## 202.04 AXIS OF ROTATION

Aesthetics, grade distortion, superelevation transitions, drainage, and driver perception should be considered when selecting the axis of rotation.

**Undivided Roadways -** The axis of rotation shall be at the roadway centerline. However, in special cases changing the axis of rotation to the inside travelled way edge can avoid drainage problems caused by superelevation, or, improve curve perception for curves preceded by long relatively level tangents.

**Expressway Connections and Ramps -** The axis of rotation may be about either edge of travelled way or centerline if multinale. Appearance and drainage considerations shall be considered when selecting the axis of rotation.

**Divided Roadways -** The axis of rotation shall be at the median edge of each travelled way. However, for bridges with decked medians the axis of rotation shall be at the centerline.

## 202.05 SUPERELEVATION TRANSITION

**General -** Superelevation transition should be designed in accordance with Figure 200.04. The length of superelevation transition should be based upon the combination of superelevation rate and width of rotation plane.

Edge of travelled way and shoulder profiles should be plotted and irregularities and drainage problems should be eliminated.

**Superelevation Transitions -** Roadways separated by barrier or median will be superelevated at independent rates. The transition length will be based on pavement width and superelevation change. The profile of the outside edge of through pavement cannot differ from the profile gradeline by more than the percentage shown on Table 200.04 and will be an unbroken line throughout the transition. The minimum transition length for a two lane roadway is shown on Table 200.04. For multiple lane roadways the minimum length shall increase proportionately. An example of expressway superelevation development is shown on Figure 200.04.

For roadways on the inside of the curve, the outside shoulder will begin rotating when the inside roadway pavement has reached a superelevation of -3.0 percent (normal shoulder slope). When superelevation becomes greater than -3.0 percent, the pavement and shoulder will rotate in unison.

The location of a superelevation transition, with respect to the point of curvature, will be determined using the inside roadway transition. Approximately one-third of the transition length will be placed on the curve. The remaining transition length will be on the tangent. The transition location will be adjusted to begin/end at a 10 meter station.

For roadways on the outside of the curve, the transition will begin/end at the adjust the curve determined by the inside roadway transition. An additional transition length is required to rotate the outside shoulder from -3.0 percent (normal shoulder slope) to -1.5 percent (normal pavement slope). This shoulder transition length must be added to the pavement transition length to get the total transition length.

**Restrictive Areas -** In restrictive areas, where full superelevation cannot be achieved, the highest possible superelevation rate and transition length shall be used. But, in no case shall the cross slope rate of change exceed 4% per 20 m.

**Superelevation Transitions on Bridges -** Superelevation transitions on bridges should be avoided.

## 202.06 SUPERELEVATION OF COMPOUND CURVES

Compound curve superelevation shall be per Figure 200.05. Where feasible, the criteria in Section 202.05 shall apply.