Problem 1. A Class I two lane highway segment has the following roadway and traffic characteristics:

- 1 mile in length
- Rolling terrain
- 11 ft lanes
- 5 ft shoulder
- 5 access points
- 60% no passing zones
- 565 two way peak hour volume
- Directional Split = 60/40
- PHF = 0.95
- 6% trucks
- 2% buses
- 4% RVs
- BFFS = 55 mi/hr
- $f_p = 0.90$

Find the LOS of this highway segment

Problem 2. A new shopping center is going to be constructed nearby and will bring an additional 2625 vehicles (total for both directions) to this roadway in the peak hour. For this new mall, 3 access points will be added along the segment. Assume all other factors stay the same.

- How many lanes need to be added to this roadway segment to accommodate this new flow rate with a level of service no worse than B?
  Note: You will now be performing a multilane highway analysis
- What is the new v/c?
- How many vehicles can be added to the peak hour flow rate before reaching LOS D?