

5 Chelsea

The first section of this chapter provides a profile of the city. The second section describes existing bicycling and walking conditions in the study area, Downtown Chelsea, and recommendations for improvements. The findings are based on meetings and correspondence with local staff, fieldwork, and review of a previous study entitled *Downtown Chelsea Historic Streetscape Project*, prepared for the City in 1997 by Carol R. Johnson, Inc.

5.1 COMMUNITY PROFILE

Included in this chapter are a short history of Chelsea; a general description of land use; population and employment data; an overview of the transportation network; and crash data.

5.1.1 HISTORY

Settled in 1624 as a neighborhood of nearby Boston, the area was first called Winnisimmet, meaning, “good spring nearby,” by the Massachusetts tribe that lived there. The community remained part of Boston until incorporated as a town in 1739 as the namesake of a London neighborhood. Chelsea included Revere, Winthrop, and parts of Saugus until 1846. Reincorporated as a city in 1857, the approximately 2-square-mile municipality developed as an industrial center, producing rubber and elastic goods, boots and shoes, stoves, and adhesives, and became home to a naval hospital and a soldiers’ home. On April 12, 1908, nearly half the city was destroyed in the First Great Chelsea Fire, so named subsequent to a second huge conflagration in 1973.

Chelsea fell on difficult fiscal times towards the end of the twentieth century; in 1991 it became the first municipality to come into state receivership since the Great Depression. A charter change in 1995 established fiscal management policies that have significantly improved the city’s financial condition. Increased emphasis on economic development and capital improvement has led to an influx of new businesses and homebuyers. In 1998, the National Civic League honored Chelsea with the All-America City Award.

5.1.2 LAND USE

Chelsea, an inner urban suburb of Boston, has excellent air, land, water, and rail transportation access. Dense residential neighborhoods sit between industrial parcels along both Chelsea Creek and the Mystic River.

The study area considered in this report includes the Broadway corridor from Beacon Street to Sixth Street/City Hall Avenue, a length of six blocks, and areas several blocks north and south of there.

5.1.3 POPULATION AND EMPLOYMENT

Home to 28,710 residents in 1990, Chelsea’s population grew by 22.2 percent, to 35,081, by 2000. The Metropolitan Area Planning Council (MAPC) forecasts a 23.6 percent increase, to 43,349, by 2030. Chelsea businesses employed 13,302 in 2000, a figure estimated by MAPC to increase 11.8 percent, to 14,871, by 2030.

**TABLE 5-1
Population and Employment,
in Chelsea, 2000, 2010, 2020, and 2030**

Chelsea	2000	2010	Change 2000 to 2010	2020	Change 2010 to 2020	2030	Change 2020 to 2030
Population	35,081	37,839	7.9%	40,732	7.6%	43,349	6.5%
Employment	13,302	13,961	5.0%	14,542	4.2%	14,871	2.3%

5.1.4 TRANSPORTATION

U.S. Route 1, winding southward from the North Shore, passes over Chelsea on a viaduct, and enters Boston via the Tobin (Mystic River) Bridge. Local collector roads serve Williams Street, Pearl Street, and Broadway, which lead to Everett, East Boston, and Revere, respectively.

The MBTA’s Newburyport/Rockport commuter rail line serves Chelsea via a station on Arlington Street. MBTA bus Routes 111, 112, 114, 116, and 117 provide direct access between Chelsea and the cities of Boston, Revere, and Everett.

5.1.5 CRASH AND USAGE DATA

As indicated in Table 5-2, between 2002 and 2006 there were 35 reported crashes in Chelsea involving bicyclists, representing 1.1 percent of all crashes, with no fatalities. In the same period there were 144 reported crashes involving pedestrians, representing 4.5 percent of all crashes and resulting in one fatality. As noted in Chapter 1, some crashes may not have been reported.

Figure 5-1 shows all bicycle and pedestrian crashes in Chelsea for the five years reported here. In the portion of Chelsea included in this study, between 2002 and 2006 there were 65 pedestrian-related crashes, including a fatality, and 19 bicycle-related crashes. These are discussed further below.

FIGURE 5-1
Chelsea: Crashes in 2002-2006 Involving Pedestrians and Bicyclists

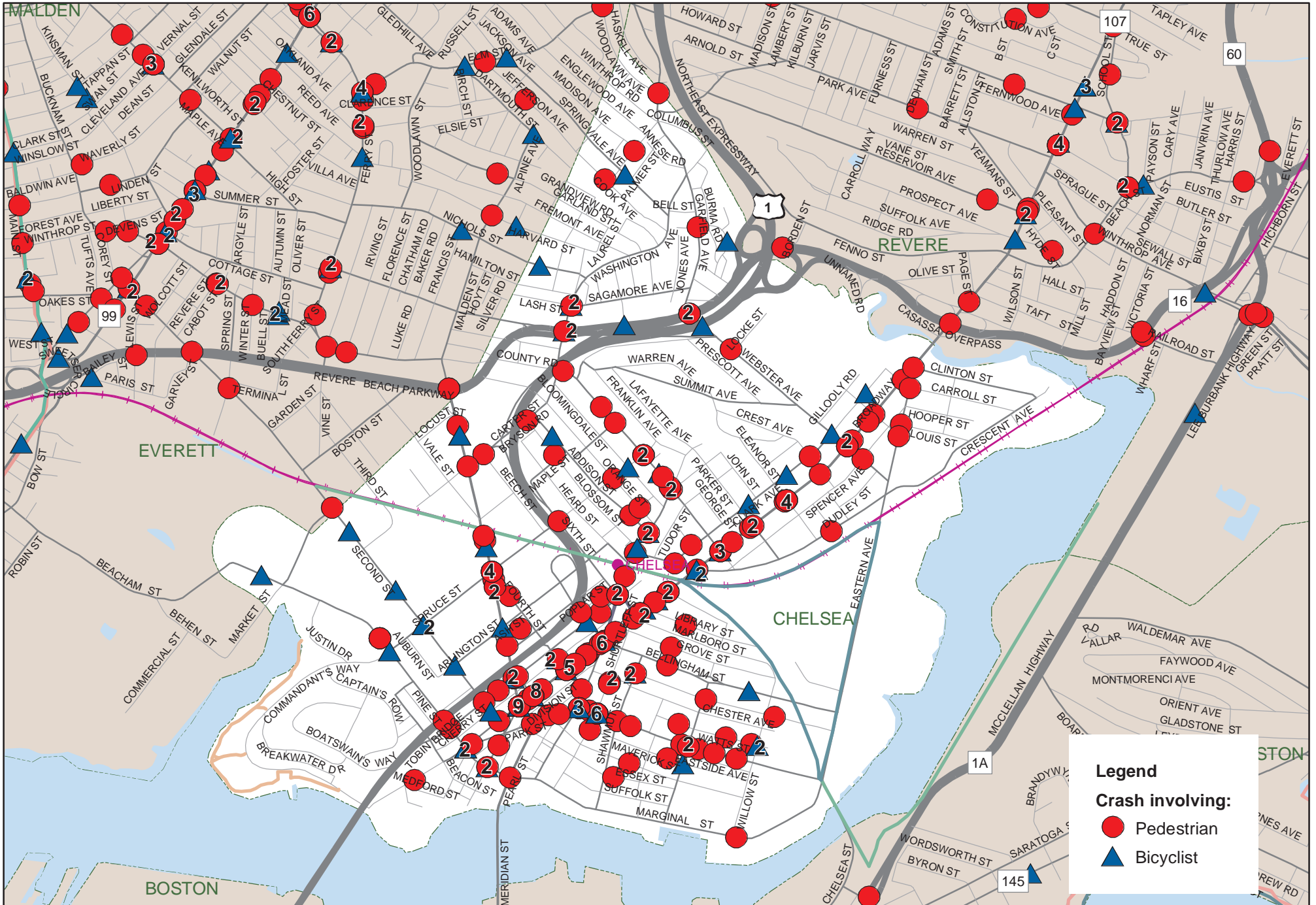


TABLE 5-2
Bicycle, Pedestrian, Motor-Vehicle, and Total Crashes and Fatalities in Chelsea,
by Number and Percentage, 2002-2006

Chelsea	Crashes		Fatalities	
	Number	Percentage	Fatalities	Percentage
Bicycle	35	1.1%	0	0.0%
Pedestrian	144	4.5%	1	12.5%
Cars	3,003	94.4%	7	87.5%
Total	3,182	100%	8	100%

Several intersections in Chelsea are included in the Boston Region MPO's ongoing Congestion Management Process. Table 5-3 indicates motor-vehicle, bicycle and pedestrian peak-hour volumes at nine intersections in the study area. For more information, see the Mobility Management section of the Boston Region MPO's website, (www.bostonmpo.org/apps/mms/mms_intersection_query.cfm).

TABLE 5-3
Motor-Vehicle, Bicycle, and Pedestrian Peak-Hour Volumes of
Selected Intersections within the Study Area

Location	Motor-Vehicle	Bicycle	Pedestrian	Time of Peak-Hour
Broadway and Third Street	832	6	113	7:15-8:15 AM
Broadway and Third Street	1,243	0	272	4:45-5:45 PM
Washington Ave and Broadway/Hawthorn	1,229	6	719	7:30-8:30 AM
Fifth St and Arlington Street	510	6	238	7:15-8:15 AM
Fourth St and Arlington Street	392	1	239	8:00-9:00 AM
Beacon St and Chestnut Street	547	1	36	4:30-5:30 PM
Beacon St and Broadway	280	2	38	7:00-8:00 AM
Broadway and Williams/Tremont Streets	1,398	14	125	4:30-5:30 PM
Broadway and Everett/Cross/Winnisimmet	750	1	140	8:00-9:00 AM
Broadway and Everett/Cross/Winnisimmet	1,076	2	232	4:45-5:45 PM
Third St and Chestnut Street	1,087	0	183	8:00-9:00 AM

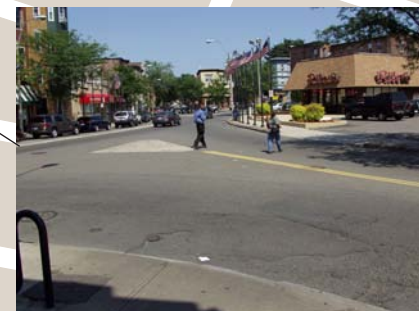
5.2 STUDY AREA

The first part of this section of the chapter defines the study area (shown in Figure 5-2) and gives an overview of transit services and walking and bicycling conditions. Subsequent sections provide more details on the different parts of the study area.

**FIGURE 5-2
Downtown Chelsea
Existing Conditions**

Legend

- || Highly visible crosswalk
- || Moderately faded crosswalk
- || Very faded crosswalk
- No curb ramp
- Shared curb ramp
- Sidewalk in good condition
- Sidewalk in fair condition
- Sidewalk in poor condition
- - - No street striping
- - - Very faded street striping
- Indicates one-way street
- Ⓣ Train station
- ⋯ Train line
- School
- PG Playground
- 📖 Library
- PO Post office
- 👮 Police department
- 🏛 Municipal building
- 🏠 Community center
- 🌳 Park
- 🚦 Traffic signal



The study area for Chelsea includes:

- Broadway
- Northwest of Broadway
- Southeast of Broadway

Five MBTA bus routes serve the study area: Route 111, connecting Haymarket Station and Revere; Route 112, connecting Wellington and Wood Island Stations; Route 114, connecting Maverick Station and Revere; and Routes 116 and the 117, both connecting Wonderland and Maverick Stations. The buses run multiple times an hour throughout the day.

Chelsea's commuter rail station, on the Newburyport/Rockport Line, is located on the corner of Sixth and Arlington Streets, north of the downtown corridor and on the northeast periphery of the study area. There are 26 inbound trains to Boston between 6:03 AM and 11:44 PM, and 25 outbound trains from Boston between 6:54 AM and 12:21 AM. There are no dedicated bicycle parking spaces.

The sidewalks along Broadway and in immediately adjacent areas are brick, with granite curbs, and are generally in good condition. Most of the sidewalks elsewhere are concrete, with granite curbs. Sidewalks on the minor streets are mainly asphalt, with granite curbs or no curbs, and are in poor to fair condition. Some of these sidewalks have weeds and minor cracking. Most sidewalks have street trees. The sidewalks along Broadway have regularly spaced trees; there are fewer trees in other areas.

The crosswalks are generally highly visible, and have exclusive curb ramps. Crosswalks extend along the most logical path for pedestrians except some at multi-street intersections. Most of the crosswalks are zebra-style; some along Broadway are brick. Long crosswalks have either a median for refuge or striping to keep cars away. There are only a couple of curb extensions in the downtown area across Broadway.

There are several signalized pedestrian crossings, one of which, Washington Street near Fifth Street, has a countdown signal. All of the pedestrian phases are adequate in length.

Few streets adequately accommodate on-street bicycling. Broadway, one-way to the southwest, is wide enough, but is not striped for bicyclists. Park and Hawthorn Streets are one-way to the northeast, but are too narrow for bicycle lanes as currently configured. If a parking or travel lane were removed, on-street bicycling would be a viable option. The multi-street intersections along Park Street pose an extra difficulty for bicyclists, who need to be aware of multiple approaches. In regard to streets crossing Broadway, Williams and Fifth Streets are wide enough to accommodate bicyclists, but have no striping for a shoulder or a bicycle lane.

Many of the roadways have on-street parking, which increases the risks to bicyclists, forcing them to use caution when moving past parked cars. The roadway edges

generally do not have significant cracks or large pieces of debris, and the drainage grates are set back from the roadway. See Figure 5-2 for more information on the bicycle network.

There is bicycle parking in front of Roca, the community center, on Park Street at Cross Street.

Figure 5-3 indicates bicycle and pedestrian crashes within the study area from 2002 through 2006. During those five years, there were 65 crashes involving a pedestrian, including one fatality, and 19 involving bicyclists (no fatalities). The following intersections had more than five crashes:

- Broadway, Everett Avenue, and Winnisimmet Street: 6 pedestrians, 3 bicyclists
- Broadway and Congress Avenue: 4 pedestrians, 4 bicyclists
- Broadway at Hawthorne and Bellingham Streets: 7 pedestrians, 1 bicyclist
- Shurtleff Street at Central Avenue: 5 pedestrians, 1 bicyclist
- Broadway at Fourth Street: 4 pedestrians, 1 bicyclist

There were also crashes quite close to many of these intersections, as seen in the figure. The only fatality in the study area during those five years occurred on Broadway, just east of Congress Avenue. There was another pedestrian crash just west of that same intersection. At Broadway and Fourth Street, there were two additional pedestrian crashes just east of the intersection. There were 10 additional locations in Chelsea with multiple crashes.

The following general recommendations pertain to the entire study area:

- Stripe crosswalks across all alleys (Cherry, Division, Pine, Miller, Ferry, Ellsworth, and School Streets, and Luther Place) and provide curb ramps on each side.
- Align all crosswalks with the corner of a street, and, where not already present, construct two curb ramps at each crosswalk—one on each end—instead of having a crosswalk sharing a curb ramp with a perpendicular crosswalk.
- Test all pedestrian signals and ensure that all of the pushbutton activators work.

The subsequent sections of the chapter include more detail on existing conditions as well as recommendations; the latter are shown in Figure 5-4.

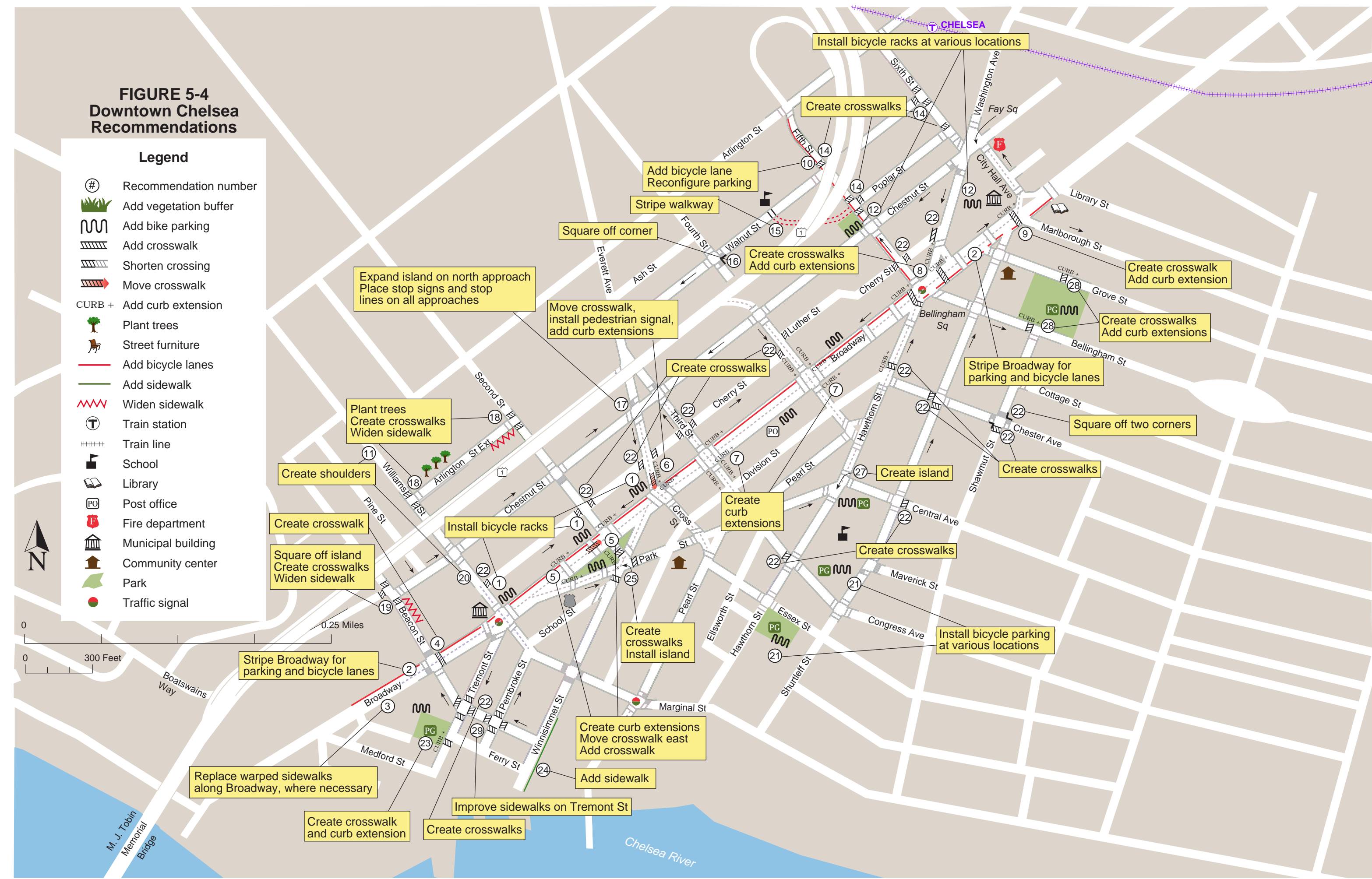
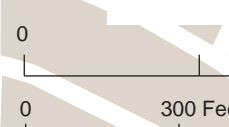
5.2.1 BROADWAY

Broadway connects City Hall and the library on the northeast with the courthouse to the southwest. Between these two points are stores, offices, apartments, a post office, and a police station. Broadway underwent streetscape improvements in 1998, from Bellingham Square southwest to Everett and Cross Streets. Improvements to Broadway from Williams Street to Bellingham Square were made in 2000. There is a brick plaza in front

**FIGURE 5-4
Downtown Chelsea
Recommendations**

Legend

- # Recommendation number
- Add vegetation buffer
- Add bike parking
- Add crosswalk
- Shorten crossing
- Move crosswalk
- CURB + Add curb extension
- Plant trees
- Street furniture
- Add bicycle lanes
- Add sidewalk
- Widen sidewalk
- Train station
- Train line
- School
- Library
- Post office
- Fire department
- Municipal building
- Community center
- Park
- Traffic signal



of City Hall. There is a park area (Chelsea Square) with benches, and a fountain near Broadway and Second Street.

Bicycling

Existing Conditions

Broadway is a two-lane, one-way road from City Hall southwest to the courthouse. It is approximately 42 feet wide, curb to curb, with parking on both sides and no striping. The roadway surface is mostly smooth, with no major impediments. Aside from the occasional double-parked vehicle, the roadway edge is clear of obstructions that would inhibit the safety of bicyclists. More than half of the 19 crashes involving bicyclists occurred on Broadway. As noted above, there were four crashes involving bicyclists at Congress Avenue, three at Everett Avenue and Winnisimmet Street, two at Williams and Tremont Streets, one at Bellingham Street, and one at Fourth Street.

There is no bicycle parking along this corridor.

Recommendations

1. Provide bicycle parking at various locations, under cover where possible. In addition to the commercial area, include some near Chelsea Square.
2. Stripe Broadway as follows: 7-foot marked parking lanes on both sides, two 11-foot travel lanes, and a 6-foot bicycle lane to the right of the travel lanes.

Walking

Existing Conditions

Sidewalks extend along both sides of all of the roadways in this area. The sidewalks are greater than five feet wide, and much wider in some areas. All of the sidewalks are made of brick, with granite curbs. Though there is some unevenness inherent in most brick sidewalks, the surfaces are relatively smooth and free of significant bumps. While there is no buffer between the sidewalk and the roadway, there are street trees throughout the area. Some of these trees are in poor health, and some tree wells are vacant.

There are numerous crosswalks along the corridor. Those in the most recently improved area are zebra-style and are highly visible. The brick crosswalks between Everett/Cross and Williams Streets are warped in areas. There are two curb extensions along Broadway.

There is a flashing traffic signal at the Broadway/Everett Avenue/Cross Street intersection. The signal, which is not pedestrian activated, flashes yellow on Broadway and red on the cross streets. The curb ramps on three of the corners are exclusive; there is a shared curb ramp on the southeast corner.

The Broadway and Williams Street intersection has a five-way stoplight with pedestrian-activated crossing signals. The signal has an exclusive pedestrian phase consisting of a 6-second “Walk” and an 11-second flashing “Don’t Walk” signal. There are crosswalks across each approach of the intersection, all zebra-style. Clockwise, they are 36, 43, 58, 30, and 52 feet long. Using a 3.5-foot-per-second standard, the pedestrian phase is barely adequate for the lengths of the crossings.

Bellingham Square is a multi-way intersection, with six one-way streets: three are entering the intersection, and three are exiting. There are pedestrian-activated crossing signals across Washington Avenue and Hawthorn Street. The pedestrian phase includes a countdown signal. There are zebra-style crosswalks on each side. Clockwise, they are 40 and 30 feet long. Using a 3.5-foot-per-second standard, the pedestrian phase is adequate for the lengths of the crossings.



A pedestrian crossing at Bellingham Square.

Recommendations

3. Throughout the Broadway corridor, repair warped brick crosswalks by placing bricks flat or with brick-pattern pressed concrete.
4. Create a crosswalk across Broadway on the northeast side of the intersection of Broadway and Beacon Street.
5. Chelsea Square
 - Construct curb extensions on the northwest side of Broadway and on the northwest side of Park Street for the crosswalks connecting to the western tip of the square.
 - Create a crosswalk across Second Street to connect the east and west parts of the square closer to the intersection of Second, Park, School, and Winnisimmet Streets and construct a curb extension on the west side of the crosswalk.
 - Move the crosswalk that crosses Broadway east to the southwest side of the intersection with Second Street.
 - Install a curb extension on the northeast corner of the square.

6. Broadway, Everett Avenue, and Cross Street
 - Install a pedestrian signal.
 - Construct curb extensions at Everett Avenue and Broadway for the crosswalks on the north and east approaches.
 - Move the Everett Avenue crosswalk on the north approach closer to the intersection.
7. Construct curb extensions at:
 - Third Street and Broadway for the crosswalks on the south and east approaches.
 - Fourth Street and Broadway for crosswalks on the north and east approaches.
8. Create an “inner ring” of crosswalks in Bellingham Square. These crosswalks would span Broadway from the northwest corner at Fifth Street to Hawthorn Street and across Hawthorn to the southeast corner at Bellingham Street. The other crosswalks would span Broadway to the island at Washington Avenue and then span Washington Avenue to the northwest corner. Construct curb extensions on the corner of Broadway.
9. Create a crosswalk across Broadway between Marlboro and Shurtleff Streets with the sidewalk in front of City Hall. Install a curb extension on the City Hall side.

5.2.2 THE AREA NORTHWEST OF BROADWAY

This area includes the middle school on Walnut Street, the commuter rail station, a fire station, and high-density residences. There are also surface parking lots and a small park at the corner of Chestnut and Fifth Streets.

Bicycling

Existing Conditions

The roadways in this neighborhood are generally in good condition. Chestnut and Walnut Streets run one-way to the southwest. These one-lane streets have parking on both sides, except in front of the school on Walnut Street, where parking is limited. City Hall Avenue and Fifth and Third Streets run one-way to the northwest, with one or two travel lanes. Everett and Fourth Streets run one-way to the southeast. Everett Street has two travel lanes and parking on both sides. Fourth Street has one travel lane and parking on one side. Beacon, Williams, and Second Streets are two-way, with one travel lane in each direction, and parking on one side, neither side, and both sides, respectively.

The Massachusetts Port Authority’s temporary closure of the Beacon Street off-ramp from Route 1 forced all traffic to Fourth Street. In response, the City eliminated all parking on Fourth Street between the off-ramp and Broadway, striped a through lane and a right-turn lane, and changed Chestnut Street between Third and Fourth Streets from northeastward to southwestward. The Beacon Street off-ramp re-opened in late 2008, and the City is debating whether or not to keep the new configuration.

The intersection of Chestnut Street, Washington Avenue, Sixth Street, and City Hall Avenue (Fay Square) is a daunting expanse of asphalt, unaccommodating for bicyclists and pedestrians, and, with no striping, essentially a “free-for-all” for motorists.



Fay Square.

Many of these streets have either no striping or faded striping. The roadway edges are generally clear of obstructions that would negatively impact the safety of bicyclists.

Williams Street, with a width of 36 feet, is a designated truck route. Two businesses that generate significant truck traffic are located nearby. The New England Produce Center is less than a mile to the north, on Beacham Street (same street as Williams, but the name changes in the vicinity of the U.S. Naval Hospital). One of the major sources of road salt in New England is located in the southeast corner of Williams and Pearls Streets.

Fifth Street, with a width of 27 to 28 feet, could accommodate bicycle lanes. There is not enough width to accommodate bicycle lanes on the rest of the streets in the neighborhood without either removing parking or making two-way streets one-way.

There is no bicycle parking along this corridor.

Recommendations

10. Given Fifth Street’s 27- to-28-foot width, create a 7-foot parking lane on the east side and a 6-foot bicycle lane on the west side. This still leaves a 14- to 15-foot-wide traffic lane. While this is much wider than necessary, the street is a few feet too short to allow the installation of back-in angle parking on one side. A longer-term alternative would be to widen the sidewalk on one or both sides of the street.
11. With a width of 36 feet, mark six-foot shoulders along both sides of Williams Street. This leaves two 12-foot travel lanes. Given the high truck volumes, this road could not serve as a preferred bicycle route.
12. Install bicycle parking in various locations, under cover where possible.

Walking

Existing Conditions

Sidewalks in the neighborhood are generally in good condition. Most are concrete, with granite curbs. The sidewalks along the west side of Sixth Street approaching the commuter rail station are asphalt, with granite curbs, and are in poor condition. The sidewalks along Fifth Street have brick details and are inlaid with student art. There are curb extensions on the east side between Broadway and Walnut Street.

The sidewalks on both sides of Beacon Street between Chestnut and Cherry Streets are too narrow. A fence along half of Arlington Street Extension prevents pedestrians from walking on the south side. There are no sidewalks adjacent to and under the bridge on the west side of the intersection of Boatswains Way and Beacon Street. Mobility in this area is complicated by the off-ramp from Route 1.



Very narrow sidewalk along Beacon Street (but keep the trees!).

While there are no vegetation buffers between the sidewalks and the roads in this neighborhood, there are trees on most of the streets. However, a few areas, noted below, have few, if any, street trees. In general, the sidewalks in the area slope down to the level of intersecting driveways.

There are several crosswalks along this corridor, all zebra-style. Most are highly visible, but a few are faded. While most crosswalks follow the natural path for pedestrians, the crosswalks at Fay Square are underutilized. A couple of crosswalks have no curb ramps, and a couple of crosswalks share one. There are two curb extensions.



Pedestrians crossing near Fay Square.

At the intersection of Third, Everett, and Chestnut Streets there are stop signs on Chestnut Street eastbound and on Third Street northbound. There are crosswalks across each approach of the intersection, all zebra-style. The crosswalk on the north approach is very long: 94 feet. There is a median 57 feet from the west side, but it barely reaches the crosswalk.



The north approach of Third, Everett, and Chestnut Streets

Recommendations

13. Fay Square: Chestnut Street, Washington Avenue, Sixth Street, and City Hall Avenue

- Mark a crosswalk on Chestnut Street on the east approach of the intersection
- Construct a curb extension for the crosswalk that crosses Washington Avenue on the north approach of the intersection
- Stripe lines through the intersection to delineate traffic movements
- Stripe a pattern or construct a low-profile brick area in the middle of the intersection to help guide motorists

14. Create crosswalks at the following locations:

- North approach of the intersection of Sixth and Poplar Streets

- All three approaches of the intersection of Sixth and Walnut Streets
 - Across the north approach of Fifth Street at the intersection with Walnut Street
 - All three approaches of the intersection of Fifth and Poplar Streets
15. Stripe a walkway through the parking lot under U.S. Route 1, from the school to the parking lot entrance on Fifth Street across from Poplar.
 16. Square off the southeast corner of Fourth Street and Walnut Street.
 17. At the intersection of Everett Avenue and Third and Chestnut Streets, expand the length and width of the island on the north side of the intersection to provide a refuge for pedestrians and to help slow traffic. Ensure that there are stop signs and stop lines on all approaches of the intersection. (Alternatively, allow only right turns for vehicles entering westbound from Chestnut Street. Use intersection space for parking or a park.)
 18. Plant trees along the northwest side of Arlington Street Extension. Move the fence back from the southeast side to widen the sidewalk. Create crosswalks on both sides of the intersections with Second and Williams Streets.
 19. Intersection of Chestnut and Beacon Streets, Boatswains Way, and U.S. Route 1 ramp. This area is a gateway for people walking to and from Admirals Hill.
 - Square off the island along the west side of Beacon Street between Boatswains Way and the off-ramp from U.S. Route 1 and construct sidewalks.
 - Create crosswalks on the south, west, and north approaches of the intersection of Chestnut and Beacon Streets with the ramp from U.S. Route 1.
 - Create a crosswalk across Boatswains Way.
 - Widen the sidewalk on the northeast side of Beacon Street from Chestnut Street to the Cherry Street alley.

5.2.3 THE AREA SOUTHEAST OF BROADWAY

This area includes the John Silber Early Learning Center, Roca, the YMCA, numerous small businesses, several playgrounds, high-density residences, and a few parking lots.

Bicycling

Existing Conditions

The roadways in this neighborhood are generally in good condition. Two major streets—Park and Hawthorne—continue the circular one-way traffic pattern, Broadway being the third approach of the triangle. Other major streets are Williams and Pearl. Minor streets include Beacon, Second, Cross, Essex, Fourth, Bellingham, Grove, Shawmut, Shurtleff, Pembroke, Pearl, Winnisimmet, and Tremont Streets, and Congress, Chester, and Central Avenues. School, Division, Ellsworth, Ferry, and Miller Streets are all alleys.

The roads are one-way, with the exception of Williams Street, Chester Avenue, and portions of Pearl and Winnisimmet Streets. All of the one-way streets have only one travel lane. The two-way roads have one travel lane in each direction. Depending on the roadway width, there is parking on either one or both sides, except for Williams Street, which has no parking. Williams Street is a designated truck route. As noted above, two businesses that are major generators of truck traffic are located nearby.

The intersection of Second, Park, School, and Winnisimmet Streets is a daunting expanse of asphalt, unaccommodating for bicyclists and pedestrians. Like Fay Square, this area is not striped, and is essentially a “free-for-all” for motorists.

Many of these streets have either faded striping or none at all. The roadway edges are generally clear of obstructions. With the exception of Williams Street, the roads are too narrow to create bicycle lanes without removing parking.

There is bicycle parking in front of Roca, on Park Street at Cross Street.

Recommendations

20. Mark six-foot shoulders along both sides of Williams Street, which is 36 feet wide. This leaves two 12-foot travel lanes. Given the high truck volumes, this road could not serve as a preferred bicycle route.
21. Install bicycle parking in various locations, covered where possible, including the playgrounds and the commercial areas.

Walking

Existing Conditions

With some exceptions, the sidewalks are in good condition. Most are concrete, with granite curbs. Sidewalks that are in fair and poor condition include some along Tremont and Winnisimmet Streets and a portion of Hawthorn Street. There are no sidewalks along Winnisimmet near the waterfront.

There are no vegetation buffers between the sidewalk and the roadways. There are trees on most of the streets, although a handful of areas, noted below, have few or none. Sidewalks in the area generally slope down to the level of intersecting driveways.

All of the crosswalks are zebra-style, and most are highly visible, although several are faded. Many crosswalks could be added in the area, particularly across the alleys and as connectors between the parks. Most crosswalks follow natural pedestrian paths, although walkers often do not use them at the following intersections: Cross, Park, and Pearl Streets; Park and Hawthorn Streets at Central Avenue; and Second, Park, School, and Winnisimmet Streets. The City recently eliminated parking on the northwestern side of Park and Hawthorn Streets at the intersection with Central Avenue to improve sight

distances for pedestrians. A couple of crosswalks have no curb ramps, and several crosswalks share one. There are only a couple of curb extensions.

The intersection of Pearl and Williams Streets has a four-way stoplight with pedestrian-activated crossing signals. An exclusive pedestrian phase consists of a 10-second “Walk” and a 9-second flashing “Don’t Walk” signal. There are crosswalks across each approach of the intersection, all zebra-style. Clockwise, they are 39, 40, 42, and 39 feet long. Using a 3.5-foot-per-second standard, the pedestrian phase is adequate. A number of the pedestrian pushbuttons did not work.

Recommendations

22. Create crosswalks at the following locations:

- All approaches of the Tremont-Beacon Street intersection
- All approaches of the Pembroke-Beacon Street intersection
- All sidewalks crossing the Cherry and Luther Street alleys
- Across Congress Avenue on the northwest approach of the intersection with Hawthorn Street
- Across Central Avenue on the east approach of the intersection with Shurtleff
- Across Hawthorn Street on the north approach of the intersection with Chester Avenue with a curb extension on the west corner
- Across Chester Avenue on the west side and across Shurtleff Street on the south side
- Across Shawmut Street on the south side of the intersection with Chester Avenue, and square off the southwest and northeast corners

23. Create a mid-block crosswalk across Tremont Street to connect to the park. Create a curb extension in front of the park entrance.

24. Install new sidewalks on the east side of Winnisimmet Street from Ferry Street past Beacon Street. Repair the sidewalks on the west side between Ferry and Williams Streets.

25. Intersection of Second, Park, School, and Winnisimmet Streets

- Either create crosswalks across Winnisimmet on the southwest and southeast approaches, or create a crosswalk along the west approach of the intersection that spans the merged portion of Park, School, and Winnisimmet Streets
- Paint or install one or more low-profile islands in the middle of the intersection to guide traffic and to visually narrow the intersection

26. Expand the low-profile island in front of Roca at the intersection of Cross, Park, and Pearl Streets. Create crosswalks to this island to provide more visible crossings.

27. Paint a median area or install a low-profile island in the middle of the intersection of Hawthorn and Park Streets with Central Avenue.

28. Improve access to the park between Grove Street and Bellingham Street.

- Create crosswalks across Bellingham Street on the west and east sides of the intersection with Shawmut Street. Create curb extensions on the park side.
- Create a mid-block crosswalk on Grove Street connecting to the park entrance. Create a curb extension on the Grove Street side.

29. Create sidewalks that are distinct from the street along Tremont Street.