

Enhancing Signal Operations Using Overlaps



John Thai, P.E.
City of Anaheim

City of Anaheim Large Event Venues



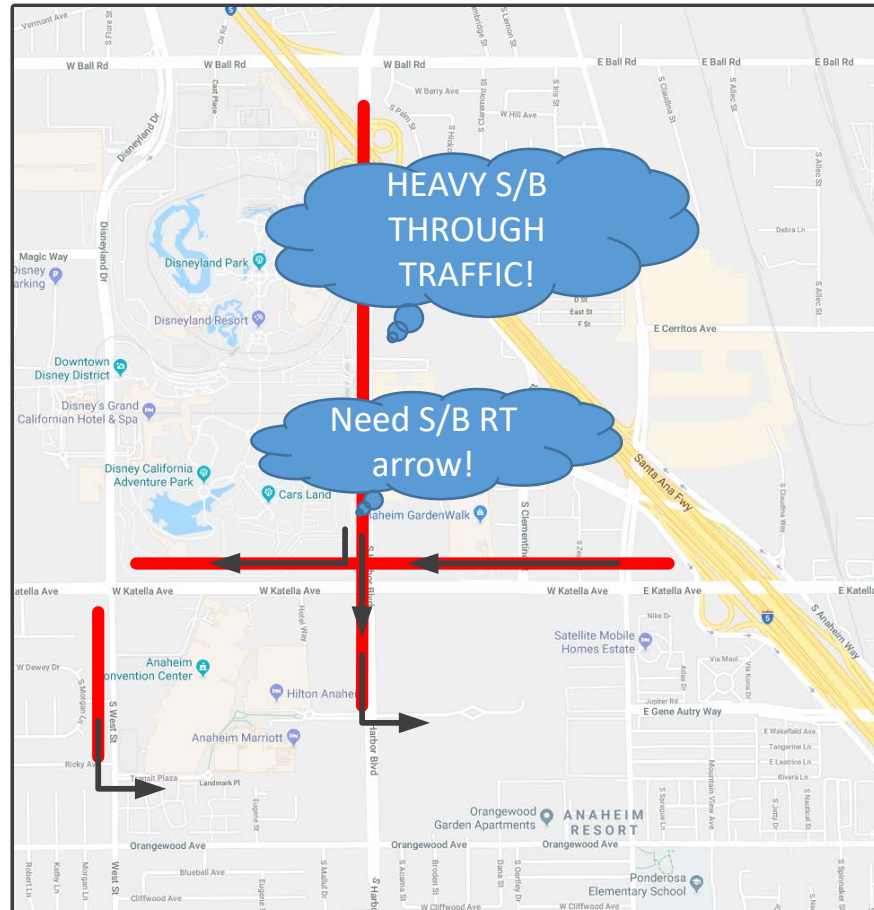
Get tickets to see the Angels host the Yankees

Cheer on the Angels when they host the Bronx Bombers at Angel Stadium starting on Friday. Get your tickets now. [Buy tickets »](#)

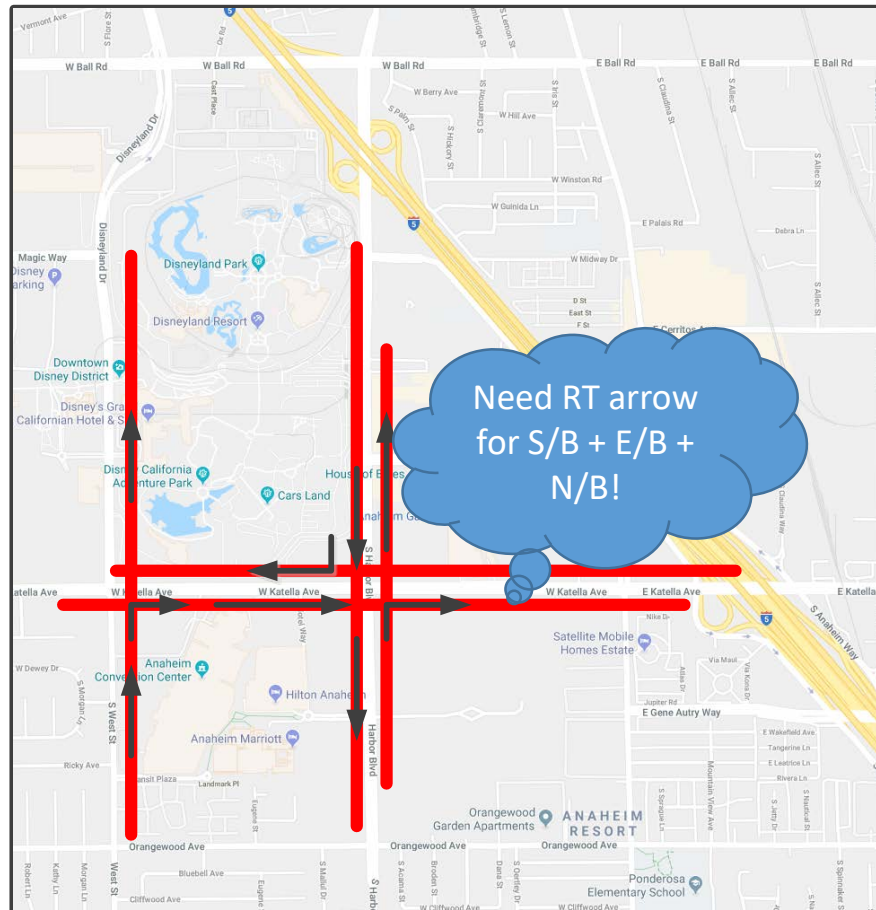


COME TO ANAHEIM TO VISIT/PLAY!

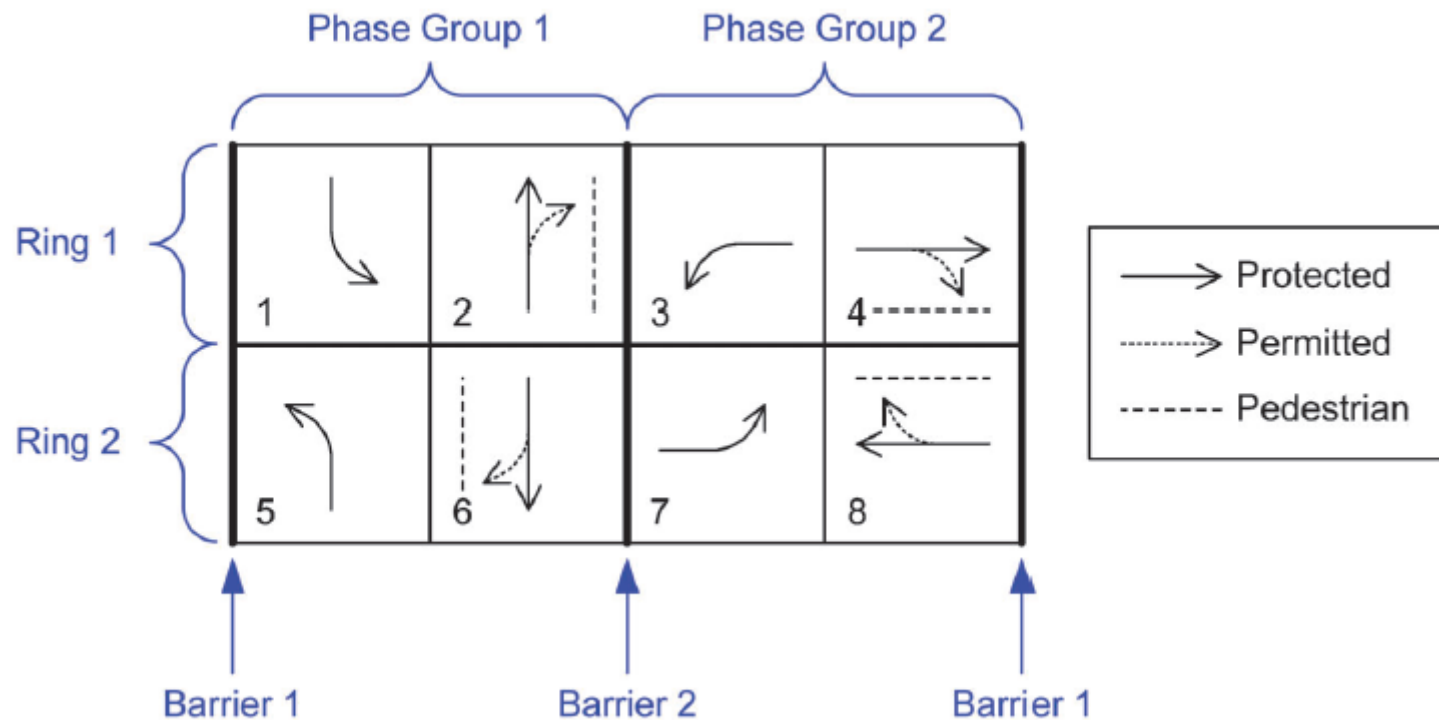
Inbound Conv. Center Traffic



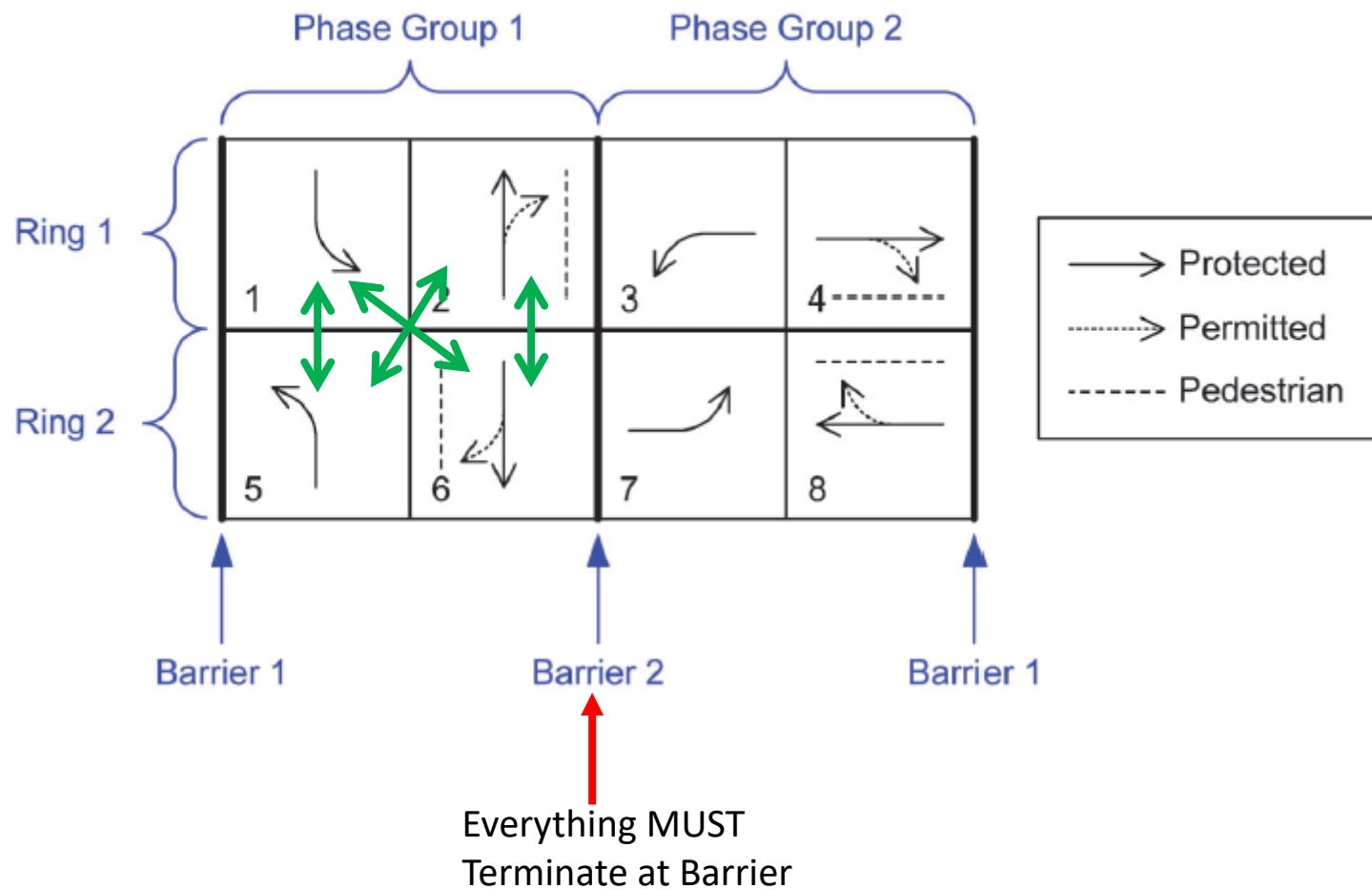
Outbound Event Traffic



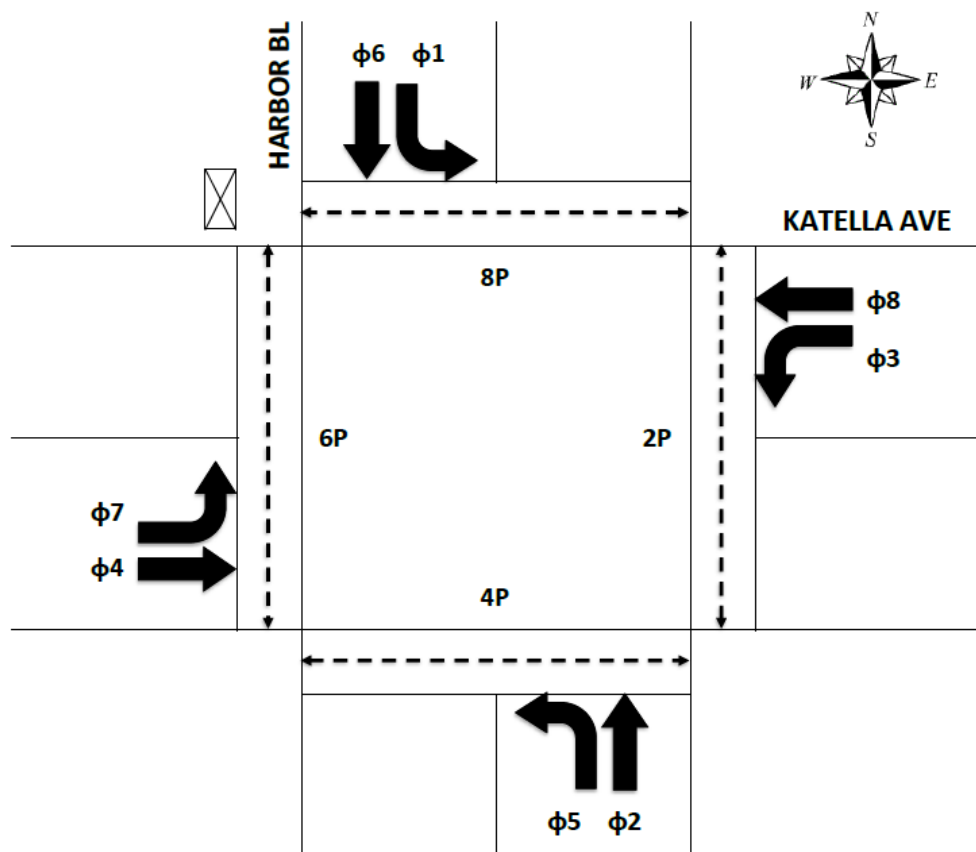
Standard North American 8-phase Ring-Barrier Signal Timing Control



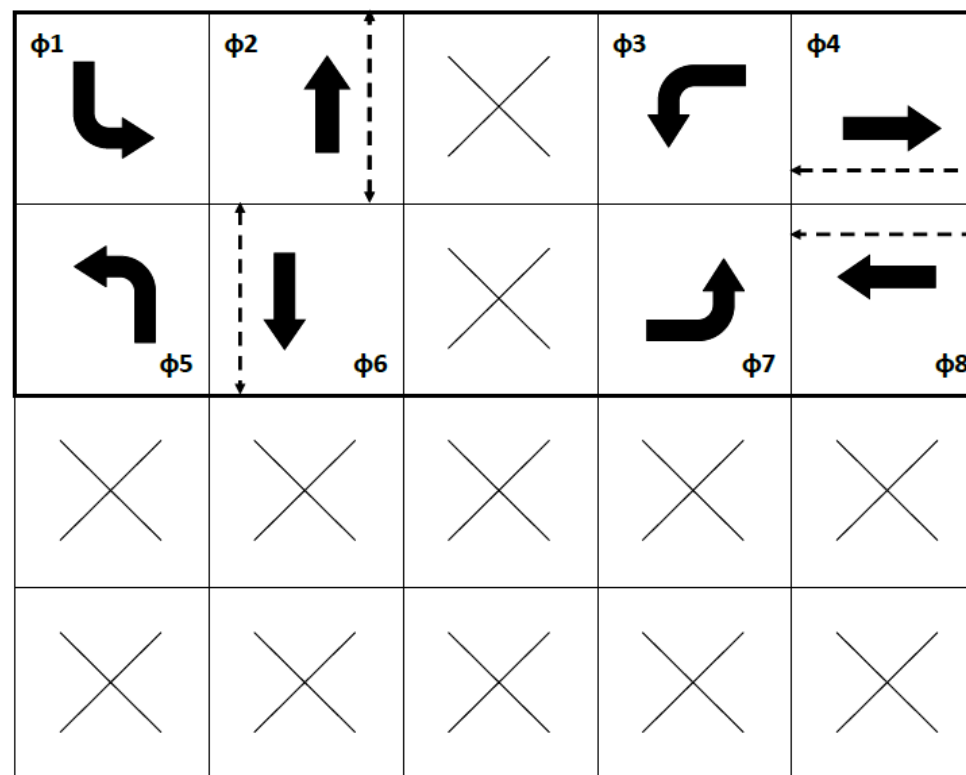
Standard North American 8-phase Ring-Barrier Signal Timing Control



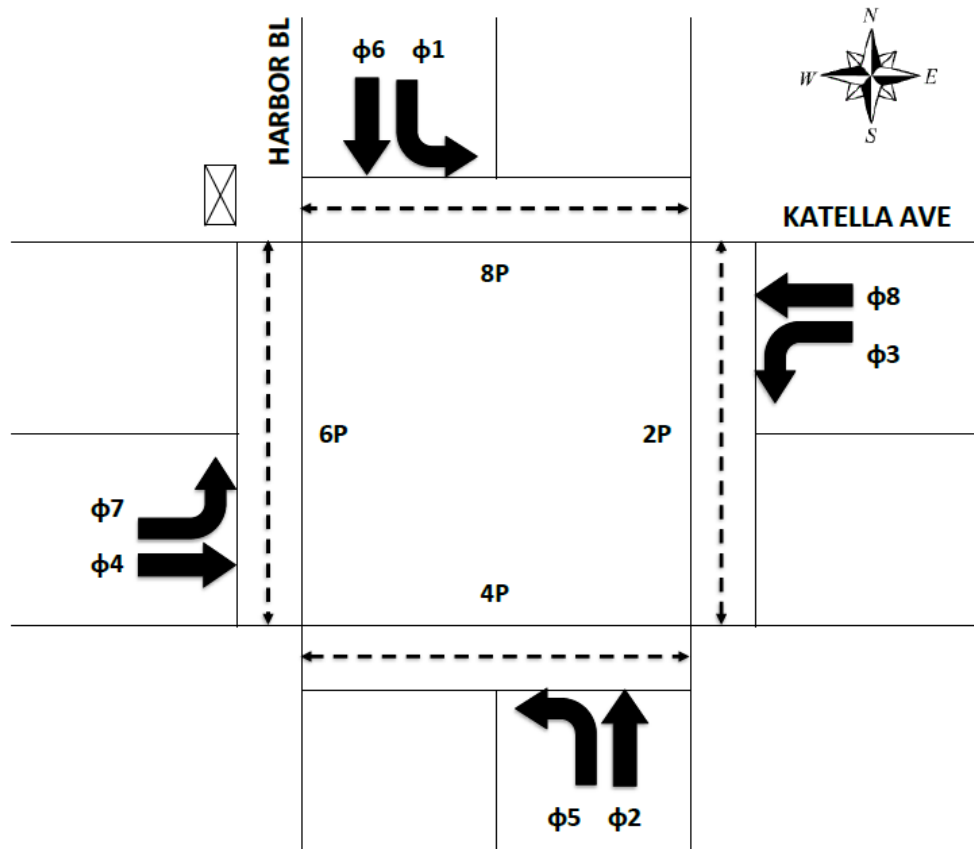
Harbor/Katella Signal Timing (2013)



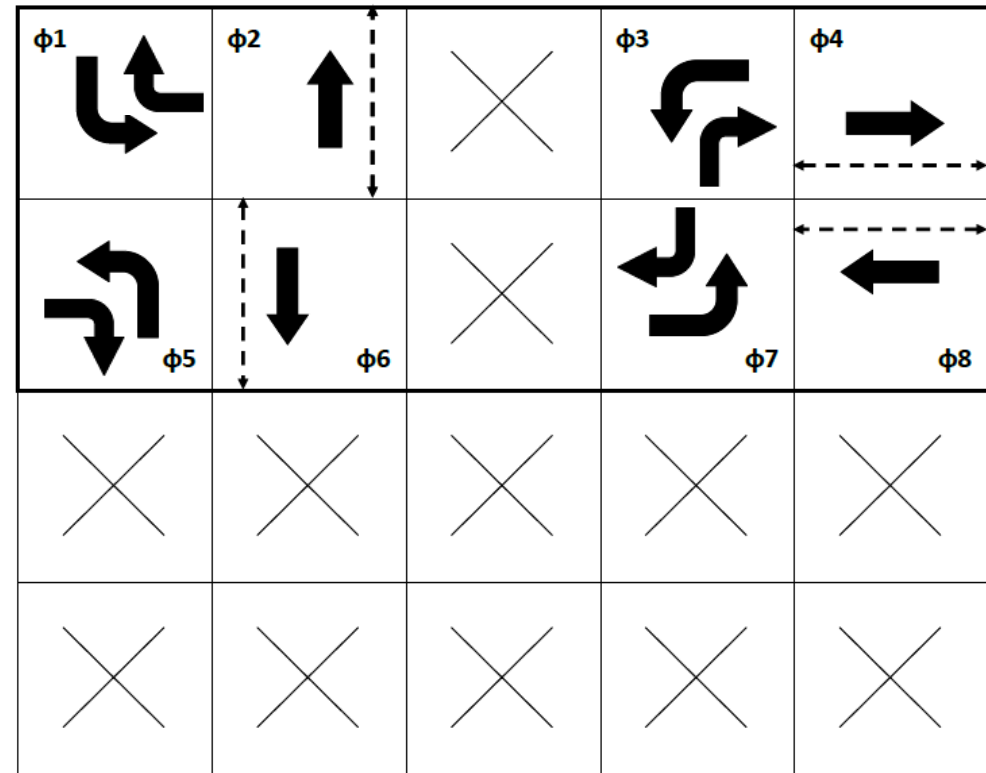
Phase Diagram:



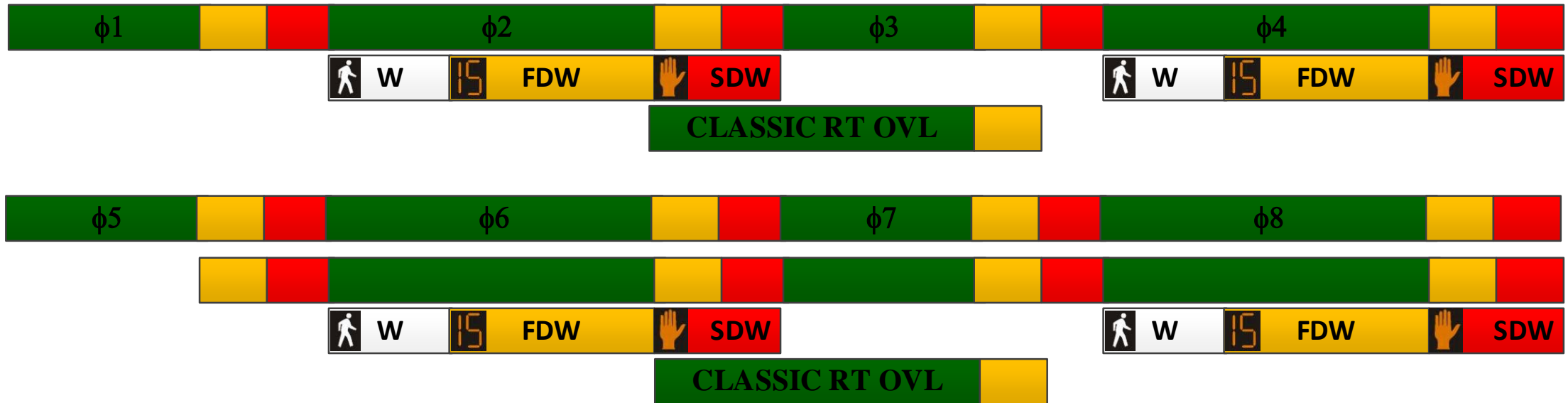
Harbor/Katella Signal Timing – If we need right turn arrows, why not do this?



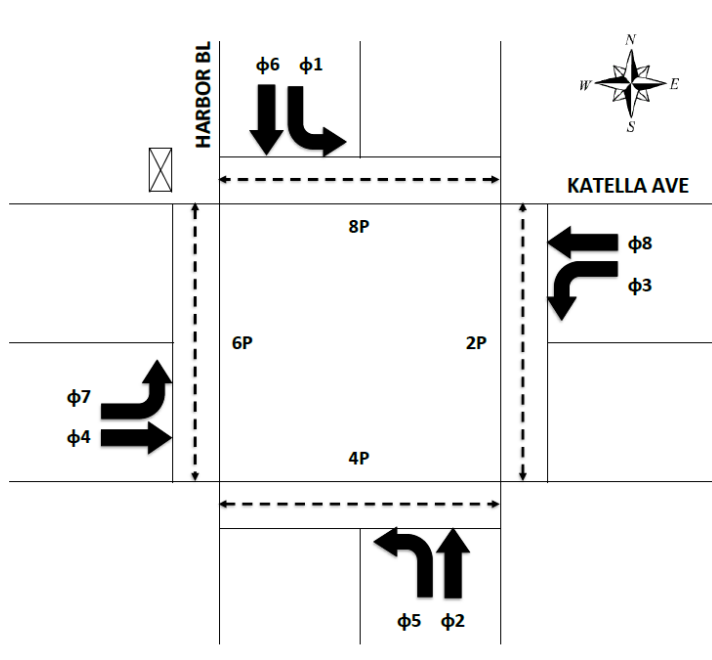
Phase Diagram:



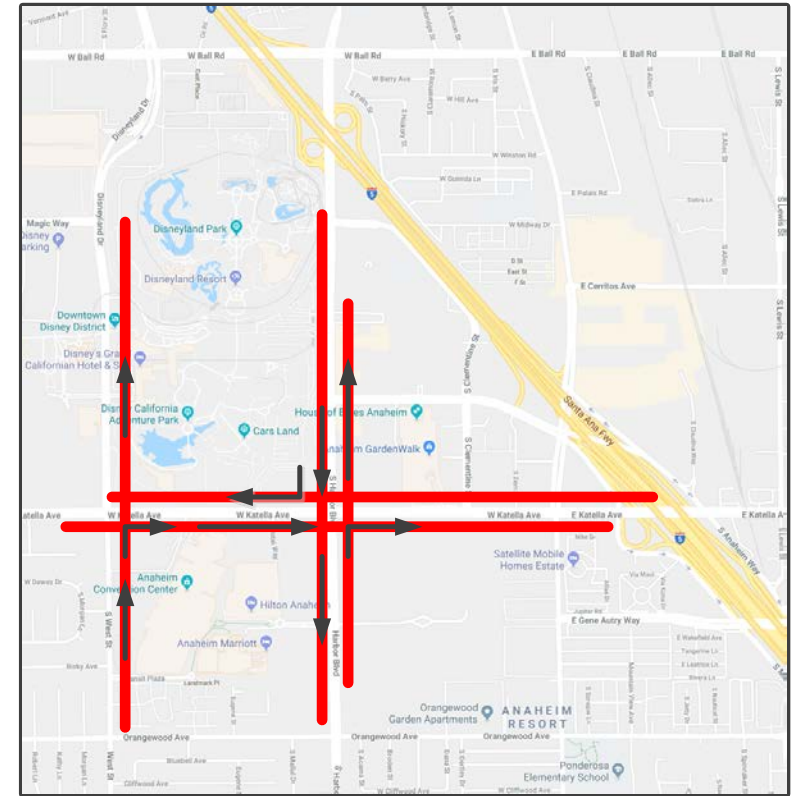
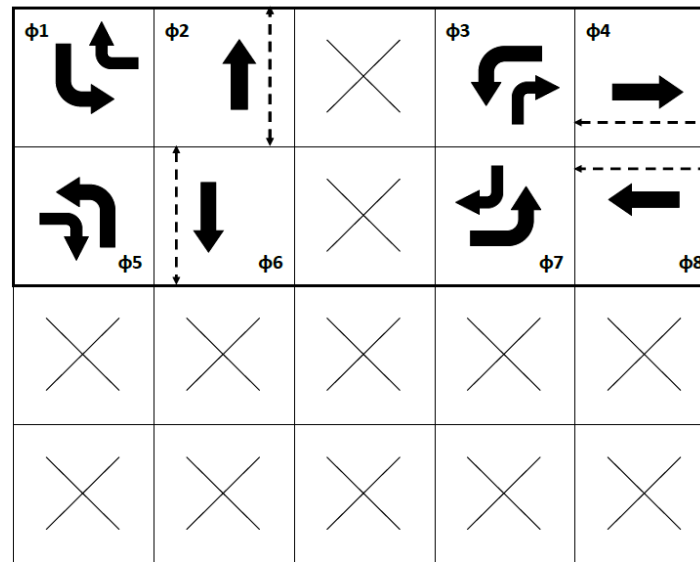
What do we know about RT overlaps?



Harbor/Katella Signal Timing – If we need right turn arrows for events, why not do this?

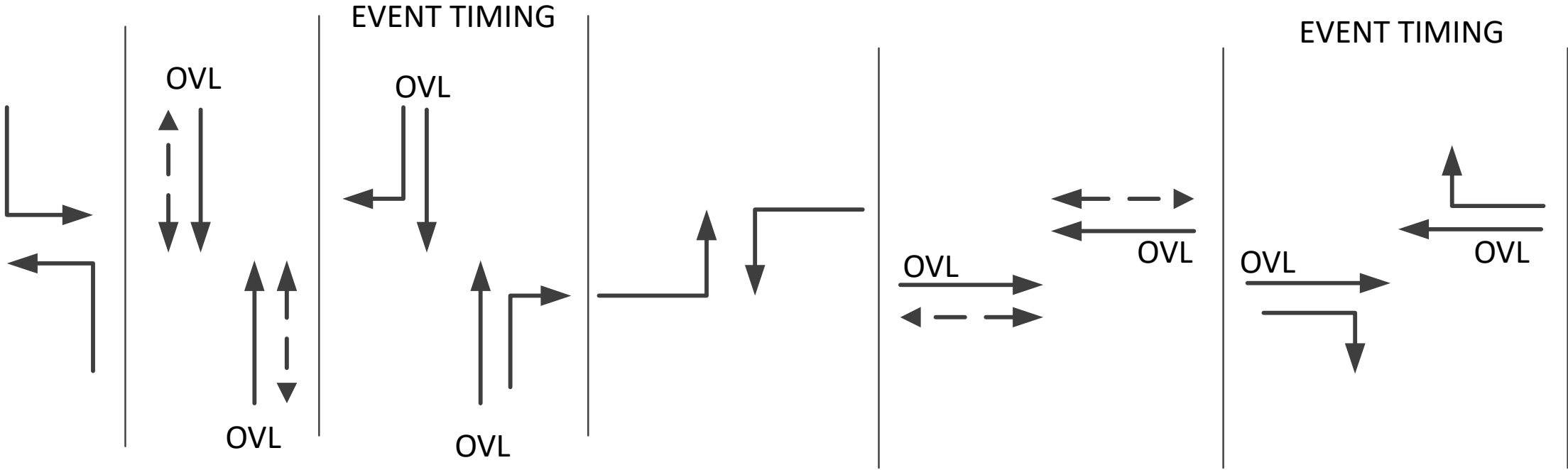


Phase Diagram:

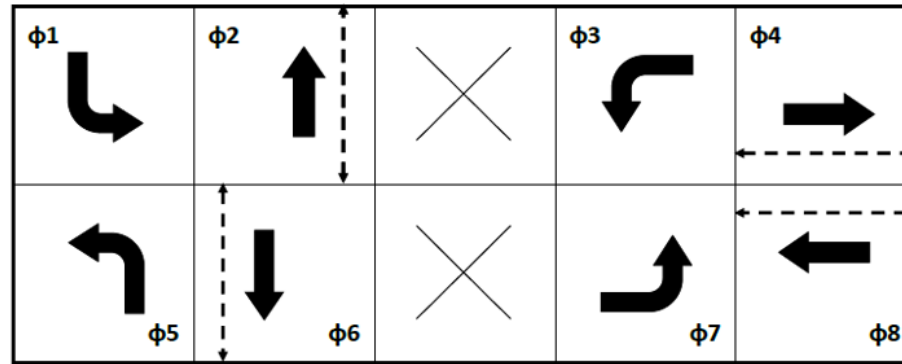


1. Need to retain U-Turn operation during non-event operation
2. Through traffic much heavier than LT traffic
3. RT overlap does not support detection (operates through parent phase)
4. Need to control pedestrians from entering crosswalk during RT arrow

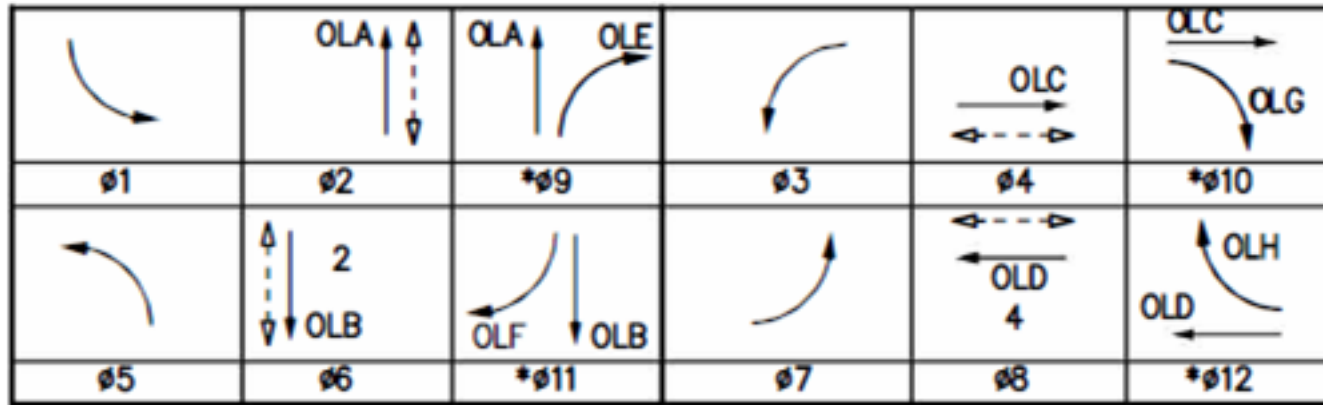
This is what we want/need



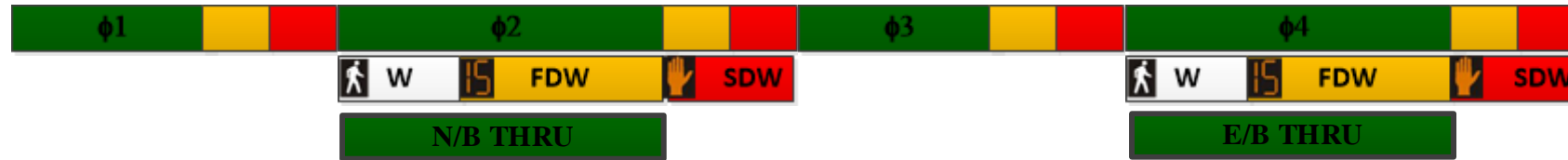
We need to change our paradigm about timing the typical RT overlap feature...



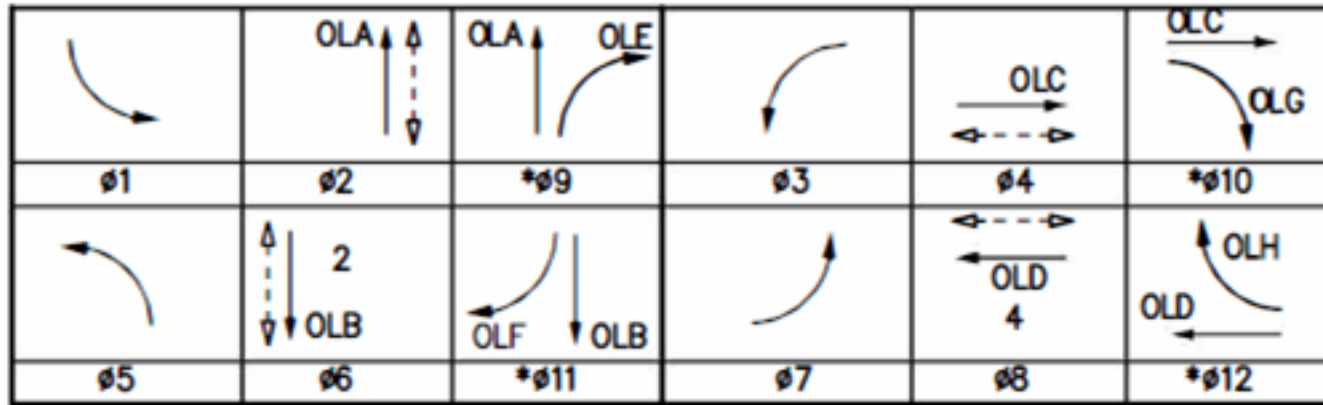
Translating what we want into signal timing inside a traffic signal controller



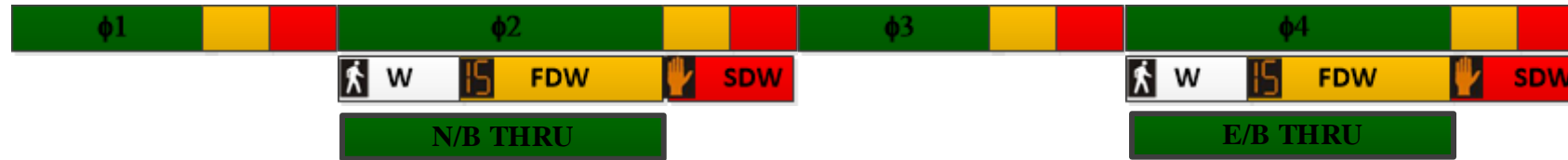
NORMAL



Translating what we want into signal timing inside a traffic signal controller



NORMAL



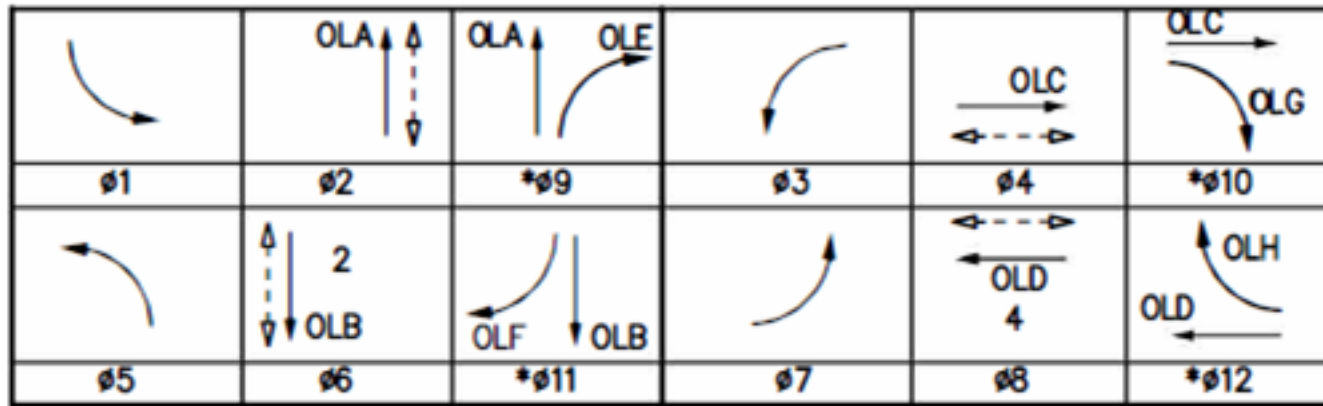
EVENT



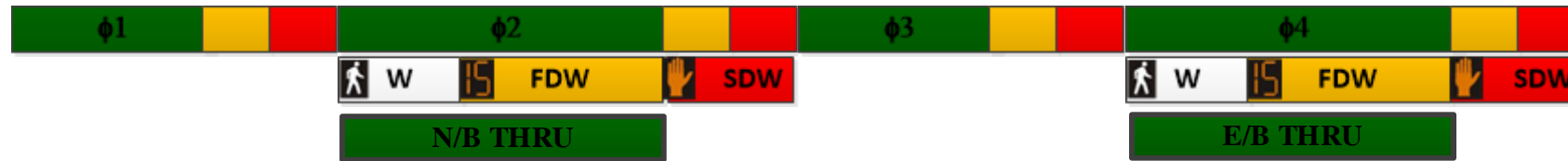
THROUGH TRAFFIC = FULL OVERLAP

RIGHT TURN = FULL OVERLAP

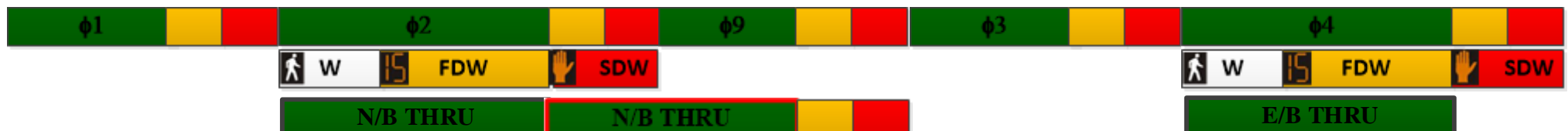
Refining signal timing to control pedestrians entering the crosswalk



NORMAL



EVENT



PROBLEM: HOW DO I CONTROL PEDS FROM ENTERING CROSSWALK BEFORE STARTING RT ARROW? WHEN DOES THIS HAPPEN?



BLANK OUT SIGN = RT OVERLAP

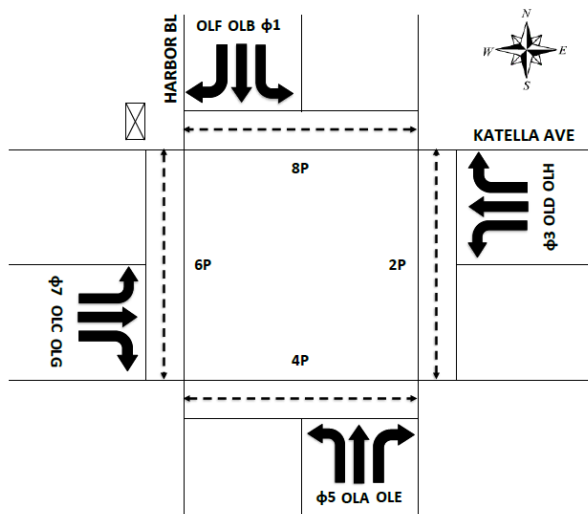
Harbor/Katella in 2014



Harbor/Katella in 2018



Harbor/Katella Event Timing



Phase Diagram:

