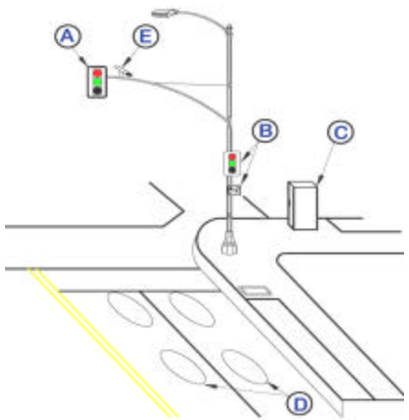
TRAFFIC SIGNALS

A traffic signal is an electronic device that assigns right-of-way at an intersection or street crossing by means of displaying the standard red, yellow, and green-colored indications. In addition, it also works in conjunction with pedestrian displays to assign pedestrian crossing right-of-way.

TRAFFIC SIGNAL COMPONENTS

Most traffic signals will have the following components or parts:



A) Main display with red, yellow, and green lights.
B) Pedestrian crossing lights containing both the "WALK" and "DON'T WALK" light indications.
C) Traffic signal cabinet containing the traffic signal controller.

And Vehicle Detection Systems, either

D) Inductive loops or sensors
Or
E) Video detection system

TYPES OF TRAFFIC SIGNAL OPERATIONS

In the City of Pasadena, traffic signals mainly operate in three modes:

1. Fixed-time
2. Semi-Actuated
3. Actuated

Fixed-time mode: Under this mode, there are no detections for any approach. The signal continuously cycles regardless of actual traffic demand. Pedestrian walk signals are automatic and will cycle concurrently with the vehicular signal indication.

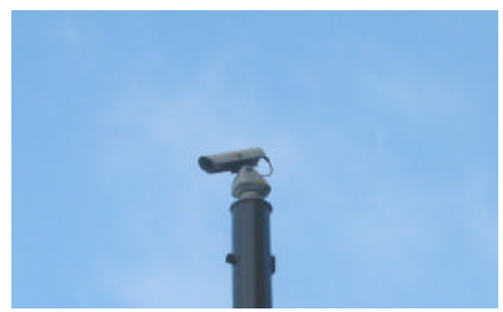
Semi-Actuated mode: Under this mode, the detection system is present only on a minor cross street. When detection is activated, the green light on a major street is interrupted to allow the minor street traffic and pedestrians to safely enter the intersection. Pedestrian walk signals for crossing a minor street are automatic, while those for crossing a major street are not. Pedestrians crossing a major street must push the "pedestrian push button" to get the walk signal.

Actuated mode: Under this mode, there are detections for all approaches. The traffic signal is set to provide the green light "on-demand" or only in the presence of vehicles. Pedestrians MUST push the pedestrian push button in order to cross either the major or minor streets.

TRAFFIC MANAGEMENT CENTER

The City of Pasadena's Traffic Management Center (TMC) is a state-of-the art computerized traffic signal control system. The computer monitors the City's traffic signals 24 - hours a day and city traffic engineers use this information to make signal timing adjustments. All traffic signals are programmed with special timing plans to improve traffic flow citywide.

Technological applications in traffic engineering are referred to as Intelligent Transportation Systems (ITS). ITS devices include Closed Circuit Television (CCTV) cameras which are used to monitor traffic flow along major arterial segments to ensure that traffic synchronization is working properly.



In addition, the CCTV cameras are beneficial to handle traffic caused by non-recurring events such as accidents, freeway closures and special events. For example by monitoring the arterials during events such as the Rose Bowl, TMC staff can make adjustments to the signal timing to facilitate better ingress and egress.

Another type of ITS device is a Changeable Message Sign or CMS. They are strategically located along major arterials throughout the City. These signs display useful information to alert motorists of road conditions ahead or Rose Bowl information during event day.

Quick Traffic Signal Facts:

- There are 300 signalized intersections in Pasadena.
- There are 20 CCTV Traffic Surveillance Cameras.
- There are 10 Changeable Message Signs.
- Three (3) intersections are equipped with Red Light Camera system.

TRAFFIC OPERATIONS AT THE PASADENA METRO GOLD LINE STATION AREAS

As a proponent of multimodal transportation systems, the City of Pasadena is fortunate to have the Pasadena Metro Gold Line service six stops in Pasadena (see above).

Most of the Gold Line in Pasadena is traversing through its own dedicated right-of-way, completely separated from road traffic. At the southerly portion of the line, there are three grade crossings along Del Mar Boulevard, California Boulevard, and Glenarm Street. In this area, a dedicated traffic control system minimizes delay to motorists caused by Metro Gold Line crossings. Special signal timing plans (with ongoing refinement) mitigate traffic delays as commuter traffic interacts with each train arrival.

RED LIGHT ENFORCEMENT

Red Light Cameras are located at critical intersections in the City. The locations are based on safety needs of the intersection as shown by a high number of broadside collisions and the number of observed violations. One of those locations is at Marengo Avenue at Union Street (see picture below).

A high-level security encrypted digital video camera system is installed at each approach of the intersection and records those motorists that violate the red light indication. Violations are verified by the Pasadena Police Department, and citations are sent by mail to the registered owner of the vehicle.

F.A.Q.'S

Q. How are traffic signals installed?

A. A series of studies are conducted by Traffic Engineers and these results are measured against guidelines established by the State of California, Department of Transportation (Caltrans). These results are used to show that a traffic signal is warranted, and then it is placed as a future improvement in the City's Capital Improvement Program (CIP).

Q. Are there disadvantages of installing traffic signals?

A. There may be excessive delays for motorists and increased utilization of minor streets where new signals are installed. Also, motorists may sometimes cut through residential neighborhoods to avoid a congested signalized location.

Q. Along Arroyo Parkway at Del Mar and California Boulevards, there are new signal displays that show a blinking yellow arrow. What does this signal display mean?

A. A blinking or flashing yellow arrow means that you may proceed to make a left-turn with caution, if oncoming traffic has cleared the intersection.

Q. What should motorists do if a traffic signal is flashing red or is inoperable?

A. The California Vehicle Code requires drivers to approach the intersection as if it was stop-controlled. Motorists must make a complete stop, look both ways and proceed through the intersection when it is safe to do so.

We hope you have found this information useful. Please contact us if you have any questions or comments.

For more information contact us:

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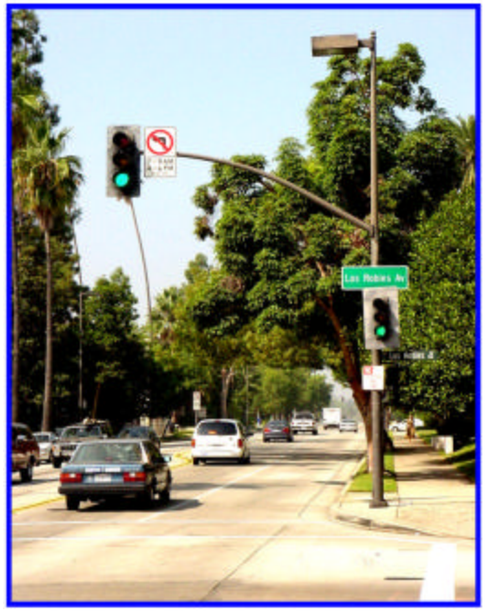
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