1. Simple Curve Radius with Taper

Laying out a simple curve radius with taper may be done in a few easy steps as outlined below:

A. Based on the angle of turn and design vehicle, select the appropriate radius, offset and taper length (length to offset ratio) from Figure 5.2.5.2-a.
B. To find the center of the radius, offset the radius plus the offset distance from the outside edge of the approach and departure legs. Draw a circle equal to the radius and snap the center to the point of intersection as shown in Figure 1-a.

*Figure 1-a Simple Curve Radius and Taper Design*
C. Draw a line from the center of the circle perpendicular to the approach and departure legs. Multiply the offset distance by the taper length. For example, if L:T is 20:1 and the offset is 4 feet, then the taper length equals 4’ x 20 = 80’. Offset the distance calculated (i.e. 80’) from the perpendicular lines as shown in Figure 1-b.

**Figure 1-b Simple Curve Radius and Taper Design**

![Diagram of Simple Curve Radius and Taper Design](image)

D. From the point where the offset intersects the outside edge of the approach and departure legs, draw a line back tangent to the circle as shown in Figure 1-c.

**Figure 1-c Simple Curve Radius and Taper Design**

![Diagram of Simple Curve Radius and Taper Design](image)
E. Trim the circle at the PC and PT as shown in Figure 1-d.

*Figure 1-d Simple Curve Radius and Taper Design*

2. **Three Centered Compound Curves**

Laying out a three centered compound curve may be accomplished in a few steps as outlined below:

A. Based on the angle of turn and design vehicle, select the appropriate radii and offset from Figure 5.2.5.3-a.

B. To find the center of the center curve radius, offset the radius plus the offset distance from the outside edge of the approach and departure legs. Draw a circle equal to the radius and snap the center to the point of intersection as shown in Figure 2-a.

*Figure 2-a Three Centered Compound Curves Design*
C. Using the ‘Place Arc’ command and ‘Tangent’ snaps in AutoCad® or Microstation®, snap tangent to the departure leg and then snap tangent to the center circle as shown in Figure 2-b. Repeat steps to draw the arc on the approach leg.

**Figure 2-b Three Centered Compound Curves Design**

D. Trim the center circle to the arcs as shown in Figure 2-c.

**Figure 2-c Three Centered Compound Curves Design**
Figure 3-a Intersection Corner Design – Example 1

Example 1

Proposed use residential
Primary four-lane collector
Auxiliary lane deceleration lane on one side
Entrance drive type reduction street (2 lanes)
Median facility separated by centerline
Shoulder vehicles parked
Angle of turn 120°

Legend:
- Direction of travel
- Path of vehicle body

Entrance with 35° simple curve radius - Encroachment on right-in movement

Right-in and right-out movements - Attempt corner design using 35° simple curve radius and enforcement occurs on right-in movement no enforcement on right-out movement but the corner design may be optimized due to effective width of approach and departure legs.

Updated entrance with simple curve radii - No encroachment

Right-in movement - Per Figure 3, using a 35° angle of turn, the effective width on approach leg and effective width on departure leg using a 35° simple curve radius.
Figure 3-c Intersection Corner Design – Example 3

1. ENTRANCE WITH 50° SIMPLE CURVE RADIUS ENCROACHMENT ON RIGHT-IN AND RIGHT-OUT MOVEMENTS

2. ENTRANCE WITH 200°-70°-200° CURVE RADIUS WITH 11' OFFSET – NO ENCROACHMENT BUT OPTIMIZE

3. ENTRANCE WITH 150°-50°-150° CURVE RADIUS WITH 11' OFFSET – NO ENCROACHMENT