



**Route 28 Walk Audit
Yarmouth, MA**

June 28, 2018

*Sponsored by the Massachusetts Executive Office of Public Safety and Security
Planning Initiative for High-Fatality Communities*

On Thursday, June 28, 2018, WalkBoston conducted a walk audit along Route 28 as part of the Executive Office of Public Safety and Security's (EOPSS) Pedestrian Safety Planning Initiative for High-Fatality Communities. The EOPSS Pedestrian Safety Planning Initiative builds municipal staff understanding and awareness of the components of a safe walking environment. WalkBoston is working in partnership with EOPSS to address walking safety concerns in Massachusetts communities with high pedestrian crash rates, with the goal of reducing pedestrian fatalities and serious injuries in the Commonwealth.¹

In Yarmouth, WalkBoston met with representatives from the Department of Public Works, Community Development, and the Police Department prior to the walk audit to identify an area in need of pedestrian infrastructure improvements. The town staff chose Route 28 between Higgins Crowell (western boundary) and Neptune Lane (eastern boundary) for the walk audit study area. A list of walk audit participants can be found in Appendix B.

The weather conditions during the walk audit were challenging with heavy rain showers and minor flooding. These conditions provided the opportunity to see the difficulties walkers face in the rain which include pooling of water along curbs and at curb ramp locations, splash zones where water ponds on the travelway and moving vehicles splash it into the sidewalk zone, and lack of shelter from trees, awnings or bus shelters along the walking route.



Ponding at curb ramps impede access.

¹ See the EOPSS factsheet in Appendix A for more information.

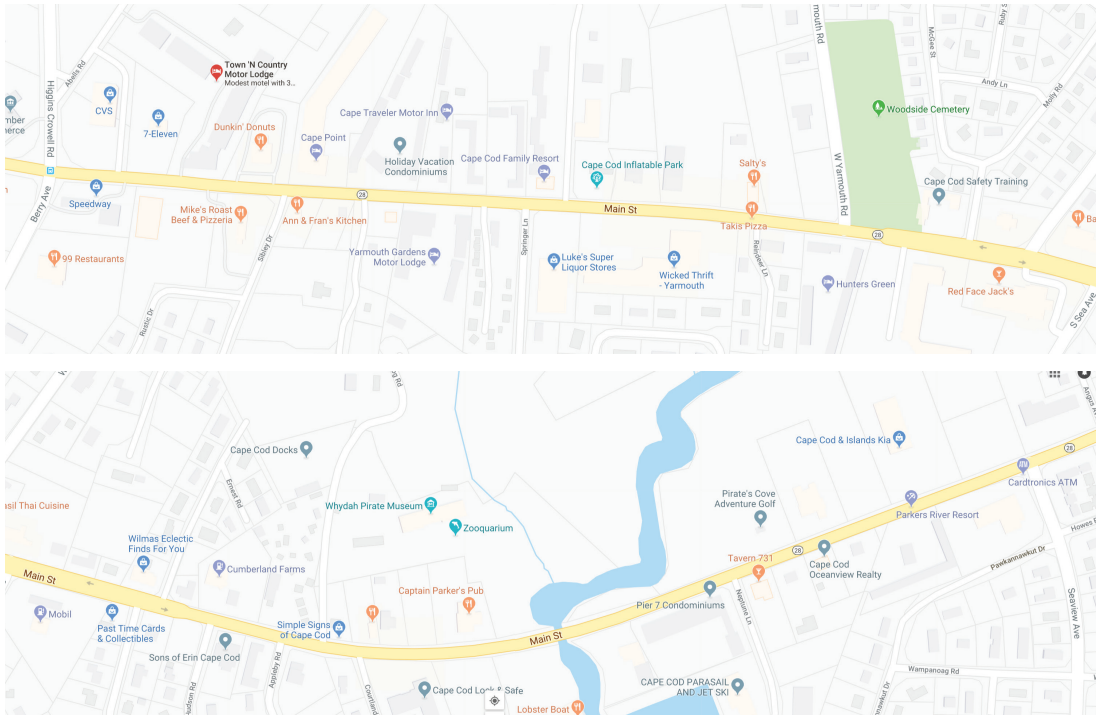
Key Recommendations:

1. Upgrade sidewalks and curb ramps for the entire length of Route 28 along the walk audit route. Improvements will vary depending on the specific location, however the resulting sidewalk should be smooth, wider (5' to 8' depending on pedestrian volumes and right-of-way constraints), and include code compliant curb ramps and detectable warning panels.
2. Install crosswalk pavement markings along all approaches at signalized intersections and consider painting crosswalks at un-signalized intersections. Evaluate the Route 28 corridor and determine locations of additional mid-block crosswalks to safely link destinations across Route 28.
3. Adjust signal phasing and timing at signalized intersections to better serve the needs of people walking along Route 28.
4. Narrow travel lanes with painted edge (fog) lines along Route 28 or adjustment of curb lines (long-term) to add bike lanes.
5. Limit the number of new driveways permitted along Route 28 and minimize the width of existing driveways where possible.
6. Add streetscape elements such as trees and benches to encourage more people to walk along the corridor. Identify areas to focus density and create centers of activity.

Walk Audit Route

Route 28 (Main Street) stretches east to west across Yarmouth. Many restaurants, hotels, tourist destinations – like miniature golf, an inflatable water park, and other retail businesses line the edges of Route 28. Most establishments have their own parking lots and driveways, which increases the number of vehicular turning movements as drivers enter and exit the businesses. Most visitors and residents alike would not consider Route 28 a walkable street mainly due to the high traffic volumes, narrow sidewalks, and limited number of marked crosswalks.

The Town Planning Department is interested in establishing town center-like development patterns along Route 28 in the long term. Yarmouth does not currently have an area that residents or visitors would identify as a town center. The Town is moving forward with the development of a boardwalk, public park and event space at the former drive-in site along the Parkers River that could help to establish a recognizable civic destination along Route 28.



Main Street (RT 28) Walk Assessment - Higgins Crowell Rd to Neptune Lane
June 28, 2018



Walk audit route

Pedestrian Crash Data

The town of Yarmouth experiences a relatively high rate of pedestrian injuries and fatalities when compared to the other cities and towns in the Commonwealth. According to MassDOT data between the years of 2012 to 2015, 3 people died while walking, while 30 people were injured in traffic crashes. Close to 40% of the injury crashes and 1 of the 3 fatalities occurred on Route 28.

Discussion of Observations and Recommendations

1. Upgrade sidewalks and curb ramps for the entire length of Route 28 along the walk audit route. Improvements will vary depending on the specific location, however the resulting sidewalk should be smooth, wide (5' to 8' depending on pedestrian volumes and right-of-way constraints), and include code compliant curb ramps and detectable warning panels.

The sidewalks along Route 28 vary in width, quality and material in the study area. Sidewalks run along both sides of the walking route except on the north side of Route 28 from the Higgins Crowell intersection to the CVS driveway (approx. 76'). In general, the sidewalks average 4 to 5 feet wide and are directly adjacent to the travel way with little or no separation from the curb. Sidewalks were made of either asphalt or concrete. Concrete tends to be associated with more recent development or property renovation. Some sections of the sidewalk have obstacles

including uneven pavement, tree roots, and trees narrowing the already minimal sidewalk width.



Trees and utility boxes limit sidewalk width.

Curb ramps are not accessible (don't meet ADA requirements), if in place at all. They are missing at the signalized intersections along the walking route, such as at Route 28/South Sea Ave and Route 28/Winslow Gray Road, as well as many of the cross streets. MassDOT recently repaved and repainted a section of Main Street (Route 28) without bringing the curb ramps up to code. While this may be technically allowable, it is not a best practice. Rain was collecting in front of many of the ramps, which would force someone in a wheelchair to traverse deep puddles or stay in the roadway. Detectable warning strips were missing throughout the corridor.



Example of a typical curb condition along Route 28.

Short-term recommendations:

- Build a sidewalk from the Higgins Crowell intersection to CVS complete with compliant curb ramps and detectable warning panels.
- Replace heaving concrete panels and patch uneven or cracked asphalt to improve sidewalk surface smoothness.

Long-term recommendations:

- Widen sidewalks based on analysis of expected number of pedestrians using the corridor. Minimum of 5 feet wide with a maximum of 10 feet wide in high pedestrian traffic zones.
- Separate the sidewalk from the curb-line where possible given right of way limitations to provide a safer, more enjoyable walking experience along Route 28. May require narrowing of travel lanes to provide more space for people walking.
- Install code compliant curb ramps with detectable warning strips at all driveways and road intersections. Ensure rainwater drains away from curb ramp entrances to eliminate ponding.

2. Install crosswalk markings along all approaches at signalized intersections and consider painting crosswalks at un-signalized intersections. Evaluate the Route 28 corridor and determine locations of additional mid-block crosswalks to safely link destinations across Route 28.

Crossing Route 28 on foot is challenging. Within the study area (which is 1.1 miles long), there were only 2 signalized intersections. Both were equipped with pedestrian signal heads, but crosswalks were missing across some approaches in both locations. At the Higgins Crowell/Route 28 intersection, the crosswalks are missing across the north side of Higgins Crowell and the east side of Route 28. This is most likely due to the incomplete sidewalk network in this area. The Winslow Gray Rd and South Sea Ave signals seem to be designed as one intersection despite the fact that the roads are offset with crosswalks approximately 325' away from each other. While this design may be acceptable for vehicular travel, it reduces the number of opportunities people have to cross and may promote risky pedestrian behavior.



No crosswalk across Route 28 at the Higgins Crowell intersection.

Crosswalks are not painted across the town-owned streets that intersect Route 28. Although more crosswalks require more maintenance, their presence would show a commitment to the safety of people walking. Yarmouth does not control the right-of-way at these intersections and, therefore, it does not have jurisdiction or funding to paint additional crosswalks. The town could extend sidewalks from the intersections down the street and install curb ramps and crosswalks, but at their expense and dependent on MassDOT approval.



Crosswalks are not painted across town-owned streets that intersect Route 28.

The lack of mid-block crossings on Route 28 promotes the dangerous practice of crossing between gaps in traffic. There is one mid-block crosswalk located in front of the Inflatable Water Park. It is left over from a previous development pattern that facilitated crossing to a Dunkin Donuts. The Inflatable Water Park asked to move the crosswalk to its entrance, but was denied due to a permit infraction. Property ownership and destinations will change over time. A regular pattern of mid-block crossings, complete with appropriate signage based on both destinations and distance, would provide safer crossings at more regular intervals across Route 28.



Mid-block crossing in a location that no longer connects destinations.

MassDOT encourages communities to install mid-block crossings in the *Municipal Resource Guide for Walkability* published in September 2017 (page 16). For guidance on crosswalk placement and treatment, MassDOT recommends consulting *Enhanced Crossing Treatments in FHWA's Achieving Multimodal Networks*.²

Short-term recommendations:

- Install crosswalk markings and appropriate ramps at all approaches at signalized intersections.
- Consider painting crosswalks at un-signalized intersections, particularly those that have (or could have based on destinations) high volumes of pedestrians crossing.

Long-term recommendations:

- Evaluate the Route 28 corridor and determine locations of additional mid-block crosswalks to safely link destinations across Route 28. Establish a rhythm of marked crossings that provide safer access and increase driver awareness of people wanting to cross the road.
- Consider installing Rapid Rectangular Flashing Beacons (RRFBs) at key mid-block crossings along Route 28 to maximize visibility of pedestrians.

3. Adjust signal phasing and timing at signalized intersections to better serve the needs of people walking along Route 28.

All three signalized intersections in the study area have an exclusive pedestrian phase, which stops traffic on all approaches so that pedestrians may cross in either direction. The pedestrian signals are push button-activated and do not display a countdown during the WALK phase. Exclusive signals have longer wait times for all users. Walk signal compliance rates tend to be lower because people don't want to wait and decide to cross during a gap in traffic. Depending on turning traffic volumes and whether right turns are allowed on red lights, switching to concurrent signals may be an option which would shorten signal phases for all users.

Short-term recommendations:

- Consider concurrent timing if No Right Turn on Red is posted, right-turn movements are limited (where conflicting turning vehicles are less than 250 vehicles per hour), and a leading pedestrian interval is added. Concurrent phasing should also have proper signage, such as TURNING VEHICLES YIELD TO PEDESTRIANS and WATCH FOR TURNING VEHICLES signs.
- Ensure WALK time is sufficient to cross and that pedestrian wait times are minimized. Shorter signal phases will improve pedestrian compliance rates with WALK signals.

Long-term recommendations:

- Replace pedestrian traffic signals with accessible pedestrian countdown signals.

4. Narrow travel lanes with painted edge (fog) lines along Route 28 or adjustment of curb lines (long-term) to add bike lanes.

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https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/6_enhanced_crossing_treatments.pdf.

The travel lanes are wide along Route 28 (approximately 28' wide from curb-to-curb). Fog (or edge) lines are painted up against the curb or within a foot of the curb throughout the corridor. Pavement markings indicate a passing lane along some portions of the stretch (dashed yellow centerline). Consistent fog lines could be used to narrow travel lanes to 10 or 11 feet without moving curbs and drainage.



Examples of different fog line treatments.

Short-term recommendations:

- Repaint dashed yellow centerline with double yellow lines assuming passing is not allowed in this zone.
- Paint consistent fog lines to delineate narrower travel lanes (between 10 to 11 feet).

Long-term recommendations:

- Evaluate width right of way to determine if bike lanes can be added to further narrow the travel way and encourage cyclists to use the roadway rather than the sidewalks.

5. Limit the number of new driveways permitted along Route 28 and minimize the width of existing driveways where possible.

Route 28 developed as a strip with retail shops, restaurants, hotels and other businesses on both sides of the road. Each has its own driveway and surface parking lot usually in front of the building. Some driveways have significant cross-slopes, which make them uncomfortable to walk across. This pattern is not pedestrian-friendly as driveways constantly interrupt the sidewalk and pedestrian access to businesses is typically through parking lot.

While it is difficult to change the development pattern that is in place, the town does require new and redevelopment projects of a certain size to build in a more walker-friendly way. Efforts should continue to be made to limit additional curb cuts and to narrow those that currently exist. Cross-slopes should be less than 2% to provide a flat surface for people walking while

maintaining sufficient slope for adequate drainage. Encouraging parking behind buildings and shared access driveways will help to minimize conflicts between people walking and people driving in the study area. Current zoning limits driveway widths to 24' for new development and requires minimum driveway separations or common driveways for projects with 20 or more parking spaces.

Short-term recommendations:

- Continue to encourage narrower or shared driveways and walker friendly front doors in permit process for new development and redevelopment of a certain size.

Long-term recommendations:

- Continue to strengthen town ordinances and development policies that minimize driveway curb cut frequency and parking requirements along Route 28.

6. Add streetscape elements such as trees and benches to encourage more people to walk along the corridor. Identify areas to focus density and create centers of activity.

Route 28 is not a road where people want to walk. People do walk between destinations, but usually out of necessity rather than choice. Given the traffic volumes, particularly in the summer months, every effort should be made to make Route 28 an enjoyable street to walk along. The strip development pattern that currently exists is not built for walkers. There are few trees, benches or bus shelters along the corridor. Street lighting is vehicular in scale and does not have a town main street character.

The town should prioritize those areas where an identifiable main street character is achievable with current land uses and invest there in the short-term. For example, town staff mentioned the proposed boardwalk and park project on the former drive-in movie site on the river. The proximity with the Pirate Museum and restaurants could make this area a town-wide destination. Walking paths and safe crossings on Route 28 would be critical to the success of such a project.

Short-term recommendations:

- Conduct regulatory review of current land use and site development policies to ensure that they encourage walkable community design.
- Establish crosswalk, bench, and tree planting (etc.) standards that support walkers.

Long-term recommendations:

- Revise town policies, ordinances or codes identified in the regulatory review to encourage walkable community design.



Appendix A.

Executive Office of Public Safety and Security (EOPSS) Pedestrian Safety Planning Initiative for High-Fatality Communities

The EOPSS Pedestrian Safety Planning Initiative builds municipal staff understanding and awareness of the components of a safe built environment for pedestrians. WalkBoston is working in partnership with EOPSS to address walking safety concerns in Massachusetts communities with high pedestrian crash rates, with the goal of reducing pedestrian fatalities and serious injuries in the Commonwealth. WalkBoston is a pedestrian advocacy organization that works to make walking safer and easier in Massachusetts to encourage better health, a cleaner environment and more vibrant communities.

Cities and towns participating in the Pedestrian Safety Planning Initiative have used the results to prioritize pedestrian improvements, negotiate infrastructure fixes into development approvals, and apply for funding sources, such as from the Complete Streets Funding Program.

As part of the Initiative, WalkBoston will conduct a walk audit focused on high pedestrian crash locations in **Yarmouth**. A walk audit provides on-street, tangible learning opportunities for diverse groups of municipal staff, including police, as well as residents and other community-based groups. During the audit, we will assess pedestrian infrastructure conditions and recommend built environment improvements that promote safety. Walk audits are also an effective means to build local constituencies for pedestrian safety efforts that include increased education and awareness opportunities for all road users, and greater attention to safety in local roadway design and maintenance efforts.

Participation in this EOPSS/WalkBoston Initiative has increased the awareness and readiness of municipal staff to adopt and implement complete streets policies and designs that will reduce fatal and injury crashes for all road users (including pedestrians, motorists and bicyclists) as called for under MassDOT's Complete Streets Funding Program.

To capture the ideas discussed during the walk audit, WalkBoston will provide a written report that includes short- and long-term recommendations for improving pedestrian safety. The report can be shared with the public and elected officials to strengthen local safety efforts.

Proposed Schedule:

1. Hold preliminary meeting with municipal staff, police, regional planning agency staff, and local residents and community groups to determine audit area
2. Conduct site visit to gather baseline information about pedestrian conditions
3. Schedule and conduct the walk audit
4. Prepare walk audit report detailing existing conditions and recommendations for improved pedestrian infrastructure

Appendix B. Walk Audit Participants

Kathi Bailey

Yarmouth Age Friendly Community Team

Gerry Bedard	Yarmouth Age Friendly Community Team
Jane Cain	Yarmouth Public Library
Jeff Colby	Yarmouth Department of Public Works
Jan Hively	Yarmouth Age Friendly Community Team
Lev Malakhoff	Cape Cod Commission
Kathy Williams	Yarmouth Town Planner
Stacey Beuttell	WalkBoston
Brendan Kearney	WalkBoston