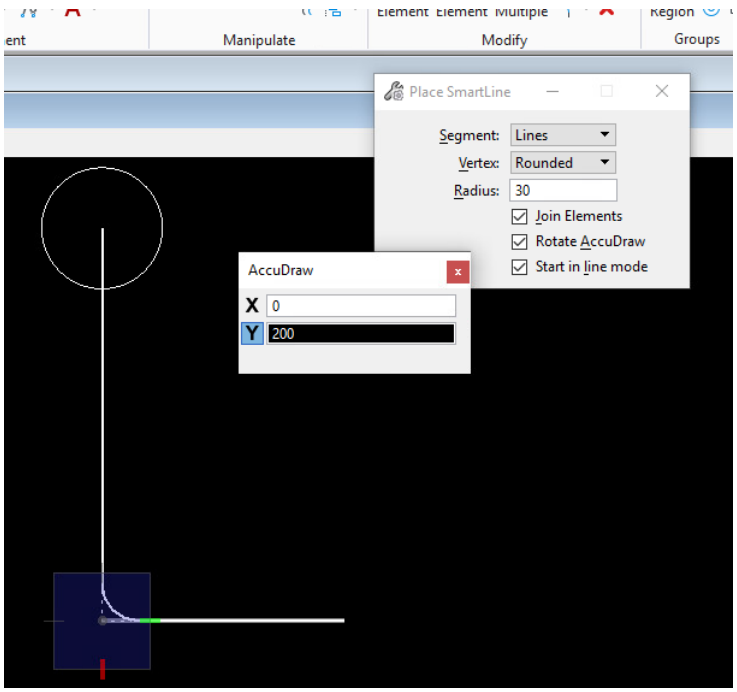
a) Set active Level to "Road" and draw a 50' circle.



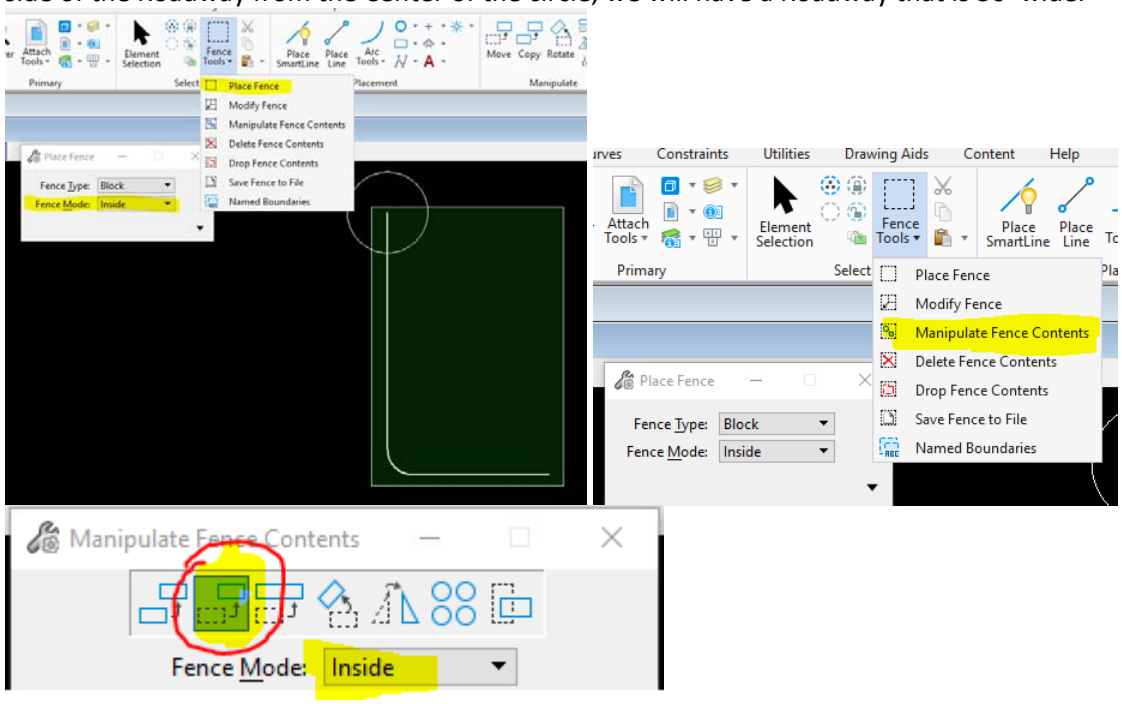
b) Draw a SmartLine from the Center of the Circle a distance of 324' with a vertex of 30' in the negative "Y" direction.



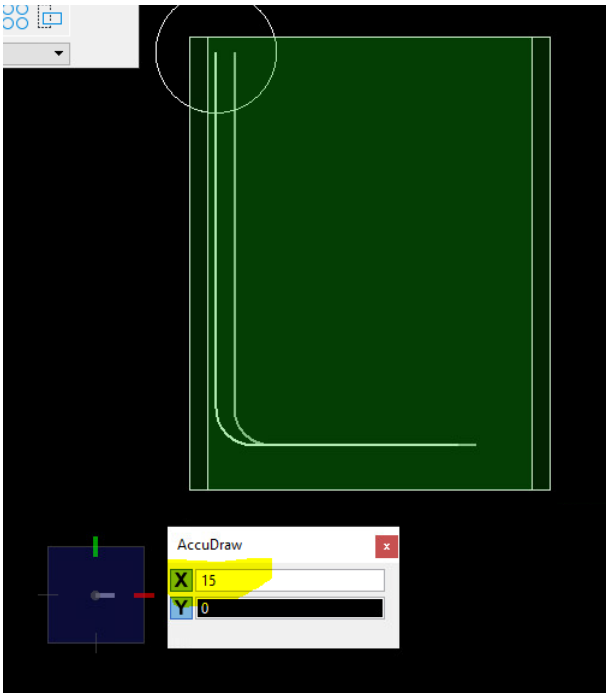
c) And allow Accudraw to create the radius in the roadway and continue in the “X” direction 200’.



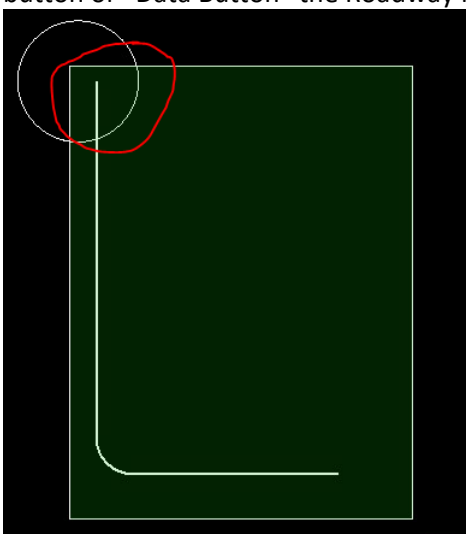
d) Utilize the "**Fence Tool**" to Window the last line created and move it 15' to the right. Notice the Roadway is 30' wide so once we "**Mirror**" this right-hand side of the road to reflect the other side of the Roadway from the Center of the circle, we will have a Roadway that is 30' wide.



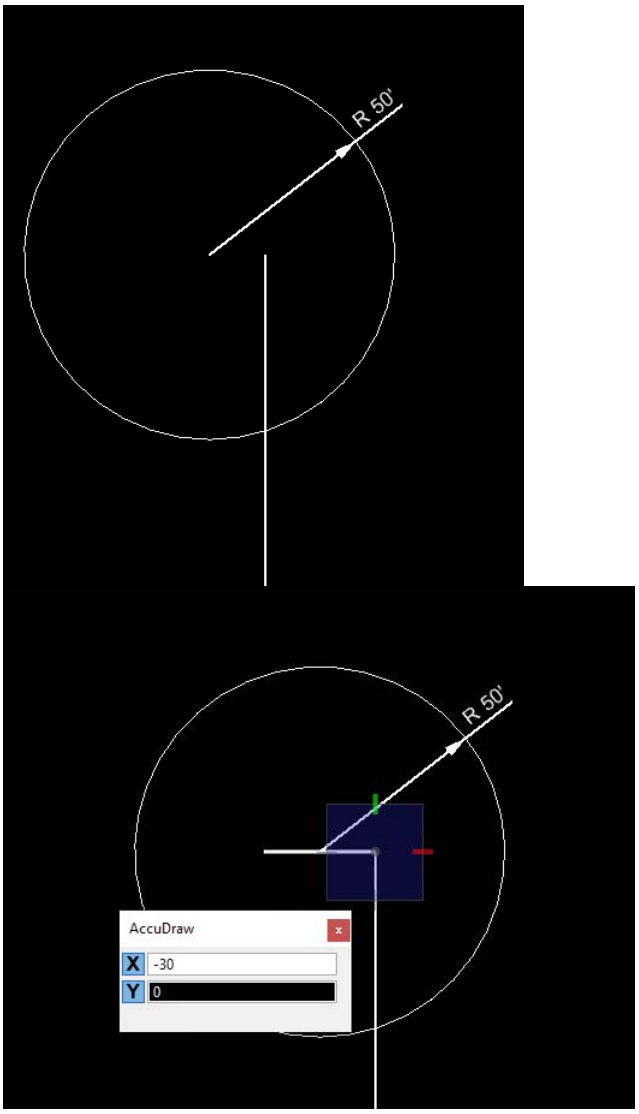
e) Once you have placed the "Fence", with "Window" the object within the Window can be moved to the right by 15' by picking a point on the graphics screen (anywhere on the graphics screen) and dragging the object in the direction you want it to be paced by the distance you want it moved.



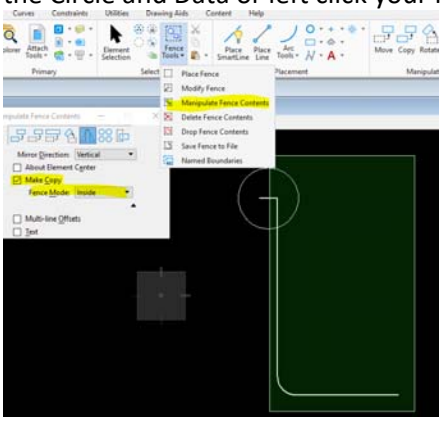
and you can see once you hit the left mouse button or “Data Button” the Roadway has moved to the right by distance given.

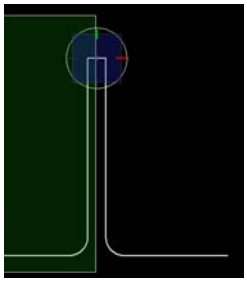


f) The right-hand side of the Roadway has now been moved 15’ to the right from the center of the 50’ Radius’ d Cul-De-Sac as shown here. We now need to replicate or mirror the Roadway to shown the left-hand side of the Roadway. We will draw a line from the end of the Right hand lane of the Roadway 30’ to the left. This line is only for reference and will be deleted once it is no longer needed. It is shown in the second picture shown below.



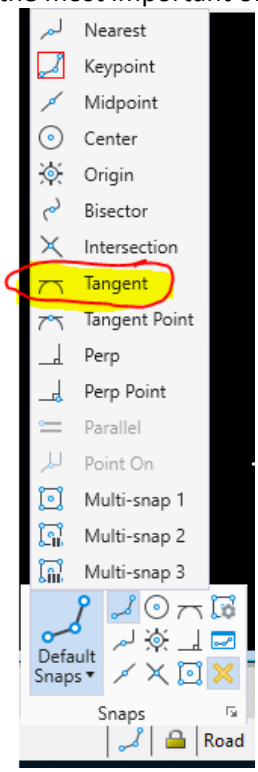
g) We will now utilize this “construction line to create the left-hand land of the Roadway with the place Fence Command and the Mirror Function. Allow Accusnap to find the “Middle or Center of the Circle and Data or left click your mouse button to create the left hand Roadway.



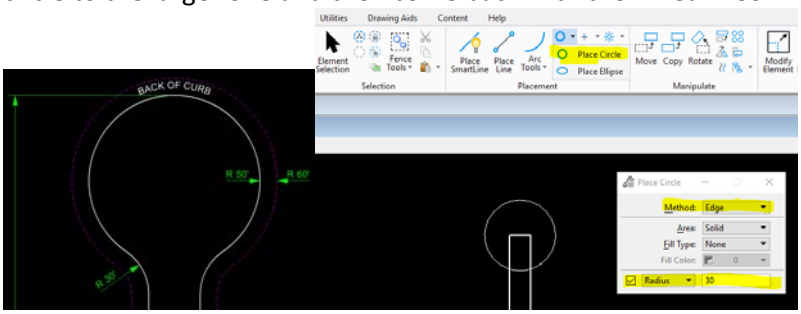


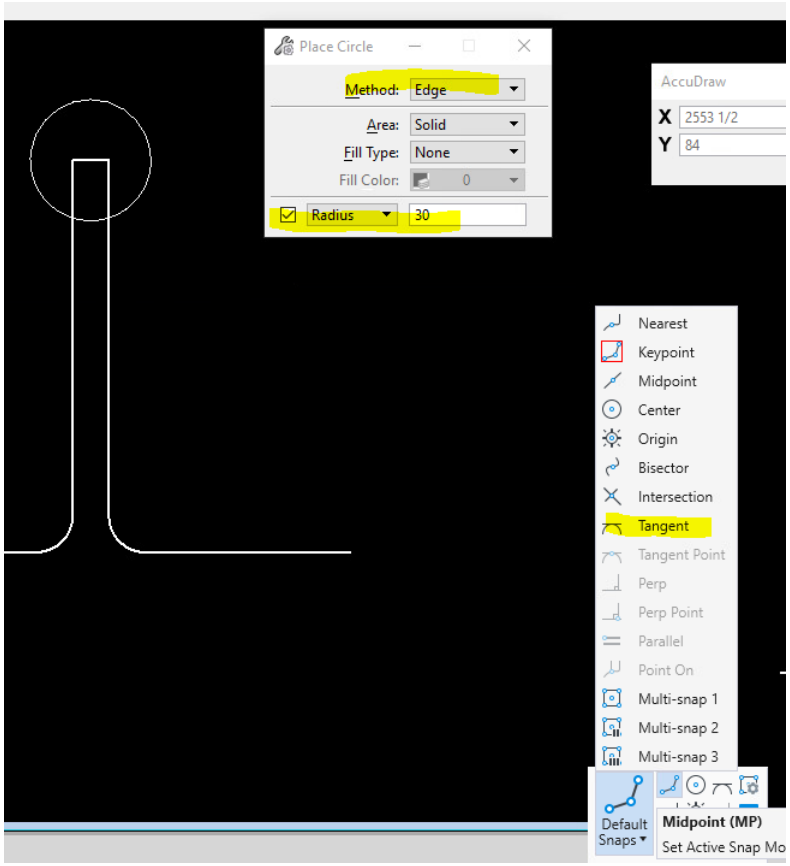
h) We shall now begin creating the Arc’s needed to complete the top portion of the Cul-De-Sac. We will utilize the Circle Command and the utilize the “Break “ command to clean up. The

Accusnaps are paramount to the success of this portion of the project. The “Tangent Accusnap is the most important of the conversation at this point in time.

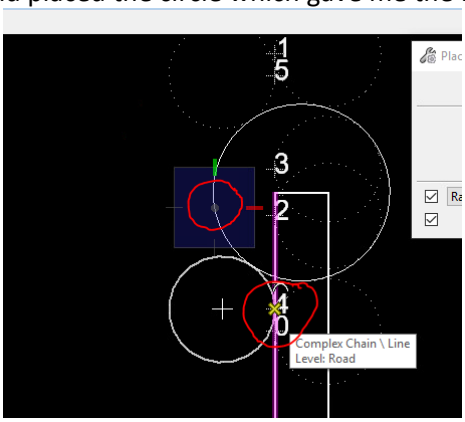


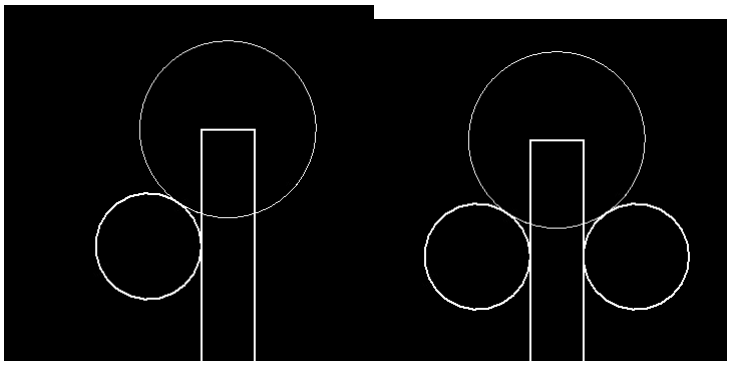
i) This graphic identifies the 30’ Radius required to connect the circle of the Cul-De-Sac to the road leaving it. We will utilize the Circle command and the Tangent Accusnaps to place the smaller circle to the larger one and then come back with the “Break” Command to clean things up.



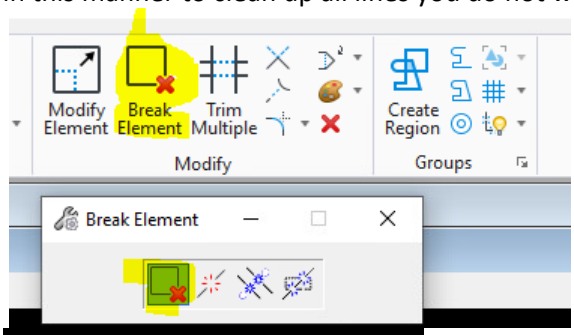
j) 

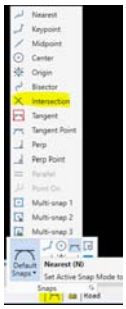
k) The following graphic shows two red circles. The circle on the upper left was my first pick utilizing Accusnaps "Tanget". Microstation then allows you to pick another tangent point and it identifies all the mathematical solutions that are possibilities. Knowing I wanted the results we do I picked the Roadway headed down and placed the circle which gave me the following result.

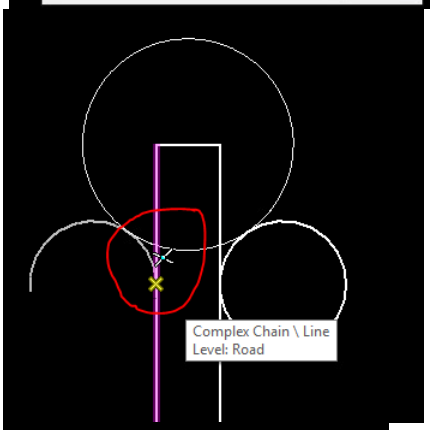
The do the same thing for the other side. 

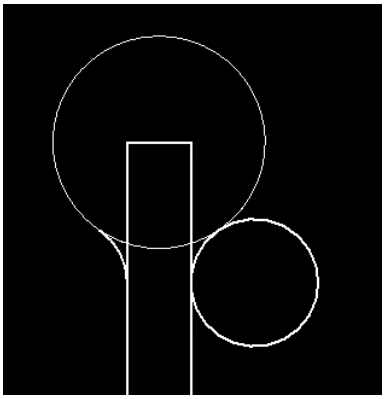


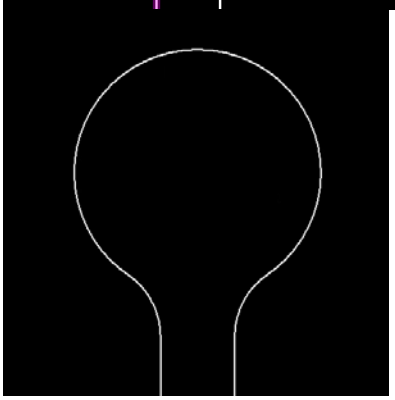
l) We will now utilize the “Break Element” Command along with the “Intersction” Accusnap to clean up our project. Pick the “Break Element” command and then choose a spot on the area of the circle you do not need and you will see the circle going away in the direction you drag your mouse. The second pick uoi make you will be utilizing the “Intersection” portion of Accusnap. This is important because you want this location to end up being clean and no overlap. Proceed in this manner to clean up all lines you do not want in your final design.



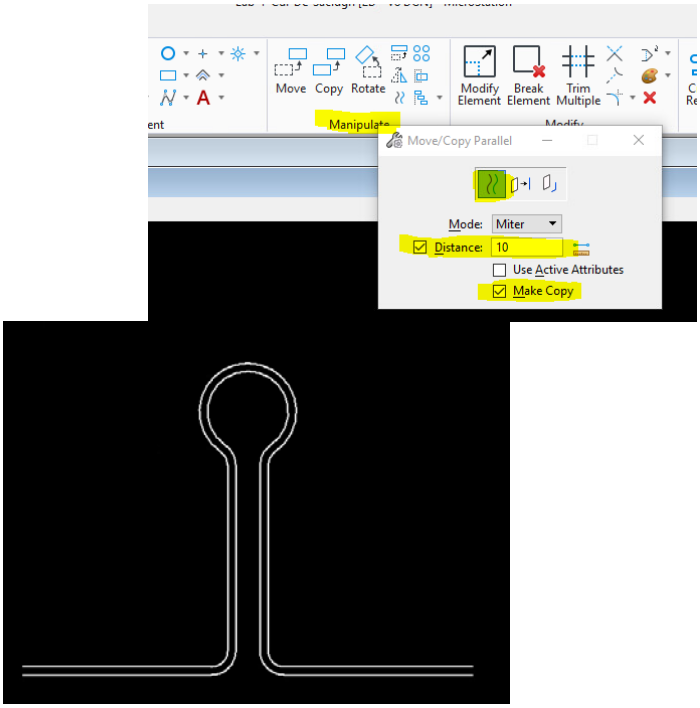




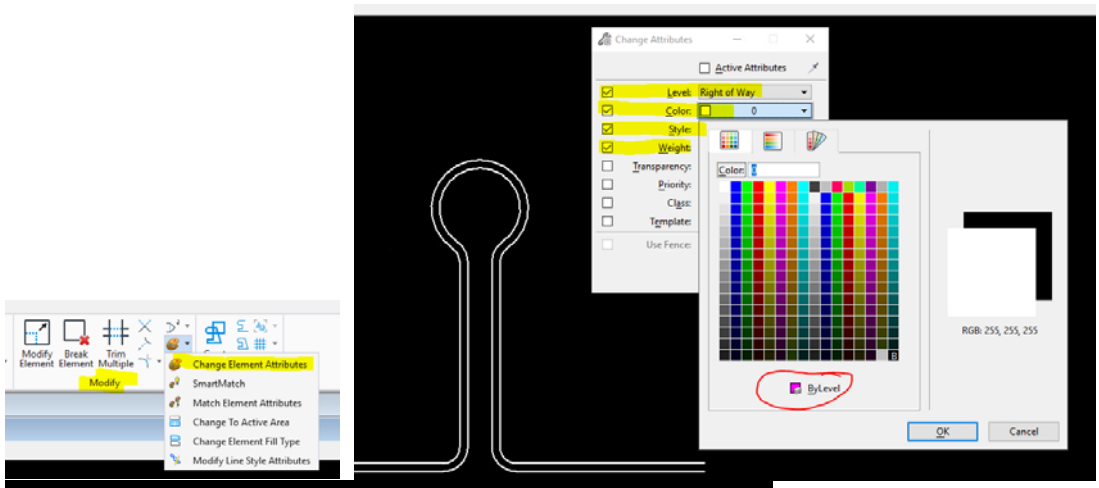


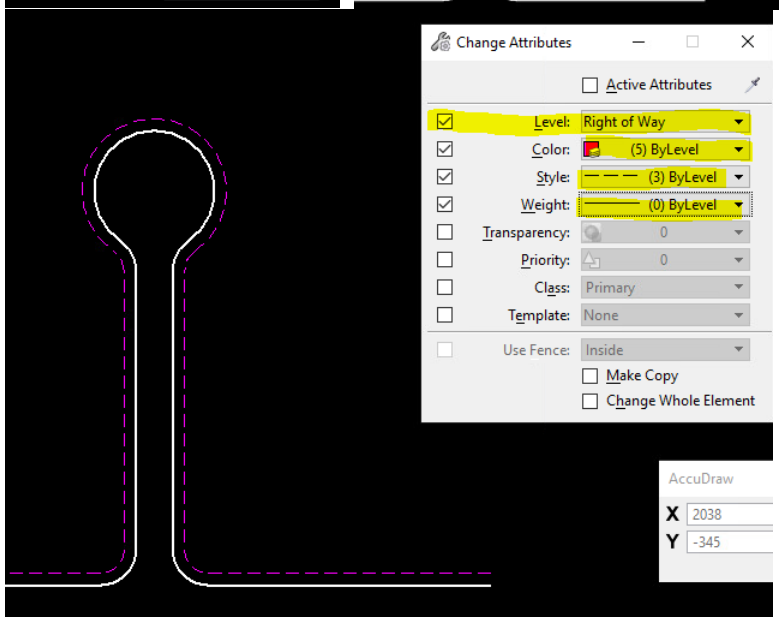


m) We will now move onto the Command “Move Parallel” We know the Purple dashed line shown in this document at 6.I is referenced as the Right of Way and is 10’ away from the Roadway. This is represented because the Property line has a 60’ radius as opposed to the Roadway having a 50’ Radius. The Move Parallel Command can be found on the Ribbon in the Manipulate Tool Bar.



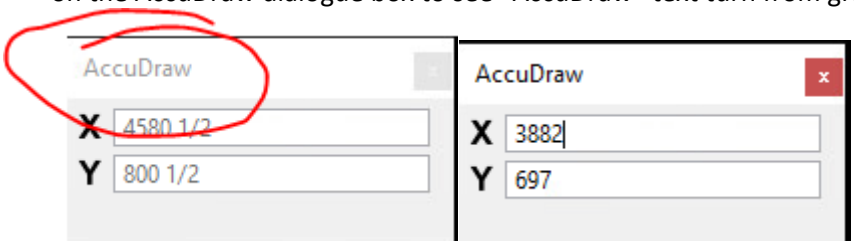
n) We then utilize the Modify Tool Box for the Change Element Attributes to the appropriate layer for the Right of Way and make sure that all are identified “By Layer”.



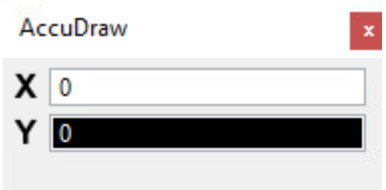


o) **Now to utilize AccuDraw.** Utilizing Accudraw to create the last and lower portion of the Roadway.

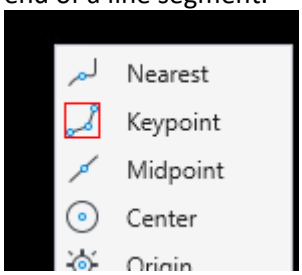
1. Undock Accudraw and make sure AccuDraw is active. This is done visually and if unsure click on the AccuDraw dialogue box to see “AccuDraw” text turn from gray to black.



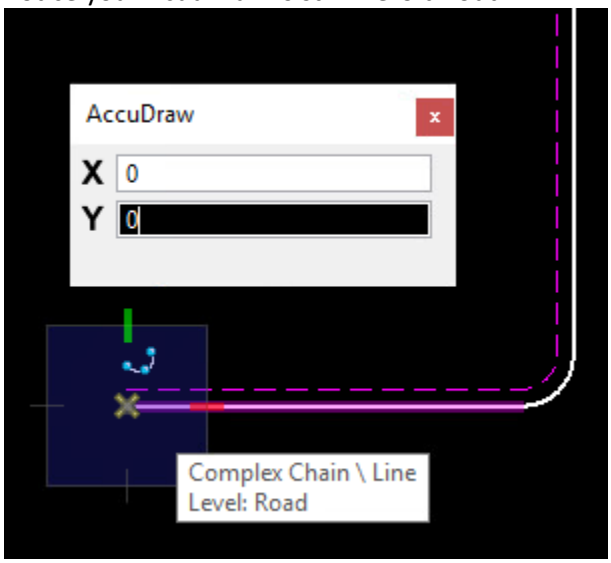
2. Notice the Accudraw will have numbers for the “X” & “Y” values. You will want to “Zero” the values by utilizing the “O” for origin on the keyboard. The letter “O” not the number zero.



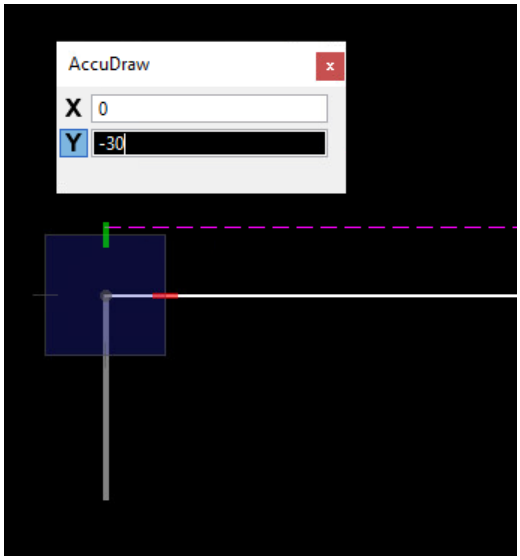
3. At this point make sure your Accusnaps are active for “Keypoints so your cursor will fin the end of a line segment.



4. Let your cursor find the end of the line segment but DO NOT CLICK the end of the line and notice your AcuuDraw is still “Zero’d” out.

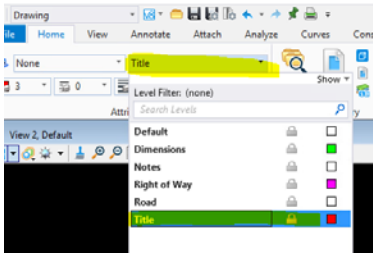


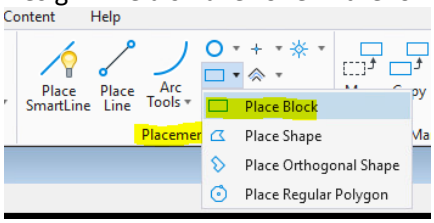
5. Still without clicking the end of the line, drag your cursor downwards and notice the “Y” value changing. At this point in time, input 30 in the “Y” box.
6. Left click (Data Point) and this will start your SmartLine -30’ from the point of reference you utilized as called out above.

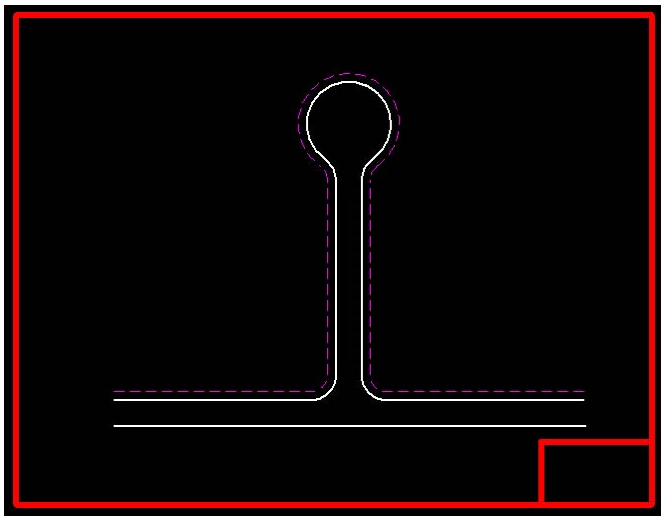


7. Drag your cursor to the right and make the end of this last Road segment extend to the end of the above Roadway.

p) **Place Title Block**

1. Set Level to “Tilte”
2. 

3. Utile the mouse wheel to Zoom out far enough to see the entire Design File.
4. In the Placement Tool Box utilize the “Polygon Tool to place a Rectangle Block around your Design. The a smaller one in the lower right corner for Name/Project Name and Date.
5. 



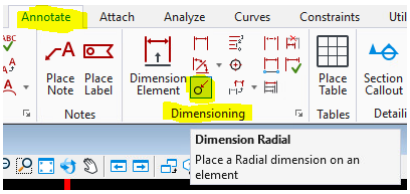
7) Dimension

a) Set “Level” to Dimension while on the “Home” tab of the Ribbon

b) You will utilize the “Annotate” Tab on the Ribbon

c) You will be utilizing the “Dimension” Tool Box.

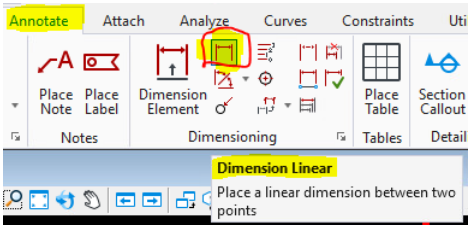
d) Find the “Dimension Radial tool within this Tool Box.

e) 

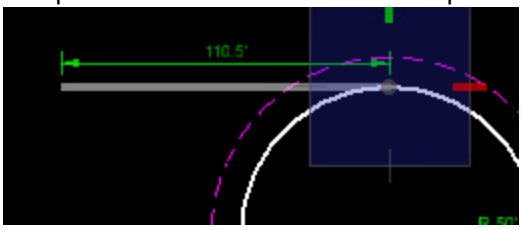
f) Invoke the Command and click the Arcs/Circles as shown on the Sample on the first page of this Project Directive for each of the two (2) 30’, one (1) 50’ and the 60’ Radius.

g) This leaves the last Dimension that has the Note of 900 FEET MAXIMUM UNLESS APPROVED OTHERWISE.

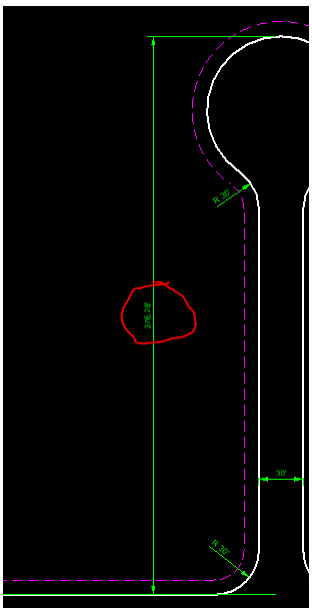
h) Utilize the “Dimension Linear” Toll to accomplish this Dimension.

i) 

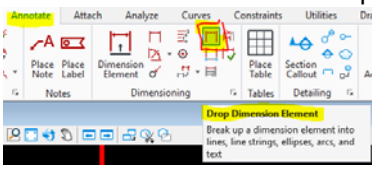
j) Utilizing the AccuSnaps, click the top quadrant of the top portion of the Cul-De-Sac and drag your cursor down to the “Perpendicular” Roadway. After you have picked the top of the Cul-De-Sac, then pick “Perpendicular form the AccuSnaps and pick a point on the Roadway. Don’t be confused if you drag your cursor to the left and MicroStaion starts inputting Dimension on your picked line right away as shown in the figure below. CLICK the below Roadway with “Perpindicular” chosen from Accusnap. This may take a few trys.



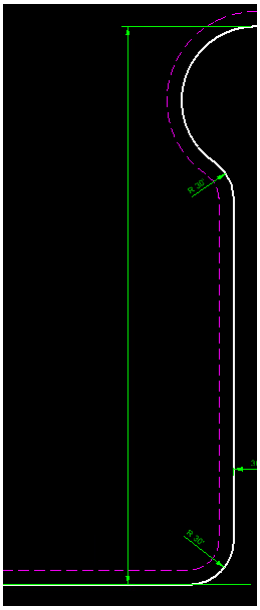
k) You will now have a Dimension with a length associated with it as shown.

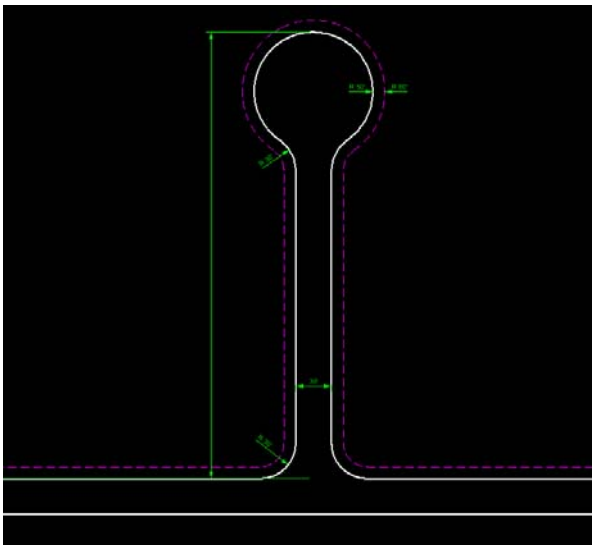


l) We want to utilize this Dimension but turn it into a note when Annotate the Design File. This means we will utilize the “Drop Dimension Element” Tool from the Dimension Tool Box.



m) Click this command and pick the numbers on the Dimension Line. Nothing seems to happen but you can now go back to the “Home” Tab and utilize the “Delete Element Tool in the “Modify” Tool Box to erase the numbers. You will be left with a Dimension Line with no numbers. That is the result we are looking for. We will be adding Text to the Dimension Line to reflect the above mentioned note this this location.





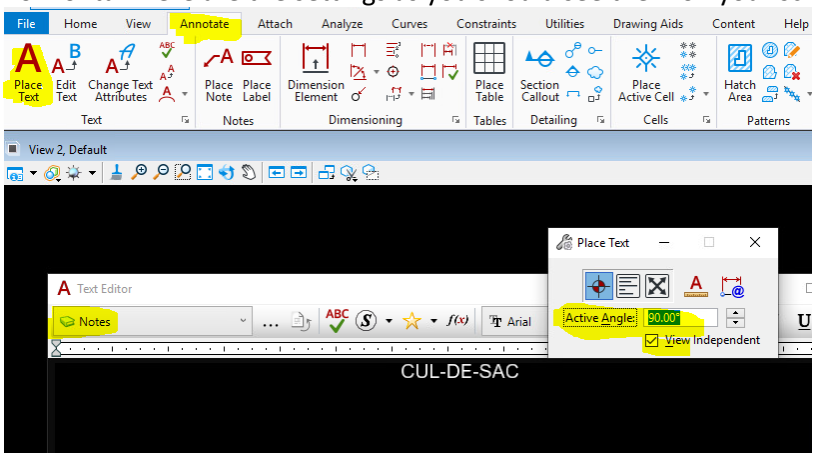
8) Annotate Design File

a) Return to the “Home” Tab to change the Level to “Notes”

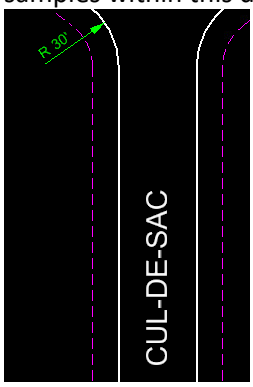
b) Return back to the Annotate Tab and utilize the “Place Text” tool from the “Text” Tool Box.

c) When the Place Text tool is invoked a window similar to a text editor will appear.

d) In the top left of the text editor there is a drop down for you to ensure you have the “Note” Text File loaded. The first text we will create is the **CUL-DE-SAC** and is oriented 90 degrees from horizontal. Here are the settings as you should see them on your screen.



e) Move your cursor away from the Text editing window and your text will appear at the 90-degree angle. Data pick or drop the text in the middle of the Roadway as shown in the samples within this document.



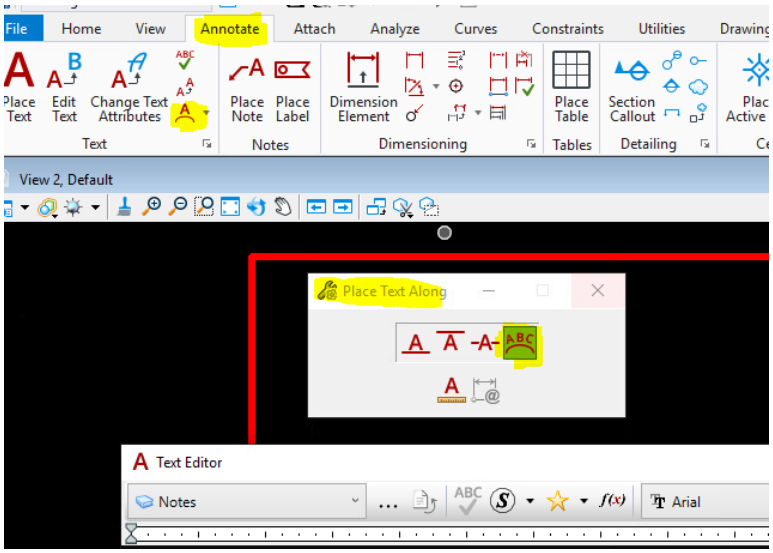
f) Change the “Active Angle back to 0.00 Degrees in the Place Text dialogue box and insert the Note at the bottom of the Roadway and Sheet Title.

(1) Text in the Title Block is on level “Dimensions” and utilizes the Text Style “Notes”

(2) Other Notes are on Level “Notes” and utilizes the Text Style “Notes”.

(3) The text of 900 FEET MAXIMUM UNLESS APPROVED OTHERWISE is Text Style “Dimension” and is placed on Leve “Dimension.

g) The last piece of text to be generated is the note “BACK OF CURB” which is placed along the arc. The command for this is also found the Annotate Tool Box and is called “Place Text Along”.



h) In the Text Editor Window type in “BACK OF CURB” and drop onto the drawing and you may need to move the text to the middle of the Roadway.