



PURPOSE

The purpose of this activity is to help you learn to visualize the role of the minimum green time during the early portion of the green and to see how the setting of this parameter can result in efficient or inefficient timing.

LEARNING OBJECTIVE

- Relate the length of the minimum green time to the efficient operation of a phase

REQUIRED RESOURCE

- Movie file: A33.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 16 and Table 17

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. When is the minimum green time too long?

2. How long should the minimum green time be in order to get vehicles moving during the early portion of green?

- What are the respective roles of minimum green time and vehicle extension time in producing efficient operations?

INFORMATION

In this activity, you will see the importance of the minimum green time during the early portion of the green indication, and how you can define the roles of the minimum green time and the vehicle extension time to ensure efficient intersection operations. You will again observe the operation of the southbound approach of Line Street, at State Highway 8, and make observations about the operation. You will again consider stop bar detection, with a detection zone length of 22 feet.

TASK 1

Open the movie file, A33.wmv.

TASK 2

Figure 118 shows the controller screen for the ASC/3 database editor. Observe that the minimum green time is set to 5 seconds for phase 4 for the first case and 10 seconds for phase 4 for the second case. The vehicle extension time is set to 2.2 seconds for phase 4.

	Phases	1	2	3	4	5	6	7	8
Min Green.....		0	5	0	5	0	5	0	5
Bk Min Green.....		0	0	0	0	0	0	0	0
CS Min Green.....		0	0	0	0	0	0	0	0
Delay Green.....		0	0	0	0	0	0	0	0
Walk.....		0	0	0	0	0	0	0	0
Walk2.....		0	0	0	0	0	0	0	0
Walk Max.....		0	0	0	0	0	0	0	0
Ped Clear.....		0	0	0	0	0	0	0	0
Ped Clear 2.....		0	0	0	0	0	0	0	0
Ped Clear Max.....		0	0	0	0	0	0	0	0
Ped CO.....		0	0	0	0	0	0	0	0
Vehicle Ext.....		0.0	2.0	0.0	2.2	0.0	2.0	0.0	2.2

Figure 118. ASC/3 Database Editor

TASK 3

Observe the timing and the termination of the southbound phase for the two cases.

- Advance the simulation until the start of green for phase 4 (the phase serving the southbound movement). Record the simulation time in Table 16 that corresponds to the start of green for both cases.
- Record the simulation time that the vehicle in queue leaves the detection zone
- Record the time that green ends (yellow begins) for both cases
- Reflect on the data that you recorded and the implications of these data
- Record your observations
- Remember, you will often observe a 0.1 second difference between the information shown in the controller status window and the indication status in the VISSIM window. This difference, resulting from communications latencies between the ASC/3 controller software and the VISSIM software, will not substantially affect your results.

Data to record	Case 1	Case 2
Start of green		
Back of vehicle leaves zone		
Start of yellow/end of green		
Difference between “start of yellow/end of green” and “back of vehicle leaves zone”		

Table 16. Data collection table

TASK 4

Observe vehicle start-ups for case 1 only, the left side.

- Move the simulation to $t = 89.2$
- At this point ($t = 89.2$), observe the status of the traffic for the SB approach and the status of the timing process for both phase 2 and phase 4 for case 1 (on the left) only
- Record your observations
- Advance the simulation until case 1 (minimum green = 5.0 seconds) reaches the start of green for phase 4. This should occur at $t = 89.5$ seconds.
- For case 1, record the times that each of the four vehicles in the queue on the southbound approach first begin to move and when they enter the detection zone. Use Table 17 to record these data. Watch the simulation carefully to note the time step that each vehicle begins to move.

Vehicle #	Start of green	Vehicle begins to move	Vehicle enters detection zone
	89.5		
1			
2			
3			
4			

Table 17. Data collection table