IN-CLASS DESIGN PROBLEM 2

Due: October 14, 2008

Two straight sections of freeway cross at right angles. At the point of crossing, the east-west highway is at an elevation 150 ft and has a constant 5% grade (upgrade in the east direction), and the north-south highway is at elevation 125 ft and has a constant -3% grade (downgrade in the north direction).

For this exercise, you are to design a 90 degree ramp that connects the northbound direction of travel to the eastbound direction of travel.

Design the ramp for the highest design speed (to nearest 5 mi/h) with the constraint that the minimum allowable value of D is 8.0. (Assume that the PC of the horizontal curve is at station 15+00, and the vertical curve PVIs are at the PC and PT). Clearly draw a figure to show the freeways and the ramp and show clearly the station and elevations of the PC, PT, PVCs and PVTs.