

CE 572 – Spring 2015

Intersection Traffic Operations

Class 16

25 February 2015

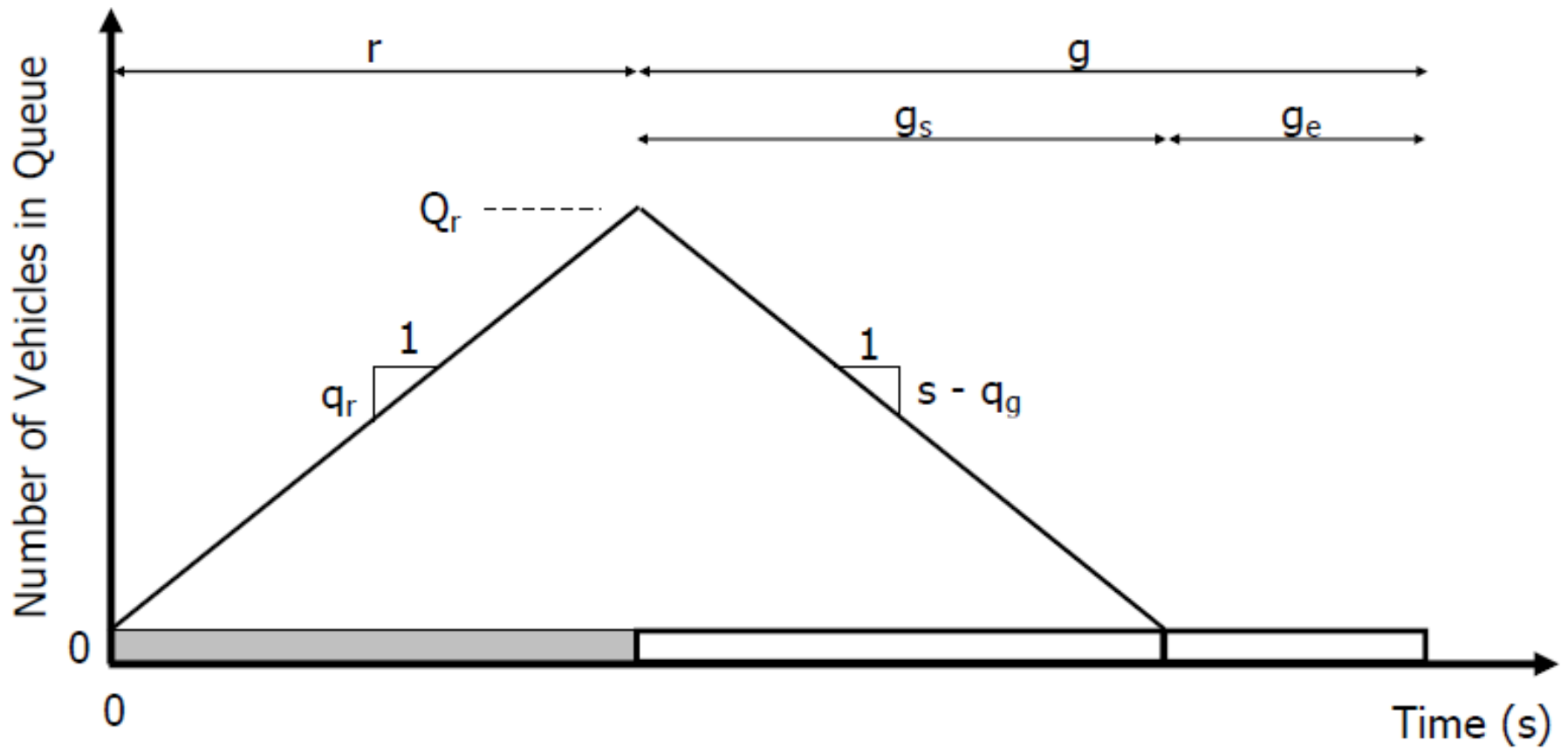


Exhibit 31-15
 Queue Accumulation Polygon for
 Protected Movements

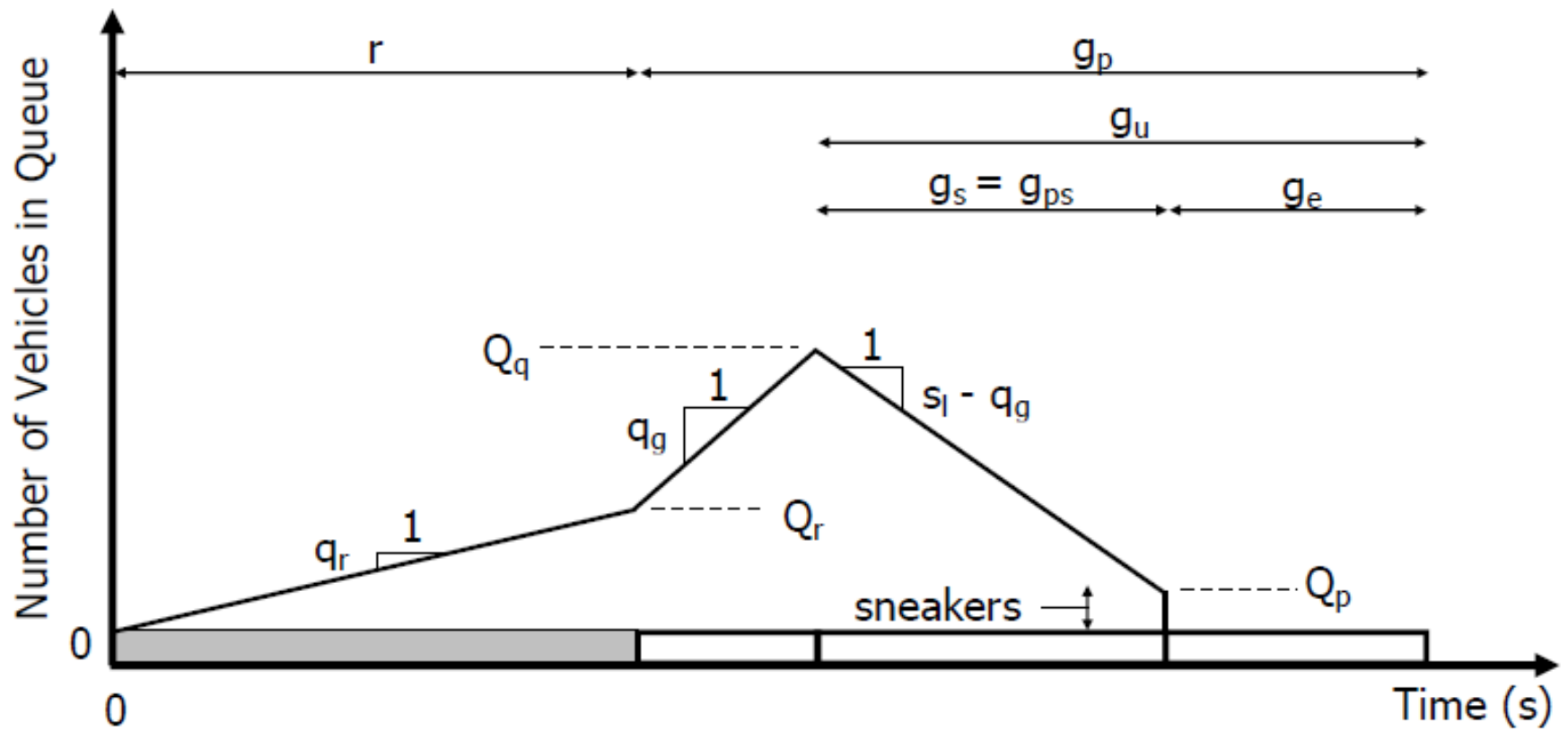


Exhibit 31-17

QAP for Permitted Left-Turn
Operation in an Exclusive Lane

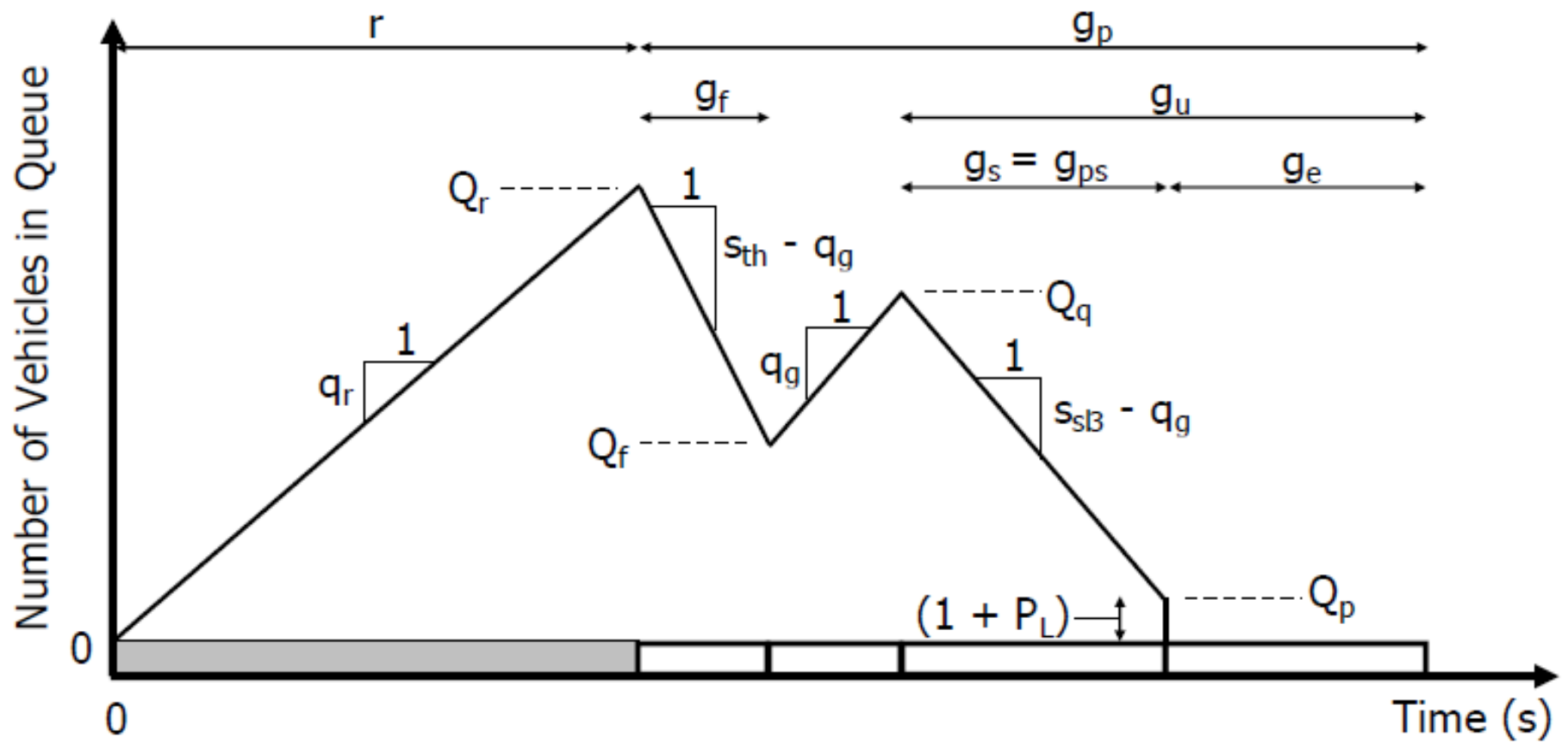


Exhibit 31-18
 QAP for Permitted Left-Turn
 Operation in a Shared Lane

Assignment 23 - Permitted LT studies

The purpose of this assignment is to study the effects that various input values have on the predicted values of the time for the opposing queue to clear and the time for the first subject LT vehicle to arrive at the intersection. Use an Excel spreadsheet to complete these studies. Then answer the questions about your results.

Assume that the cycle length is 60 sec, the green ratio is 0.5, the saturation flow rate is 1900 veh/hr, the base opposing TH volume is 700 veh/hr and the subject shared lane flows are 50 veh/hr for the LT movement and 50 veh/hr for the TH movement.

Prepare charts that show:

1. The opposing queue service time g_{so} as a function of the opposing TH volume (with a range from 0 to 1000 veh/hr).
2. The time for the first subject LT vehicle to arrive after the start of green g_f as a function of the subject LT volume (with a range from 0 to 800 veh/hr).

Answer the following questions:

1. Comment on the predicted value of the queue service time when the opposing TH volume is 1000 veh/hr.
2. At what subject LT volume does the arrival of the first LT vehicle occur almost immediately after the start of green?
3. Briefly summarize what you've learned in reviewing these two charts about the operation of permitted LTs.

Assignment 24 - Reading

HCM 2010

- Chapter 18, determining uniform delay (pp 18.46-18.48)
- Chapter 30, predicting the arrival flow profile (pp 30.11-30.15)

Be ready to discuss how you think this model can be used to determine delay at a signalized intersection.