

Are traffic signals always the best option?

Traffic signals do more than direct traffic to stop and go. Traffic signals assign right-of-way at intersections; help control the movement of traffic in an effective manner; and ensure an orderly traffic flow by providing opportunities for vehicles, bicyclists or pedestrians to cross at intersections.

Traffic signals are intended for use where, without them, the continuous flow of vehicles would cause an excessive amount of delay.

A traffic signal is not always the best solution for safety problems at intersections. Better options could include sight distance improvements, directional crossovers and rumble strips.

Some types of crashes, such as broadside collisions, may be reduced at intersections with a signal; however, traffic congestion, disobedience of signal indications and crashes often increase at intersections where an unwarranted signal is installed. Some of the most severe crashes continue to occur at intersections controlled by a traffic signal.

**For more information, please contact
your local NCDOT Division Office.
www.ncdot.org**



**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

Division of Highways

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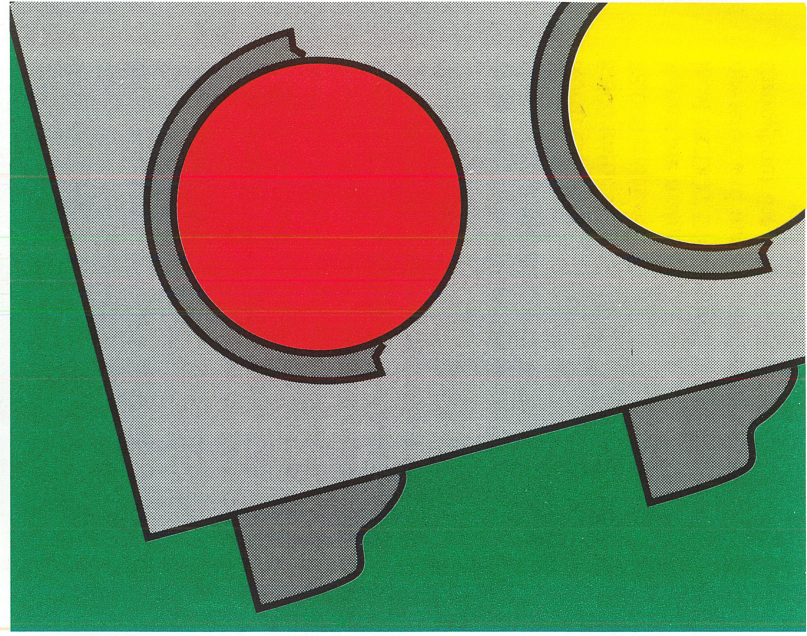
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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



YOUR GUIDE TO TRAFFIC SIGNALS

DIVISION OF HIGHWAYS



How are signal locations determined?

Traffic engineers use citizen requests and frequent monitoring of intersections to identify which locations may have safety, travel or traffic congestion concerns. When a concern is identified, traffic engineers perform studies using federal guidelines to determine if minimum requirements for a traffic signal are satisfied.

These guidelines consist of eight nationally-used signal warrants which identify specific requirements, including crash data, traffic volumes and determine motorist's delays. These warrants are available upon request from your local division traffic engineer or at <http://www.mutcd.fhwa.dot.gov/pdfs/2003/ch4.pdf>.

An investigation may take one to three months to complete. After a citizen's request is reviewed, the individual is notified of the decision and the details of the investigation are explained.

How long does it take to install a signal?

Upon approval of the installation and funding, design plans are drawn, specifications are written, equipment is ordered, installation is scheduled and the signal is installed. This process, depending on the complexity, may require six months to one year to complete.

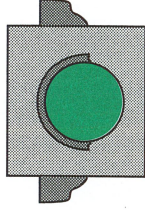
Depending on the situation, once a signal is installed it is either immediately operational or placed on flash for a predetermined amount of days in order for motorists to become accustomed to the signal before it is fully operational. This helps reduce the number of initial crashes caused by motorists running the light.

Who is responsible for the maintenance of a traffic signal?

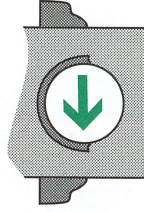
North Carolina's highway system has more than 8,800 traffic signals which are located along over 78,000 miles of state-maintained roadways. These signals are maintained and regularly monitored by local NCDOT Division offices. Additional signals are operated and maintained by towns and cities throughout the state.

What is the difference between a circular green, green arrow and a red arrow indication?

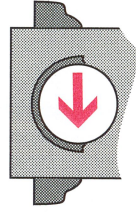
A **circular green indication** means a vehicle may proceed straight through or, if allowed by lane design, turn left or right. Turning movements shall yield the right-of-way to other traffic and to pedestrians lawfully using the intersection.



A **green arrow** means a motorist may enter the intersection only to make the movement indicated by the arrow. When this indication is used, all conflicting traffic will be stopped.



A **red arrow** means traffic facing the signal shall not make the movement indicated and must stop, and remain stopped until a green arrow is displayed. Both circular red and red arrows mean stop. For right turns, unless there is a sign indicating "No Turn On Red," right turns can still be made on a red arrow after coming to a complete stop.



What is a closed loop or synchronized signal?

A closed loop or synchronized traffic signal is a series of traffic signals that can increase the flow of traffic by the use of proper coordinated timing plans. Proper coordination and timing of traffic signals can reduce travel and delay times and provide environmental and safety benefits.

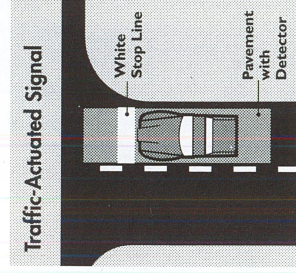
How does a traffic signal work?

Traffic signals are described as being either pre-timed or traffic-actuated.

Pre-timed signal systems provide a predetermined amount of time for each red, green and yellow interval.

Traffic-actuated systems have detectors in and/or around the roadway which enable the signal to vary the duration of green intervals according to traffic demands.

Detectors electronically identify when a vehicle is traveling through or stopped at an intersection. These detectors may be placed in the pavement or mounted overhead. The traffic signal receiving this information responds accordingly by adjusting the signal timing, sequence or display. If a vehicle does not travel within the roadway boundaries or stop at the white "stop line," it may not be detected. If this happens, the vehicle will not receive a green indication.



Signals are often coordinated electronically or by timing adjustments to help traffic progression on congested roads.

How do traffic signals work near railroad tracks?

Some traffic signals located near railroad tracks can be overridden by approaching trains to allow vehicles on or near the tracks to clear prior to the arrival of the train. In these cases, the signal will detect the approaching train, allowing the vehicles to clear and then allow only those movements which are not interrupted by the passage of the train.

