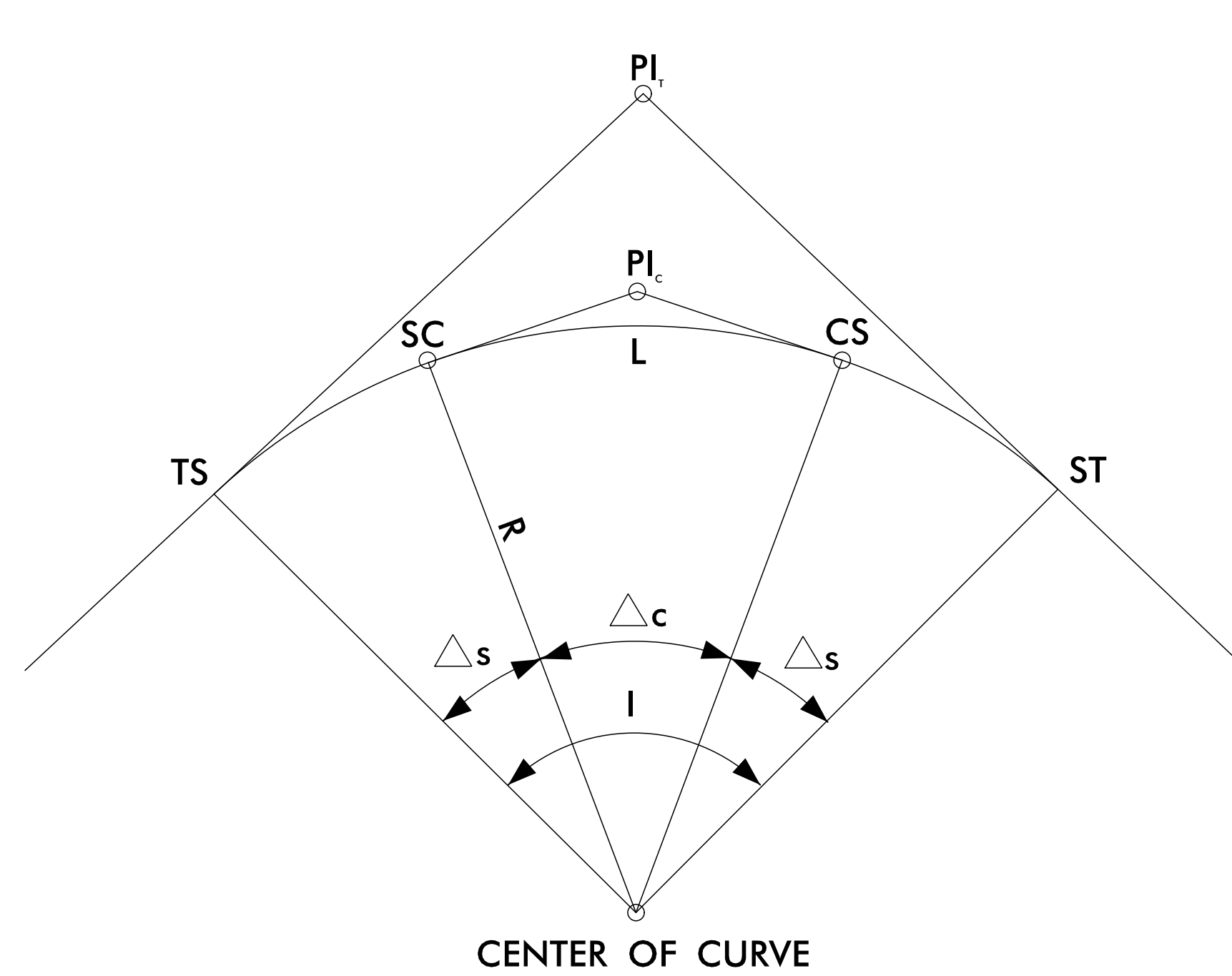
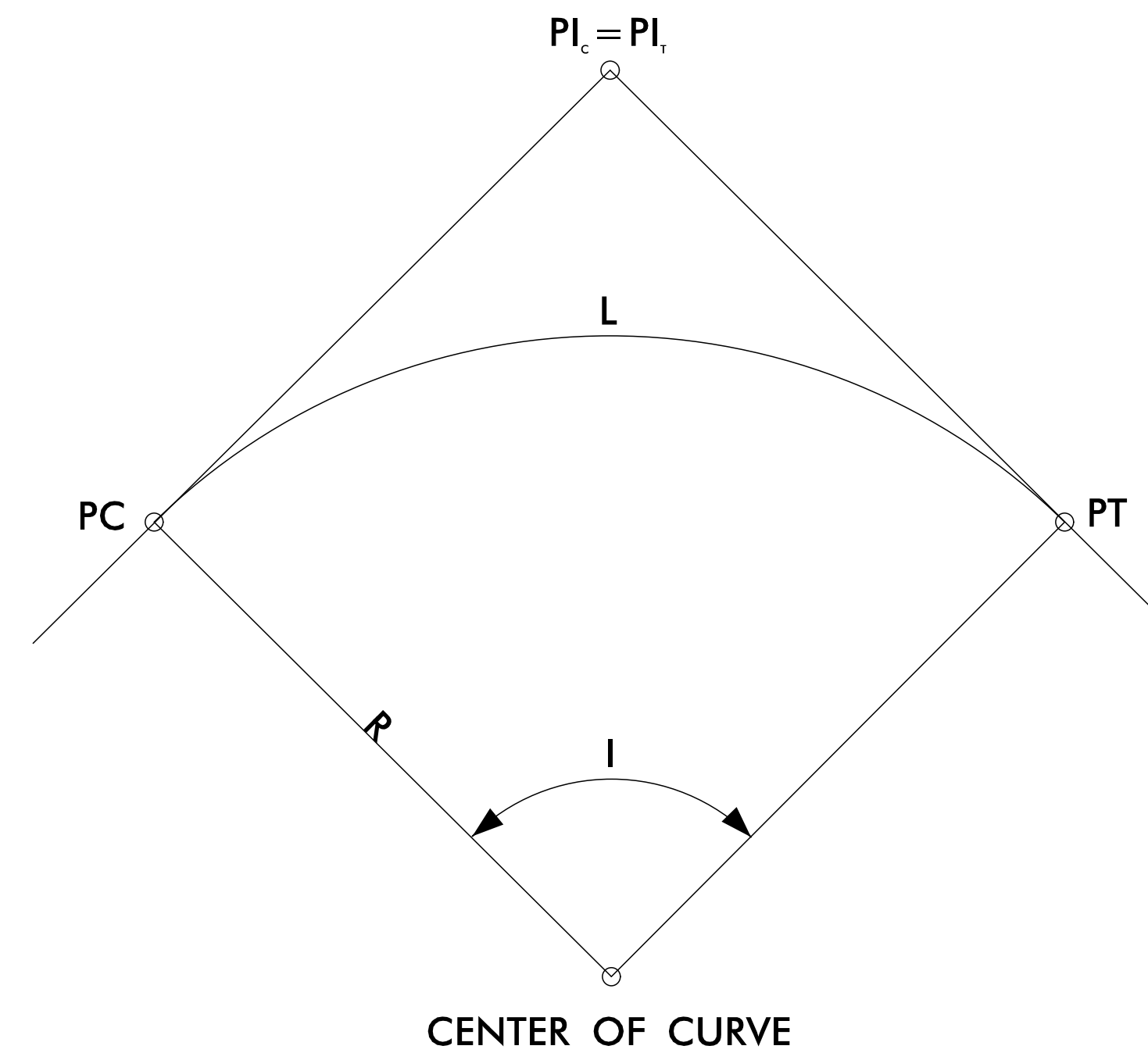


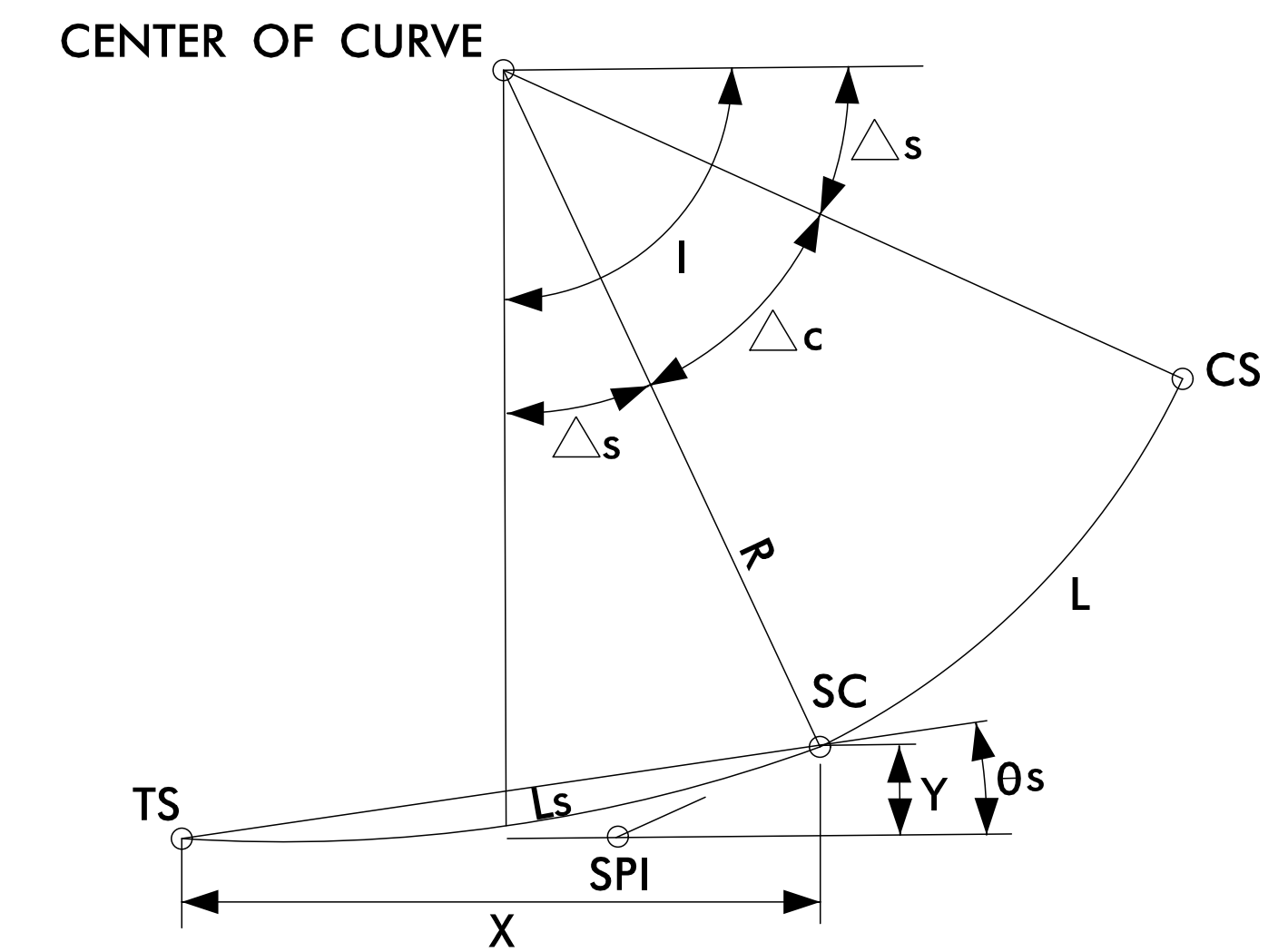
# RAILROAD HORIZONTAL ALIGNMENT GEOMETRY



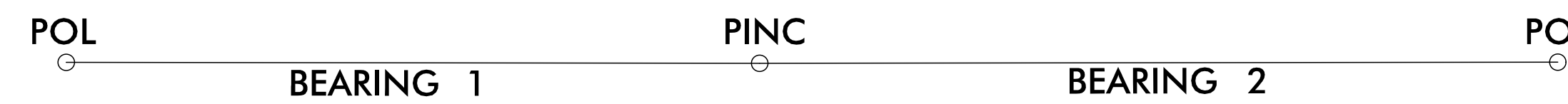
**FIGURE A**  
 CIRCULAR CURVE WITH SPIRAL TRANSITION CURVES



**FIGURE B**  
 SIMPLE CIRCULAR CURVE



**FIGURE C**  
 SPIRAL TRANSITION CURVE



**FIGURE D**  
 DEFLECTION BETWEEN TANGENTS

- |                |                                     |                 |  |
|----------------|-------------------------------------|-----------------|--|
| R              | RADIUS OF CURVATURE                 | PI <sub>c</sub> | POINT OF INTERSECTION (CIRCULAR CURVE) |
| D <sub>c</sub> | DEGREE OF CURVATURE (CHORD DEFINED) | PI <sub>t</sub> | POINT OF INTERSECTION (TANGENT)        |
| L              | LENGTH OF CURVE (CHORD DEFINED)     | SPI             | POINT OF INTERSECTION (SPIRAL)         |
| I              | TOTAL INTERSECTION ANGLE            | PC              | TANGENT TO CIRCULAR CURVE              |
| Δ <sub>c</sub> | CURVE ANGLE                         | PT              | CIRCULAR CURVE TO TANGENT              |
| Δ <sub>s</sub> | SPIRAL ANGLE                        | TS              | TANGENT TO SPIRAL                      |
| θ <sub>s</sub> | SPIRAL DEFLECTION                   | SC              | SPIRAL TO CIRCULAR CURVE               |
| L <sub>s</sub> | LENGTH OF SPIRAL                    | CS              | CIRCULAR CURVE TO SPIRAL               |
| X              | SPIRAL TANGENT LENGTH TO OFFSET     | ST              | SPIRAL TO TANGENT                      |
| Y              | SPIRAL TANGENT OFFSET               | PINC            | POINT OF INTERSECTION NO CURVE         |