



Drum Hill Walk Audit Lowell & Chelmsford, MA

July 19, 2019

MAKING MASSACHUSETTS MORE WALKABLE

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Background

On Friday, July 19, 2019, WalkBoston conducted a walk audit starting at the Greater Health Alliance office on Technology Drive in Lowell, MA and continued down Drum Hill Road/Westford Street to the intersection at the entrance of the Walmart retail plaza in Chelmsford, MA. This walk audit was completed through the Massachusetts Department of Public Health's Mass in Motion program, which provides grant funding and technical assistance to help communities eat better and be more active.

Drum Hill Road/Westford Street is a minor arterial connecting the town of Chelmsford and the city of Lowell. At the Chelmsford and Lowell line, the roadway changes names from Drum Hill Road to Westford Street. We refer to this roadway as Drum Hill Road/Westford Street in this report. Drum Hill Road/Westford Street carries heavy traffic and has a dense retail corridor with restaurants, grocers, and shops.

Despite the close proximity of many residences and businesses to these amenities, individuals must use their vehicles to access them due to unsafe walking conditions. Individuals who reside in apartment complexes along Carl Street and walk as a primary means of transportation often cross Drum Hill Road/Westford Street to commute to their jobs along this corridor.

Technology Drive has many business and service employers. The difficult walking conditions along Technology Drive and at the Drum Hill Road/Westford Street intersection have led to poor pedestrian utilization of this road despite the proximity of office spaces to restaurants and other retail. Groups that utilize Technology Drive for lunchtime running and walking have concerns about pedestrian visibility, high vehicular traffic speeds, and inadequate crosswalks.



Walk audit participants included community members and municipal staff from multiple sectors including health, law enforcement, and city planning.

Walk Audit Route

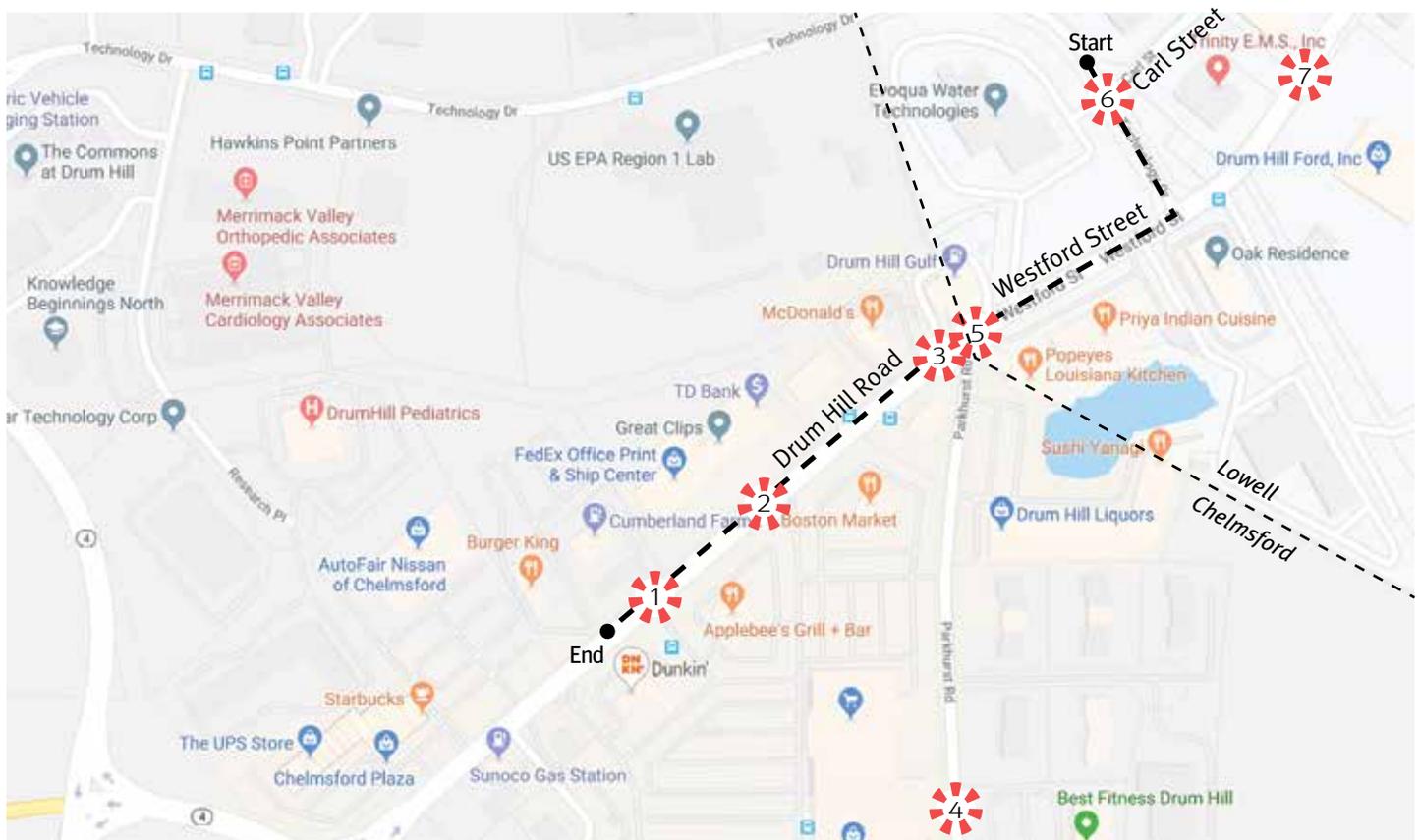
WalkBoston conducted a walk audit along Technology Drive to the intersection of Drum Hill Road/Westford Street and along Drum Hill Road/Westford Street to the crosswalk at Walmart Plaza.

This walk audit highlighted the need for improved pedestrian safety and comfort along Technology Drive and Drum Hill Road/Westford Street. As one

walk audit participant stated, “I knew it was bad, but to be taught why it’s bad made me realize it’s worse.” To get a more complete understanding of the pedestrian safety issues along this stretch of roadway, WalkBoston analyzed crash data from the MassDOT crash portal (IMPACT). Since 2014, there have been 7 pedestrian-involved crashes on this section of Drum Hill Road/Westford Street.

MassDOT Data on Pedestrian-Involved Collisions Along the Walk Audit Route

	Town	Street	Date	Time
1	Chelmsford	Drum Hill Road	4/28/2016	1:25pm
2	Chelmsford	Drum Hill Road	2/14/2014	6:13pm
3	Chelmsford	Drum Hill Road	2/10/2019	3:00pm
4	Chelmsford	Parkhurst Road	8/10/2015	11:41am
5	Lowell	Westford Street	12/17/2015	8:33pm
6	Lowell	Technology Drive/Carl Street	9/21/2017	7:47pm
7	Lowell	Westford Street	12/19/2017	5:26pm



Map of the walk audit route (pedestrian-involved collisions marked in red)

Key Recommendations

1. Improve the sidewalk network on the north and south sides of Drum Hill Road/Westford Street.
2. Install crosswalks along Drum Hill Road/Westford Street to improve pedestrian safety and retail accessibility.
3. Improve the intersections of Drum Hill Road/ Westford Street – Technology Drive and Drum Hill Road/Westford Street – Parkhurst Road.
4. Improve pedestrian safety and visibility on Technology Drive.

Walk Audit Participants

The walk was well-attended with representatives from several City of Lowell departments, and members of the Greater Lowell Health Alliance Healthy Eating and Active Living Task Force.

Christine Clancy	City of Lowell Engineering Department
Kerrie D’Entremont	Greater Lowell Health Alliance
Kate Elkins	Lowell Health Department
Marilyn Graham	Lowell Health Department
Chris Hayes	City of Lowell Department of Planning and Development
Heather Hilbert	Lowell General Hospital
Andy Hostetter	UMass Lowell/Lower Highland Neighborhood Group
Jon Kelley	Trinity EMS
Karen Leonard	Cultivating Vitality Nutrition Coaching
Amy Pessia	MV Food Bank
Deb Sevigny	Hunger/Homeless Commission
Kerry Sorrentino	Chelmsford Board of Health
John Spinney	Lowell Police Department - Traffic Division
Molyka Tieng	Lowell Police Department
Stacey Beuttell	WalkBoston
LeighAnne Taylor	WalkBoston
Ayesha Mehrotra	WalkBoston



The sidewalk network on Drum Hill Road/Westford Street is not paved in sections and lacks a verge.



On Drum Hill Road/Westford Street, the sidewalk is frequently interrupted at property boundaries.



Pedestrians have to navigate cables, rubble, and vegetation along Drum Hill Road/Westford Street at a property line.

Street Characteristics and Recommendations

Technology Drive

Technology Drive is a relatively wide connector road that provides access to several office buildings, medical buildings, and residential properties. Sidewalks line both sides of the street, although there are sections where there is only a sidewalk on one side. Vehicles travel at high speeds along Technology Drive, which is particularly problematic at the two pedestrian crossings. A raised crossing in front of the USEPA Region 1 Lab helps to reduce driver speeds, however, the crossing in front of 55 Technology Drive is not raised and is located on a curve which limits pedestrian visibility. Furthermore, the crosswalk is faded and has no pedestrian crossing signage.

Short-term recommendations:

- Add an in-street pedestrian signage at 55 Technology Drive.
- Add pedestrian crosswalk signage that complies with the current Manual on Uniform Traffic Control Devices (MUTCD) standards.
- Narrow travel lanes by painting fog lines to designate 10-foot wide lanes, instead of 12 feet, which will help to reduce vehicle speeds.

Long-term recommendations:

- Install raised crossing at 55 Technology Drive to help reduce traffic speeds.



Sidewalks along Technology Drive are generally in good condition, but some maintenance is required.



Walk audit participants discussed the need for a raised crosswalk with enhanced pavement markings across from 55 Technology Drive to help reduce traffic speeds.

Intersection of Technology Drive and Drum Hill Road/Westford Street

The intersection of Technology Drive and Drum Hill Road/Westford Street is wide with long, sweeping curb radii on both corners of the intersection. The sidewalk at this intersection dissolves along the west side, making it difficult for those with mobility challenges to use the sidewalk. A high stone wall demarcating the entrance to Technology Park blocks pedestrian visibility and leads to cars blocking the crosswalk on Technology Drive as they wait to turn.

Since there is no left turn lane into Technology Drive from Westford Street or a traffic signal at this intersection, drivers utilize the asphalt sidewalk as a passing lane on the south side of Drum Hill Road/Westford Street. There is a relatively long, poorly visible crosswalk in need of new paint across Technology Drive, but there is no pedestrian crossing across Drum Hill Road/Westford Street to reach south side restaurants and businesses.

There is an apartment complex across from this intersection, at which there is a public school bus stop. Buses park diagonally across oncoming lanes of traffic to board students. This seems like an unusual practice and none of the walk audit participants knew why this was the established practice.



The sidewalk at the intersection of Technology Drive and Drum Hill Road/Westford Street is discontinuous.

Short-term recommendations:

- Repaint the crosswalk and stop line on Technology Drive.
- Study the impact of adding a traffic signal at this intersection given the concerns about driver and pedestrian safety.
- Consider shortening or removing the stone wall framing the entrance to Technology Drive to improve both pedestrian and vehicle visibility.
- Repair the west side of the sidewalk at the Technology Drive intersection to improve accessibility for all users.

Long-term recommendations:

- Tighten the curb radii and add curb extensions to slow the speeds of turning vehicles, improve pedestrian visibility, and shorten the crossing distance for people walking.
- If a traffic signal is put in place, install pedestrian signals, curb ramps and crosswalks at all approaches.



A car inches towards the faded stop line and crosswalk to see past the stone wall on the corner of Technology Drive.

Drum Hill Road/Westford Street

Drum Hill Road/Westford Street has an incomplete sidewalk network and no verge to safely separate pedestrians from vehicle traffic. The sidewalk is narrow and unpaved in sections along the north side of the street and severely fragmented, full of gravel, or non-existent on the south side of the street. According to city staff, the sidewalk fragmentation may be due to development projects that provide sidewalks only within their site project boundaries, which is allowed under current development guidelines. Participants experienced the breaks in the sidewalk most often at driveways and property boundaries.

There are few crosswalks along Drum Hill Road/Westford Street, forcing pedestrians to cross unsafely mid-block or walk a long distance to utilize a crosswalk. A person walking from Technology Drive would have to walk over a $\frac{1}{4}$ mile (approx. 1,400 feet) along the north sidewalk to access a crosswalk, and then backtrack to reach the restaurants and businesses on the south side of the street. This means that someone working in an office on Technology Drive would have to walk close to a mile to buy lunch at a restaurant just across the street (approx. 260' away).

Short-term recommendations:

- Repair the WALK sign and WALK countdown pedestrian signal at the crosswalk in front of the Walmart retail plaza entrance.
- Update pedestrian signage to the current MUTCD (Manual on Uniform Traffic Control Devices) standards, where needed. Existing signage is dated.
- Install uninterrupted sidewalks on both sides of Westford Street/Drum Hill Road. If the city-owned right-of-way allows, widen sidewalk to at least 5', allow for a verge to separate the sidewalk from the curb-line, and consider planting trees along the street.

Long-term recommendations:

- Review site plan requirements for development projects to ensure that property owners are held responsible not only for building and maintaining sidewalks in front their lot, but also for creating and maintaining sidewalk connections to abutting properties.



People walking along Drum Hill Road/Westford Street must abut loud and fast vehicular traffic without any verge or buffer.



On Drum Hill Road/Westford Street, there are occasional verges around some businesses' driveways.



The intersection at the entrance to the Walmart retail plaza is a high traffic area with only one crosswalk on the west side of the intersection.



The sidewalk along Drumhill Road/Westford Street is interrupted by vegetation, rubble and other barriers for walkers.

Intersection at Parkhurst Road and Drum Hill Road/Westford Street

The intersection of Parkhurst Road and Drum Hill Road/Westford Street is a wide expanse of pavement with no pedestrian signal or crosswalks. There are few traffic signals along this corridor that provide a protected crossing phase for people walking. Given the fact that a traffic signal is already in place at this intersection, adding pedestrian signals would provide at least one safer option to cross the street.

The southwestern corner has an incredibly wide curb radius which facilitates fast right-turning traffic from Drum Hill Road to Parkhurst Road. The asymmetric configuration of this intersection and the fast-moving vehicle traffic make this section of Drum Hill Road/Westford Street particularly unsafe for pedestrians. In August 2015, a pedestrian was injured upon being struck by a driver at this intersection.



Drumhill Road/Westford Street intersects with Parkhurst Road and changes name at the town border between Lowell and Chelmsford.

Short term recommendations:

- Add a crosswalk at the western Gulf Gas Station driveway to raise awareness of people walking across this signalized driveway.
- Trim vegetation blocking pedestrian signage.

Long term recommendations:

- Redesign the intersection to reduce the amount of pavement and improve pedestrian safety. Two recommendations to consider include:
 - » Realign Parkhurst Road so that it meets Drum Hill Road at a 90-degree angle; install pedestrian signals and crosswalks.
 - » Remove signalization of the Gulf Station driveway; forbid left turns out of Gulf Station driveways; tighten southwestern curb radius to minimize pavement and narrow intersection; relocate traffic signal to spot in between Gulf Station driveways; install pedestrian signals and crosswalks.

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

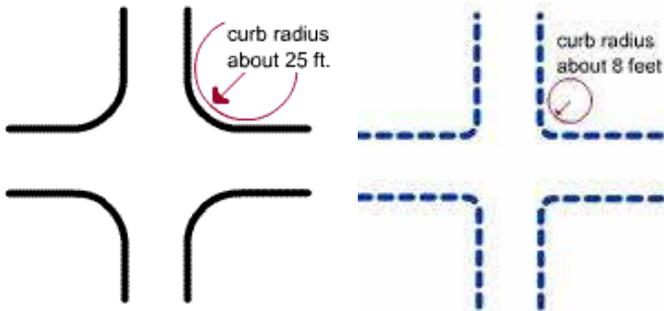
Curb ramps provide access from the sidewalk to the street for people using wheel chairs and strollers. They are most commonly found at intersections. While curb ramps have improved access for wheelchair-bound people, they are problematic for visually impaired people who use the curb as an indication 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.