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!