5   Key in *rads* and then press *<Enter>*.

The result is the equivalent angle in degrees.

6   Identify the text displayed in Window 1 as the object to rotate and enter a pivot point for the text.

7   With the input focus in the active angle field on the *Rotate* settings box, type any of the following operators:

+, -, *, /, =

8   Type a value or expression to complete the calculation and rotate an element in the design file by the resultant value.

9   Press *<Enter>*, enter a data point, or click outside the *Pop-up Calculator* to accept the calculated value. Press *<Esc>* to reject the value.

✍ Delete a variable by keying in *popcalc variable delete* followed by the variable name you wish to delete.

Advanced uses of the Pop-up Calculator

You can use the *Pop-up Calculator* to enter complex expressions, including multiple operators, parentheses, and C expressions ("sin(30)", "tcb->actangle"). Parentheses do not have to be matched to have a valid string.

✍ You can use the -s command line switch to copy variables to a "script" file which is executed when you start MicroStation. To create a script file to create a variable, use a text editor and type the line: *popcalc variable save* [variable name] [value]. For example: *popcalc variable save natlog 1.782818*, creates a variable called "natlog." Use a new line for each new variable.
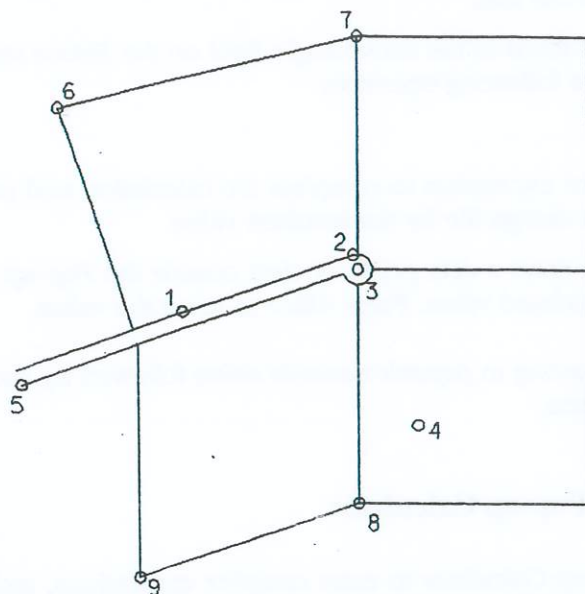
Notes:

Exercise: Completing Subdivision Layout

Now that we've explored *AccuDraw's* inner workings, let's use it so complete a drawing of a subdivision layout. Pay attention to the shortcut key-ins. They make this drawing project much faster than it would be without them.

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Don't worry if this isn't the sort of work you normally do. This site plan is just a means to reinforce the concepts we have studied. The completed layout will look like this.
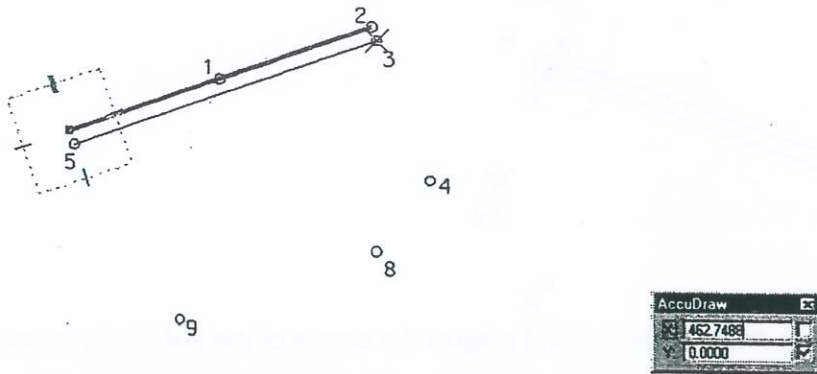

Notes:

1 Open *AccuDraw3.dgn*.

2 Choose *Modify Element* and select the line at point *1*.

✍ Notice how *AccuDraw* automatically rotates to match the orientation of the selected line. This is one of several automatic features in context sensitivity.
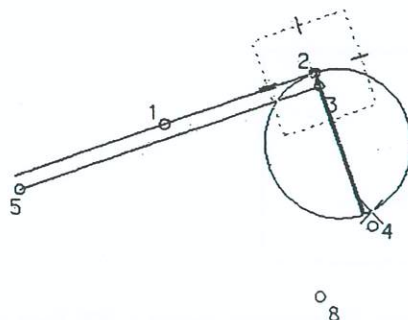

3   Move the pointer in the direction of point *2* and hit *<Enter>*. *Smart Lock* fixes the line to the axes.

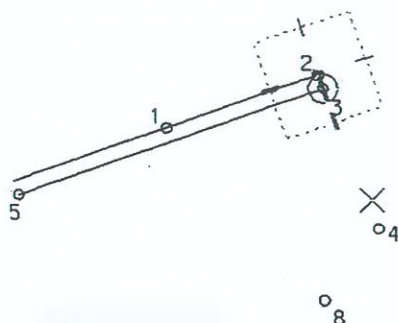**4**   Snap to the line at point *3* and accept.

Next we will place an offset cul de sac at the end of the line. This cul de sac will be tangent to our upper line and will be 40 feet in diameter.

5   Select the place circle command.

6   Change the method to diameter.

7   Snap to the line at point *3* and accept with a data point

8   Snap to the line at point *1* and type the *AccuDraw* shortcut *<RQ>* to change the rotation of the *AccuDraw* compass.

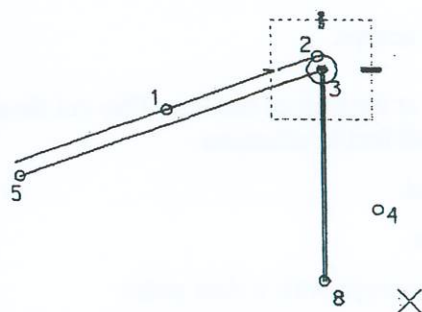**9**   Move the pointer towards point *4* and hit *<Enter>* to activate *Smart Lock*.

10 Key in *40* and then and accept with a data point. This places the cul de sac from which we will build our development. The center of the cul de sac is not the monument point from which we will build the property lines.
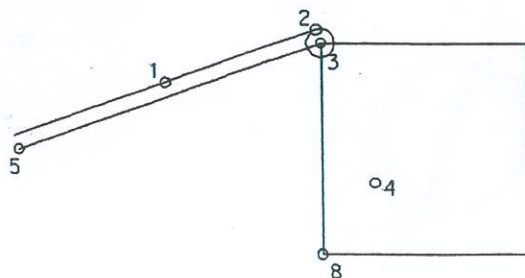

11 Select *Place Smartline* and snap to the center of the cul de sac at point *3*.

12 Move the pointer down, hit *<Enter>* for *Smart Lock* and key-in *300*. *Accept* with a data point.

13 Move the pointer to the right, hit *<Enter>*, key in *300* and place another data point.

Use the same procedure up and to the left to complete a square.
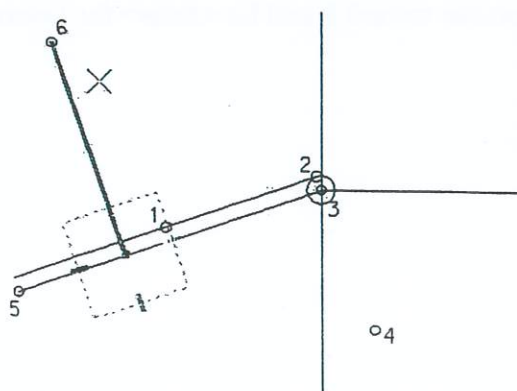

15 The property above has the same dimensions, place a 300 foot square property line based on a corner starting at the center of the cul de sac. Use

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the same procedures to create a property line that resembles the image below.

We will create 2 more property boundaries. The first is larger than the other two and includes a line perpendicular to the road.
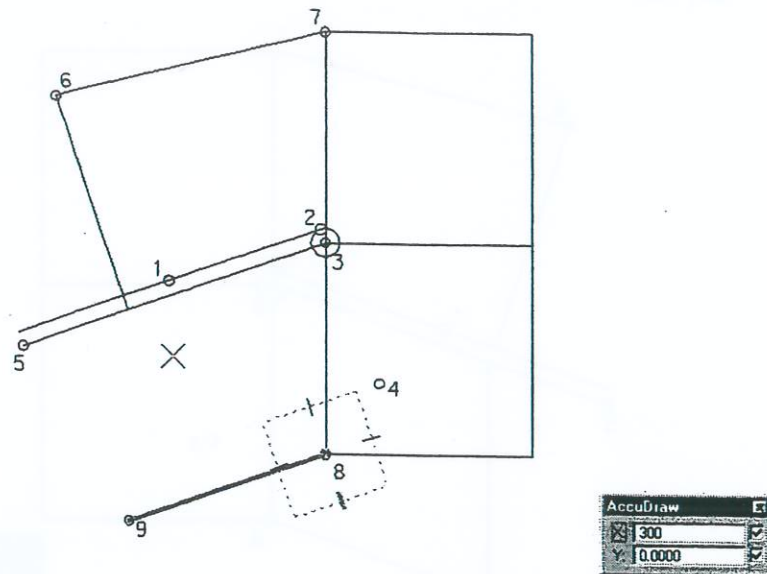
16 Snap to point *3* and hit the *AccuDraw* shortcut <O> for origin.

17 Snap to the endpoint of the line at point *5* and key in <RQ> for the *AccuDraw* shortcut *Rotate Quick*.

18 Move the pointer to point *5* again and hit <Enter>, key in *300* followed by a data point to start the line.

19 Snap to the endpoint of the line at point *3* and key in <RQ> for the *AccuDraw* shortcut *Rotate Quick*.

20 Move the pointer toward point *6*, hit the <Enter> key for smart lock and key in *320* followed by a data point (we have compensated for the width of the road by adding 20 to our distance).

21 Now finish the property line by snapping to the corner at point *7* and accept with a data point.
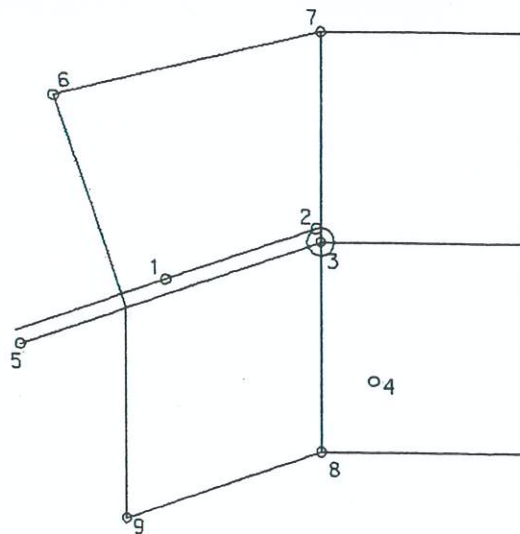
The bottom-most property line is the only one remaining. We will create it by acquiring a rotation from one area of the drawing and applying it to an unrelated area.

22 Select *Place Smartline* and snap to the point at location *3* and type <O> for the *AccuDraw* shortcut origin.

23 Type in <RA> for *Rotate ACS*. This is the sticky version of <RQ>. <RA> will maintain the axes until the user changes it back explicitly.

24 Snap to location *3* and accept with a data point You will now see that the compass is in a dynamic rotational mode. Move the pointer around the screen to show this.

25 Snap to point *5* and accept with a data point to change the compass default rotation.

26 Choose *Place Smartline* and snap to location 8, accept with a data point to start the line.

27 Move the pointer toward *9* and hit <Enter> for *Smart Lock*.

28 Key in the distance *300* and accept with a data point.

29 Type the *AccuDraw* shortcut *<V>* for view rotation. The compass is now in it's default rotation. Move the pointer vertically and hit *<Enter>* to *Smart Lock* the line.

30 Key in *<300>* and accept with a data point.

31 Use *Trim* to clean up leftover line endpoints and make the drawing look like this.