

# Ramp D2 Curve / Superelevation

Per AASHTO Exhibit 3-26,

$$V = 20 \text{ mph}$$

$$R = 81'$$

$$e = 6.0$$

$$PC = 1503+00.87 \rightarrow \text{design } V = 30 \text{ mph}$$

$$PT = 1505+31.60 \rightarrow \text{design } V = 20 \text{ mph}$$

$$G(30) = 152$$

$$G(20) = 135$$

PC:

$$0.06 - 0.016 = 0.044$$

$$(152)(0.044)(18) = 120.38$$

want 0.04 @ PC - (66.7%)

$$\frac{(0.06 - 0.04)}{x} * \frac{0.044}{120.38}$$

$$x = 54.72'$$

$$FS = 1503+00.87 + 54.72 = 1503+55.59$$

$$NC = 1503+55.59 - 120.38 = 1502+35.21$$

PT:

$$0.06 - 0.02 = 0.04$$

$$(135)(0.04)(18) = 97.2'$$

want 0.04 @ PT - (66.7%) rotation

$$\frac{(0.06 - 0.04)}{x} * \frac{0.04}{97.2}$$

$$x = 48.6'$$

$$FS = 1505+31.60 - 48.6 = 1504+83.00$$

$$NC = 1504+83.00 + 97.2 = 1505+80.20$$

## BURGESS & NIPLE COMPUTATION SHEET

JOB NO. 40566 JOB NAME Cleveland Innerbelt (G4) SHEET 1 OF     SHEETS  
SUBJECT Superelevation Ramp D2 PREPARED BY ALR DATE 1-27-2010  
SCALE     CHECKED BY DCL DATE 02-03-2010

time at full super

$$\left(\frac{20 \text{ mi}}{\text{h}}\right) \left(\frac{5280 \text{ ft}}{\text{mi}}\right) \left(\frac{1 \text{ h}}{3600 \text{ s}}\right) = 29.3 \text{ ft/s}$$

$$0.06 \text{ occurs for } (1505+31.60) - (1503+00.87) = 230.7'$$

$$(230.73) \left(\frac{1}{29.3 \text{ fps}}\right) = 7.87 \text{ s.}$$

**BURGESS & NIPLE COMPUTATION SHEET**

JOB NO. 40566 JOB NAME Cleveland Innerbelt CG4 SHEET 2 OF      SHEETS  
SUBJECT Super-elevation Ramp D7 PREPARED BY      DATE 1-27-2010  
SCALE      CHECKED BY DCL DATE 02-03-2010