walkBoston

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Photo by Dan Watkins

Manchester Village Walk Audit

Manchester-by-the-Sea, MA

June 3, 2019

MAKING MASSACHUSETTS MORE WALKABLE
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Purpose of the Walk Audit

On Monday, June 3, 2019, WalkBoston conducted a walk audit in Manchester-by-the-Sea in the area between Manchester Memorial Elementary School and the village center. This walk audit was completed through the Massachusetts Department of Public Health's Mass in Motion program, which grants funding and provides technical assistance to help communities eat better and be more active. WalkBoston has been providing technical assistance to Mass in Motion projects throughout the state, and has previously conducted a walk audit along Manchester's School Street in 2015 through Mass in Motion.

The area covered in this walk audit includes Manchester Memorial Elementary School, Manchester Essex Regional Middle High School, and Tara Montessori School. The southern portion of the audit cuts through the village center, which houses several restaurants, cafes and shops, and is proximate to the Manchester commuter rail station and Singing Beach. Though the area is well-frequented, most access is by car. Sidewalks are typically narrow and only on one side of the street, and several crosswalks have low visibility and insufficient signage.

MassDOT's crash data indicate 4 serious pedestrian-involved crashes in Manchester between 2015-2017, and an additional 5 crashes between 2009-2017 where bicyclists were struck by cars. Two of these bicycle-involved crashes were within the walk audit site. In the summer of 2016, there were 2 collisions between a car and bicyclist at the intersection of Flatley Ave and School St. In both cases, the bicyclist was non-fatally injured. In the second instance (on July 6, 2016) the bicyclist injured was a minor.

According to US Census data, 20.6% of Manchester residents are children. Children walk to and around their schools in groups, so narrow sidewalks and low visibility crosswalks are a particularly pressing problem here. Furthermore, renovations to the Manchester Memorial Elementary School in the upcoming year will mean that children must use new routes to get to their campus.

Walk audit participants walked from the elementary school to the village to identify potential barriers for pedestrians. Photo by Dan Watkins.

Key Recommendations

1. Organize campaigns to keep sidewalks clear, trim hedges, and improve pedestrian safety along walking routes to school.
2. Install clearly marked crosswalks in front of schools with visible signage.
3. Improve the Norwood Avenue - Washington Street - Union Street - North Street intersection.
4. Improve pedestrian visibility at the Union Street - Beach Street intersection.
5. Implement strategies to reduce traffic speeds on School Street. Enforce maximum lane widths of 10 feet on School Street.

Participants

Jennifer Donnelly	Cape Ann Mass in Motion Coordinator
Todd Fitzgerald	Manchester Police Chief
Al Centner	Bike/Ped Committee
Aileen O'Rourke	Bike/Ped Committee
Terry Cowman	Bike/Ped Committee
Sue Brown	Town Planner
Judy Crocker	MassDOT Safe Routes to School
Greg Federspiel	MRTS Town Administrator
John Willis	Manchester Memorial Elementary School Principal
Joanne Maino	Manchester Essex Regional Middle School Principal
Tricia Puglisi	Manchester Essex Regional High School Principal
Stacey Beuttell	WalkBoston
Ayesha Mehrotra	WalkBoston

Walk Audit Route

The walk audit was conducted between 2:15pm to 3:30pm on a sunny Monday afternoon. The audit began at Manchester Memorial Elementary School and continued southward around the school campus and towards the village center. Participants then walked up School Street on the west, taking Lincoln Street back to Manchester Memorial.

The area from Lincoln Street to Brook Street on the east is entirely composed of single-family, residential units. Sidewalks are narrow, only on one side of the street, and sometimes compete with overgrown hedges on the abutting properties. These streets are used by elementary and middle/high school students walking to and from school. Next academic year, pedestrian traffic here will increase as construction on the elementary school campus means that more students will be directed to walk this route to school.

The southern portion of the walk audit route (below North Street) dips into the 'village', characterized by retail, restaurants, grocers, the historical museum, and some town government buildings. While this area is well-used by walkers, wide and angled intersections can make pedestrian access daunting. According to Manchester's Complete Streets report, there have been five crashes at the intersection of Union Street and Beach Street between 2014-2017; two pedestrians were struck.

Five of Manchester-by-the-Sea's proposed Complete Streets (CS) projects fall along the walk audit route:

A. Brook Street - Norwood Avenue
    1. The CS Plan recommends installing a 'do not enter' sign on Norwood Avenue, as the western half of Brook Street before it hits Norwood Avenue is a one-way.
    2. It also recommends extending the stop bar on Brook Street to the full width of the street, and extending the curb/ widening the sidewalk at the northeast corner of the intersection.

B. Norwood Avenue - Washington Street
    1. The Plan recommends extending the median, adjusting the stop bar locations, and extending the curb with pavement markings at North Street and Norwood Avenue.

C. Union Street - Beach Street
    1. The CS report describes plans for pedestrian refuge medians and yield markings. In the Town's final design plan, the refuge medians were removed in favor of curb extensions.

2. The CS Plan calls for enforcement of the no parking rule within 20' of the crosswalk on Union Street. Pavement markings will be painted to indicate the no parking zone.

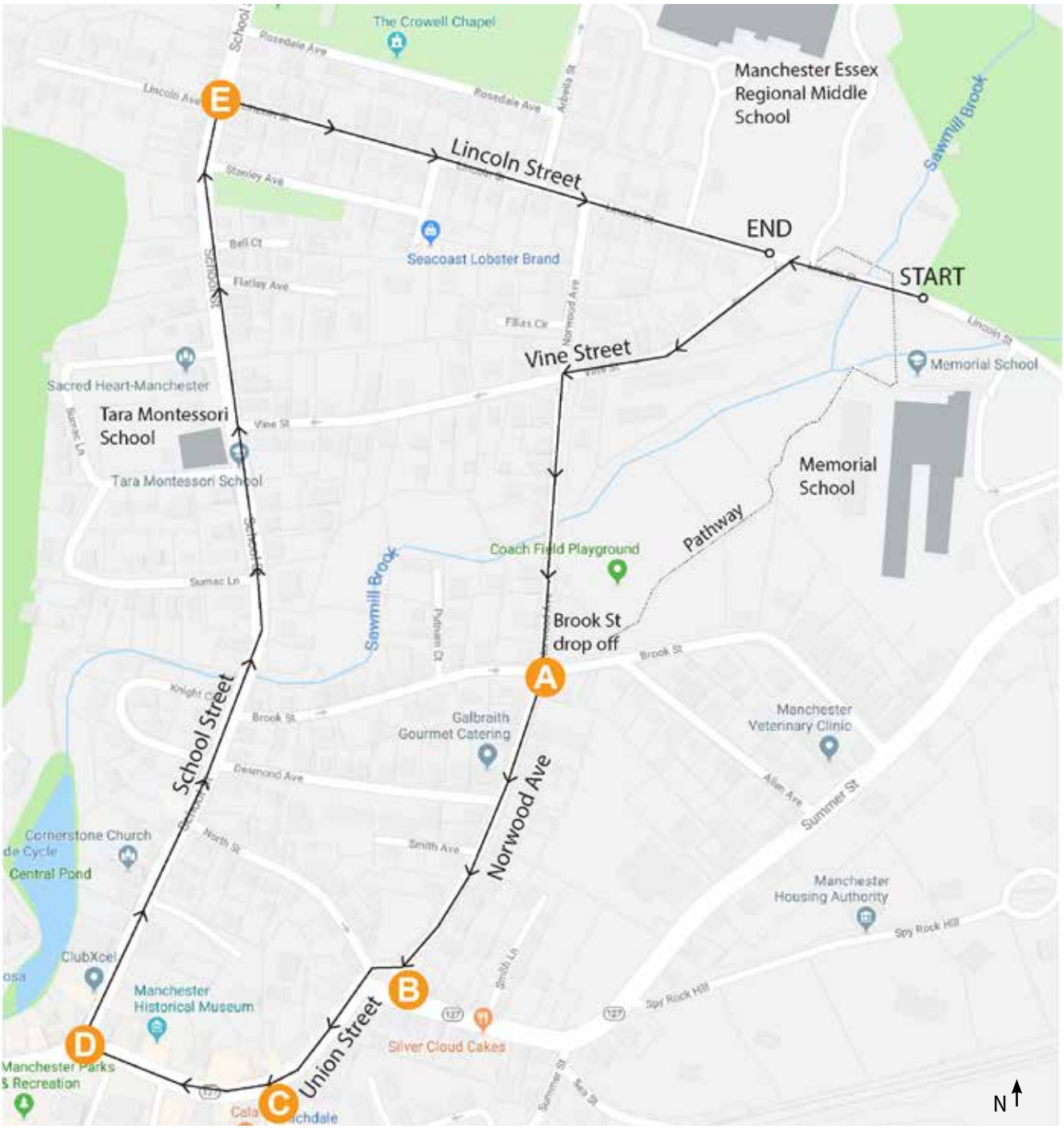
D. Union Street - School Street - Central Street

1. The report outlines a plan to extend curbs, repaint and move the crosswalks, install yield markings, and install no parking signs.
2. It also suggests that the Town consider back-in angled parking on Central Street.

E. School Street - Lincoln Street

1. The CS report proposes adding a crosswalk and ADA-compliant ramp, as well as rectangular rapid flashing beacons (RRFBs) at this intersection.

Walk Audit Route with Complete Streets Projects Marked in Orange



Discussion of Recommendations

1. Organize campaigns to keep sidewalks clear, trim hedges, and improve pedestrian safety along walking routes to school.

During the 2019-2020 school year, student foot traffic will increase significantly on Norwood Avenue and Vine Street, according to Manchester Memorial Elementary School Principal John Willis. Students will have to take this route to come to school as the campus is reoriented during the school renovation project.

Currently, this stretch is characterized by narrow sidewalks that are only on one side of the street for the most part. Overgrown hedges and other plantings infringe on the sidewalk, making it difficult for multiple people to walk together. As more students walk to school along this route, children may walk in groups in the street, which can be dangerous given the curves on Vine Street and drivers' limited visibility.

"The overgrowth is what struck me. I just hadn't realized," said the town administrator who participated in the walk audit. Several participants believed that neighbors probably did not know that their hedges were aggravating a pre-existing problem of narrow sidewalks, and said that there needed to be an effort to make neighbors more cognizant of the issue. Participants discussed a "good neighbor" campaign, through which parents at the schools talk to their neighbors about doing their part to keep sidewalks clear. The Town could also distribute flyers to the homes along popular routes to school. This way, homeowners will know the importance of trimming protruding hedges and keeping sidewalks clear of other barriers.

To capture the child's perspective, it may be useful for school and town officials to conduct a walk audit with a group of students so that the children have an opportunity to present the problems they encounter and to highlight what changes could be made to the built environment to keep them safer as they walk to and from school.

Additionally, signage that reminds drivers that children may be on these streets will also help protect students walking to school. This includes formal signage as well as creative projects that serve to remind drivers that children use these roads to get to school. For instance, painting the streets along popular routes with children's footprints, animal tracks, or other illustrations could alert drivers that children may be in the street. School administrators could work with students over the summer to implement such projects.

Short-term Recommendations

- Organize a student walk audit to better understand what challenges children encounter on their walks to school.
- Implement projects to paint streets along popular routes to school with a playful, colorful pattern that notify vehicles that children may be walking in the street.
- Notify households surrounding the school that they should keep their sidewalks clear of plantings and other items.

Long-term Recommendations

- Ensure that hedges and other plantings along sidewalks remain clear of the sidewalk and that no other materials infringe on pedestrian space.

Overgrown hedges paired with narrow sidewalks are a consistent problem for walkers. Photo by Stacey Beuttell.

The crosswalk outside the middle/high school is well-marked but still poses visibility challenges during pick up and drop off times. Photo by Dan Watkins.

Drivers on Lincoln Street cross the median line to pass a pile up caused by pick up at the middle/high school. Photo by Ayesha Mehrotra.

2. Install clearly marked crosswalks in front of schools with visible signage.

For children walking to school in Manchester-by-the-Sea, crossing the street to get to school can be precarious. Recent enhancements to the crosswalk at the school driveway south of the tennis courts include a Rectangular Rapid Flashing Beacon (RRFB), in-street pedestrian crossing sign, and a painted median. These enhancements provide more warnings to drivers that students are crossing at this location, but high traffic volumes and distracted drivers force everyone crossing here to remain vigilant.

Children wishing to cross Lincoln Street north of the school can use the pedestrian bridge or the crosswalk outside Manchester Essex Regional Middle/High School. This crosswalk is well-painted and has a curbside crossing sign but presents challenges to pedestrians during pick-up and drop-off hours. Through traffic often try to cut around cars queueing up to drop off or pick up by driving on the opposite side of the road. As we watched middle/high school dismissal, a second lane of westbound traffic formed to pass those waiting to get to the middle/high school. Pedestrians using the crosswalk are difficult to see through the line of cars, leaving them vulnerable to

A 3D-appearing crosswalk in Medford is designed to slow drivers' speeds. Photo via Medford Public Schools.

Students paint a unique crosswalk outside Medford High School. Photos via Wicked Local Medford.

traffic coming from the opposite direction as well as drivers that cross the median line. An in-street pedestrian crossing sign, crossing guards, and/or other crosswalk enhancements would improve safety.

Conventional crosswalks enhancements promote safety, but some municipalities have pushed the envelope when thinking about crosswalks. Medford's new "3D" sidewalks are the most recent example of students pitching creative ideas for slowing traffic around schools. In 2016, students from Medford High School also partnered with WalkMedford to paint a mural on a crosswalk outside the school, bringing more attention to the fact that students may be trying to cross there. Of course, it is important to ensure that the pavement markings do not further distract drivers or cause them to react unexpectedly. Crosswalk pavement markings must be approved by the local or state authorities depending on who owns the roadway.

Short-term Recommendations

- Place an in-street pedestrian sign on the crosswalk between Lincoln Street and Vine Street and/or have crossing guards to assist walkers at pick up/drop off times.
- Consider installing an RRFB at this crossing.
- Consider an atypical crosswalk pavement marking to enhance safety and draw attention to the school zone.

3. Improve the Norwood Avenue-Washington Street-Union Street-North Street intersection.

The intersection between Norwood Avenue, Washington Street, and Union Street has wide curb radii, and excessive asphalt in the intersection, giving drivers far more space than they need. There is also currently no stop sign on Washington Street, so drivers coming down this one-way street do not need to slow down before swinging right at the wide turn. Many walk audit participants described those drivers unfamiliar with the intersection as being confused and slowing down which promotes honking and aggressive driving behavior by those in the know.

The Manchester Complete Streets report already presents several actions to address these problems. For one, it adds a stop sign to Washington Street. It also proposes relocating the stop bars for North Street, Norwood Avenue, and Washington Street so that drivers have greater visibility. Last, it proposes extending the curb between North Street and Norwood Avenue with pavement markings and extending the central median so as to narrow the slip lane between Washington Street and Norwood Avenue. All of these steps would make this intersection safer. WalkBoston supports these recommendations found in the Manchester Complete Streets report.

In the short term, residents and town officials expressed interest in projects that used tactical urbanism. To this end, there are several examples from

The wide 4-way intersection where Norwood Avenue, Washington Street, Union Street, and North Street come together is one of Manchester's proposed Complete Streets projects (See 'B'). Photo by Ayesha Mehrotra.

Community members in Somerville paint the Dimick Street intersection. Photo via Somerville Neighborways.

An eye-catching curb bulb painted near a school in Seattle. Photo via Seattle Department of Transportation.

Youth in Bridgeport, CT paint colorful curb bulbs to slow drivers along walking routes to school. Photos via Street Plans.

other communities that can be instructive.

In Somerville, residents living around the wide, atypically shaped Dimick St intersection partnered with Neighborways to slow traffic at the intersection. After collectively strategizing on a design, they held a neighborhood block party where residents, including children, painted a street mural that fills the space and encourages drivers to slow down as they drive through the mural. Similarly, teens in Bridgeport, Connecticut worked with Make the Road Connecticut to paint decorative curb extensions on wide intersections along walking routes to school.

In Seattle, recognizing the need for greater pedestrian safety at a wide intersection by Hazel Wolf School, the City narrowed the intersection by painting colorful curb bulbs onto the street. This low-cost installation reduced crossing times and encouraged drivers to turn more slowly. As Manchester plans more permanent solutions for this intersection, community-involved projects are an effective and engaging way to guide traffic and bring attention to pedestrians.

Short-term Recommendations

- Undertake a tactical urbanism project to expand the median and extend the curbs, informally and impermanently narrowing the driving lanes.

Long-term Recommendations

- Implement plans from the Complete Streets proposal for this intersection.

4. Improve pedestrian visibility at the Union Street - Beach Street intersection.

The Union Street - Beach Street intersection is another Complete Streets project. It is in the village center, and surrounded by retail. The intersection is characterized by wide turning radii and parking that continues right up to the intersection. There is no stop sign for drivers heading east on Union Street or drivers coming from Beach Street onto Union Street; the only stop sign is on the eastern side of Union Street.

The Complete Streets concept plan included adding pedestrian refuge medians to Beach Street and the western, two-way section of Union Street. The curb line will be extended on the eastern corner of the intersection, and yield marks will be added ahead of all crosswalks. Last, pavement markings will be added to deter parking within 20 feet of the intersection.

Some store owners and residents resisted proposals for this intersection, especially the use of curb extensions to prevent parking up against the intersection and make pedestrians more visible as they tried to cross. They worried that curb extensions would look too urban for the village center, and that preventing parking along parts of the intersection would hurt businesses located at the intersection.

In the final designs advanced by the Town, the pedestrian refuge median and curb extensions were omitted in favor of relocating crosswalks to areas where the street is more narrow and adjusting the geometry of the curbs. The design preserves parking spaces while making the intersection safer.

While WalkBoston supports the importance of making changes to improve pedestrian safety through public process, we firmly believe that curb extensions are crucial for pedestrian safety. Therefore, we support the Complete Streets design approach and encourage continued monitoring of the intersection to determine whether curb extensions should be added in the future.

Further, there is a large body of research to support the idea that improved walkability benefits retail. More walkable neighborhoods are better for business; people who walk through commercial areas tend to spend more per capita at local businesses, visit more businesses, stay longer and visit the area more often. Walkability also means healthier living, which results in cost savings for employers and government.

Short-term Recommendations

- Construct intersection improvements as advanced in local public process.

Long-term Recommendations

- Continue monitoring this intersection to determine whether curb extensions are necessary.

At the intersection of Union Street and Beach Street, cars are typically parked up to the intersection. The Town's Complete Streets proposal for this intersection seeks to make crossing safer for pedestrians. Photo by Stacey Beuttell.

On School Street, a car is parked on the sidewalk and an in-street pedestrian sign is moved off the roadway. Photos by Ayesha Mehrotra.

5. Implement strategies to reduce traffic speeds on School Street. Enforce maximum lane widths of 10 feet on School Street.

School Street is a wide, two-way road within the posted 20 mph safety zone drawn around the railroad station. Despite the safety zone, anecdotal data and observed speeds during the walk audit indicate that drivers are often not driving near the 20 mph limit. The topography and width of the street promote higher speeds particularly when driving towards the village center (southbound traffic). The sidewalks along School Street vary in location – sometimes up against the curb, sometimes separated with a grassy verge with trees, and along some stretches there is no sidewalk on one side of the street.

Currently, the road width along School Street is roughly 30 feet, with one travel lane in each direction. Parking is allowed on one side of the street and the centerline was adjusted to provide a wider area for a parking lane and travel lane on the west side for southbound traffic. During the walk audit, this section of School Street had just been paved and most pavement markings had not yet been installed. The Department of Public Works was exploring the possibility of including a bike lane on the west side of School Street depending on the width of the right-of-way. Certain municipal bylaws require parking along certain stretches of School Street and need to be further examined before determining if a bike lane is feasible.

WalkBoston recommends a maximum lane width of 10 feet, as 10-foot wide lanes encourage drivers to slow down. We also support the installation of a bike lane, where feasible. If a bike lane is not included, we recommend a fog line (or edge line) be painted to limit each travel lane to 10 feet.

Short-term Recommendations

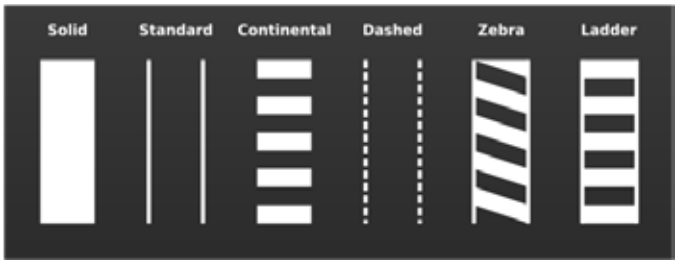
- Explore possible alternative uses for the excess road width along School Street.
- Install a bike lane or paint a parking lane along one side of the street, if feasible.
- Paint fog lines to limit lane widths to 10 feet in the absence of a bike lane.

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

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.

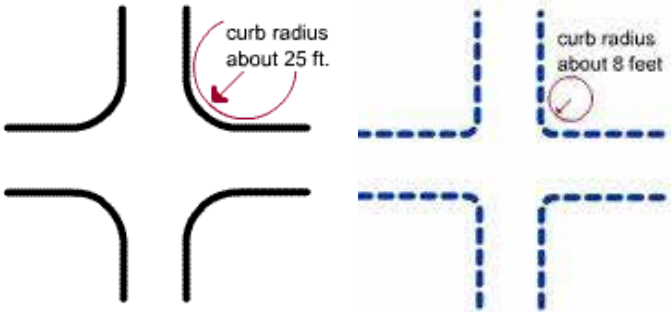
Curb Ramp and Detectable Warning Strip

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

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.

(A) Gravel-filled curb extension

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

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

Fog Line

A fog line is a solid white line painted along the roadside curb that defines the travel lane. It narrows a driver's perspective and helps to slow traffic speeds. Fog lines are used in urban, suburban and rural locations.

Fog lines delineate the vehicular driving zone on wide roadways.