Assignment 6: Geometric Design Standards

Date Due: July 2, 3016

Problem #1

A 2,900 meter long runway at an airport has three longitudinal grades (**from right to left**): at 0.45%, -0.67% and 0.55% with the points of intersection located at metric stations 780 and 1,890 from the right threshold. Assume the right threshold is station 0+00.

a) Test the suitability of this runway to be used at airport with Boeing 787-800 operations. Comment on your answers.

b) Design the second transition curve for this runway using a symmetric parabola. Specify the elevations (every 10 meters) as a function of the station (in meters). Refer to the formulas in the handout Geometric Design to create a symmetrical parabola. Use Excel or Matlab to simplify your work. You are allowed to use the Matlab script provided in class.

c) Find the transverse grade for this runway. Also state the typical grade of the shoulders for maximum drainage.

Problem #2

a) Design a 90 degree, taxiway-taxiway intersection for the Boeing 777-300ER using the latest FAA criteria for taxiway-taxiway intersections considering the aircraft ADG and TDG groups.

b) Draw your solution using the CAD program of your choice. Label the main dimensions.

c) Compare your solution to the solution stated in the Boeing Document with Aircraft Characteristics for Airport Planning. Comment on any discrepancies observed.