walkBoston®

Walk Assessment
New Bedford, MA

October 29, 2014

Massachusetts Department of Transportation
Bicycle and Pedestrian Safety Program

in partnership with Massachusetts Department of Public Health

MAKING MASSACHUSETTS MORE WALKABLE
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Report Scope and Purpose

WalkBoston conducted this walk assessment as part of the Massachusetts Department of Transportation Bicycle and Pedestrian Safety Program, in association with the Massachusetts Department of Public Health. WalkBoston is a pedestrian advocacy organization whose mission is to make walking safer and easier in Massachusetts to encourage better health, a cleaner environment and vibrant communities. The purpose of the walk assessment is to develop knowledge and awareness of the pedestrian environment at the state and municipal level.

This walk assessment report summarizes the observations made along the walk route and makes recommendations for improvements to the built environment. The observations vary from specific infrastructure deficits (e.g., faded crosswalk, uneven sidewalk) to general comments on traffic speeds or land use patterns (e.g., vacant storefronts). Likewise, the recommendations range from individual fixes (e.g., paint the crosswalk) to suggestions for further study (e.g., evaluate the feasibility of installing raised crosswalks). The assessment is not meant to be a complete inventory of infrastructure deficiencies, nor is it meant to provide specific designs for improvement.

WalkBoston leads these assessments as a means to build local capacity for improving the built environment for walking and not as a complete inventory of walking conditions. WalkBoston staff members are not licensed design or engineering professionals. This report may be used as a resource for municipal staff and for design professionals who may be engaged by municipalities to program and design infrastructure improvements.

New Bedford Walk Assessment

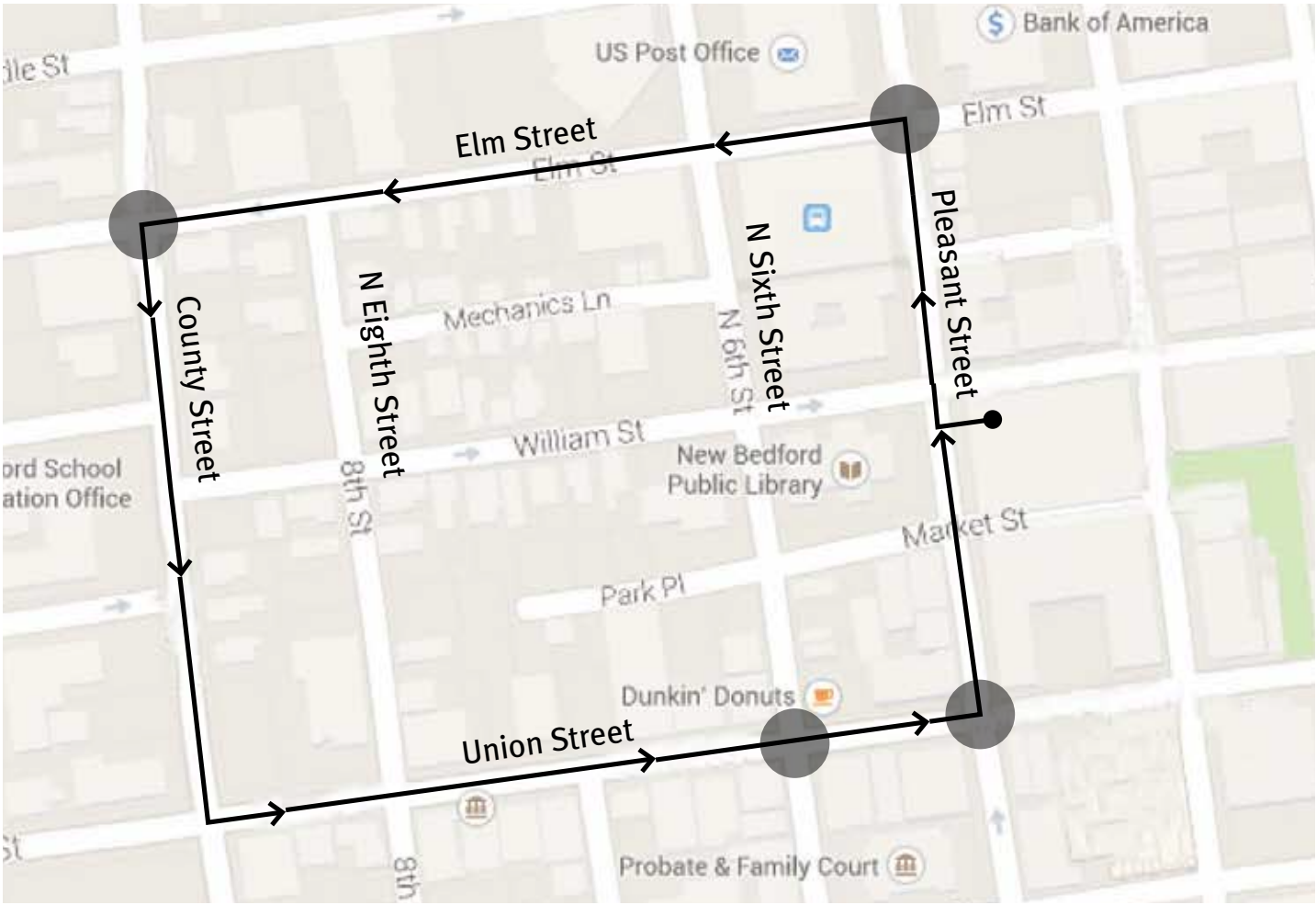
The City of New Bedford is one of twelve communities participating in the Massachusetts' Department of Transportation's Highway Safety Improvement Program. After evaluating clusters in the City's crash data, the City identified high-priority intersections that are particularly dangerous for pedestrians. Four such intersections were included in the assessment area. In order to help scope out potential remedies to make these intersections safer, WalkBoston conducted a walk assessment in a portion of New Bedford's central commercial district on October 29, 2014. The walk assessment was conducted from 1:00 pm to 3:00 pm, and was followed by a discussion and debrief with the walk audit participants.

A map of the walk audit route is available below. The intersections identified as enforcement locations were monitored by New Bedford police as part of the bicycle/pedestrian safety enforcement and awareness program.

Study Area

The central business district of New Bedford is immediately adjacent to the busy fishing port that both historically and presently provides much of the city's identity. A portion of the downtown area that was related to the history of its port has been designated a national historic district under the guidance of the National Park Service to preserve and protect its historic buildings. The University of Massachusetts College of Visual and Performing Arts occupies a large building which also contains small offices, restaurants and shops on the main thoroughfare, Union Street. The area also hosts the historic public library and a significant grouping of municipal buildings, the post office and the regional bus station.

This report summarizes the characteristics of each intersection and street segment, lists the current infrastructure deficiencies, and proposes recommendations to address each issue.



Map of the walk assessment route in downtown New Bedford

Enforcement location

Pleasant Street between William Street and Elm Street

Street characteristics

- Street direction – northbound one-way street through the business district toward the "Octopus" – an 8-lane intersection at the edge of the business district connecting Pleasant Street, Foster Street, and North Sixth Street and the two one-way streets marked as the main route of U.S. Route 6 through the city) and with the Route 18 expressway.
- Street character –two-lane street with wide travel lanes and parking on both sides of the street, except along the bus garage. Traffic moves relatively fast.
- Abutting uses - City Hall on western corner of William and Pleasant Streets and adjacent to large bus terminal building; mixed business area on east side of Pleasant.
- Streetscape – sidewalks on west side is made of concrete bounded by brick strip along curb; sidewalk on the east is brick; large street trees and signs concentrated near City Hall. No other parts of the block has street trees.
- Traffic on street - relatively high vehicular traffic volumes compared to pedestrian volumes.
- Mid-block intersection at Mechanics Lane – two white parallel lines mark the crosswalk that crosses Pleasant Street.
- Pavement markings – painted parking spaces. No dashed lane line marking.

Current infrastructure deficiencies

- No dashed lane line is painted on the street, nor is there an edge line (fog line) to identify travel paths for vehicles and to help slow through traffic. The lack of markings suggest there is one lane of travel, however Pleasant Street often functions as two lanes.
- An unprotected mid-block crosswalk serves the bus station at the intersection of Pleasant Street and Mechanics Lane. Crosswalk has minimal pavement markings especially when compared with other red bituminous crosswalks in the study area.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.
- No pedestrian crossing signs or "yield to pedestrian" signs are located on Pleasant Street to forewarn drivers of pedestrians crossing the mid-block crosswalk.

Mid-block crossing near Mechanics Lane and Pleasant Street

Recommendations

- Paint a dashed white lane line down the middle of the two traffic lanes on Pleasant Street, and an edge (fog) lines along Pleasant Street to define and narrow travel lanes.
- Enhance existing crosswalk pavement markings at the Mechanics Lane mid-block pedestrian crossing with painted cross-strips in a "piano keys", ladder, zebra or continental design. Consider enhancing the existing crosswalk by installation of red bituminous that identifies other downtown crosswalks or by painting. Crosswalk is the starting line for the New Bedford Half Marathon and could be designed to highlight this use.
- Upgrade curb ramps to ADA standards, including detectable warning strips.
- Install pedestrian crossing signs and/or "yield to pedestrian" signs on the Pleasant Street approach to the Mechanics Lane crosswalk to indicate that pedestrians might be crossing.
- Consider traffic calming measures to slow traffic on Pleasant Street, such as curb bump-outs.

Intersection of Pleasant Street and Elm Street

Intersection characteristics

- Street directions – Pleasant Street is a two-lane, one-way north-south thoroughfare carrying traffic northbound; Elm Street is one way westbound to the west of Pleasant Street and is two-way to the east of Pleasant Street.
- Crosswalks - the intersection has red bituminous crosswalks on all approaches except the northern one that show very limited marks of vehicle/tire track wear, with low maintenance requirements.
- Curb ramps - all four corners have curb ramps.
- Traffic observed on both streets – high vehicular vehicle volumes on Pleasant Street, lower volumes on Elm Street, low pedestrian volumes.
- Pavement markings - parking lanes.

Current infrastructure deficiencies

- Missing red colored bituminous crosswalk on the north side of the intersection, curb ramps missing for a north side crossing of the intersection.
- The curb radius on the northeast corner of the intersection is very wide, encouraging fast-moving traffic and endangering pedestrians crossing the street.
- Wide pavement with no signage or street paint lines on the Pleasant Street approach to the intersection may suggest motorists can drive fast heading toward the "Octopus."
- A single sign indicates the one-way status of Pleasant Street. No signs show that Elm Street is one-way to the west of the intersection and two-way to the east.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.
- Distances across the Pleasant Street intersection are significantly difficult for pedestrians to cross in the absence of traffic signals or signs.

Recommendations

- Consider adding a crosswalk and curb ramps on the north side of the intersection.
- Replace the curb and tighten the curb radius at the northeast corner of the intersection to make it similar to the other 3 corners and discourage fast-moving turns.
- Consider installing additional regulatory signage such as one-way and do-not-enter signs to indicate travel direction of both Pleasant Street and Elm Street.
- Upgrade curb ramps to ADA standards, including detectable warning strips.
- Consider adding bump-outs at crosswalks on the two corners on south side of Elm Street at the Pleasant Street intersection to narrow distances pedestrians must cross and to make them more visible to motorists.

Wide curb radius at northeast corner of Pleasant Street/Elm Street intersection

Elm Street between Pleasant Street and County Street

Street characteristics

- Street direction - westbound one-way.
- Street character - a narrow, tree-lined street with a single, wide travel lane, perhaps 15+'. Pedestrian scale lighting.
- Parking – parallel only along the north side of Elm Street.
- Abutting uses - residential on one side of the street and business/parking areas on the other. The Federal Building housing the Social Security Office is a government use.
- Streetscape – sidewalks on both sides of the street have a concrete walkway bounded by a brick strip containing street lights and signs along curb. North Sixth Street has concrete sidewalks on both sides of the street, with no street trees north of Elm Street.
- Traffic on street – low vehicular traffic volumes, low pedestrian volumes.
- Mid-block east-west crosswalk is red bituminous and has curb ramps across North Eighth Street at its intersection with Elm Street.
- Pavement markings – parking spaces on south side of street are marked.

Current deficiencies

- No travel lane markings on pavement.
- Insufficient signage to indicate direction of Elm Street mid-block, at Pleasant Street, or at North Sixth Street.
- Red bituminous crosswalk at Eighth Street extends east-west only at the intersection of Eighth Street.
- No north-south crosswalk over Elm Street at intersection with Eighth Street and no curb ramp on the north side.

Recommendations

- Add edge (fog) line on south side of street to slow traffic or to provide a bicycle lane.
- Add one-way signs and other regulatory signage such as do-not-enter signs to indicate the direction of Elm Street, especially at intersections.
- Consider adding crosswalk over Elm Street at intersection with Eighth Street.

Eighth Street looking from Elm Street towards Mechanics Lane

Intersection of Elm Street and North Sixth Street

Site description

- Street directions - Elm Street is one-way westbound, and is crossed by North Sixth Street, a one-way southbound street with two lanes leading from the "Octopus." North Sixth Street is parallel to Pleasant Street, forming a one-way pair of streets through downtown.
- Parking - North Sixth Street has parking on the west side of the street south of Elm Street, and parking spaces are painted on the pavement. There is no parking north of Elm Street.
- Crosswalks - made of red colored bituminous on all four sides of intersection.
- Curb ramps - on all four crosswalks at the intersection.
- Observed traffic – relatively heavy traffic on North Sixth Street, low volumes on Elm Street.
- Pavement markings – dashed centerline on North Sixth Street, painted parking spaces south of intersection.

Current deficiencies

- Crosswalk north of this intersection at North Sixth and Middle Streets is insufficiently marked; an in-street pedestrian sign provides some indication of pedestrians crossing the heavy traffic southbound on North Sixth Street after leaving the "Octopus."
- A single sign indicates the one-way status of North Sixth Street. Few signs show that Elm Street is one-way westbound.
- Travel lanes are wide on North Sixth Street, making crossing distances at the Elm Street intersection long for pedestrians to cross in the absence of traffic signals or signs. Wide lanes also support high speeds departing the Octopus.
- North Sixth Street has a dashed centerline and no edge (fog) lines.
- The single travel lane on Elm Street is excessively wide with no street markings such as a painted edge that would help control speeds on this narrow street.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.

Recommendations

- Traffic on North Sixth Street should be slowed as it approaches this intersection in the central business district, using advance signage leading into the intersections on Elm Street and William Street.
- Consider installing additional one-way signs to indicate travel direction of both North Sixth Street and Elm Street.
- Consider installing curb bump-outs to reduce traffic speeds and to shorten crossing distance across N Sixth Street.
- Paint an aligned centerline down the middle of the two traffic lanes on North Sixth Street, along with edge lines (fog lines) on both sides of the street to narrow travel lanes and provide additional safety for pedestrians.
- Paint edge (fog) lines along Elm Street to narrow the single travel lane as a safety measure.
- Upgrade curb ramps to ADA standards, including detectable warning strips.

In-street pedestrian traffic barrel draws attention to crosswalk on N 6th Street connecting a parking lot used by Post Office employees to the Post Office

Crossing distances are long across N 6th Street at the Elm Street intersection

Intersection of Elm Street and County Street

Intersection characteristics

- Street direction – Elm Street is one-way westbound and is crossed by County Street, a two-lane north-south thoroughfare.
- Curb ramps - on all four crosswalks at the intersection.
- Crosswalks - with red bituminous paving on all four sides of intersection.
- Traffic observed on street – high vehicular vehicle volumes, low pedestrian volumes relative to each other.
- Traffic signals - signalized intersection with exclusive pedestrian phase.

Current deficiencies

- North-south red bituminous crosswalks show signs of wear from vehicle traffic.
- Pedestrians crossing signals cover only two paths across the intersection – one on north side of Elm Street facing south, another on south side of Elm Street facing east. Existing signal heads are not functioning and have no working push buttons.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.
- A single sign indicates the one-way status of Elm Street.
- McDonalds entrance and egress at the corner of Elm and County further complicate turning movements and contribute to vehicle stacking issues at the intersection. Drivers entering and exiting the driveway are more concerned with vehicular traffic and tend to overlook pedestrians.

Missing pedestrian signal and heavy traffic at Elm/County intersection

Recommendations

- Repair red bituminous crosswalks so they are more visible to County Street traffic.
- Provide working pedestrian countdown signals and push buttons for all approaches.
- Upgrade curb ramps to ADA standards, including detectable warning strips.
- Install additional one-way signs and do-not-enter signs to indicate travel direction of Elm Street.
- Review McDonalds site plan for potential improvements to vehicular circulation patterns; increase enforcement of illegal turning movements.

McDonalds drive-thru and parking circulation patterns complicate turning movements at the Elm/County intersection

County Street between Elm Street and Union Street

Street characteristics

- Street direction - two-way street.
- Street character – busy cross-town traffic; narrower street (compared with North Sixth Street and Pleasant Street) with one lane in each direction.
- Parking – parking in one lane only along the west side of the street.
- Abutting uses - mixed residential, business, and office uses line the street.
- Streetscape – sidewalks on both sides made of concrete; no street trees although abutting properties provide hedges and established trees on this street segment. Sidewalks are narrow with obstructions such as street lights and signs throughout.
- Traffic on street - high vehicular traffic volumes, low pedestrian volumes relative to each other.
- Pavement markings - County Street has parking only on the west side of the street, and a double yellow centerline, which is offset to make three lanes – two for movement, one for parking.
- Mid-block intersections – located at eastbound William Street, westbound Morgan Street and eastbound Court Street. Each of these streets terminate at County Street.
- Crosswalks – North-south crosswalks at Morgan and Court Streets marked by double white lines between curb ramps. A red bituminous crosswalk leads east-west across County Street in front of New Bedford School Department building (between Morgan and Court Streets) where it joins the end of William Street. A red bituminous crosswalk runs north-south across William Street. Each crosswalk has curb cuts.

Current deficiencies

- No painted lines to denote the parking lane along County Street.
- Travel lanes are wide on County Street, marked a double yellow center line, but lacking an edge (fog) line.
- Distance between crosswalks is extensive – a 600'-distance separates Elm Street crosswalks from the mid-block crosswalk at the courthouse, and a 400'-distance separates Union Street crosswalks from the mid-block crosswalk at the courthouse.
- Crosswalks have curb ramps that do not meet ADA standards calling for detectable warning strips.

County Street corridor looking south towards Union Street

Crosswalk at County Street and William Street

Recommendations

- Paint parking space lines along west side of County Street to narrow travel lanes.
- Paint edge (fog) lines along County Street to narrow travel lanes and reduce speed for additional pedestrian safety.
- Consider adding new mid-block crosswalks to avoid inconveniencing pedestrians trying to cross County Street.
- Install curb ramps and detectable warning strips at mid-block crossing. Install warning signs for crosswalk in front of courthouse.

Intersection of County Street and Union Street

Intersection characteristics

- Intersection –County Street is a two-lane north-south thoroughfare; Union Street is a two-lane east west thoroughfare.
- Crosswalks - all four sides of intersection have red bituminous paving.
- Traffic observed on both streets – high vehicular vehicle volumes on County Street, lower volumes on Union Street, low pedestrian volumes.
- Pedestrian signals on each corner regulate pedestrian crossings; countdown signals present.

Current deficiencies

- North-south red bituminous crosswalks show signs of wear from County Street vehicular traffic.
- Pedestrian signal timing seems somewhat limited in terms of amount of time provided for crossing safely.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.

Recommendations

- Repair red bituminous crosswalks as needed.
- Lengthen pedestrian signal timing to make crossing safer; consider leading pedestrian indicators.
- Upgrade curb ramps to ADA standards, including detectable warning strips.

Participants test the signal phasing at the County and Union Street intersection

Union Street between County Street and Pleasant Street

Street characteristics

- Direction of street – two-way street with two wide traffic lanes.
- Street character – two-lane business street with parking and street trees.
- Parking – parking lanes painted on both sides of the street.
- Abutting uses – principal office, restaurant and retail street in downtown New Bedford. UMASS College of Visual and Performing Arts on corner of Purchase Street.
- Streetscape – Sidewalk materials vary on both sides of the street between concrete and brick and contain poles, trees and signs in strip next to parking lane.
- Traffic on street - high vehicular traffic volumes, low pedestrian volumes relative to each other.
- Intersections – at Seventh Street and Eighth Street
- Mid-block crosswalks - red bituminous crossings for Seventh Street and Eighth Street parallel to Union Street. No crosswalks north-south at Seventh Street and Eighth Street.
- Pavement markings – double yellow center line

Current deficiencies

- No north-south crosswalks at mid-block intersections of Seventh Street and Eighth Street.
- No curb ramps at east-west crosswalk at Seventh Street.
- No edge (fog) lines along either side of the street.

Recommendations

- Consider adding a mid-block crossing of Union Street at the intersections of Seventh Street and Eighth Street.
- Install curb ramps and detectable warning strips at the Seventh Street crosswalk.
- Consider adding edge (fog) lines or bike lanes along both sides of the Union Street.

There are few marked crosswalks between County St and 6th Street along Union Street

Intersection of Union Street and North Sixth Street

Intersection characteristics

- Travel lanes – North Sixth Street is a two-lane, one-way thoroughfare southbound; Union Street is a two-lane, two-way east-west thoroughfare.
- Crosswalks - all four sides of intersection have red bituminous crosswalks.
- Curb ramps - all four corners have curb ramps.
- Pedestrian signals - three of the four corners. No pedestrian signal on the southwest corner.
- Traffic observed on both streets – high vehicular vehicle volumes on North Sixth Street, lower volumes on Union Street, low pedestrian volumes.
- Pavement markings - left turns and through movement lanes on North Sixth Street lanes are clearly channelized and marked.

Current deficiencies

- Paint designating parking spaces on North Sixth Street is faded.
- Pedestrian signal missing on southwest corner of the intersection.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.

Union Street and N 6th Street is home to a busy Dunkin Donuts which generates significant pedestrian traffic

Recommendations

- Renew faded parking spaces on North Sixth Street to narrow travel lanes.
- Upgrade signal equipment to current standards with new pedestrian signal heads and push buttons on all approaches.
- Modify curb ramps to make them meet ADA standards.

Intersection of Union Street and Pleasant Street

Intersection characteristics

- Direction of streets – Pleasant Street is a two-lane, one-way northbound thoroughfare; Union Street is a two-lane, two-way east west thoroughfare.
- Parking - on both sides of Pleasant Street and both sides of Union Street.
- Crosswalks - all four sides of intersection have red bituminous crosswalks.
- All four corners have curb ramps.
- Pedestrian signals – located on each corner regulate pedestrian crossings.
- Traffic observed on both streets – high vehicular vehicle volumes on Pleasant Street, lower volumes on Union Street, moderate pedestrian volumes.

Pedestrian signage at Union Street and Pleasant Street

Current deficiencies

- No edge (fog) lines on either side of the travel lanes.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.
- Traffic signals have an exclusive pedestrian phase which adds wait time for all intersection users.

Recommendations

- Add edge (fog) line along east side of the Pleasant Street.
- Upgrade curb ramps to ADA standards, including detectable warning strips.
- Consider concurrent signals for pedestrian crossings and potentially leading pedestrian indicators to give pedestrians a slight head start.

Pleasant Street between Union Street and William Street

Street characteristics

- Direction of street – northbound one-way street with two very wide traffic lanes.
- Parking – Parking spaces painted on both sides of the street. Police parking spaces outlined in yellow along east side of the street.
- Street character – most of the short block between Union Street and William Street contains public buildings for the city, such as the police department and the library.
- Abutting uses – buildings related to downtown district – sides of retail, restaurants, and other businesses. Municipal center buildings on both sides of the street: public library at corner of Pleasant and William Streets across from City Hall.
- Streetscape – concrete sidewalk on west side of the street, with brick sidewalk on the east side.
- Traffic on street - low vehicular traffic volumes, low pedestrian volumes.
- Crosswalks – red bituminous crosswalks at the intersection of Market and Pleasant Streets across the north and west legs.

Current deficiencies

- Limited visibility of pedestrians at Market Street crosswalk.
- No edge (fog) lines along either side of the street.
- Police vehicles park close to crosswalk at Market Street.
- Missing curb ramps on south corner of Market Street crosswalk and at the east end of the crosswalk over Pleasant Street.
- Curb ramps do not meet ADA standards, which call for detectable warning strips.
- No warning signs approaching the crosswalk across Pleasant Street at Market Street.

Recommendations

- Consider adding mid-street warning signs at intersection of Market Street.
- Consider adding edge (fog) lines on both sides of the street or bike lanes along one side of the street.
- Consider repainting parking spaces for police vehicle away from crosswalk.
- Upgrade curb ramps to ADA standards, including detectable warning strips.
- Add curb ramps for Market Street crosswalk south corner, and also at the east end of the crosswalk over Pleasant Street.
- Consider adding traffic calming measures such as curb bump-outs, raised crossings, or narrower travel lanes at the intersection of Market and Pleasant Streets to make pedestrians crossing Pleasant Street more visible.

Municipal buildings, including the library and City Hall, line Pleasant Street between William and Union Streets

Appendix A. Summary of Issues and Recommendations

Pleasant Street between William Street and Elm Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
No dashed lane line or edge line (fog line) to identify travel paths for vehicles and to help slow through traffic.	Paint a dashed white lane line down the middle of the two traffic lanes on Pleasant Street, and edge (fog) lines along Pleasant Street to define and narrow travel lanes.	Short-term	City of New Bedford
An unprotected mid-block crosswalk serves the bus station at the intersection of Pleasant Street and Mechanics Lane. Crosswalk has minimal pavement markings.	Enhance existing crosswalk pavement markings at the Mechanics Lane mid-block pedestrian crossing with painted cross-strips in a "piano keys", ladder, zebra or continental design; or install red bituminous paving	Short-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford
No pedestrian crossing signs or "yield to pedestrian" signs are located on Pleasant Street to forewarn drivers of pedestrians crossing the mid-block crosswalk.	Install pedestrian crossing signs and/or "yield to pedestrian" signs on the Pleasant Street approach to the Mechanics Lane.	Short-term	City of New Bedford

Intersection of Pleasant Street and Elm Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
Missing red colored bituminous crosswalk on the north side of the intersection; curb ramps missing for a north side crossing of the intersection.	Consider adding a crosswalk and curb ramps on the north side of the intersection.	Short-term	City of New Bedford
The curb radius on the northeast corner of the intersection is very wide, encouraging fast-moving traffic and endangering pedestrians crossing the street.	Replace the curb and tighten the curb radius at the northeast corner of the intersection to make it similar to the other 3 corners and discourage fast-moving turns.	Long-term	City of New Bedford
A single sign indicates the one-way status of Pleasant Street. No signs show that Elm Street is one-way to the west of the intersection and two-way to the east	Consider installing additional regulatory signage such as one-way and do-not-enter signs to indicate travel direction of both Pleasant Street and Elm Street.	Short-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford
Distances across the Pleasant Street intersection are significantly difficult for pedestrians to cross in the absence of traffic signals or signs.	Consider adding bump-outs at crosswalks on the two corners on south side of Elm Street at the Pleasant Street intersection to narrow distances pedestrians must cross and to make them more visible to motorists.	Long-term	City of New Bedford

Elm Street between Pleasant Street and County Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
No travel lane markings on pavement.	Add edge (fog) line on south side of street to slow traffic or to provide a bicycle lane.	Short-term	City of New Bedford
Insufficient signage to indicate direction of Elm Street mid-block, at Pleasant Street, or at North Sixth Street.	Add one-way signs and other regulatory signage such as do-not-enter signs to indicate the direction of Elm Street, especially at intersections.	Short-term	City of New Bedford
No north-south crosswalk over Elm Street at intersection with Eighth Street and no curb ramp on the north side.	Consider adding crosswalk over Elm Street at intersection with Eighth Street and install curb ramps	Long-term	City of New Bedford

Intersection of Elm Street and North Sixth Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
Crosswalk north of this intersection at North Sixth and Middle Street is insufficiently marked	Use advance signage leading into the intersections on Elm Street and William Street.	Short-term	City of New Bedford
A single sign indicates the one-way status of North Sixth Street. Few signs show that Elm Street is one-way westbound.	Consider installing additional one-way signs to indicate travel direction of both North Sixth Street and Elm Street.	Short-term	City of New Bedford
Travel lanes are wide on North Sixth Street, making crossing distances at the Elm Street intersection long for pedestrians to cross in the absence of traffic signals or signs. Wide lanes also support high speeds departing the Octopus.	Consider installing curb bump-outs to reduce traffic speeds and to shorten crossing distance across N Sixth Street.	Long-term	City of New Bedford
North Sixth Street has a dashed centerline and no edge (fog) lines.	Paint an aligned centerline down the middle of the two traffic lanes on North Sixth Street, along with edge lines (fog lines) on both sides of the street.	Short-term	City of New Bedford
The single travel lane on Elm Street is excessively wide with no street markings such as a painted edge that would help control speeds on this narrow street.	Paint edge (fog) lines along Elm Street.	Short-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford

Intersection of Elm Street and County Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
North-south red bituminous crosswalks show signs of wear from vehicle traffic	Repair red bituminous crosswalks so they are more visible to County Street traffic.	Short-term	City of New Bedford
Pedestrians crossing signals cover only two paths across the intersection – one on north side of Elm Street facing south, another on south side of Elm Street facing east. Existing signal heads are not functioning and have no working push buttons.	Provide working pedestrian countdown signals and push buttons for all approaches.	Long-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford
A single sign indicates the one-way status of Elm Street.	Install additional one-way signs and do-not-enter signs to indicate travel direction of Elm Street.	Short-term	City of New Bedford
McDonalds entrance and egress at the corner of Elm and County complicate turning movements and contribute to vehicle stacking issues at the intersection.	Review McDonalds site plan for potential improvements to vehicular circulation patterns; increase enforcement of illegal turning movements.	Short-term	City of New Bedford

County Street between Elm Street and Union Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
No painted lines to denote the parking lane along County Street.	Paint parking space lines along west side of County Street to narrow travel lanes.	Short-term	City of New Bedford
Travel lanes are wide on County Street, marked a double yellow center line, but lacking an edge (fog) line.	Paint edge (fog) lines along County Street to narrow travel lanes and reduce speed for additional pedestrian safety.	Short-term	City of New Bedford
Distance between crosswalks is extensive – a 600'-distance separates Elm Street crosswalks from the mid-block crosswalk at the courthouse, and a 400'-distance separates Union Street crosswalks from the mid-block crosswalk at the courthouse.	Consider adding new mid-block crosswalks to avoid inconveniencing pedestrians trying to cross County Street.	Long-term	City of New Bedford
Crosswalks have curb ramps that do not meet ADA standards calling for detectable warning strips.	Install curb ramps and detectable warning strips at mid-block crossing. Install warning signs for crosswalk in front of courthouse.	Long-term	City of New Bedford

Intersection of County Street and Union Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
North-south red bituminous crosswalks show signs of wear from County Street vehicular traffic.	Repair red bituminous crosswalks as needed	Short-term	City of New Bedford
Pedestrian signal timing seems somewhat limited in terms of amount of time provided for crossing safely.	Lengthen pedestrian signal timing to make crossing safer; consider leading pedestrian indicators.	Short-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Short-term	City of New Bedford

Union Street between County Street and Pleasant Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
No north-south crosswalks at mid-block intersections of Seventh Street and Eighth Street.	Consider adding a mid-block crossing of Union Street at the intersections of Seventh Street and Eighth Street.	Long-term	City of New Bedford
Curb ramps serve only east-west crosswalk at Seventh Street.	Install curb ramps and detectable warning strips at the Seventh Street crosswalk	Long-term	City of New Bedford
No edge (fog) lines along either side of the street.	Consider adding edge (fog) lines or bike lanes along both sides of the Union Street.	Short-term	City of New Bedford

Intersection of Union Street and North Sixth Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
Paint designating parking spaces on North Sixth Street is faded.	Renew faded parking spaces on North Sixth Street to narrow travel lanes	Short-term	City of New Bedford
Pedestrian signal missing on southwest corner of the intersection.	Upgrade signal equipment to current standards with new pedestrian signal heads and push buttons on all approaches	Long-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Modify curb ramps to make them meet ADA standards.	Long-term	City of New Bedford

Intersection of Union Street and Pleasant Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
No edge (fog) lines on either side of the travel lanes	Add edge (fog) line along east side of the Pleasant Street	Short-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford
Traffic signals have an exclusive pedestrian phase which adds wait time for all intersection users.	Consider concurrent signals for pedestrian crossings and potentially leading pedestrian indicators to give pedestrians a slight head start.		

Pleasant Street between Union Street and William Street

ISSUE	RECOMMENDATION	TIMEFRAME	RESPONSIBLE PARTY
Limited visibility of pedestrians at Market Street crosswalk	Consider adding mid-street warning signs at intersection of Market Street.	Short-term	
No edge (fog) lines along either side of the street.	Consider adding edge (fog) lines on both sides of the street or bike lanes along one side of the street.	Short-term	City of New Bedford
Police vehicles park close to crosswalk at Market Street.	Consider repainting parking spaces for police vehicle away from crosswalk.	Short-term	City of New Bedford
Missing curb ramps on south corner of Market Street crosswalk and at the east end of the crosswalk over Pleasant Street.	Upgrade curb ramps to ADA standards, including detectable warning strips.	Long-term	City of New Bedford
Curb ramps do not meet ADA standards, which call for detectable warning strips.	Add curb ramps for Market Street crosswalk south corner, and also at the east end of the crosswalk over Pleasant Street.	Long-term	City of New Bedford
No warning signs approaching the crosswalk across Pleasant Street at Market Street	Consider adding traffic calming measures such as curb bump-outs, raised crossings, or narrower travel lanes at the intersection of Market and Pleasant Streets to make pedestrians crossing Pleasant Street more visible.	Long-term	City of New Bedford

Appendix B. Participant List

NAME	ORGANIZATION
Stacey Beuttell	WalkBoston
Scott Downing	New Bedford Traffic Commission
Stephanie Dupras	New Bedford Engineering Dept
Kim Ferreira	Mass In Motion
Jen Gonet	New Bedford Planning Dept.
Jill Maclean	New Bedford Planning Dept.
Corey O'Connor	MassDOT Traffic Safety Division
Lisa Estrela Pedro	SRPEDD
Jackie Schmidt	SRPEDD
Bob Sloane	WalkBoston

Appendix C. 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

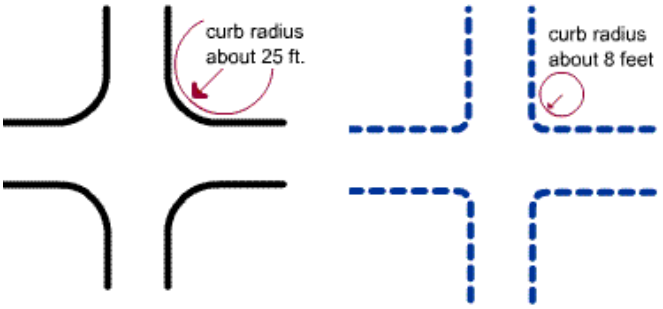
Curb extension/curb bulb-out

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.

Edge line

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

Edge 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 Indicator (LPI)

A leading pedestrian indicator 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.

Walker taking advantage of leading pedestrian interval
Source: http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_scdproj/sys_impact_rpt/images/fig34.jpg

High-Intensity Activated crossWalk (HAWK)

A HAWK beacon (High-Intensity Activated crossWalK beacon) is a traffic signal used to stop road traffic and allow pedestrians to cross safely. It is officially known as a Pedestrian Hybrid Beacon (PHB). The purpose of a HAWK beacon is to allow protected pedestrian crossings, stopping road traffic only as needed. Where standard traffic signal 'warrants' prevent the installation of standard three-color traffic signals, the HAWK beacon provides an alternative.

Walker crosses roadway after activating the HAWK beacon
Source: http://www.achdidaho.org/Projects/Images/NewHawkSignal092209% 20014.jpg

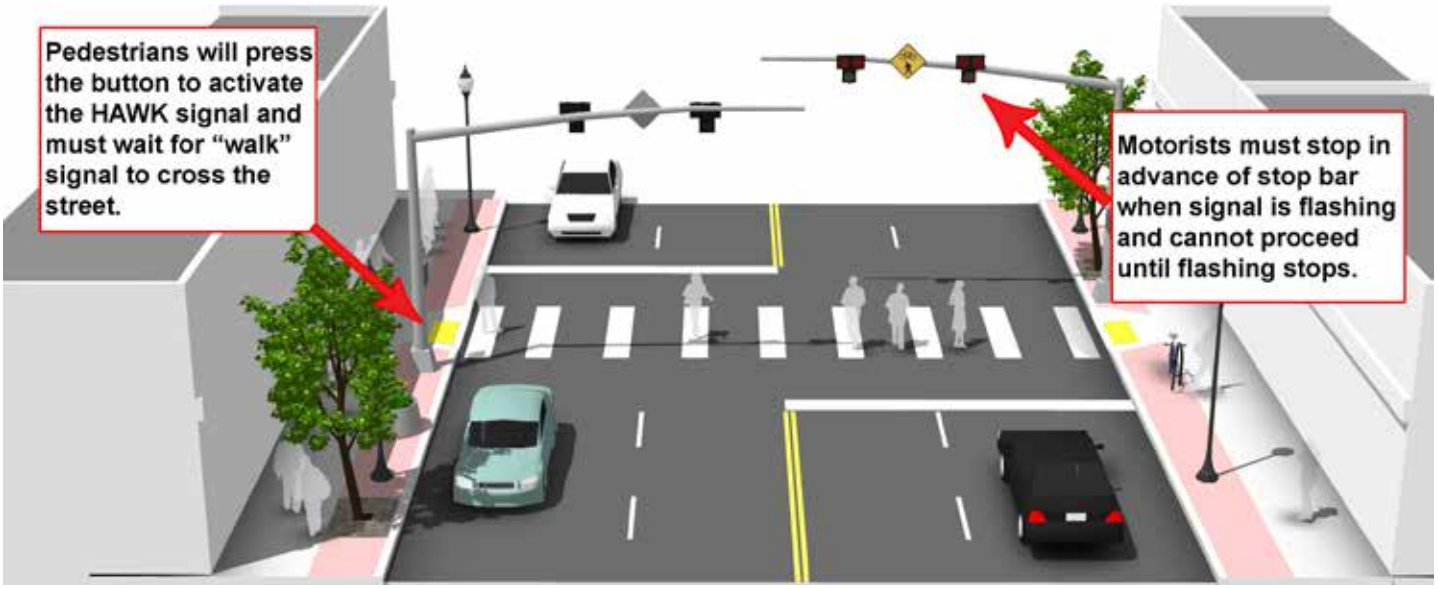


Diagram showing step-by-step operation of a HAWK signal. .Source: http://bloomington.in.gov/media/media/image/jpeg/13144.jpg

Pedestrian Refuge Island

Pedestrian refuge islands are protected areas where people may safely pause or wait while crossing a street. Pedestrian refuge islands are particularly helpful as resting areas for seniors, persons with disabilities, children, and others who may be less able to cross the street in one stage. At signalized intersections, they allow slow moving pedestrians to cross in two phases. At unsignalized locations, they simplify the act of finding a gap in traffic to cross since vehicles from only one direction must be reckoned with at a time.

http://www.sfbetterstreets.org/find-project-types/pedestrian-safety-and-traffic-calming/traffic-calming-overview/medians-and-islands/

Pedestrian refuge island at a signalized crossing
Source:http://safety.fhwa.dot.gov/intersection/resources/fhwasa06016/images/fig95.jpg

Appendix D. Walk Assessment Tool

walkBoston

Street Name/Intersection	
Date/Time	
Weather Conditions	
Neighborhood Character	
❍ Land use: residential, commercial, industrial or mixed use?	
❍ Community facilities: schools, parks, libraries?	
❍ Surface parking lots?	
❍ Buildings occupied?	
❍ Building facades – blank walls, engaging storefronts, sidewalk cafes?	
❍ Is there street activity?	
Street Description	
❍ Arterial or local	
❍ Number and estimated width of travel lanes – narrow, adequate, wide?	
❍ Parking – none, one or both sides?	
❍ Sidewalks – none, one or both sides?	
Vehicular Traffic	
❍ Posted speed limit signs	
❍ Estimated vehicle speeds	
❍ Volume	
Sidewalks	
❍ On both sides of the street?	
❍ Wide? Continuous? Smooth surface?	
❍ Curb ramps/detectable warning strips?	
❍ Buffered from traffic with landscape strips (verge)?	
❍ Minimal number of interrupting driveways? Narrow or wide driveways?	
❍ Are newspaper racks, outdoor seating organized?	

Street furnishings	
❍ Trees?	
❍ Benches?	
❍ Trash receptacles?	
❍ Bicycle accommodations?	
❍ Lighting?	
Crosswalks	
❍ Condition?	
❍ Design: 2 lines, zebra/ladder, stamped, pavers? Raised?	
❍ Marked and signed?	
Traffic signals	
❍ Pedestrian-activated? Countdown signals?	
❍ Timing – enough time to cross? Traffic stops in all directions? Traffic stops only in lanes pedestrian is crossing?	
❍ Right turn on red prohibited?	
Sight lines/Visibility	
❍ Obstacles – vegetation, light poles, parked cars?	
❍ Road design – curves, elevation change?	
Pedestrian Safety Countermeasures	
❍ Curb extensions?	
❍ Pedestrian refuge islands or medians?	
❍ In-street pedestrian signs?	
❍ Speed tables?	
Accessibility	
❍ Curb ramps?	
❍ Detectable warning strips?	
❍ Slopes/cross-slopes?	