



TRAFFIC SIGNAL TIMING

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TRANSPORTATION & DRAINAGE OPERATIONS



SIGNAL TIMING

technique traffic engineers use to distribute right-of-way at an intersection



OPERATION DESIGN

traffic volumes

intersection geometry

road classification

service purpose

surrounding area (network)

efficiency

equipment

user characteristics

TERMINOLOGY

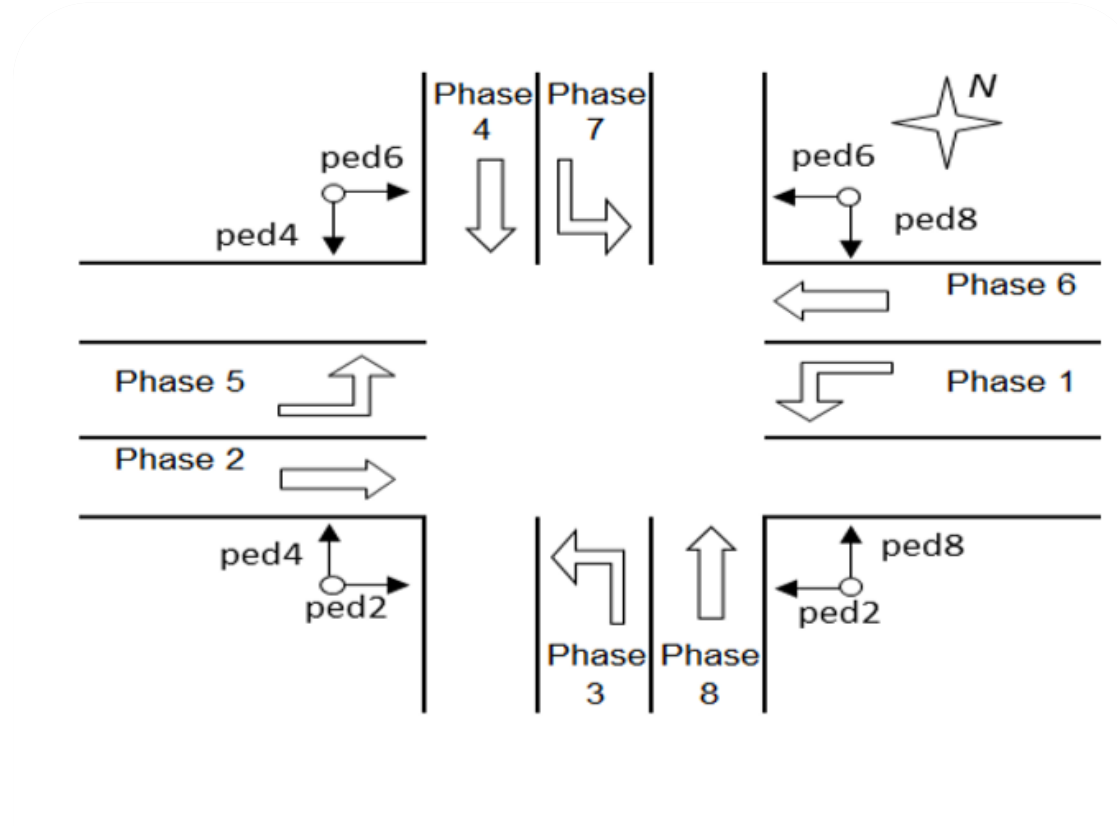
Indication	illumination of signal indicating an allowed or prohibited movement
Interval	time when all signal indications remain the same
Green Time	amount of time for green indication
Yellow Time	amount of time for yellow indication (change interval)
Red Time	amount of time for red indication
All Red Time	period following yellow when all of the intersection's signals are red (clearance interval)

TERMINOLOGY

Phase

green time, yellow change, and red clearance intervals in a cycle assigned to an independent or combination of traffic movements

Phase Diagram

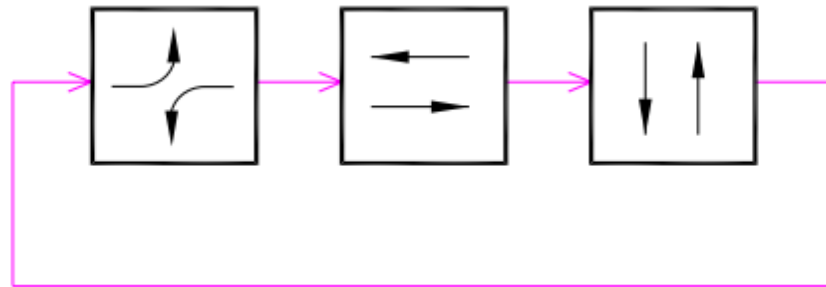


Standard 8-phase Intersection

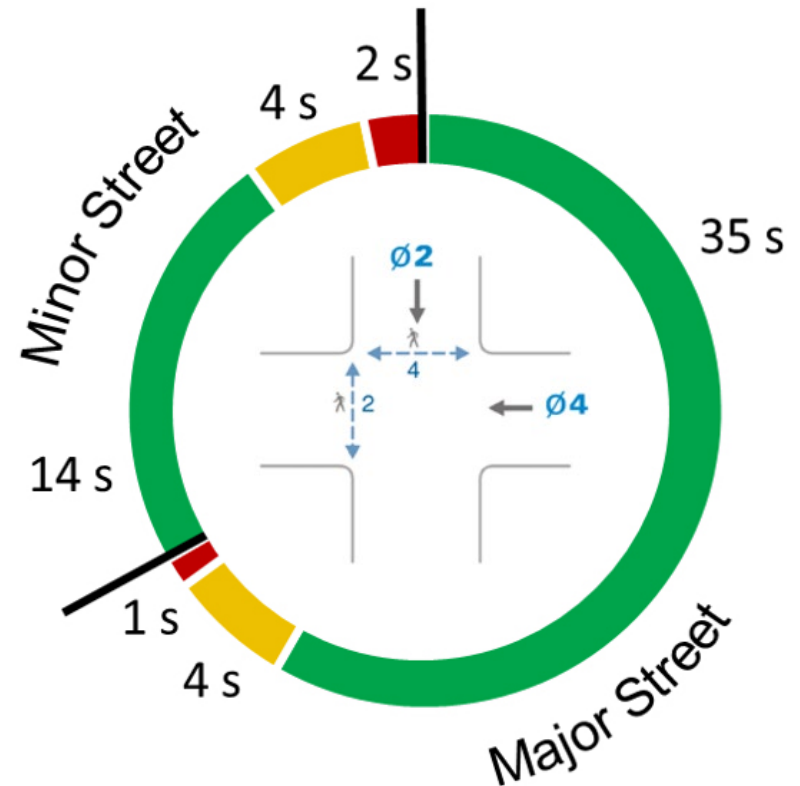
TERMINOLOGY

Cycle one completed sequence of all phases

Cycle Length total time for the signal to complete one cycle



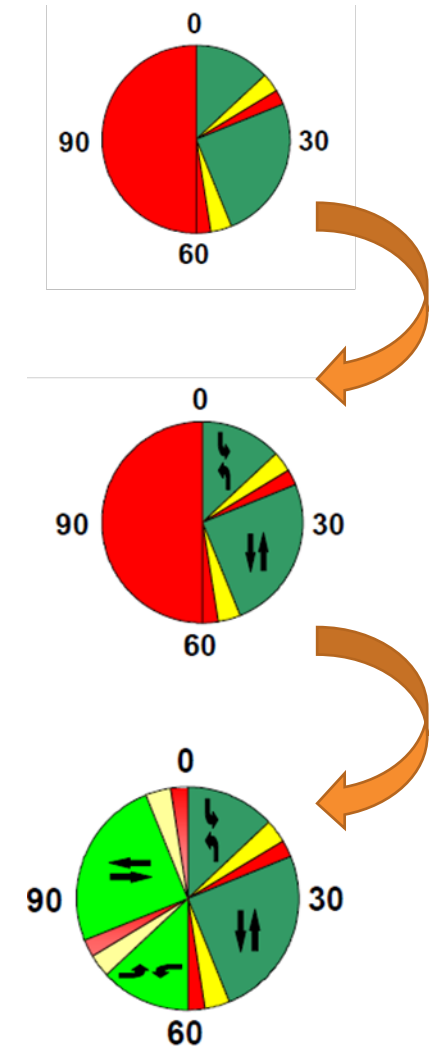
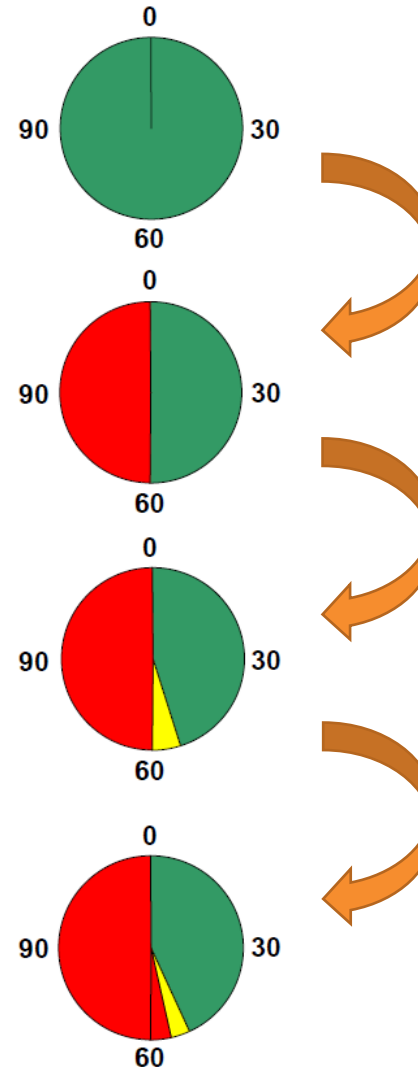
CYCLE = 1 COMPLETE LOOP



EXAMPLE: TYPICAL 8-PHASE INTERSECTION

intersection has leading left turns on each approach

cycle length: 2 minutes



SIGNAL CONTROL

Type of Operation

- pre-timed
- actuated
- traffic adaptive

Type of System

- isolated
- coordinated



PEDESTRIANS SIGNAL CONTROL



Walk Interval

- 4 to 7 seconds



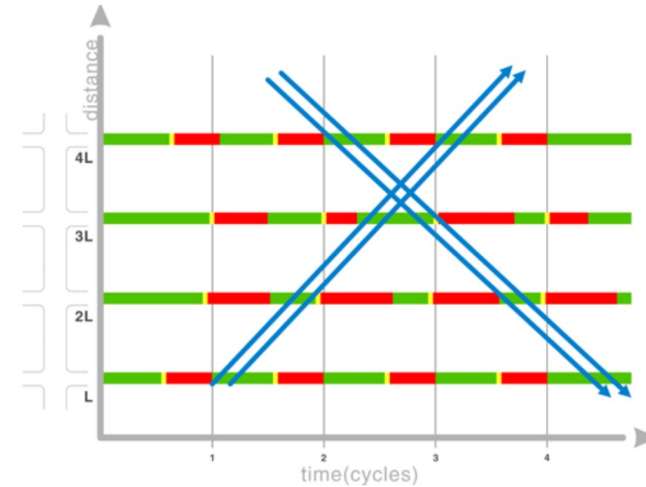
Flashing Don't Walk

- pedestrian change interval
- flashing don't walk time = crosswalk length / speed
- pedestrian speed: 3 fps

COORDINATED INTERSECTIONS

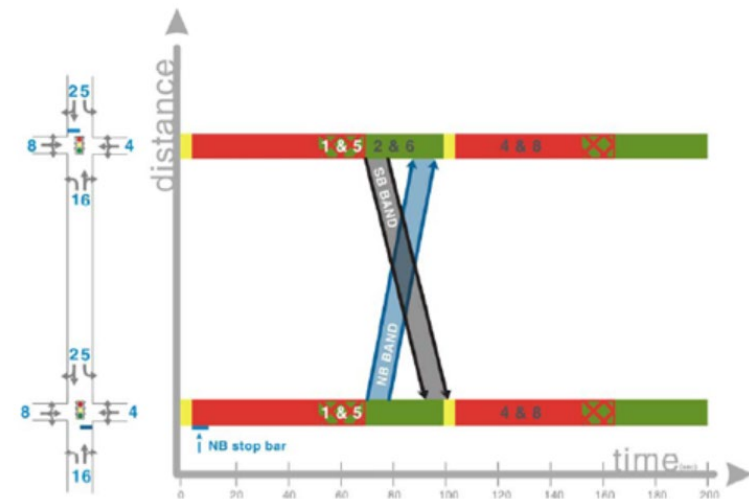
Pre-Timed Coordination

- cycle length
- offset
- split



Time-Space Diagram

- plots ideal vehicle platoon trajectories through a series of signalized intersections



DOWNTOWN TRAFFIC SIGNALS

Pre-Timed Coordination

- duration of red, green, and yellow intervals are predetermined and fixed

Cycle Length

- 90 seconds

Pedestrian

- WALK indication comes on without the need to push the button



thank you!



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