15_10 Drawing Using the 3-Centered Curve

Question:

Do you guys in Roadway have any tool that helps in drawing the kind of curves shown below? This is a crossover intersection and one of us is having problems drawing the curves correctly.

90R – 5R- 90R

Answer:

If a three centered curve is proposed for median crossovers or at intersections, the Three Centered Curve MDL Application can be applied for this typed of situation. Basically instead of laying out a three centered curve, a two centered curve commonly known as compound curves, is laid out. Here are the steps to follow.

Step 1.
Determine the geometrical center between the two inside EOT lines of the median and draw a temporary line.

Step 2.
Determine the nose or the limits of the median crossover point and draw a temporary perpendicular line.

Step 3.
Activate the Three Centered Curve MDL Application. Uncheck "Use AASHTO Data" and to layout a compound curve in TCC, click on the Symmetric option button until it changes to "Asymmetric".
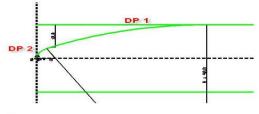

Step 4.
Determine the radii for Curve 1 and Curve 2 and key in their values in the appropriate Radius field. Curve 3 radius is 0'.

Step 5.
Determine the offset distance for Curve 1 and key in its value in the Offset 1 field. Offset 2 distance is 0'. Offset distance for Curve 1 is determined by the distance between the EOT line and geometric center line, as determined in step 1, MINUS the radius of Curve 2. For example, if the distance between the geometrical center of the median and the EOT line is 15' and the radius of Curve 2 is 5', then the offset distance of Curve 1 is 10' (15-5=10).

Step 6.
Identify the two elements for Curve 1 and Curve 2. Remember that Curve 1 is the EOT element with the offset distance and Curve 2 is the nose of the crossover located by the temporary perpendicular line as determined in step 2. This will form one half of the desired three centered curve layout.

Step 7.
Lastly, if the median crossover is symmetrical, then simply mirror the two arc elements to the other side of the median center line. Otherwise, steps 4 through 6 can repeated for the other side of the crossover. Delete temporary lines and elements once completed.

It is worth noting that this three centered curve layout can and may also be accomplished by Geopak Graphical COGO (not the infamous Store Graphics) and Geopak Incomplete Alignment Writing Method. The only shortfall to these methods is that it requires the Designer to store each TCC layout as a chain in the GPK file. See Roadway CADD Support and Ed Williams (Graphical COGO Guru) if one wishes to pursue these routes.