



PURPOSE

The purpose of this activity is to give you the opportunity to learn the degree to which vehicle headways vary in the departing queue.

LEARNING OBJECTIVES

- Describe the variation of vehicle headways in a departing queue
- Establish a desired maximum allowable headway (MAH)

REQUIRED RESOURCE

- Movie file: A34.wmv

DELIVERABLE

- Prepare a spreadsheet that includes:
 - Tab 1:** Title page with activity number and title, authors, and date completed
 - Tab 2:** Your answers to the Critical Thinking Questions
 - Tab 3:** The data that you collected in Table 18

CRITICAL THINKING QUESTIONS

As you begin this activity, consider the following questions. You will come back to these questions once you have completed the activity.

1. How much variation is there in the headways between vehicles in the departing queue?

2. Based on the headways that you observed in the departing queue, what is your recommendation for the desired MAH?

INFORMATION

In previous activities, you learned that when the minimum green and vehicle extension times are set to zero, the phase will terminate immediately when the detection zone becomes unoccupied. You also learned that the detection zone length alone will not guarantee good quality of service to the motorist, since the phase may terminate before the entire queue has been served. This is especially true for the shorter 22 foot detection zone, in which it is difficult to have more than one vehicle in the zone at the same time. Finally, you learned that the minimum green time should be long enough to make sure that the queue immediately upstream of the detection zone begins to move, and enters the detection zone before the green indication prematurely ends.

In this activity, the detection zone length is 22 feet. The minimum green time is set to 7 seconds. The vehicle extension time is set to 5 seconds, a very conservative (high) value. You will observe the operation of the southbound movement, developing an understanding of the normal variation of headways in a departing queue. You will also identify the desired maximum allowable headway, the longest headway in a departing queue that you are willing to tolerate without terminating the green indication. This will help you to understand how to establish the vehicle extension time, which will be covered in Activities #36 and #37.

TASK 1

Open the movie file: “A34.wmv.”

TASK 2

Observe and record headways for one cycle.

- When the simulation time reaches $t = 66.1$ seconds, pause and observe the status of the traffic flow and the timing processes; record your observations
- Begin the simulation again
- Record the following values in Table 18 for phase 4 serving the southbound through movement
 - Record the simulation clock time that the indication changes to green (“Start of green” in the table)
 - Record the clock time that the front of each vehicle reaches the stop bar
 - Compute the headway for each vehicle (the time difference between when this vehicle enters the intersection and when the previous vehicle entered the intersection) and record your results in the table

Vehicle number	Start of green	Time front of vehicle reaches stop bar	Headway
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Table 18. Data collection table

