CE 572 – Assignment 06b

26 January 2015

Q1: What happens when the volumes on each approach are set to 500 veh/hr? What are the results from the spreadsheet? Describe what you would observe in the field. What should X be for these volumes?

- X exceeds 1, as long as you are considering arrival flow rates only. When you consider departure flow rates (rate at which vehicles depart from the stop line), X must be less than or equal to 1.

Q2: Suppose the NB volume is 500 veh/hr and the volumes on the other approaches are zero. What is the capacity of the NB approach?

- 923 veh/hr

Q3: What is the condition (DOC case) at which the intersection volume is maximum?

| **DOC Case** | **Intx Volume** |
|---|---|
| 1 | 923 |
| 2 | 766+766=1532 |
| 3 | 621+621=1242 |
| 4 | 514+514+514=1542 |
| 5 | 375+375+375+375=1500 |

Q4: Verify the five boundary conditions for this model.

- You should change the volumes to resemble each of the five DOC cases. For each case, verify that the departure headway equals the saturation headway for that case. For example, for DOC case = 4, hd = 7.0 sec.

Q5: Why can X be different in rows 13-16 and in row 27?

- In one case X is constrained (rows 13-16) and in the other case it is not (row 27); again arrival flow vs. departure flows.

Q6: What is the condition at which the volume on any one approach is maximum?

- When the flows on all approaches but one are zero.