

CE 466 / 566 Highway Geometric Design
Homework 6

Due Tuesday, April 14, 2009

This homework follows on the same design project as in Homework 5; namely, an alignment that connects the intersection of Sabino Canyon and Tanque Verde with Kolb. Homework 5 dealt specifically with the mechanics of a geometry for the alignment. This is important, but there are a number of major additional issues that will directly affect your design.

In this assignment, you should imagine that you are going to conduct an open house for interested parties regarding this project. Your role in the open house is to discuss possible design options that could be negotiable or that are flexible as you make a preliminary design. In your design, let us assume that the following are *not* negotiable:

- The roadway will have 4 lanes, two in each direction.
- The design speed will be 45 mph. While the local community might want something lower, it would not meet driver expectations to have a 4-lane roadway with a lower design speed.
- The road will depart from the intersection of Sabino Canyon and Tanque Verde and will connect to Kolb somewhere between Speedway and Tanque Verde.
- The total budget must remain within the RTA programmed funds of \$10,116,000.

You should familiarize yourself with this area. A site visit is encouraged, or at least you should check out the area with an aerial photo and other details available on the Pima County MapGuide site, at <http://www.dot.co.pima.az.us/gis/maps/mapguide/>.

For this assignment, think about possible design options. Consider the following questions, and then provide a brief 1-paragraph summary in response to *each* question. Your response should *not* provide a *single* solution, but should identify *options* that might be reasonably considered.

- (a) How will people from the residential area west of Udall Park walk to the park?
- (b) How will you handle road noise, for the park and/or for the residential area to the west?
- (c) How will you handle automobile access to this residential area on the west? [Note that there is now a small local street that winds south from the Sabino Canyon/Tanque Verde intersection.]
- (d) How will bikes and pedestrians be accommodated along the roadway?
- (e) Will you include a median on the roadway?
- (f) Will you impinge on the landfill? [Note that the landfill is “clean”, in the sense that the material would not need to be entirely replaced if you decided to put the roadway over it.]
- (g) Will you have to take property from the residential area to the west of Udall Park or from the office complex on the east side of Kolb? [Note that much of the land in this area is already owned by the City of Tucson or Pima County.]
- (h) Where will you put the intersection on Kolb? What movements will be allowed at that intersection? [A flyover is not possible – it is too expensive and obstructs someone’s view of the Catalinas.]
- (i) What traffic control will be used at the new intersection on Kolb? If it is signalized, is there any way it could be coordinated with adjacent signals at Speedway or Tanque Verde?