walkBoston®

Rebecca Johnson Elementary School Walk Audit Springfield, MA

March 4, 2015

Centers for Disease Control and Prevention Division of Community Health/Community Transformation Grant
Mass in Motion, an initiative of the MA Department of Public Health

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Purpose and Goals of the Walk Audit

The school administration reached out to the walk-to-school leaders in Springfield with the goal of establishing a walking school bus for the 2015-2016 academic year. WalkBoston met with school staff to discuss proposed routes, areas of concern and current student walking patterns.

The route for the first proposed walking school bus would begin at Reed Village on Bay Street, take a left onto Girard Avenue, right onto McKnight Street, and a left onto Catharine Street to the Rebecca Johnson front door. An alternate route may be to turn left onto Bowles Street from McKnight Street to reach Rebecca Johnson.

Findings

The walking school bus route is planned along roads that have continuous sidewalks, relatively slow moving traffic and marked crosswalks. There are three intersections of concern: (1) Catharine/Bay, (2) Bay/Dartmouth, and (3)State/Catharine. While the planned route does not cross these intersections, students living on the north side of Bay Street or the south side of State Street will need to cross these intersections to join the walking school bus or to reach Rebecca Johnson. Specific recommendations for improving the safety of these intersections are described later in this report.

The major issues and infrastructure fixes needed along this route include:

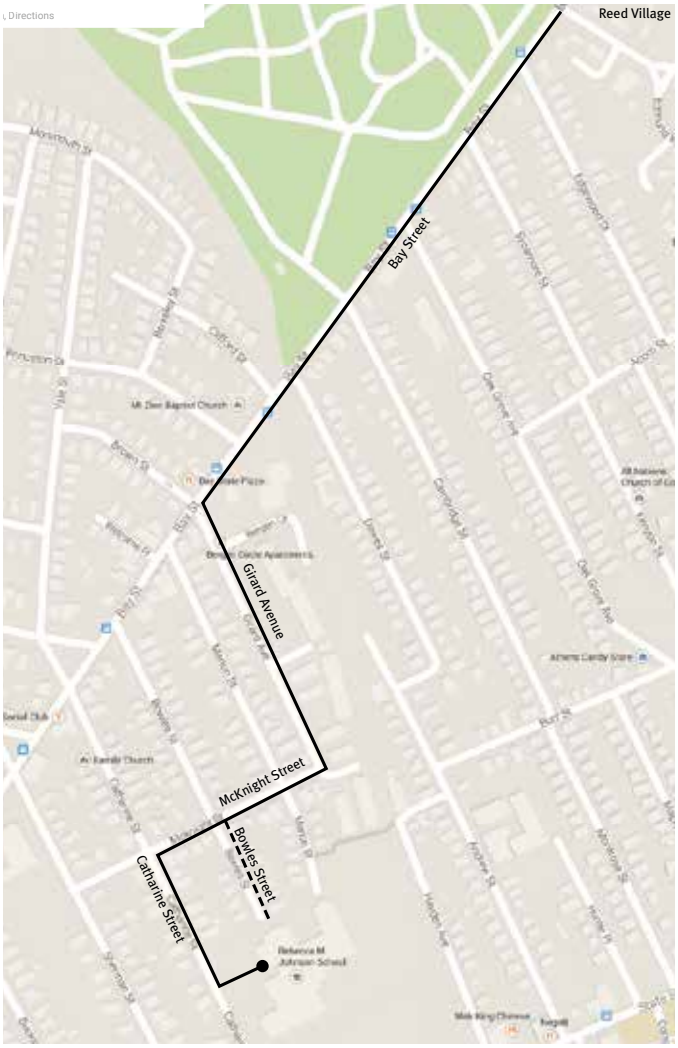
- Slowing traffic on Catharine Street
- Improving visibility of street crossings
- Delineating the school zone
- Providing protected pedestrian crossings at signalized intersections

In addition to the infrastructure issues mentioned, measures should be taken to improve the physical safety of students walking to school. Reaching out to the larger housing complexes and neighborhood groups to get more “eyes on the street” can help foster a sense of community and work towards improving security.

Background on Rebecca M. Johnson Visual and Performing Arts Elementary School of Excellence

Rebecca Johnson Elementary School enrolls over 850 students ranging in age from pre-K to 5th grade. The school provides opportunities for students to focus on dance, drama, music and art, while maintaining high academic standards. Rebecca Johnson has been one of Springfield’s high performing schools since the 2003 academic school year. The school opened in 1992.

According to school staff, over 90 percent of the students live within 1.5 miles of the school. Only 50 students ride a bus to the school. The City of Springfield does not provide bus service to elementary students within a 1.5-mile radius of an elementary school, except in special circumstances. Therefore,



Map of proposed walking school bus route from Reed Village

the majority of students at Rebecca Johnson are considered "walkers." Although considered "walkers," many students are driven to school, causing traffic back-ups and dangerous street crossing patterns, which are common safety issues around elementary schools throughout the United States.

Rebecca Johnson staff stated that their primary safety concerns for students walking to school were traffic speeds (along Catharine Street, Bay Street, State Street, Wilbraham Road, and in the school parking lot), bullying by older kids and homeless people, and illicit activities (drug dealing near a liquor store and in other locations on the walk to school). There is a shared city park and school playground area along Hayden Avenue. While the school sees the benefits of the proximity of the park, school staff indicated that dogs often roam the area unleashed and people loiter in the park during school hours.

Walk audit participants walk along Catharine Street on snow-covered sidewalks

Walk Safety Audit – Participants and Route

WalkBoston conducted a walk safety audit along several streets surrounding Rebecca Johnson to assess the conditions of the walking environment. School staff had mapped student addresses throughout the Rebecca Johnson district to help determine appropriate routes for high participation in a walking school bus program. The walk route was based on this location information as well as anecdotal information describing current student walking patterns and dismissal information.

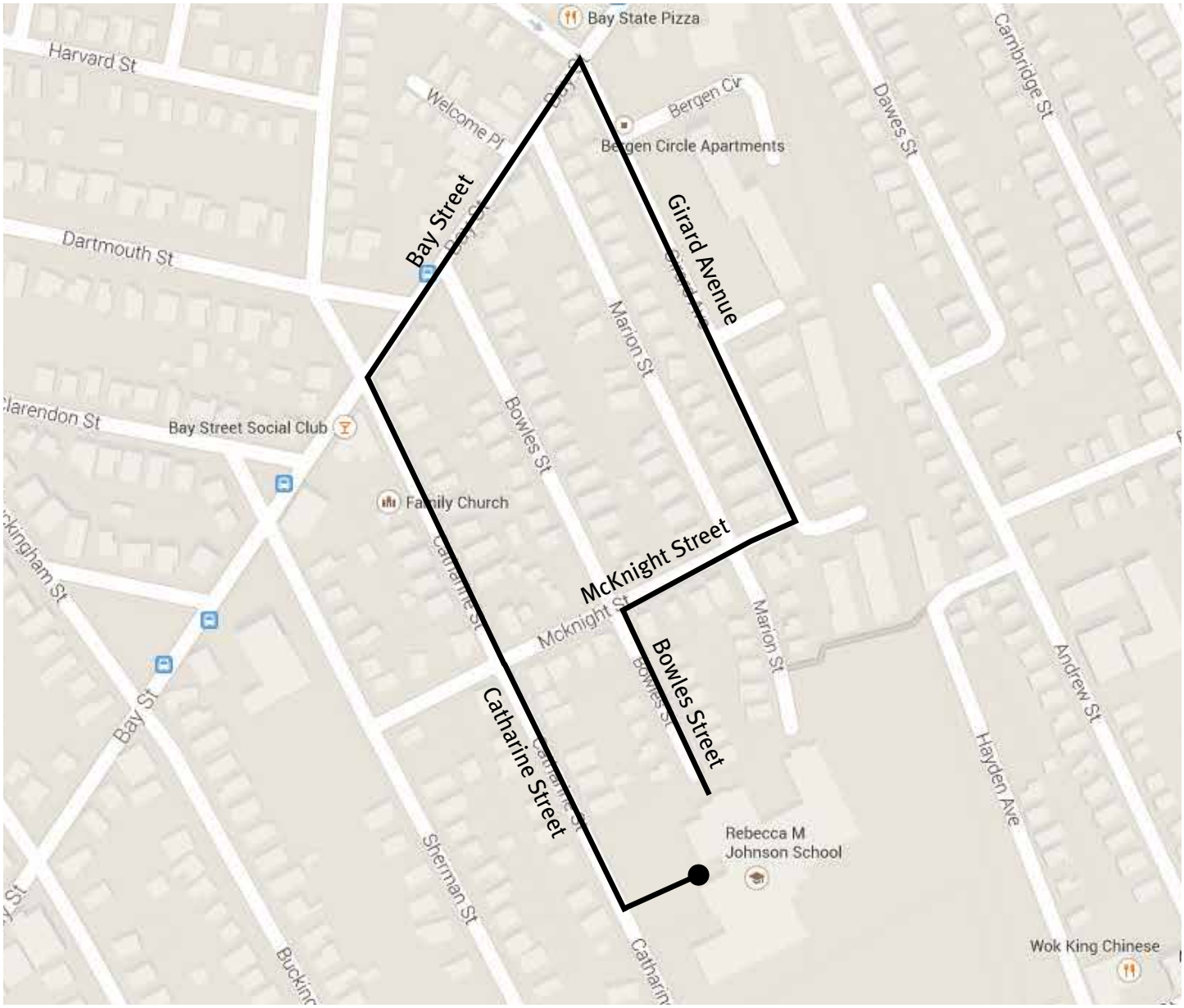
Despite the cold temperatures and snow-filled streets, 16 people participated in the walk audit on Tuesday, March 4, 2015, between 10:30 am and 12:00 pm. The skies were cloudy and temperatures hovered around freezing (30 degrees). Walk audit participants are listed below:

Michelle Norman, Rebecca M Johnson Elementary School, Parent Facilitator
Michael Quinn, Rebecca M Johnson Elementary School, Counselor
Cheryl Ray-Bass, Rebecca M Johnson Elementary School, Counselor
Chandi Jones, Rebecca M Johnson Elementary School, Counselor Intern
Lucy Darkwah, Rebecca M Johnson Elementary School, Assistant Principal
Roni Gold, Rebecca M Johnson Elementary School
Helen Creswell, Rebecca M Johnson Elementary School, parent
Julie Minns-Piepho, Rebecca M Johnson Elementary School, PE teacher
Brad Rosenberg, Rebecca M Johnson Elementary School, PE teacher
Devon Williams, Springfield Police Department
Hector Velez, Springfield Department of Public Works
Jeff McCollough, Pioneer Valley Planning Commission
Dorothea Hass, WalkBoston
Heather Strassberger, WalkBoston
Stacey Beuttell, WalkBoston

School Arrival and Dismissal

As at most elementary schools, arrival and dismissal are the most complicated and dangerous times for students entering and leaving school. Rebecca Johnson's arrival and dismissal procedures are based on student grade level. Pre-K and special needs students arrive and are dismissed at the southeast corner of the school in a driveway dedicated to this use. Kindergarten students are dismissed from the front door along Catharine Street. Grades 1-3 are dismissed from a door across from Bowles Street and Grades 4-5 are dismissed from a door across from Marion Street.

Parents drop-off and pick-up their students on Bowles Street, Marion Street, and in the parking lot at the front door of the school. Parents park and idle on these streets while waiting for their children. Neither street has a designated turn-around for vehicles, so drivers perform unpredictable turning movements to maneuver back down the streets to McKnight Street. Traffic on Bowles Street is particularly heavy at dismissal time given the age and number of students dismissed at this location. Residents complain of the traffic and are often blocked into their driveways by parents who park in front of them.



Map of walk audit route

The school has 5 crossing guards who are stationed at the following locations:

1. State Street/Catharine Street
2. Crosswalk at entrance drive to Rebecca M Johnson on Catharine Street
3. Crosswalk at exit drive to Rebecca M Johnson on Catharine Street
4. Catharine Street and Bay Street
5. Bay Street and Dartmouth Street

The crossing guards are also janitors at Rebecca Johnson. Staff members also supervise arrival and dismissal at all four locations on the Rebecca Johnson campus.

Observations and Recommendations along Walk Route

The observations and recommendations listed below describe the conditions observed during the walk audit. Given the amount of snow, much of the infrastructure was buried (curb ramps, crosswalks, etc.). However, participants could assess the condition of street crossings and pedestrian signals, and experience the snow removal realities that students face in severe winter conditions.

Maintenance of some private properties was an issue along the route, as was dog poop on the sidewalk. A "pick up after your dog" campaign, including signs and dispensers with recycled grocery bags, could improve aesthetics/sanitation/pedestrian comfort and is a good community volunteer project that kids can be heavily involved in. In general, cleaning up litter and other waste and improving maintenance of surrounding properties can help create a more pleasant walking atmosphere and encourage safe and respectful behavior.

Catharine Street

Rebecca M. Johnson Elementary sits in a residential neighborhood bounded by two arterials – Bay Street and State Street. Catharine Street runs roughly north/south in front of the school and acts as a cut-through between Bay and State Streets. According to school staff, vehicular traffic volumes are relatively high and speeds exceed those appropriate for a school zone. There are no stop-controlled or signalized intersections on Catharine Street between Bay and State Streets, so drivers maintain their speeds for this length of Catharine Street without stopping. Police have conducted enforcement and used mobile "your speed" signs in the school zone in the past and observed improvement, but found the average speed before the campaign was 38 (in 20 mph school zone) and recorded a maximum speed of 59 mph.

Sidewalks approximately 4 to 5 feet in width run along both sides of Catharine Street between Bay and State Streets. Narrow green, grassy strips (called a verge) separate the sidewalks from the curbs along Catharine Street that provide some separation between fast-moving traffic and people walking. Trees line both sides of the street, which provide shade and further define the edge of the street. The condition of the sidewalks was hard to determine given the amount of snow on the ground.

View down Catharine Street

The street crossings across Catharine Street had marked crosswalks with minimal striping, except at the State Street intersection where the crosswalks are enhanced with a red, stamped asphalt brick pattern. The crosswalks at the entrance and exit drives at Rebecca Johnson had no curb ramps and terminate in driveways rather than leading to the sidewalks. The crosswalks at the Catharine/McKnight Streets intersection have curb ramps, but are missing detectable warning strips.

School zone signage is missing along Catharine Street and pedestrian crossing signs appear only at the crosswalk adjacent to the school exit drive. There are no signs placed in advance of the crosswalk to warn of pedestrians crossing. On-street parking is prohibited south of the McKnight Street intersection.

Recommendations:

1. Slow traffic down on Catharine Street
    - Place in-street pedestrian signs in the crosswalks adjacent to the entrance and exit drives to Rebecca Johnson (short-term)
    - Install raised crosswalk(s) across Catharine Street near entrance and exit drives to Rebecca Johnson (long-term)
    - Work with law enforcement to continue monitoring speed and enforcing speed limits near the school

2. Improve visibility of street crossings
    - Consider relocating crosswalks adjacent to the entrance drives away from driveways
    - Install curb ramps and detectable warning strips
    - Repaint crosswalks using a zebra or continental design

3. Delineate school zone
    - Install school zone signs with 20 mph speed limits in highly visible locations at all approaches to the school
    - Consider painting SCHOOL ZONE pavement markings on Catharine Street
    - Install wayfinding signs to Rebecca Johnson from major intersections at Catharine/State and Catharine/Bay Streets for people walking and driving.
    - Paint footprints on the sidewalks leading to the school as a fun, inviting wayfinding program for walkers and the walking school bus

Catharine Street/Bay Street Intersection

The Catharine Street/Bay Street intersection is a dangerous crossing point for students walking to Rebecca Johnson. The angle at which the streets cross poses a challenge, lengthening crossing distances and limiting visibility. There is a crossing guard posted at this intersection at arrival and dismissal times, which improves student safety. The intersection is signalized, but there are no pedestrian signals and therefore no protected pedestrian signal phase. Marked crosswalks exist on three of the four legs of the intersection, but not on the side that provides the most direct route for students traveling from northeast of the school. The crosswalks have only minimal pavement markings.

Catharine/Bay intersection has no pedestrian signals

Recommendations:

1. Improve visibility of street crossings
    - Repaint crosswalks using a zebra or continental design and mark all four legs
    - Install missing curb ramp and detectable warning strips

2. Provide protected pedestrian crossing phase
    - Install pedestrian signals on all legs of the intersection
    - Consider concurrent phase with an automatic WALK signal

Bay Street

Bay Street is a two-way neighborhood arterial with one lane of traffic traveling in each direction. There are sidewalks on both sides of the street that are approximately 4 to 5 feet wide. While the sidewalks are separated from the street with a verge, there are no street trees to define the street edge, and therefore the roadway seems much wider than Catharine Street. Neighborhood retail is mixed with multi-family and single family residential along Bay Street. Parking is permitted in front of the retail establishments. The verge is slightly narrower than on Catherine Street, allowing room for road signs to be placed outside the sidewalk, but not enough space for trees to be planted.

Observed traffic speeds on Bay Street during the audit were significantly lower than the posted speed of 30 mph. Although weather conditions probably contributed, the highest speed clocked with the radar gun was 21 mph.

Students cross Bay Street at Dartmouth Street despite the fact that there is no marked crosswalk. A crossing guard is posted at this intersection to improve safety, but students crossing at times other than arrival and dismissal have no protection.

The Bay/Dartmouth intersection has no marked crosswalk, but students and other pedestrians cross here frequently

Bay Street was flooded where drainage structures were blocked by snow.

Bay Street has significant drainage issues. While the snow depths were higher than average, water was ponding across intersections making them impassable for pedestrians. Participants found themselves in the middle of the road to avoid deep puddles. Storm drains were either obstructed or ineffective in moving water off the streets.

Recommendations:

1. Improve safety of pedestrians crossing from the north side of Bay Street to the south side at the Catharine Street and Dartmouth Street intersections
   - Study safety implications of painting a crosswalk at the Dartmouth and Bay Street intersection; paint crosswalk if deemed appropriate
   - Repaint crosswalks using a zebra or continental design along Bay Street at the Bowles Street, Marion Street and Girard Avenue intersections

2. Improve drainage along Bay Street
   - Evaluate effectiveness of storm drains to remove water from Bay Street; any major redesign should address known drainage issues (long-term)

Girard Avenue

Girard Avenue is a residential two-way street with one lane traveling in each direction. Parking is permitted on both sides of the street. Traffic volumes are relatively low when compared to Bay Street and Catharine Street. Sidewalks are continuous on the east side of Girard Avenue, but are missing along most of the west side of the street. There are no marked crosswalks at the intersection of Girard Avenue and McKnight Street.

Large apartment buildings house many Rebecca Johnson students on Girard Avenue. Many other homes and buildings are boarded up and vacant. This street has seen its share of crime and violence. If a walking school bus route uses Girard Avenue, it will be important to reach out to the housing developments to promote more "eyes on the street" to watch out for the safety of the children walking to school.

Recommendations:

1. Improve visibility of street crossings at the Girard and McKnight intersection
    - Repaint crosswalks using a zebra or continental design
    - Install missing curb ramp and detectable warning strips
2. Reach out to housing developments along Girard Avenue to assist in monitoring walking school bus to increase safety of children walking to school

McKnight Street

McKnight Street is a two-way residential street with one lane traveling in each direction. Traffic volumes are relatively low except during school arrival and dismissal. Parents driving to pick up their students on Bowles and Marion Streets use McKnight to reach their children. There are sidewalks on both sides of the street and mature trees line the northern side of the street. Marked crosswalks run across and along McKnight Street at the Bowles Street intersection, but run only along McKnight Street at the Marion Street intersection. There are no marked crosswalks at Girard Avenue as noted above.

Recommendations:

1. Improve visibility of street crossings along McKnight Street
    - Paint crosswalks across Marion Street
    - Repaint crosswalks using a zebra or continental design
    - Install missing curb ramps and detectable warning strips (long-term)

Bowles Street and Marion Street

Both Bowles Street and Marion Street are neighborhood residential streets that terminate at Rebecca Johnson's campus. There are sidewalks on both sides of each street. As described above, parents dropping off and picking up students use these streets to access the school. Neither street was designed as a cul de sac and therefore both have limited space to accommodate vehicles turning around. Homeowners on both streets are often parked in by parents waiting for school to be dismissed.

View down Marion Street to Rebecca Johnson

View down Bowles Street to Rebecca Johnson

Snow removal on these streets was a primary concern. City plows had pushed snow into towering piles up against the school property at the base of both Bowles and Marion Streets. The snow obstructed pathways and limited the visibility of students coming out of school. Students were forced to walk single file in some cases around these mounds to the street. Snow removal responsibilities were complicated due to the overlapping property boundaries of the school, street right-of-way, and the adjacent park. School staff participating in the audit suggested that the school staff needs to improve snow removal on its property in this area.

Recommendations:

1. Improve safety at the Bowles Street and Marion Street dismissal point
    - Consider prohibiting pick up and drop off at the end of Bowles and Marion Streets; close streets to traffic during arrival and dismissal except for residents
    - Consider making McKnight Street the parent pick up point for students dismissed at the Bowles Street and Marion Street doors
    - Work with the city department of public works and neighborhood residents to formalize pick up procedures along McKnight Street to minimize traffic impacts
    - Adjust staffing to provide student supervision on Bowles and Marion Streets to pick up point on McKnight Street

2. Prioritize snow removal along Bowles and Marion Streets
    - Resolve property boundary issues and determine responsibilities for snow removal
    - Ensure that walks and stairs on Rebecca Johnson property along the north side of the school are cleared of snow

Snow piled in front of the school entrances at the end of Bowles Street

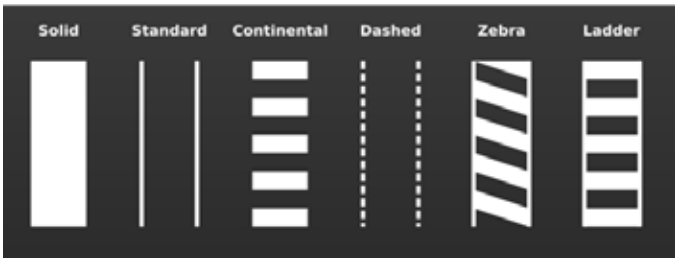
School walkways were not cleared near entrance doors along the northern side of the school

Appendix A. Terminology

Below are images and definitions of the terms used to describe the walking environment in this report.

Crosswalk and Stop Line

Crosswalks can be painted in a variety of ways, some of which are more effective in warning drivers of pedestrians. Crosswalks are usually accompanied with stop lines. These lines act as the legally mandated stopping point for vehicles, and discourage drivers from stopping in the middle of the crosswalk.



Crosswalk patterns
Source: USFHA

Crosswalk and stop line
Source: http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_scdproj/sys_impact_rpt/images/fig16.jpg

Curb Ramp and Detectable Warning Strip

Curb ramps provide access from the sidewalk to the street for people using wheel chairs and strollers. They are most commonly found at intersections. While curb ramps have improved access for wheelchair-bound people, they are problematic for visually impaired people who use the curb as an indication of the side of the street. Detectable warning strips, a distinctive surface pattern of domes detectable by cane or underfoot, are now used to alert people with vision impairments of their approach to streets and hazardous drop-offs.

Curb ramp and detectable warning strip in Woburn, MA

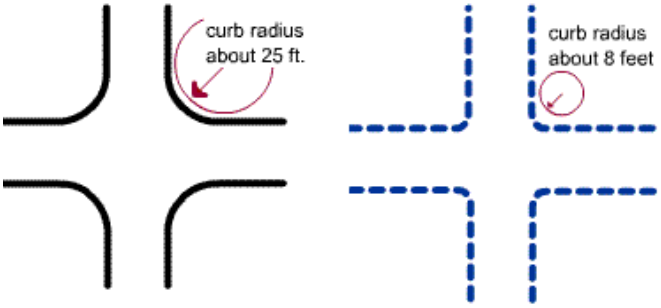
Curb Extension/Curb Bulb-out

A sidewalk extension into the street (into the parking lane) shortens crossing distance, increases visibility for walkers and encourages eye contact between drivers and walkers.

Curb extensions are often associated with mid-block crossings

Curb Radius

A longer curb radius (on the left in figure below) allows vehicles to turn more quickly and creates longer crossing distance for pedestrians. A shorter curb radius (on the right in the figure below) slows turning speeds and provides pedestrians shorter crossing distances.



There are two excellent examples of the shortening of curb radii in Woburn, MA. The first (A) is a low- cost solution using a gravel-filled zone between the original curb line and the newly established road edge. The second is a higher-cost solution using grass and trees and extending the sidewalks to the new curb. Both work to slow traffic.

Fog Line

A fog line is a solid white line painted along the roadside curb that defines the driving lane and narrows the driver's perspective. Fog lines are most often used in suburban and rural locations, but may be appropriate in some urban conditions.

Fog lines delineate the vehicular driving zone on wide roadways.

(A) Gravel-filled curb extension

(B) Grass, trees and extended sidewalk in curb extension

In-street Pedestrian Crossing Sign

In-street pedestrian crossing signs are used at the road centerline within crosswalks to increase driver awareness of pedestrians in the area. These signs are a relatively low-cost, highly effective tool in slowing traffic by the narrowing travel lanes. They are popular with road maintenance departments since they can be easily moved for snow removal.

Leading Pedestrian Interval (LPI)

A leading pedestrian interval gives pedestrians an advance walk signal before motorists get a green signal, giving the pedestrian several seconds to start walking in the crosswalk before a concurrent signal is provided to vehicles. This makes pedestrians more visible to motorists and motorists more likely to yield to them. Typical LPI settings provide 3 to 6 seconds of advance walk time.

Source: http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_scdproj/sys_impact_rpt/images/fig34.jpg