

# CE 474 – Class 10

September 16, 2015

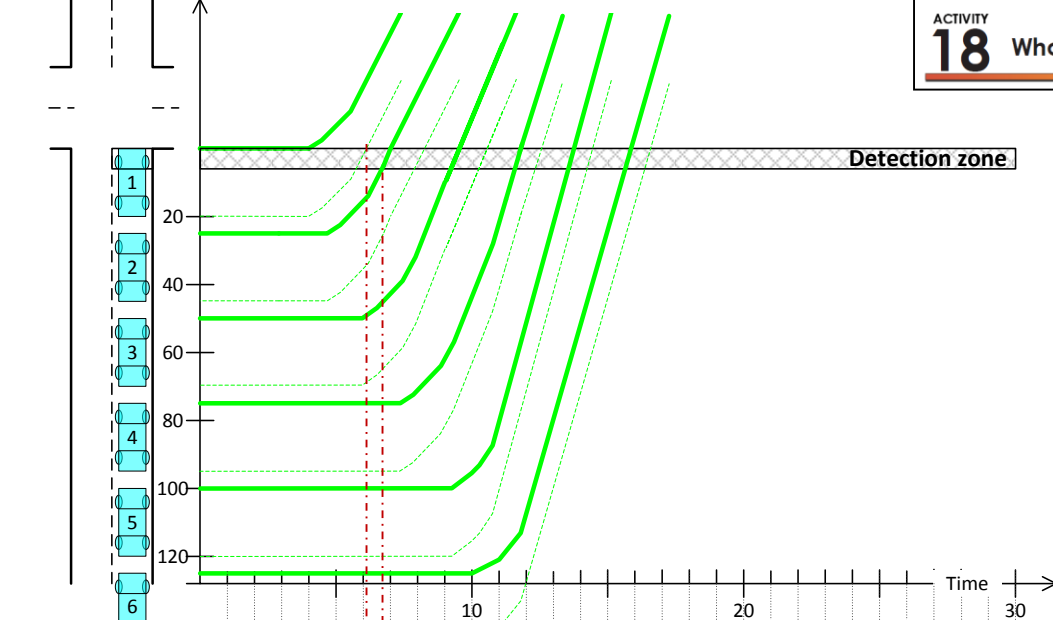
# For next time

- Do A22 (individual); show work in book and bring to class tomorrow.
- Prepare for A23 by reading activity and listing questions that you have for it; this will be primary activity during lab tomorrow.

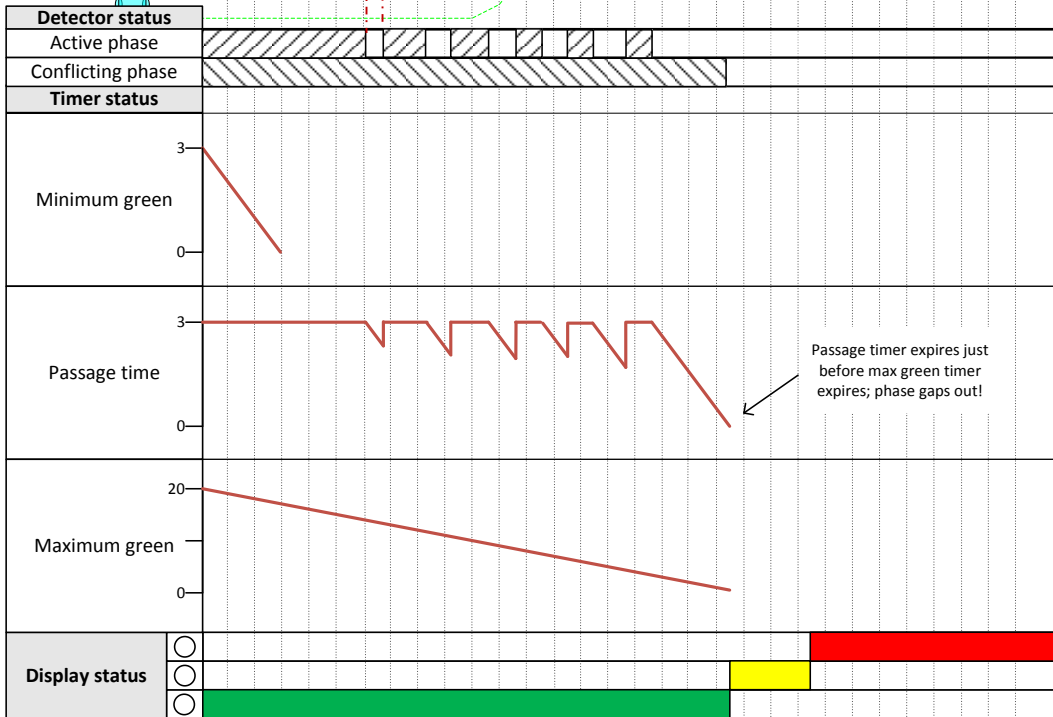
# Transportation in the News

- [Continuous flow intersection](#)

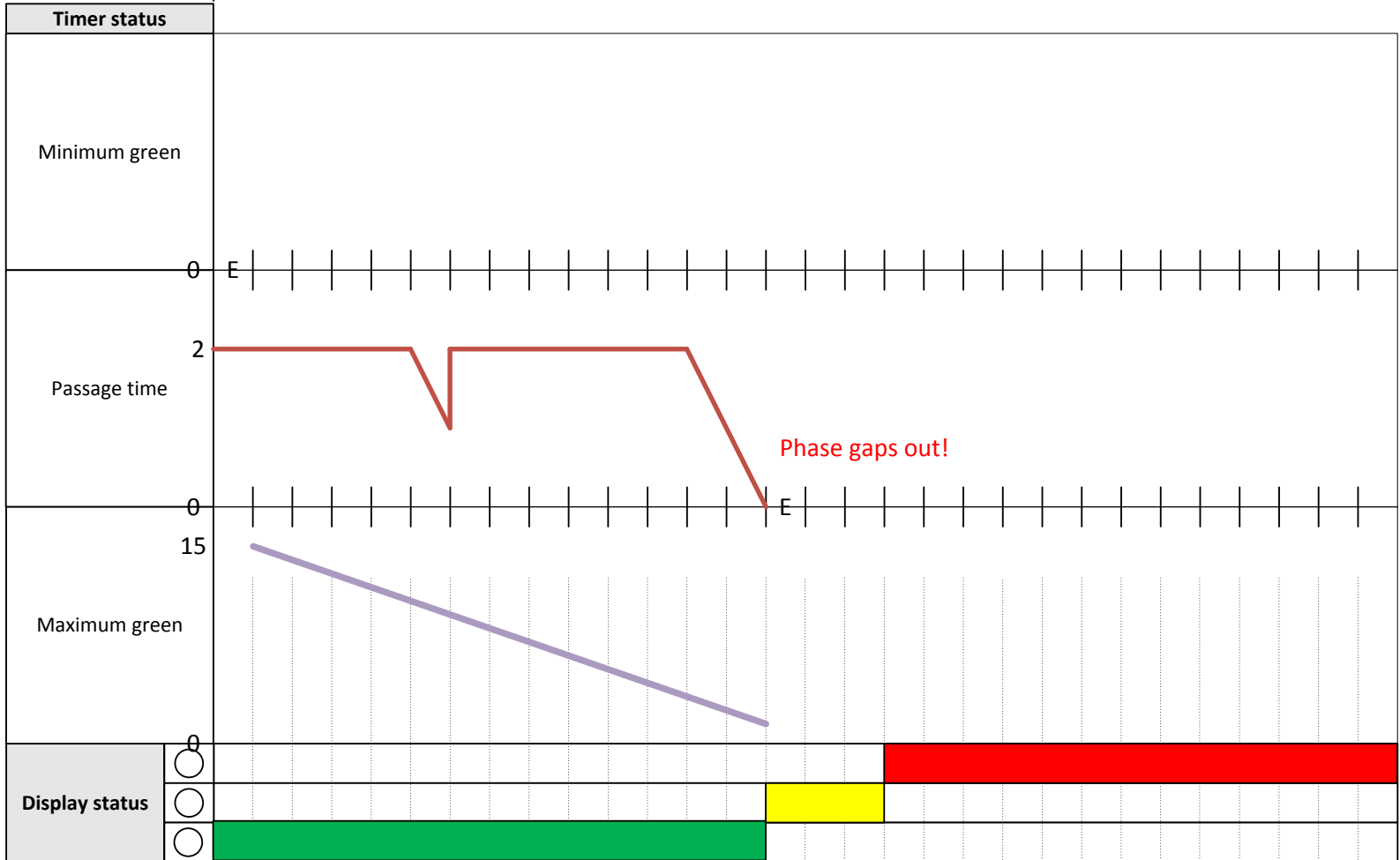
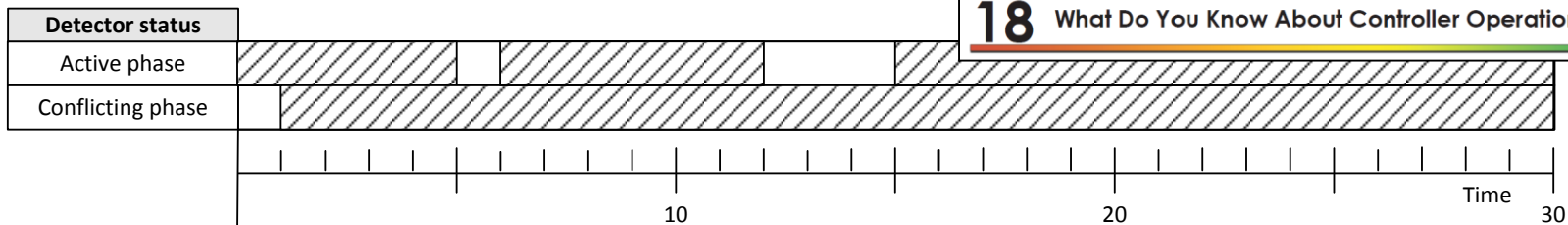




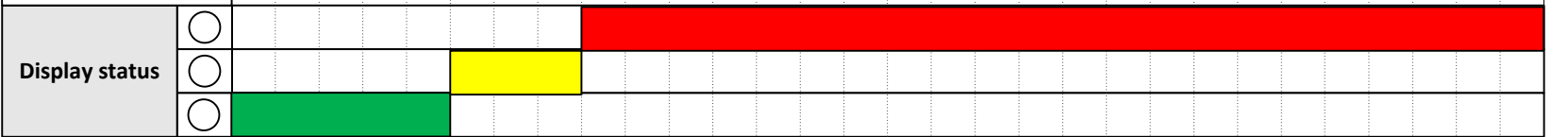
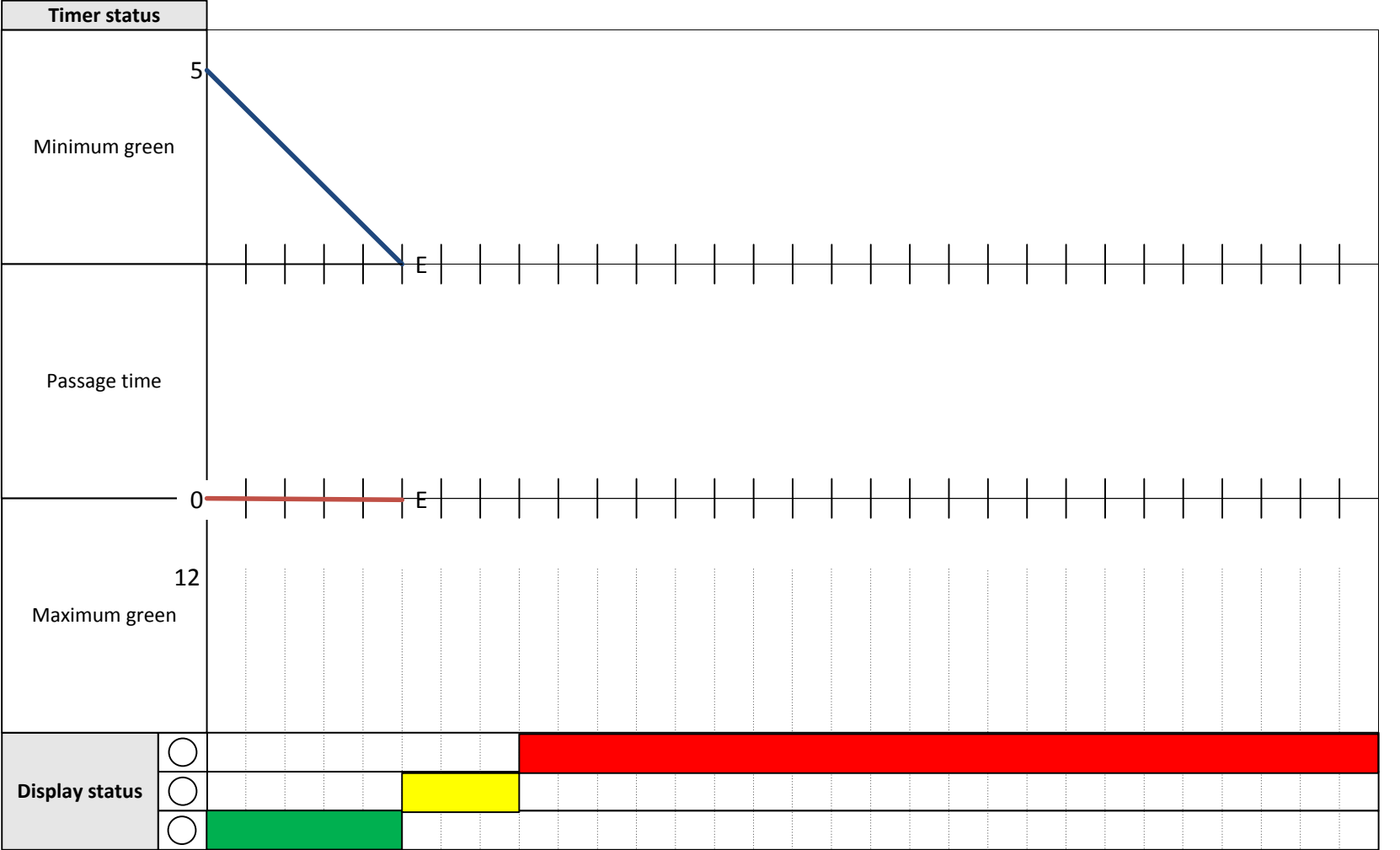
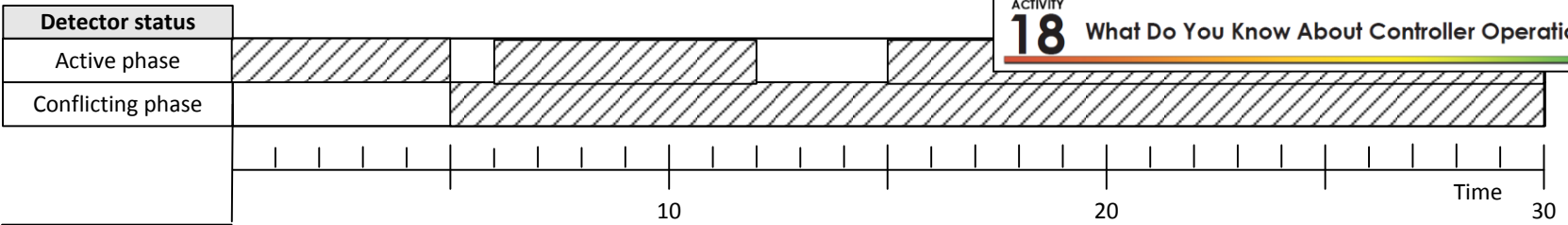
- ### Notes
- Vehicle trajectories and detector status
  - Phase terminates when min green and passage timers have both expired
  - Phase gaps out when passage timer expires



Min green	3s
Passage time	3s
Max green	20s



Min green	0s
Passage time	2s
Max green	15s



Min green	5s
Passage time	0s
Max green	12s

Phase gaps out!

# ASC/3 Display and Detector Status

ASC/3 CONTROLLER 12.46.00 ASC/3 2100

Green	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Red	●	○	●	●	●	○	●	●	●	●	●	●	●	●	●	●
Walk	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Ped Clear	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Don't Walk	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
O'lap Green	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Red	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
On	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○
Next	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TSP Test    Turbo  
 Automatic Flash  
 External Start  
  
 Database number to load on next start:   
 Controller Type:  
 ASC/3 2100  
 ASC/3 1000  
 2070 2A  
 2070 2B  
 2070 2N  
 ASC/3 RM  
 Fault Monitor (FM) ●  
 Voltage Monitor (CVM) ●  
 Momentary  
 Momentary  
 Phase Omit  
 Ped Omit  
 Low Priority Preemptor Inputs

Veh Det																	
Ped Det																	
Hold																	
Phase Omit																	
Ped Omit																	
Preempt																	

Inhibit Max	R1	R2	R3	R4	C1	C2	C3	C4
Max 2								
Max 3								
Min Recall								
WRM								
CNA 1								
CNA 2								

CMD DFT 1 - RUN DFT 1

```

STATUS [FREE-DEFAULT 104/25/12|14:37:33
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PH STAT . G . . . G . . - - - - - - - -
VEH CALL . . . . .
PED CALL . . . . .
R1/PH 2|R2/PH 6|R3/PH .|R4/PH .
GRN REST |GRN REST |INACTIVE |INACTIVE
MAX1 0|MAX1 0|
PLAN SPLT: 0|TP: 1|SEQ: 1|ACT: 0|DP: 1
LC: 0s/ 0|SYS CYL: 0s|COS | FREE
FUNCTION 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PMT|TSP ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
LP FLAG . . . . .
COMMUNICATIONS PORT STATUS|TLM ADD: 0
ETH RX TX|P2 RX TX|P3A RX TX|P3B RX TX
1 ■ ■ |0 ■ ■ |0 ■ ■ |0 ■ ■ |

```

R1	01	02	03	04	MM	SM	ND	NS	1	2	3
R2	05	06	07	08					4	5	6
R3									7	8	9
R4									SF	0	C

Small D

.H .Status .NP

Download file  
 Observe part 1: 0:00-0:55



# Constant calls placed on phases 2, 4, 6, and 8

ASC/3 CONTROLLER 12.46.00 ASC/3 2100

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Green	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○
Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Red	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	●
Walk	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Ped Clear	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Don't Walk	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
O'lap Green	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Red	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Check	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
On	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Next	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TSP Test     Turbo  
 Automatic Flash  
 External Start  
  
 Database number to load on next start:   
 Controller Type:  
 ASC/3 2100  
 ASC/3 1000  
 2070 2A  
 2070 2B  
 2070 2N  
 ASC/3 RM  
 Fault Monitor (FM)   
 Voltage Monitor (CVM)   
 Lock  
 Momentary  
 Phase Omit  
 Ped Omit  
 Low Priority Preemptor Inputs

Veh Det	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Ped Det	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Phase Omit  
 Ped Omit  
 Low Priority Preemptor Inputs

Inhibit Max	R1	R2	R3	R4	C1	C2	C3	C4
Max 2								
Max 3								
Min Recall								
WRM								
CNA 1								
CNA 2								

CMD DFT 1 - RUN DFT 1

```

STATUS [FREE-DEFAULT] 10/4/25/12|14:38:39
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PH STAT . . . G . . . G - - - - -
VEH CALL . C . C . C . C
PED CALL . . . . .
R1/PH 4|R2/PH 8|R3/PH .|R4/PH .
MGRN1 4|MGRN1 4|INACTIVE|INACTIVE
MAX1 34|MAX1 34|
PLAN SPLT: 0|TP: 1|SEQ: 1|ACT: 0|DP: 1
LC: 0s/ 0|SYS CYL: 0s|COS | FREE
FUNCTION 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PMT|TSP - - - - - - - - - - - - - - - -
LP FLAG . . . . .
COMMUNICATIONS PORT STATUS|TLM ADD: 0
ETH RX TX|P2 RX TX|P3A RX TX|P3B RX TX
1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
  
```

R1	01	02	03	04	MM	SM	ND	NS	1	2	3
R2	05	06	07	08					4	5	6
R3									7	8	9
R4									SF	0	C

01:11

Part 2: 0:55-2:30  
 Example detector calls and controller/display responses



# Test Your Understanding....

**ASC/3 CONTROLLER 12.46.00 ASC/3 2100**

**Observe the detector calls, timing processes for rings 1 and 2, the phase status, and the displays .... and .... record what you see....**

Green	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Red	●	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○
Walk	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Ped Clear	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Don't Walk	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
O'lap Green	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Yellow	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
O'lap Red	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
On	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Next	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ASC/3 1000  
 2070 2A  
 2070 2B  
 2070 2N  
 ASC/3 RM

Fault Monitor (FM) ●  
 Voltage Monitor (CVM) ●

Momentary  
 Momentary

Phase Omit  
 Ped Omit  
 Low Priority Preemptor Inputs

R1 R2 R3 R4 C1 C2 C3 C4  
 Inhibit Max  
 Max 2  
 Max 3  
 Preempt Red Cl

Min Recall  
 WRM  
 CNA 1  
 CNA 2

CMD DFT 1 - RUN DFT 1

```

STATUS [FREE-DEFAULT 104/27/12|12:19:12
- PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PH STAT . . . G . . . G - - - - - - - -
VEH CALL . . . . . . . . . . . . . . . .
PED CALL . . . . . . . . . . . . . . . .
R1/PH 4|R2/PH 8|R3/PH .|R4/PH .
GRN REST |GRN REST |INACTIVE |INACTIVE
MAX1 0|MAX1 0|
PLAN SPLT: 0|TP: 1|SEQ: 1|ACT: 0|DP: 1
LC: 0s/ 0|SYS CYL: 0s|COS | FREE
FUNCTION 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PMT|TSP ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
LP FLAG . . . . . . . . . . . . . . . .
COMMUNICATIONS PORT STATUS|TLM ADD: 0
ETH RX TX|P2 RX TX|P3A RX TX|P3B RX TX
1 ■ ■ ■ 0 ■ ■ ■ 0 ■ ■ ■ 0 ■ ■ ■
  
```

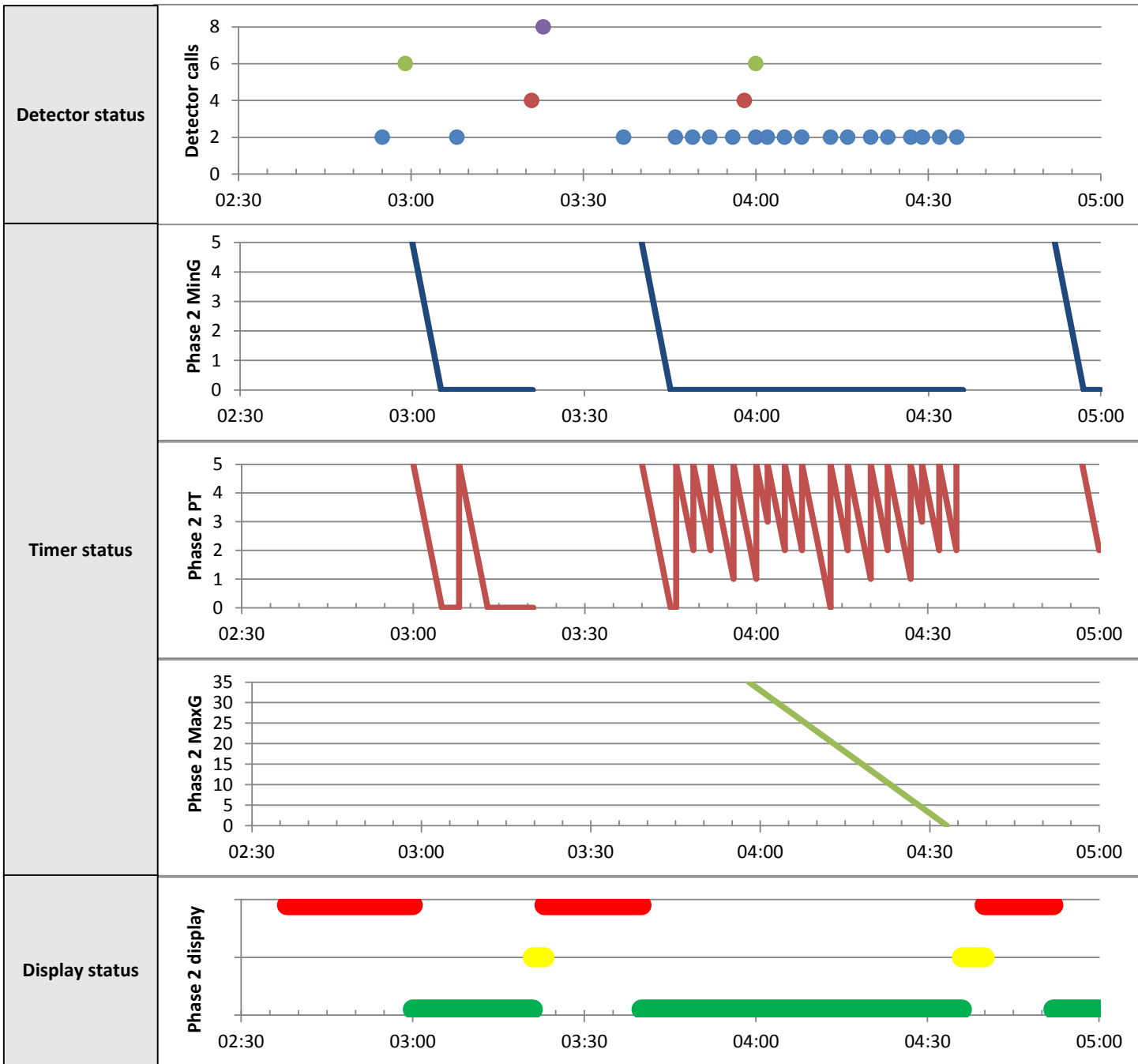
MM SM ND NS 1 2 3  
 R1 01 02 03 04 4 5 6  
 R2 05 06 07 08 7 8 9  
 R3 L E R SF 0 C  
 R4 Small D  
 H Status NP

02:41

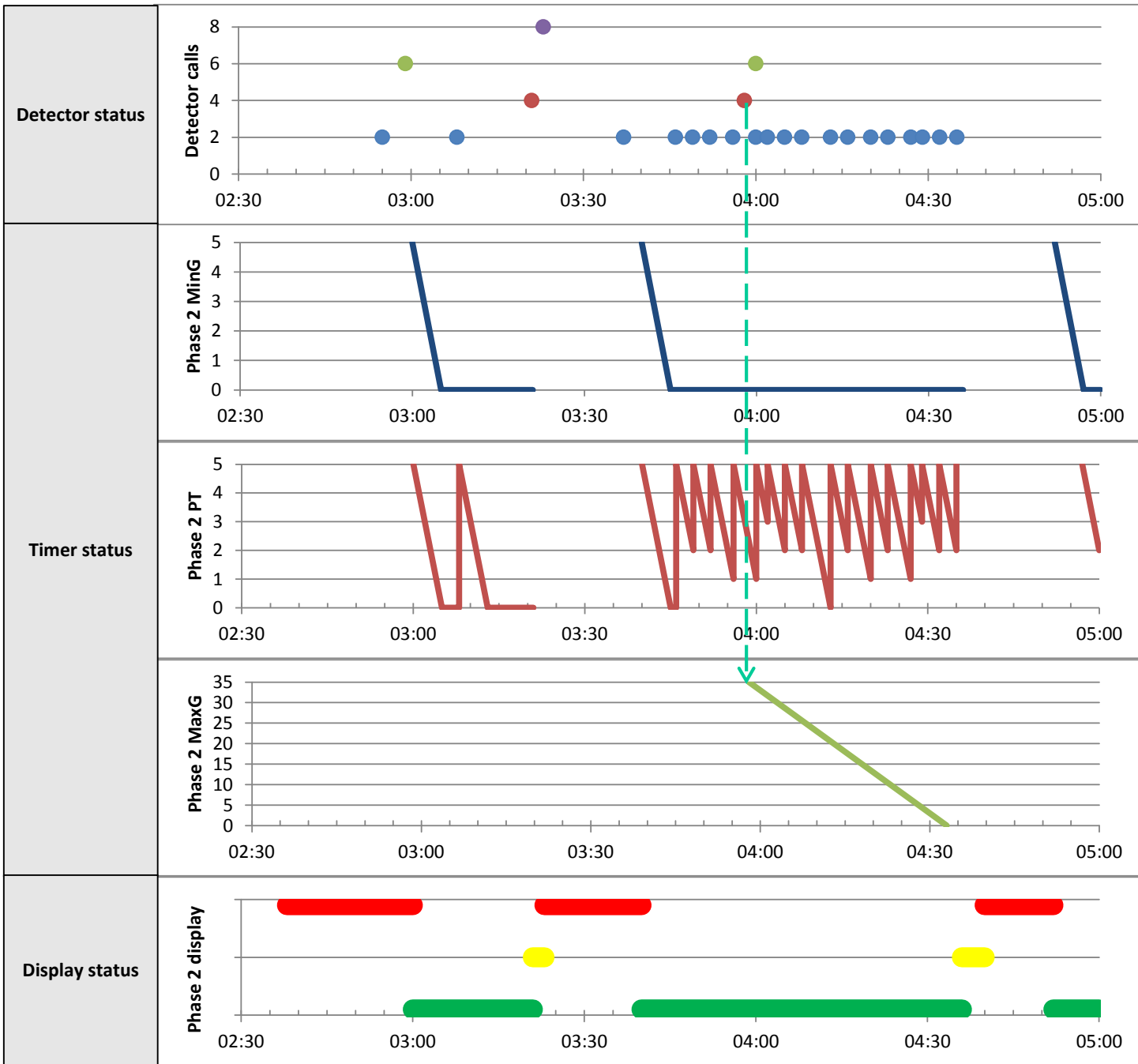
Part 3: 2:40-5:00 ← Testing your skills



1. What are examples of the data provided in the controller status display screen?
2. How many rings can be accommodated by the ASC/3 controller?
3. How do you know whether a gap out or max out has occurred?
4. How can you verify that a vehicle call has been placed?
5. Describe some of the observations that you have made on the response of the controller timing processes to vehicle calls.



Time →



Conflicting call (on phase 4) spawns maximum green timer for phase 2

Time →

# ACTIVITY 20

## How a Traffic Phase Times and Terminates



**1001 - ASC/3**

CONTROLLER STATUS: 1 OF 3  
 PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6  
 T/N..... - T - - T - - - - - - - - - -  
 UEH..... C C C .  
 PED.....  
 R1/PH 2 R2/PH 6 R3/PH . R4/PH .  
 XFER UEXT 0.2 RRST RRST  
 MAX1 0.0 MAX1 18.2  
 CHD SRC NIC COS ACTION PLAN 0  
 SVS CVC 0s PTN 0 START TIME ---  
 LOC CVC 0s FREE STOP TIME ---  
 TLM ADD 0 NO TLM PATTERN 0  
 PREEMPTOR 1 NEXT PLAN 0  
 1 2 3 4 5 6 7 8 9 0 CHD-RUN SEQ 1/ 1  
 ----- 02/06/2006 16:30:41

MM SM ND NS 1 2 3  
 4 5 6  
 U 7 8 9  
 L E R SF 0 C  
 D  
 H Status NP

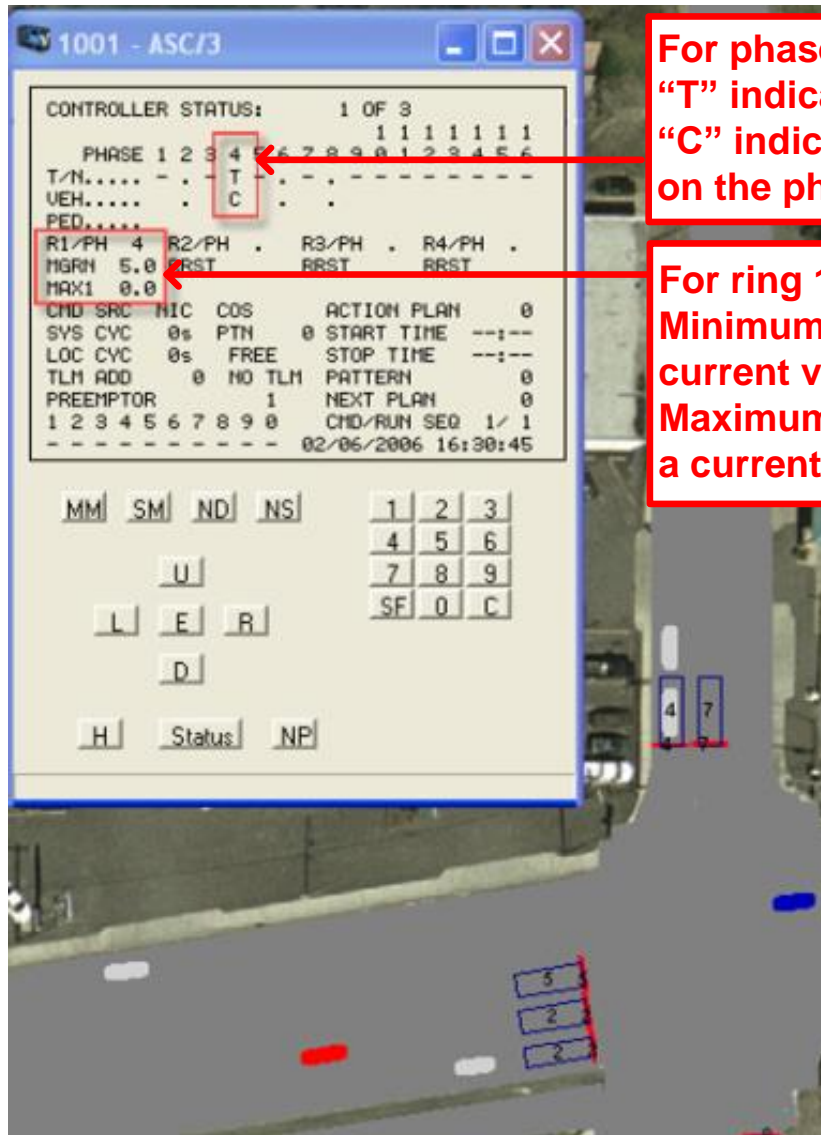
**1002 - ASC/3**

CONTROLLER STATUS: 1 OF 3  
 PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6  
 T/N..... - T - - T - - - - - - - - - -  
 UEH..... C C C .  
 PED.....  
 R1/PH 2 R2/PH 6 R3/PH . R4/PH .  
 XFER 2.5 XFER RRST RRST  
 MAX1 6.0 MAX1 0.0  
 CHD SRC NIC COS ACTION PLAN 0  
 SVS CVC 0s PTN 0 START TIME ---  
 LOC CVC 0s FREE STOP TIME ---  
 TLM ADD 0 NO TLM PATTERN 0  
 PREEMPTOR 1 NEXT PLAN 0  
 1 2 3 4 5 6 7 8 9 0 CHD-RUN SEQ 1/ 1  
 ----- 02/06/2006 16:30:41

MM SM ND NS 1 2 3  
 4 5 6  
 U 7 8 9  
 L E R SF 0 C  
 D  
 H Status NP

Bottom status bars:  
 Left: -182.2:23.9 41.4 0.0 25 1.1 (22)  
 Right: -247.2:-62.1 41.4 0.0 42 1.1 (38)





For phase 4:  
"T" indicates phase is timing;  
"C" indicates an active call on the phase.

For ring 1/phase 4:  
Minimum Green timer has a current value of 5.0 sec;  
Maximum 1 Green timer has a current value of 0.0 sec.



# Critical Thinking Question

1. Why does phase terminate for each scenario?

# Doing the Activity

- Step 1. Open movie file
- Step 2. Observe status at beginning of Phase 4 green
- Step 3. Observe two scenarios for one green indication
- Step 4. Summarize your observations

- Why does phase terminate for each scenario?

- Why does phase terminate for each scenario?

1001 - ASC/3

```

CONTROLLER STATUS:      1 OF 3
                        1 1 1 1 1 1 1
  PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
T/PL.... - N - T - N - . - - - - - - -
UEH....  C  .  C  .
PED.....
R1/PH 4  R2/PH .  R3/PH .  R4/PH .
VEL 3.0 RRST      RRST      RRST
GAP OUT
CMD SRC  NIC  COS      ACTION PLAN  0
SYS CYC  0%  PTN  0  START TIME  ---:--
LOC CYC  0%  FREE  STOP TIME  ---:--
TLM ADD  0  NO TLM  PATTERN  0
PREEMPTOR      1  NEXT PLAN  0
1 2 3 4 5 6 7 8 9 0  CMD/RUN SEQ 1/ 1
- - - - - 02/06/2006 16:30:52

```

MM SM ND NS 1 2 3  
4 5 6  
U 7 8 9  
L E R SF 0 C  
D  
H Status NP

1002 - ASC/3

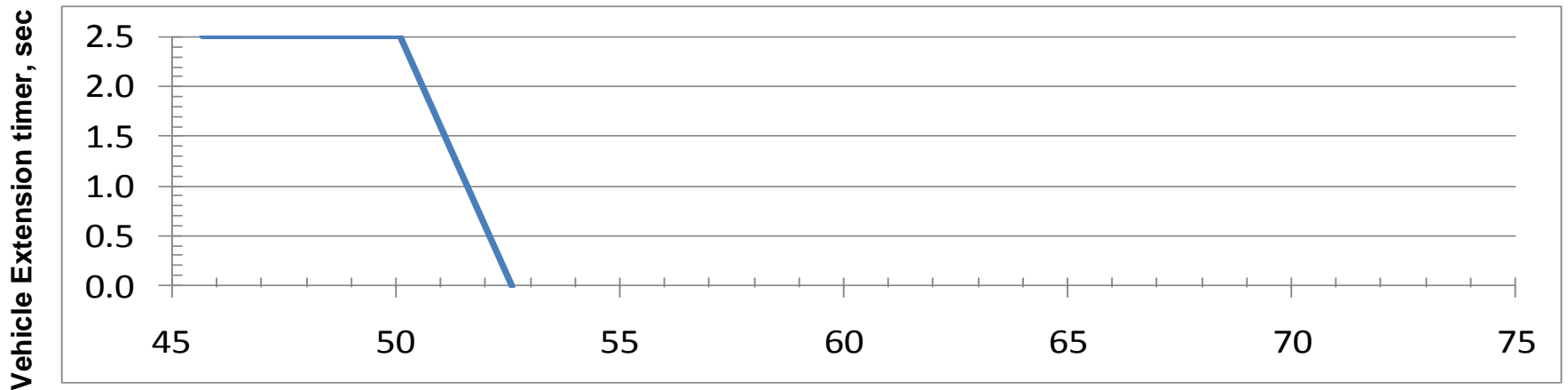
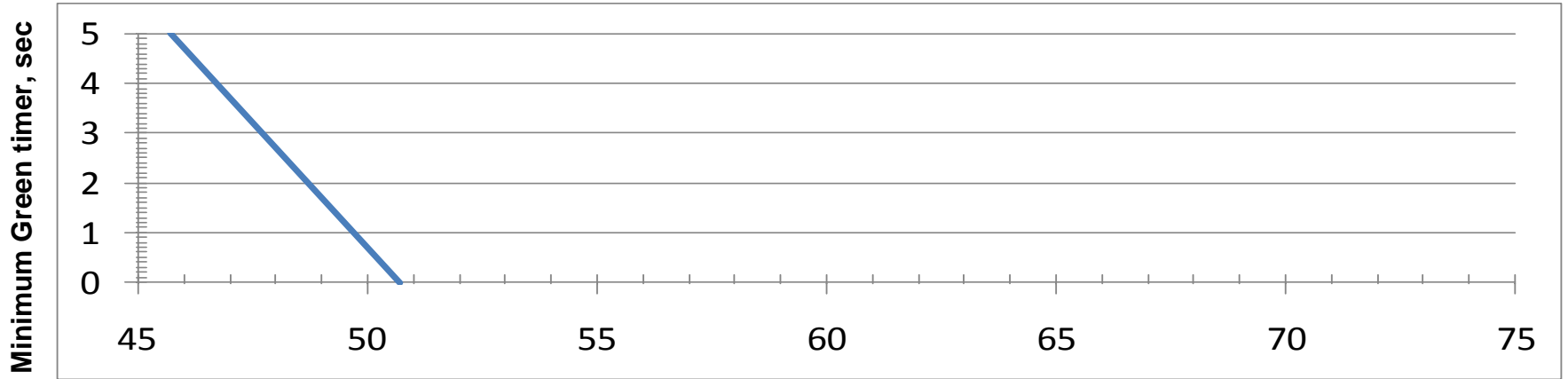
```

CONTROLLER STATUS:      1 OF 3
                        1 1 1 1 1 1 1
  PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
T/PL.... - N - T - N - . - - - - - - -
UEH....  C  C  C  .
PED.....
R1/PH 4  R2/PH .  R3/PH .  R4/PH .
VEL 3.0 RRST      RRST      RRST
PRK OUT
CMD SRC  NIC  COS      ACTION PLAN  0
SYS CYC  0%  PTN  0  START TIME  ---:--
LOC CYC  0%  FREE  STOP TIME  ---:--
TLM ADD  0  NO TLM  PATTERN  0
PREEMPTOR      1  NEXT PLAN  0
1 2 3 4 5 6 7 8 9 0  CMD/RUN SEQ 1/ 1
- - - - - 02/06/2006 16:31:11

```

MM SM ND NS 1 2 3  
4 5 6  
U 7 8 9  
L E R SF 0 C  
D  
H Status NP

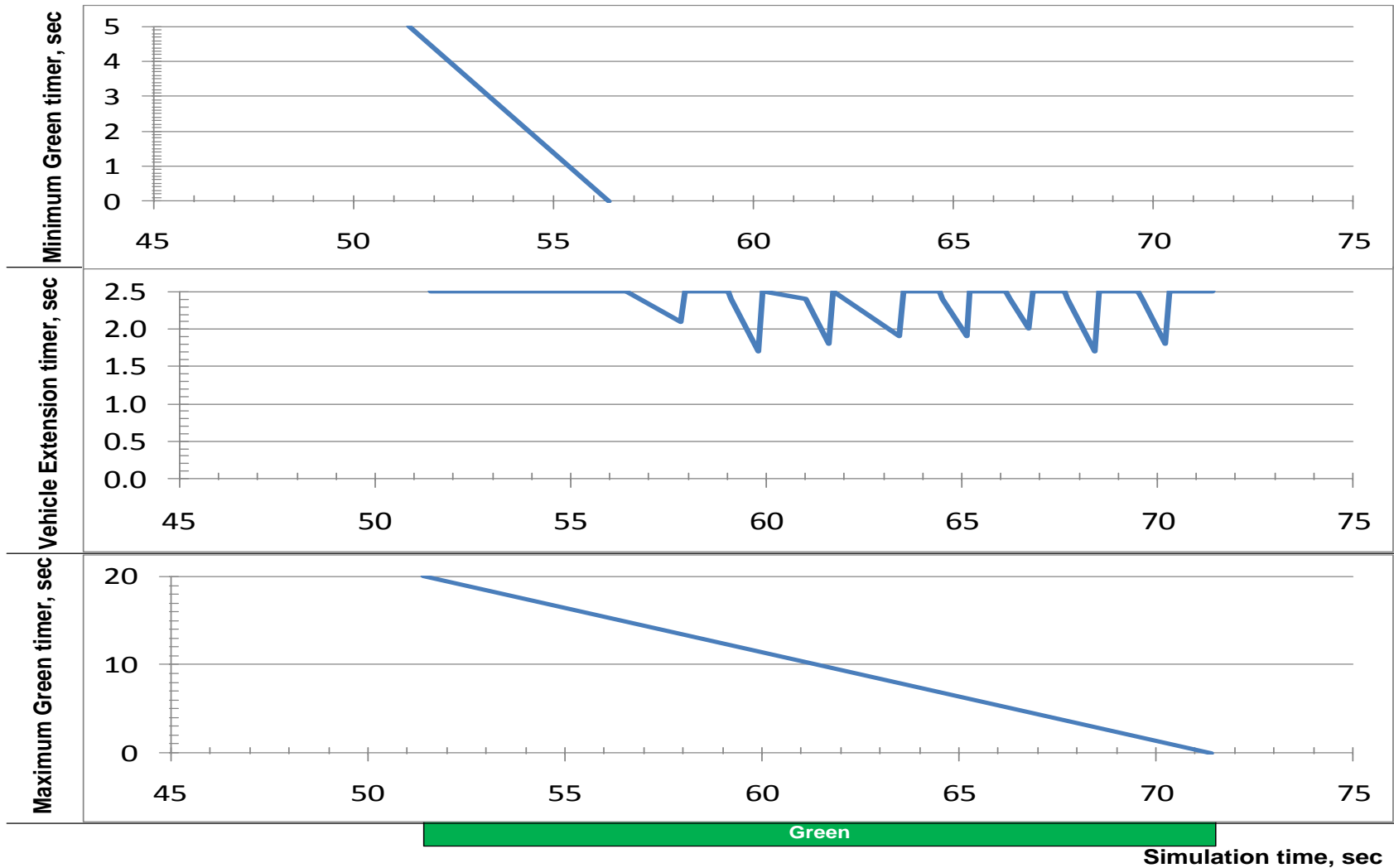
- Why does phase terminate for each scenario?



Green

Simulation time, sec

- Why does phase terminate for each scenario?





**TASK 1**

Complete the detector responses, timer responses, and signal display responses for each of the eight cases that follow. The conditions for each case are shown in the lower right of each figure. Assume that the green time begins at  $t = -3$  and that yellow time = 3 seconds and red clearance time = 1 second.

  
**t=0**

For next time...

**Class 10 (9.16)**

Review: A18

Do/Discuss: A19

Do/Discuss: A20

Do/Discuss: A21

Homework (due 9.17):

- Do: A22 (in book)
- Prepare: A23

