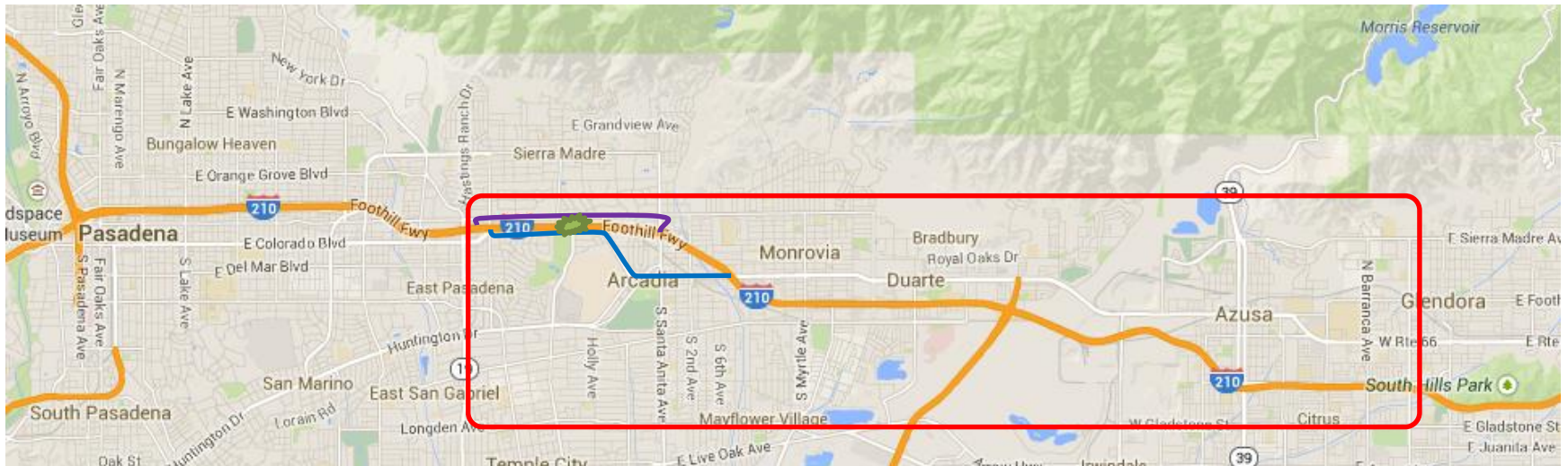


Site Information

Site Specification

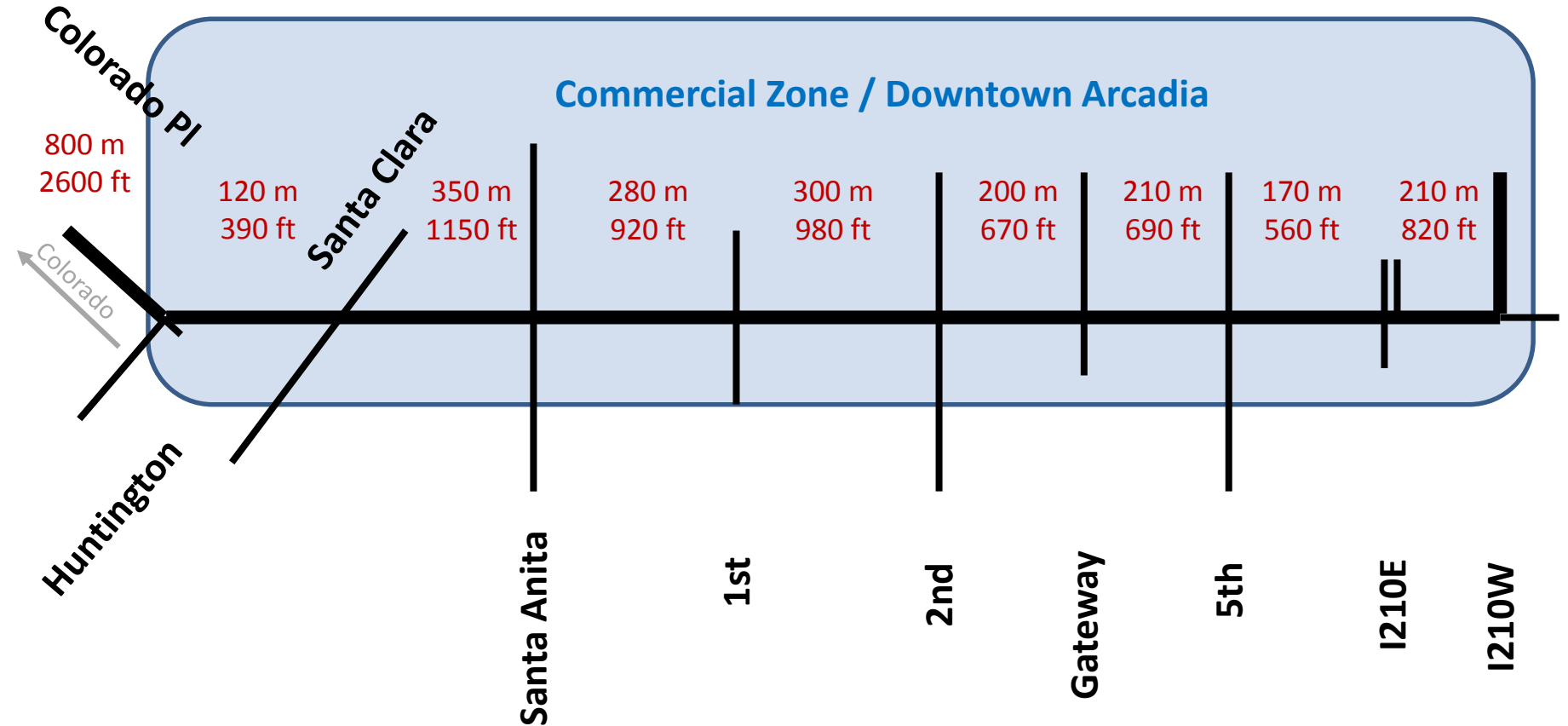


- Network for Evaluation:
 - I210W: PM 42 to 29
 - Huntington + Colorado (on-ramp Michillinda)
 - Foothill

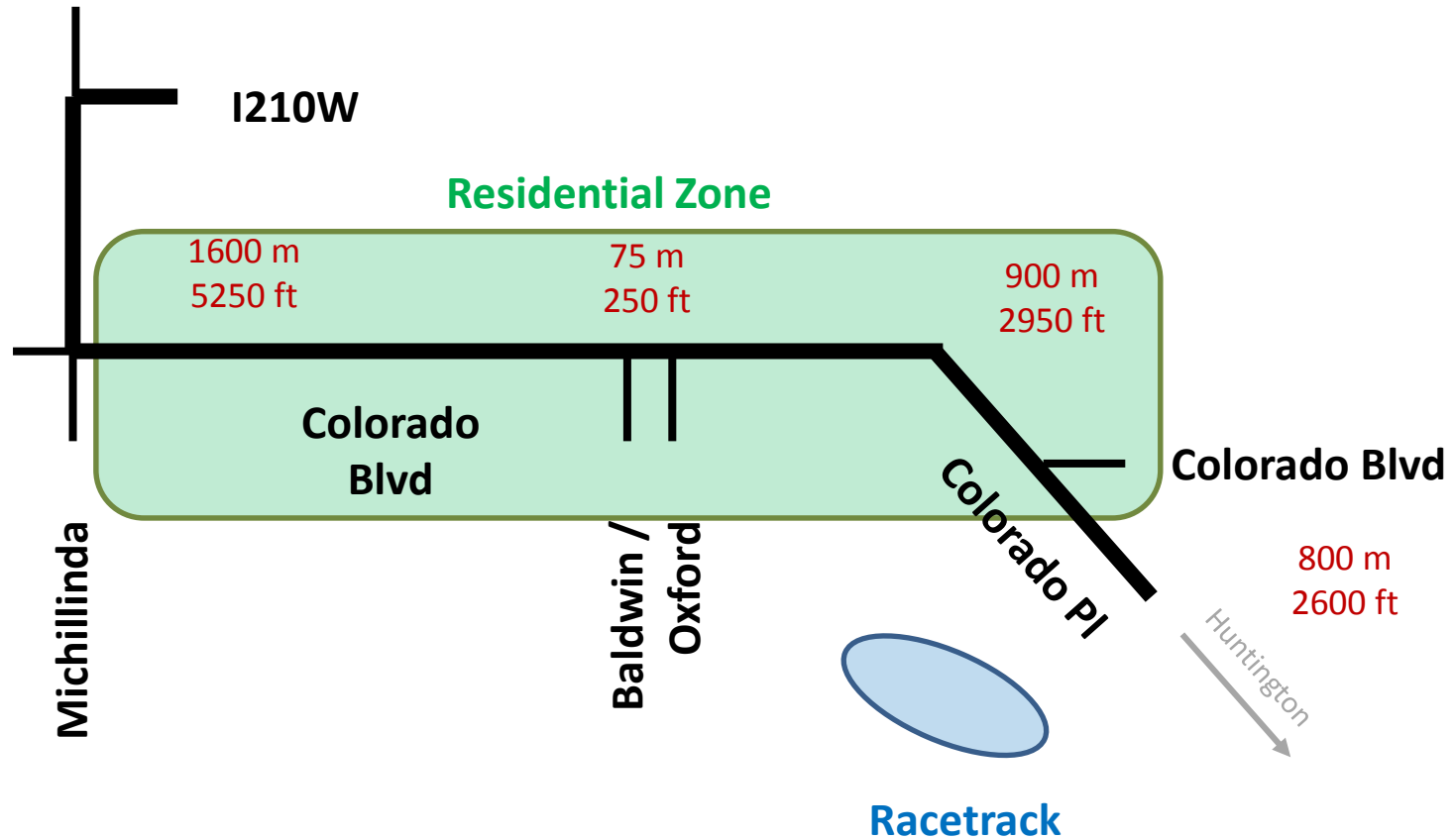
Network Information

- I210 (for each direction):
 - 4 general purpose lanes
 - 1 HOV lane, separated by yellow line
- Huntington + Colorado
 - 2 lanes each direction
 - One exception: 1 lane at WB right-turning movement at Michillinda (not signalized)
- Foothill
 - 2 lanes each direction
 - Exception 1: 3 lanes between Michillinda and Quigley
 - Exception 2: 1 lane for left-turn movement at Quigley

Huntington



Colorado



Foothill

Commercial Zone

270 m
890 ft

240 m
790 ft

Residential Zone

1300 m
4250 ft

280 m
920 ft

1700 m
5600 ft

Rosemead

I210W /
Quigley

Michillinda

I210W /
Baldwin (W)

Baldwin (E)

Santa
Anita

1st /
Highland
Oaks

2nd

5th

290 m
950 ft

290 m
950 ft

450 m
1500 ft

AVAILABLE DATA

Available Data

- Freeway:
 - PeMS: speed, flow, occupancy, density
- Huntington + Colorado
 - Racetrack study 2006: counts + splits
 - Signal times (Huntington only)
 - Loop data (March/April 2014, Huntington only)
- Foothill
 - Racetrack study 2006: counts + splits
 - Signal times
- NOTE: Although we have a lot of data, some information is missing because of the following issues:
 - Broken detectors, or even worse: detectors with wrong data
 - Missing signal plans
 - Unknown quality of detectors
- We therefore have to make reasonable assumptions to make up for the missing parts.

Racetrack study

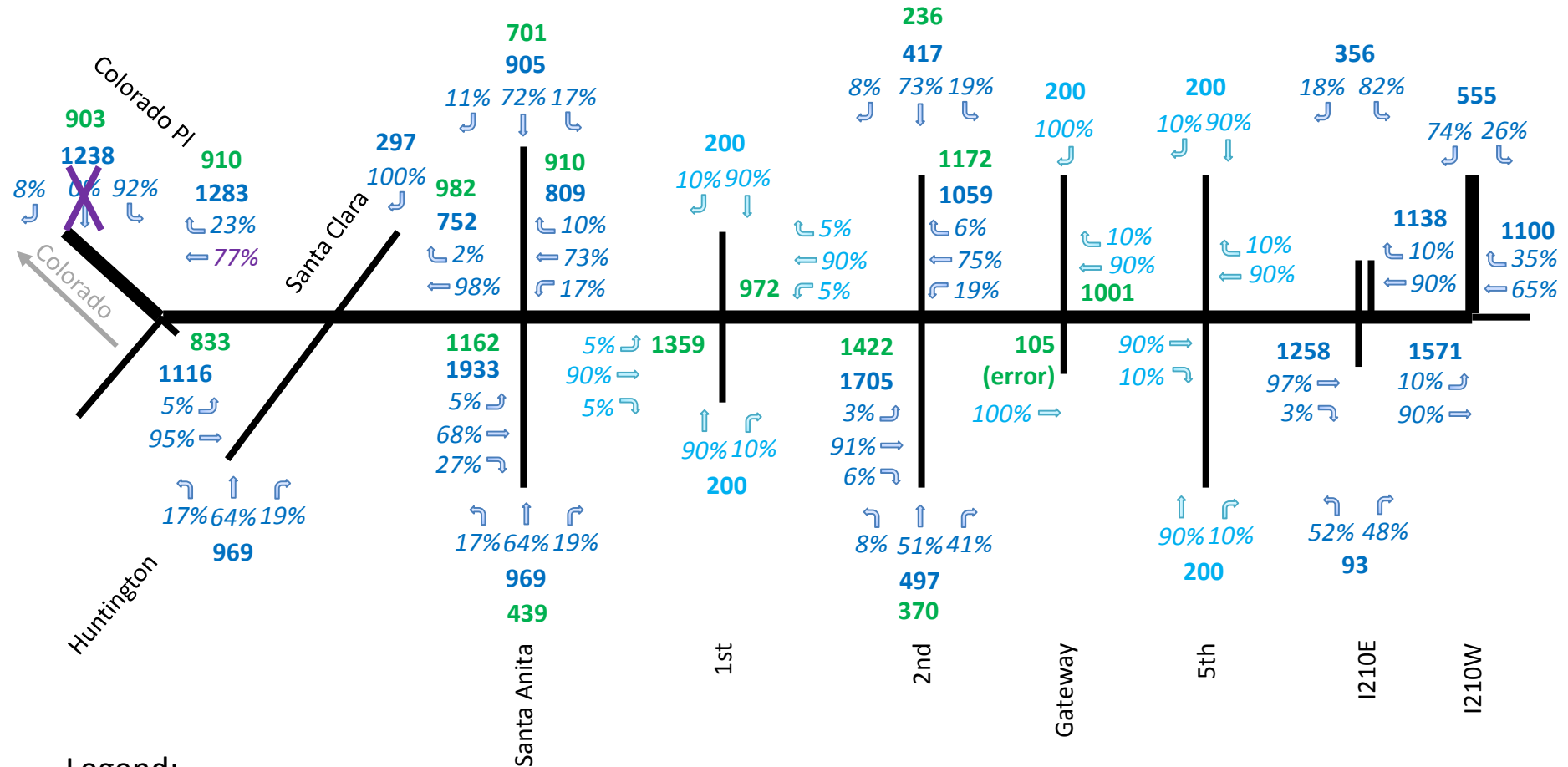
- Counts from March and April 2006 per movement per intersection
- 42 signalized and unsignalized intersections
- “[I]ntersection traffic counts were conducted at all of the analyzed intersections during **typical weekday morning and evening peak** traffic periods (7:00–9:00 A.M. and 4:00–6:00 P.M.) [...] The weekday counts were conducted during March and April, 2006, on days **when the Racetrack was in session**. [...] Figure 4.13-3 [...] present[s] a summary of the traffic volumes at each of the study area intersections for the **busiest hours** of the morning [and] evening [...] peak hours.”
- ➔ Since the counts were gathered during racetrack sessions, and the racetrack attracts additional traffic, the counts presented in the study probably overestimate the volume of an average hour.

Assumptions Made When Data is Missing

- Arterials
 - Splits:
 - 90% thru
 - Protected left turn present? → 5% left, 5% right
 - No protected left? → 10% right
 - Boundary flow: 200 veh/h
 - Inner flow: calculate from neighboring intersections assuming conservation of vehicles

Visualization of Flows and Splits

Huntington



Legend:

439 Flow [veh/h] based on Arcadia Loop data

969 Flow [veh/h] based on Racetrack study

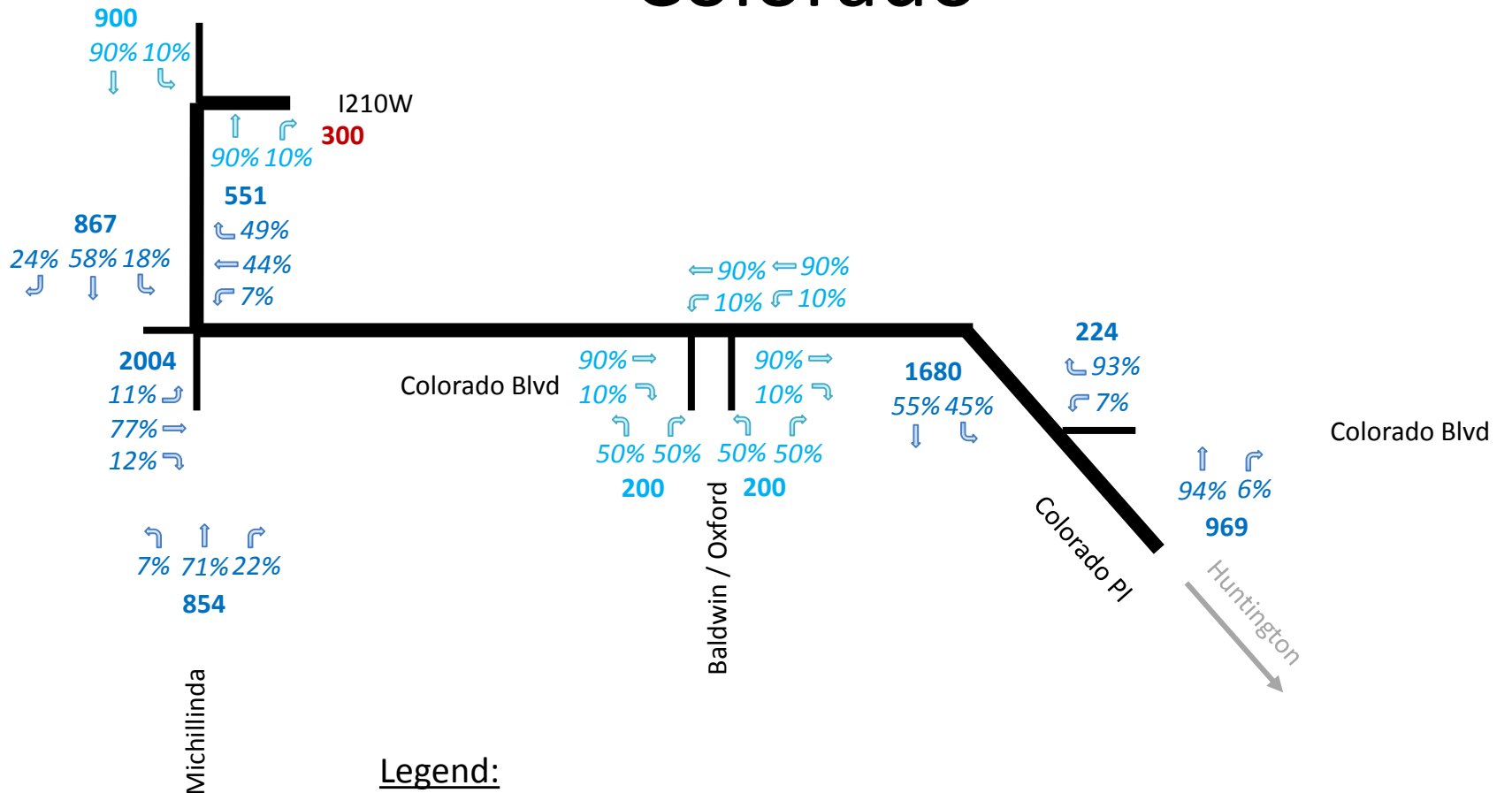
19% Split ratio based on Racetrack study

200 Flow [veh/h] based on defaults

10% Split ratio based on defaults

Visualization of Flows and Splits

Colorado



Legend:

300 Flow [veh/h] based on PeMS

439 Flow [veh/h] based on Arcadia Loop data

969 Flow [veh/h] based on Racetrack study

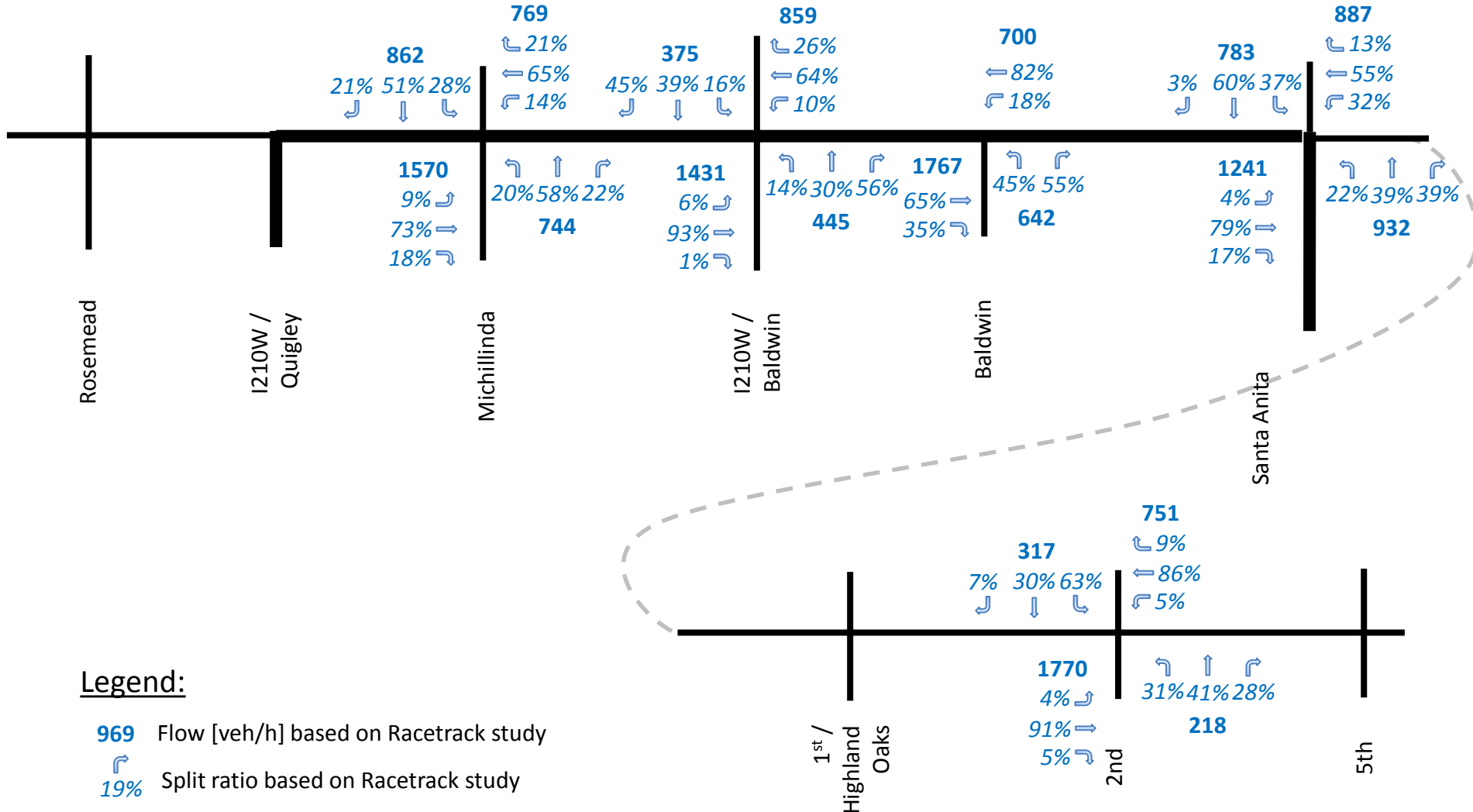
19% Split ratio based on Racetrack study

200 Flow [veh/h] based on defaults

10% Split ratio based on defaults

Visualization of Flows and Splits

Foothill

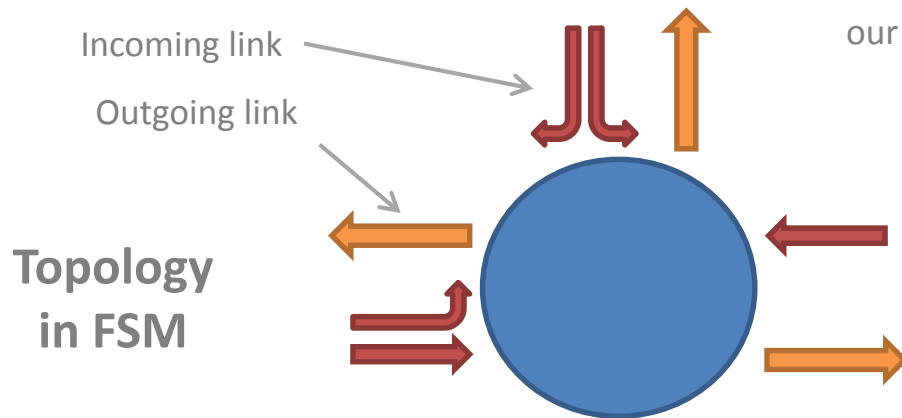


INTERSECTION INFORMATION

Intersection Information

- Huntington from East to West between I210W and Michillinda
- Foothill from East to West between 5th and Rosemead

[1] Huntington + I210W



Main direction of our reroute

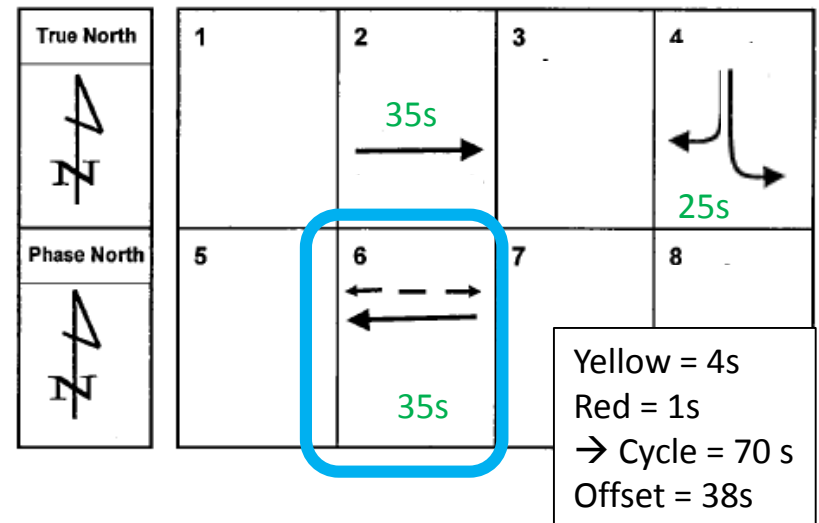
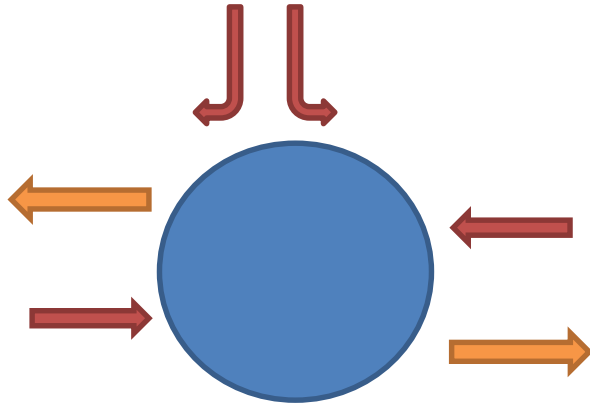


True North
Phase North

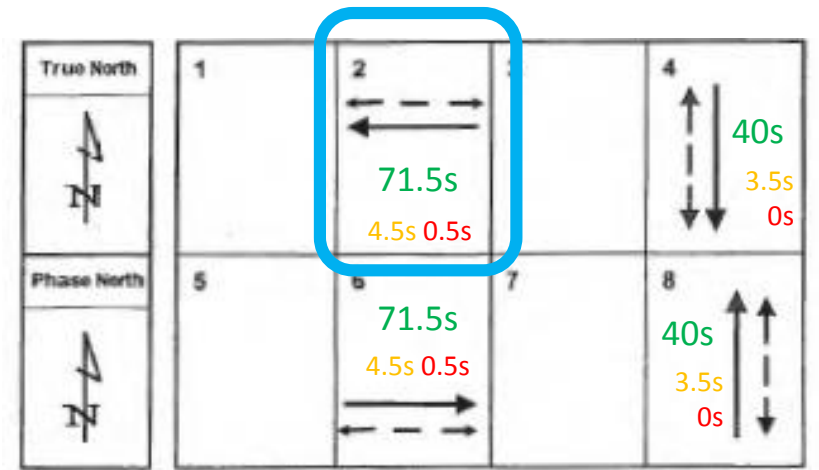
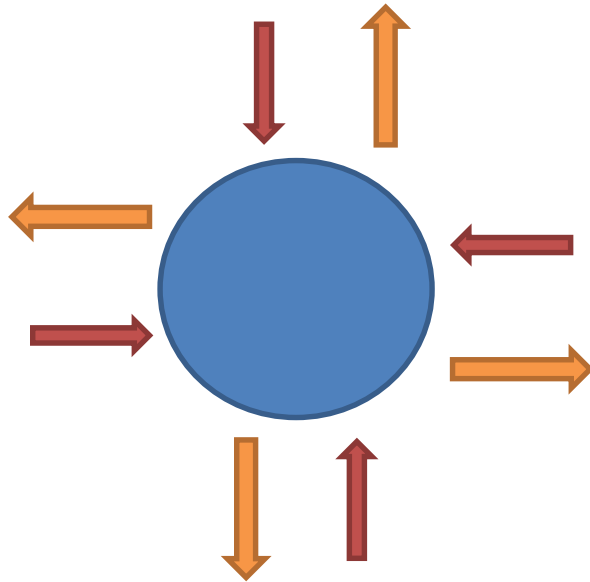
1	2	3	4
	35s →		25s ↙ ↘
5	6	7	8
	35s ← →		

Yellow = 4s
Red = 1s
→ Cycle = 70 s
Offset = 45s

[2] Huntington + I210E

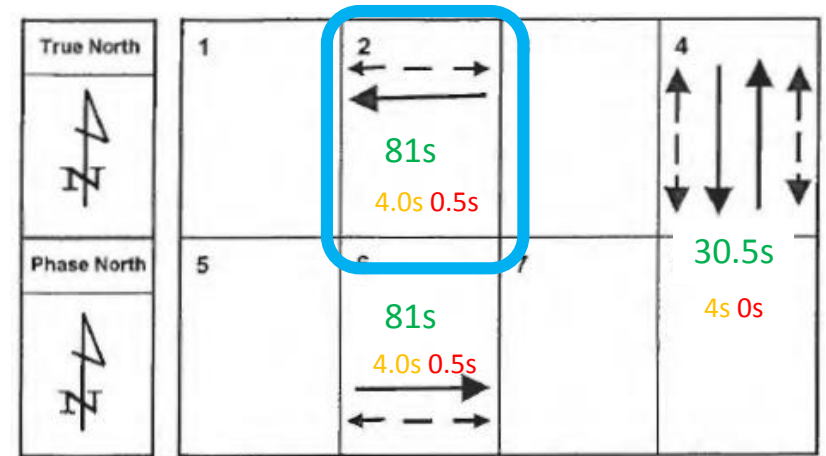
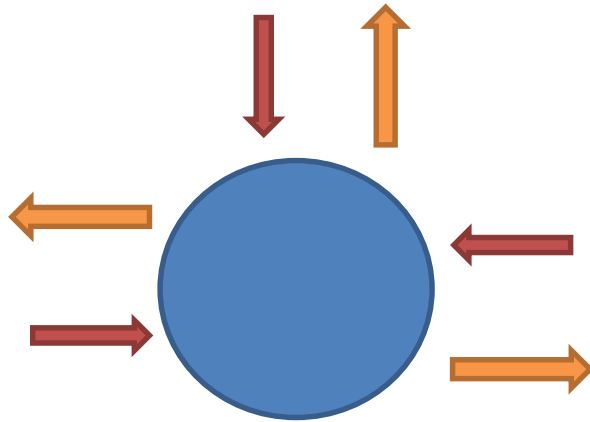


[3] Huntington + 5th



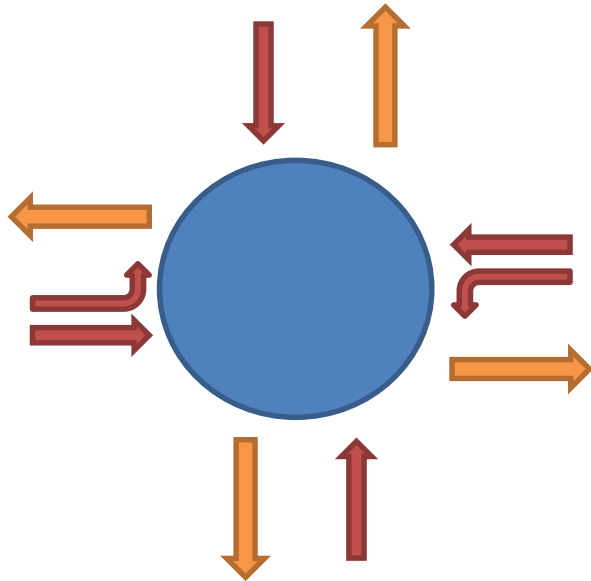
Cycle = 120 s, Offset = 2s

[4] H'ton + Gateway



Cycle = 120 s, Offset = 9s

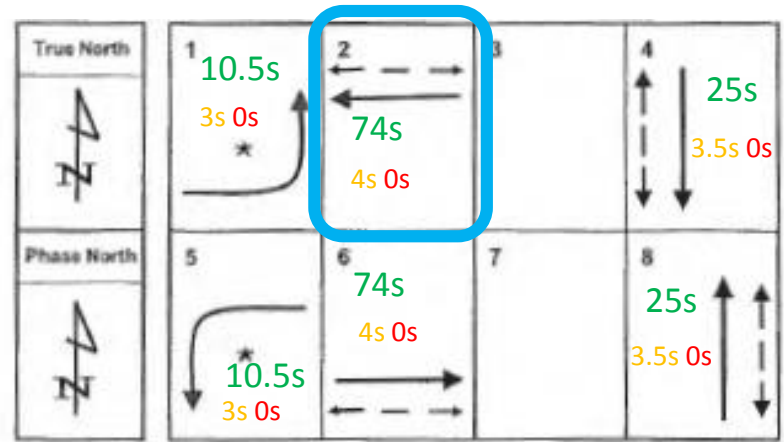
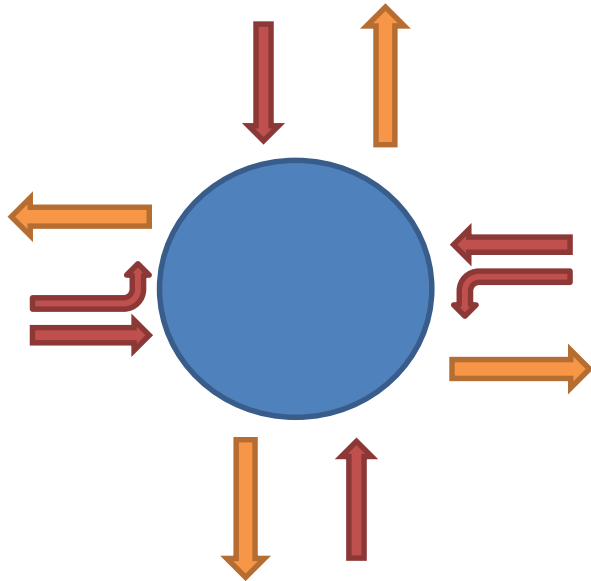
[5] Huntington + 2nd



True North	1 10s 3.0s 0s *	2 ←→ ←→ 72s 4.0s 0.5s	3	4 ↑↑↑ ↓↓↓ 25.5s 4s 1s DUMMY
Phase North	5 ↙ * 20s 3s 0s	6 → → 62s 4.0s 0.5s	7	

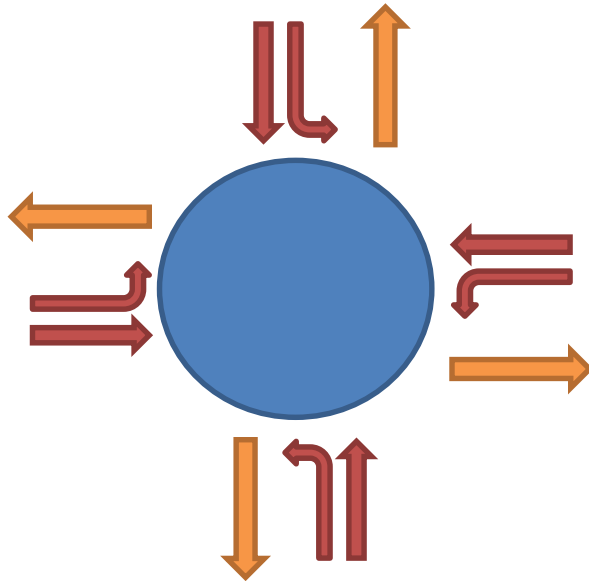
Cycle = 120 s, Offset = 73s

[6] Huntington + 1st



Cycle = 120 s, Offset = 71s

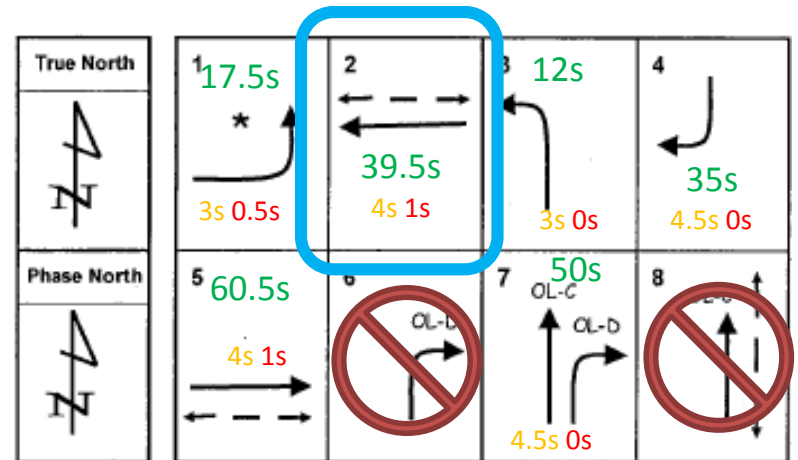
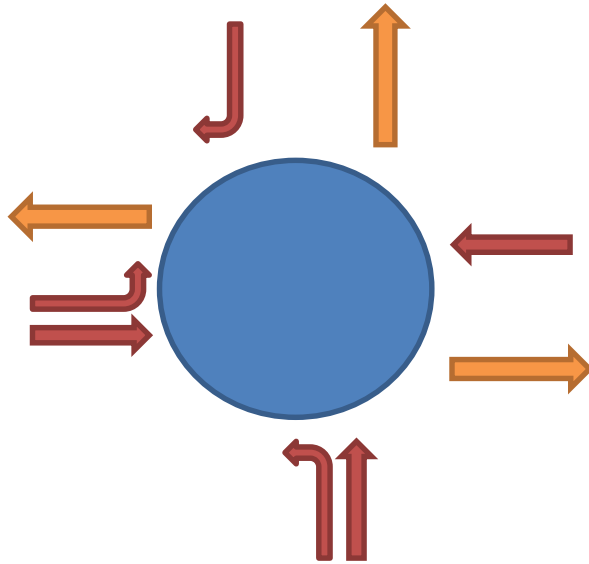
[7] H'ton & Santa Anita



<p>True North</p>	<p>1 15.5s</p> <p>3s 0.5s</p>	<p>2 40.5s</p> <p>4s 0.5s</p>	<p>3 12.5s</p> <p>3s 0.5s</p>	<p>4 35.5s</p> <p>4.5s 0s</p>
<p>Phase North</p>	<p>5 15.5s</p> <p>3s 0.5s</p>	<p>6 40.5s</p> <p>4.0s 0.5s</p>	<p>7 12.5s</p> <p>3s 0.5s</p>	<p>8 35.5s</p> <p>4.5s 0s</p>

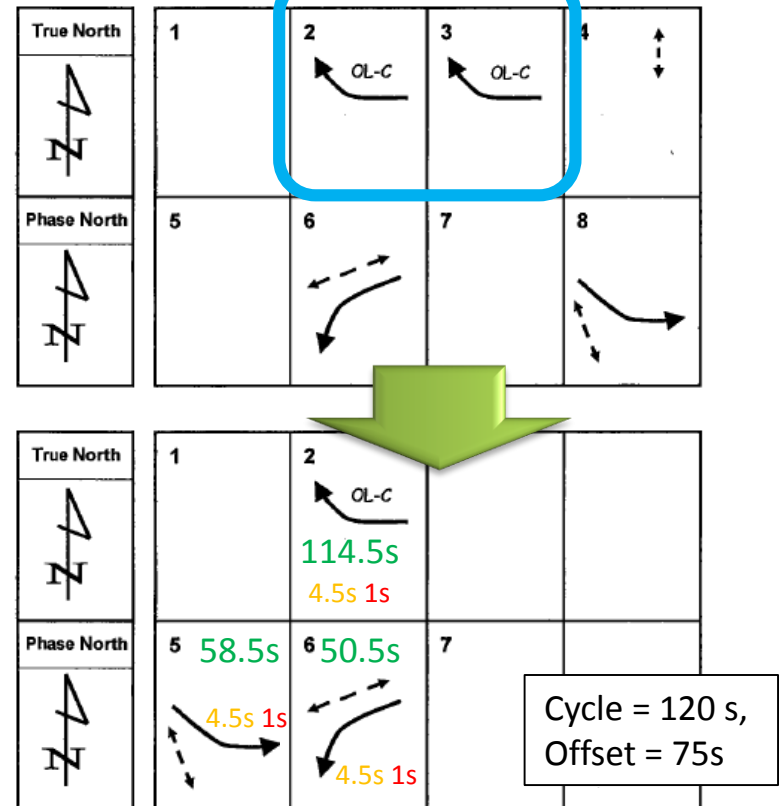
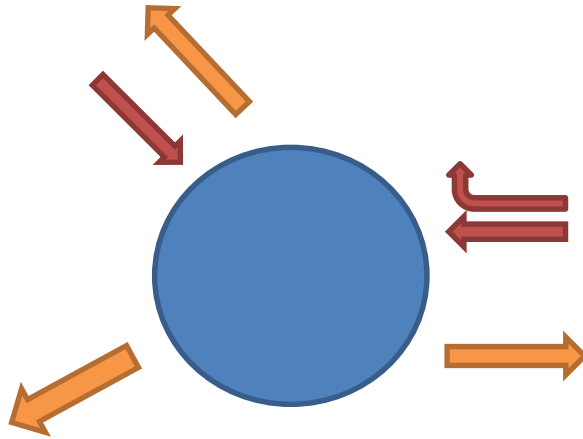
Cycle = 120 s, Offset 35s

[8] H'ton & Santa Clara

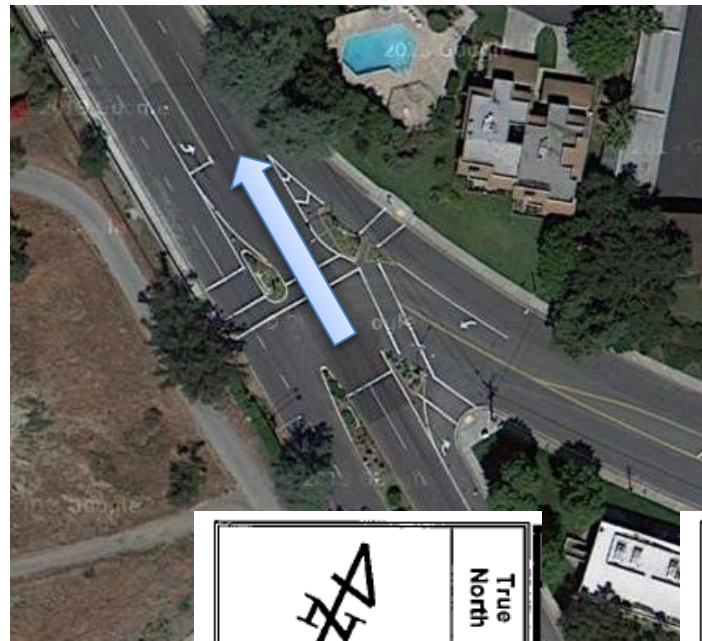
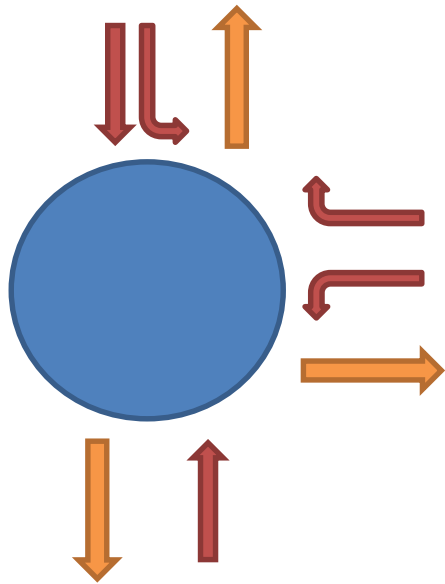


Cycle = 120 s, Offset = 28s

[9] H'ton & Colorado



[10] Col & Col



Cycle = 145 s,
Offset = 0s

True North	Phase North	
		1
		2
		3
		4
		5
		6
		7
		8



True North	Phase North	
		1
		2
		3
		4
		5
		6
		7
		8

60.5s

5s 1s

60.5s

5s 1s

35s

4s 1.5s

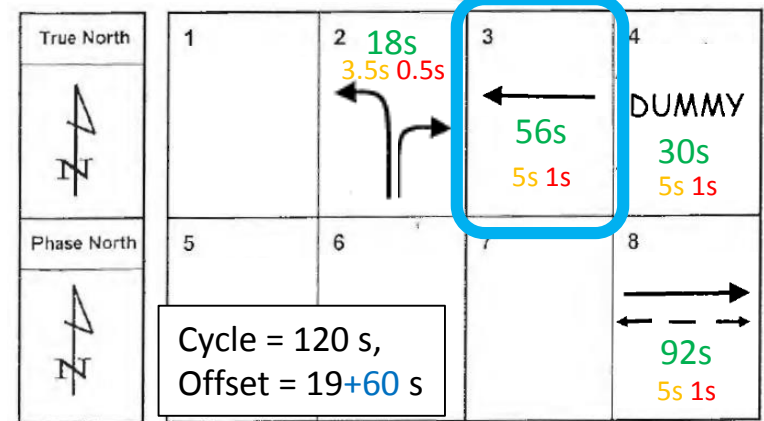
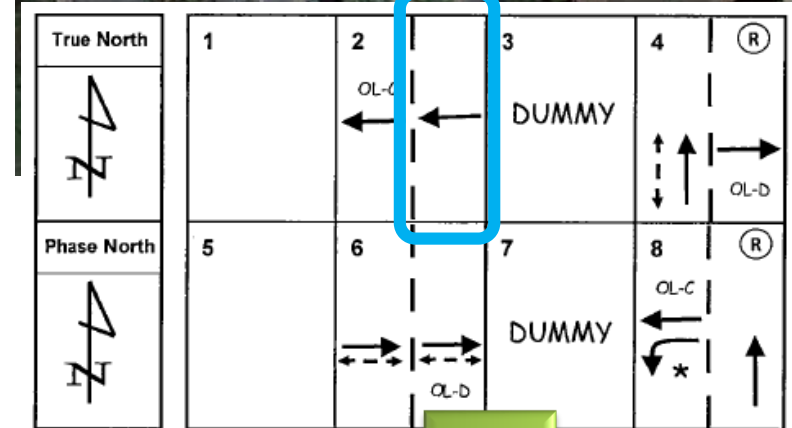
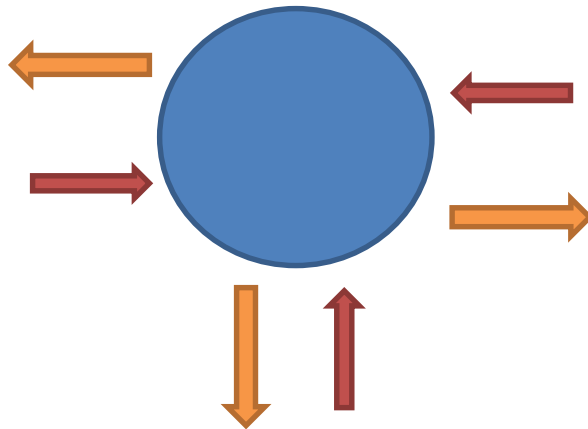
74s

33.5s

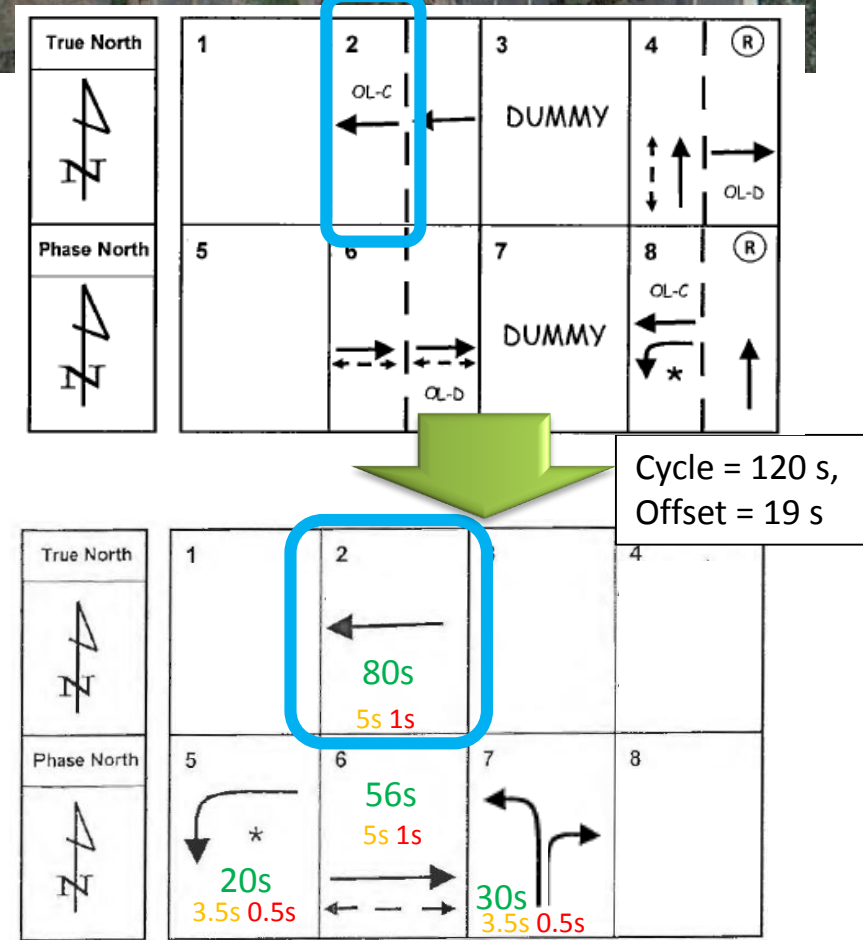
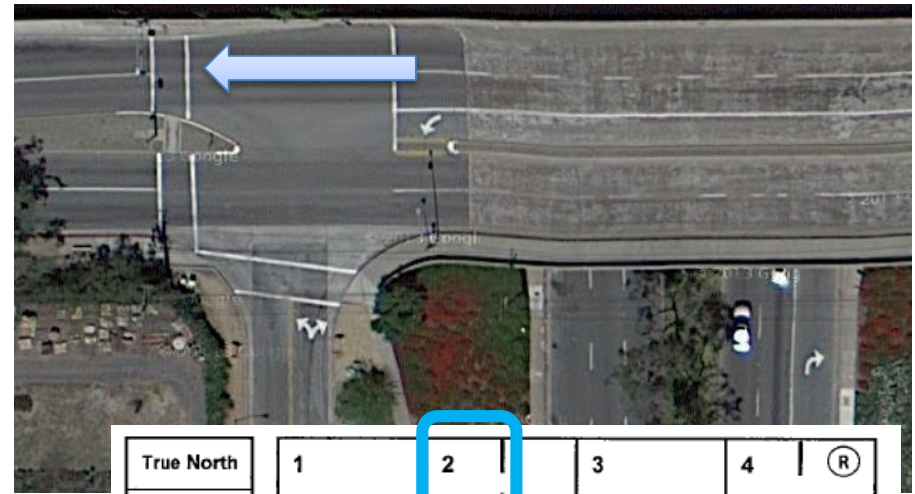
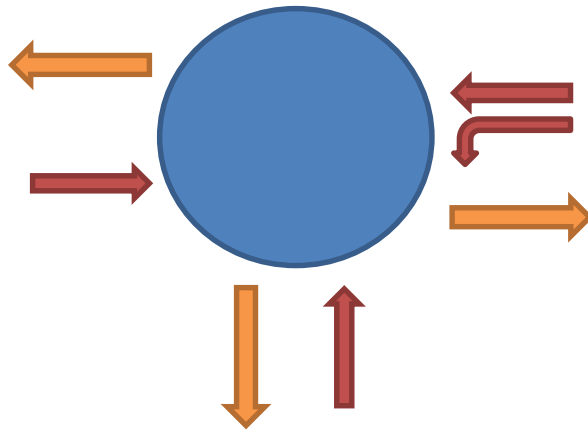
4s 0.5s

4s 0.5s

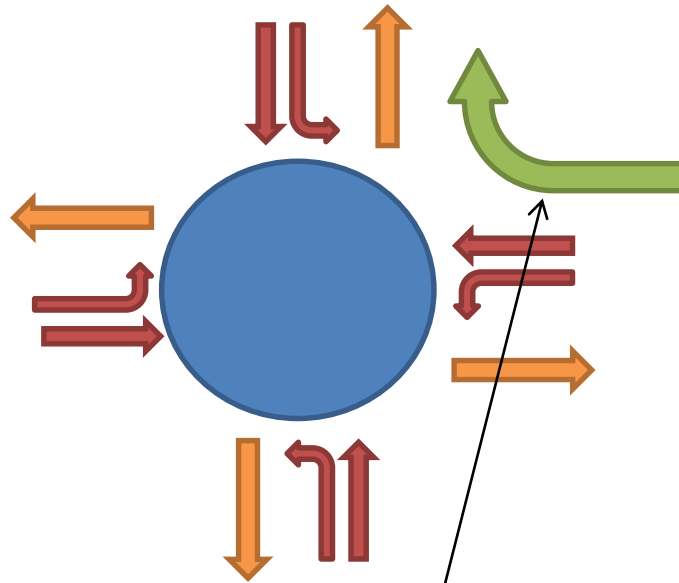
[11] Col & Baldwin N / Oxford



[12] Col & Baldwin S



[13] Col & Michillinda



- Right turn (our main direction) does not cross signalized intersection; it has a yield sign
 ➔ add right-turning link



Assumed plan for purpose of simulation

True North 	1 10s	2 54s	3 10s	4 30s
Phase North 	5 10s	6 54s	7 10s	8 30s

Yellow = 3s
 Red = 1s
 ➔ Cycle = 120 s
 Offset = 0s

Foothill & 5th

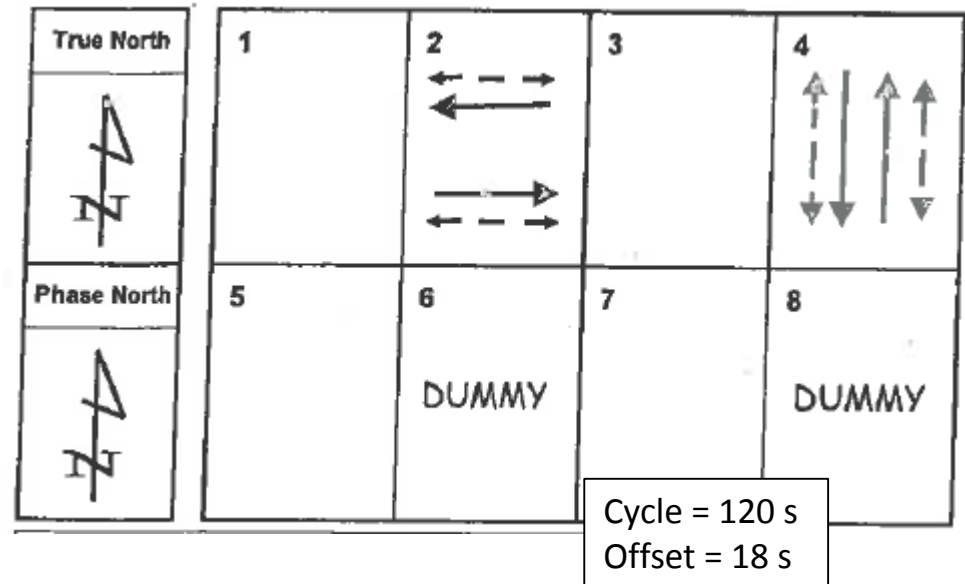


- No plans found

Foothill & 2nd



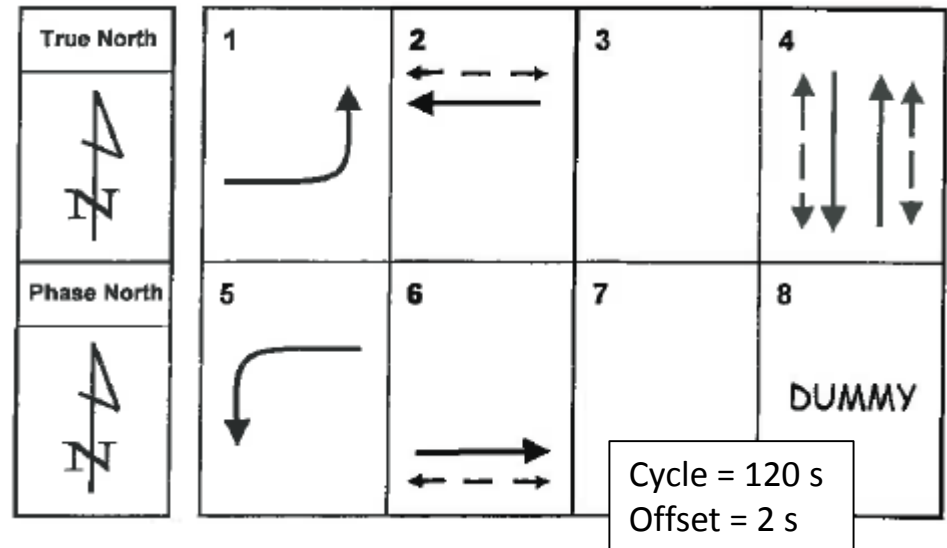
• ..



Fh & 1st / High Oaks



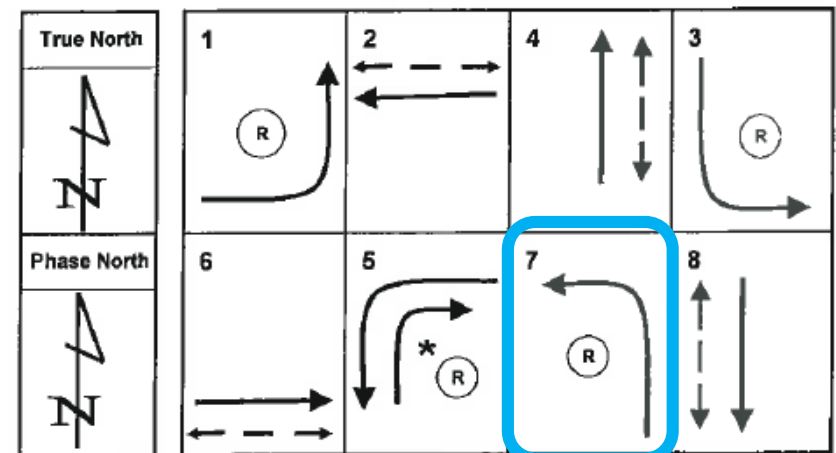
- ..



Fh & Santa Anita

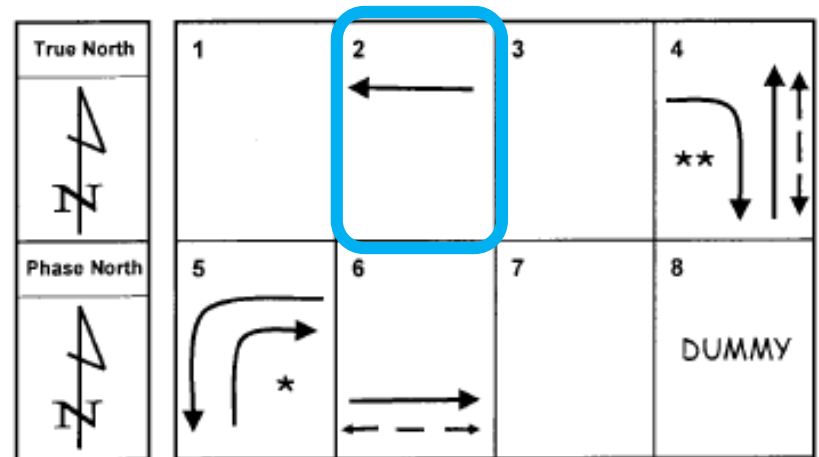


- What does Restricted Phase mean (the “R” in the circle)?
- What does it mean that the phase numbers are not in order?



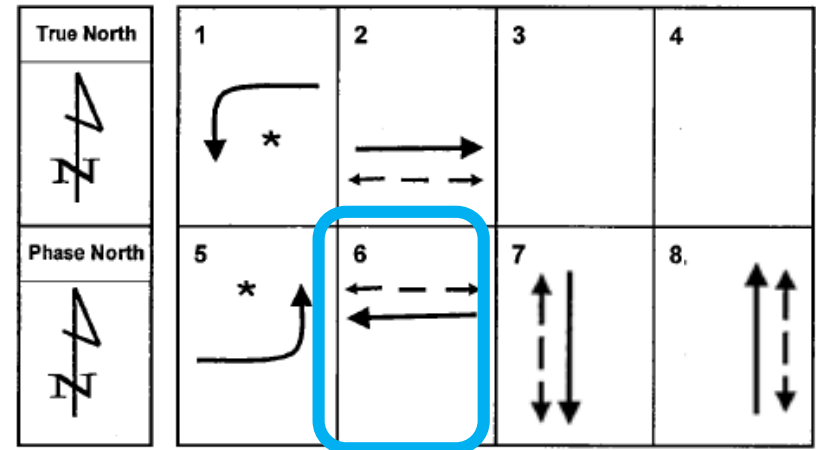
Cycle = 120 s
Offset = 116 s

Fh & N Baldwin (E)



Cycle = 120 s
Offset = 17 s

Foothill & I210W / N Baldwin (W)

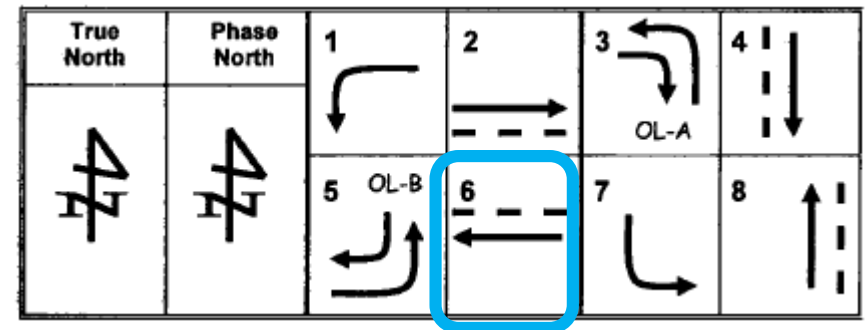


Cycle = free
Offset = ---

Fh & Michillinda

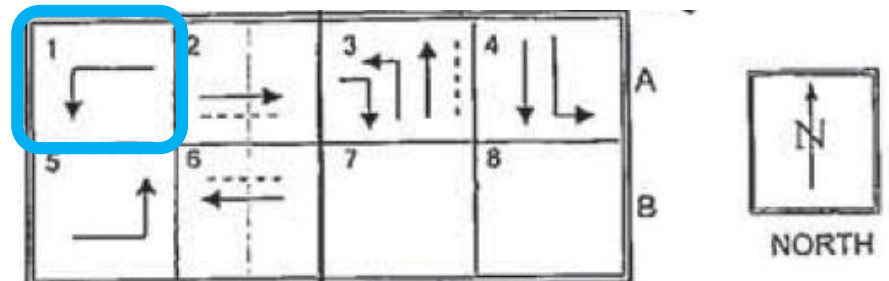


- Check LACO-1R manual for definition of offset



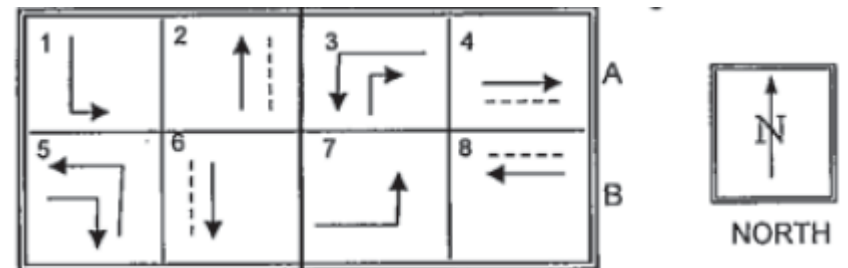
Cycle = 120 s
Offset = ??

Fh & I210W / Quigley



Cycle = 120 s
Offset = 40 s

Foothill & Rosemead



Cycle = 120 s
Offset = 16 s