

# Improving Rail Crossing Safety & Accessibility

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# Rail Safety

- Railroad
  - Passenger and freight railroads
- Rail Transit
  - Subway, trolley, etc.
- Rail Crossings
  - CPUC reviews safety of rail crossing designs

# Rail Crossing Incidents

## HIGHWAY — RAIL INCIDENTS

FOR ALL RAILROADS

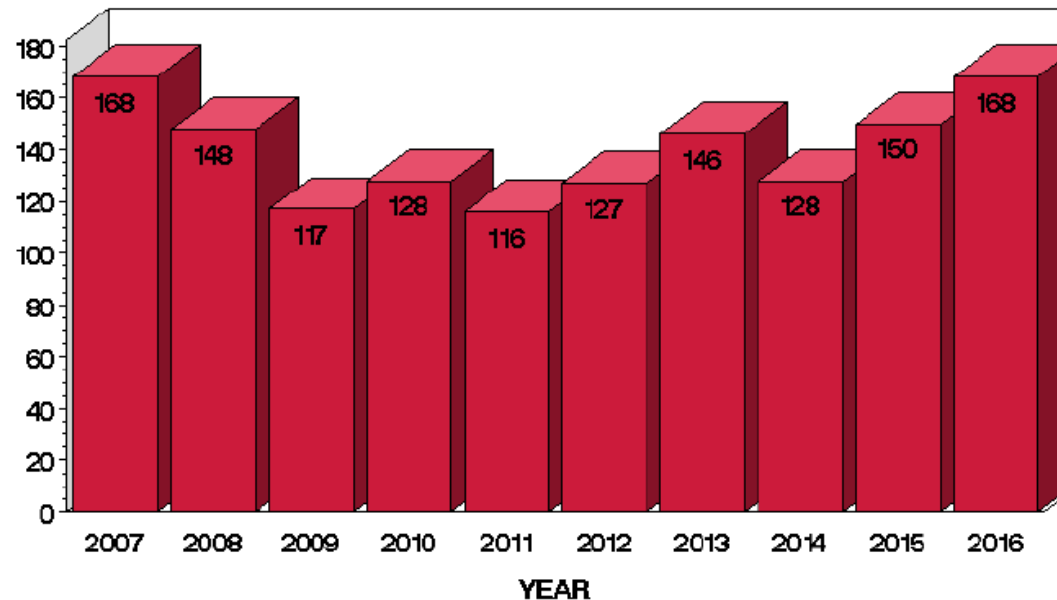
ALL REGI ALL RAILROADS GROUPS CALIFORNIA ALL COUNTIES

CALENDAR YEAR REPORT (January — December)

FOR January — December

Run Date: Wed, Jul 5, 2017

INCIDENTS



Source: Federal Railroad Administration (FRA)

# Rail Crossing Funding

- At-grade:
  - safety improvements of existing at-grade crossings
- Grade separation:
  - CPUC grade separation priority list

# Diagnostic Team

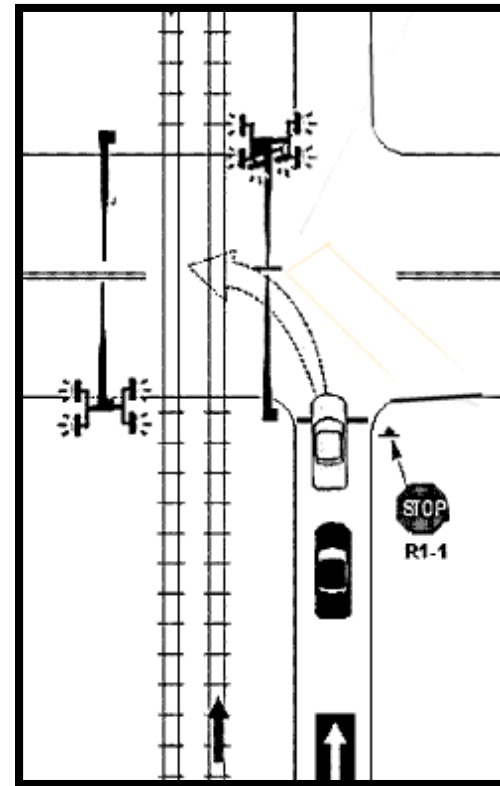
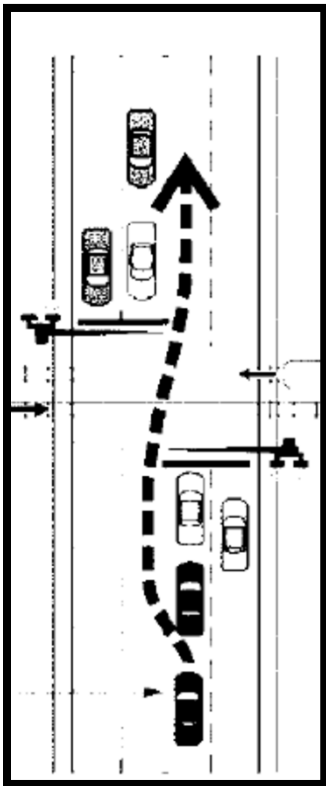
- Evaluate safety needs
- Roadway Agency, Railroad and CPUC



# Safety consideration: Pedestrians



# Safety consideration: Driving Around Gates



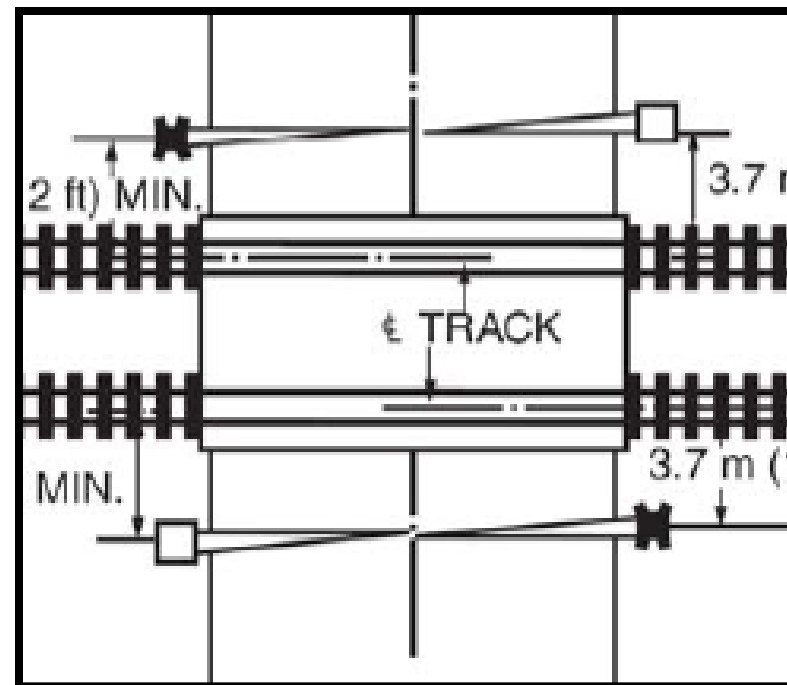


# Safety consideration: Driving Around Gates

Raised median



Exit gates





# Safety consideration: Vehicles on Tracks



For additional information

<http://www.cpuc.ca.gov/crossings>

# Traffic Signal Railroad Preemption

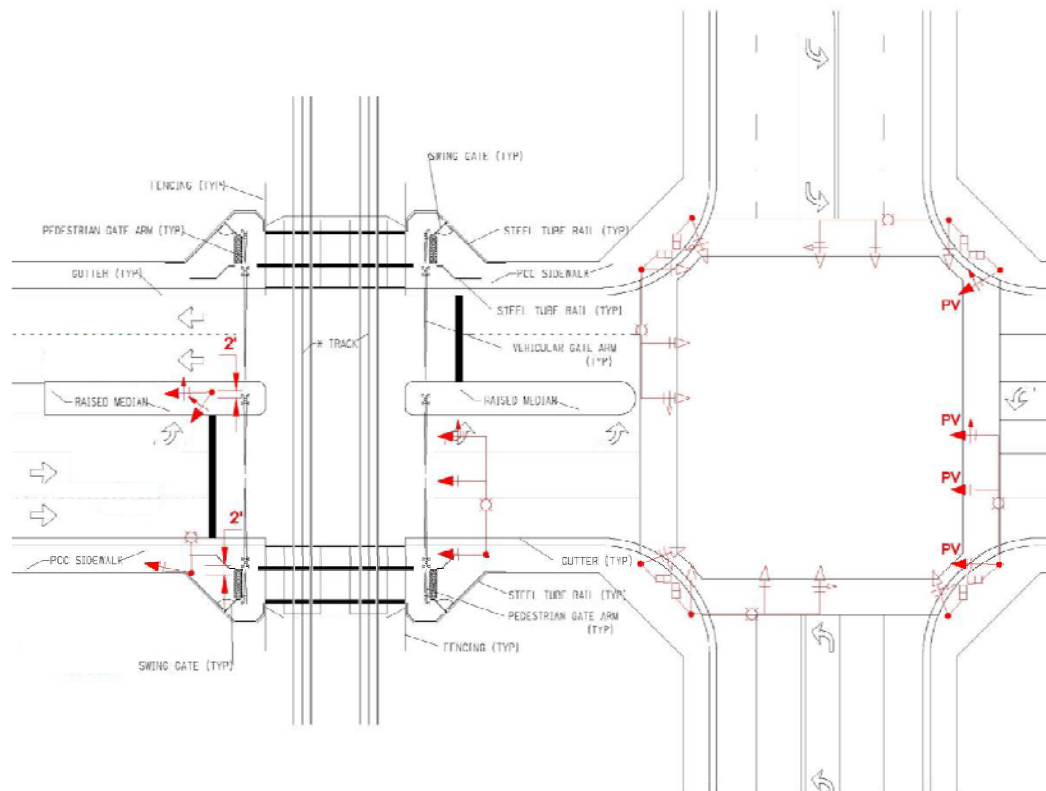
- All about managing queues and keeping the track area clear.
- Installed at highway-rail grade crossings located within 200 feet of a signalized intersection or midblock crossing.
- If traffic queues are observed to extend to a crossing more than 200 feet from a signalized intersection; consider installing preemption, a queue cutter signal, or an alternative provision shall be made to clear highway traffic from the grade crossing prior to train arrival.

# Queue Management Systems

- Pre-Signals
- Queue Cutter Signals
- Hybrid Pre-Signals
- Hybrid Queue Cutter Signals
- Crossing Area Vehicle Detection
- Signal Consolidation and Coordination
- Preemption Warning Time
- Preemption Interconnect

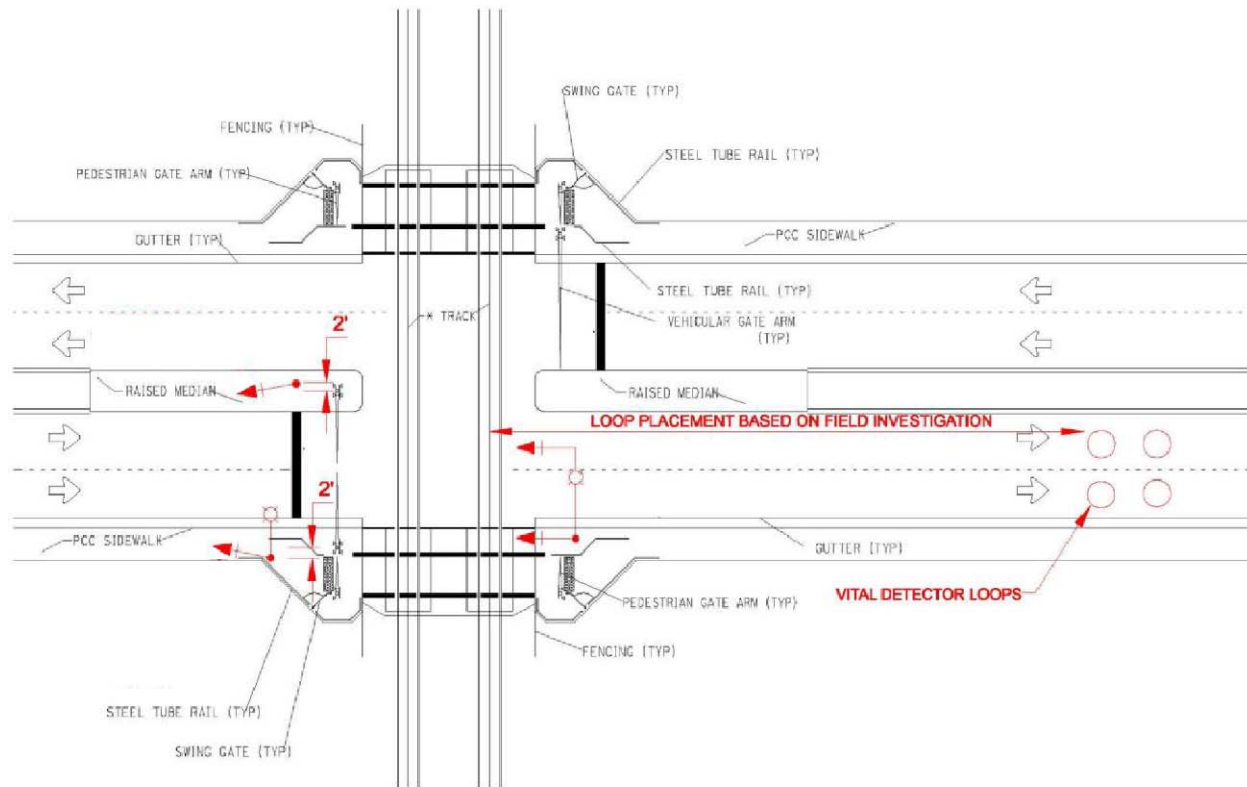
# Pre-Signal Traffic Signal

- A pre-signal provides indications for motorists to stop prior to the tracks. Consider applying to signalized intersections within 75 feet of highway rail grade crossing.



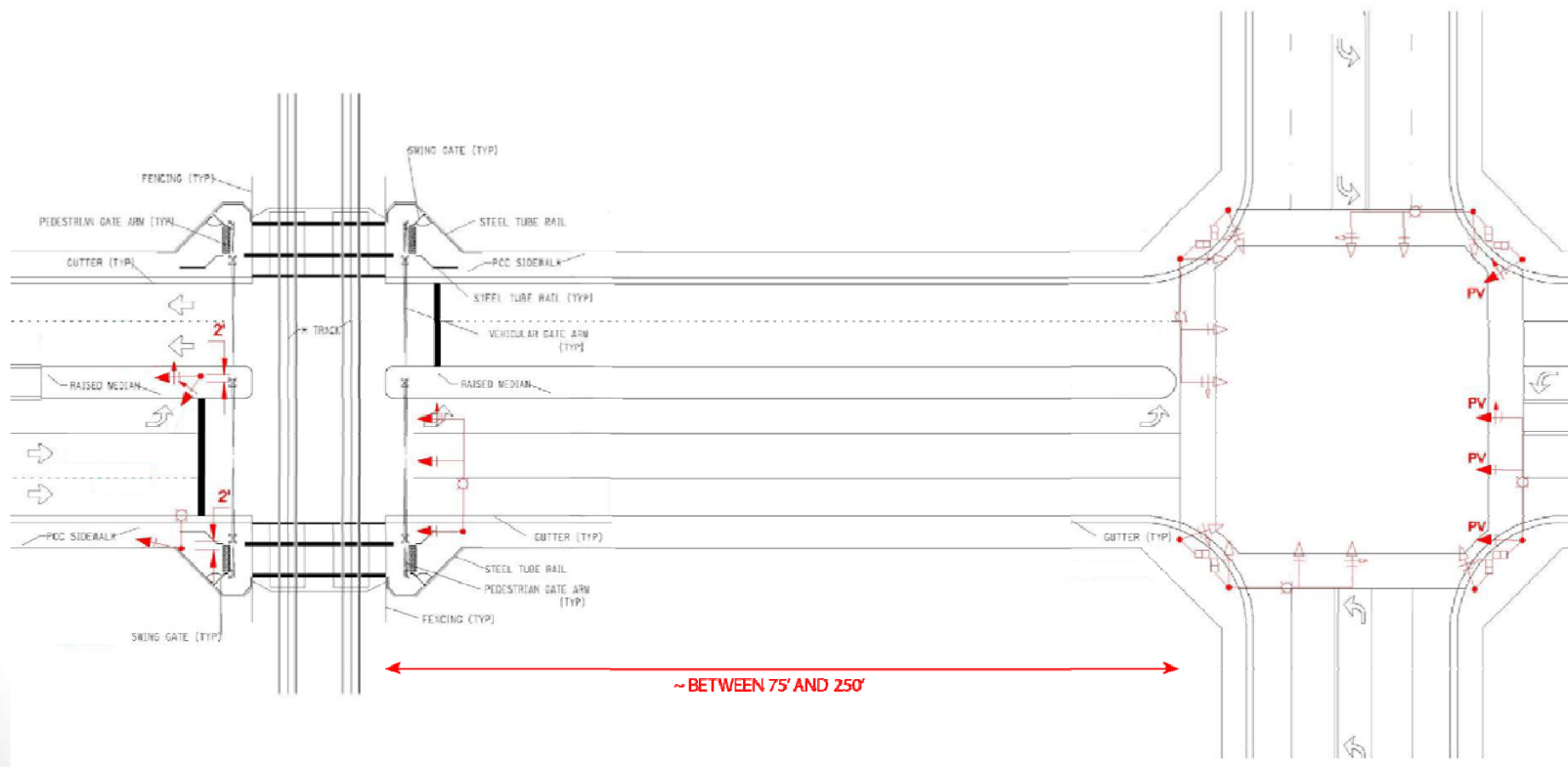
# Queue-Cutter Traffic Signal

- Consider applying where the highway-rail grade crossing is located more than 400 feet from the traffic signal and queuing is a concern.



# Hybrid Pre-Signal Traffic Signal

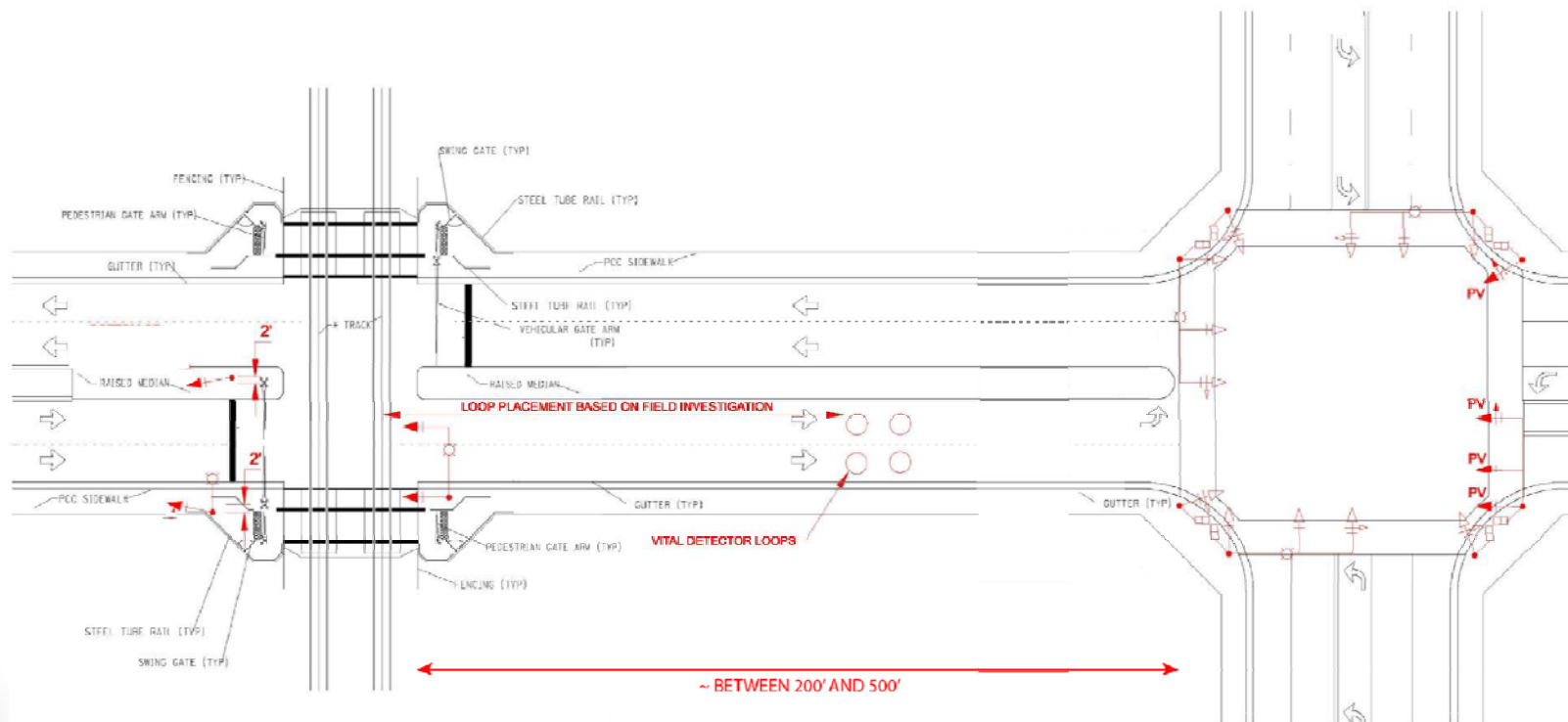
- Consider applying where the highway-rail grade crossing is located up to 250 feet from the traffic signal and queuing is a concern.





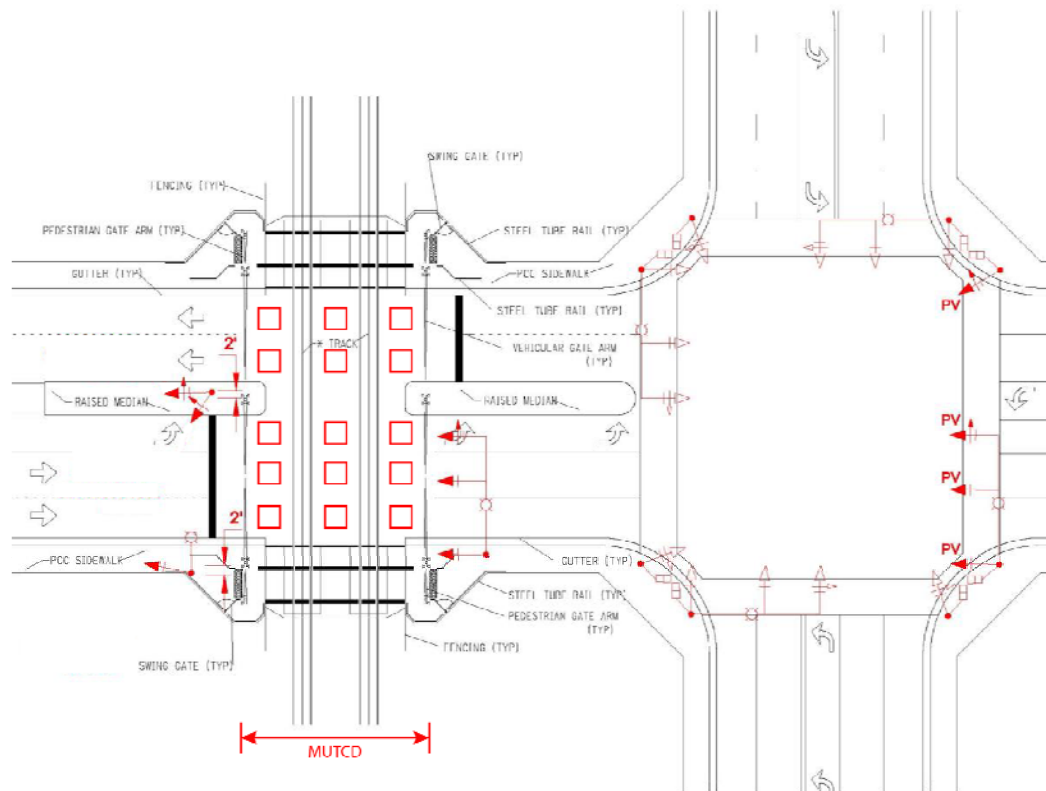
# Hybrid Queue-Cutter Traffic Signal

- Consider applying where the highway-rail grade crossing is located between 200 and 500 feet from the traffic signal and queuing is a concern.



# Crossing Area Vehicle Detection

- The crossing area vehicle detection system detects motor vehicles in the Minimum Track Clearance Distance (track area).



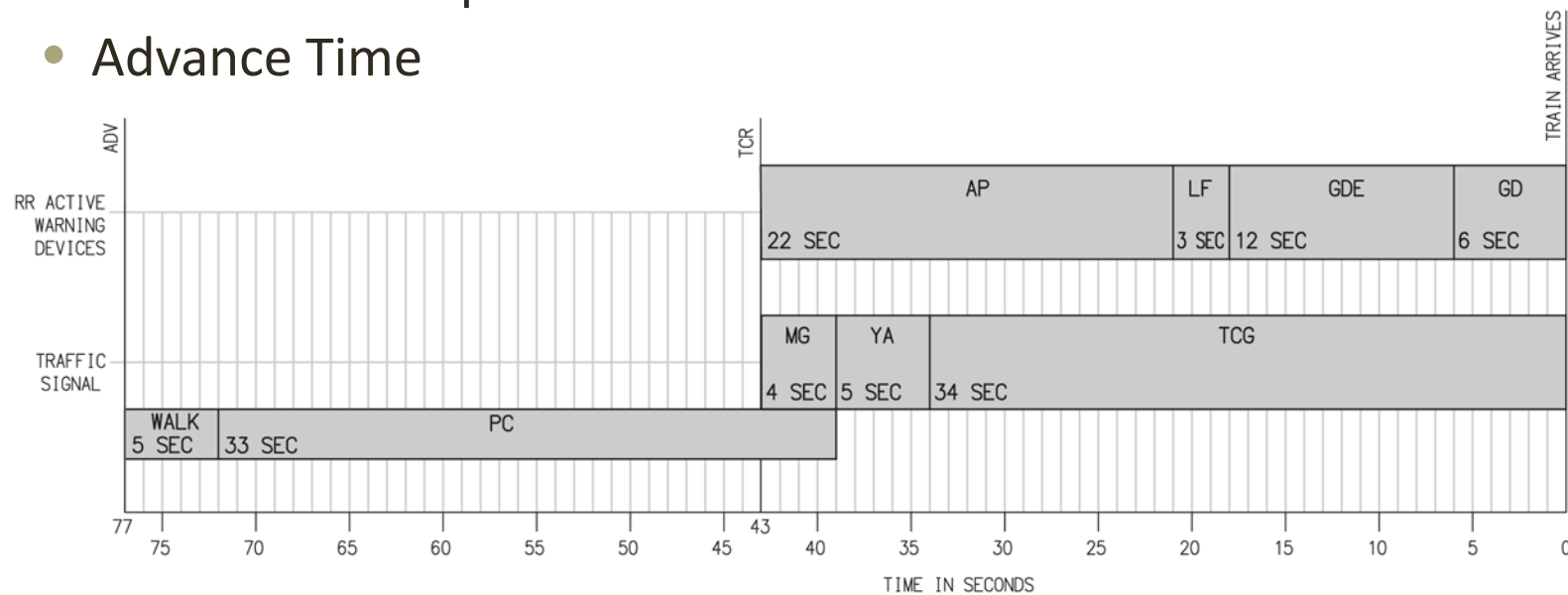
# Traffic Signal Consolidation and Coordination

- Operate traffic signals as a system to better manage movement of vehicles through the grade crossing and intersections.



# Preemption Warning Time

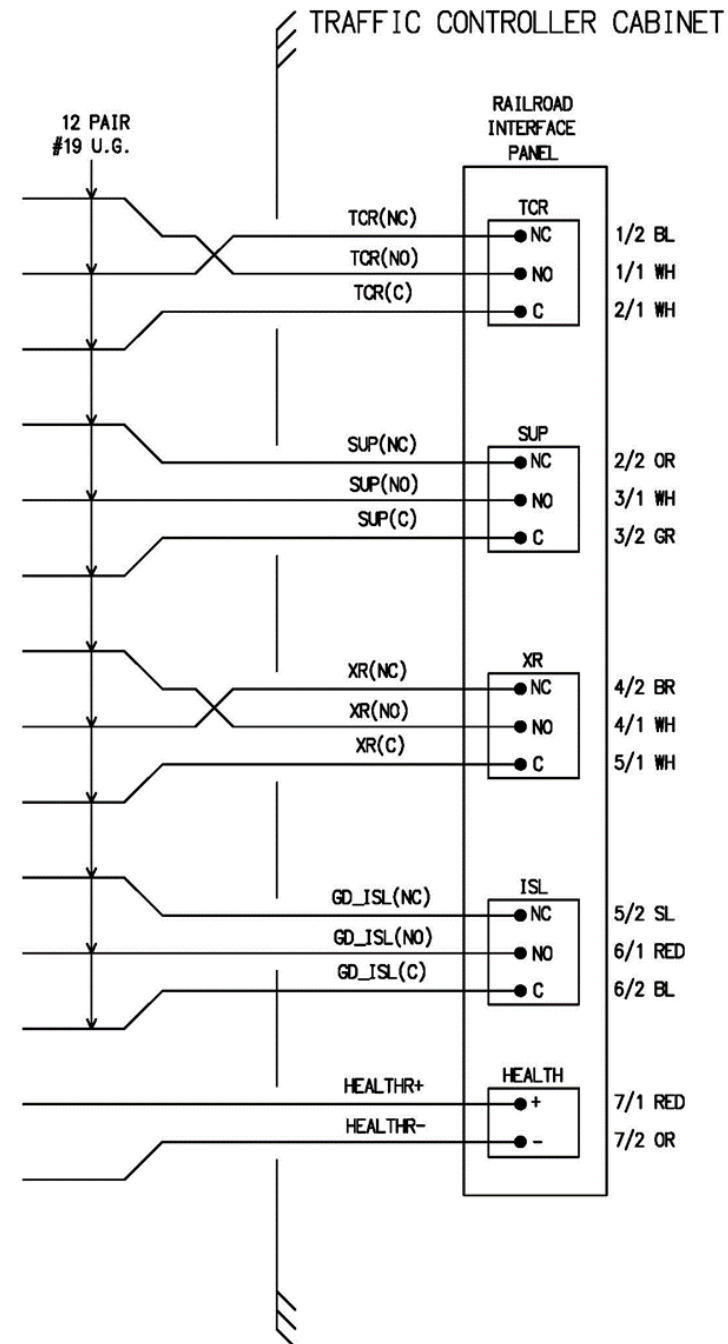
- Simultaneous
- Advance
- Queue Clearance Time
- Right of Way Transfer Time
- Advance Preemption Time
- Advance Time



PREEMPTION TIMELINE

# Preemption Interconnect

- Advance Input (ADV)
- Advance Preemption (TCR)
- Supervisor (SUP)
- Crossing Activation (XR)
- Gate Down/ Island (GD/ ISL)
- Health (HLT)
- Exit Gate (EG)



“You can’t stop the waves,  
but you can learn to surf.”

– John Kabat-Zinn