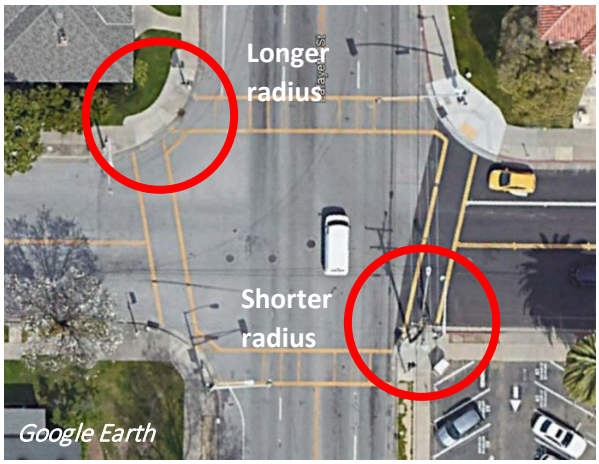
Crossing Improvement

Curb Extension

Curb extensions, or bulb outs, are extensions of the sidewalk and curb at the corners of intersections. They shorten the roadway crossing distance and make pedestrians more visible to motorists. They can also help calm traffic by narrowing the travel lane, and provide additional space for plantings and street furnishings.

Curb Radius Reduction



Shorter turn radi at intersections shorten the crossing distance for pedestrians and require vehicles to turn more slowly.

Improved Right-Turn Slip Lane Design

Right-Turn Slip-Lanes can be improved for pedestrian safety by shortening the turn radius to require vehicles to turn more slowly or removing slip lane entirely. Other improvements include refuge islands and marked pedestrian crossings that are perpendicular to the slip-lane (or as close to perpendicular as possible) so that people are clearly visible to oncoming vehicles.

High Visibility Crosswalk Marking

High Visibility Crosswalks are enhanced crosswalks that clearly define the pedestrian space and help to deter vehicle encroachment. The continental type shown here is one of the most common configurations.

Advance Yield/ Stop Lines

Advance Yield Lines are triangular pavement markings placed in advance of a marked pedestrian crossing to alert motorists to the upcoming crossing. From the advance position, motorist visibility of the crosswalk is also improved. Advance yield have been shown to increase yield rates. Stop lanes are placed in advance of a stop sign and alert motorists of where they should stop.

Curb Ramp

Curb Ramps are ramps that provide access for people with disabilities, or those using wheeled mobility devices, from a curbed sidewalk to a roadway and vice versa. Each corner of an intersection should have two curb ramps, one for each crossing, that are parallel to the crosswalk. This design reduces the crossing distance and orients pedestrians directly into crosswalks. Each ramp should also have tactile warning strips, such as truncated domes, to safely accommodate users with vision impairments.

Crossing Island

Crossing Islands, or Pedestrian Refuge Islands, are typically areas at the mid-point of a marked crossing that prove a safe waiting space for pedestrians. They minimize pedestrian exposure by shortening crossing distances and allowing pedestrians to cross one direction of traffic at a time.

Crosswalk Lighting and Illumination

Crosswalk lighting improves visibility for both pedestrians and motorists.

Signal Improvement

Pedestrian Signal/Countdown Signal

A Pedestrian Signal communicates when it is safe for a pedestrian to cross an intersection. Countdown Signals notify the pedestrian of how much time remains in the crossing phase. They can help prevent people from getting stuck in the middle of the intersection when the signal changes. However, they have also been shown to increase vehicle speeding and should be used with caution.

Pedestrian Hybrid Beacon (PHB) Warrant Study

Pedestrian Hybrid Beacons, also known as High-Intensity Activated Crosswalk Beacons (HAWKs), are user-activated traffic control devices that cycle through a flashing yellow, steady yellow, and then steady red light to stop vehicles and allow pedestrians to cross a road safely. They can be installed in mid-block locations or at intersections where a full traffic signal is not warranted. Research suggests that PHBs are more effective at inducing motorist compliance on high-volume, high-speed roadways than RRFBs.[1]

Rectangular Rapid-Flashing Beacon (RRFB) Study

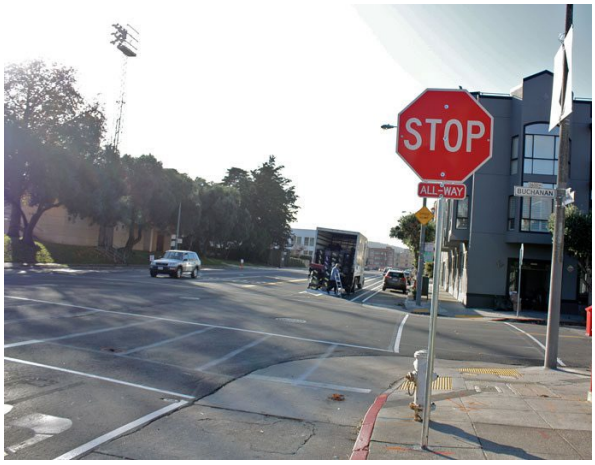
Rectangular Rapid-Flashing Beacons are user-activated pedestrian signals that use flashing yellow lights to alert motorists to the presence of pedestrians in the crosswalk. They can be installed in mid-block locations or at intersections where a full traffic signal is not warranted.

[1] Improving Pedestrian Safety at Unsignalized Crossings. Transportation Research Board. 2006. TCRP report 12/NCHRP Report 562.

Leading Pedestrian Interval

Leading Pedestrian Intervals are pedestrian-only crossing signals that occur slightly before the green signal for parallel lanes of vehicle traffic. They allow pedestrians to get a head-start in the crosswalk, making them more visible to turning motorists.

Stop Sign/Signal Warrant Study



Stop Sign or Signal Warrant Studies evaluate whether there is sufficient vehicle or pedestrian volumes at an intersection to warrant the installation of traffic controls. Changes in land use can increase traffic volumes, necessitating installation of stop signs or traffic signals.

Pedestrian Crossing Sign

Pedestrian crossing signs alert motorists to the presence of a marked crosswalk. They can be placed parallel to or in advance of a crosswalk, and are particularly useful in locations where a crosswalk may not be expected by motorists.

Transit Stop Improvement

Transit Waiting Area Improvements

Transit stop amenities such as benches, shade, and shelters enhance pedestrian comfort.

Walking Environment Enhancement

Public Space Activation

Public Space Activation refers to urban design and programming with the goal of enhancing a space to make it more inviting to people and encouraging them to linger. Examples of public space activation include art installations, temporary pop-up parklets, farmers markets, and festivals.