



## PURPOSE

The purpose of this activity is to give you the opportunity to compare permitted and protected left turn phasing.

## LEARNING OBJECTIVE

- Show that protected left turn phasing is more efficient than permitted left turn phasing under some conditions

## REQUIRED RESOURCE

- Movie file: A48.wmv

## DELIVERABLE

- Prepare a document that includes your answer to the Critical Thinking Question

## CRITICAL THINKING QUESTION

As you begin this activity, consider the following question. You will come back to this question when you have completed your observations.

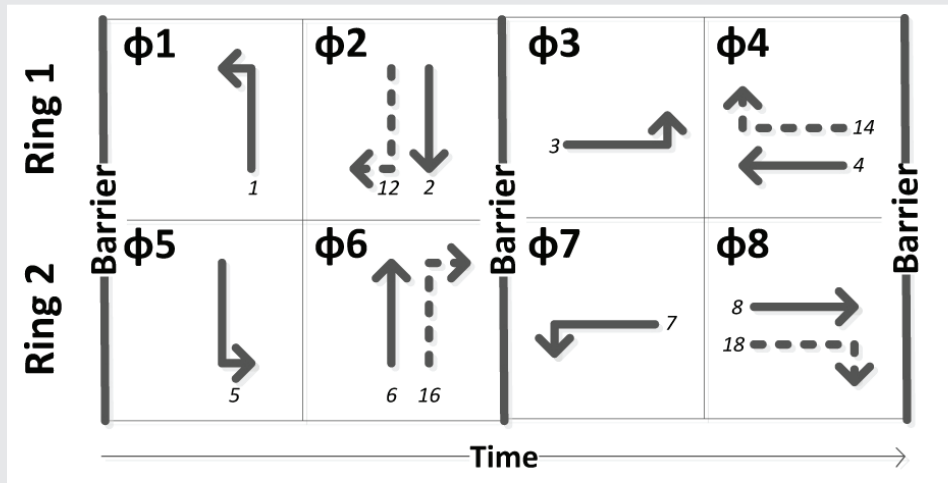
1. How does changing from permitted to protected left turn phasing affect the left turn operation and the operation of the entire intersection?

## INFORMATION

In the previous activity, you considered the efficiency of permitted left turn operations. You saw that high opposing through volumes could seriously degrade the quality of permitted left turn operations. One option to improve the left turn operation is to change the phasing from “permitted” to “protected.” Figure 166 illustrates the ring barrier diagram for full left turn protection.

In this activity you will again observe the left turn operation on State Highway 8. Both cases that you will observe have through volumes of 1450 vehicles per hour per lane and left turn volumes of 100 vehicles per hour. The only difference is in the left turn phasing. Case 1 is permitted left turn phasing (similar to case 2 in the previous activity) while case 2 is protected left turn phasing.

**Figure 166.** Ring barrier diagram for protected left turn phasing



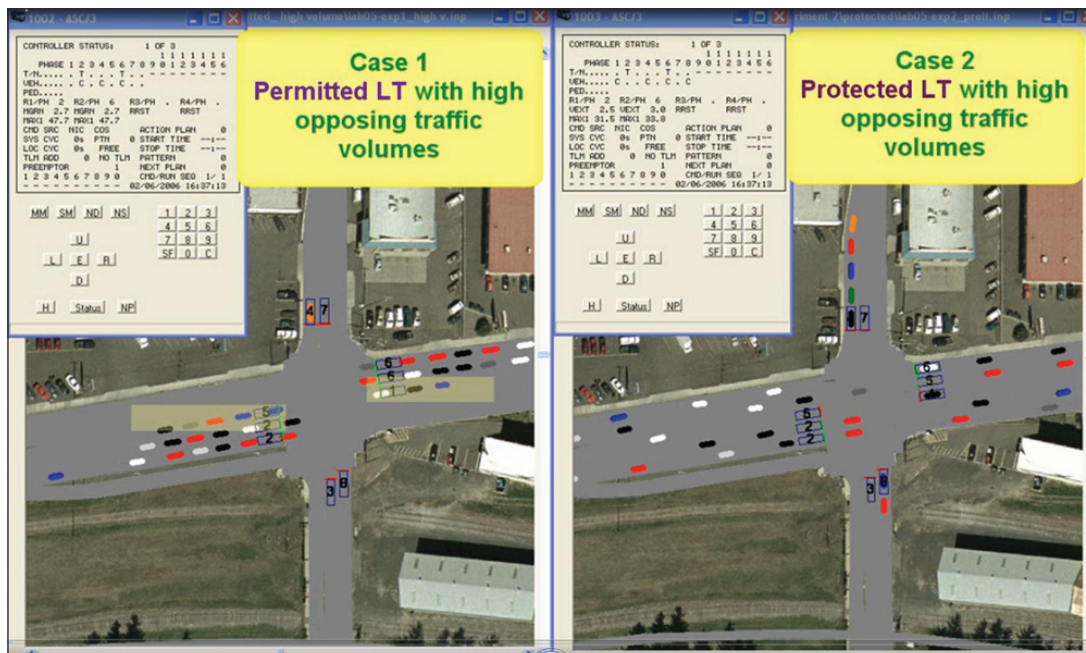
**TASK 1**

Open the file: “A48.wmv”

**TASK 2**

Observe the operation of the two cases.

- Observe the left turn vehicles on the eastbound and westbound approaches for case 1 (permitted left turn) and case 2 (protected left turn). Observe the queue length for the eastbound left turn and westbound left turn movements for case 1 and the waiting time for those vehicles. Observe the same vehicles in case 2 and notice how all vehicles are served during the protected left turn. (See Figure 167.)
- Summarize your observations



**Figure 167.** Animation comparing permitted and protected left turn phasing