Crossing a signalized intersection can be dangerous for a pedestrian. It is important for an intersection with regular pedestrian traffic to have clearly visible signals that tell the pedestrian when they should not cross the intersection. This is especially necessary when the pedestrian cannot see the green signal for the vehicles travelling in the same direction. The presence of pedestrians can greatly affect traffic signal timing. Understanding how signals work is very important to pedestrian safety.

WHAT DO THE PHASES OF THE WALK/DON'T WALK SIGNS MEAN?

When the WALK indication is illuminated, the pedestrian may *start* walking across the intersection. The pedestrian should still check for potential conflicts with turning vehicles.

When the DON'T WALK indication is *flashing*, it is *not safe* for a pedestrian *to start* crossing. A pedestrian who is already crossing when the indication starts to flash should have sufficient time to safely finish.

When the DON'T WALK sign is constantly illuminated, it is *not safe* for a pedestrian to be in the crosswalk.

WHY DOES THE WALK SIGNAL STAY ON FOR ONLY A FEW SECONDS?

A major misconception by pedestrians is that they should not be in the crosswalk when the WALK sign changes to a flashing DON'T WALK sign. Some pedestrians actually turn around and go back to where they started! Pedestrians should realize that the only time that they should not be in the crosswalk is the period when the DON'T WALK signal is illuminated *constantly*. They *should not start* crossing if DON'T WALK is flashing. Most WALK phases last only about four to seven seconds and are normally referred to as the minimum start-up time for a pedestrian. The flashing DON'T WALK phase should give a pedestrian enough time to safely cross the intersection.

HOW IS PEDESTRIAN CROSSING TIME RELATED TO SIGNAL TIMING?

There is a simple equation that transportation professionals use to determine how much time is needed for a pedestrian to safely cross an intersection. The equation is $GP = (4 \text{ to } 7) + (W/4.0)$, where GP is the minimum pedestrian crossing time needed in seconds. In general, the WALK signal is illuminated for four to seven seconds (depending on the level of pedestrian flow). The flashing DON'T WALK sign is illuminated for ($W/4.0$) seconds, where W is the distance in feet from the curb to the center of the farthest lane on a roadway and the 4.0 (in feet per second) is the walking speed typically assumed for pedestrians.

There are also other methods to signal timing for pedestrians. A common alternative to the previous approach is the installation of a pedestrian push-button detector. When the button is pushed, the traffic signal controller provides a minimum crossing time for the pedestrian during the next available concurrent vehicle green phase. Because of the existence of a pedestrian, the green time might be increased past what is needed for the vehicles, and the percentage of the cycle allocated to the other phases decreased proportionally. Sometimes it is assumed that a pedestrian crosses an intersection in two trips. In this case, pedestrian timing is based on the use of a median island.

WHAT DETERMINES THE PLACEMENT OF A PEDESTRIAN SIGNAL?

The safety of pedestrians crossing intersections is very important. The *Manual of Uniform Traffic Control Devices* (MUTCD) outlines several guidelines that address pedestrians at signalized intersections. The following are some of the basic conditions that stipulate the placement of a pedestrian signal:

- when pedestrian volume or school crossing warrants require the installation of a traffic signal;
- when there is an exclusive interval set for pedestrian crossing;
- when traffic pattern indicators are not visible to pedestrians (e.g., one-way streets);
- at established school crossings where the intersection may be signalized under any warrant;
- when the pedestrian volume is large enough to cause vehicle-pedestrian conflicts and there needs to be a longer pedestrian clearance interval;
- when multiphase indications confuse pedestrians; and
- when pedestrians cross only part of a street (to or from an island).