



MAXIMUM CHANGE IN GRADES WITHOUT A VERTICAL CURVE		
Design Speed (mph)	Crest Vertical Curve	Sag Vertical Curve
20	$\Delta G = 7.0\%$	$\Delta G = 4.5\%$
25	$\Delta G = 5.0\%$	$\Delta G = 2.5\%$
30	$\Delta G = 3.0\%$	$\Delta G = 1.5\%$

Notes:

1. *At a signalized intersection, the most desirable rotation option will be to transition all approach legs into a plane section through the intersection.*
2. *The grade of the approach roadway where vehicles may be stored should not be steeper than 1%. A grade steeper than 3% should be avoided.*
3. *The minor-road profile should tie into the major road's travel lane cross slope as shown in the diagram. However, it will be acceptable for the minor-road profile to tie into the major road's shoulder cross slope. Actual field conditions will determine the final design.*

VERTICAL PROFILES OF INTERSECTING ROADS

Figure 46-1C