The image is a grayscale photograph of a city street scene. On the left, there is a multi-story building with classical architectural features like columns and a pediment. In the foreground, there are trees and a sidewalk. In the middle ground, two people are walking away from the camera on the sidewalk. To the right, a car is driving on the street. A large, semi-transparent green rectangular overlay is centered over the image, containing the title text in white.

STAMFORD BICYCLE AND PEDESTRIAN PLAN

WestCOG Project No. WC-2016-0411

State Project No. 0135-0333

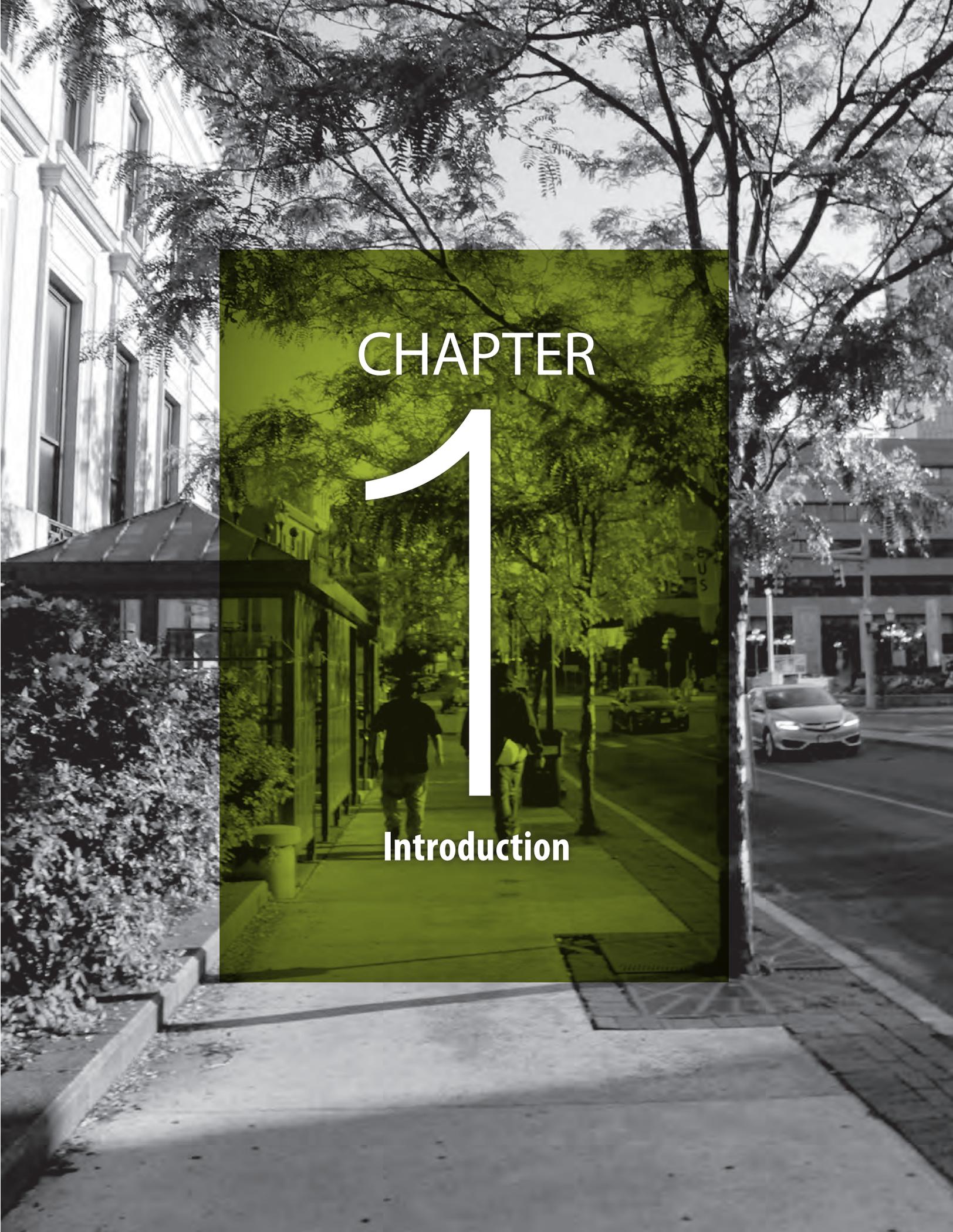
State Agreement No. 7.21.03(15)

This document was prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration and the Connecticut Department of Transportation. The opinions, findings, and conclusions expressed in this publication are those of the author and do not necessarily reflect the official views or policies of the Western Connecticut Council of Governments, Connecticut Department of Transportation or the U.S. Department of Transportation.

CONTENTS

1. Introduction	1.1
2. Where We are Now. Walking and Bicycling Today in Stamford	2.1
3. Previous Plans and Studies	3.1
4. Where We Want to Go. Community Support for Better Bicycling and Walking	4.1
5. How We Get There. Strategies for Successful Education and Enforcement	5.1
6. How We Get There. Building the Bicycle Network	6.1
7. How We Get There. Building the Walking Network	7.1
8. How We Get There. Advocating for Change	8.1
9. Funding the System	9.1
10. Maintaining the System	10.1
11. Performance Measures and Action Plan	11.1





CHAPTER

1

Introduction

Page 1.3 » Introduction

Page 1.4 » Benefits of walking and Bicycling

Introduction

The City of Stamford has developed this Bicycle and Pedestrian Master Plan to provide a framework for an important element of the City's multimodal transportation system. The emphasis of this plan is on safe and convenient travel for people walking and bicycling.

The community articulated this goal, when establishing the vision...

The City of Stamford is a place where people of all ages and abilities can safely and conveniently walk and bicycle to access all destinations.

While the number of people driving to work has dropped 10 percent nationally since 2000, the number of people walking and biking has increased by around 20 percent according to the US Census Bureau¹. The city has recognized the numerous benefits of creating a multimodal transportation system as well as the cost, equity, economic, health and environmental benefits of prioritizing safety and access for those citizens who walk and bicycle.

Walkable communities make it easier for people to know their neighbors, and add more "eyes on the street" which increases safety. When people walk or bike instead of driving, there is less air pollution, and everyone can breathe more easily. Many neighborhoods of Stamford are traditionally walkable and provide comfortable and contiguous sidewalks for people. Nevertheless, there are still gaps in the pedestrian network. Improving the connectivity and increasing the quality of this network will provide more direct, convenient and safe travel routes for walking; provide more travel choices and reduce dependency on automobiles; and increase the city's economic competitiveness by providing comfortable spaces that attract residents and businesses to the city.

Benefits of Walking and Bicycling

Equity

Walking and bicycling is an essential means of transportation for people who are not able to drive, including children, the elderly, and people who cannot afford to own and maintain a car. According to the US Department of Transportation's 2013 National Household Travel Survey, approximately 13 percent of adults in the U.S. do not drive². Walking rates are directly related to the quality of the walking infrastructure. In other words, in high-quality pedestrian environments, lots of people walk. Where the network fails or is lacking—missing sidewalks, major barriers, no safe crossings—people walk less, and those who do are at greater risk. A truly viable pedestrian system involves both the big picture and the smallest details—from how a city is built to what materials are under our feet.

Health

As a fundamental form of physical activity, walking and bicycling provides substantial health benefits. They provide many people with an affordable way of incorporating physical exercise into their daily routine for transportation and recreational purposes, helping to fight obesity and related chronic diseases. Health organizations including the American Medical Association and the Centers for Disease Control and Prevention have recommended adults engage in at least 20 minutes a day of physical activity³. Less than half of adults living in the U.S. report meeting the recommended physical activity requirements and a third report being physically inactive⁴. Walking is the most frequently reported activity among adults who meet physical activity guidelines.⁵ Through its ability to improve health, walking has been shown to reduce health care costs. The annual individual medical cost of inactivity (\$622) is more than two and a half times the annual cost per user of bike and pedestrian trails (\$235).⁶ Costs associated with obese and overweight adults in the United States and Canada are estimated to be approximately \$300 billion annually.⁷ The nation could save \$5.6 billion every year in health care costs related to obesity if one of every 10 adults started a regular walking program.⁸

Increased walking and bicycling can also help address many common health problems including obesity. According to the Centers for Disease Control, twenty-five percent of Connecticut adults are obese.⁹

Economic

Improving conditions for walking can also have positive effects on local economies by providing opportunities to reduce household transportation costs, increase access to jobs, improve upward economic mobility,¹⁰ and increase property values. According to a 2013 survey, 60 percent of adults in the U.S. favor walkable mixed use neighborhoods, and almost two thirds of adults between 18 and 35 report a desire to drive less if alternative transportation options were available.¹¹ Additionally recent research suggests that a one point increase in the walking score of a real estate property is associated with between a \$700 and \$3,000 increase in home values.¹² Bicycling and walking in New Jersey contributed an estimated \$497.46 million to the New Jersey economy in 2011.¹³ In Vermont bicycling and walking support 1,400 jobs, bring in \$41 million in wages and \$83 million in revenue and health care savings and increases in property value have added more than \$400 million in economic benefits to the state.¹⁴ Local communities have also benefited from increased walkability and bike-friendliness: in San Francisco for example nearly 40% of merchants on Valencia Street reported increased sales and 60% reported more area residents shopping locally due to reduced travel time and convenience as the street was reconfigured to improve bicycling and walking conditions.¹⁵

Safety

Pedestrians and bicyclists tend to be the most vulnerable user on the road and are at the highest risk of death or serious injury in the event of a crash. As many people do not have access to a vehicle due to age or financial constraints, it is important to provide safe transportation options for all users. Investing in a connected and well-designed pedestrian network, including sidewalks and roadway crossings, can improve safety for pedestrians. In 2016, The Alliance for Biking and Walking released an update to their benchmarking report documenting trends and best practices in American cities and states. The report states that in cities where a higher percentage of commuters walk or bicycle to work, corresponding fatality rates are generally lower. If the pedestrian network is not accessible, it is often not safe. For example, lack of access may cause wheelchair users to use the street rather than a poorly maintained sidewalk. Additionally, a culture of

walking tends to increase “eyes on the street” which can help reduce crime in a local community.

Conclusion

Increasing the number of people walking and bicycling in Stamford helps the City achieve its broader goals of economic vitality, neighborhood quality of life, mobility and access for all, downtown growth, maintaining community character, and sustainability.

The Bicycle and Pedestrian Master Plan lays out a roadmap for improving the safety, convenience and practicality of walking and bicycling through a wide range of changes to the physical environment, as well as a series of education, enforcement and encouragement strategies that will help establish a stronger culture of active transportation in the community.

¹ U.S. Census Bureau, 2009-2013 5-Year American Community Survey. File B08141 means of transportation to work by vehicles available

² This figure includes persons with temporary or permanent disabilities, those who cannot afford to drive, seniors, or those who have chosen to travel by other modes.

³ US Department of Health and Human Services. “2008 Physical Activity Guidelines for Americans.” 2008

⁴ Alliance for Biking and Walking. “Bicycling and Walking in the United States: 2014 Benchmarking Report.” 2014

⁵ Kruger, J et al. “Prevalence of Transportation and Leisure Walking among US Adults.” American Journal of Preventative Medicine. 2008

⁶ Wang, G., “Cost analysis of the built environment: The case of bike and pedestrian trails in Lincoln, Neb”, American Journal of Public Health, 94, 549-53. 2004

⁷ Behan, D. and Cox, S. “Obesity and its Relation to Mortality and Morbidity Costs.” Society of Actuaries. 2010

⁸ National Governor’s Association Report on Healthy Living. 2011

⁹ The State of Obesity: Better Policies for a Healthier America. www.cdc.gov/vitalsigns/childhoodobesity/index.html

¹⁰ Chetty, Raj, et al. “Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States.” Harvard University and the National Bureau of Economic Research. 2014.

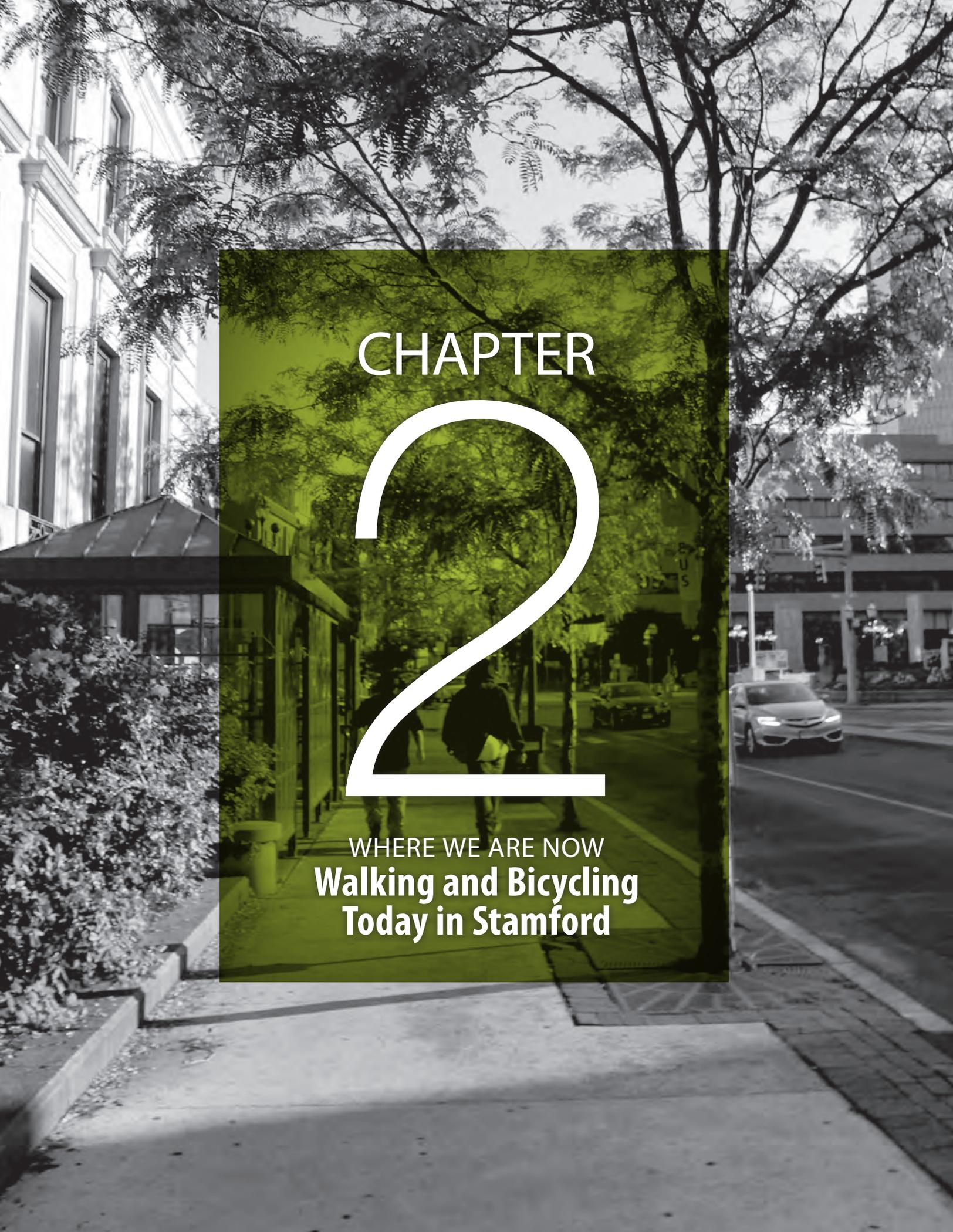
¹¹ National Realtors Association 2013 Community Preference Survey

¹² Joe Cortright, Impresa, Inc. (2009) Walking the Walk, CEOs for Cities

¹³ Brown, Charles, “The Economic Impacts of Active transportation in New Jersey”, Alan M. Voorhees Transportation Center, <http://njbikeped.org/wp-content/uploads/2013/05/Economic-Impacts-of-Active-Transportation-in-NJ.pdf>

¹⁴ Resource Systems Group, Inc., Economic and Policy Resources, Inc., and Local Motion, “Economic Impact of Bicycling and Walking in Vermont”. 2012, http://www.localmotion.org/documents/advocacy/Final_Draft_Report_Econ_Impact_Walking_and_Biking_030812.pdf

¹⁵ Drennan, E., “The Benefits of Complete Streets 7: Complete streets spark economical revitalization”. 2003



CHAPTER

2

WHERE WE ARE NOW
**Walking and Bicycling
Today in Stamford**

This chapter documents the state of walking and bicycling in Stamford today and highlights opportunities for improvement. On the following pages, you will find:

Page 2.3 » Stamford Today

Overview of the current number of people walking and bicycling and opportunities for better access to schools and transit stations, among others.

Page 2.10 » Education and Enforcement

Summary of program.

Page 2.11 » Complete Streets Policies

State and City-level Complete Street policies.

Page 2.15 » Design Guidelines

Overview of existing guidance.

Page 2.16 » Issues and Challenges

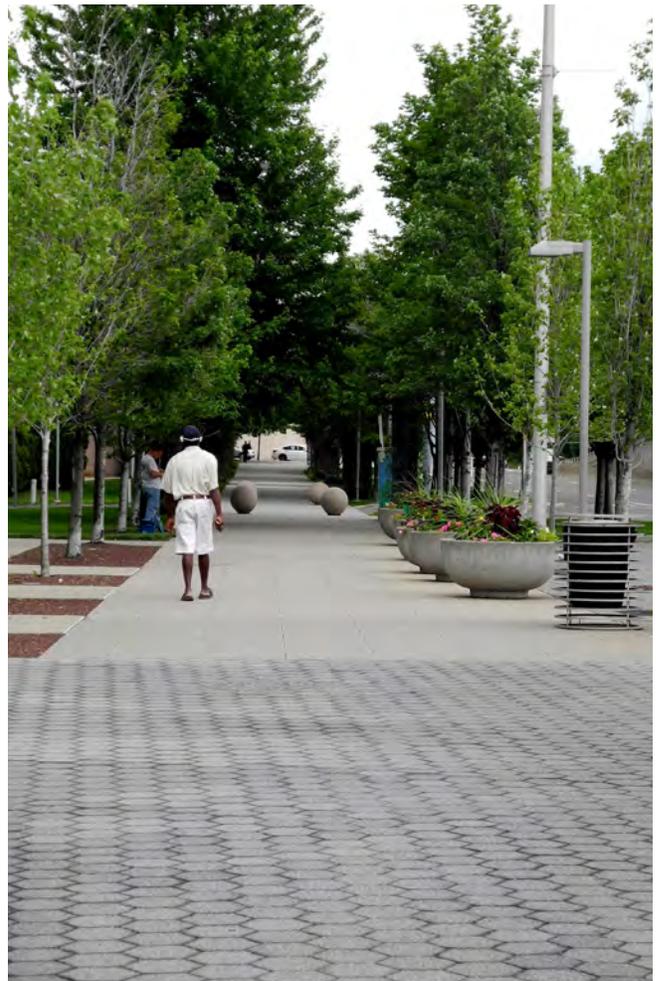
Detailed list with photos of key issues that affect the Safety and comfort of bicyclists and pedestrians and Americans with Disabilities Act compliance.

Walking and Bicycling Today in Stamford

The city of Stamford is well-placed to become a hub of walking and bicycling activity. Major transit centers are centrally located to allow residents to access destinations without needing an automobile. Schools are dispersed throughout the city creating the possibility for almost all children to be able to walk or ride their bicycle to school or to walk to school-based bus stops. The city is served by a half-dozen shopping centers, most of which are pedestrian in scale. In the southern part of the city, the dense and finely-gridded street network disperses traffic and creates a diversity of route options while large parks and waterways create opportunities for the development of a connected trail system. In northern Stamford, quiet roads meander among forested hills creating the opportunities for pleasant walking and bicycling experiences.

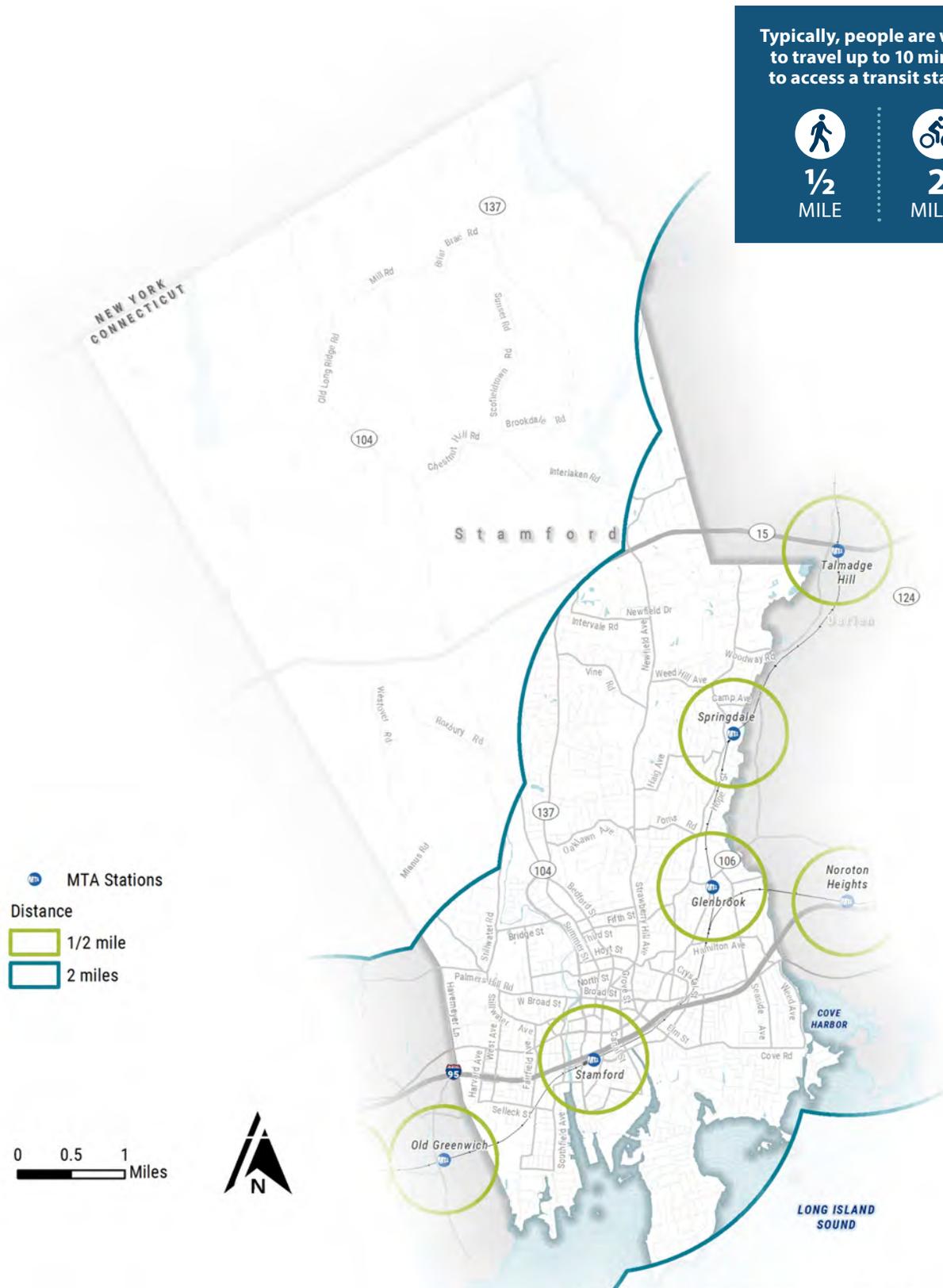
A network of sidewalks exists, predominately in the downtown area, and trails can be found in many city parks. The city has begun to install bicycle facilities such as bike lanes and bicycle-oriented pavement markings such as sharrows (shared-lane markings) in the vicinity of the Stamford Transit Center. Bicycle parking in the form of twenty bicycle hitches (bicycle parking loops that are added onto parking meters) and sixteen multi-bike racks were installed in downtown in 2016.

The following maps highlight the population of Stamford that lives within a walking and bicycling distance of schools and transit station and where current bicycle facilities exist.



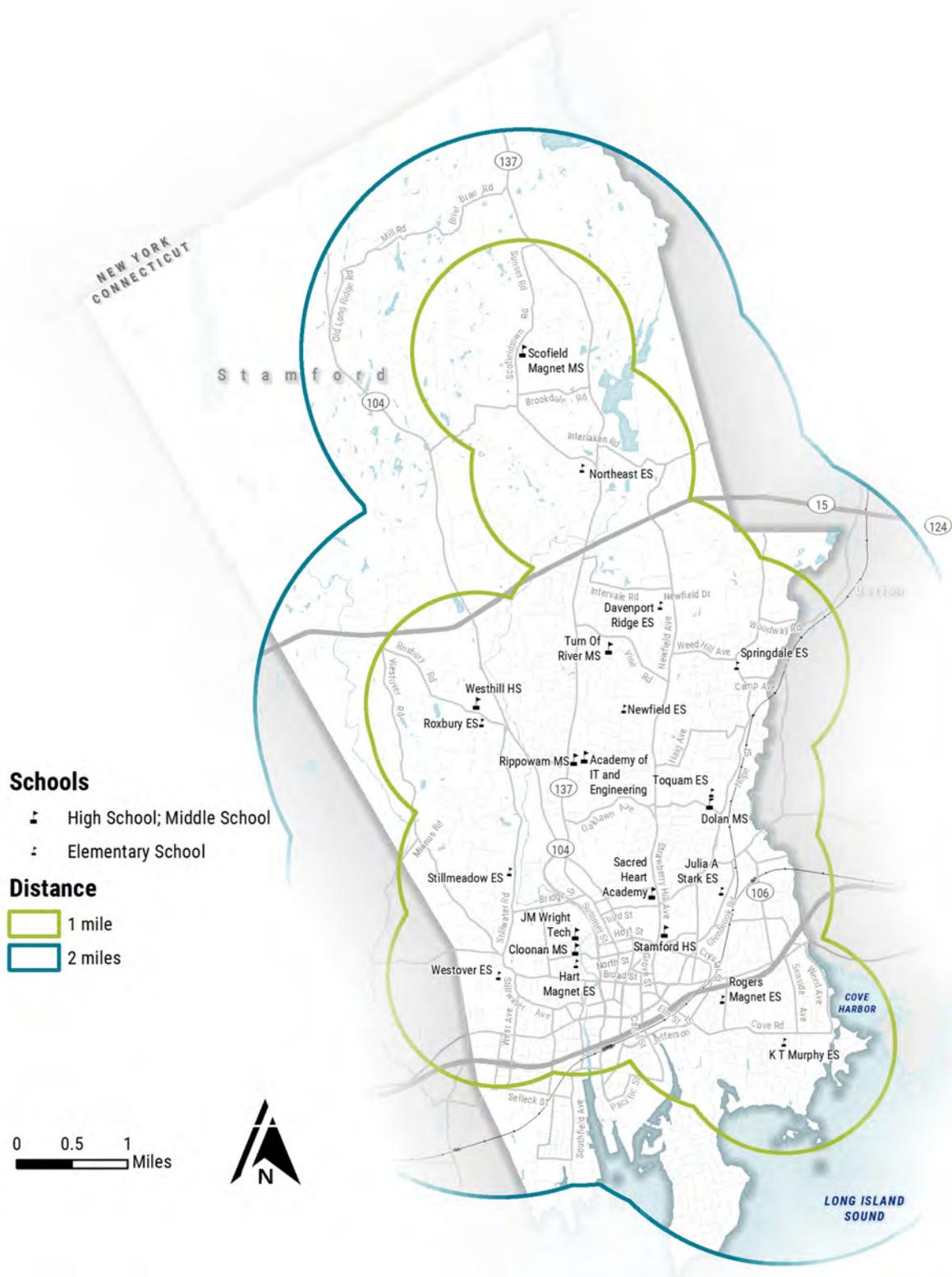
TRANSIT STATIONS

There are three transit stations in Stamford which could be accessible to people walking and bicycling if safe and comfortable facilities existed. Encouraging people to walk or bicycle to transit reduces roadway congestion and the cost of building parking garages at transit stations.



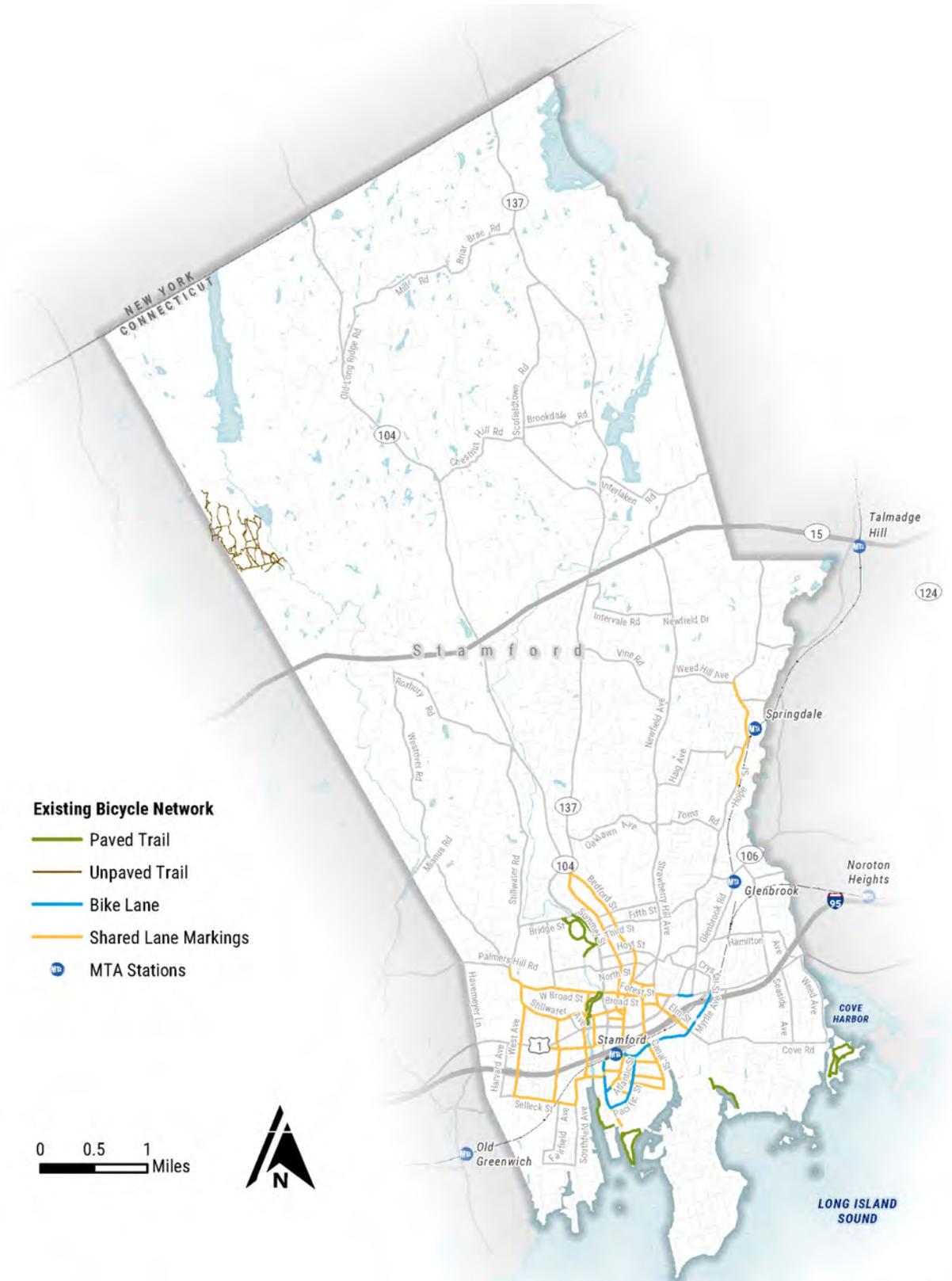
SCHOOLS

There are numerous schools in Stamford, many of which could be accessible by foot or by bicycle if direct, safe and comfortable facilities for children and young people existed. Typically, children are comfortable walking up to a mile and bicycling up to two miles to get to school.



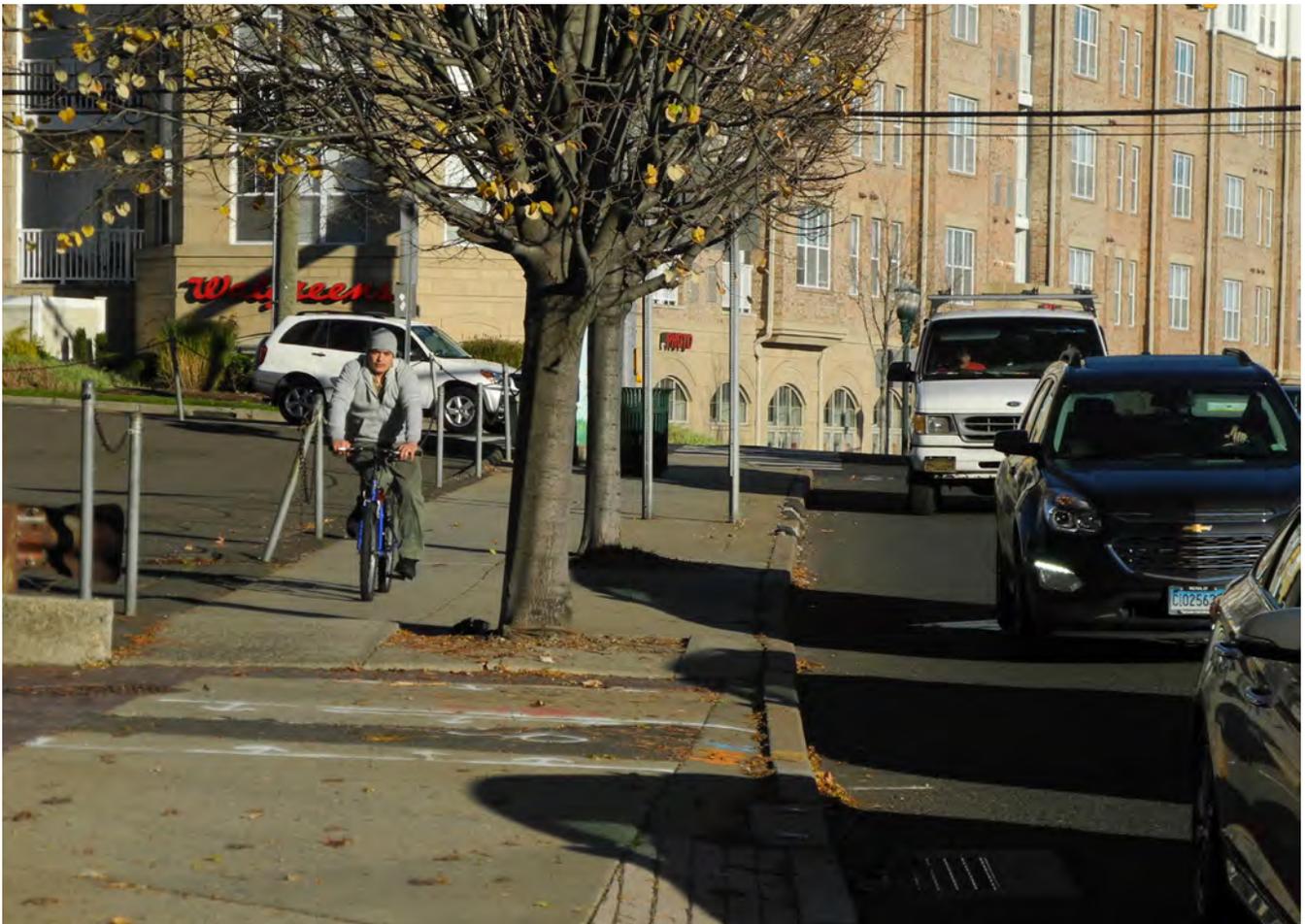
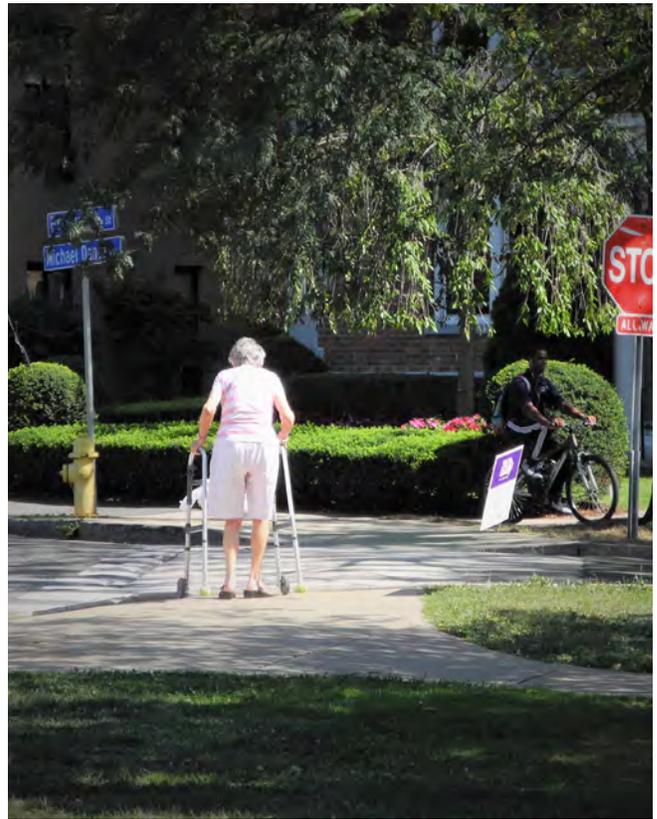
EXISTING BICYCLE FACILITIES AND PAVEMENT MARKINGS

This map shows the existing bicycle facilities in Stamford including trails and bike lanes as well as shared-lane markings (i.e. sharrows).



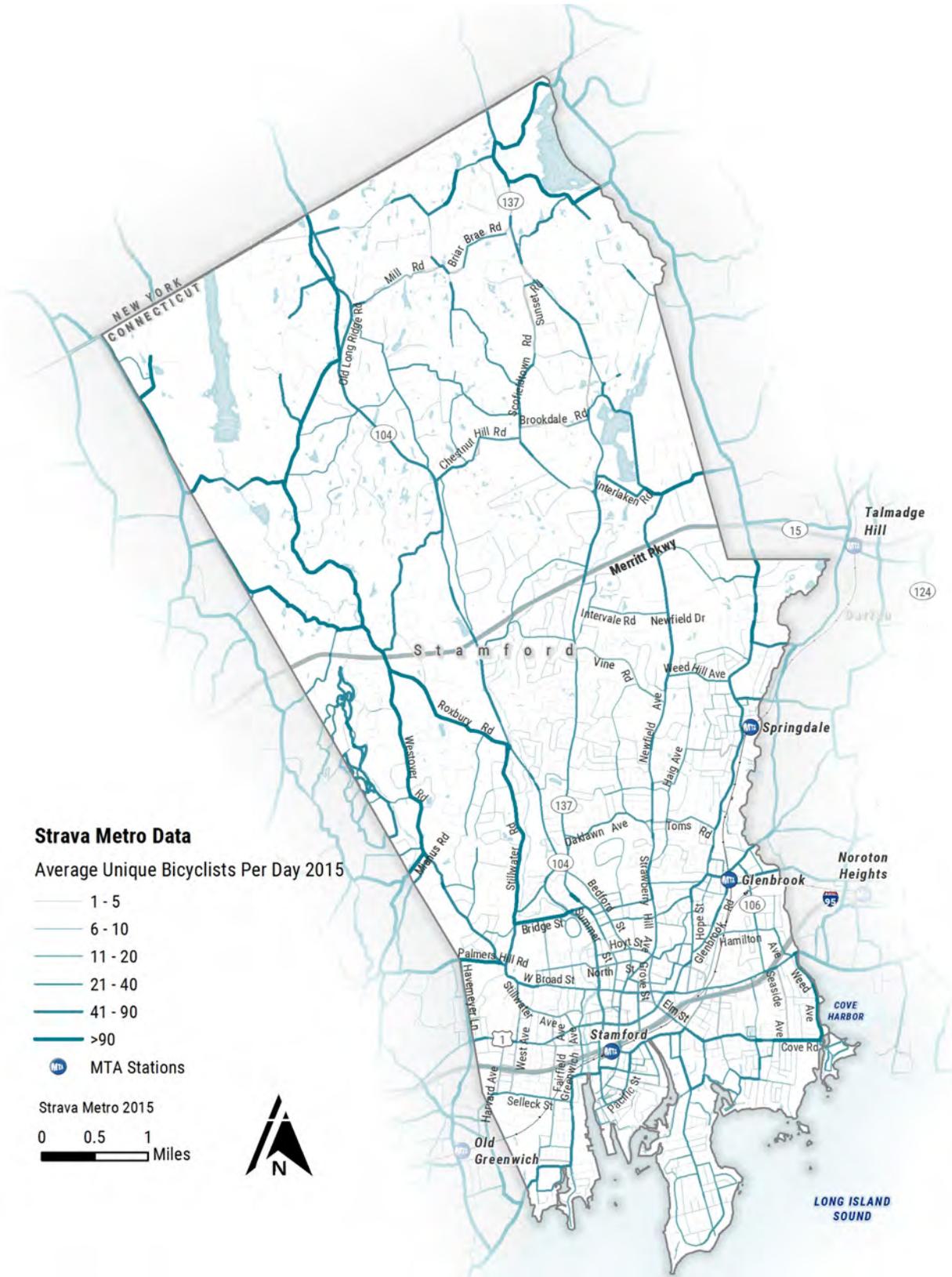
IN STAMFORD PEOPLE ARE WALKING AND BICYCLING TODAY ON EVERY STREET.

Throughout the city of Stamford, on every street—from urban to rural—there are people walking and bicycling. This is reinforced by data from the walking and bicycling app, Strava. Strava is most commonly used by athletes to track data on their training rides and runs; therefore, it frequently does not include routine trips for work or to go shopping and would likely not include trips by Stamford residents who work in homes or service industries outside of the downtown area. This suggests that the number of people walking and bicycling on roadways throughout the city exceeds the data shown on the following maps.



BICYCLE TRIPS

This map shows the routes of people bicycling who use Strava (an app for people who want to track their bicycling activity). This map demonstrates how almost all roads in Stamford are used by bicyclists and that bicycle trips take place regionally often crossing town lines.



Education and Enforcement

Education and enforcement of pedestrian and bicycle safety and awareness has begun with the StreetSmarts campaign.

The Stamford Police Department is supportive of enhancing safety for pedestrians and bicyclists and recognizes that vehicle speeds are a major contributor to crashes and fatalities.

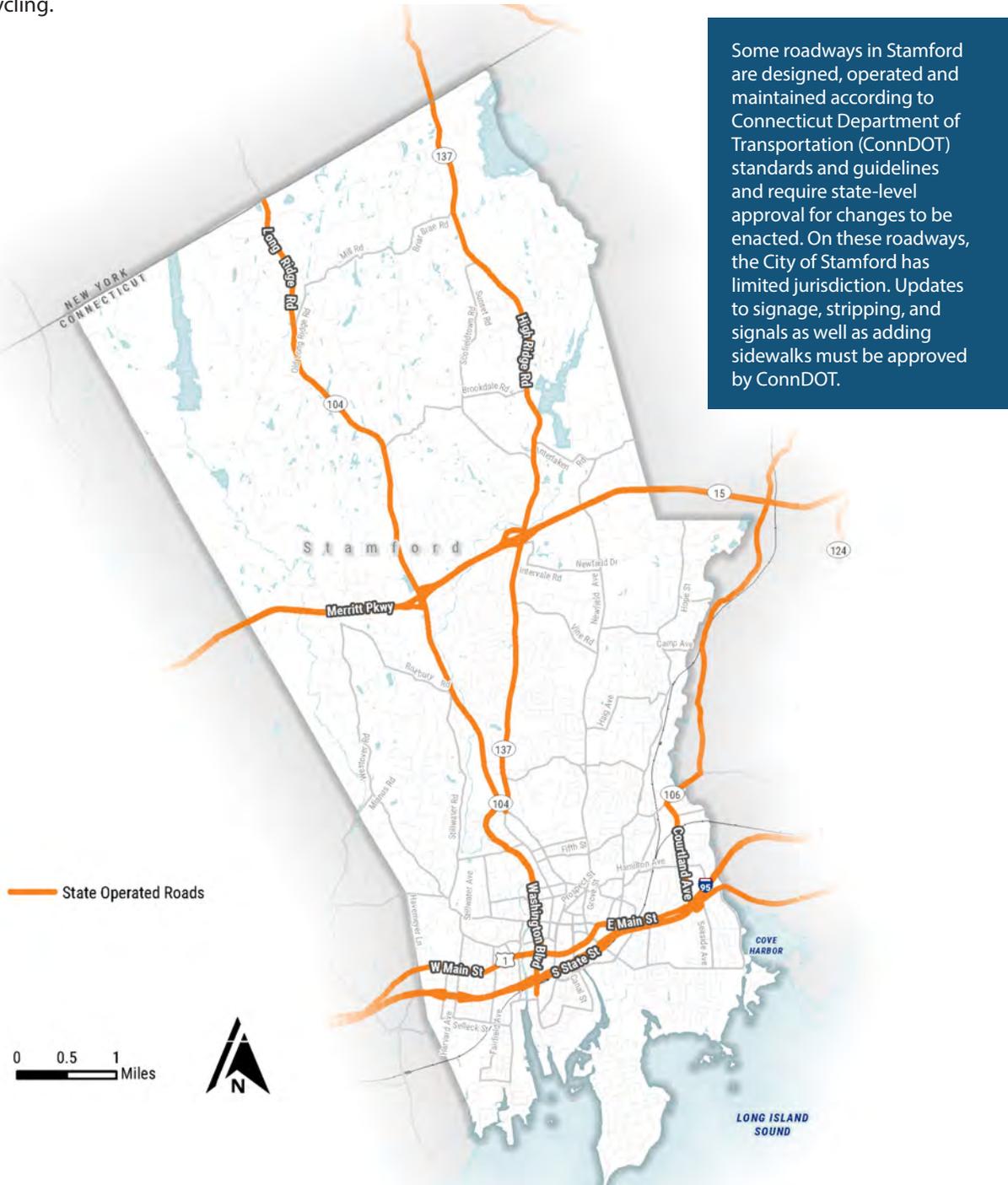


Policy

Both the City of Stamford and the Connecticut Department of Transportation (ConnDOT) have created Complete Streets policies which aim to provide safe and convenient access for all users of the transportation network including pedestrians and bicyclists.

This ConnDOT map highlights roadways in Stamford which are overseen by ConnDOT and can be focus areas for the state to improve conditions for people walking and bicycling.

The following documents are the complete street policies of Stamford and ConnDOT.



ARTICLE XII. - COMPLETE STREETS

Sec. 231-78. - Title.

This Article shall be entitled the Complete Streets Ordinance.

Sec. 231-79. - Definitions

As used in this Article, the following terms shall have the meanings indicated:

Complete Streets. Roadways that are designed and operated to provide safe and convenient access to all Users.

Users. Are all people that use roadways, including pedestrians, bicyclists, public transportation riders, and motorists and includes people of all ages and abilities, including children, seniors and individuals with disabilities.

Transportation Improvement Project. Any public or private investment within the public right-of-way, regardless of funding source, including, but not limited to, new construction, reconstruction, alteration and maintenance inclusive of road resurfacing, except that a Transportation Improvement Project shall not include routine upkeep such as cleaning, sweeping, plowing or spot repair.

Sec. 231-80. - Implementation

This Article shall require the implementation of Complete Streets in appropriate locations within the City of Stamford by the Office of Operations, as follows:

- (a) The Office of Operations shall review all Transportation Improvement Projects being designed for implementation within the City limits and explore opportunities to meet the needs of all Users, including but not limited to motorists, pedestrians, bicyclists, and transit vehicles.
- (b) All Transportation Improvement Projects located within 1,000 feet of a school, commercial center, or bus stop shall include infrastructure designed to accommodate pedestrians.
- (c) The requirements of this Article shall not apply to Transportation Improvement Projects:
 - (1) where specific users are prohibited by law (e.g. interstate highways or pedestrian-only paths); or
 - (2) where the cost of the accommodations necessary to implement Complete Streets is excessively disproportionate to the need or probable use; provided, however, that the Director of Operations must document the rationale for exemption from the Complete Streets Ordinance in such cases.

Sec. 231-81. - Complete Streets Manual.

A Complete Streets Manual, detailing the steps to be taken to implement this Ordinance, shall be adopted by the Office of Operations and approved by the Board of Representatives.

ConnDOT Complete Streets policy



CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. EX.O. - 31

October 23, 2014

SUBJECT: Complete Streets

This policy is developed in accordance with Section 13a-153f (a)(d) of the Connecticut General Statutes, Accommodations and Provision of Facilities for All Users. It is the policy of the Department to consider the needs of all users of all abilities and ages (specifically including pedestrians, bicyclists, transit users, and vehicle operators) in the planning, programming, design, construction, retrofit and maintenance activities related to all roads and streets as a means of providing a “safe, efficient transportation network which enhances quality of life and economic vitality”. Complete streets shall be defined as, for the purposes of this policy, a means to provide safe access for all users by providing a comprehensive, integrated, connected multi-modal network of transportation options.

As a condition of funding, Complete Streets must be considered, in adherence with Public Act 09-154. This policy enables the alignment of transportation funds to encourage improvements for non-motorized users, especially those that connect to transit, schools, and other generators of non-motorized traffic.

OBJECTIVES

- Improve safety and mobility for pedestrians of all ages and abilities, bicyclists, and the mobility challenged, as well as those who choose to live vehicle free
- Develop and support a transportation system that is accommodating of active transportation modes that promote healthier life styles
- Develop and support a transportation system that is accommodating of compact, sustainable and livable communities
- Ensure that the State's transportation network is sustainable through Transportation Demand Management and System Management
- Improve mobility and accessibility to activity centers, including: employers, commercial centers, schools, transit, and trails
- Encourage a shift to alternative transportation modes, reducing reliance on carbon fuels and promoting energy conservation
- Support the State's Transit Oriented Development (TOD) efforts through the provision of integrated transportation networks
- Enhance State economic competitiveness by enabling communities to become livable, walkable, bikeable, drivable, efficient, safe and desirable

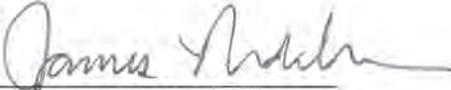
ConnDOT Complete Streets policy

The Department shall form a Complete Streets Standing Committee with membership from each Bureau. This standing committee shall be responsible for providing guidance for the implementation of Complete Streets Department-wide.

PROCEDURES

This policy will be implemented via the following actions:

1. **Training:** The Department will provide training for its engineers and planners on Complete Streets best practices. This training will also be open for registration to municipal engineers, planners and local traffic authorities, Metropolitan Planning Organizations (MPOs) and Regional Planning Organizations (RPOs), as room permits. The Complete Streets Standing Committee will schedule annual training opportunities related to Complete Streets.
2. **Checklist:** The “Connecticut Department of Transportation Bike and Pedestrian Travel Needs Assessment Form” will be regularly updated to ensure compliance with this policy. This form shall be used at the earliest point in project development for all applicable projects. This form shall apply to all Department projects, mainline utility projects within the state right-of-way, the Office of the State Traffic Administration (OSTA) certificate applications receiving state or federal funding, and municipal transportation projects that receive state or federal funding.
3. **Complete Streets** shall be considered in all projects receiving state or federal funding. The checklist will be integrated into all Department reviews including Planning, Engineering, Encroachment Permits, Public Transportation, Ferries and Ports, and OSTA Certificate Applications. The checklist will consider all travel modes, environmental and social context.
4. **Design Guidance:** The Department will amend its design, construction and maintenance guidelines to reflect the routine accommodation of all users. The Complete Streets Standing Committee shall provide input on the development guidance documents. Department design guidance shall reflect best practices for all users.
5. **Funding:** The Department shall review eligibility of funding sources to increase flexibility for the funding of Complete Streets. The Complete Streets Standing Committee shall work with program managers to refine prioritization criteria in order that all projects reflect complete streets, and projects that focus on bicycles and pedestrians are able to compete with traditional roadway projects for funding appropriately.
6. **Data Collection:** The Department will include non-motorized users in traffic counts to the extent possible. Turning movement counts associated with OSTA certificate application reviews shall include counts of non-motorized users where appropriate.
7. **Performance Measures:** The Department shall establish and annually report performance measures, through the Performance Measures Standing Committee. These measures shall be developed in line with federal performance measures for safety and mobility of non-motorized users.



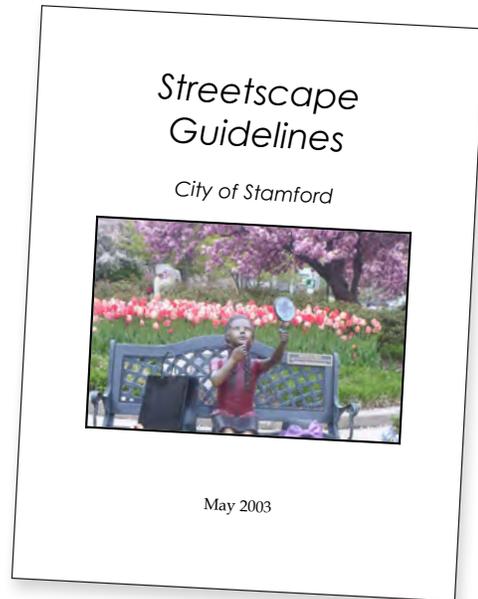
James Redeker
Commissioner

Design Guidelines

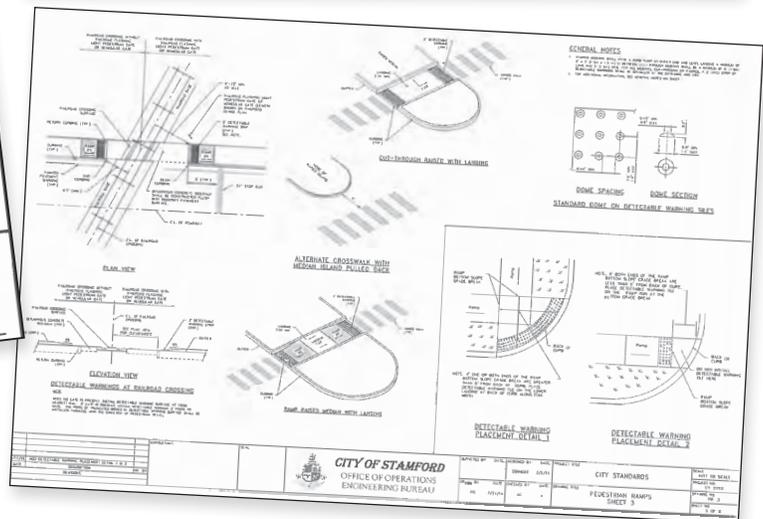
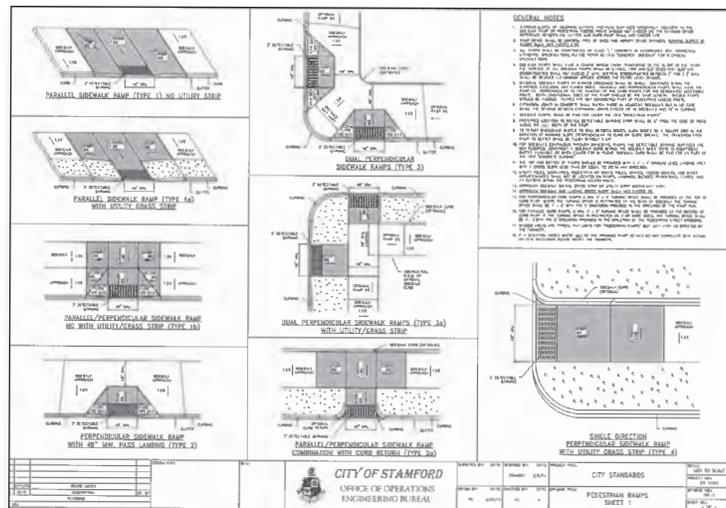
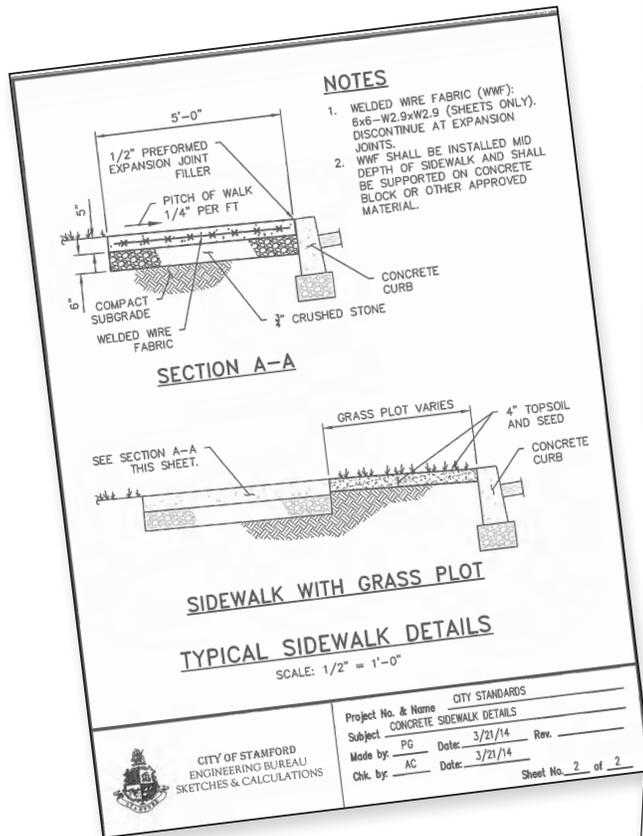
The City of Stamford is currently lacking design guidelines for both pedestrian and bicycle facilities. Streetscape Guidelines were developed in 2003, but were never adopted or enforced. These guidelines provide principles for streetscape development, but could benefit by being updated and incorporating the entire roadway right-of-way, providing more detailed guidance on intersections and including bicycle facilities.

The Stamford Office of Operations Engineering Bureau standard drawings provides guidance on sidewalks, crosswalk markings, curb ramps and pedestrian islands, but could be updated to provide additional detail on sidewalk widths in varying contexts, among others. No guidance on bicycle facilities is provided.

Streetscape Guidelines



Stamford Office of Operations Engineering Bureau standard drawings for sidewalks, curb ramps and pedestrian islands.



Issues and Challenges

In addition to the numerous assets and opportunities within the City of Stamford, there are a number of issues and challenges that should be addressed in order to meet Stamford's **vision** of being:

A place where people of all ages and abilities can safely and conveniently walk and bicycle to all destinations.

These issues are highlighted in this section of the report. Challenges include infrastructure that is in poor condition, in need of maintenance and/or replacement and infrequently meets Americans with Disabilities Act (ADA) standards such as:

- sidewalks in need of repair or whose widths do not comfortably or safely accommodate the number of people who use them;

- a lack of separated bicycle facilities especially on high speed/high volume roadways or trails to provide comfortable and safer places for people to ride their bicycles;
- intersections that feel dangerous to cross, do not provide enough time to cross, and have long wait times for pedestrians; and,
- high automobile speeds which are related to higher injury and fatality rates and create an uncomfortable environment for walking and bicycling.

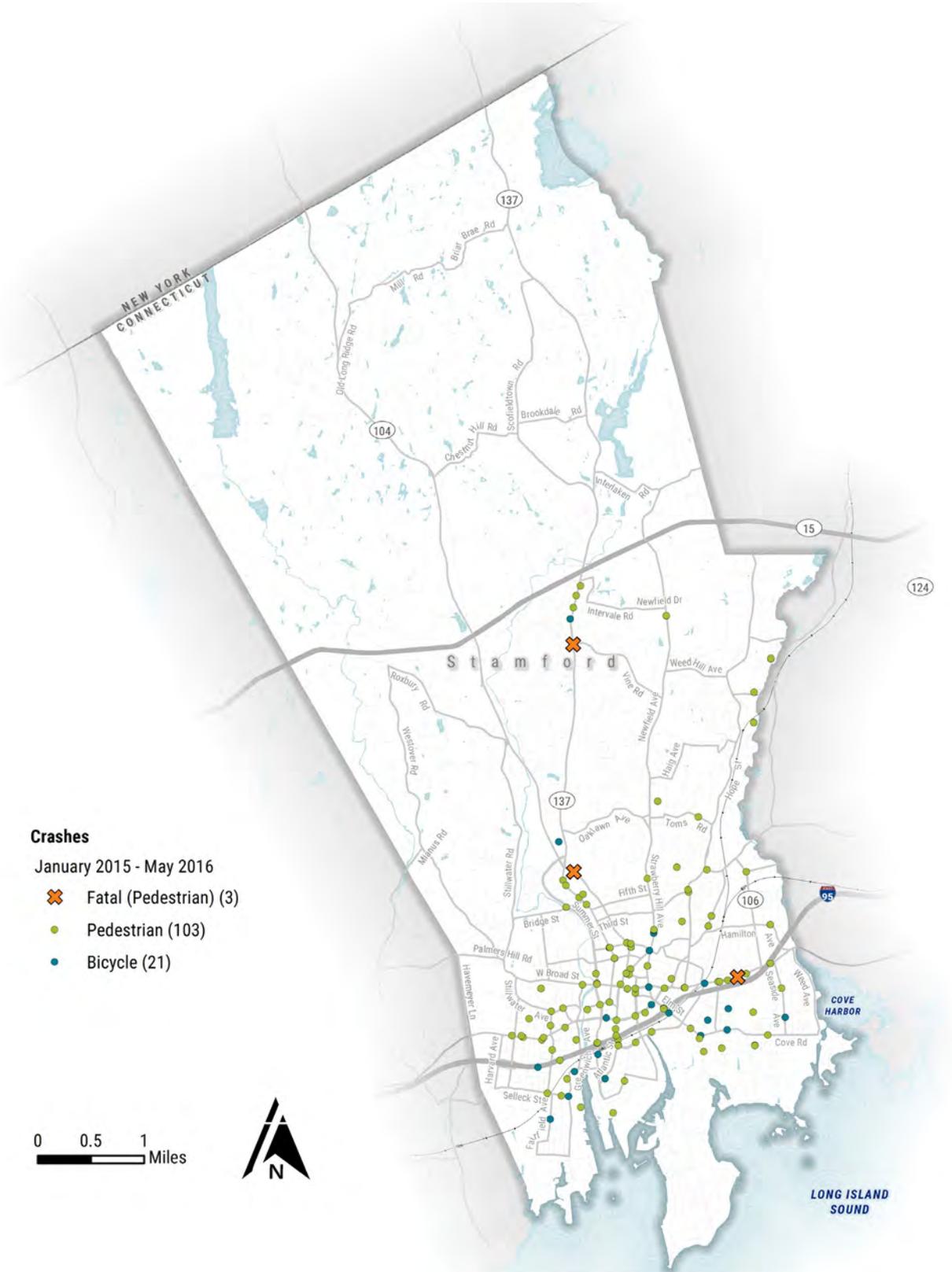
These issues are highlighted on the map of crashes that have led to both injuries and fatalities in the last seventeen months.

Maps also show areas where the populations are dependant upon walking and bicycling. This provides an opportunity to enhance the safety and convenience of walking and bicycling for constituents for whom these travel modes are particularly important.



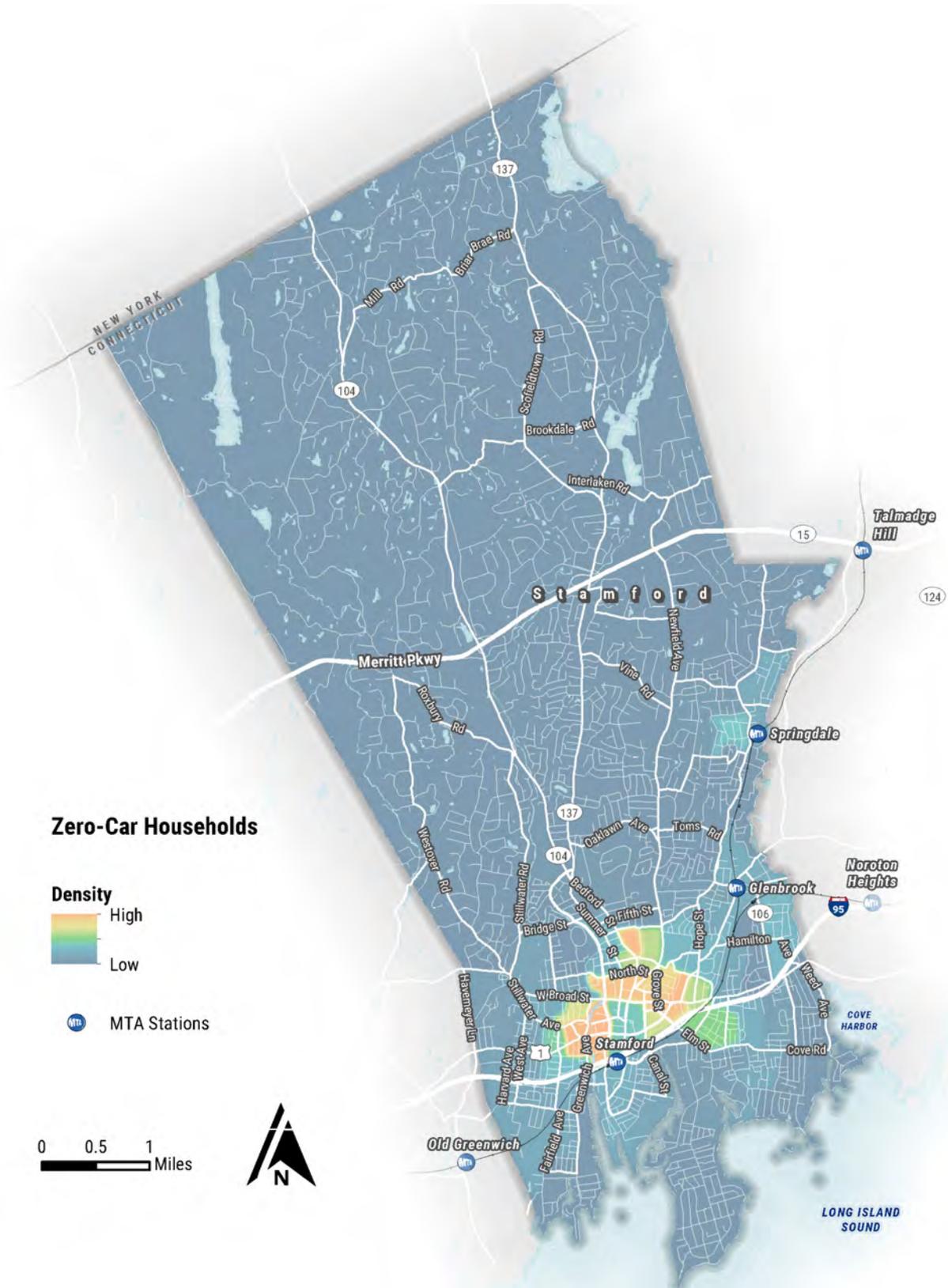
CRASHES

The following fatal and non-fatal crashes involving pedestrians and bicyclists occurred in a seventeen-month period in Stamford from Jan 2015—May 2016. This highlights locations where pedestrian and bicycle safety measures should be prioritized for installation.



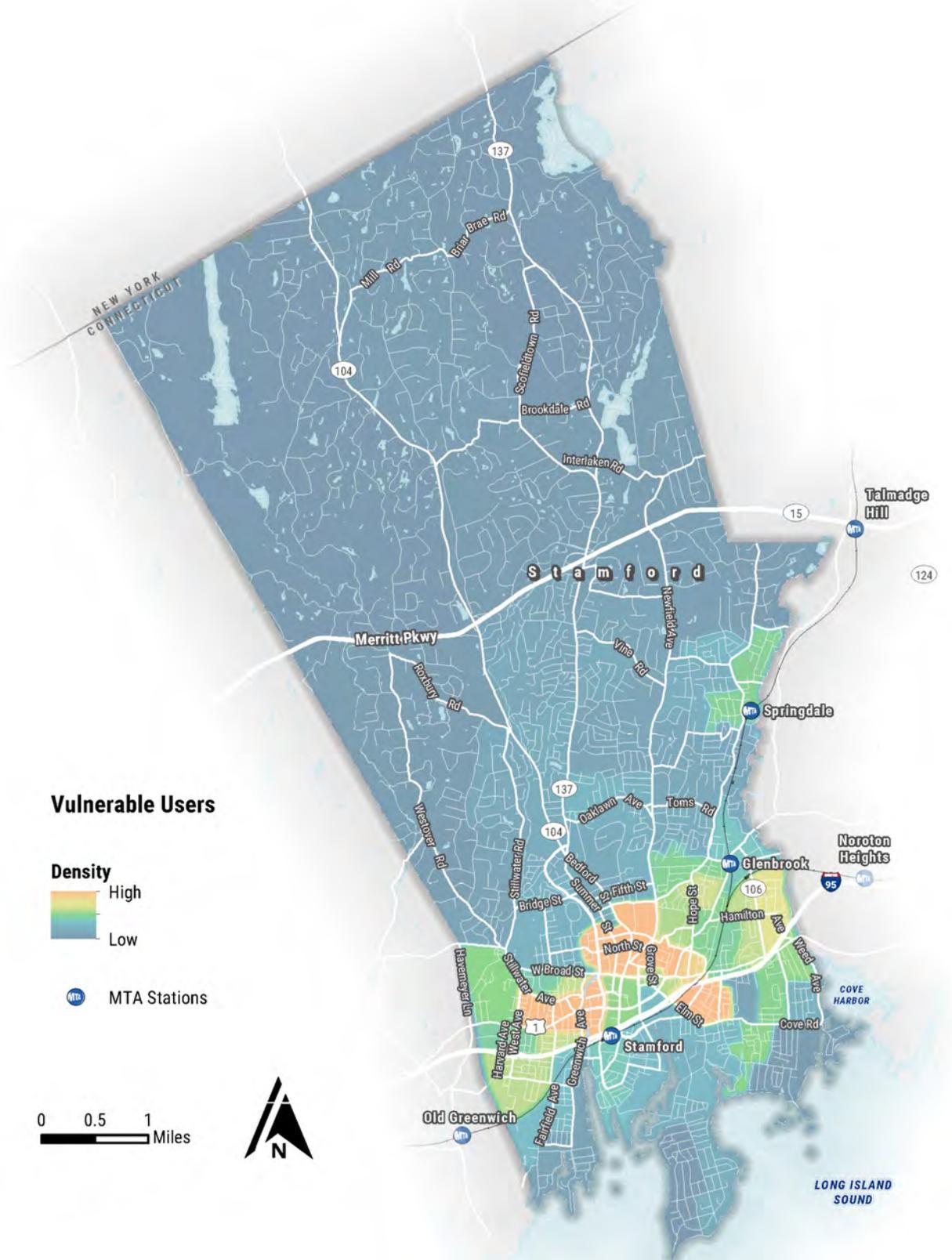
ZERO CAR HOUSEHOLDS

Many residents of Stamford choose or are not able to own a car. These residents are beneficial to the city as they do not use parking spaces and do not add to traffic congestion on the roadway. Pedestrian and bicycle safety infrastructure should be prioritized in the neighborhoods in which they live.



VULNERABLE USERS

Many residents of Stamford are unable to travel by automobile either due to a disability, age or a lack of resources. This map shows the areas with the highest density of seniors, people with disability and people in poverty. These residents are more reliant on walking and often bicycling to get where they need to go. The areas that show a high density of vulnerable users should be considered as priority areas for pedestrian and bicycle improvements.



Bicycle Issues »

Stamford lacks a connected system of safe places for bicycling. Many neighborhood streets are comfortable for riding a bicycle; however, there is a lack of connectivity between one neighborhood and the next. In the northern part of the city, hills and narrow winding roads create less safe conditions for people bicycling. In the southern part of the city, I-95 and the Amtrak/Metro-North rail lines create barriers to connectivity and roadways adjacent to I-95 often experience high vehicular volumes and speeds as drivers enter and exit the interstate.

Bicycle Facilities and Pavement Markings

A limited number of new bicycle lanes have been installed primarily in the southern area of the city. A number of streets have been painted with shared-lane-markings, or “sharrows”, but studies have shown that these have a limited impact on enhancing safety. In general, there is a lack of dedicated space for bicyclists on major roads and through intersections.

Trails

A few trails exist predominately along waterways, but are not part of a larger system or network of trails. Many of the trails that do exist do not meet minimum width standards for bicycle and pedestrian use. In addition, trails in Stamford are not clearly identified as being available for pedestrians-only, bicycles-only or both. Ambiguous design and a lack for signage has led to community conflicts.

Bicycle Racks

Bicycle racks are important as they create a secure place to park one’s bicycle whether traveling to work, a transit station, school, or other destinations. New bicycle racks and hitches (bike parking loops that are added onto parking meter posts) are being installed in downtown. Bicycle parking is not currently required within public or private developments in Stamford. In addition, the types of bicycle racks vary and not all racks follow design best practices.



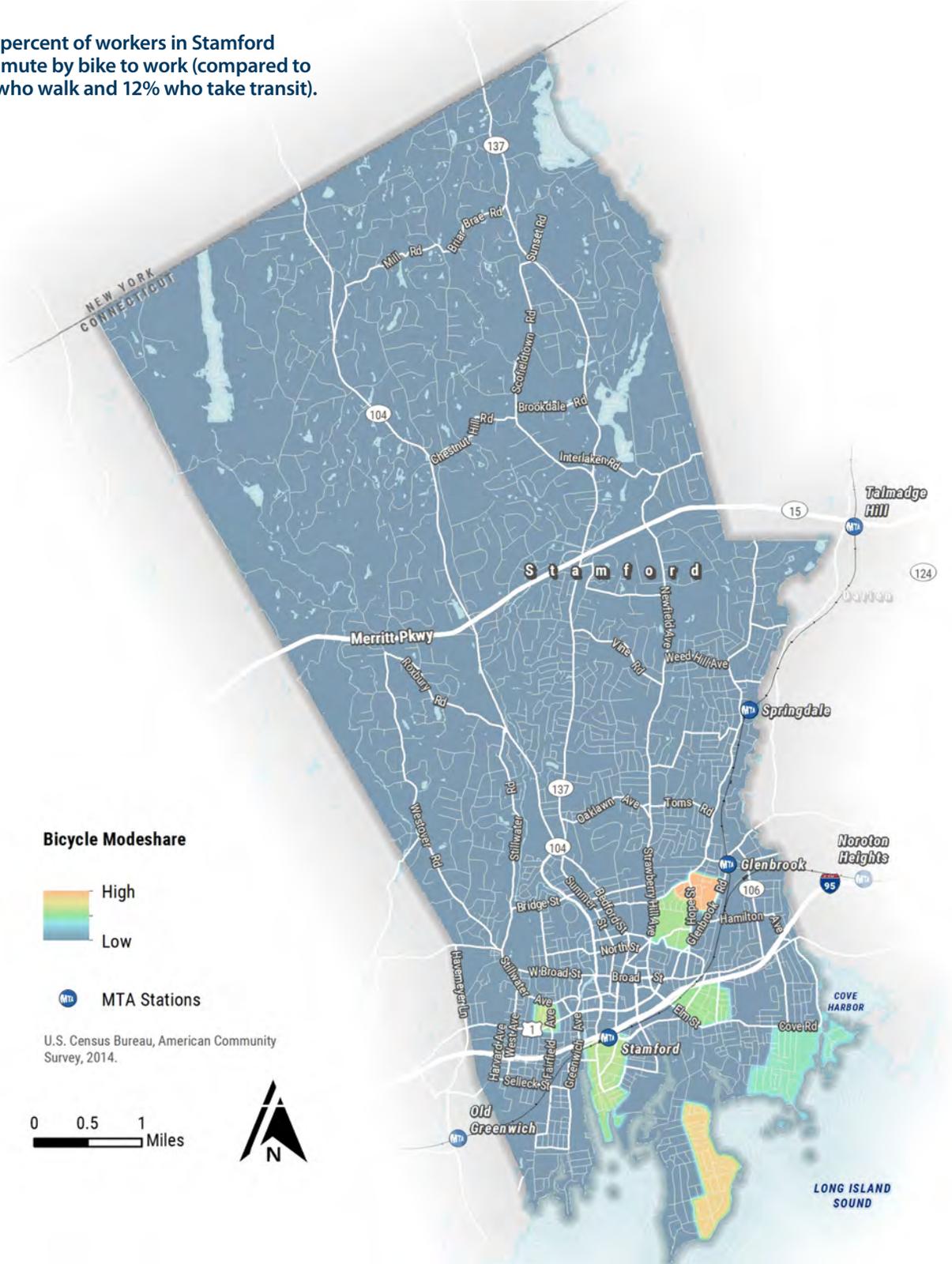
PERCENT OF JOURNEYS TO WORK BY ACTIVE TRANSPORTATION MODES

.2% 

5% 

12% 

.2% percent of workers in Stamford commute by bike to work (compared to 5% who walk and 12% who take transit).

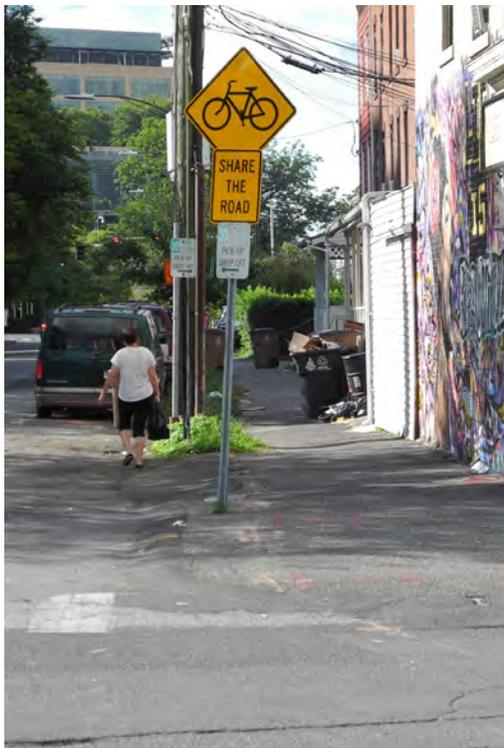


Pedestrian Issues » Sidewalks

Key design and infrastructure issues in Stamford that will need to be addressed in order to create a safe, comfortable, and convenient travel environment for all users include:

» MISSING SIDEWALKS.

Sidewalks create a safe place for pedestrians to travel away from motor vehicles and are the most significant countermeasure for increasing pedestrian safety. Not every block in Stamford has a sidewalk on one or both sides of the street increasing the chances of pedestrian crashes.



» POOR SIDEWALK CONDITIONS.

Particularly in downtown, Stamford is served by a network of sidewalks. However, not all sidewalks are in good condition. Many sidewalks are broken or heaved or are made of uneven asphalt. This creates an uncomfortable, unsafe and unattractive environment as well as creating a liability for the city.

Pedestrian Issues » Sidewalks



» NARROW SIDEWALK WIDTHS.

Where sidewalks exist, they do not always comfortably accommodate pedestrian use. Especially in residential areas, some sidewalks have street fixtures, such as utility poles, placed in the sidewalk. In many of these locations, the sidewalks do not meet Americans with Disabilities Act (ADA) standard widths. Residential neighborhoods also serve as bus stops for public and school buses. Providing a safe environment for walking to and queuing at these locations is especially important.



In other areas, such as along commercial streets, sidewalks often do not comfortably accommodate the high-volume of people walking. In these areas, outdoor seating often restricts pedestrian movements. While outdoor seating is a wonderful community amenity, good design can accommodate outdoor seating, the walking width needed to accommodate a variety of volumes of users, as well as street fixtures and street trees.

Pedestrian Issues » Intersections



» MISSING AND UNMAINTAINED CROSSWALK MARKINGS.

On many of Stamford's busiest streets, crosswalk pavement markings are non-existent or show wear, tear, and fading. Whereas it is legal for a pedestrian to cross the street at all intersection legs, crosswalk markings help communicate to drivers where pedestrians will be present.

Guidelines for crosswalk markings may be found in the Manual of Uniform Traffic Control Devices (MUTCD). Minimum specifications call for solid white lines at least 6 inches in width along both edges of the crosswalk path with at least 72 inches between them. To create additional visibility, but at a higher installation and maintenance cost, a "ladder" design can accompany the crosswalk edge lines (the ladder design consists of lines perpendicular to the edge lines).

In Stamford crosswalks are also designated by concrete or brick paving. While the color and patterns of concrete or brick crosswalks provide a visual contrast with the street, they are often less comfortable to use than a smooth surface and are harder to maintain.



Pedestrian Issues » Intersections



» LONG CROSSING DISTANCES.

Crashes between pedestrians, bicyclists and vehicles are most likely to occur at intersections where these modes interact. Crashes can be reduced by limiting the amount of time a pedestrian or bicyclist is in the intersection, which can be done by reducing crossing distances. In Stamford, there are many intersections with long crossing distances. The long crossing distances are primarily due to the number of lanes that need to be crossed, including parking lanes, and wide curb radii. Long crossing distances also increase the amount of time that must be allowed for people to cross the road safely. This reduces the efficiency of the intersection for motorists and pedestrians alike.



» WIDE CURB RADII.

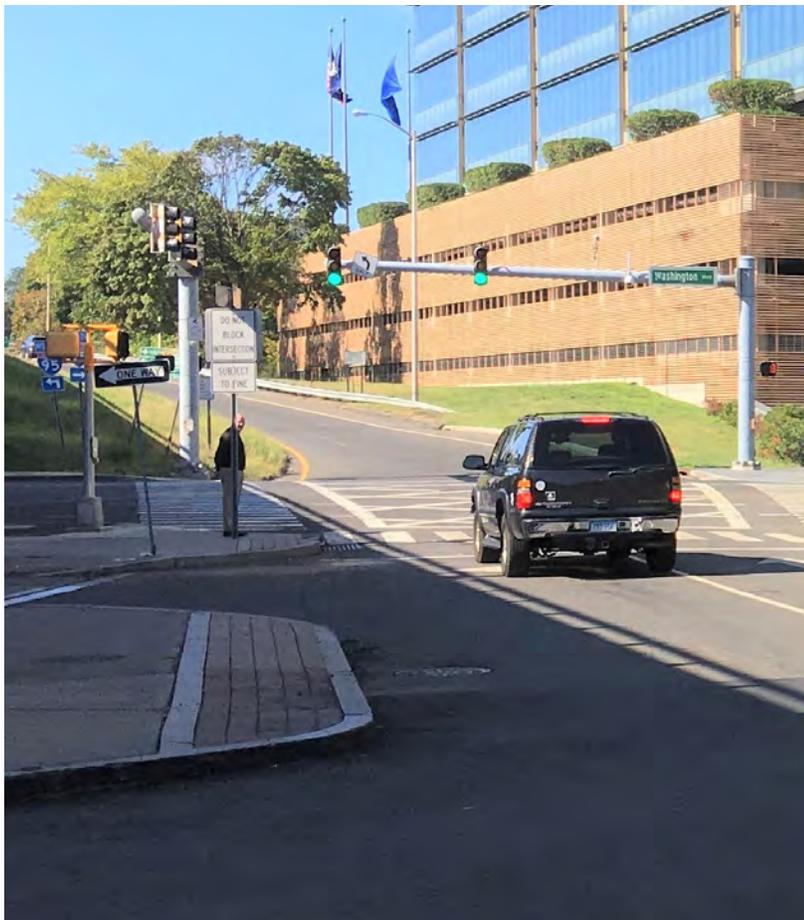
The speed at which an automobile can turn at an intersection is directly related to the curb radii. A wider curb radii allows faster automobile movements, increases pedestrian crossing distances, and reduces the visibility of pedestrians at crosswalks. Faster vehicle speeds also reduce the likelihood that drivers will stop or yield to pedestrians in the crosswalk or waiting to cross. In Stamford, many intersections have wide curb radii. This occurs on residential streets, along collector roads and on major arterial roadways. Some curb-extensions have been added along roadways; however, curb radii have not always been reduced as part of curb-extension design.

Pedestrian Issues » Signalized Intersections



» LACK OF AUTOMOBILE YIELDING.

At intersections, it is important to the safety of pedestrians and bicyclists that vehicles yield when making right and left turns. In Stamford, vehicles frequently do not yield to pedestrians in crosswalks when pedestrians have the right-of-way. Vehicles also often do not slow when nearing a crosswalk with a pedestrian when the pedestrian has the right of way. Whereas some signalized intersections in Stamford include pedestrian-only phases (where all vehicles are stopped and only pedestrians travel through the intersections), at intersections where pedestrians and automobiles share a green phase, a lack of vehicle yielding is pronounced and increases the likelihood of a crash.



» LONG WAIT TIMES.

At signalized intersections, shorter wait times increase pedestrian convenience and decrease pedestrian uncertainty, leading to better compliance. In Stamford, wait times for pedestrians are particularly long and often exceed one minute.

In general, pedestrians become impatient when they experience delays in excess of 30 seconds, and there is a high likelihood of their not complying with the signal indication. In contrast, pedestrians are very likely to comply with the signal indication if their expected delay is less than 10 seconds.

– *Highway Capacity Manual*

Pedestrian Issues » Signalized Intersections



» SHORT PEDESTRIAN CROSSING TIMES/PEDESTRIAN-PHASES.

At signalized intersections, short crossing times cause pedestrians to be present in the crosswalk after the green crossing phase is over or to be stranded in the center refuge island. In Stamford, pedestrian walk signals often provide only the minimum or less than the minimum amount of time to cross the street.



» PEDESTRIAN SIGNALS REQUIRING ACTIVATION.

In Stamford, many signalized intersection use actuated pedestrian signals. This requires a pedestrian to push the pedestrian button in order to receive a pedestrian phase or have enough time to cross the street. Actuated signals can increase pedestrian wait times and create uncertainty for pedestrians.

Americans with Disabilities Act (ADA) Overview

Adopted in 1990, the Americans with Disabilities Act (ADA) prohibits discrimination against, and ensures equal opportunity for, persons with disabilities in employment, state and local services, public accommodations, commercial facilities, and transportation. Accessibility of the built environment, including removal of barriers to travel in public rights-of-way; access to public accommodations, businesses and certain private facilities; and all public transportation as set forth in Title II (Public Services: State and Local Government) and Title III (Public Accommodations and Services Operated by Private Entities) of the ADA, are particularly pertinent. The Attorney General is responsible for publishing implementation regulations, and in 2010, the Department of Justice released revised regulations for ADA, which included updated ADA Standards for Accessible Design.

Scoping and technical minimum requirements were set by the 2010 Standards for Accessible Design, applicable to newly designed and constructed or altered state and local government facilities, public accommodations, and commercial facilities, to ensure use of and access to such facilities by individuals with disabilities.

Regulations for pedestrian facilities in public rights-of-way are set in these standards, and ensure that the built environment is consistent and accessible to all including people who use wheelchairs, scooters, crutches, and others

with mobility aids, people who are blind or who have low vision, and people who are deaf or hearing impaired. These regulations for pedestrian facilities include, for example, provisions that specify the angle and grade of curb ramps, the design and layout of medians and pedestrian refuge islands, the material of sidewalks and crossing paths, pedestrian traffic signal visibility, timing, and audibility.

Further guidance relative to conditions unique to public right-of-ways are addressed under new rules known as the Public Rights-of-Way Accessibility Guidelines – or PROWAG – which are currently being developed by the United States Access Board. Proposed guidelines were issued in 2011. These new guidelines will build upon the 2010 ADA Standards to provide greater guidance relative to elements in the public right of way including wheelchair access to on-street parking, greater access for blind pedestrians at street crossings, and other aspects of street design. These guidelines aim to ensure that access for persons with disabilities is provided along newly built or altered pedestrian facilities, and that pedestrians with disabilities will be given equal connectivity, safety, and convenience. Once adopted by the Department of Justice, these guidelines will become enforceable standards under Title II of the ADA. The current proposed version was published in the Federal Register on July 26, 2011, and is considered reliable guidance for accessible design in the public right of way, while a final version is contemplated.



ADA Infrastructure Issues » Sidewalks



» NARROW SIDEWALK WIDTHS AND OBSTRUCTIONS.

Sidewalk widths are a significant determinant of sidewalk usability, safety, comfort, and access by persons with disabilities. PROWAG guidelines state that a continuous, clear, and unobstructed width of at least 4 feet must be maintained across all sidewalk sections. The broader curb-to-building width may be used for stationary fixtures like street signs, utilities, street trees, furniture or just as additional space for more comfortable pedestrian passage. In Stamford, such fixed obstacles encroach into this minimum required clear width, even along some of downtown's widest sidewalks. This improper placement of fixtures and failure to maintain a continuous, unobstructed width of 4 feet precludes passage by people in wheelchairs and makes the sidewalk difficult to use for the visually impaired as well.



ADA Infrastructure Issues » Sidewalks



» MISSING SIDEWALKS ACROSS DRIVEWAYS.

When a driveway cuts across the path of a sidewalk, it is important to have the sidewalk remain a raised and level surface which effectively communicates pedestrian right-of-way and provides unhindered paths of travel for pedestrians, especially wheelchair users. Many driveways in Stamford not only force pedestrians and wheelchair users to ramp down and up, they often present severe cross-slopes, which exceed standards under ADA and PROWAG..



» POOR PAVEMENT CONDITIONS.

Stamford’s sidewalk network boasts extensive coverage, most notably in downtown, but sidewalk conditions vary greatly on a block-by-block basis. Heaved, broken, excessively cross-sloped or non-level sidewalk panels and inconsistent materials present significant access barriers, safety hazards, and potential liabilities for the city.

ADA guidelines allow vertical changes in level of less than 0.25 inches and horizontal spaces of less than 0.5 inches. (Vertical changes in level between 0.25 and 0.50 inches must have a bevel. If a change in level exceeds 0.50 inches, a ramp is required.)

ADA Infrastructure Issues » Sidewalks and Street Crossings



» WIDE GRATES AND GAPS.

Stamford's sidewalk network also contains grates and gaps which can exist in intentional elements such as tree pits, or in spaces and cracks caused by general disrepair and weathering. Canes, crutches, and wheelchair casters can get caught in wide or poorly placed grates and gaps. ADA guidelines state that grates located along or within sidewalks must have spaces that do not exceed 0.5 inches wide.



» SHORT PEDESTRIAN CROSSING TIMES.

Virtually all signalized intersections in downtown Stamford are outfitted with pedestrian crossing signals with varying features and functionality. Newly-installed marked crosswalks and signals have well-located and visible signal faces, crossing and timing information, and audible information at or triggered by a pedestrian push button. However, older pedestrian crossing signals lack audible crossing cues and countdown clocks. All pedestrian crossing signals must also provide adequate crossing durations relative to the width of a crossing; this is a particular challenge in downtown Stamford due to many streets with wide rights-of-way and multiple travel lanes.

ADA Infrastructure Issues » Street Crossings



» UNMAINTAINED AND NON-COMPLIANT MEDIANS AND REFUGE ISLANDS.

Medians and pedestrian refuge islands are common in Stamford, particularly within the downtown on wider streets with longer crossing distances. Medians and islands reduce the distance that pedestrians are exposed to traffic when crossing the street, and provide a safe, physically separated space for pedestrians to rest or wait. Much like a curb ramp, pedestrian refuge islands with an at-grade cut-through must have detectable warning materials where both sides of the island meet the roadway. However, if a pedestrian refuge island is less than 6-feet wide in the direction of travel, detectable warnings should not

exist due to required spacing between tactile warning strips. While less navigable for users in wheelchairs, raised medians and islands must be level with the street surface and have ADA-compliant curb ramps on all sides.

Several of Stamford's pedestrian refuge islands are in disrepair, and do not provide the minimum required cut-through width of 5-feet. Other accessibility features like detectable warning strips are also commonly absent. In some cases, the pedestrian access route within a refuge island is broken, heaved, or caved, presenting significant access and mobility issues to pedestrians with disabilities or in wheelchairs.

ADA Infrastructure Issues » Curb Ramps



» MISSING CURB RAMPS AT CROSSWALKS.

In Stamford, many crosswalks lack curb ramps presenting significant access and mobility issues and a failure to meet ADA standards. They are particularly important for people in wheelchairs, but also serve children in strollers, people on bicycles, and anyone using a wheeled device. Curb ramps also help direct people to where to cross the street. While many intersections in Stamford include curb ramps, they frequently do not meet ADA design standards for detectable warnings, slopes, flares and level landings. Installation of curb ramps in locations where they are absent should be a priority in order to comply with the most basic elements of ADA regulations. (Note: There are legal precedents including *Kinney vs Yersalem* (9F.3d 1067 – 3rd Cir. 1993) which conclude that resurfacing of a street is considered a valid alteration of a street surface, which under ADA, requires installation of curb ramps.)



» MISSING DETECTABLE WARNINGS AND LEVEL LANDING AREAS.

Raised and tactile surface materials indicate to sidewalk users with cognitive or visual disabilities that street crossings or hazardous drop-offs lie before them. Detectable warning surfaces, or tactile warning strips (also often referred to as “truncated domes”) are easily detected when stepped on or swept with a cane. ADA standards recommend that tactile warning strips contrast in color with the adjacent sidewalk for visual recognition by pedestrians who have visual disabilities but are not completely blind. Detectable warning surfaces must extend at least 2-feet in the direction of pedestrian travel, and must extend the full width of a ramp run, excluding side flares. The top landing of the ramp must be equal in width to the ramp run and at least 36-inches wide. In Stamford, the existence, material, size and slope of detectable warning surfaces and landing areas are varied and inconsistent.



» INAPPROPRIATELY LOCATED CURB RAMPS.

Curb ramps should be appropriately located relative to a marked crosswalk. In some locations in Stamford, perpendicular curb ramps exist, with two ramps that are oriented at 90-degree angles to the curb face, each leading to a separate crosswalk approach. In other locations, a diagonal curb ramp exists, consisting of a single ramp located at the apex of a street corner at the convergence of two crosswalk approaches.

ADA Infrastructure Issues » Bus Stops and Shelters



» INACCESSIBLE BUS STOPS.

Fixed-route bus transit in Stamford is provided by CTtransit. Bus stops are required to have a level and stable surface for passengers both waiting for and boarding buses. Bus stops are most accessible to pedestrians with disabilities when located at ADA-compliant signalized intersections. A clear and unobstructed boarding area with a minimum length of 8-feet and a minimum width of 5-feet perpendicular to the street edge is required. Bus stops and boarding areas must be connected to the broader street, sidewalk, and pedestrian circulation network.

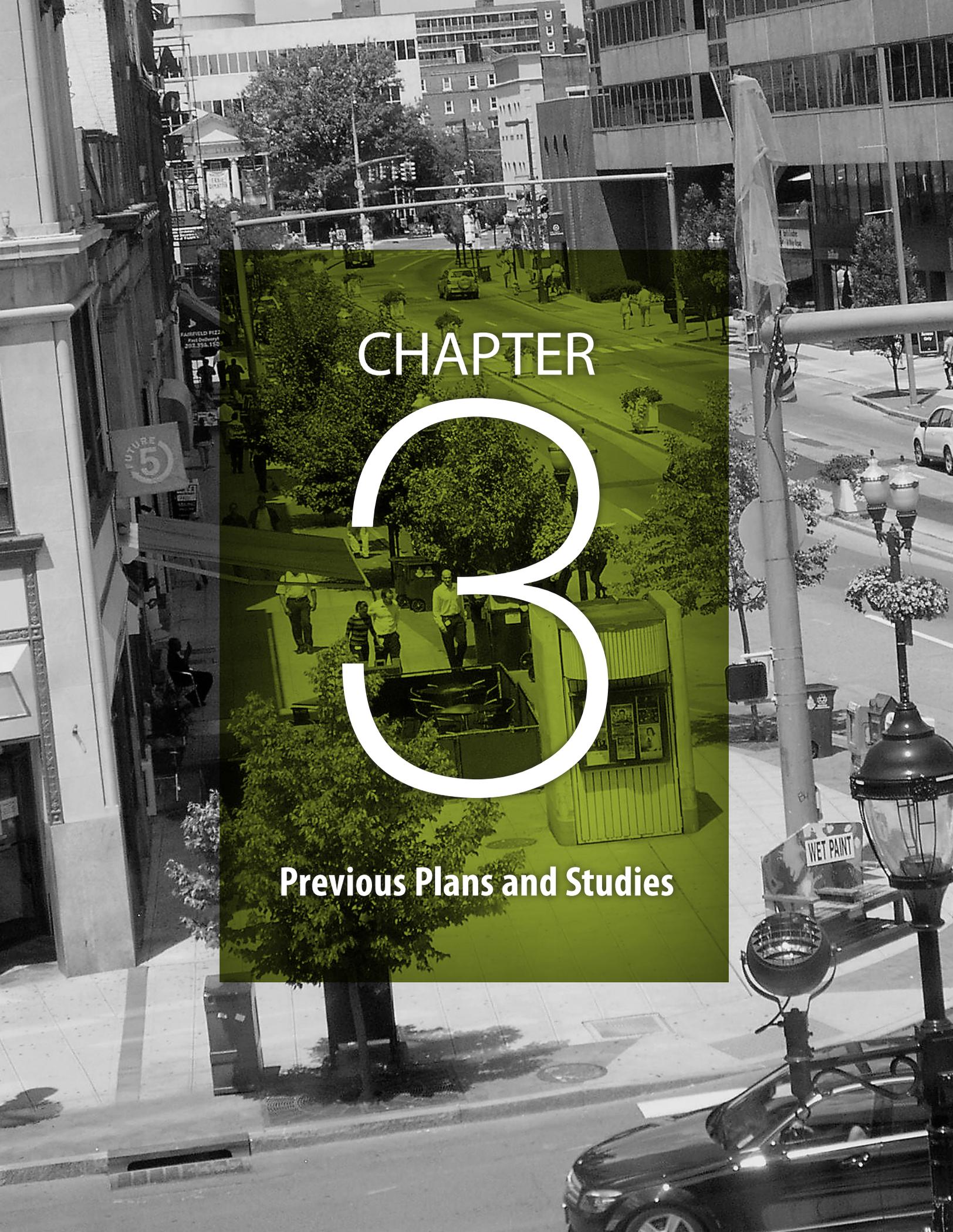
In Stamford, sidewalks that are missing, deteriorating, or do not meet minimum width requirements present significant barriers to accessing bus stops. Additionally, bus stops at sidewalks that are non-level and cracked, or have planting strips or gaps between the sidewalk path and the curb greatly complicates bus boarding by pedestrians with disabilities or in wheelchairs.



» INACCESSIBLE BUS SHELTERS.

Bus shelters require the same connectivity to the broader street, sidewalk, and pedestrian circulation network as a basic bus stop. Additionally, a clear space for wheelchair users must be located entirely within the confines of the bus shelter, and may not overlap with benches or seating that may exist in the shelter. A clear space of at least 2.5-feet by 4-feet is required. An accessible path must be provided between the clear space in a bus shelter and the bus stop boarding area.

Stamford's modern bus shelter design complies with interior clear space requirements. However, in many locations, sidewalks that are in disrepair at or near bus shelters may present significant access barriers by pedestrians with disabilities or in wheelchairs.

An aerial photograph of a city street intersection, overlaid with a semi-transparent green rectangle. The green area contains a large white number '3'. The background shows buildings, trees, and a street with a car. A utility pole with a 'WET PAINT' sign and a street lamp are visible in the foreground on the right. On the left, a building has a sign that says 'FUTURE 5'.

CHAPTER

3

Previous Plans and Studies

This page left intentionally blank.

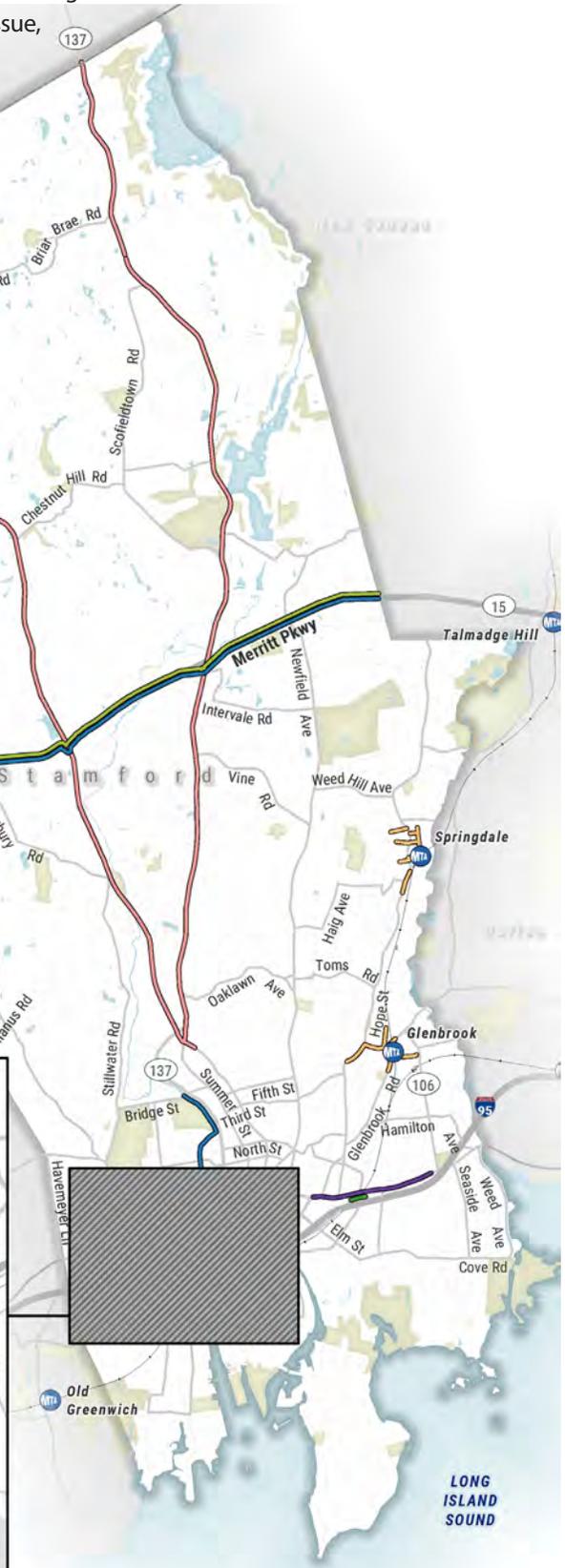
Plans and Corridor Studies

Numerous area and corridor studies have been completed for Stamford addressing issues as diverse as transit-oriented development and traffic calming. Planning studies are important as they provide a comprehensive review of the issue, address and incorporate community comments and concerns, and create strategies for addressing important safety issues. This map highlights where previous planning studies have occurred. An overview of each planning study follows.

Previous Plans and Studies

- ① Merritt Parkway Trail Study (ongoing)
- ② Glenbrook Springdale TOD Feasibility Study (2015)
- ③ Long Ridge/High Ridge Corridors Study (2015)
- ④ Stamford Master Plan 2015
- ⑤ Stamford West Side Transportation Study (2015)
- ⑥ E Main St Transit Node Feasibility Study (2013)
- ⑦ South Western Region Bicycle and Pedestrian Plan (2013)
South Western Region Long Range Transportation Plan (2015)
- ⑧ Bicycle-Pedestrian Safety Corridors (2012)
- ⑨ US Rte 1 Greenwich/Stamford Operational Improvements Study (2011)
- ⑩ Connecticut Statewide Bicycle and Pedestrian Plan (2009)
- ⑪ Walkable Stamford (2008)
- MTA Metro-North Stations

0 0.5 1 Miles



① Merritt Parkway Trail Study

Prepared by CTDOT, ongoing

This study analyzes the feasibility of a multi-use trail along the Merritt Parkway corridor, considering scenic, historic, and environmental factors, as well as stakeholder input. No recommendations have yet been made.

<http://www.ct.gov/dot/cwp/view.asp?a=4185&Q=491882&PM=1>

② Glenbrook/Springdale Transit Oriented Development Feasibility Study

Prepared by Goody Clancy for City of Stamford, 2015

This study explores the opportunities for and challenges of transit-oriented-development at the Glenbrook and Springdale transit stations along Metro-North's New Canaan Branch Line, recommending the following:

- Glenbrook Station
 - Implement pedestrian and bicycle improvements on Glenbrook Rd, Church St, Hope St, and Courtland Ave by narrowing lanes and enhancing the streetscape with new trees, lighting, and pavement.
 - Make the intersection of Glenbrook Rd, Church St, and Kirkham Pl more pedestrian friendly.
 - Add landscaped islands, pedestrian lighting, and bike parking.
 - Add sharrows on collector and arterial streets within a half-mile of the station.
- Springdale Station
 - Implement pedestrian and bicycle improvements on Hope St, Bennett St, Fahey St, Cushing St, Northhill St, Hyde St, and Knapp St by narrowing lanes and enhancing the streetscape with new trees, lighting, and pavement.
 - Make the intersections of Hope St at Largo Dr and Hope St at Clearview Ave more pedestrian-friendly.
 - In the long term, extend Fahey St to the north to connect with Greenway St and Camp Ave.
 - Add two new access points from Hope St: one vehicular, one pedestrian. Add bike parking.
 - Add sharrows on Hope St, Camp Ave, and Largo Dr.



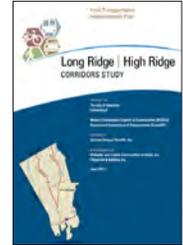
www.stamfordct.gov/sites/stamfordct/files/u255/final_report_june_2015.pdf

③ Long Ridge/High Ridge Corridors Study

Prepared by VHB for City of Stamford, 2015

This study provides recommendations for the High Ridge Road and Long Ridge Road corridors to improve traffic operations, safety, accommodate all users, reduce congestion and support current and future economic development. Recommendations include:

- High Ridge Rd at Bedford Street: re-stripe northbound High Ridge Rd to provide at least a 5-foot shoulder for cyclists from northbound Bedford St and around the corner onto High Ridge Rd.
- Install bicycle-friendly drainage inlet grates along the length of both corridors.
- Complete and extend sidewalks on both sides of Long Ridge Rd and High Ridge Rd Upgrade the existing sidewalks to meet ADA standards.
- Restripe the roadways on both corridors with 10.5 or 11-foot vehicle through-lanes to make room for shoulders of at least 4 feet in width. Provide wider shoulders on the longer uphill sections of the roadway and narrower shoulders on the corresponding longer downhill sections of the road. If there is not room for two shoulders, provide sharrows in a wider shared outside lane on the downhill sections.
- Upgrade pedestrian crossings on both corridors, especially at signalized intersections. Install new ADA ramps and pedestrian signals and restripe crosswalks.
- Provide parking for bicycles adjacent to transit stops.
- Construct a path for pedestrians and cyclists parallel to both Long Ridge Rd and High Ridge Rd under the Merritt Parkway to connect the north and south sides of the corridors.
- Provide a pedestrian and bicycle connection to the planned Rippowam River Rail Trail.



<http://projects.vhb.com/lrhrstudy/>

4 Stamford Master Plan

Prepared by BFJ Planning for City of Stamford, 2015

The transportation element (chapter 4) of the Stamford Master Plan is aligned with many of the studies discussed in this review, and includes the following recommendations:

- Implement the recommendations of the *High Ridge/Long Ridge Roads Corridor Study* (2015) to improve pedestrian and bicycle mobility.
- Fund and create a citywide bicycle and pedestrian plan.
- Adopt a Complete Streets ordinance.
- Implement traffic calming strategies, including the recommendations of the *Stamford Neighborhood Traffic Calming* report (2011), and the *Walkable Stamford* report (2008).
- Prioritize improvements for pedestrians along Tresser Boulevard between Greenwich Ave and the Marriott Hotel. The roadway should be redesigned to create a safer environment for all users.
- Encourage the use of the National Association of City Transportation Officials' (NACTO) *Urban Street Design Guide*.



www.stamfordct.gov/sites/stamfordct/files/u358/final_draft_12.16.14_0.pdf

5 Stamford West Side Transportation Study

Prepared by Fitzgerald & Halliday for City of Stamford, 2015

This plan outlines strategies for improved traffic operation, walkability and placemaking in the Stillwater Avenue area. Recommendations include:

- On Stillwater Ave between West Ave and Smith St, use the parking lane to install curb extensions and painted bumpouts at select intersections. Install traffic calming features including speed humps, alternating on-street parking to create a “chicane effect”, median islands to discourage speeding and make the street more attractive to bicyclists.
- Install a roundabout at Stillwater Ave and West Ave to reduce speed and pedestrian crossing distances.



- Reconfigure Boxer square intersection with shorter crosswalks and a pedestrian plaza.
- Apply a road diet on Broad Street between Stillwater Ave and Merrell Ave, with space for separated bike lanes.
- Add speed humps on Mill River Rd north and south of the Smith St intersection. Realign the intersection of Mill River St and Smith St so that the roads meet perpendicularly and install a raised intersection.
- Reconstruct the Rippowam River pedestrian bridge so that it aligns with the crosswalks at the intersection.
- Adopt the recommendations of the US Route 1 Greenwich/Stamford study for West Main St, including installing curb bumpouts to slow traffic and shorten crossing distance.
- Install bumpouts on Main St at the Virgil St and Diaz St intersection, and install a midblock crosswalk between bumpouts.
- Install crosswalks, pedestrian signals, high visibility crosswalks, and other pedestrian enhancements at specific locations (identified on p. 43 of the study).
- Add bicycle lanes to W Broad St between Stillwater Ave and Merrell Ave and to Smith St between Schuyler Ave and Mill River St.
- Add sharrows to Merrell Ave; Stillwater Ave between Merrell Ave and Smith St; and to Fairfield Ave between Stillwater Ave and W Main St.
- To enhance street connectivity, convert Smith St to a two-way street by removing on-street parking.
- Explore building new street connections between Progress Dr and Myano Ct and from Catoona Ln to Acosta St.

www.stamfordct.gov/sites/stamfordct/files/uploads/westside_recguidebook_final1_oct2015.pdf

6 Stamford East Main Street Transit Node Feasibility Study and Action Plan

Prepared by Parsons Brinkerhoff for SWRPA, 2013

The study examines the possibility of a transit station and transit-oriented-development at East Main St and North State St. The study recommends the eventual construction of a branch line rail station at this location, beneath the I-95 superstructure. In the interim, the study recommends



completing the Myrtle Ave transitway, building a bus and shuttle station at the North State St and East Main St corner, and promoting transit-oriented-residential-development nearby. No specific recommendations for bicycling or pedestrian accommodation were made, except that the rail bridge over Main St eventually be replaced with a wider bridge to accommodate pedestrians and bicycles.

https://westcog.org/wp-content/uploads/2016/05/EastMainStTransitNodeReport_FINAL_LowQuality.pdf

71 South Western Region Long Range Transportation Plan, 2015 - 2040

Prepared by WestCOG, 2015

The long range transportation plan for Connecticut’s South Western Region is called “Going Forward: The Plan to Maintain & Improve Mobility”. Recommendations are aligned with those of the *Connecticut Statewide Bicycle and Pedestrian Plan* (2009), the *Bicycle and Pedestrian Safety Corridor Study* (2012) and the *Southwestern Region Bicycle and Pedestrian Plan* (2013). Specific recommendations include:



- Implement the recommended countermeasures in the *Bicycle and Pedestrian Safety Corridor Study* (2012).
- Build the Merritt Parkway Trail, a major shared-use trail proposed for the Merritt Parkway right-of-way and proposed as a segment of the East Coast Greenway, a planned multi-use trail connecting Maine to Florida.
- Complete the Mill River Greenway through downtown Stamford to improve bicycle and pedestrian movement through the downtown and surrounding neighborhoods.

<https://westcog.org/wp-content/uploads/2015/12/LRTP-Update-2.pdf>

72 South Western Region Bicycle and Pedestrian Plan

Prepared by SWRPA, 2013

This plan aligns the goals, policy recommendations, and financial recommendations of the South Western Region Bicycle and Pedestrian plan to mirror the 2009 Connecticut Statewide Bicycle and Pedestrian Plan. The plan also presents the major multi-use trail proposals in the South Western Region, including the following:



- Build the Merritt Parkway Trail, a major shared-use trail that would be located within the Merritt Parkway right-of-way which is approximately 300 feet wide. The trail would begin in Greenwich and pass through Stamford, New Canaan, Norwalk, and Westport.
- Complete the Mill River Greenway through downtown Stamford. The greenway would parallel the Mill River from Selleck St north until about Forest Lawn Ave. It would link a planned new park in south Stamford with existing parks and open spaces located along Mill River including Scalzi Park.

https://westcog.org/wp-content/uploads/2015/09/2-Bike-PedSWRPA_bike-ped_plan_20131.pdf

8 Bicycle–Pedestrian Safety Corridors Study

Prepared by VN Engineers for SWRPA, 2012

This report examines pedestrian and bicycle safety deficiencies in high-priority corridors in Greenwich, Norwalk, Stamford, and Westport, and recommends engineering countermeasures to address them. Of the seven corridors in the report, three are in the City of Stamford. The recommendations are:



- US 1 (East Main St) from Broad St to Standish Rd
 - Separate pedestrian space from vehicular space by adding planter boxes, bollards, or other markers.
 - Reconstruct sidewalks.

- Improve pedestrian accommodations at signalized intersections (Lafayette St, North State St, Sherman St, Blachly Rd); add pedestrian accommodations at Myrtle Ave intersection.
- Reconfigure signal phasing to include exclusive pedestrian phase.
- Develop access management plan.
- Study whether the corridor can be reconfigured with a raised median.
- US 1 (West Main St and Tresser Blvd) from Spruce St to the Marriott Hotel
 - Along West Main St, install curb extensions and sharrows. Future changes to the roadway cross section should consider adding bike lanes.
 - On West Main St, repair street surface where needed, especially at Rose Park Ave crosswalk.
 - On West Main St at Greenwich Ave, ensure pedestrians and bicycles are accommodated in roundabout design.
 - On West Main St at Spruce St and Hazel St, study whether the intersection can be reconfigured to improve its layout and operation.
 - On Tresser Blvd, reconfigure signal phasing to include exclusive pedestrian phase or protected only left turn phasing.
 - On Tresser Blvd, remove right turn lanes from side streets and replace with curb extensions.
 - On Tresser Blvd, extend medians further into intersections (beyond the crosswalk) to provide pedestrian refuges.
 - On Tresser Blvd, evaluate pedestrian crossing patterns in order to determine measures to discourage or accommodate mid-block crossing.
 - On Tresser Blvd, study option to implement road diet between Greenwich Ave and Elm St.
- CT 493 and CT 137 (Washington Blvd) from Station Pl to Broad St
 - At the eastbound approach to South State St intersection, install an island at the channelized right-turn lane to serve as a pedestrian refuge.
 - Remove right turn lanes from side streets and replace with curb extensions.
 - Install sharrows and bicycle signage as planned, south of Tresser Blvd.
 - Install medians, or extend existing medians further into intersections (beyond the crosswalk) to provide

pedestrian refuges.

- Study option to remove one through lane from each direction between Station Place and North State St.

https://westcog.org/wp-content/uploads/2015/09/3-SWRPASWRPA_Bike-Ped_Safety_Corridor_Study_Final1.pdf

9 US 1 Greenwich–Stamford Study

Prepared by Urban Engineers for SWRPA, 2012

This study was developed to improve traffic operations and safety on US 1 in Greenwich and Stamford to improve pedestrian friendliness, manage access, minimize congestion, accommodate transit, and enhance the corridor's economic potential and community character. The report recommended the following for the Stamford sections of the corridor (West Main St):



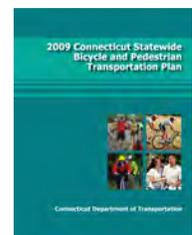
- Realign the intersection of Richmond Hill Ave with West Main St, install traffic calming measures in the area, and convert Fairfield Ave west of Jackie Robinson Park into a curbless “festival street”.
- Replace signalized intersections with roundabouts at West Main St/Greenwich Ave and at West Main St/Alvord Ln/Commerce Rd to provide for easier pedestrian and bicycle movements.

<https://westcog.org/highways/>

10 Connecticut Statewide Bicycle and Pedestrian Plan

Prepared by Fitzgerald & Halliday for Connecticut DOT, 2009

This plan provides direction for the Connecticut Department of Transportation in developing policy and pursuing initiatives to advance non-motorized transportation. The plan is currently being updated. The plan sets forth specific recommendations for state bicycle and pedestrian priorities in the City of Stamford:



- Develop a regional marked route system. Identify and sign three east-west bicycle routes: US 1 (East and West Main Streets), Merritt Parkway Trail and an on-road route further north from Weston to Greenwich. Identify and sign north-south

- bicycle routes, including CT 137 (Washington Blvd) and/or CT 104 (Long Ridge Rd) and CT 106 (Courtland Ave).
- Improve bicycle and pedestrian access and integration with transit.
- Improve bicycle and pedestrian safety on US 1 through markings and delineations or other measures.
- Complete the Mill River corridor, extending it up CT 137 (Washington Blvd) with bike lanes.
- Complete a pedestrian connection between the South End of Stamford/Stamford Station and the Mill River/Downtown area.

www.ct.gov/dot/cwp/view.asp?a=1390&q=259656
<http://ctbikepedplan.org/>

II Walkable Stamford

Prepared by Project for Public Spaces for City of Stamford, 2008

This report was prepared at the urging of the Royal Bank of Scotland, whose new building opened on Washington Boulevard in 2009. The report describes evaluations and recommendations for three sites in downtown Stamford. Mid- and long-term recommendations include:

- On Washington Blvd between Tresser Blvd and Richmond Hill Ave:
 - Add low-level, pedestrian scaled lighting.
 - Increase pedestrian crossing time at intersections.
 - Repair and widen sidewalks.
 - Redesign Washington Blvd with landscaped medians.
- On Washington Blvd between Richmond Hill Ave and State St:
 - Prohibit vehicles from turning right on red to improve pedestrian safety.
 - Paint crosswalks on all four legs of the Washington Blvd and North State St intersection.
 - Remove the channelized two-lane free right turn lane on North State St.
 - Redesign Washington Blvd with landscaped medians.
 - Provide a bicycle and pedestrian connection between the Mill River Greenway and the Transportation Center, possibly along South State St.



- At the Stamford Transportation Center “Gateway” area:
 - Provide more bicycle racks in visible locations.
 - Stripe crosswalks across all four legs of the intersection of North State St and the access road into the UBS parking garage.
 - Permanently narrow North State St to two lanes (possibly providing space for a separated bicycle lane).
 - Study ways to reduce traffic on North State St such as limiting the street to buses, bicycles, and high-occupancy vehicles.
 - Create a bicycle station that includes secure bicycle parking, lockers, showers, and repair.
 - Use curb extensions at the intersection of North State St and the UBS garage access street to shorten crossing distances, slow traffic, and improve pedestrian sight distance.
 - Widen the sidewalk to accommodate bicycles or add bike lanes to Atlantic, North State, and South State Streets; redesign the intersection of Atlantic and North State Streets to prohibit right turns.
 - Take advantage of excess vehicular capacity on Atlantic St between North State St and Main St to install landscaped medians, pedestrian refuges and curb extensions, bicycle lanes, on-street parking, and a reduction in the width and number of travel lanes.
- At the intersection of Washington Blvd and Tresser Blvd:
 - Narrow Tresser Blvd to two lanes in each direction with dedicated left-turn lanes.
 - Provide median pedestrian refuges at the intersection.
- At the intersection of Broad St and Atlantic/Bedford St:
 - Provide a leading pedestrian interval and retime traffic signals.
 - Add curb extension on southend corner to shorten the crosswalk length and slow turning vehicles.
 - In the long-term, shrink and realign the intersection to shorten crossing distances. Widen and extend the medians on both legs of Broad St and on Atlantic St through the crosswalk.
 - Raise the entire intersection to slow traffic entering the intersection and highlight that this is the heart of downtown Stamford.
 - Design Bedford Street as a “Festival Street” so it is easily closed for downtown events by removing the grade change between the sidewalk and street.

Stamford Traffic Calming Plan

Prepared by Urban Engineers for City of Stamford, 2011

This plan provides an overview of a comprehensive list of traffic calming strategies as well as standard details and cost estimates for traffic calming treatments. The plan lays out a procedure for the City to follow when a neighborhood group or local official requests traffic calming in a location. An extensive series of charrettes led to the development of sixteen neighborhood traffic calming plans which are in Appendix A of the report.



www.stamfordct.gov/sites/stamfordct/files/file/file/appendices.pdf

2015 ADA Transition Plan (see map on next page)

In compliance with the Americans with Disabilities Act (ADA) and other federal statutes, the Connecticut Department of Transportation (CT DOT) has established, and periodically updates, an ADA Transition Plan¹ for

¹ [http://www.ct.gov/dot/lib/dot/documents/ddbe/2015_ada_transition_plan_\(draft\).pdf](http://www.ct.gov/dot/lib/dot/documents/ddbe/2015_ada_transition_plan_(draft).pdf)

Table 1: Excerpt from curb ramp inventory contained in 2015 ADA Transition Plan, showing State Routes in Stamford

ROUTE NUMBER	Route Length	Length within Stamford	Percent Length within Stamford	Existing Ramps with warning mat	Existing Ramps (various types)	Future Potential Ramps	Future Potential Ramps (Ped. Button issue)	Potential Max Number of Ramps
1	117.35	4.08	3%	531	1319	240	55	1614
104	6.82	6.82	100%	0	2	1	10	13
106	14.37	1.32	9%	15	63	22	7	92
137	9.33	9.33	100%	16	119	10	5	134
493	0.34	0.34	100%	13	12	0	0	12

upgrading state roadways to make them more accessible to persons with disabilities. These upgrades most commonly take the form of curb ramps and audible pedestrian signals at crosswalks. Recognizing that state roadways span the full range of built environments in Connecticut—from urban main streets to rural highways—the ADA Transition Plan identifies specific locations and segments of state routes where upgrades to improve accessibility are most needed.

Based on the populations they serve, the 2011 ADA Transition Plan identified two corridors in Stamford, US 1 and CT 137/493 (Figure 1), as included within five priority locations to receive installation of ADA-compliant curb ramps. According to the 2015 ADA Transition Plan, “no action has been initiated” to install these curb ramps because “the design-bid-build process for these projects has been extremely costly, resource intensive, and slow.” It further states that “new methods are being sought” to install curb ramps along these priority routes. Table 1 shows the existing and potential crosswalk ramps on state routes in Stamford. This list is excerpted from a complete inventory of all state routes contained in the 2015 ADA Transition Plan. The Transition Plan also identifies corridors where ADA ramps will be installed as part of repaving projects conducted through the VIP Paving Program. None of these are in Stamford.

The 2015 ADA Transition Plan identifies priority traffic signals to be upgraded with “accessible pedestrian signal” (APS) technology. The report states that the Department will start by addressing those within District 1 (Hartford area). “The APS upgrades in District 2, 3 and 4 are planned for a future year.” The priority intersections for APS upgrades within District 3, where Stamford lies, are not specified in the 2015 ADA Transition Plan.

ADA TRANSITION PLAN - Priority Routes to Receive Curb Ramps

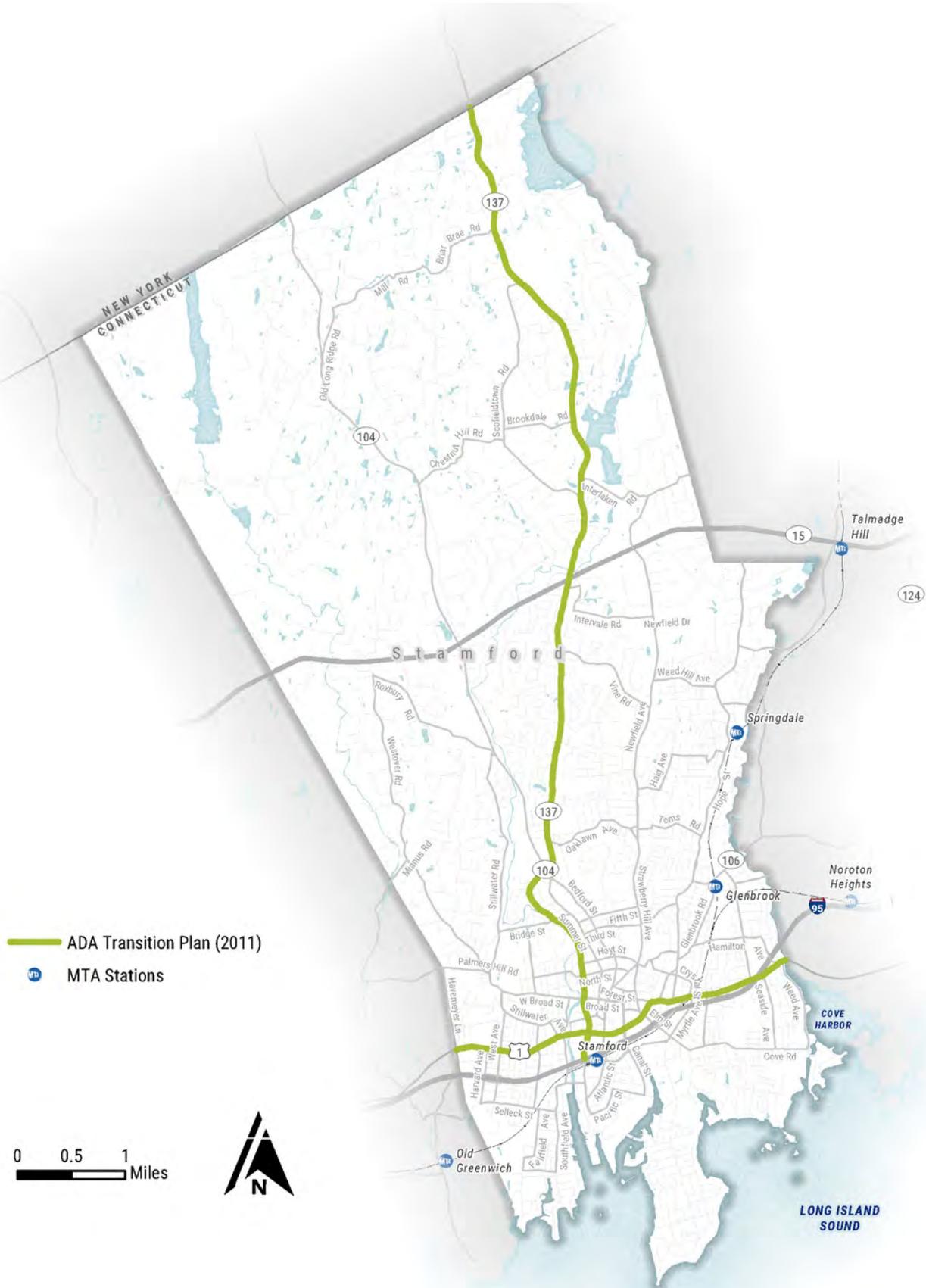


Figure 1: Map of priority routes to receive crosswalk curb ramps in Stamford, as identified in 2011 ADA Transition Plan



CHAPTER

4

WHERE WE WANT TO GO
**Community Support for Better
Bicycling and Walking**

This page intentionally left blank.

Community Involvement

An essential element of the Stamford Bicycle and Pedestrian Plan was the engagement and participation of the people who live and work in the city. Members of the Stamford community—especially those who walk and bike on a daily basis—were involved throughout the entire process and their voices informed the strategies, networks and recommendations outlined in this plan.

Advisory Committees

Two advisory committees were formed to help guide this plan. A **Technical Advisory Committee**, consisting of representatives from key City departments, Western Connecticut Council of Governments, and Connecticut Department of Transportation, reviewed plan progress and recommendations to ensure the plan was technically feasible and appropriate for the city. The Technical Advisory Committee included the departments and organizations listed below:

- City of Stamford Transportation Bureau
- City of Stamford Board of Education
- City of Stamford Planning Bureau
- City of Stamford Board of Representatives
- City of Stamford Parks & Recreation Department
- City of Stamford Access4All Committee
- City of Stamford Mayor's Office
- Stamford Senior Center
- City of Stamford Health, Safety, Welfare Department
- Western Connecticut Council of Governments
- City of Stamford Police Department
- Connecticut Department of Transportation

A **Community Advisory Committee**, made up of representatives of Stamford's diverse neighborhoods and community organizations, provided insight into challenges and opportunities, contributed and reviewed recommendations and disseminated project information within their community networks to ensure broad support for the plan. Neighborhoods represented on the Community Advisory Committee included:

- Shippan Resident (representing the Shippan Point Association)
- South End Resident (representing the South End Neighborhood Revitalization Zone)
- Harbor Point Resident (representing Harbor Point)
- Springdale Resident (representing the Springdale Neighborhood Association)
- Strawberry Hill Resident (representing the Strawberry Hill Neighborhood Association)
- Glenbrook Resident (representing the Glenbrook Neighborhood Association)
- East Side Resident (representing the East Side Partnership)
- Newfield Ave Resident and People Friendly Stamford (representing bicycle interests)
- South End Resident and People Friendly Stamford (representing pedestrian interests)
- Downtown Resident / UCONN Stamford Student
- UCONN Stamford
- Stamford 2030 District
- Westover Resident and Sound Cyclists Bicycle Club President
- West Side Resident (representing the West Side Neighborhood Revitalization Zone)
- High Ridge Road Resident (no neighborhood association)
- Cove Resident (representing the Cove Neighborhood Association)
- South End Resident and People Friendly Stamford (representing pedestrian and bicycle interests)

Stakeholder Meetings

Numerous meetings with a variety of stakeholders were also conducted. These meetings ensured that a multitude of perspectives and interests were incorporated into the plan. Stakeholders met with during the development of this plan included representatives of:

- Access4All Committee
- Building and Land Technology Real Estate and Development Company
- Building One Community
- Charter Oak Communities
- DOMUS
- Engineering Department, City of Stamford
- Fairfield County Business Council
- Fleet Feet Sports Stamford
- Ferguson Library
- Land Use Bureau, City of Stamford
- Mayor's Multicultural Council
- Mill River Park Collaborative
- People Friendly Stamford
- Police Department, City of Stamford
- Public Safety Department, City of Stamford
- Parks & Recreation Department, City of Stamford
- Stamford 2030 District
- University of Connecticut, Stamford
- Waterside Coalition
- YMCA
- Zagster
- Stamford Hospital
- Stamford Partnership

During the stakeholder meetings, attendees expressed the following concerns and recommended the plan address the following issues:

- **Design:** Focus on infrastructure by building or upgrading facilities for bicycling and walking, designing roadways for traffic calming, adding street trees and enhancing bus stops.

- **Accessibility and Americans with Disabilities Act:** Strengthen the process for reviewing new construction projects and address sidewalk encroachment from sidewalk cafes and other obstructions.
- **Speeding:** Develop recommendations to calm traffic, such as implementing priority projects from the Traffic Calming Plan.
- **Intersections:** Address intersection safety through design recommendations and an educational campaign.
- **Partnerships:** Engage a wide range of partners including CTDOT, employers, local organizations, neighborhood associations, developers, and hospitals.
- **Education:** Expand the Stamford Street Smarts Initiative to address distracted traveling, speeding and intersection safety, among others.
- **Visitor experience:** Address a visitor's first impression by adding artistic gateways, plazas, sidewalks, bike facilities, and street trees to communicate that visitors are now in a vibrant downtown filled with people and to drive safely.
- **School access:** Focus on access for children whether through prioritized funding, school trainings, or infrastructure at schools and school bus stops.
- **Lighting:** Address low lighting levels and maintenance issues throughout the city with a focus on lighting in winter and at intersections and underpasses.
- **Costs:** Conduct a cost benefit analysis of bicycle and pedestrian facilities including the cost of bussing school children, 911 emergency responses, and hospital visits, among others.
- **Education:** Develop driver education classes and teach walking and bicycle safety in schools.



Open Houses/Public Meetings

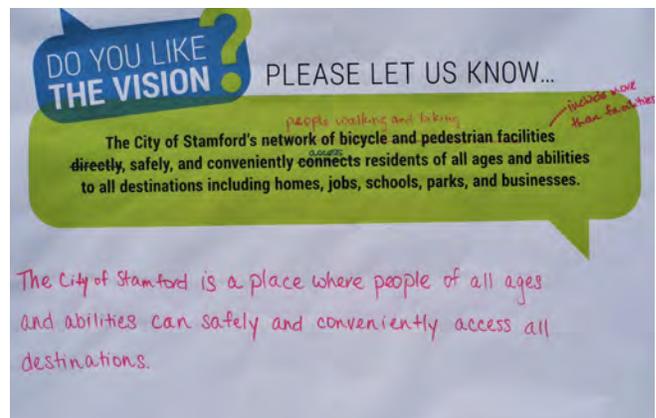
Three open houses/public meetings were hosted during the course of the project. The purpose of these meetings was to provide an opportunity for the larger public to learn about the project, ask questions, provide comments and help shape the direction and final outcome of the plan. During the first open house, an interactive project information booth was set up during the Stamford Downtown Arts & Crafts Fair and farmer's market which included informational maps and graphics, an opportunity to comment on and highlight unsafe areas for walking and bicycling in the city, and a walking-oriented game for children. The open house was conducted as part of the fair to attract a larger and more diverse representation of the Stamford community than who might attend a public meeting about the plan as walking and bicycling affects everyone in Stamford.

A second open house was held to present the draft vision and performance measures, along with preliminary versions of the proposed bicycle network and pedestrian improvements. A final open house was held at the Mill River Carousel to present the adopted plan to the public.



Project Website

A website was created for the project to provide an overview of the planning process, maps of existing conditions and recent trends, project team contact information, public meeting information, and links to the survey and Wikimap. The maps displayed data relating to bicycle and pedestrian crashes, car ownership, transit access, and demographics. The website was updated multiple times and served as a central place for sharing information with the public. Since the website's creation, it has had 2,571 views with an average of 7 views per day.



Survey

Over the course of five months, Stamford participated in a survey provided in both English and Spanish. The survey received 289 responses either through an online portal or via intercept-surveys. The survey asked questions focused on the pedestrian and bicycling environment in Stamford, propensities to walk and bicycle today, and physical and social changes that would lead to an increase in walking and bicycling. Responses provided an understanding of the desire to walk and bicycle in Stamford and the most common factors that discouraged these activities.

Respondents were asked for their home and work zip codes. Most respondents lived in Stamford south of the Merritt Parkway while a few lived to the north. Most respondents also worked in Stamford, predominately downtown. Respondents generally represented the demographics of Stamford; however, the percentages of respondents who were Hispanic/Latino, Black/African American, or younger than eighteen were lower than the city's actual composition. Twenty-six percent of respondents had children—a group that is typically particularly risk-averse and may be more likely to wish to ride on trails and other separated facilities. Twenty percent of respondents' household income was less than \$50,000 representing a group which may be more dependent on walking and bicycling.

Intercept Survey

Intercept surveys (i.e. in-person surveys) were conducted at key sites throughout the city to ensure information was captured from a diverse cross-section of residents, commuters, students and workers. Intercept-surveys took place at Cove Island Park, the University of Connecticut—Stamford campus, the Stamford Transportation Center, and Friendship and Lione Parks.

Cove Island Park, located along Stamford's southeastern coast, sees many recreational walkers and cyclists, both from surrounding Stamford neighborhoods and from bordering towns. Survey respondents here communicated that inadequate cycling and pedestrian facilities, along streets such as Cove Road, act as a prominent barrier to safety and access in the neighborhood.

At the University of Connecticut campus on Broad Street, college students, who commute to the campus via train (typically Metro-North rail), bus, bike, and foot expressed concern with walking and cycling the "last mile" to campus due to fast-moving traffic, a lack of bicycle lanes, and generally unsafe conditions, prompting their regular use of the University-operated shuttle bus.



Intercept surveys conducted at the Stamford Transportation Center gathered responses from Stamford workers, visitors, and residents, as well as those traveling into, out of, and around Stamford via CTtransit bus, private shuttle, and Metro-North commuter rail. Respondents consistently desired better connections between the transit hub, neighborhoods and offices.

Friendship Park, located at Richmond Hill Avenue and Spruce Street in Stamford's West End, saw minimal pedestrian traffic during the survey period. Those surveyed walk to work, school, or other destinations "always or almost always". Concerns included sidewalk widths and condition, fast car speeds, and difficult street crossings. Despite people enjoying Lione Park, no surveys were administered due to minimal pedestrian traffic.

What We Learned

The survey results highlight the significant desire of Stamford residents to bicycle and walk more, if issues such as high traffic speeds and dangerous crossings were addressed and pedestrian and bicycle facilities created a connected network—all focus areas of this plan. The potential to increase walking rates by 20 percentage points and bicycling rates by 32 percentage points will have a positive impact on Stamford by diverting short car trips to walking and biking, reducing downtown and citywide traffic congestion, increasing physical activity, making streets more vibrant, and improving health and the environment.

Survey Results

Survey respondents overwhelmingly stated they wanted to walk and bicycle more and would do so if Stamford's streets provided a safer, more direct and more comfortable network for walking.

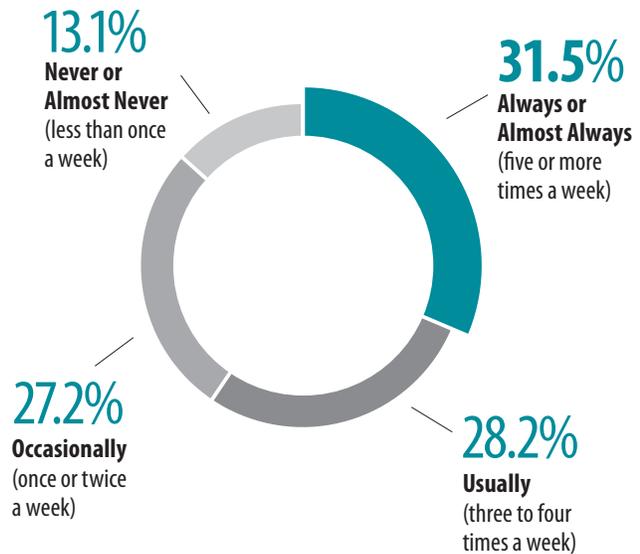
Walking



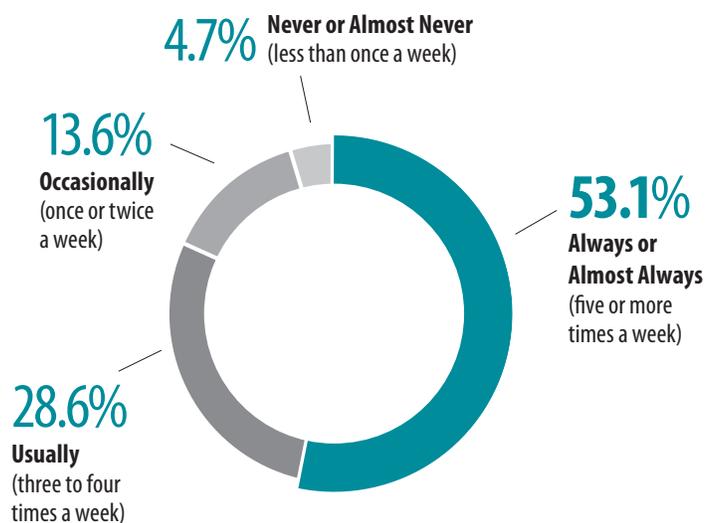
Thirty-one percent of residents walk almost daily, but fifty-one percent would do so if it were safer and more pleasant—an increase of twenty percent. Additionally, fifty-nine percent walk at least twice a week, but eighty-one percent would do so if it were safer and more pleasant—an increase of twenty-two percentage points.

Stamford has the potential to increase daily walking rates by **2/3**

How often **do** you walk to get where you need to go, or for exercise?

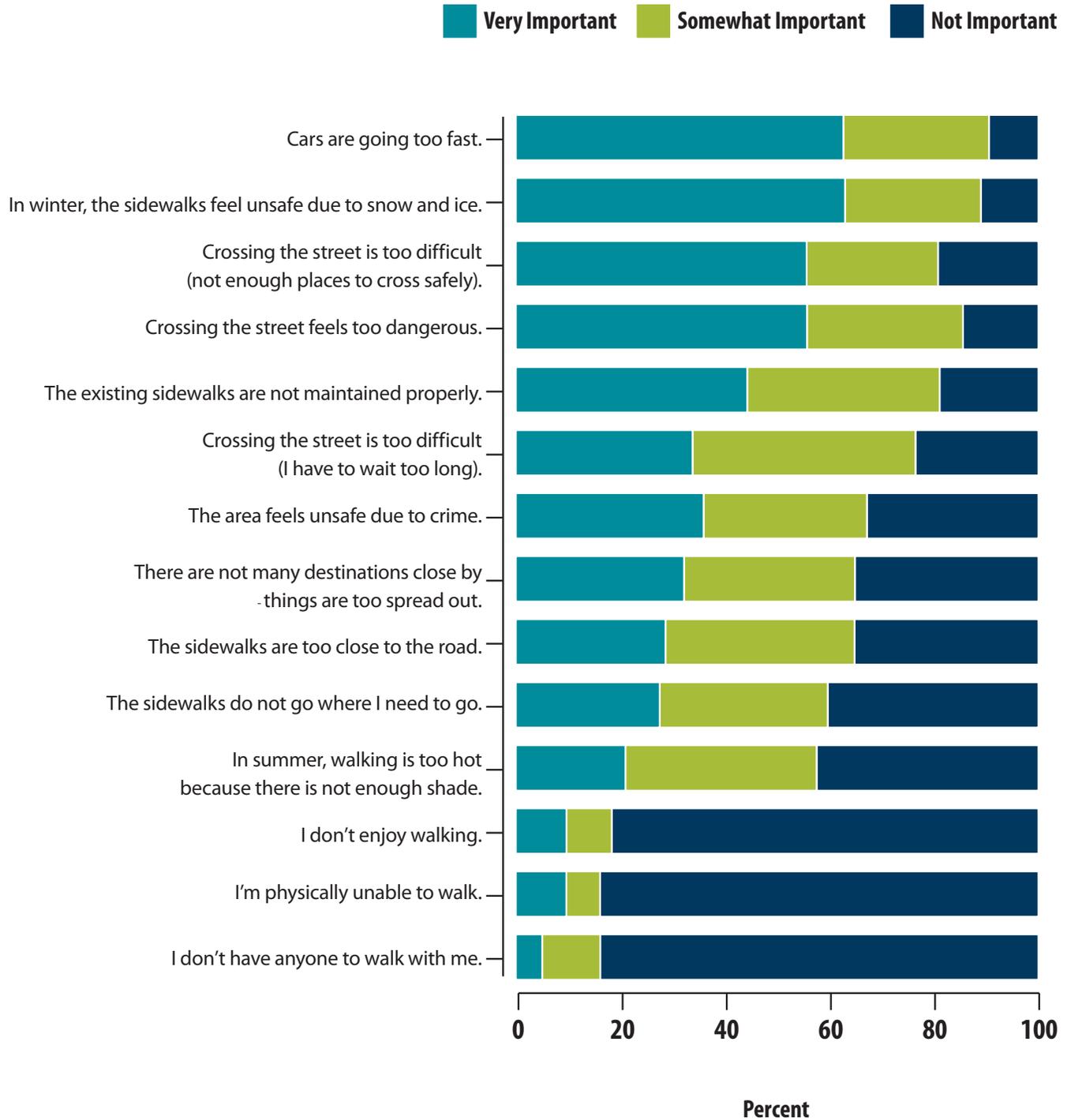


How often **would** you walk if walking felt safer and more pleasant?



Survey Results (continued) | Walking

Residents ranked, on a scale of importance, factors that discourage walking. The most discouraging factors were: high traffic speeds, dangerous street crossings, and inadequate sidewalk maintenance. This list shows which factors are considered “very important” for people in Stamford and which discourage them from walking.



Survey Results

Survey respondents overwhelmingly stated they wanted to walk and bicycle more and would do so if Stamford’s streets provided a safer, more direct and more comfortable network for bicycling.

Bicycling

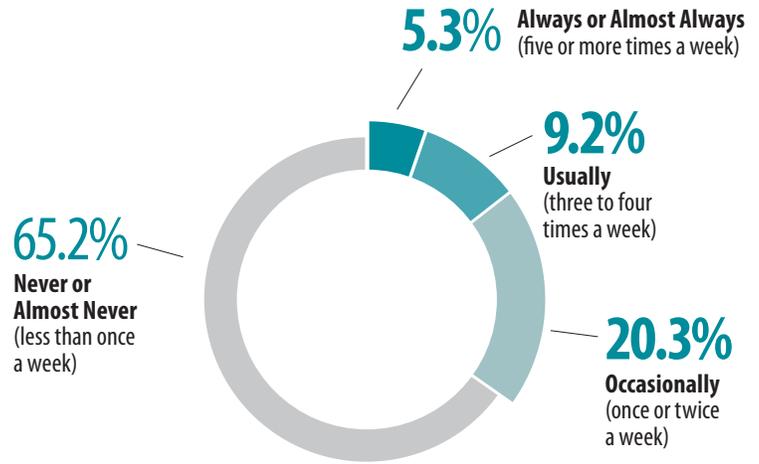


Thirty-five percent

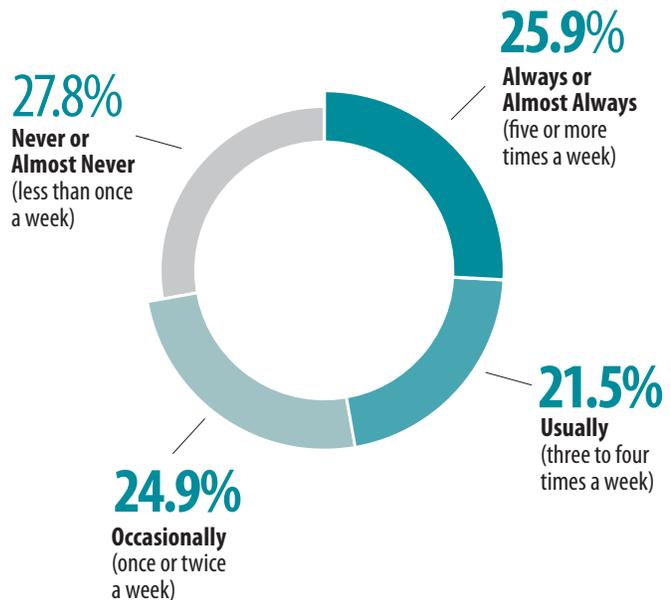
bicycle at least once a week, but seventy-two percent would do so if it were safer and more pleasant. Fifteen percent of residents already bicycle over three times a week, but forty-seven percent would do so if it were safer and more pleasant—an increase of thirty-two percentage points.

Stamford has the potential to increase weekly bicycling rates by **2x**

How often **do** you bicycle to get where you need to go, or for exercise?

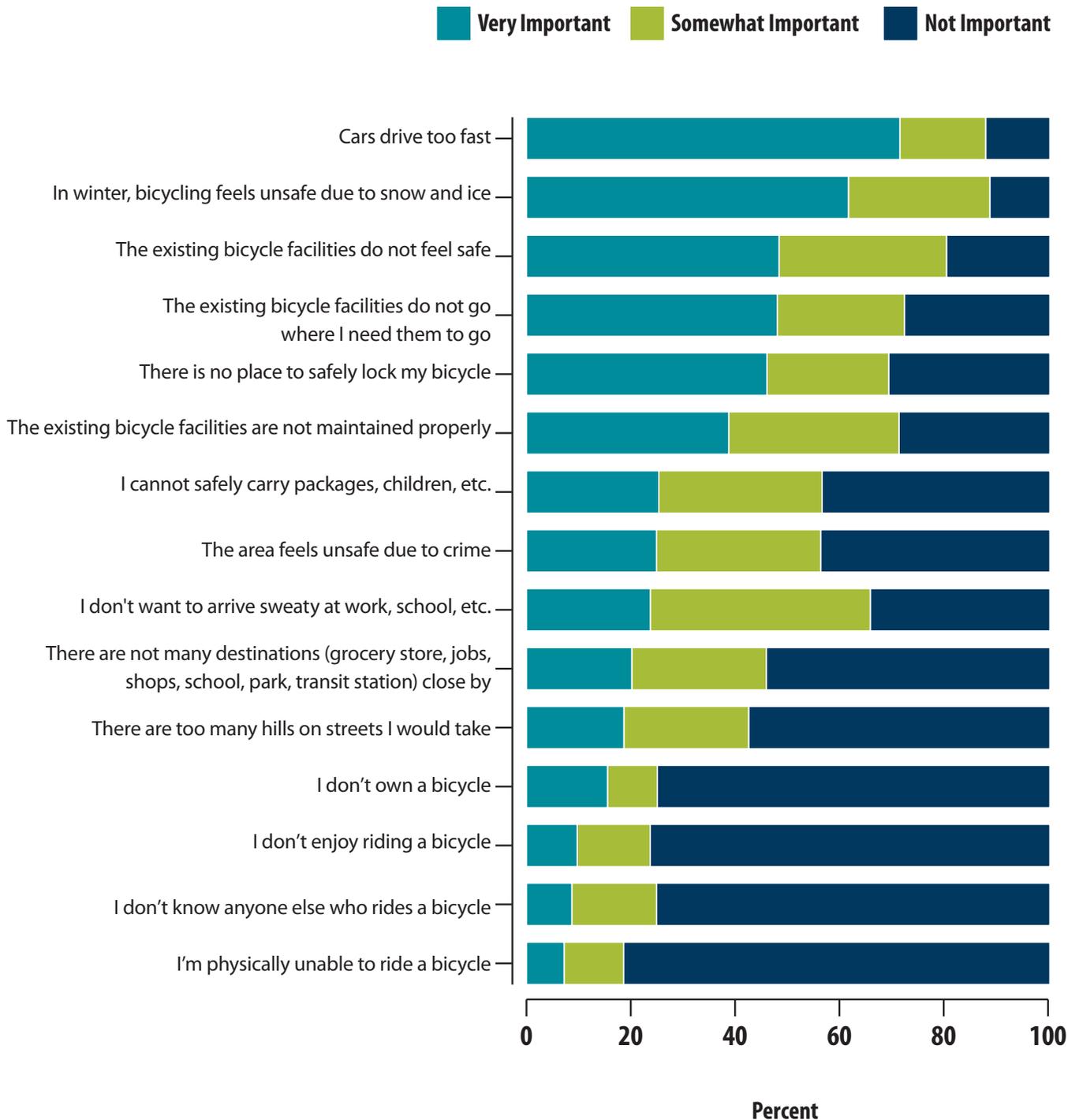


How often **would** you want to bicycle, if bicycling felt safer and more pleasant?



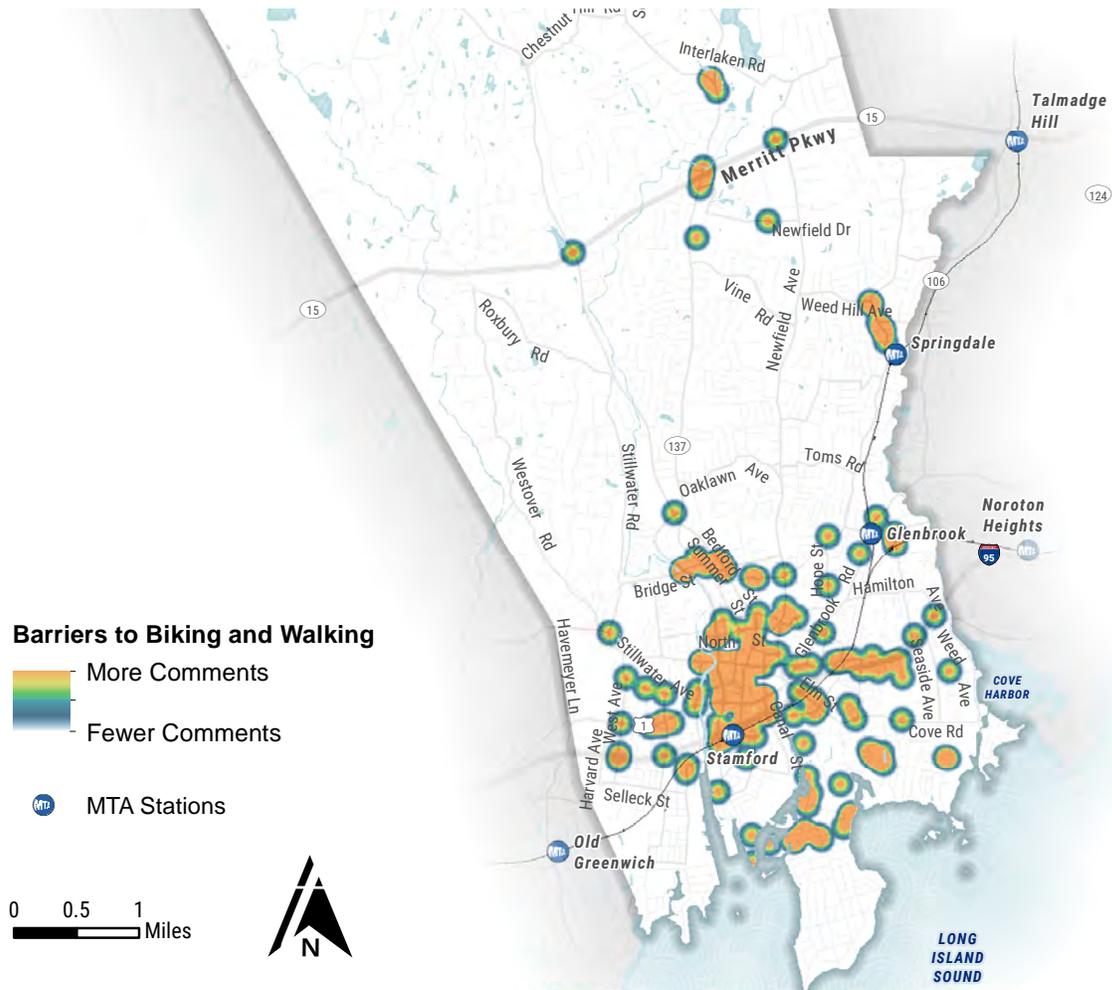
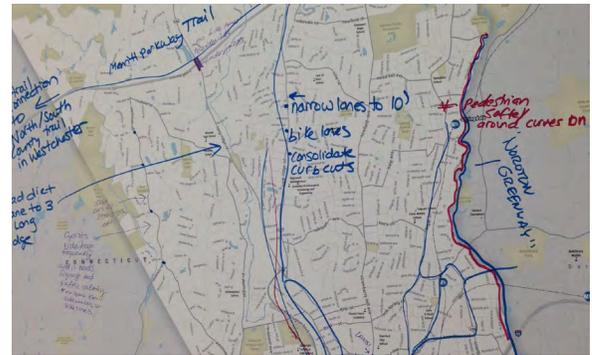
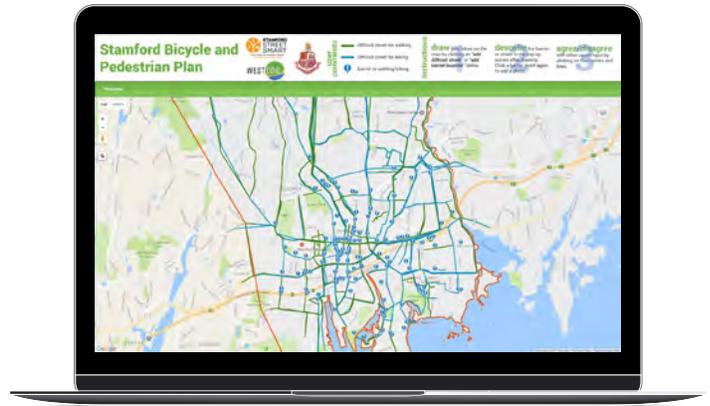
Survey Results (continued) | Bicycling

Residents ranked, on a scale of importance, factors that discourage bicycling. Discouraging factors included: high traffic speeds and bicycle facilities that do not connect to destinations, do not feel safe, and are not properly maintained. Most residents own a bicycle, enjoy bicycling, and about half would bicycle regardless of the terrain. Following is a list of common traffic-related reasons that discourage people from bicycling.



Map Comments

An online interactive map, called a Wikimap, was created to gather geographically-specific input from the community about bicycling and walking in Stamford. The Wikimap was available for public input from July 1, 2016 to December 30, 2016. The public identified barriers and routes that are difficult to bike and walk, and provided specific information about the issues at these locations. One hundred and fourteen residents of Stamford commented on 294 routes and 173 barriers. Most of the barrier comments related to intersections. There were concerns about the frequency of places to cross the street and the lack of automobile yielding at marked crosswalks and signalized intersections. Several commenters noted that pedestrian signals should be automatic. Comments related to difficult streets for bicycling and walking focused on fast vehicle speeds. This information was used, along with comments on maps from community meetings and posted at Stamford libraries, as the basis for the recommended bicycle and pedestrian facilities and policies in this plan.



MAP OF ROUTES CONSIDERED DIFFICULT FOR BICYCLING

The routes highlighted on the map below, especially routes in orange and yellow, were designated as being uncomfortable for bicycling. These routes were given special attention when developing the recommendations for future bicycle facilities.



MAP OF ROUTES UNCOMFORTABLE FOR WALKING

In addition to many intersections that were difficult to cross, many streets were considered uncomfortable for walking due to a lack of sidewalk, a narrow sidewalk, or proximity to high-speed and high volume traffic.





CHAPTER

5

HOW WE GET THERE
**Strategies for Successful
Education and Enforcement**

Education and Enforcement

Traffic safety efforts typically depend on three complementary approaches: engineering, education, and enforcement, with each playing a vital role in correcting improper and unsafe behavior and creating a culture of compliance and civility.

This chapter provides recommendations for enhancing Stamford's existing Street Smart Initiative supported by robust education and enforcement programs. Examples of Street Smart programs in other cities are provided.

This chapter also provides case studies of cities who have made positive advances in their biking and walking environments and can provide additional guidance to Stamford. Examples of exemplary activities include providing free information about transportation options, gathering user data, providing incentives for bicycling and walking, establishing design manuals, and creating partnerships with universities.

Education and Enforcement Focus Areas in Stamford

While it is important that all users of the roadway respect the law and laws are enforced for everyone, it is recommended that education and enforcement efforts in Stamford be focused on driver responsibility and accountability. Motorists are at little risk in crashes with pedestrians and bicyclists and can cause the greatest harm (regardless of fault). Conversely, pedestrians of all ages and abilities, but especially—children, people with disabilities, and older adults, are particularly vulnerable and pose little risk to others.

In Stamford, the following safety issues were reported by community members and project stakeholders as reasons people do not feel comfortable walking or bicycling in Stamford.

Vehicles often:

- Travel at unsafe speeds
- Fail to yield to pedestrians while turning
- Fail to stop for pedestrians at crosswalks
- Fail to stop during the red phase of traffic signals

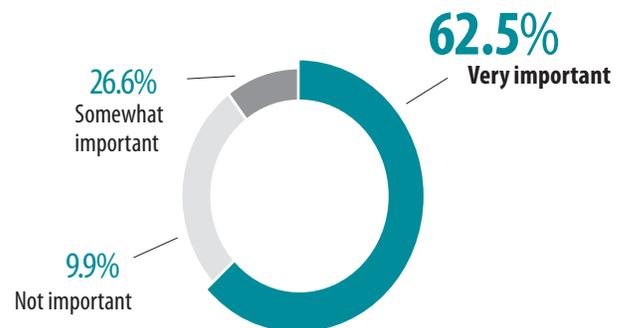
Consequently, it is recommended that education and enforcement campaigns in Stamford be targeted to improve pedestrian and bicycle safety through two specific objectives:

1. Reduce the speed of motor vehicles
2. Improve yielding to pedestrians in crosswalks (targeting turning motorists)

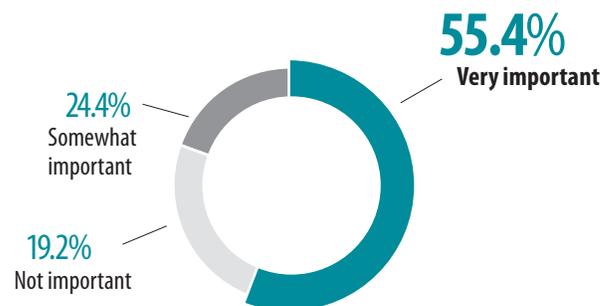


The City of Stamford has an important program, the **Stamford Street Smart Initiative**, which provides tips for bicycling and walking. It has created videos on how to use sharrows, HAWK signals, and Leading Pedestrian Intervals. It also organizes events such as Bike to Work, Walk to Work and Park(ing) Day. Other cities which have initiated Street Smart campaigns are New Jersey and the Washington, DC area. An overview of their programs is provided on the next page.

Cars are going too fast



Crossing the street is too difficult



Crossing the street feels too dangerous



Stamford community survey responses to factors discouraging walking.

Education Programs

Education plays an important role in changing behavior. Education can complement enforcement programs to teach road users about safe driving practices, as well as the laws that govern them. Numerous studies support the concept that education efforts succeed in changing behaviors as is highlighted in the Street Smart programs in this chapter.

In Stamford, it is recommended that education programs be expanded per the table below.



Action/Program	Description	Target Audience	Resources
Enhance "Street Smart" Safety Initiative	Expand on Stamford's existing Street Smart Initiative, with a focus on reducing speeding and increasing yield rates for pedestrians in crosswalks. Uses television, radio, billboards, and transit advertising.	All Stamford residents, particularly drivers	Washington, DC Street Smart campaign: beststreetsmart.net New Jersey Street Smart campaigns: beststreetsmartnj.org
Mail Education Materials	Regularly include information about safe driving in City communications (such as utility bills & tax bills). Could be part of Street Smart Initiative.	All Stamford residents, particularly drivers	Boulder, Colorado utility bill inserts: https://goo.gl/Y2EovG
Expand website	Provide driver, bicycle and pedestrian safety education material via the City's webpage covering: <ul style="list-style-type: none"> • Dangers of speeding • Yield and stop laws at crosswalks • An interactive "report a problem" feature to allow citizens to communicate safety concerns to City staff. 	Stamford residents interested in walking and biking	Bike New Haven: https://goo.gl/4vlgH2
Conduct annual walk audit with elected officials	Lead officials and City staff on a walk or bicycle audit focused on infrastructure and safety to strengthen their awareness and commitment. People Friendly Stamford or Access4All could lead the tour.	Elected officials and City transportation staff	Bike Walk Connecticut: bikewalkct.org/walk-audits.html
Establish driver training program	Develop routine training on driving safely with pedestrians and bicyclist for bus drivers, maintenance workers, and all City staff.	Drivers of City vehicles, garbage trucks, and CT Transit.	Project for Public Spaces Training modules for NJ Transit Staff; Washington Area Metropolitan Transit Authority (WMATA) bus driver training program

Enforcement Programs

Enforcement programs are needed because roadways are typically designed for the safe, fast, and convenient movement of motor vehicles to the detriment of pedestrian and bicyclist safety and convenience. For example, roadways are often designed for drivers to feel comfortable traveling over the speed limit, although speed is a leading cause of pedestrian and bicycle fatalities. Consequently, enforcement programs are typically controversial as the roadway design itself encourages illegal behavior. Ideally, enforcement programs are supported by the re-design of infrastructure focused on the safety of all users.

Enforcement does play a vital role in correcting improper and unsafe behavior by motorists, bicyclists and pedestrians alike. In addition to its punitive role, enforcement can also educate all users on unsafe behaviors and their consequences. Unfortunately, most law enforcement officers receive limited bicycle- or pedestrian-specific training, and officers may find it challenging to enforce laws they are not familiar with or cannot defend. Therefore, it is important that officers be provided with specialized training so as to efficiently and equitably enforce the law. The training should be designed to raise police awareness of bicycle and pedestrian issues and identify the most important laws to enforce.

A single training effort, however, isn't often enough to institutionalize knowledge. Instead, a continuum of

training implemented over time have proven to be most effective. In such a program, all officers are provided with basic bicycle and pedestrian safety information, via a tool like a brochure. Over a period of months, officers are then provided with more advanced training through informational videos shown at roll call, computer-based training, and instructor-led training. The latter stages of the continuum are more labor-intensive but are typically targeted at officers who will become the bicycle and pedestrian experts for their departments or precincts.

Additional recommendations are provided in the table below.



Action/Program	Description	Target Audience	Resources
Coordinate Enforcement with the Street Smart Education Initiative	During publicity for the Street Smart Education Initiative, conduct targeted enforcement operations focused on speeding, red light running and failure to yield to pedestrians at crosswalks. Issue warnings, not tickets, for first offenders.	All drivers, particularly those who are engaging in unsafe behaviors.	Pittsburgh, PA Drive with Care Campaign: bikepgh.org/care Washington, DC Street Smart campaign: bestreetsmart.net New Jersey Street Smart campaigns: bestreetsmartnj.org
Start a Bicycle and Pedestrian Enforcement Program	Investigate the leading causes and hot spots for crashes and develop a department strategy for reducing them. Designating an officer is the first step.	Stamford Police Department	New Haven, CT Police Department unit, led by Sgt David Snyder: https://goo.gl/VsRrQW
Implement a Continuum of Training in Pedestrian and Bicycle Safety	Start with basic information provided to all police officers, and provide increasingly detailed training for officers who are interested in learning more.	Stamford Police Department	WE BIKE, etc, Continuum of Training approach: https://goo.gl/XEcPu8

Many communities have initiated Street Smart campaigns, much like Stamford’s Street Smart Initiative. Examples of campaigns in New Jersey and the Washington, DC Metropolitan region are highlighted here.

Street Smart New Jersey Campaign

More than forty communities in New Jersey have participated in the New Jersey Street Smart Campaign. Coordinated by the regional planning association (North Jersey Transportation Planning Authority), it targets drivers, pedestrians and bicyclists through mass media and enforcement efforts like crosswalk stings. The campaign’s slogan, “Check your vital signs” is paired with five graphics focused on pedestrian safety.

Police officers focus on engaging and educating, rather than simply issuing citations. All officers have been trained in the pedestrian decoy program. Officers monitor driver, pedestrian, and bicyclist behavior at selected crossings. Observing officers note violations and call ahead to waiting officers, who warn or ticket all offenders, regardless of whether they were driving or biking. Officers use the stops

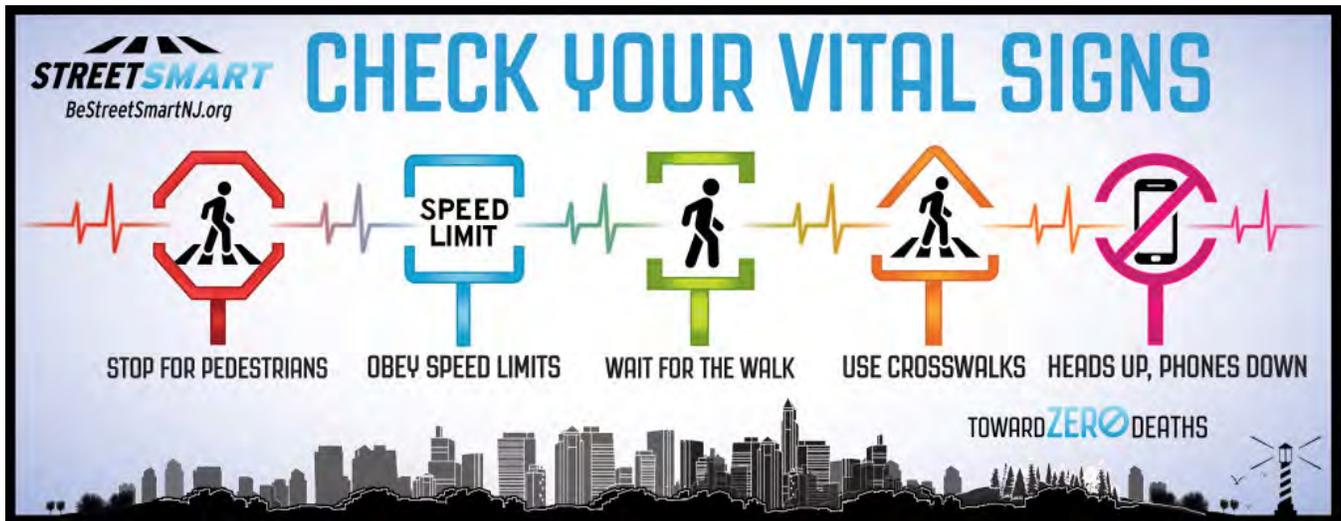
to educate drivers, pedestrians, and bicyclists about their duties and responsibilities under the law.

An evaluation of Street Smart NJ campaigns found them to be successful in improving pedestrian safety by changing the behaviors of drivers and pedestrians.

Metro Washington Street Smart Safety Campaign

The Metropolitan Washington Council of Governments (MWCOG) in the Washington, DC area funds a Street Smart campaign that emphasizes education through TV spots, viral web marketing, transit advertisements, and social media. These messages are accompanied by the tagline, “Local police are enforcing pedestrian safety laws”.

Street Smart public awareness efforts are conducted in conjunction with law enforcement “waves” in which police put an added emphasis on enforcing roadway safety laws. The DC Metropolitan Police Department and the MWCOG teach best practices in pedestrian enforcement to patrol officers and are creating a standardized reporting form.



City of Cambridge, MA

The City of Cambridge is an historic, compact city with constrained rights of way and a large student population. In 1992, the City Council adopted the Vehicle Trip Reduction Ordinance to address air quality issues. The ordinance established the Bicycle and Pedestrian Mobility Program and a requirement to “design and implement a program to encourage greater use of bicycles as alternatives to single occupancy vehicles within the city.” Since then, it has continually pushed the envelope in innovative design features that favor bicycling and walking. The City constructed one of the country’s first cycle tracks on Vassar Street, and in 2012, bicyclists in Cambridge logged 15.5 million miles, a 237-percent increase in mileage from 2004.

The City has initiated transportation demand management measures and incentives, which aim to maximize use of multimodal transportation as well as encourage new users. In Cambridge, parking maximums of .9 per 1,000 square feet have been established and bicycle parking is required. The City also offers free information on transit options, bicycle facilities, and other commuting advice for employers to give to employees, as well as transit passes through the Massachusetts Bay Transit Authority (MBTA) Corporate Pass program. Because of these policies, the number of vehicles traveling through popular commercial areas such as Kendall Square has decreased.

Cambridge attributes its progressiveness with multimodal transportation to a high level of interdepartmental communication. Cara Seiderman, the City’s Transportation Program Manager who is also on the bicycle and pedestrian advisory committees, has facilitated this communication for over 20 years. Departments tend to take on more varying responsibilities than in other cities of similar size. The Planning Department facilitates coordinating committees made up of the Public Health, Human Services, Public Works, School, and Water Departments. Having interdepartmental working groups and an expectation that all departments can consult each other ensures that projects move forward efficiently.

Lessons Learned

For bicycle and pedestrian projects to be successful, it is important to have a committed network of individuals and groups who are dedicated to the issues being addressed. This “critical mass” of followers forms the public process, which heavily relies on excitement and support. For example, bicycle facilities often imply removal of parking spaces. Because on-street parking is highly valued from the public perspective, without enough pro-bicycle supporters present at meetings, parking concerns will ultimately prevail.

Monthly bicycle and pedestrian committee meetings are crucial to ensure regular attendance and support at larger public meetings. A multi-pronged approach is needed for this to happen. First, the City of Cambridge has found that citizen advisory committees that are officially appointed by the City Manager and have clearly defined responsibilities facilitate a strong bicycle and pedestrian network. Second, citizen voices in Cambridge have weight, and for a long time, finding strong, advocate voices to gather the public outside of formal meetings was a challenge. Fortunately, groups are now forming that have become more proactive as interest in bicycle and pedestrian infrastructure has increased.

Lastly, it is important for the public to have a mechanism for submitting requests and comments regarding sidewalk or bicycle facility problems. Because large master plans often do not address spot improvements, the public can become frustrated when small problems are not addressed. Cambridge uses an online request system called Commonwealth Connect to address this. While the City cannot formally address every small issue, this submittal system allows the public to feel that complaints are being recorded and prioritized in an unbiased manner.

City of New Haven, CT

New Haven's bicycle and pedestrian infrastructure planning has its roots in community action. The community's response to two pedestrian deaths that occurred in the spring of 2008, and the formation of the Safe Streets Coalition, marked the beginning of New Haven's vision for complete streets and increasing safer streets for all modes. The adopted Complete Streets city ordinance called for the creation of a local design manual, education campaign, increased motor vehicle enforcement and the establishment of a capital fund to support future complete streets projects. As a result of this funding, the City began improving the safety of local intersections at a pace of one intersection per year. The City of New Haven has focused its active transportation planning efforts on engineering, education, and enforcement, all under the larger goal of improving traffic safety.

In the fall of 2008 the City launched its award winning Street Smarts campaign which was aimed at users of all transportation modes and has received over two million views. The City developed user safety handbooks which have served as models of other cities. Also in 2008, the Police Department committed to providing greater enforcement of traffic laws, increased the number of personnel on its traffic detail, and began working with the city to develop traffic safety goals.

In 2010 city staff created a Complete Streets subcommittee to further guide projects. This subcommittee included representation from the community, a local advocacy organization called Elm City Cycling, and City staff. The hard work and dedication of these groups has led the City to make great strides in providing safer infrastructure for road users. After getting city staff, engineers, and contractors on board, the City was able to increase their safety infrastructure project completion rate from one per year in 2008 to seven in recent years. The City has already completed ten projects this year and is hoping to complete a total of 20 by the end of 2016.

As a historical city, New Haven faces unique challenges. For example, very often during street reconstruction old infrastructure is found. These relics, whether cisterns, conduits, or old mining structures, usually result in unanticipated increases in project time and monetary expenses. In addition, the narrow streets found in historic cities can make road diets (i.e. reducing the

number of lanes or the width of existing lanes) which enhance automobile safety and can provide space for sidewalks and bicycle facilities, difficult, but not impossible. New Haven's transportation planners have come to realize that some streets are just not wide enough for bicycle and car lanes, but they are working to add bicycle lanes wherever both fit.

Lessons Learned

Community, city, and institutional partnerships have been key to the success of bicycle and pedestrian planning and policy change in New Haven. No single champion is the cause of New Haven's increased bicycle planning efforts. Advocacy groups, passionate city staff and community members, along with partnerships with institutions like Yale University provide the support to begin and continue safety improvements on New Haven's streets. The City's traffic safety projects have been able to garner support from a wide variety of community groups, not just traditional pedestrian and bicycle advocates. Public health groups and sustainability groups focused on reducing carbon emissions have also been engaged and provide valuable support for the City's complete streets efforts. Some safety groups have intentionally kept their missions broad and focused on the safety of users of all transportation modes rather than just pedestrians or cyclists so as not to alienate certain populations.

Patience and flexibility are important mindsets that the City recommends to those engaging in active transportation planning. All cities, especially historical cities, must be prepared for unanticipated hiccups in projects and for it to take time before one's city undergoes a shift and begins to accept pedestrian and bicycle projects as part of their reality.

Timing and use of media have also been important to policy change in New Haven. Members of the City and community successfully capitalized on media surrounding two traffic deaths to gain support for their cause. The City's Street Smarts campaign also made effective use of media by simplifying their message, developing a brand and public service announcements, and creating events such as the Street Smarts Summer Cycling Celebration which brings further media attention to traffic safety.

City of Alexandria, VA

The City of Alexandria adopted its first Pedestrian and Bicycle Plan in 2008. In 2011, Alexandria adopted a Complete Streets Policy through which the City stated it would incorporate infrastructure that supports safe travel for all users. The 2016 update to the Pedestrian and Bicycle Master Plan focused on improving walking and biking conditions across the city, with a focus on specific corridors.

Old Town, the city's historic center, characterized by short blocks, sidewalks, and narrow roadways, has always been conducive to walking. However, on the west side there are many state roadways, larger arterials, and large blocks which discourage walking and biking. Alexandria has aimed to attract more novice bicyclists by building low-stress bike networks. With varying construction and design over several decades, there is inconsistency in both sidewalk quality and accessibility, and Alexandria has focused on improving Americans with Disabilities (ADA) access.

The City is making consistent investments in its bicycle and pedestrian infrastructure; Alexandria developed citywide Complete Streets Design Guidelines, and its full-time Complete Streets coordinator ensures that these are addressed as part of all redevelopment and repaving opportunities. The City also installed more than 30 bike share stations and the region's first advisory bike lanes. While city staff provided important leadership, the Bicycle and Pedestrian Advisory Committee (BPAC) was instrumental in the entire master plan process. The BPAC identifies funding sources, monitors budget processes and conducts counts serving as a crucial resource for concrete data and prioritization.

Lessons Learned

In implementing the 2016 plan, the City has refined its civic-engagement-oriented approach for gathering input. The community often knows problems that the City does not, and it is important to have strong citizen committees to moderate and facilitate discussion about tough issues. At the same time, the City realized it must be aware of who is selected for these committees. At one point, the advisory committee was attended by members who were heavily anti-bike, which was counterproductive and unaligned with the trajectory of the master plan.

Alexandria sees multiple online civic engagement tools as valuable for coherent planning grounded in community input. The City uses AlexEngage, which is an online forum run by Peak Democracy, a non-partisan company whose mission is to broaden civic engagement and build public trust in government. This tool allows community members to provide feedback to City officials while also being able to read and comment on other community comments.

Call.click.connect is a similar online program used by the City that allows citizens to submit service requests, report problems, register complaints about safety issues, and make suggestions. Programs like these allow the City to keep ongoing records of peoples' desired changes. This reinforces the City's objective to ensure a data-driven prioritization process that is based on demand and need, rather than politics.

Other lessons learned are to include the public works and engineering departments from the outset of the process so they can provide input and feel a sense of ownership in the final product. Another lesson learned, is to keep the list of projects short. If the list of network improvements becomes too long, it is hard for staff to take action. In particular, cities should select a short list of projects that will require major street reconstruction and then move forward with design, grant-writing, or allocating funding.

City of Bellevue, WA

The City of Bellevue has been updating their bicycle and pedestrian plans since the early 1990s, however the 2009 Bicycle and Pedestrian Plan has been the most impactful of these revisions. The 2009 plan outlined a strong vision for the city's future bicycle and pedestrian network. The plan called for the addition of 80 miles of bike lanes, 90 miles of sidewalks, and 20 miles of trail improvements. In the past, Bellevue has created a new bicycle and pedestrian plan every five years. In 2014, however, rather than spend time and money creating a new set of goals for the city, the City's Transportation Commission devoted their energy to developing an implementation strategy to help the previously defined goals become a reality. The implementation strategy has since been developed and lists 52 bicycle and pedestrian projects which the City will complete in the coming years. Among other successes, the City has already implemented their first electronic bike counters and has cultivated City support for road diets to allow for new bike lanes.



The success of Bellevue's recent engagement in bicycle and pedestrian planning and the implementation initiative cannot be attributed to a few key players. Both the City Council and Transportation Commission is composed of stronger bicycle and pedestrian advocates than in the past. Bellevue's Mayor Claudia Balducci served as a strong advocate and laid the foundation for current projects. In 2015, she committed Bellevue to participating in Safe People, Safer Streets - a nationwide challenge from USDOT to create safer streets by prioritizing bicycle and pedestrian safety. By the end of 2015, the City Council endorsed Vision Zero and established a goal of ending traffic deaths and serious injuries in the City of Bellevue by 2030. In addition to

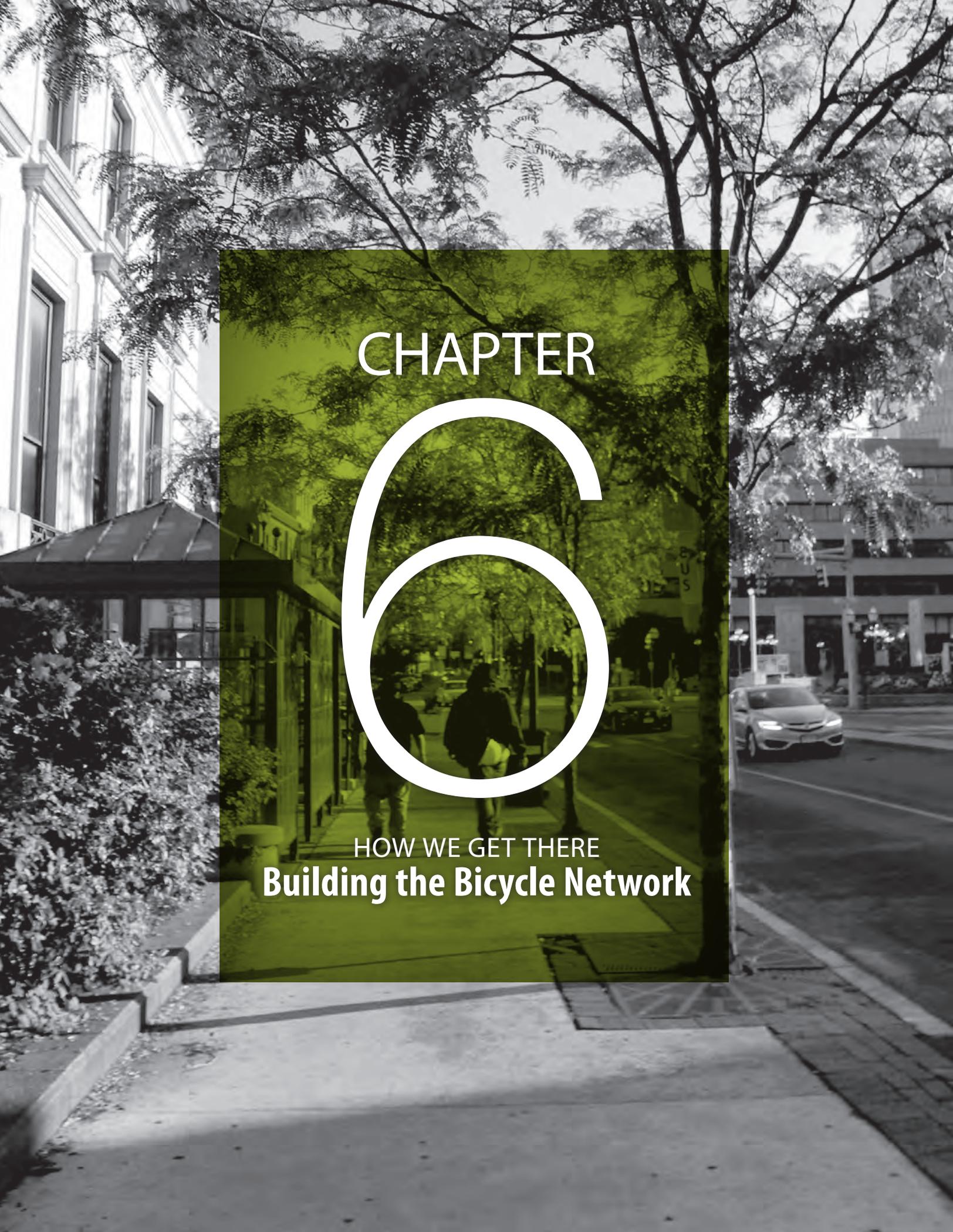
the efforts of City staff, active support from Bellevue's bicycle advocacy group, the Cascade Bicycle Club, has contributed to the success of Bellevue's recent bicycle infrastructure and safety improvements. The City also cites the occurrence of two major bicycle crashes and pressure from surrounding cities, such as Redmond, Seattle, Kirkland, and Issaquah, as significant forces.

Lessons Learned

Bellevue learned to start developing a robust bicycle dataset as early as possible. The City Council would not approve projects until the Transportation Commission had presented a strong case backed by ample local and national data which supported the need and impact of bike infrastructure and safety improvements. For example, bike count data and literature reviews on the success of road narrowing was needed to show that reducing automobile lanes to 10 feet would not reduce automobile level of service.

Bellevue also cultivated allies in the form of individuals and highly influential business executives. Bellevue's Transportation Commission was able to secure letters of support for bicycle infrastructure and safety projects. In addition, Bellevue's partnerships with local institutions such as the University of Washington and Microsoft has led to a working group which is creating a new traffic camera which will allow Bellevue to conduct bike counts more efficiently and capture vehicle trajectory and near misses at specific intersections, all of which the City can use to create safer streets for cyclists.

Lastly, Bellevue recommends conducting careful research on new bike infrastructure and technology and practicing patience when necessary. For example, while many places were painting shared lane markings all across their cities, Bellevue waited to review research on their impact. The City ultimately decided that shared lane markings would not help them reach their bicycle safety goals and have since decided to put more effort into creating bike lanes and buffered bike lanes.



CHAPTER

6

HOW WE GET THERE
Building the Bicycle Network

This chapter documents the facilities and strategies that were developed in collaboration with City staff and the community of Stamford to create a city in which people on bicycles have safe and comfortable routes to access destinations. On the following pages, you will find:

Page 6.3 » Benefits of Bicycling

Overview of the benefits of bicycling including mobility, access to transit, economic impact, public health, and environmental sustainability.

Page 6.4 » Bicycle Facility Types

Toolbox of facility types and roadway designs to make bicycling attractive to the greatest number of people.

Page 6.13 » Developing the Bicycle Network

Process of developing the bicycle network including incorporation of community input, a review of destinations, and an assessment of roadway right-of-way.

Page 6.15 » Minor Retrofit Bicycle Network

Summary and maps of the Minor Retrofit Network.

Page 6.18 » Major Retrofit Bicycle Network

Summary and maps of the Major Retrofit Network.

Page 6.21 » Trail System

Overview, design recommendations and maps of the trail system recommendations.

Page 6.23 » Bike Parking

Overview of facility types and policy recommendations.

Bicycle Network

Benefits of Bicycling

Bicycle transportation is a vital element of Stamford's future mobility, economic development, public health and environmental sustainability. A bicycle-friendly community will attract employers, employees and new residents because an investment in bicycling is an investment in safety, public health, a clean environment, a higher quality of life and economic development that positively impacts all residents, bicyclists and non-bicyclists alike.

In the U.S., approximately one-third of daily trips are less than three miles, a distance easily covered by bicycle in 15 to 20 minutes. Most of these trips are made by automobile, in part due to a lack of safe bicycling facilities.

Currently only .2% of workers in Stamford commute to work by bicycle.

Improved bicycling conditions in Stamford can play a key role in mitigating auto traffic congestion by providing Stamford residents with the option to travel by bicycle.

72% of over 200 surveyed individuals in Stamford say they would bike once a week if it felt safe and comfortable to do so.

Increased levels of bicycling can reduce fuel consumption, air pollution and carbon emissions in Stamford. Short vehicular trips can also have high levels of per-mile emissions, as research shows that an estimated 60 percent of the pollution created by automobile emissions is emitted in the first few minutes of operation.

Bicycling also offers a low-cost transportation option for the residents of Stamford. The cost of owning and operating a bicycle for transportation is estimated to be less than four percent of the cost of owning a car and many residents of Stamford, especially in the downtown area, live car-free (see map Zero-Car Households).

Creating a network of bikeways will enhance access for Stamford residents to the many public parks, the



waterfront, and other recreational venues. Bicycling also fulfills residents' needs for improving and maintaining their health through routine exercise. The Centers for Disease Control and Prevention recommends 30 minutes of moderate physical activity daily. Expanded and improved bicycle facilities will encourage bicycling as means of transportation, recreation and exercise.

Investing in bicycle infrastructure will also enable Stamford to capitalize on existing transit stations. A cohesive and integrated network of on- and off-road bikeways throughout Stamford and enhanced bicycle parking at the stations will enable residents living further away to access the stations. This can increase ridership, while reducing the need to build costly vehicle parking garages on prime transit-adjacent real estate. Shifting how people access the stations will provide opportunities for human-scaled land uses, building forms and road designs which encourage more people to bike, walk and use transit; thereby completing a positive reinforcing cycle.

Companies deciding where to locate or expand are increasingly concerned about the lifestyle and amenities that a location can offer. The transportation and recreational options that a high-quality bikeway network provides enhance the attractiveness to employers and future residents.



LOWER STRESS TOLERANCE

Bicycle Facility Types

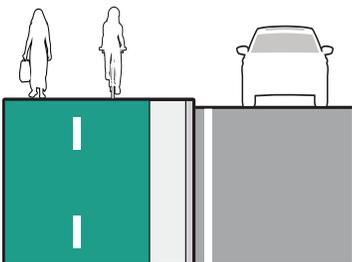
Local municipalities and state departments of transportation throughout the United States are refining their thinking on how best to provide safe, convenient, comfortable facilities for people riding bikes, walking, and running/jogging.

Bicycle and pedestrian facilities have evolved from serving as “alternative transportation” facilities to filling a critical gap in communities’ transportation networks. For many years, the approach to bicycle facility design for roadways placed people riding bicycles in or directly adjacent to vehicular travel lanes. While this approach met the needs of confident cyclists, it did not create new users or encourage a broader bicycling culture. This can be seen in Stamford

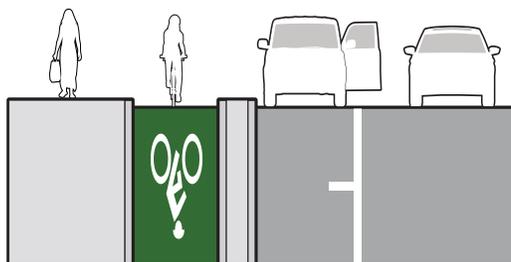
where the use of shared-lane markings, or “sharrows” were placed on some high-speed roadways near the Stamford Transit station, but have not resulted in an increase in cycling to the station.

Today, over 50% of people indicate that they are “interested but concerned” about bicycling and would like to ride more often but are concerned about their safety riding in traffic. Over 50% say they are worried about being hit by a car and nearly 50% say they would more likely ride a bike if physical separation were provided between motor vehicles and bicycles. Similarly, pedestrians prefer to be placed further away from the curb and/or have a buffer between themselves and motor vehicle traffic.

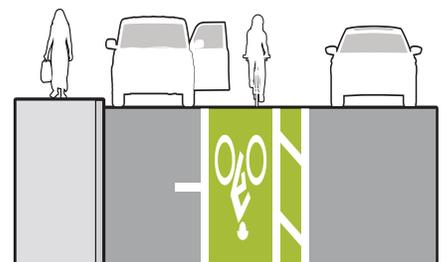
Trail/Shared Use Path



Separated Bike Lane



Buffered Bike Lane



MOST SEPARATED



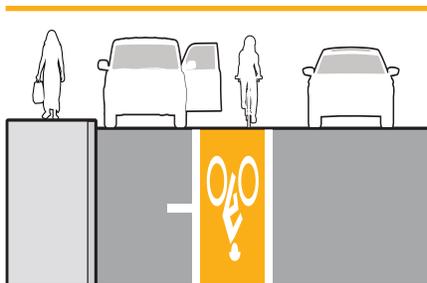
HIGHER STRESS TOLERANCE

Design professionals are paying attention and designing facilities, such as buffered and separated bike lanes, and trails, that create a greater separation between bicyclists and high-speed high-volume roadways.

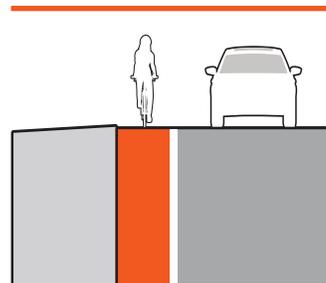
In addition, there is a greater understanding of the relationship between vehicle speeds and traffic fatalities. On low-volume streets with limited right-of-way, comfortable bicycle routes may be established by addressing speed using traffic calming measures.

The following pages present a toolbox of bicycle facility types and key design features of these emerging practices as recommended in the Stamford Bicycle Network.

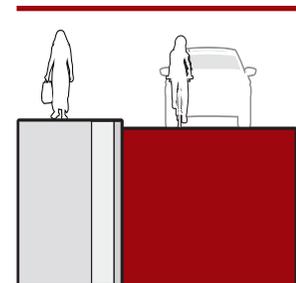
Bike Lane



Shoulder Bikeway



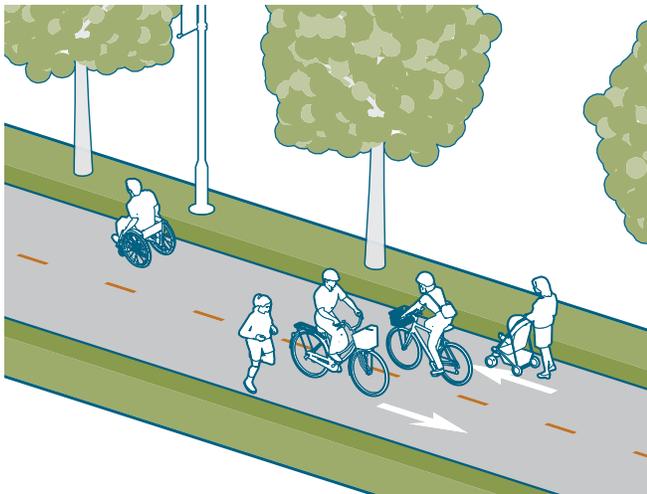
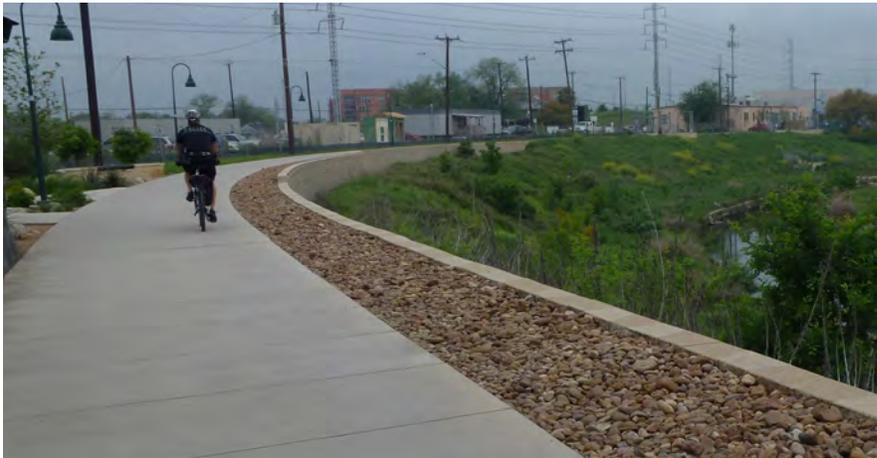
Shared Roadway



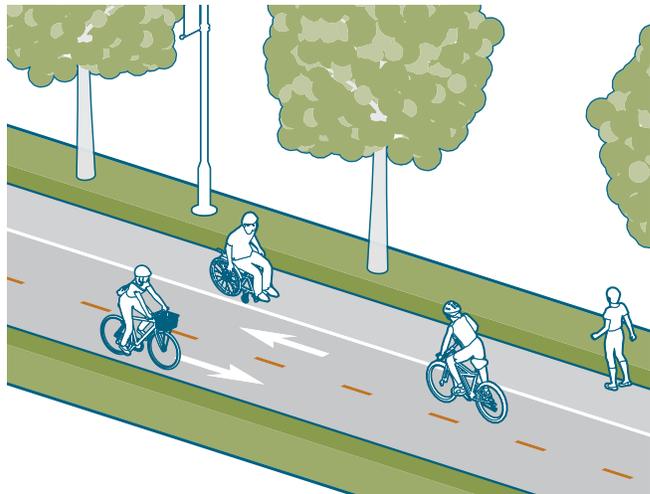
LEAST SEPARATED

Trail/Shared Use Paths

» Trails or Shared Use Paths are separated facilities providing two-way travel for walking, bicycling, jogging and skating activities.



Shared use path with mixed use



Shared use path with separated users

Guidance

- The minimum width of a shared use path is 10 ft but should be wider based on the anticipated user volume.
- A 2 ft clearance from vertical objects such as poles, signs, landscaping, etc. should be included on each side.
- Ideally, a graded shoulder area of 3 to 5 ft. should be included on each side.

Considerations

- Shared use paths are attractive to a wide range of people.
- Good design includes:
- Intuitive and safe intersection crossings.
 - Adequate widths to enable side-by-side travel and passing, (11 ft wide or greater).
 - Separation between pedestrians and bicyclists in areas with higher levels of use.
 - Direct and seamless connections to destinations and other bicycle and pedestrian facilities.

References: MassDOT. Separated Bike Lane Planning and Design Guide. 2015; AASHTO. Guide for the Development of Bicycle Facilities. 2012.

Separated Bike Lanes / Cycle Track

» Separated Bike Lanes are an exclusive bikeway facility that combines the user experience of a trail with the on-street infrastructure of a bike lane. They are physically separated from motor vehicle traffic and distinct from the sidewalk.



Typical Application

Separated bike lanes should generally be considered on any road with one or more of the following characteristics:

- Total traffic lanes: 3 lanes or greater.
- Posted speed limit: 30 mph or higher.
- Average Daily Traffic: 6,000 vehicles or greater.
- Parking turnover: frequent.
- Streets that are designated as truck or bus routes.

Guidance

Separated bike lanes can provide different levels of separation:

- Flexible delineator posts (“flexposts”) offer the least separation and are appropriate as an interim solution.
- On-street parking offers a high-degree of separation, but may require raised buffer treatments at intersections.
- Raised buffers provide the greatest level of separation from traffic, but will often require road reconstruction.

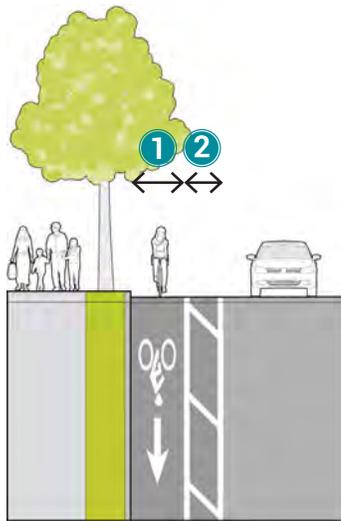
Considerations

- More comfortable to a wider range of bicyclists than striped bikeways on higher volume and higher speed roads.
- Eliminates risk of a bicyclist being hit by an opening car door.
- Prevents motor vehicles from driving, stopping or waiting in the bikeway.
- Provides greater comfort to pedestrians by separating them from bicyclists.

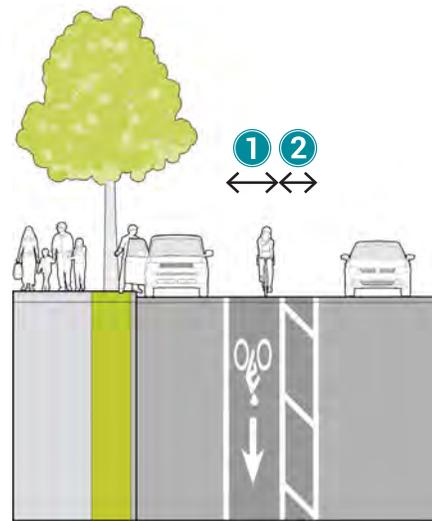
References: MassDOT. *Separated Bike Lane Planning and Design Guide*. 2015; NACTO. *Urban Bikeway Design Guide*. 2nd Edition.

Buffered Bicycle Lanes

» Buffered Bike Lanes are bicycle lanes with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane or parking lane to increase the comfort of bicyclists.



Buffered Bike Lane Adjacent to Curb



Buffered Bike Lane Adjacent to Parking

Typical Application

Buffered bike lanes should generally be considered on any road with one or more of the following characteristics:

- Total traffic lanes: 3 lanes or fewer.
- Posted speed limit: 30 mph or lower.
- Average Daily Traffic: 9,000 vehicles or fewer.
- Parking turnover: infrequent.
- Bike lane obstructions: likely to be infrequent.
- Where a separated bike lane is infeasible or not desirable.

Guidance

- 1 The minimum width of a buffered bike lane adjacent to parking, exclusive of the buffer, is 5 feet. A desirable width is 6 feet.
 - 2 The minimum buffer width is 18 inches. There is no maximum. Diagonal cross hatching should be used for buffers less than 3 feet in width.
- Chevron cross hatching should be used for buffers greater than 3 feet in width.

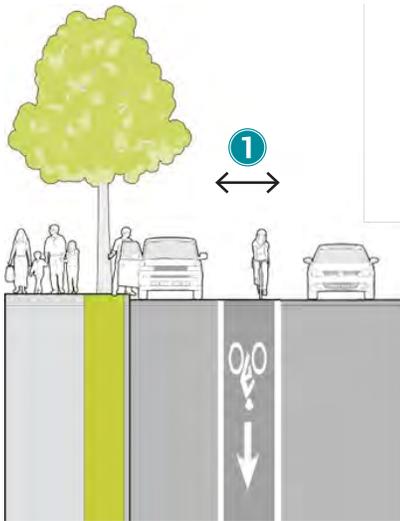
Considerations

- Recommended as an alternative where separated bicycle facilities are not feasible.
- Should be provided in lieu of a standard bike lane at locations where 7 foot bike lanes are feasible.
- When not curb-adjacent, place buffer next to the parking lane where there is commercial or metered parking (i.e. higher parking turnover) and next to the travel lane where speeds and traffic volumes are higher.
- Research has documented buffered bicycle lanes increase the perception of safety.

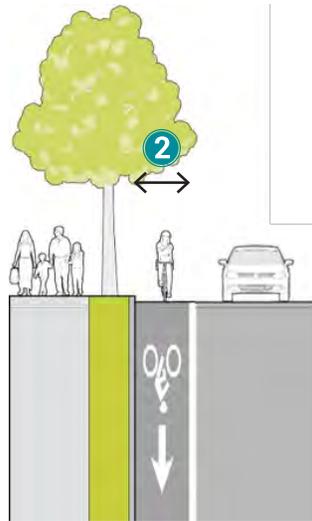
References: AASHTO. *Guide for the Development of Bicycle Facilities*. 2012; NACTO. *Urban Bikeway Design Guide*. 2nd Edition; Portland State University, Center for Transportation Studies. *Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track & SW Stark/Oak Street Buffered Bike Lanes FINAL REPORT*. 2011.

Bicycle Lanes

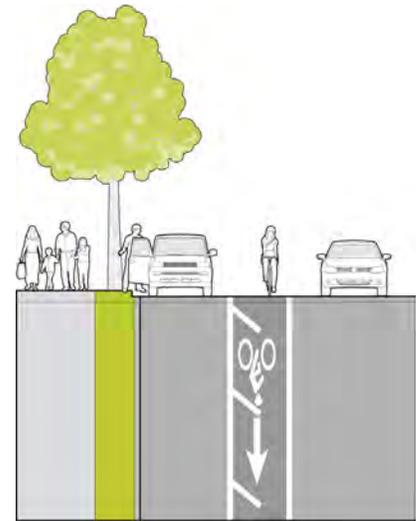
» A bicycle lane is a portion of a street designated for the exclusive use of bicycles distinguished from traffic lanes by striping, signing and pavement markings.



Bike Lane Adjacent to Parking



Bike Lane Adjacent to a Curb



Bike Lane with Door Zone Marking

Typical Application

Bicycle lanes should generally be considered on any road with one or more of the following characteristics:

- Total traffic lanes: 3 lanes or fewer.
- Posted speed limit: 30 mph or lower.
- Average Daily Traffic: 9,000 vehicles or fewer.
- Parking turnover: infrequent.
- Bike lane obstructions: likely to be infrequent.
- Where a separated or buffered bike lane is infeasible or not desirable.

Guidance

- 1 The minimum width of a bike lane adjacent to parking is 5 feet, a desirable width is 6-7 feet.
- 2 The minimum width of a bike lane adjacent to a curb is 5 feet exclusive of the gutter; a desirable width is 6 feet.

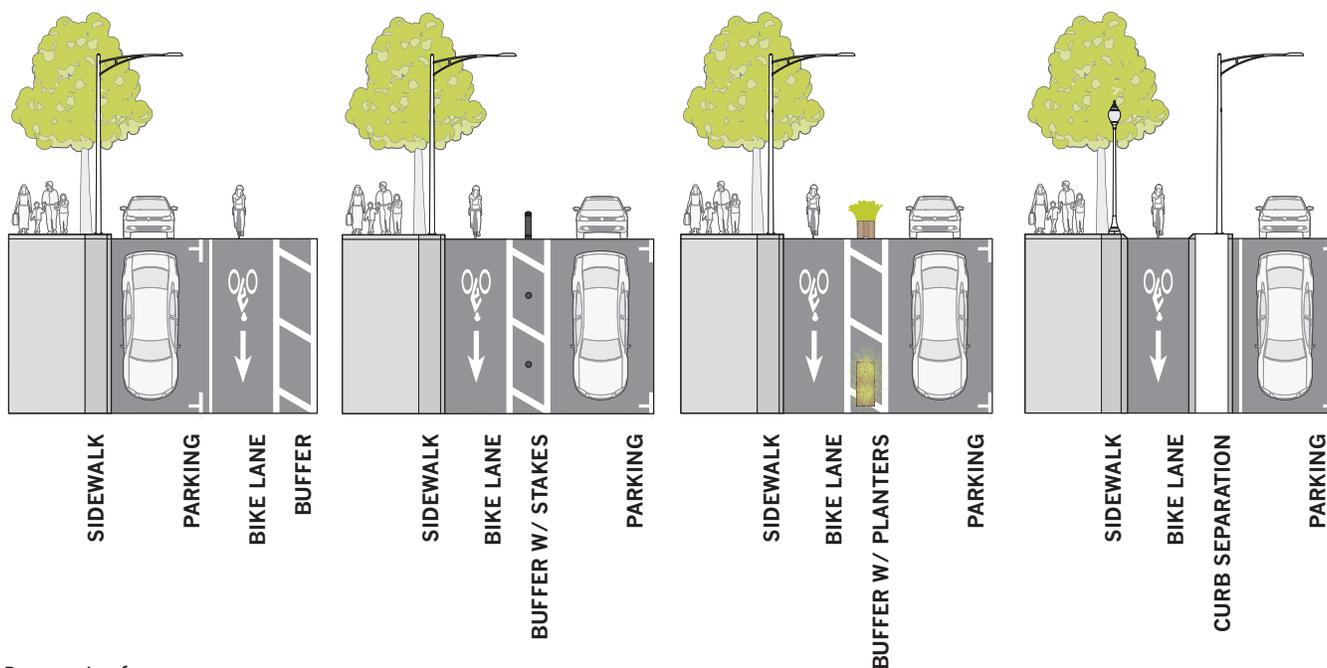
Considerations

- Typically installed by reallocating existing street space.
- Stopping, standing and parking in bike lanes may be problematic in areas of high parking demand and deliveries especially in commercial areas.

References: AASHTO. *Guide for the Development of Bicycle Facilities*. 2012; NACTO. *Urban Bikeway Design Guide*. 2nd Edition.

Evolution of a Bike Lane

» Bicycle facilities can be implemented incrementally - starting with a bike lane, moving to a buffered bike lane, adding physical separators in the buffer, and finally developing a permanent separated facility. A phased approach allows troubleshooting to occur before permanent materials and expensive infrastructure is installed.



Progression from

Considerations

Separated bike lanes have been implemented in many cases as low-cost retrofit projects (e.g. using flex posts and paint within the existing right-of-way). More permanent forms of separation, such as curb-protected bike lanes, cost more and are less flexible once implemented. A phased implementation approach, where “pilot” projects transition to permanent protected bike lanes may solve both of these problems, by implementing the facility slowly and troubleshooting before permanent materials and high costs are necessary.

Lower-cost retrofits or demonstration projects allow for quick implementation, responsiveness to public perception and ongoing evaluation. Separation types for short-term separated bike lane designs often include non-permanent separation, such as flexible delineator posts, planters or parking stops. Pilot projects allow the agency to:

- Test the separated bike lane configuration for bicyclists and traffic operations
- Evaluate public reaction, design performance, and safety effectiveness
- Make changes if necessary
- Transition to permanent design

Guidance

Permanent separation designs provide a high level of protection and often have greater potential for placemaking, quality aesthetics, and integration with features such as green stormwater infrastructure. Agencies often implement permanent separation designs by leveraging private development (potentially through developer contribution), major capital construction, and including protected bike lanes in roadway reconstruction designs. Examples of permanent separation materials include rigid bollards, raised medians and grade-protected bike lanes at an intermediate or sidewalk level.

AASHTO Guide for the Development of Bicycle Facilities (2012). NACTO Urban Street Design Guide (2013) - Curb Extensions

Neighborhood Bikeway

» Neighborhood bikeways are streets with low motorized vehicle traffic volumes and speeds, designated and designed to give walking and bicycling priority. They use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles. Neighborhood bikeways feature comfortable crossings of busy arterial streets.



Typical Application

Neighborhood bikeways should generally be considered on residential streets or streets:

- with low vehicle volumes and speeds.
- that provide either cross-town connections or create access to specific destinations.

Guidance

Neighborhood bikeways prioritize bicycles and optimize the street for bicycle traffic by:

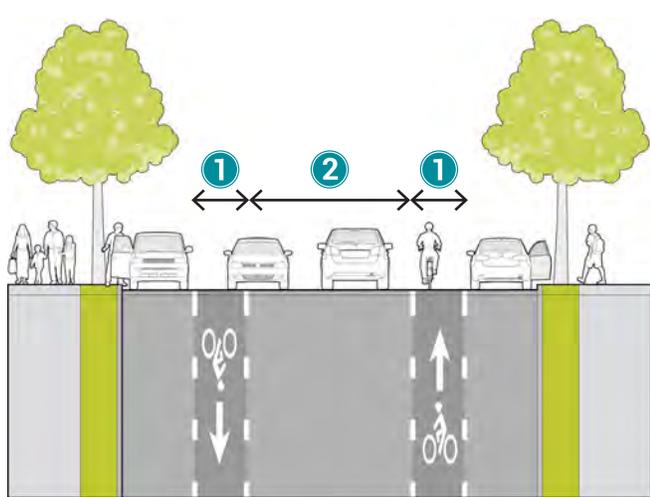
- Installing vehicle traffic calming and traffic reduction measures.
- Adding bicycle-specific signage and pavement markings.
- Developing bicycle-focused intersection treatments.



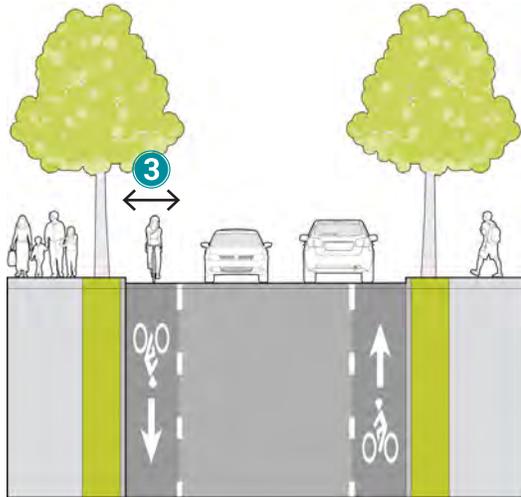
References: IPBI, Alta Planning + Design, Portland State University. *Bicycle Boulevard Planning and Design Guidebook*. 2009; NACTO. *Urban Bikeway Design Guide*. 2nd Edition; Portland Bureau of Transportation. *Neighborhood Greenway Assessment Report*. 2015.

Advisory Bike lanes

» Advisory bicycle lanes (ABLS) function as bicycle lanes, but are designed to allow motorists to enter them while they yield to approaching traffic in a narrowed travel lane.



Advisory Bike Lane with Parking



Advisory Bike Lane without Parking

Typical Application

Advisory bikeways should generally be considered on streets too narrow for bike lanes and with one or more of the following characteristics:

- Total traffic lanes: 2 lanes or fewer.
- Posted speed limit: 30 mph or lower.
- Average Daily Traffic: 2,000-4,000 vehicles per day desirable, 6,000 vehicles per day or 300 vehicles or fewer maximum during the peak hour.

Guidance

- 1 The minimum width of an advisory bike lane adjacent to parking is 5 feet; a desirable width is 6 feet.
- 2 The minimum width of the unlaned motorist space is 16 feet between the bike lanes.
- 3 The minimum width of an advisory bike lane adjacent to a curb is 4 feet exclusive of a gutter; a desirable width is 6 feet.

Considerations

- **Requires FHWA permission to experiment.**
- For use on streets too narrow for bike lanes and normal width travel lanes.
- A Two-Way Traffic warning sign (W6-3) may increase motorists understanding of the intended two-way operation of the street.

References: AASHTO. *Guide for the Development of Bicycle Facilities*. 2012; FHWA. *Bicycle Facilities and the Manual on Uniform Traffic Control Devices – Dashed Bicycle Lanes*. 2015.

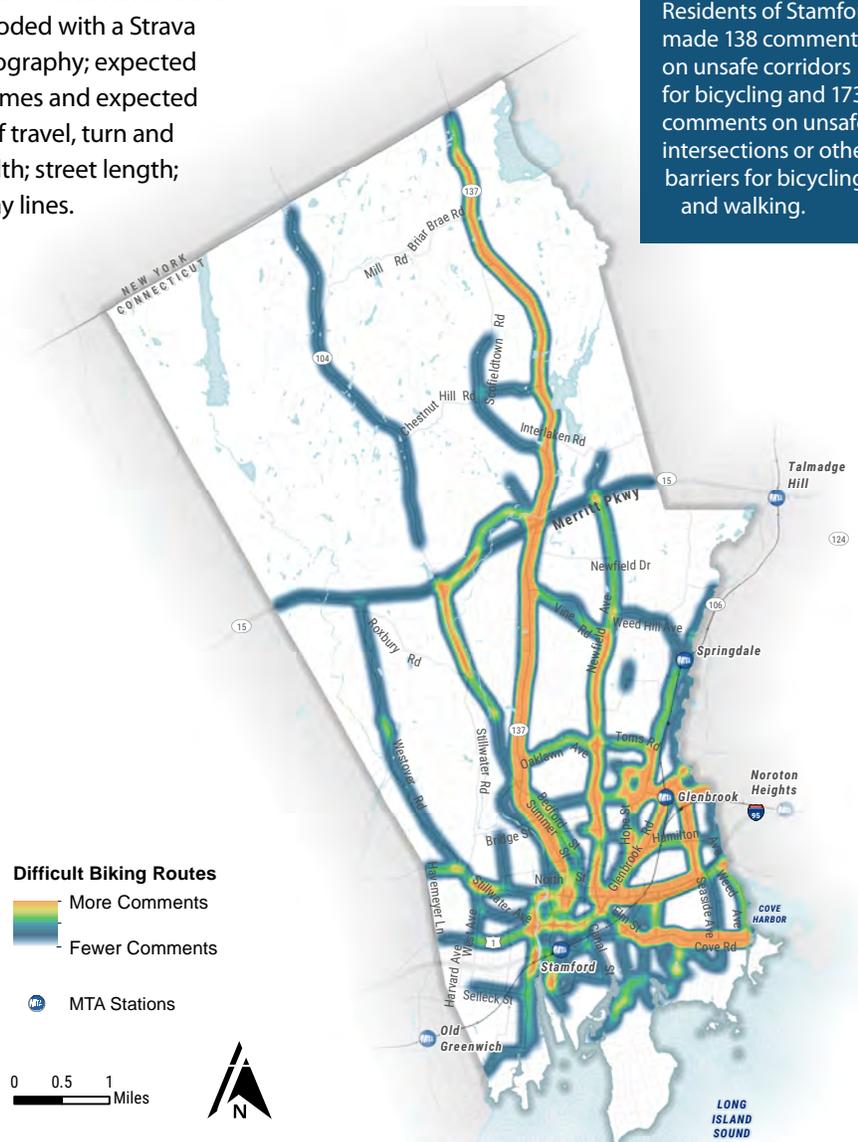
Developing the Bicycle Network

The draft bicycle network maps on the following pages were developed with the goal of ensuring that all streets in Stamford are safe for bicycling and that residents of Stamford can comfortably travel by bicycle between residential zones, commercial districts, transit stations and popular recreational areas.

The network maps were developed based on input provided by the Stamford community and a review of data and existing conditions affecting bicycling in Stamford. Community comments were received via online interactive Wikimaps and comments written on hard copy maps provided at the initial project open house, stakeholder meetings, the Technical Advisory and Community Advisory Committee meetings and posted at Stamford libraries. Data reviewed included bicycling routes recoded with a Strava app; destinations within Stamford; topography; expected or actual roadway vehicular traffic volumes and expected or posted speeds; curb lines; number of travel, turn and parking lanes and widths; shoulder width; street length; and property data showing right-of-way lines.

Community comments were used to ensure that improvements were in locations where community input suggested they were most needed. The interactive online Wikimap provided an opportunity for community members (during the period from July to December of 2016) to add locations where there were barriers to or where bicycling was difficult. Hard copy maps were provided to enable community members without internet access or computers to provide feedback and these comments were manually added to the Wikimap.

Residents of Stamford made 138 comments on unsafe corridors for bicycling and 173 comments on unsafe intersections or other barriers for bicycling and walking.



Barriers to bicycling also considered topographic data; i.e., where hills were located and which roadways included especially steep terrain. Not all bicyclists feel comfortable or will use routes that traverse steep hills due to the amount of effort required. Bicycle network recommendations considered topography to ensure that the network avoided steep slopes where possible.

High-use bicycle routes were determined by reviewing key destinations and existing levels of use. Key destinations for bicyclists included downtown Stamford, transit stations, commercial areas, schools and the southern shoreline parks. Currently used bicycle routes (gathered via Strava – a mobile app used to track athletic activity) were factored into the recommendations. Although Strava data typically captures only 5-10% of bicycle trips, and is less likely to capture trips made by people who are commuting by bicycle out of necessity, such as the economically disadvantaged, it highlighted that every street in Stamford is used by bicyclists, and some used more frequently than others such as Cove Road, Southfield Avenue, Fairfield Avenue, Palmers Hill Road, Westover Road, Roxbury Road, Stillwater Road, Riverbank Road, and Hope Street.

The existing roadway configuration, including the number of travel, turn and parking lanes, was considered when developing the bike network. Where possible, especially as part of the minor network recommendations, travel, turn and parking lanes were not removed. Where the removal of lanes is required, further traffic analysis will be needed to determine the appropriate configuration. Wide lanes, such as parking lanes more than 8-feet wide and travel and turn lanes more than 10-feet wide, were assumed to be able to be narrowed to accommodate bicycle facilities. Current research suggests that in urban and suburban areas narrower lane widths improve safety in most situations.

Property lines and street right-of-way lines were also reviewed to determine the amount of space in the public realm that could be used to accommodate bicyclists. In some instances, a review of city parcel data revealed that city-owned land could be used to connect dead-end streets for bicyclist and pedestrians only, further augmenting the bicycle network.

The final network recommendations were developed by identifying wide, high-volume and speed roads that could support safer facilities, such buffered or separated bike lanes, as well as low-volume and speed streets that could augment and feed the larger routes, via neighborhood bikeways. In the case of high-volume and high-speed

roadways, which often create the most direct citywide connections, each potential bicycle route was measured for its current curb-to-curb width and the width of its right-of-way, which is the amount of space beyond each curb that is publicly-owned and can be utilized for road modifications. The curb-to-curb width measurement defined which improvements were possible using paint and striping, while the right-of-way measurement could allow facilities but would require roadway reconstruction. Final design for each of these facilities will require field measurements of the curb-to-curb widths and a survey of rights-of-way. This task is being augmented by WestCOG, which will be providing detailed curb-to-curb widths based on analysis of planimetric roadway data in GIS. Neighborhood bikeway recommendations focused on limited-access streets that were likely to experience limited vehicular traffic.

Based on the review highlighted above, two sets of bicycle networks were developed as is explained on the following pages.

Minor Retrofit Bicycle Network

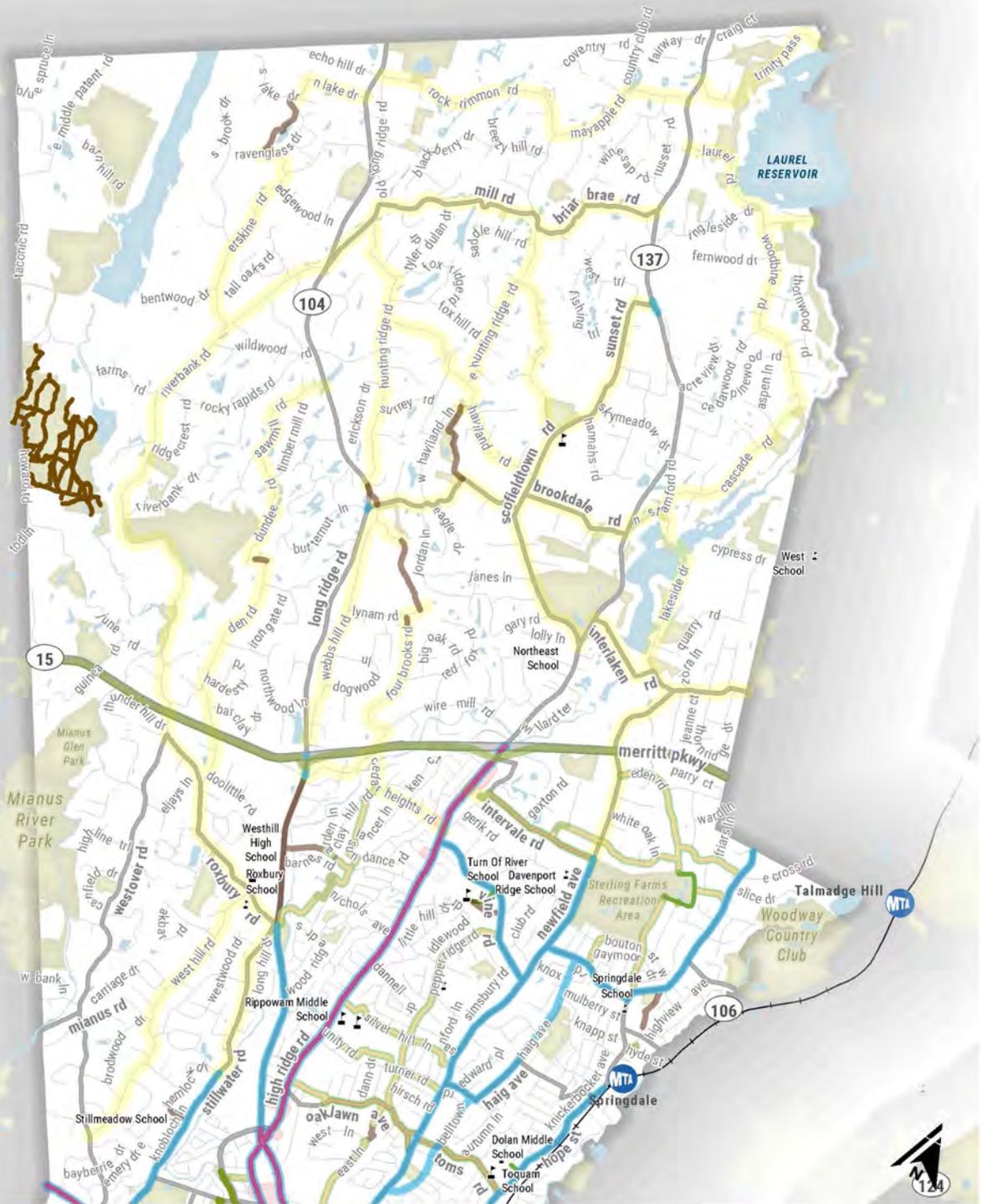
The Minor Retrofit Bicycle Network is a network of recommended projects that can be completed primarily using pavement markings and signs. In general, the recommendations do not reduce the number of travel or parking lanes and utilize roadway shoulders and reductions in lane width to provide space for bicycle facilities. These recommendations can be cost effectively implemented during street re-paving and re-striping projects or implemented as stand-alone retrofit projects.

Maps of the Minor Retrofit Network can be found on the following pages.



Example of a Separated Bike Lane installed as a retro-fit project in Manhattan, KS

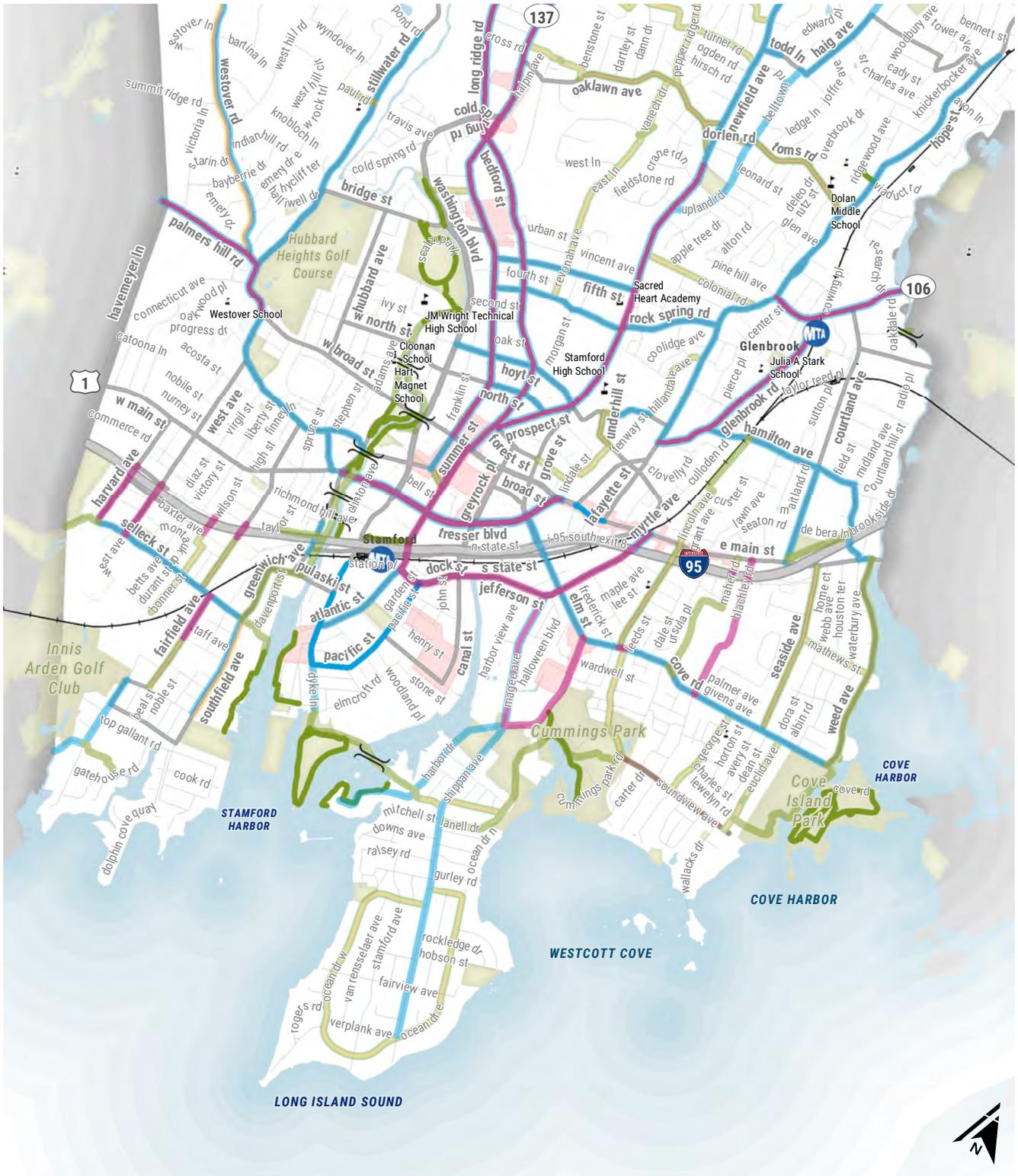
MINOR RETROFIT MAP (north)



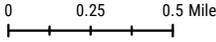
Recommendations	Buffered Bike Lane	Trail / Shared Use Path	Existing Bike Network	Other
Neighborhood Bikeway	Climbing Lane	Unpaved Nature Trail	Bike Lane	MTA Station
Bike Lane	Separated Bike Lane		Paved Trail	Commercial Zone
			Signed Route	High School; Middle School
				Elementary School

0 0.25 0.5 1 Mile

MINOR RETROFIT MAP (south)



- | | | | | |
|------------------------|--------------------|-------------------------|------------------------------|----------------------------|
| Recommendations | Bike Lane | Separated Bike Lane | Existing Bike Network | Other |
| New Bike/Ped Bridge | Buffered Bike Lane | Trail / Shared Use Path | Bike Lane | High School; Middle School |
| Neighborhood Bikeway | Climbing Lane | Unpaved Nature Trail | Paved Trail | Elementary School |
| | | Unpaved Trail | | Commerical Zone |



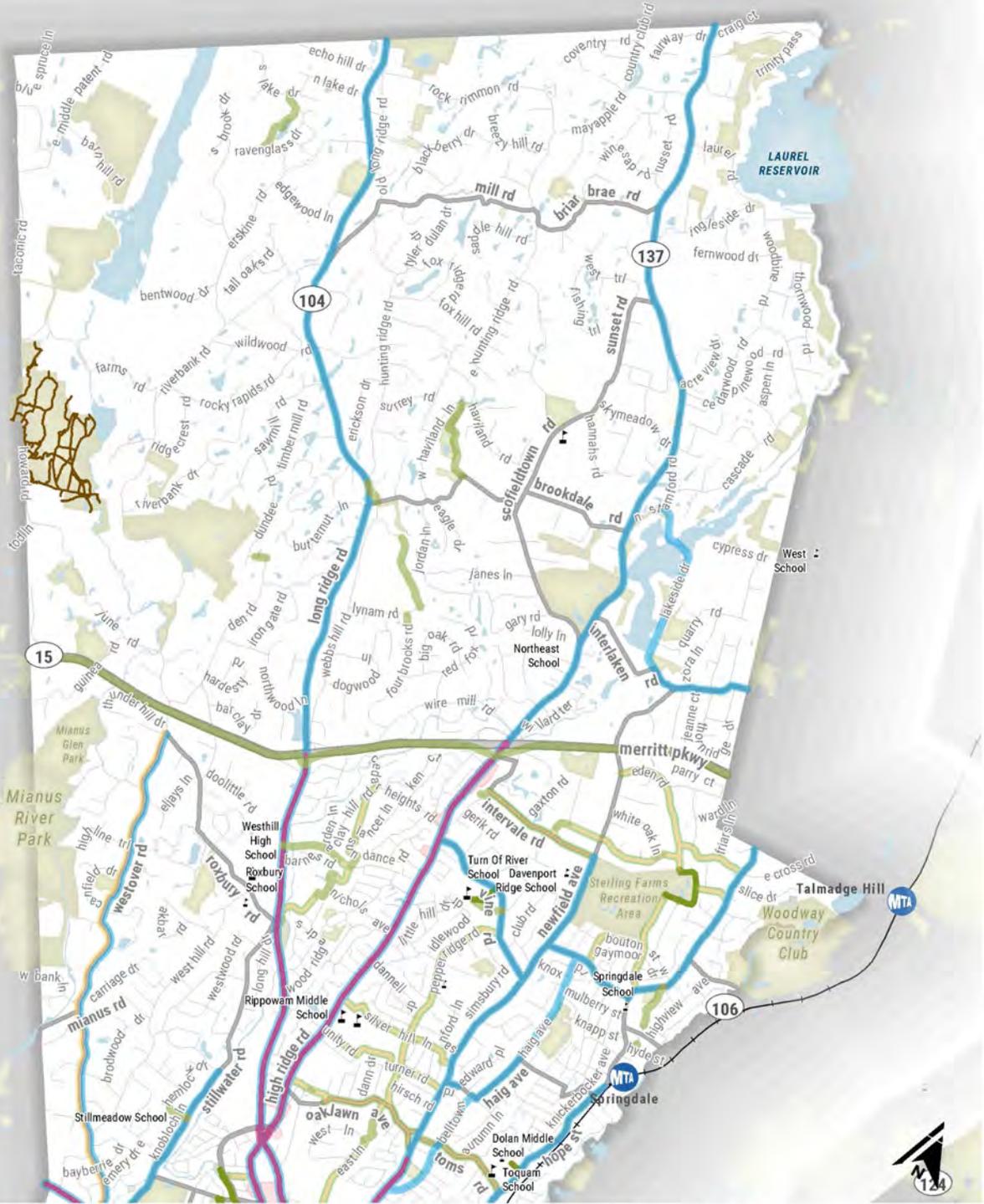
Major Retrofit Bicycle Network

The Major Retrofit Bicycle Network is a network of recommended projects that typically require major street reconstruction for their implementation. Using the entire roadway right-of-way, these recommendations often require realignment of sidewalks, reconstruction of curbs, and lane reconfiguration; however, they typically do not reduce the number of travel or parking lanes. They can be implemented as stand-alone capital projects or incorporated during street reconstruction projects. The goal of these network recommendations is to ensure the inclusion of safe and comfortable facilities for bicyclists during any roadway reconstruction project and to help plan capital projects focused on building the bicycle network.

Maps of the Major Retrofit Network can be found on the following pages.

The U.S. Department of Transportation's *Incorporating On-Road Bicycle Networks into Resurfacing Projects* provides a framework for including bicycle facilities during routine resurfacing programs including providing an overview of the process, the benefits of facility inclusion, recommended improvements to the typical resurfacing process, typical timelines, and methods for including bikeways such as during shoulder paving, lane diets, and road diets.

MAJOR RETROFIT MAP (north)



Recommendations	Bike Lane	Separated Bike Lane	Existing Bike Network	Other
New Bike/Ped Bridge	Buffered Bike Lane	Trail / Shared Use Path	Bike Lane	MTA Station
Neighborhood Bikeway	Climbing Lane	Unpaved Nature Trail	Paved Trail	Commerical Zone
		Unpaved Trail	High School; Middle School	Elementary School

0 0.25 0.5 1 Mile



Recommendations	Buffered Bike Lane	Trail / Shared Use Path	Existing Bike Network	Other
Neighborhood Bikeway	Climbing Lane	Unpaved Nature Trail	Bike Lane	High School; Middle School
Bike Lane	Separated Bike Lane	Paved Trail	Signed Route	Elementary School
				MTA Station
				Commercial Zone

0 0.25 0.5 Mile

Trails Network

Trails are an important element of Stamford's bicycle and pedestrian plan. They provide an opportunity to walk and bicycle fully separated from vehicle traffic making them especially attractive to those who feel uncomfortable traveling near automobiles, such as parents with children, the elderly and novice bicyclists. Trails also offer the opportunity to enjoy nature and participate in healthy outdoor fitness.

Trails are typically built in linear parks, along waterways, or along railroad corridors where the street network and roadway crossings are limited. Stamford can develop a robust network of trails because of its location on the water and the numerous rivers, streams and the railroad corridor that traverse the city. Trails along corridors with limited roadway crossings allows users to travel greater distances in a shorter period, as there are fewer intersections at which to stop, and can reduce the travel time of residents to access transit stations, jobs, school and other amenities.

During this study, the Stamford community expressed interest in further developing trail systems in the following areas:

- Along Merritt Parkway
- Connecting the shoreline parks
- Along the Noroton River
- Along the waterfront paralleling Weed Ave
- In Sleepy Hollow Park in Springdale
- Creating neighborhood connections through Woodland Cemetery

TRAIL DEVELOPMENT

In Stamford, many of the waterways, beach fronts and rail corridors are privately owned and will require long-term planning to turn a trail network vision into reality. Primary steps include the feasibility of trail development focusing on property ownership and site constraints. This includes understanding:

- Land ownership and the owner's likelihood to provide easements, land, or support for the project;
- Specialized permits (if the trail is near a waterway, environmentally sensitive area or are with protected, rare, threatened or endangered species); and,
- Site geography including grading, potential retaining walls or boardwalks.



Trails are substantially different from sidepaths. Sidepaths are aligned along a roadway, typically within the roadway right-of-way, and often require users to frequently cross intersections, decreasing safety.

TRAIL DESIGN GUIDELINES

As trail projects are determined to be feasible, it is important to recognize that a safe and well-used trail begins with good design. Good trail design is based on understanding several principles related to how trails are used and how trail design accommodates user needs. The following national guidelines, in addition to appropriate state and local standards and specifications, can provide specific design guidance for Stamford.

- American Association of State Highway and Transportation Official's *Guide for the Development of Bicycle Facilities* (AASHTO Bike Guide)
- Federal Highway Administration's *Shared Use Path Level of Service Calculator* (FHWA Shared Use Path LOS Calculator) - for determining trail widths
- U.S. Access Board's *Public Rights-of-Way Accessibility Guidelines* (PROWAG), the *Guidelines for Outdoor Developed Areas*, and the *Advanced Noticed of Proposed Rulemaking on Shared Use Paths* - designing public paths for accessibility is a requirement of the Americans with Disabilities Act (ADA).

Collectively, this guidance is designed to give practitioners the tools to develop appropriate, high quality trails. This guidance should be used by the public and private sector in the development of trail construction documents, including in the development review, approval and inspection process so that the City of Stamford can ensure that appropriate designs are approved and constructed.

KEY TRAIL DESIGN ELEMENTS INCLUDE:

Trail Width: The width of a trail has a large effect on the safety and comfort of trail users. Determining trail width is a key element of safe trail design and should consider the volume of expected users, both today and in the future. It is important to remember that a trail accommodates two-way traffic and will be used by both people bicycling and walking. As people bicycling and walking travel at different speeds, trail width should allow people bicycling to overtake or pass someone walking without impacting the safety of someone traveling in the opposite direction.

The AASHTO Bike Guide has established 10 feet as the standard minimum width for a shared use trail; an extra foot (11 feet) enables the middle of a trail to function as a passing lane, which increases the volume of users that can be comfortably accommodated. It is recommended that trails in Stamford be designed at eleven feet in width at a minimum. Twelve to 14 feet in width should be used in areas expecting frequent use, such as waterfront parks or trails that might also serve as commuter routes. In areas expecting especially high use, such as trails near downtown, separating pedestrians and bicyclist on two separate trails is recommended.

Accessibility: Designing trails based on accessibility guidelines benefits all users. Amenities such as benches, drinking fountains, and interpretive signage should be designed to be accessible to all people. Trails should be designed with a maximum cross slope of two percent, a maximum running grade of five percent, and ADA compliant curb ramps with ramps (not including the flares) matching the width of the trail. Interpretive signage should be designed at a height of twenty-seven inches, to allow viewing by a person in a wheelchair. To ensure ADA compliance, consult the U.S. Access Board's *Public Rights-of-Way Accessibility Guidelines (PROWAG)*, the *Guidelines for Outdoor Developed Areas*, and the *Advanced Noticed of Proposed Rulemaking on Shared Use Paths*.

Trail Access Points: Trails should be designed to be accessible to as many users as possible and to provide direct connections to destinations; therefore, access points should be located frequently. Typical trail access points include connections to neighborhoods, schools, recreation

facilities, and retail centers. Trail connections should be designed to reduce conflicts with motor vehicles with no or minimal crossings of driveways and roadways.

Design Speed, Sight Distances and Alignments:

Trail alignments are often constrained by right-of-way limitations, topography and/or environmental features. Because trails are used by bicyclists, it is important to understand the relationship between design speed, sight distances, trail geometry and safety. The speed of bicyclists is dependent on the type of user, the slope of the trail, and the trail material. As the expected speeds of trail users increase, adjustments to trail alignments, sight distances and trail widths should be made to enhance safety. Additional detailed information is provided in the AASHTO Bike Guide (Ch 5 Design of Shared Use Paths).

Trail/Roadway Intersections: Designing safe intersections is one of the most important elements of trail design as intersections are potentially the most dangerous location on a trail. Trails can be designed to cross at existing intersections or at mid-block locations. Detailed recommendations for trail/roadway crossings can be found in the AASHTO Bike Guide. These recommendations address using the proper operating controls; identifying right of way and priority; good geometric design, proper signing and marking; and crossing enhancements such as refuge islands, traffic calming measures and lighting. (See the AASHTO Bike Guide, Ch 5.3 Shared Use Path-Roadway Intersection Design for more information).

Trail Clearances: Including a two-foot horizontal clearance on each side of the trail is an important element of trail design. This applies to signs, lighting, trees, and other vegetation. Designing without the proper clearances reduces the usable width of the trail and creates potentially unsafe conditions.

Lighting: While not all trails need lighting, it is important to consider when each trail in Stamford will be used and whether lighting is needed. Lighting is more important for trails used for transportation purposes when the trail users are not able to limit their use to daylight hours. If it is expected that trail users will need to use the trail at night, lighting should be considered.



Trails are used by a wide variety of people: pedestrians including walkers, hikers, with dogs, pushing strollers, and in groups; people riding bikes of various designs and at a variety of speeds; people on skateboards; and disabled people using wheelchairs, electric carts or other assistive equipment. **A key factor of trail design is recognizing that users have a wide range of speeds which can result in potential conflicts.**

Bicycle Parking

Providing bicycle parking is an essential element of a multi-modal transportation system. Consistent, organized bicycle parking encourages people to bicycle for transportation, provides site-specific benefits, and encourages good parking behavior. Inadequate bicycle parking facilities, such as those at the Stamford Transit Station, and fear of theft are major deterrents to bicycle transportation; as such, users are more likely to use a bicycle for transportation purposes if they are confident that they will find adequate bicycle parking at their destination. Providing designated bicycle parking areas will also deter bicyclists from locking their bicycles to various fixed amenities including benches, railings, or trees.

PLANNING FOR BICYCLE PARKING

Bicycle parking should be provided at all public facilities, incorporated into roadway and streetscape projects, and an integral aspect of land development and redevelopment processes. Bicycle parking can also be provided in response to requests from business owners or property managers and consulting with local bicyclists can be an excellent way to determine where bicycle parking is needed.

STAMFORD CURRENTLY HAS 2 BICYCLE RACK INSTALLATION PROGRAMS.

1. One program allows businesses and institutions to request a bicycle rack on the streetscape in front of their property.
2. The second is an initiative of Stamford Street Smart program (partially funded by the Sound Cyclists Bicycle Club), which installed 9 bike racks at parks and community centers (at Bocuzzi Park, West Beach, Cummings Park, Cove Island Park, and Scalzi Park, and Chester Addison Community Center, DOMUS Trailblazer's School, Ferguson Library and the Yerwood Center) in 2017.

In addition, the City has been coordinating with the Stamford Transportation Center which will begin by replacing outdated racks and installing wayfinding signage, while considering plans to install secure bicycle parking in the future.



TYPES OF BICYCLE PARKING

The wide variety of bicycle parking devices available is generally grouped into two classes, short-term and long-term. Short-term parking serves users parking a bicycle for a short period, such as during a visit to a store or restaurant. Long-term bicycle parking is for users parking a bicycle for a long period such as at work, school, or a transit station. The needs for each differ in terms of their design and level of protection. In most locations, a combination of short- and long-term options is appropriate.

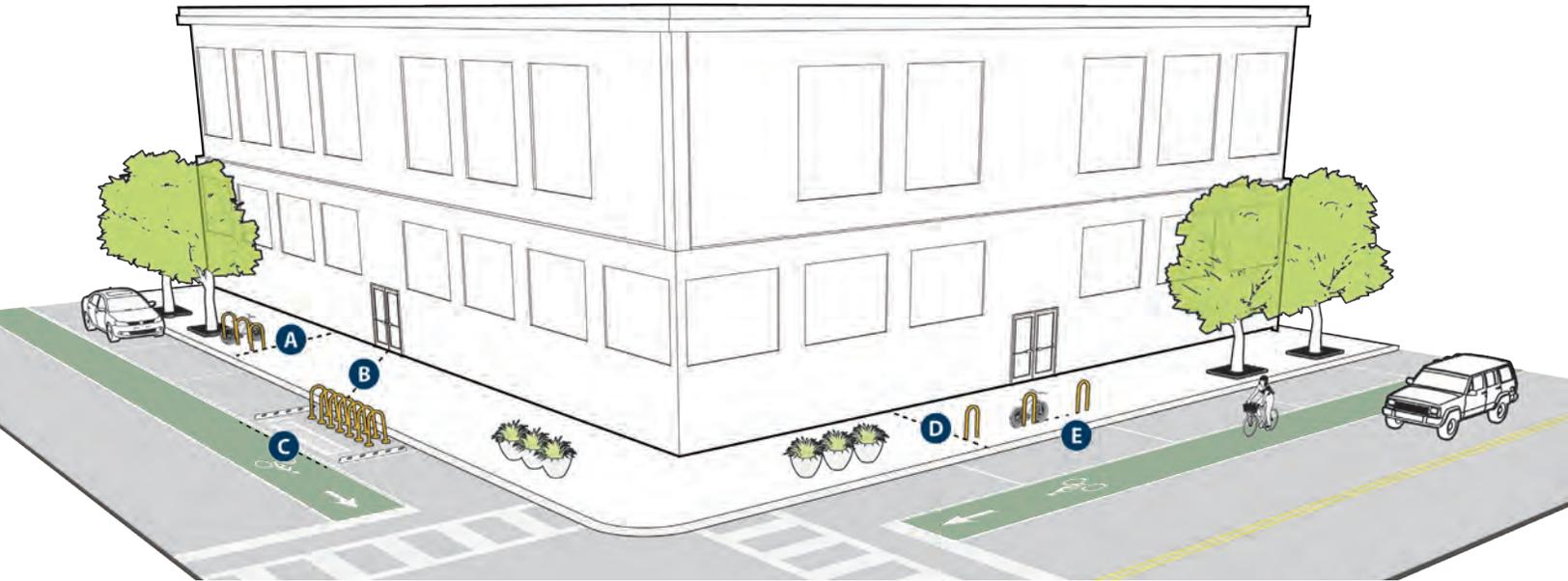
STANDARD BICYCLE PARKING

Standard bicycle parking consists of an immovable, anchored object that a bike can be locked to using any type of lock and supports the bicycle at two points of contact, ideally near the head tube/forks and seat tube. Bicycle racks are manufactured in various shapes and sizes, however not all manufactured bicycle racks meet recommended standards. Features of an acceptable bicycle rack include;

- Rack secured to a permanent foundation;
- Tamper-resistant hardware used to fasten to location;
- Supports a bicycle upright in two (2) or more places; and
- Supports a variety of bicycle sizes and frame shapes.

RECOMMENDED LOCATIONS

Bicycle parking should be easy to locate and simple to use. Land use can help identify where to install bicycle parking. Priority locations include residential and commercial buildings, commercial districts, schools, libraries, transit stops and service destinations. Bicycle parking is typically located in the parking garages and first-floors of office and multi-unit residential buildings and, in public areas, in the amenity or façade zone of the sidewalk, in curb extensions, and in-street in parking lanes.



- A** Bicycle dimension (2x6-feet) should not impede pedestrian zone of sidewalk.
- B** Bicycle racks should be located near and visible to building entrances.
- C** Bicycle Corrals can accommodate more bicycles than a vehicle using the same space.

- D** Bicycle dimension (2x6-feet) should not impede pedestrian zone of sidewalk and should accommodate the opening of passenger-side doors of parked vehicles.
- E** Sequential racks should accommodate bicycle dimensions (2x6-feet).

GENERAL SITE DESIGN

The location and dimensions of bicycle parking determine whether racks will be used. Whereas in locations with space constraints, it may be found acceptable to design to minimum standards, it should also be recognized that these racks may less used and accessible to a limited portion of the bicycling public. In general, the design of bicycle parking sites should consider three principle elements:

- Dimensions needed for the bicycle itself: typically, two by six-feet
- Space between bicycles for a person to access and lock their bike: typically racks should not be placed closer than 3-feet apart
- Passageway to access to the bicycle: not less than five-feet in width (can be accommodated in public areas via the sidewalk)

The location of bicycle racks should also be:

- Easily accessible from the street, trail, etc. and protected from motor vehicle traffic;
- Visible to passers-by or included on wayfinding signage to promote use and enhance security;
- Located so that bicycles are not impacted by opening passenger-side doors when located near parking;

And, not:

- Hinder or impeded pedestrian travel (i.e. located outside the pedestrian zone of a sidewalk);
- Block access to buildings, transit boardings or freight loading.

ON-STREET BICYCLE PARKING CORRALS »

On-street bicycle parking corrals are bicycle parking facilities located at roadway grade in the parking lane. Bicycle parking corrals allow an increase in bicycle parking where sidewalk space is limited, are generally easy to install, and, in commercial areas, can be used by multiple businesses as several bicycles can be parked in the same space as one automobile.



COVERED BICYCLE PARKING »

Covered bicycle parking consists of racks with a roof structure to prevent precipitation from landing on bicycles. Most often, this is a simple roof or canopy, either a separate structure constructed to cover the racks, or part of a building's existing overhang. Covered parking can also be located inside a building or parking garage. Covered bicycle parking facilities extend the life of bicycles and keep them safe for riding by reducing their deterioration due to exposure to natural elements.



LONG TERM SECURE BICYCLE PARKING »

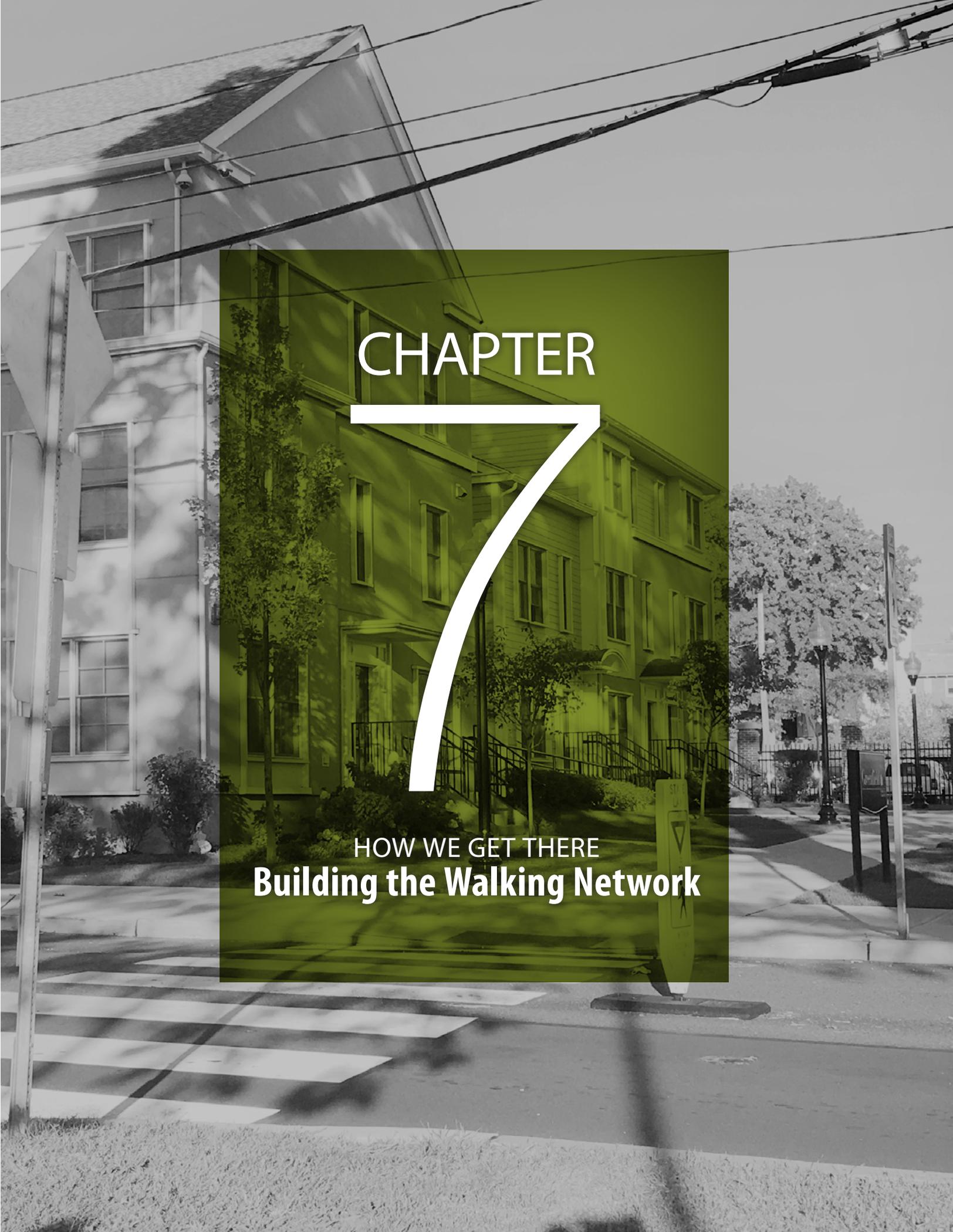
Secure bicycle parking can come in several forms and includes secure parking in multi-unit residential and commercial buildings and at high-demand public facilities such as transit stations. These facilities are generally access controlled with a key, card or combination. Freestanding public facilities can be constructed to completely enclose a set of racks and is recommended for visible, central locations accessible to a wide variety of bicyclists. A visible location will increase awareness of available secure bicycle parking, encourage greater use of the racks and increase bicyclists' safety as they come and go.



BICYCLE PARKING POLICY RECOMMENDATIONS

To create a supportive and robust environment for cyclists and to encourage more bicycle use in Stamford, the following approach to bicycle parking policy is recommended:

- Specify number of bicycle spaces by land use.
- Require long-term bicycle parking for all workplaces, transit stations, and multi-unit residential buildings.
- Require adequate short-term parking for other land uses.
- Provide site planning requirements.
- Provide rack element and bicycle parking facility design requirements.



CHAPTER

7

HOW WE GET THERE
Building the Walking Network

This chapter documents the systemwide changes to the pedestrian environment that will increase the safety, comfort, and convenience of people on foot and people with disabilities.

On the following pages, you will find:

Page 7.3 » Why Walk?

Page 7.5 » Streetscape and Sidewalks

- Streetscape
- Pedestrian Zone
- Amenity/Buffer Zone
- Frontage Zone
- Sidewalks at Driveways

Page 7.12 » Increasing Safety at Intersections

- Corner Curb Radii
- Crosswalks
- Curb Ramps
- Pedestrian Crossing Islands
- Signaling

Page 7.22 » Reducing Vehicle Speeds

- Appearance of Roadway Width
- Lane and Road Narrowing
- Curb Extensions
- Neighborhood Traffic Circles
- Parklets
- Traffic Calming

Building the Walking Network

Why Walk?

Walking is the most common and accessible form of transportation and engaging in physical activity. In the City of Stamford people of all ages, abilities and backgrounds walk to access jobs, schools, services and participate in social activities. Even when residents take public transportation, such as transit or the bus to school, walking is an integral part of that trip. This necessary activity has many positive benefits as study after study shows that walking, whether for leisure, recreation or transportation, improves health and the social, economic and natural environment.

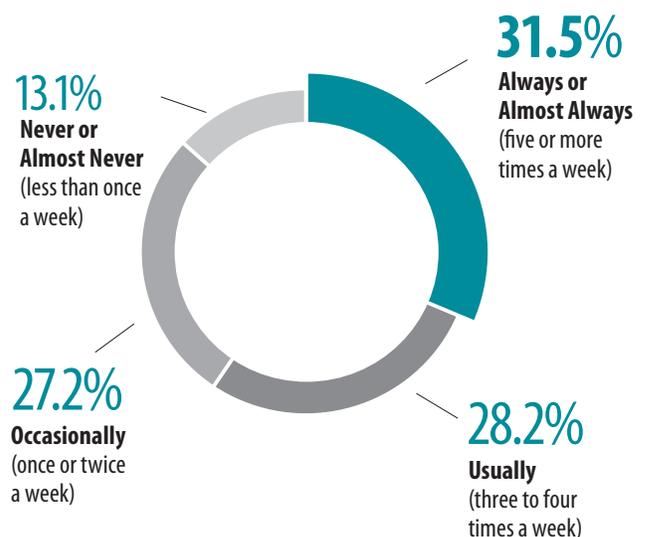
Many people in Stamford depend on modes of travel other than driving, whether due to age, disability, economic circumstances or personal preference. Regular physical activity reduces the risk of many chronic diseases and has also been shown to lead to improved mental well-being and reductions in depression and feelings of isolation. Pedestrian infrastructure is especially important in neighborhoods with children and adolescents as it helps them develop healthy behaviors. Youth with access to walkable and well-connected neighborhoods and recreation activities engage in higher levels of physical activity and exhibit lower levels of obesity.

The walkability of an area also has an impact on economic development and housing demand. Neighborhoods with grid street patterns, pedestrian amenities and street-oriented design have higher housing sales. To attract home buyers, real estate ads now include Walk Scores, calculated using population density, block length, intersection density and distance to amenities such as shopping, schools, recreation and health care. Businesses are following these trends as they realize that they can attract the best workforce when they locate where people want to live. This provides an opportunity for Stamford, as new development occurs and existing infrastructure is rebuilt, to create a safer, more attractive, and more enjoyable pedestrian realm.

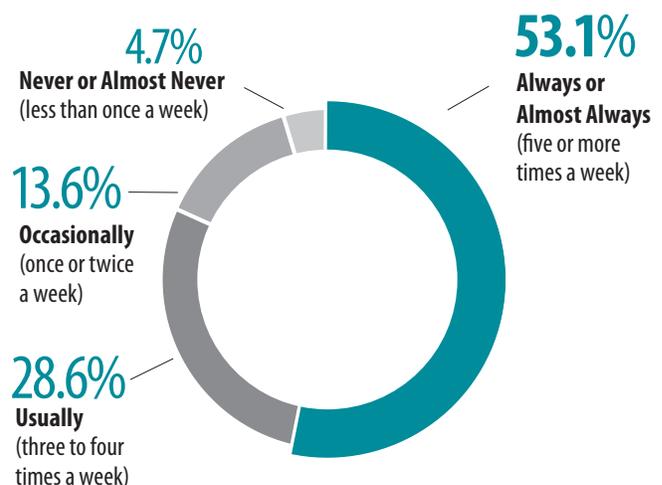
The pedestrian network in Stamford suffers from several issues that have led to an unsafe and uncomfortable environment leading to a substantial difference between the percent of people walking in Stamford today and the number of people who could walk to work, school, services and recreational facilities.

This difference presents a significant opportunity for the city to shift from a vehicle-centric to a walking-centric environment thereby reducing costs associated with roadway widening and resurfacing projects, parking garages, roadway congestion, health care, and emissions.

How often *do* you walk to get where you need to go, or for exercise?



How often *would* you walk if walking felt safer and more pleasant?



Over the course of this project, an online survey and numerous stakeholder and community meetings were conducted. Consistently, the same themes emerged:

Sidewalks are missing, in poor condition or are too narrow or too close to the street to provide a comfortable or enjoyable walking environment in most areas of the city.

Crossing the street feels extremely unsafe and there are limited places to cross.

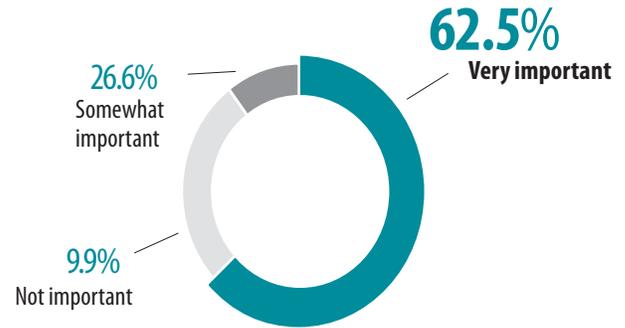
Vehicle speeds make pedestrians feel unsafe traveling along or crossing the roadways and are the basis for the severe injuries and fatalities in traffic crashes.

The following sections provide design recommendations for sidewalk standards, increasing safety at intersections, and addressing vehicle speeds.

Meeting the requirements of the Americans with Disabilities Act (ADA)

The ADA is landmark civil rights legislation passed in 1990 to end discrimination against people with disabilities, including the elimination of physical barriers in the built environment that prevent people with disabilities from participating fully in society. The United States Access Board has published Public Rights of Way Accessibility Guidelines (PROWAG) that, when adopted by the Department of Justice, will be enforceable design standards covering sidewalks, street crossings, and other elements of the public right-of-way. The design recommendations that follow are based on PROWAG and build upon the principle that access for people with disabilities be provided whenever a pedestrian way is newly built or altered and that the same degree of convenience, connection, and safety afforded the public generally is available to pedestrians with disabilities.

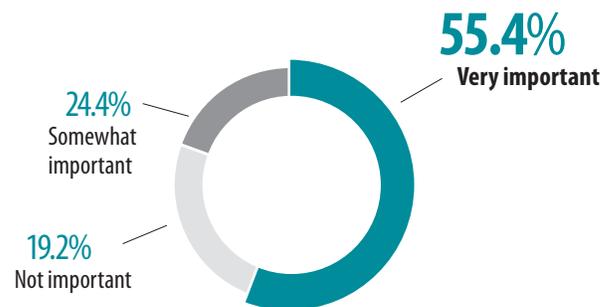
Cars are going too fast



Crossing the street feels too dangerous



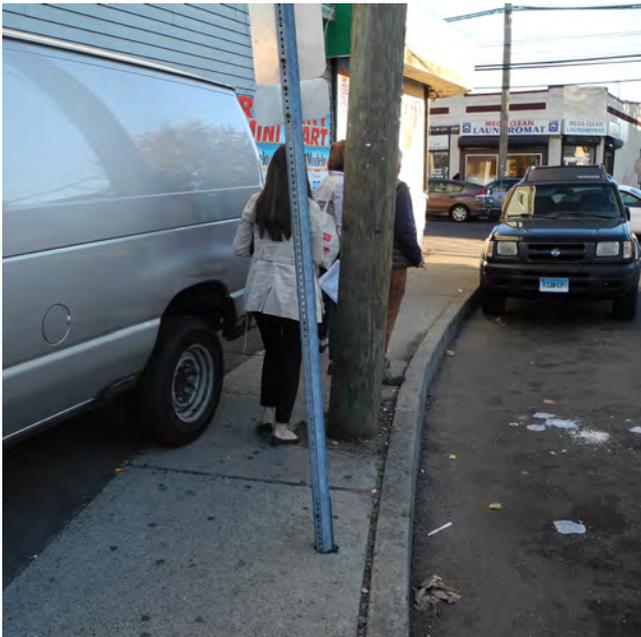
Crossing the street is too difficult



Streetscape and Sidewalks

Sidewalks provide pedestrians with a space to travel within the public right-of-way that is separated from motor vehicles. Streetscapes typically consists of three zones: the Frontage Zone, the Pedestrian Zone, and the Amenity Zone. The zones may vary in width and character depending on the adjacent land use, available right-of-way, and intended function. These zones help to organize the streetscape and each zone serves a distinct purpose.

Sidewalks are an essential element of the public realm, beyond their transportation purpose. They are places where people meet, interact, people-watch, window-shop, and linger. Narrow sidewalks inhibit these activities and make the street less lively and attractive, discouraging investment and potentially increasing danger to people using the street.



Streetscape

» The streetscape typically connotes the area between the front of buildings and the street curb reserved for pedestrians and pedestrian-oriented amenities.



The streetscape accommodates pedestrians, landscaping, street trees, public utilities and private activities. Well-loved streetscapes balance the safety and utility of pedestrian travel needs with vibrant sidewalk activities.

Frontage Zone

The Frontage Zone is the area of sidewalk that immediately abuts buildings along the street. In residential areas, the Frontage Zone may be occupied by front porches, stoops, lawns, or other landscape elements that extend from the front door to the sidewalk edge. The Frontage Zone of commercial properties may include architectural features or projections, outdoor retail displays, café seating,

awnings, signage, and other intrusions into or use of the public right-of-way. Frontage Zones may vary widely in width from just a few feet to several yards.

Pedestrian Zone

Also known as the “walking zone,” the Pedestrian Zone is the portion of the sidewalk space used for active travel. For it to function, it must be kept clear of any obstacles and be wide enough to comfortably accommodate expected pedestrian volumes including those using mobility assistance devices, pushing strollers, or pulling carts. To maintain the social quality of the street, the width of the Pedestrian Zone should accommodate

pedestrians passing singly, in pairs, or in small groups as anticipated by density and adjacent land use.

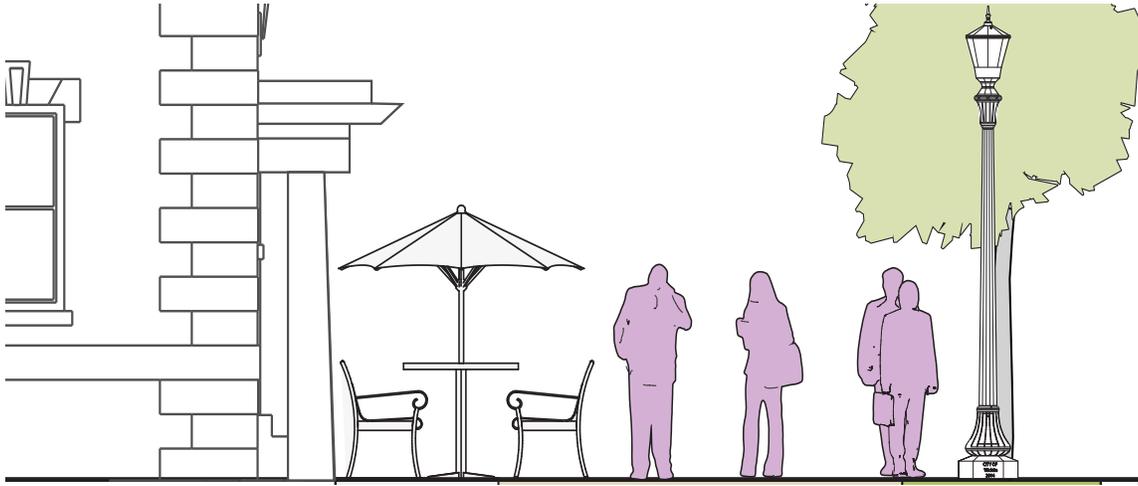
Amenity Zone

The Amenity Zone is where most of the public amenities and utilities are located from street signs and light poles, to benches, bike racks and landscaping. This width takes into account the need to set vehicle objects 1.5-feet away from the street (to ensure they are not hit by vehicles) and the width of the objects themselves.

Sometimes private retail seating is located in this zone as well.

Streetscape Widths in Stamford

» The width of the various streetscape zones vary given the street type, scale of the adjoining buildings and the intensity and type of uses along each street segment. The following are recommended for adoption in Stamford.



District Type	Frontage Zone	Pedestrian Zone	Amenity Zone or Planted Buffer Zone	Total Width
	landscaping, front stoops, door swings, awnings, café seating, retail signage and displays	zone should be clear of any and all fixed obstacles; clear space for pedestrian travel only (zone edge should be scored or otherwise demarcated)	lights, signs, utility poles and boxes, trees, bicycle racks, parking meters, transit stops, benches, stormwater facilities and snow storage	
Residential-Districts RA-1, RA-2, RA-3, R-10 and R-20	From building front/property line to edge of Pedestrian Zone (minimum 9-feet from back of curb)	5-feet min crushed stone path	4-feet min	9-feet min
Neighborhood Districts R-7 ½ and up, including commercial and industrial	From building front/property line to edge of Pedestrian Zone (minimum 10-feet from back of curb)	6-feet min	4-feet min	10-feet min
18' Streetscape (As Defined on Map)	From building front/property line to edge of Pedestrian Zone (minimum 13-feet from back of curb)	8-feet min	5-feet min	13-feet min
Trail (As Defined on Map)		11-feet min	4-feet min when adjacent to roadway	

Guidance

- + New sidewalks should meet standards above even if adjacent sidewalks do not. Transitions between new and old sidewalks should ensure that Pedestrian Zone edges meet.
- + Crushed stone (or other material) paths must meet compaction requirements per Americans with Disabilities guidelines.

- + Buildings should be designed so that door swings do not impact the Pedestrian Zone.

Considerations

- + Amenity Zone widths are based on the 18-inch recommended offset of vertical objects from the curb (per AASHTO) and typical widths of those vertical objects (2.5-foot stop signs, 1.5-foot road signs, 2-foot light poles).

- + Sidewalk cafés are attractive elements of the urban environment and come in many sizes. Sidewalk cafés (and other Frontage Zone amenities) should not infringe on the Pedestrian Zone. Where possible, sidewalk cafes can be located in the Amenity Zone.
- + Amenity Zones should be widened to 5-feet where possible to allow the growth of healthier street trees and reduced sidewalk heaving.

NACTO Urban Street Design Guide (2013)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)

The Pedestrian Zone

CRASH REDUCTION FACTOR: 65-85%

» The Pedestrian Zone is the walkable area within the streetscape. It should be continuous, clear of obstacles and provide a unobstructed passageway for pedestrians to access street crossings and adjacent amenities.



Considerations

- Sidewalks make walking an easy choice between destinations and create a network for pedestrian travel throughout the city.
- Sidewalks make access to transit possible since the majority of transit users walk between their destination and transit stops.
- When reconstructing sidewalks and relocating utilities, all above ground utility access points should be relocated outside of the Pedestrian Zone.
- For ease of maintenance and to communicate to pedestrians that this is space designated for their public

use, pavement materials should be as uniform as possible.

Guidance

- All new sidewalks and curb ramps need to comply with Americans with Disabilities Act regulations.
- The Pedestrian Zone should meet load-bearing, friction, and other requirements as per relevant standard design specifications and regulations.
- The width of the Pedestrian Zone will vary from 4 to 11-feet based on the Stamford Zoning maps.
- The Pedestrian Zone should, as much as possible, keep to the natural path

of pedestrian travel parallel to the roadway. Ideally, it will be located in a position that naturally aligns with crosswalks at intersections.

- It may be desirable in some locations for the Pedestrian Zone to curve to form a more direct route to an intersecting walkway, to preserve significant trees, or to provide a greater degree of separation between the sidewalk and the roadway.

AASHTO *Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Designing Sidewalks and Trails for Access: Ch. 4 Sidewalk Design Guidelines and Existing Practices:* http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm

Amenity/Buffer Zone

» The Amenity Zone is the area between the Pedestrian Zone and the curb. This is where vegetation, signs, utilities, bike parking and street furniture should be located. This zone organizes objects away from pedestrian flow and simultaneously provides a buffer for pedestrians from the roadway. A buffer between pedestrians and motor vehicle traffic creates greater levels of comfort and safety.



Considerations

- This Zone keeps the Pedestrian Zone free from obstructions by providing space in which to organize street amenities and utilities.
- This Zone provides space for the slope of driveway ramps so that the Pedestrian Zone remains level.
- The Amenity Zone is where street trees and additional vegetation can be planted. The zone width should be considered when selecting trees and vegetation so that plantings do not damage the sidewalk as they mature.
- This zone should be designed to accommodate winter snow storage and prevent snow from obstructing the Pedestrian Zone.
- Green infrastructure elements should be designed to make use of stormwater runoff from the sidewalk and the street. Permeable paving may be considered.
- Sidewalk cafes and public art can also be located here.

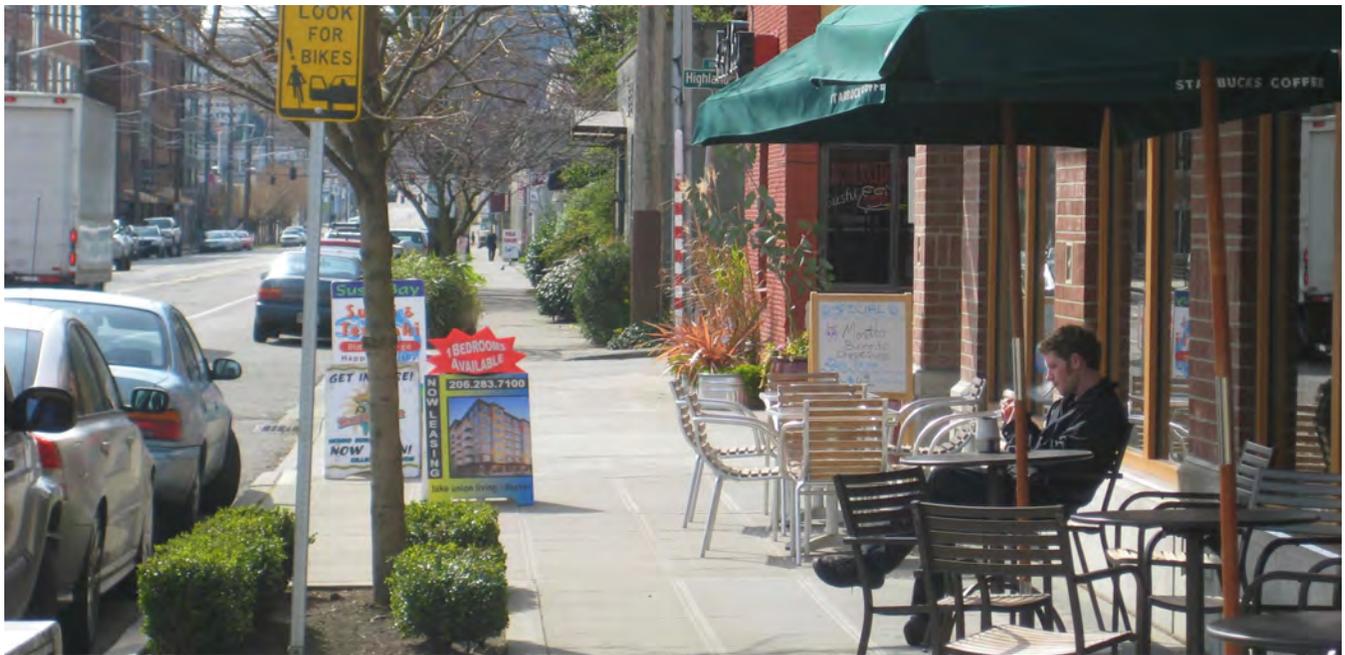
Guidance

- Utilities, street trees, and other sidewalk furnishings should be set back from the curb face a minimum of 18 inches, but should be sure not to obstruct the Pedestrian Zone.
- Vertical objects in the Amenity Zone must be strategically placed to not obstruct sight lines, avoid damage from vehicles on the street, and to allow for access to and from parked cars and transit stops.

PROWAG: <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/guidance-and-research/accessible-public-rights-of-way-planning-and-design-for-alterations/chapter-5%E2%80%94model-sidewalks>

Frontage Zone

» The Frontage Zone is the area between the Pedestrian Zone and building frontages, which may incorporate public right-of-way or private property. The Building Frontage Zone provides a buffer for pedestrians and bicyclists from opening doors, architectural elements and building signage and may also provide space for sidewalk cafés, store entrances, window shopping or landscaping.



Considerations

- The Building Frontage Zone provides room for elements that enliven the street and create visual interest for pedestrians.
- The Building Frontage Zone announces building entrances and the occasional café.

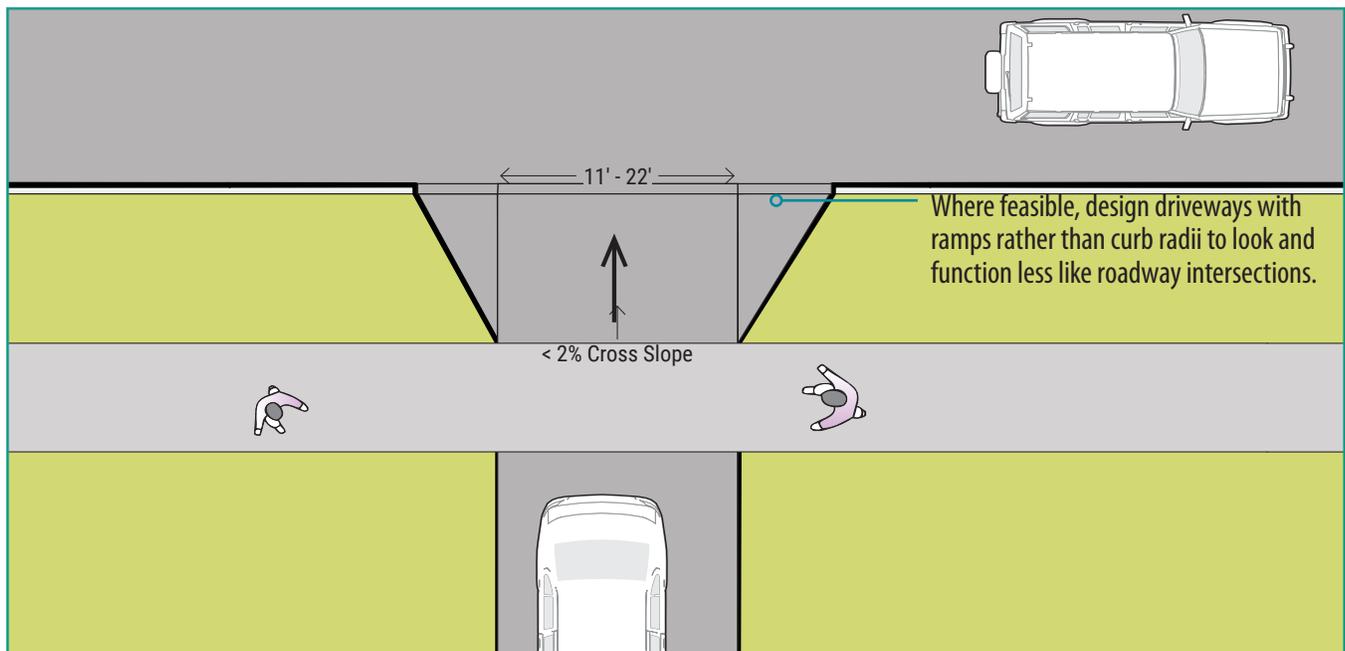
- Where buildings are located against the back of the sidewalk and constrained situations do not provide width for the Frontage Zone, the effective width of the Pedestrian Zone is reduced by 1 foot, as pedestrians will shy from the building edge.

Guidance

- The Building Frontage Zone should be maximized to provide space for cafés, plazas, and greenscape elements along building facades, but not at the expense of reducing the Pedestrian Zone beyond the recommended minimum widths.

Sidewalks at Driveways

» Driveways provide access to businesses and residences from public streets. In doing so they often intersect with sidewalks. This creates occasions for conflict between pedestrians and vehicles.



Considerations

When driveways are properly designed, they:

- Re-enforce the law that pedestrians have the right of way.
- Provide an even, continuous walking surface for comfortable pedestrian travel particularly for those with disabilities and wheelchair users.

Guidance

- Design driveways to look like driveways, not roadway intersections
- Clearly delineate the pedestrian zone across the driveway.
- Continue the pedestrian zone material, width, grade and cross-slope across the driveway.
- Design the pedestrian zone across the driveway with a 1% cross slope (no more than 2%) to ensure that wheeled mobility devices can safely cross the driveway.
- Contain driveway ramps within the amenity zone and do not let them intrude into the pedestrian zone.
- Use ramp-style driveway designs over full curb radii designs (see graphic).
- Where curb radii are present, use minimized (5 to 15 feet) radii to prevent high speed turning movements.
- Include smaller driveway widths (11 feet for one-way, 22 feet for two-way) to reduce conflict areas.
- Minimize site obstructions (signs, landscaping, building appurtenances) to improve visibility between turning motorists and pedestrians.

FHWA Designing Sidewalks and Trails for Access, www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm
AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities

Design Features to Increase Safety at Intersections

Intersections are where most roadway conflicts occur as this is the location where the variety of roadway users cross each other's paths of travel. Increasing safety at intersections requires establishing expectations, clearly defining who has the right of way and who must yield.

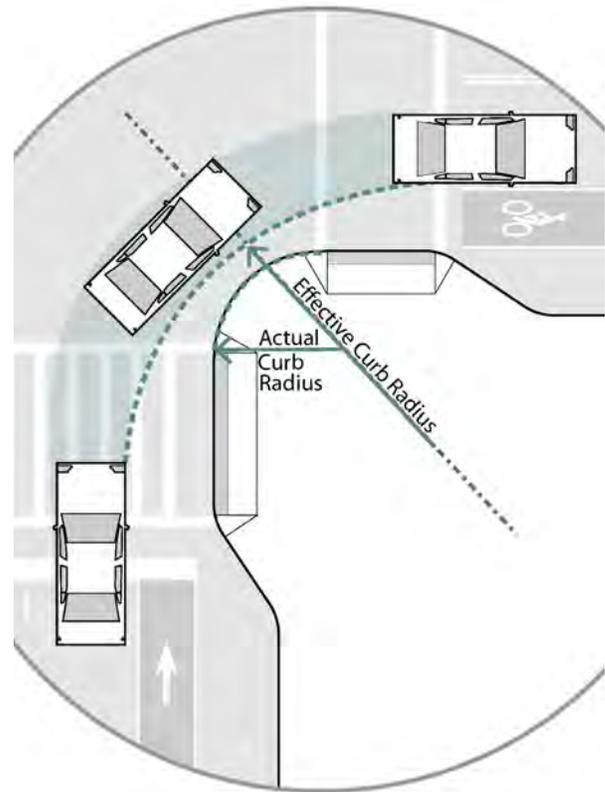
Design features in this section focus on increasing the safety and visibility of pedestrians and bicyclists as these are the most vulnerable users and most likely to become injured or killed in a crash. Design features include facilities at low volume and low speed intersections located primarily in residential areas but often also in small commercial areas. Many of these treatments (with specific locations for implementation) can be found in the *Stamford Traffic Calming Study*.

Other recommendations focus on enhancing safety and convenience at signalized intersections by addressing signal timing, adding a Leading Pedestrian Interval or a Protected Left Turn phase.



Corner Curb Radii

» The corner curb radius is the radius of the street corner as defined by two curbs on perpendicular streets as they come together. Pedestrian safety and comfort is directly impacted by curb radii. Smaller curb radii can shorten crossing distances for pedestrians and reduce vehicle speeds.



Considerations

- Pedestrian safety and comfort is directly impacted by the width and configuration of street corners. Smaller curb radii reduce vehicle speeds and shorten crossing distances which reduces the time pedestrians are in the intersection and exposed to conflict with vehicles.
- Intersection design should strive for an actual curb radius that is between 10 to 25-feet. The default curb radius for two intersecting residential streets should be 10 to 15-feet. For all other street classifications, including streets that intersect with residential streets, corner design should strive for an actual curb radius that is no more than 15-feet.

Guidance

Streets must accommodate large turning vehicles, including transit and emergency vehicles, while keeping intersections as compact as possible. This requires design flexibility and engineering judgment, as each intersection includes unique angles of approach and departure, number of lanes and other features that impact corner design. A variety of strategies can be employed to minimize curb radii:

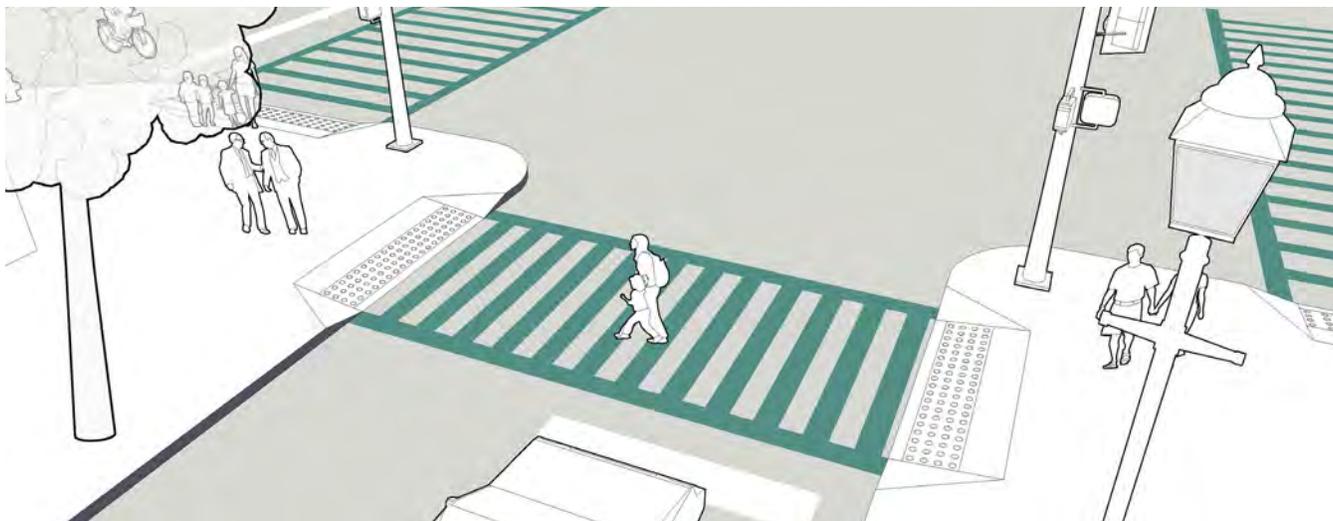
- On-street parking and bicycle lanes may provide a larger effective radii to accommodate appropriate design vehicles (see graphic above).

NACTO Urban Streets Design Guide (2013)

- On low volume (less than 4,000 vehicles per day), two-lane streets, corner design should assume that a large vehicle will use the entire width of the departing and receiving travel lanes, including the oncoming traffic lane.
- At signalized intersections, corner design should assume that a large vehicle will use the entire width of the receiving lanes on the intersecting street.
- At signalized intersections where additional space is needed to accommodate turning vehicles, the stop bar on the receiving street can be recessed to enable the vehicle to use the entire width of the receiving roadway (encroaching on the opposing travel lane).
- In some cases, large turning vehicles may encroach on the adjacent travel lane on the departure side (on multi-lane roads).
- A compound curve can be used to vary the actual curb radius over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn.
- Where there are alternative access routes, turning movements by large vehicles can be restricted at certain intersections and driveways to enable tighter curb radii. Restrictions and alternate routes should be properly signed and locally approved.
- The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies.

Crosswalks

» Crosswalks continue the path of the sidewalk across an intersection designating where a pedestrian may cross. They may be marked or unmarked.



Considerations

Legal crosswalks exist at all locations where sidewalks meet the roadway, regardless of whether pavement markings are present. Typically, drivers are legally required to yield or stop for pedestrians at intersections, even when there are no pavement markings. Providing marked crosswalks communicates to drivers that pedestrians may be present, and helps guide pedestrians to locations where they should cross the street.

In addition to pavement markings, crosswalks may include signals/beacons, warning signs, and raised platforms.

Signal phasing is very important. Pedestrian signal phases must be timed based on the

length of the crossing. And, if pedestrians are forced to wait longer than 30 seconds, non-compliance is more likely.

Raised crossings can calm traffic and increase the visibility of pedestrians.

Curb extensions, also known as bulb-outs and bump-outs, reduce the distance pedestrians have to cross and calm traffic.

Guidance

- Place crosswalks on all legs of signalized intersections, in school zones, and across streets with more than minimal levels of traffic.
- Crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy

pedestrian volumes, crosswalks can be up to 25 feet wide.

- Stop lines at stop-controlled and signalized intersections should be striped no less than 4 feet and no more than 30 feet from the approach of crosswalks.
- Crosswalks should cross perpendicular to streets, minimizing crossing distances and therefore limiting the time that pedestrians are exposed.
- Americans with Disabilities Act (ADA)-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).

NACTO Urban Street Design Guide (2013)

Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines (2005)

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)

ADA Accessibility Guidelines (2004)

Manual on Uniform Traffic Control Devices (2009)

Crosswalk Markings

» Marked crosswalks delineate optimal or preferred locations for a pedestrian to cross a street, and indicate to motorists where to expect pedestrians. Pavement markings must follow one of the styles as shown in the Manual for Uniform Traffic Control Devices (MUTCD). These include high visibility crosswalks (e.g. ladder style) and lower visibility (e.g. parallel bars). Markings can be installed using white paint, thermoplastic or other pavement marking material.

Standard crosswalk marking

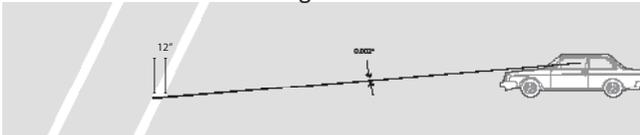


High visibility crosswalk marking



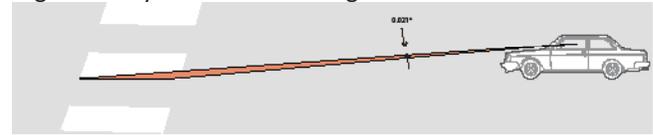
Standard crosswalk markings are composed of two parallel lines, which are virtually invisible from a distance compared to high visibility crosswalk markings. Thick striping perpendicular to the direction of the crossing allows drivers to more clearly see the crosswalk. This is because the perceived thickness of the long, perpendicular line is greater than that of the parallel line.

Standard crosswalk marking



12-inches seen from 300-feet away = 0.002° cone of vision

High visibility crosswalk marking



10-feet seen from 300-feet away = 0.021° cone of vision

Considerations

- Marked crosswalks should be aligned with the approaching sidewalk and should be located to maximize the visibility of pedestrians while minimizing their exposure to conflicting traffic.
- Marked crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes crosswalks should be wider (e.g. 14 to 20 feet).
- Standard parallel line markings are acceptable (per MUTCD), however they may be less visible to motorists.
- High visibility markings are more visible and should be used on roadways with high vehicle volumes, high vehicle speeds and locations with a high number of expected pedestrians.
- Advance stop lines at stop-controlled and signalized intersections, when used, should be striped no less than 4 feet and no more than 30 feet from the edge of the crosswalk.
- Americans with Disabilities Act (ADA)-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).
- The design of marked crosswalks at uncontrolled locations should incorporate additional crossing treatments depending on the number of travel lanes, vehicle speed, and the volume of vehicles in a given location.

Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines (2005)
ADA Accessibility Guidelines (2004)
Manual on Uniform Traffic Control Devices (2009)

Curb Ramps

» A curb ramp is the solid ramp graded from the level of the sidewalk to the level of the street.



Considerations

The designs of curb ramps are critical for all people, but particularly for people with disabilities. Curb ramps also benefit people pushing strollers, grocery carts, suitcases, or bicycles. The Americans with Disabilities Act (ADA) standards require all pedestrian crossings be accessible to people with disabilities by providing curb ramps at intersections and mid-block crossings as well as other locations where pedestrians can be expected to enter the street.

Separate curb ramps should be provided for each crosswalk at an intersection rather than a single ramp at a corner for both crosswalks. The separate curb ramps improve orientation for visually impaired pedestrians by directing them toward the correct crosswalk.

Curb ramps are required to have landings. Landings provide a level area with a cross slope of 2% or less in any direction

for wheelchair users to wait, maneuver into or out of a ramp, or bypass the ramp altogether. Landings should be 5x5-feet. ADA regulations require that landings shall, at a minimum, be 4x4-feet.

ADA regulations require that ramps be a minimum of 4-feet wide; however, in areas of high pedestrian volumes and crossing activities, wider curb ramps should be considered.

Flares are required when the surface adjacent to the ramp's sides is walkable, however, they are unnecessary when this space is occupied by a landscaped buffer. Excluding flares can also increase the overall capacity of a ramp in high-pedestrian areas.

Typically, 7-feet between the curb and sidewalk is needed to provide enough space for curb ramps to gain sufficient elevation to become level with the sidewalk.

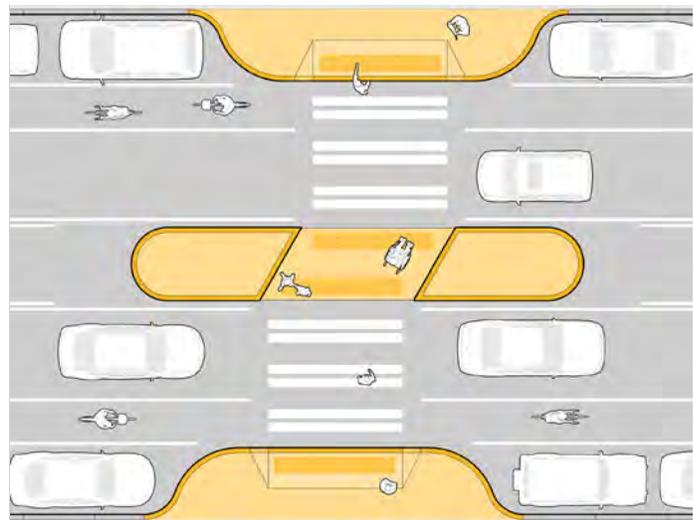
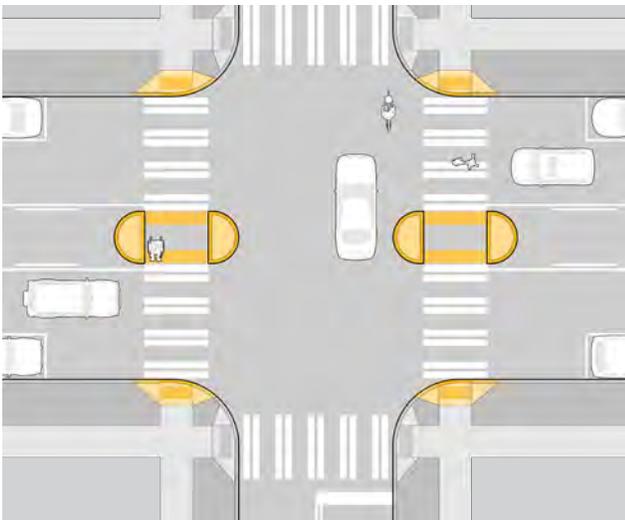
Guidance

- Maximum slope: 1:12 (8.33%).
- Maximum slope of side flares: 1:10 (10%).
- Maximum cross-slope: 2% (1–2% with tight tolerances recommended).
- Should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk.
- Truncated domes (the only permitted detectable warning device) must be installed on all new curb ramps to alert pedestrians to the sidewalk and street edge.
- Ramps which provide one ramp leading to each crosswalk at an intersection are strongly preferred over ramps that provide only a single ramp for multiple crosswalks.

Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) (2011)

Pedestrian Crossing Islands

» Crossing islands (also known as center islands, refuge islands, pedestrian islands, or median slow points) are raised islands placed in the center of the street at intersections or mid-block.



Considerations

- Crossing islands allow pedestrians to deal with only one direction of traffic at a time by enabling them to stop partway across the street and wait for an adequate gap in traffic before crossing the second half of the street.
- Crossing islands are effective at reducing crashes at uncontrolled locations on busy multi-lane roadways where gaps are difficult to find, particularly for slower pedestrians, such as pedestrians with disabilities, older pedestrians and children.

Guidance

- The design of crossing islands and the incorporation of additional crossing treatments depends on the number of travel lanes, vehicle speed, and the volume of vehicles in a given location.
- Crossing islands should be a minimum of 6-feet wide to meet ADA standards and accommodate the typical width of a bicycle.
- Crossing islands should be aligned directly with marked crosswalks and provide an accessible route of travel.
- Where mid-block or intersection crosswalks are installed at uncontrolled locations (i.e., where no traffic signals or

stop signs exist), crossing islands should be considered as a supplement to the crosswalk, and should be designed with a slight stagger forcing pedestrians to face oncoming traffic before progressing through second phase of the crossing.

- Islands are appropriate at signalized crossings and may improve safety for vehicles by dividing traffic streams.
- If there is enough width, center crossing islands and curb extensions can be used together to create a highly visible pedestrian crossing and effective traffic calming.

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013) - Curb Extensions

Signal Timing for Pedestrians

» Signal timing for pedestrians is typically shown through the use of pedestrian signal heads which communicate to the pedestrian when they can cross the street and to drivers when they should expect pedestrians. Signal timing for pedestrians should focus on providing adequate time for pedestrians to cross the street and minimizing pedestrian wait times.



Pedestrian signal heads display three intervals of the pedestrian phase: (1) the Walk Interval, signified by the WALK indication (the walking person symbol), alerts pedestrians to begin crossing the street; (2) the Pedestrian Change Interval, signified by the flashing DON'T WALK indication (the flashing hand symbol and countdown display), alerts pedestrians approaching the crosswalk that they should not begin crossing the street; (3) the Don't Walk Interval, signified by a steady DON'T WALK indication (the steady upraised hand symbol), alerts pedestrians that they should not cross the street.

Considerations

One of primary challenges for traffic signal design is to minimize conflicts between competing motor vehicle movements and minimize pedestrian wait times.

- Intersection geometry and traffic controls should encourage turning

vehicles to yield the right-of-way to pedestrians.

- Requiring pedestrians to wait for extended periods can encourage crossing against the signal.
- Pedestrians have an increased likelihood of crossing against a signal after waiting longer than 30 seconds at signalized intersections.
- Opportunities to provide a WALK indication should be maximized whenever possible.
- Vehicular movements should be analyzed to utilize non-conflicting phases to implement Walk Intervals.

Guidance

- Pedestrian signals should allocate enough time for pedestrians of all abilities to cross the roadway. The MUTCD specifies a pedestrian walking speed of 3.5 feet per second to account

for an aging population. The pedestrian clearance time, the total time for the pedestrian change interval plus the buffer interval, is calculated using the pedestrian walking speed and the street crossing distance.

- In areas with higher pedestrian activity, such as near transit stops, along commercial corridors, schools, and in neighborhood centers, pedestrian push button actuators are typically not appropriate. Pedestrians should expect to get a pedestrian cycle at every signal phase, rather than having to push a button to call for a pedestrian phase.
- Countdown pedestrian displays inform pedestrians of the amount of time in seconds that is available to safely cross during the flashing Don't Walk interval. All pedestrian signal heads should contain a countdown display provided with the DON'T WALK indication.

Leading Pedestrian Interval

» A Leading Pedestrian Interval (LPI) is an interval within a traffic signal cycle that initiates the pedestrian green/WALK indication three to seven seconds before motor vehicles are given the green indication.



Considerations

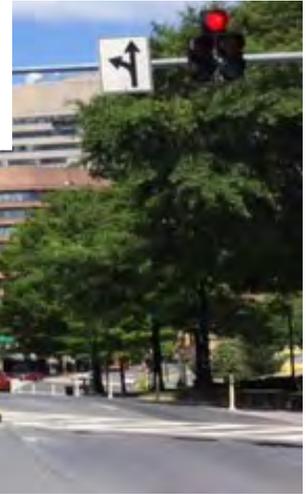
The Leading Pedestrian Interval (LPI) signal timing technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, increasing visibility between all modes.

Guidance

- The LPI should be used at intersections with high volumes of pedestrians and conflicting turning vehicles and at locations with a large population of elderly or school children who tend to walk more slowly.
- The LPI should be at least three seconds to allow pedestrians to cross at least one lane of traffic to establish their position ahead of turning traffic.
- A lagging protected left arrow (i.e. left turn arrow after the solid green phase) for vehicles should be provided to accommodate the LPI.
- LPIs should provide accessible pedestrian signals to notify visually-impaired pedestrians of the LPI. In the absence of an accessible pedestrian signal, visually impaired pedestrians may begin to cross with the vehicular movement when motorists are less likely to yield to them.

Protected Left Turn Phase

» A protected left turn phase occurs at a signal when vehicles are given a turn signal which does not conflict with other vehicular or pedestrian movements.



At signals, turning movements account for most pedestrian crashes. And, crashes are two times more likely to occur when vehicles are turning left than turning right. Permissive left-turns allow vehicles to make a left turn on green when oncoming travel lanes are clear. Often pedestrians are given a walk signal at the same time. Left-turning motorists are often focused on watching for oncoming traffic and commonly don't look for pedestrians, which results in collisions with pedestrians in the crosswalk.

Considerations

- A protected left-turn phase (red ball followed by a green signal arrow) provides a dedicated left turn and eliminates the need for motorists to wait for gaps in on-coming traffic.
- Protected left turns are safer for pedestrians because they cross the street before left-turning cars have the signal to move through the intersection.
- Protected left turns can also help to reduce vehicle-vehicle collisions.

Guidance

- In addition to protected turn phases, the MUTCD has some signing applications that can be used in conjunction with traffic signals to enhance pedestrian crossing.
- Because they add an additional signal interval, protected left turns may add delay to all movements.

*PedSafe: http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=51
AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities*

Accessible Pedestrian Signals (APS)

» Accessible pedestrian signals (APS) and accessible detectors are devices that communicate information in non-visual formats about the pedestrian phase to pedestrians with visual and/or hearing disabilities. APS and detectors may include features such as audible tones, speech messages, detectable arrow indications and/or vibrating surfaces.



Considerations

The major functions of the Accessible Pedestrian Signal (APS) are to provide information for:

- Location of pushbuttons, if used
- Beginning of WALK interval
- Direction of crosswalk
- Location of destination sidewalk
- Intersection signalization with speech messages

Pushbutton locator tones are used for locating the pedestrian pushbutton needed to actuate the WALK interval. Detectable arrows should be located on pushbuttons to point in the same direction as the crosswalk. At corners of signalized

locations where two pushbuttons are present, they should be separated by at least 10'.

For automatically-called pedestrian phases, pushbuttons can be used to activate accessible pedestrian signal features such as detectable arrow indications and/or speech messages.

Guidance

- When new pedestrian signals are installed, APS with pushbuttons are required.
- For existing pedestrian signals, the APS and pedestrian pushbuttons should be provided when the signal controller and software are altered, or the signal head is replaced.

- At new locations where the pedestrian phase is automatic (pushbutton activation is not required as the pedestrian phase recalls every signal cycle), accessible pedestrian pushbuttons only call accessible features, not the pedestrian WALK signal indication.
- Audible walk indications should have the same duration as the pedestrian walk indication unless the pedestrian signal rests during the pedestrian phase, in which the audible indication should be provided in the first seven seconds of the Walk interval.

Design Features to Reduce Vehicle Speeds

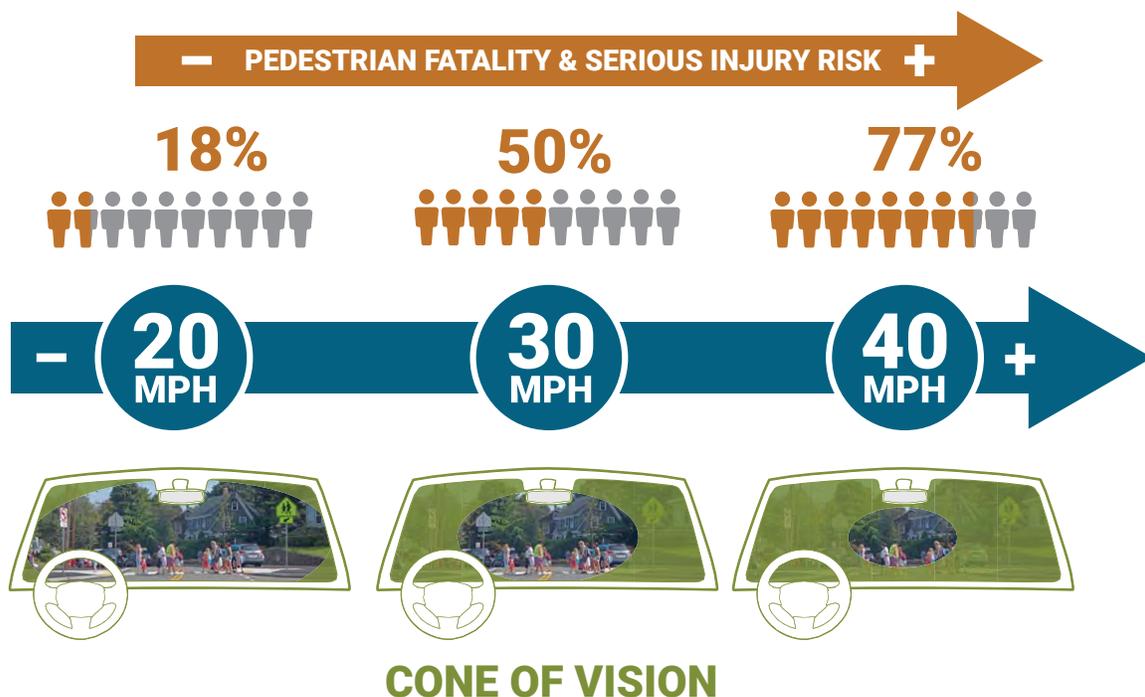
Successful transportation systems allow all users to travel relatively quickly, safely, and directly to their final destinations. The movement of people -whether traveling on foot, by bicycle, on transit, or in a private automobile- is typically referred to as flow. In Stamford, this flow has been center on the needs of the automobile and has led to unsafe conditions for pedestrians; 106 pedestrians have been hit and three pedestrians have been killed by drivers in Stamford in the last year alone.

Traffic Management measures, such as stop signs, turn restrictions and signals redirect or restrict traffic flow and are sometimes used to address safety issues. However, rather than restrict flow, the ideal scenario is to allow the flow of all modes, but in a safer manner. This is called **Traffic Calming** or **Speed Management**.

Traffic Calming or Speed Management measures can include driver education, speed enforcement programs and engineering design measures. Engineering design measures typically focus on reducing the operating speeds (i.e. the speed at which automobiles are traveling) on the roadway and increasing driver attentiveness. Reducing automobile speeds is especially important because faster speeds are more like to kill or severely injure a pedestrian or bicyclist and at faster speeds drivers see less while also needing more time to react (see graphic below).

Traffic calming design measures typically fall into three major categories all focused on reducing speeds and increasing attentiveness. They include:

- + **Narrowing (or appearing to narrow) the roadway.** Examples include narrowing the widths of travel lanes (lane diet) or the roadway (road diet) or adding pedestrian crossing islands and curb extensions. Traffic speeds are also reduced and drivers more attentive when the roadway appears to be narrower through a sense of enclosure (using street trees, buildings, street furniture and on-street parking) and there is an expectation of more people on the street.
- + **Curving (deflecting) the roadway vertically.** Examples include traffic circles, chicanes, and curb extensions which create vertical curves in the roadway.
- + **Curving the roadway horizontally.** Examples include speed humps, raised crosswalks and raised intersections which create horizontal curves in the roadway.



A variety of traffic calming measures can be used on different streets; however, specific measures are most applicable on specific street types. For this reason, traffic calming measures are assigned to specific street types, as is shown below.

These measures are further highlighted on the following pages and many are recommended, along with specific locations for implementation, in the *Stamford Traffic Calming Study*.

	Arterial	Collector	Local
Street Narrowing			
Narrow Lanes	X	O	O
Enclosures (trees, pedestrian activity, buildings fronting the street, on street parking)	O	O	O
Road Diets	X	X	O
Crossing Islands	O	O	O
Curb Extensions	O	O	O
Horizontal Roadway Curvature			
Chicanes			O
Traffic Circles			O
Roundabouts	O	O	O
Vertical Roadway Curvature			
Speed Humps		X	O
Raised Crosswalks		X	O
Raised Intersections		X	O
Textured Pavement	O	O	O
o = often used x = may be used			

Appearance of Roadway Width

» The appearance of the roadway width (vs. the actual width) can be effected by the existence street trees, street furniture, lighting, medians, crossing islands, buildings fronting the street, gateways, parked cars and bicycle facilities.



Considerations

The width of the roadway effects the speed at which vehicles are driven and the attentiveness of the driver. Reducing the actual or perceived roadway width can reduce the operating speed of vehicles and increase the attentiveness of drivers leading to a safer environment for pedestrians, bicyclists and drivers alike. In most cases, these measures involve no loss in vehicular service. Many elements also influence a driver's sense of enclosure and the expectation of pedestrians, further reducing speeds and increasing attentiveness. Elements that can influence the apparent street width include:

- Buildings fronting the street with off-street parking located on the side or behind the building and entranceways fronting the street (increasing the expectation of pedestrians).
- Street furniture such as signs, signals, benches, transit shelters, and trash cans.

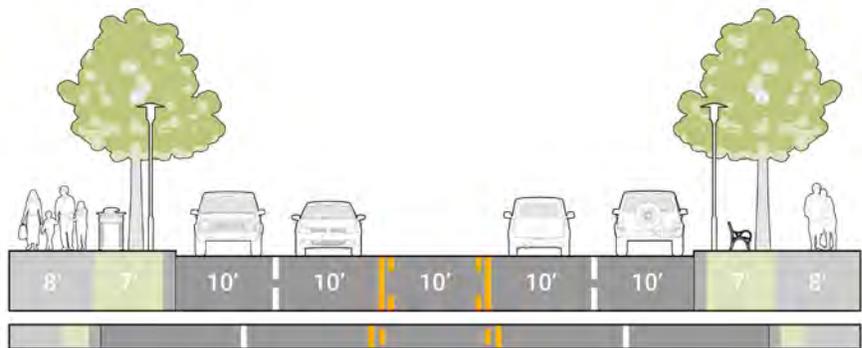
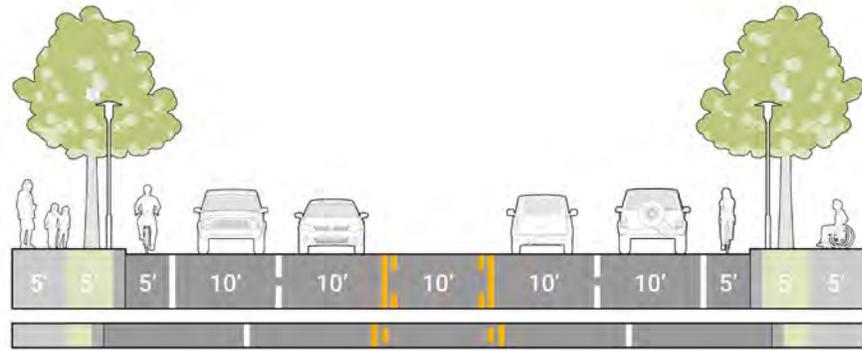
- Street lighting located at a frequency and height to suggest pedestrian use and to reinforce a sense of enclosure.
 - Street trees which create a sense of enclosure with their trunks and canopy.
 - Parked cars which enclose the street, reduce speeds as they enter and exit parking spaces, and establish the expectation of pedestrians exiting vehicles.
 - Raised curbs which signal a transition from a rural or high-speed environment to an urban area and permits the placement of street trees and furniture nearer to the street.
 - Gateways which create a sense of enclosure and signal to drivers that pedestrians may now be present.
- from the back of the curb to allow car doors to be opened and people to exit.
- Benches, transit shelters and other street furniture should not be placed in the pedestrian-through area.
 - Street lights should be placed between street trees, lower than the tree canopy and shielded to reduce light pollution.
 - Gateways should be designed to allow through pedestrian traffic, meet minimum street setbacks and minimum sight triangles.
 - Vehicle parking design should address the bicycle safety implications of vehicle doors and movements to parking spaces.
 - Diagonal parking should be designed with the back of the vehicle located near the curb to permit exiting drivers to see street users including bicyclists, vehicles or pedestrians.

Guidance

- Where on street parking exists, street furniture is typically located 2-3 feet

Lane Narrowing (Lane Diet)

» Lane narrowing reduces the width of a vehicle travel or parking lane.



Considerations

Narrower lanes can contribute to lower operating speeds along the roadway, which is especially appropriate in dense, walkable corridors.

Narrowing vehicular lanes creates space that can be reallocated to provide a more comfortable experience for pedestrians and bicyclists.

Pedestrians benefit when sidewalks are widened and buffers between the sidewalk and roadway are added. Lane narrowing also reduces the distances pedestrians must travel when they cross the street.

Bicyclist benefit when the reallocated roadway is used to add bike lanes and buffers between cyclists and motor vehicles.

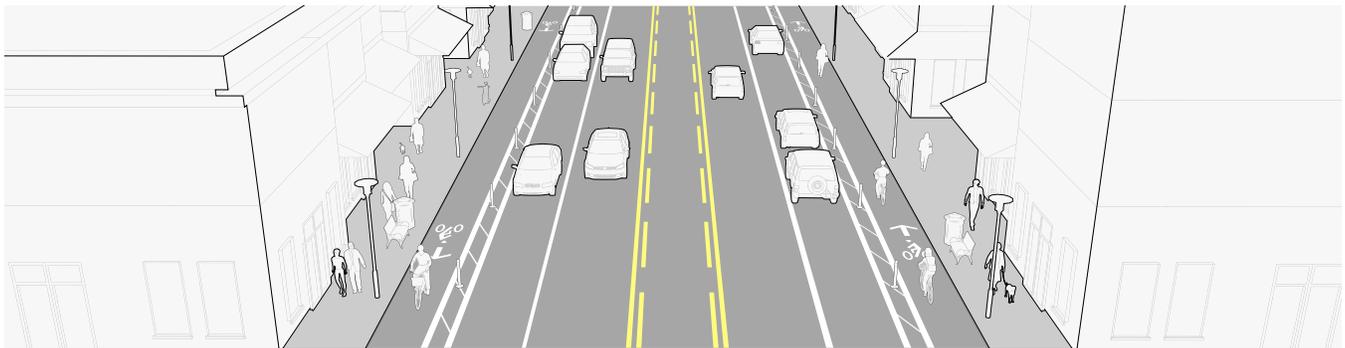
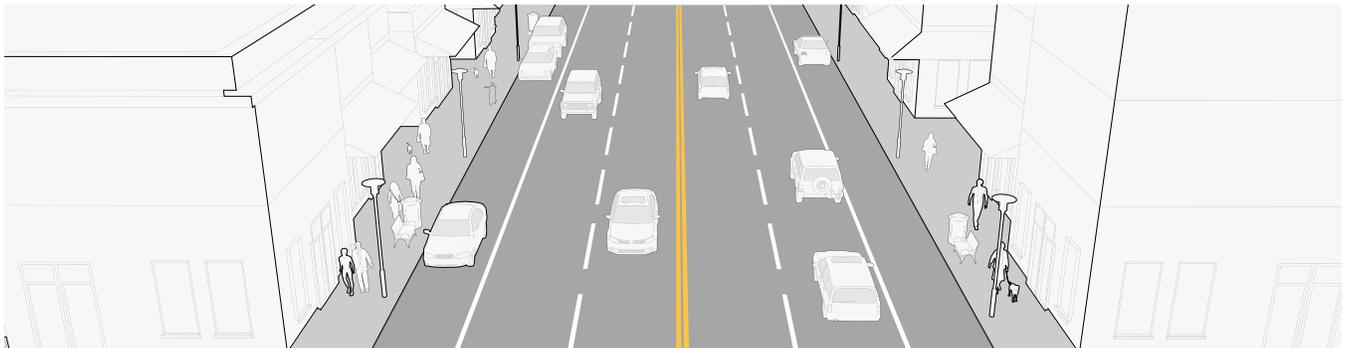
Guidance

- Motor vehicle travel lanes as narrow as 10 feet are allowed in low-speed environments (45 mph or less) according to the AASHTO Green Book.
- Lane widths of 10 feet are appropriate in urban areas and have a positive impact on a street's safety without impacting traffic operations (NACTO, Urban Streets Guide).

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013)

Lane Configuration (Road Diet)

» A road diet is a reduction in overall roadway width, typically accomplished by removing motor vehicle travel lanes.



Considerations

Lane configurations or road diets can be applied broadly to a wide variety of cross sections where one or more travel lanes are repurposed to provide more space for pedestrians and bicyclists and to calm traffic. This typically occurs on roadways with excess capacity where anticipated traffic volumes have not materialized.

The most common road diet configuration involves converting a four-lane road to three lanes: two travel lanes with a turn lane in the center. This configuration

is often as or more productive at addressing traffic congestion, especially at intersections.

The space gained for a center turn lane is often supplemented with painted, textured, or raised center islands which improve pedestrian crossings, can incorporate landscape elements and reduce travel speeds.

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013)

Curb Extensions

» Curb extensions, also known as neckdowns, bulb-outs, or bump-outs, are created by extending the sidewalk at corners or mid-block.



Considerations

Curb extensions calm traffic, increase safety, and provide extra space along sidewalks for users and amenities.

Care should be taken to maintain direct routes across intersections by aligning pedestrian desire lines on either side of the sidewalk.

The turning needs of emergency and larger vehicles should be considered in curb extension design. Providing a 20-foot long curb extension to restrict parking near an intersection often improves emergency access as intersections are kept free of parked cars.

When curb extensions conflict with turning movements, reducing the width and/or length of the curb extension should be prioritized over elimination.

Guidance

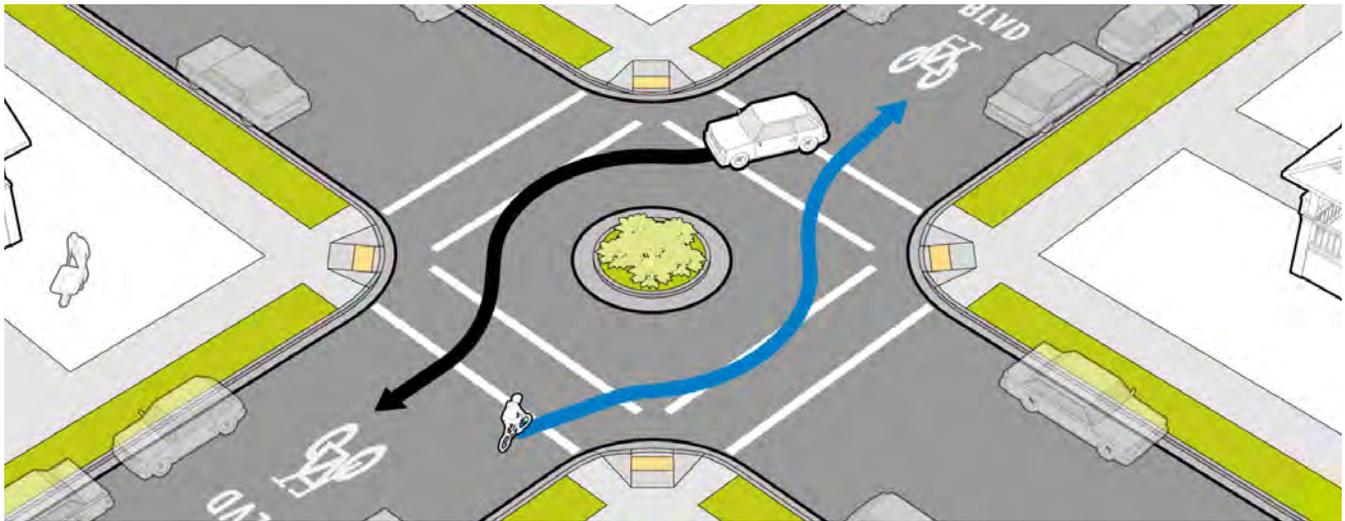
- Curb extensions should be considered only where parking is present or where motor vehicle traffic deflection is provided through other curbside uses such as bicycle share stations or parklets.
- Curb extensions are particularly valuable in locations with high volumes of pedestrian traffic, near schools, at unsignalized pedestrian crossings, or where there are demonstrated pedestrian safety issues.
- A typical curb extension extends the width of a parked car (or about 6' from the curb).
- The minimum length of a curb extension is the width of the crosswalk, allowing the curvature of the curb

extension to start after the crosswalk, which should deter parking.

- The maximum length of a curb extension can vary depending on the intended use (e.g., stormwater management, transit stop waiting areas, restricting parking).

Neighborhood Traffic Circles

» Neighborhood Traffic Circles or mini roundabouts are raised circular medians constructed in the center of low-volume low-speed intersections to reduce vehicle speeds and increase driver awareness.



Considerations

- Traffic circles, or mini roundabouts, can reduce speeds and crashes in low-volume areas and are an ideal treatment for uncontrolled intersections.
- They can be installed using simple markings or raised islands and provide great opportunities to include stormwater management infrastructure, gateways or art.
- Traffic circles provide advantages for bicyclists and vehicles as they reduce the need for a full stop and enable continuous progression when conflicting traffic is not present.
- Designs should consider the speed of the roadway and access to underground utilities.
- A neighborhood partner should be identified for maintenance of any plantings.
- Vertical elements must not obstruct visibility.
- Circle visibility should be maintained with paint and reflectors.
- Regulatory and/or warning signage should be provided to remind traffic to proceed counter-clockwise around the circle.

Guidance

- Traffic circles are a good alternative to stop-controlled intersections, and are usually preferred to four-way stops.
- Careful attention should be paid to the available lane width and turning radius

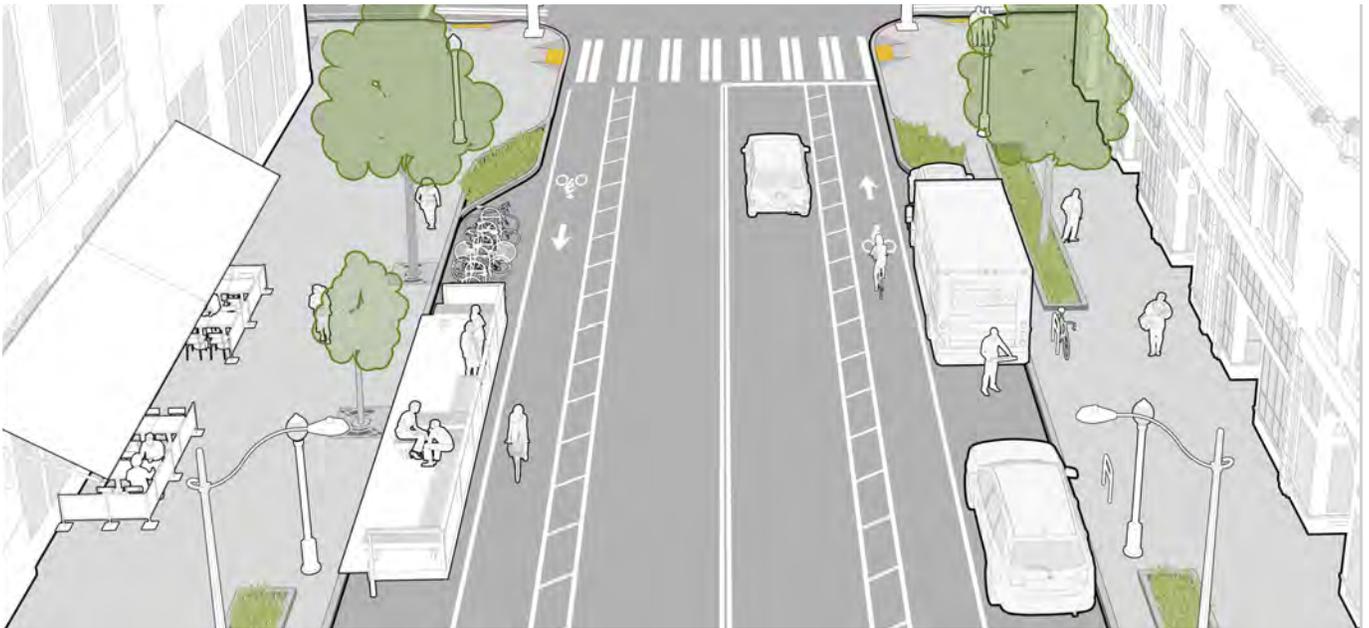
used with traffic circles.

- A mountable curb/curb apron should be provided at traffic circles where large trucks or emergency vehicles require access in constrained spaces.
- Crosswalks should be marked to clarify where pedestrians should cross and that they have priority. ADA-compliant ramps and detectable warnings are required.
- Approximately 15-feet of clearance from the corner to the widest point on the circle should be provided.
- Plantings should require minimal maintenance and be accessible to maintenance crews.

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013)

Parklets

» A parklet is the conversion of one or more on-street parking spaces into a temporary or permanent extension of the sidewalk. Parklet features typically include benches, tables, chairs, plantings, art and bicycle parking.



Parklets calm traffic by creating a sense of enclosure and creating an expectation of pedestrians in the roadway. Parklets may be open to the public or developed and used by private businesses. Parklet space can be used seasonally and converted into parking or used for snow storage in the winter.

Considerations

- Parklet platforms should be safe, practical, and flush with the adjoining sidewalk. They must also be accessible and meet all ADA requirements.
- Parklet designs should not extend beyond the width of the adjacent parking lane and typically provide a 4-foot buffer between the parklet and adjacent parked cars; buffers may include planters, wheel-stops, barricades or temporary bollards.
- Parklets should not be located in front of fire hydrants, over manholes or over utility access points.
- Parklet platform installation should be sponsored by and coordinated with neighborhood groups and adjacent businesses who may be responsible for deconstructing and storing materials in the off-season.

Guidance

- Parklets should be located where the street has minimal slopes, platforms are not obstructing curbside drainage, and access to below ground utilities is maintained.
- Parklets should be considered in areas with moderate to high pedestrian traffic and where existing sidewalk widths do not provide space for amenities such as seating, bicycle parking, or sidewalk cafés. Suggested locations include retail districts and restaurants.
- Maintenance agreements with area businesses and community groups are key to the long-term viability of parklets.

Traffic Calming - Vertical Deflection Treatments

» Vertical deflections are raised elements of the roadway, such as speed humps or raised crosswalks, installed to create discomfort for drivers traveling at high speeds.



Considerations

Vertical traffic calming treatments compel motorists to slow speeds. By lowering the speed differential between pedestrian, bicyclists and motorists, safety and comfort is increased.

- These treatments are typically used where other types of traffic controls are less frequent, for instance along a segment where stop signs may have been removed to ease bicyclist travel.
- Speed humps and raised crosswalks impact bicyclist comfort. The approach profile should preferably be sinusoidal or flat.

- Where traffic calming must not slow an emergency vehicle, speed cushions should be considered. Speed cushions provide gaps spaced for an emergency vehicle's wheelbase to pass through without slowing. However, continuous devices, such as speed humps and raised crosswalks, are more effective as achieving slower speeds than speed cushions.
- At intersections between a neighborhood street and a major street, consider using raised crosswalks to slow traffic turning onto a neighborhood street.

Guidance

- Vertical traffic calming is not necessary on all neighborhood streets but should be considered where there are measured or observed speeding issues such as neighborhood streets with 50th percentile of traffic exceeding 25mph.

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013) - Curb Extensions

Traffic Calming - Horizontal Treatments

» Horizontal traffic calming narrows travel lanes, which creates a sense of enclosure and additional friction between passing vehicles.



Examples of horizontal traffic calming treatments include bulbouts (top right), traffic circles (bottom left), and crossing islands (bottom right).

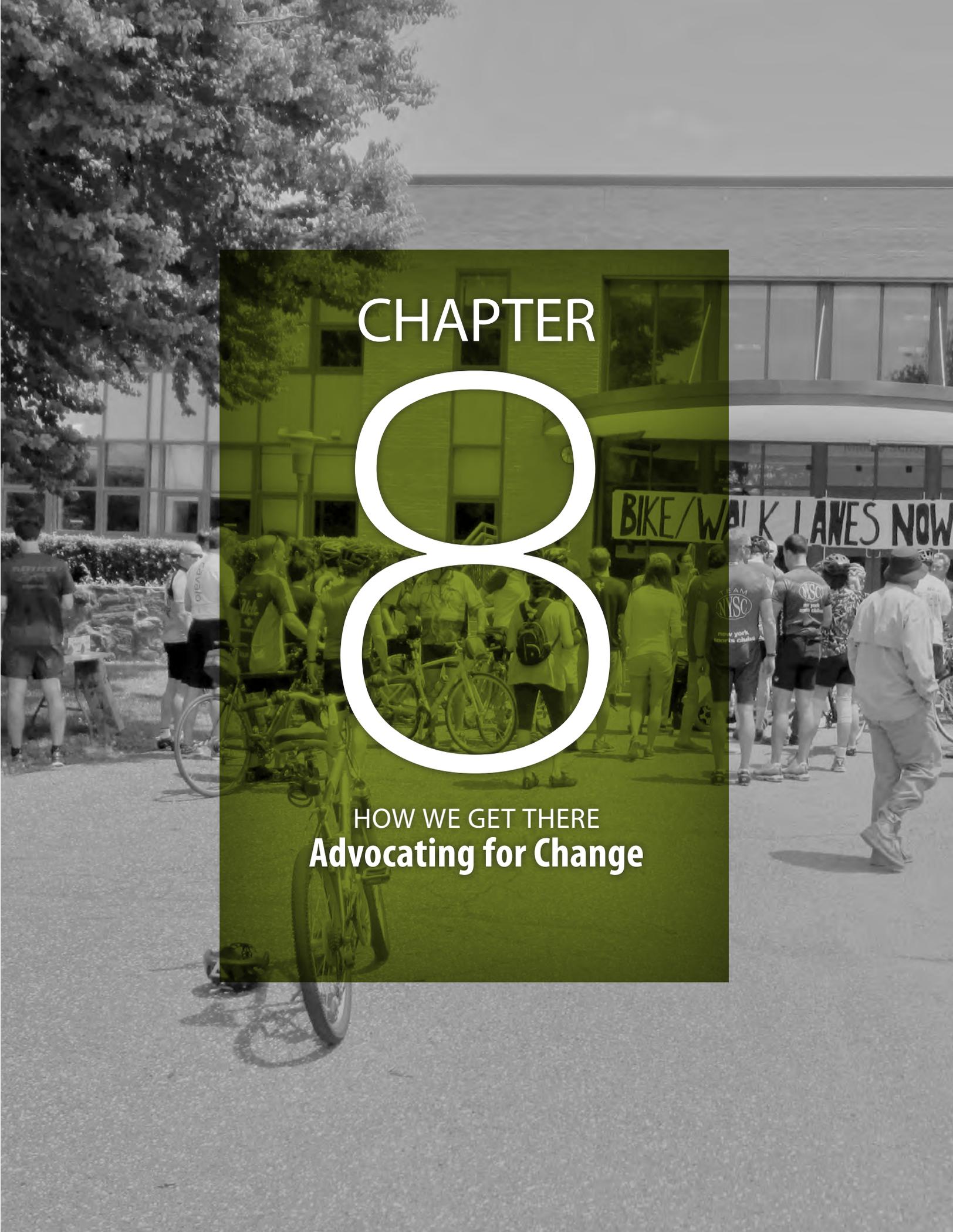
Considerations

- Horizontal traffic calming reduces speeds by narrowing lanes and creating a sense of enclosure and additional friction between passing vehicles.
- Narrower conditions require more careful maneuvering around fixed objects and when passing oncoming automobile traffic or bicyclists. Some treatments may slow traffic by creating a yield situation where one driver must wait to pass.
- Infrastructure costs will range dependent upon the complexity and permanence of design. Simple, interim treatments such as striping and flexposts are low-cost. Curbed, permanent treatments that integrate plantings or green infrastructure are higher-cost.
- Traffic calming using horizontal treatments is often used in the design of bicycle boulevards. Horizontal traffic calming treatments must be designed to deflect motor vehicle traffic without forcing the bicycle path of travel to be directed into a merging motorist.
- Neighborhood traffic circles should be considered at local street intersections which typically includes the removal of stop controls without enabling an increase in motorist's speeds.
- Traffic calming measures can also be achieved using crossing islands that narrow travel lanes.

Guidance

- Horizontal traffic calming treatments can be appropriate along street segments or at intersections where width contributes to higher motor vehicle speeds. It can be particularly effective at locations where:
- On-street parking is low-occupancy during most times of day.
- There is desire to remove or decrease stop control at a minor intersection.
- Horizontal treatments are most effective if they deflect motorists midblock (with chicanes) or within intersections (with neighborhood traffic circles).

AASHTO Guide for the Development of Bicycle Facilities (2012)
NACTO Urban Street Design Guide (2013) - Curb Extensions



CHAPTER

8

HOW WE GET THERE
Advocating for Change

Strategies for Successful Advocacy

Creating a city that is safer for walking and bicycling starts with strong leadership and community advocacy supported by an educated public and the enforcement of safe behaviors.

This chapter provides recommendations and best practices for developing and strengthening community participation and advocacy in Stamford. It includes case studies of similar cities who have taken impressive strides in enhancing their walking and bicycling networks and improving safety.

Bicycle Advisory and Pedestrian Advisory Committees-

Bicycle and Pedestrian Advisory Committees are advisory bodies appointed by a local government or a regional planning agency to advise that entity's decision-making body on planning and policy decisions. They are distinct from advocacy organizations in that they are official bodies and play an internal, rather than an external, advisory role. They are important as they often represent specific districts or neighborhoods, thereby creating a direct path of communication between citizens and the government on issues related to walking and bicycling.

Bicycle and Pedestrian Advisory Committees are often given projects to review, which can provide additional oversight on the implementation of complete streets. They are also able to monitor project progress, the speed at which projects are implemented, and hold leaders accountable when projects stagnate. It is recommended that the City of Stamford establish a Bicycle and Pedestrian Advisory Committee.

Community Advocacy

Community advocacy is a vital component to Stamford developing as place where people of all ages and abilities are able to safely traverse the city by foot and by bicycle. Advocacy organizations coordinate like-minded individuals to communicate to City officials the views of the public.

Cities benefit from advocacy organizations as they are provided a clear mandate from the public for spending funding and taking action.

The best course of action for advocacy in Stamford depends on the strengths and preferences of organizational leadership and Stamford-specific opportunities and challenges, among others. Stamford already benefits from the existence of *People Friendly Stamford* whose mission is “to connect Stamford’s neighborhoods in a way that is safe and enjoyable for bicycling and walking” and can provide the energy and support needed to implement this and other plans and create a bicycle and walkable-friendly city.

Based on national best practices and case studies of existing organizations including Bike Pittsburgh, Elm City Cycling, and All Walks DC, a framework for thinking through organizational topics is provided below.

Organizational Structure

The structure of an advocacy organization should support the strategic needs of the entity, create opportunities for strategic growth, and be sustainable over time.

Conduct strategic planning early. Organizations that have a clear consensus around organizational and advocacy priorities and strategic direction are less likely to have internal conflict, spend time pursuing non-critical activities, or risk over-extending themselves. *Examples:* Elm City Cycling recommends starting with a long term planning process to establish a vision and goals for the first five years. All Walks DC conducted internal planning exercises to address fundraising goals and other organizational strategies.

Develop an Advocacy Strategy and Activities

Select the right advocacy strategies. The primary role of bicycle and pedestrian advocacy organizations is to build public support for bicycling and walking improvements in the community. There are countless possible strategies and tactics for effective advocacy, ranging from relationship-building and lobbying to staging events to publicize urgent safety problems. *Examples:* All Walks DC is working on a campaign to encourage the city to release crash data. Many communities are working on Vision Zero campaigns (Vision Zero Cities commit to eliminating traffic deaths within a defined time period.)

Membership and Fundraising

Develop an appropriate membership strategy. Members can be the lifeblood of an organization, but acquiring and retaining members requires energy and financial resources. Some organizations are largely sustained by membership dues; others find that the cost of member benefits (magazines, discounts, stickers, etc.) leaves relatively little left to the fund the organization. One tactic that smaller, newer organizations use is to build email lists or Facebook followers. Instead of touting the number of paying members, these organization tout their number of “supporters.” These supporters can be tapped to contact elected officials during advocacy campaigns and can later become donors. *Examples:* BikePGH has 2,500 members. Elm City Cycling and All Walks DC do not have active membership programs.

Consider an online fundraising campaign.

Many organizations conduct online fundraising campaigns. Elements of these efforts can include websites, emails, social media, crowdfunding, and fundraising videos. Successful types of messages include personal stories, program-specific achievements, political asks, and matching gifts. *Example:* All Walks DC receives online donations through the “open platform,” The Action Network: <http://allwalksdc.org/donate-to-all-walks-dc>. Bike PGH has an online donation form: www.bikepgh.org/get-involved/donate. In 2014, Memphis raised \$70,000 using an online crowdsourcing platform to build a separated bicycle lane and in 2015, Denver launched a crowdfunding campaign focused on corporate donors for the planning and design of bicycle facilities.

Media

Develop a social media strategy. A strong social media presence helps build an organization’s list of supporters (and potential donors). It can also be an important tool for advocacy. Social media can also be used to encourage bicycling. *Example:* The Los Angeles County Metropolitan Transportation Authority launched a social media outreach campaign to encourage people to walk and bike instead of using their cars.

Events

Start small and build on success. Events are an excellent way to build excitement and enthusiasm for bicycling and walking in a community. Organizations such as BikePGH and Cascade Bicycling Club in Seattle hold

large events, but small and more frequent events can be logistically easier for smaller organizations. *Examples:* Elm City Cycling recommends having an event for everyone, including beginning bicyclists. BikePGH recommends hosting small or medium sized events rather than one or two large events to keep people engaged all year.

Join with existing events. Rather than taking on the whole responsibility for organizing an event, organizations can join existing events, by co-sponsoring or setting up a booth or table. It is recommended that there be a specific request of or activity for event attendees.

Build a Coalition

Develop a base of supporters. Effective advocacy organizations are seen as representatives of a large group of people. Through membership or social media, develop a base of supporters to show the reach and influence of the organization. *Example:* Pittsburgh Mayor Bill Peduto once joked that BikePGH had more members in Pittsburgh than the Democratic Party.

Be a trusted resource for the City. Advocates can and should act as experts to identify and prioritize issues in the community. *Example:* All Walks DC was asked to provide feedback on legislation on the Washington, DC's, "Bicycle and Pedestrian Safety Act." They have frequently testified on transportation policy before City Council.

Build relationships. Advocacy organizations should work closely with partners in the community, including developers, university, hospitals, and other nonprofits. *Examples:* BikePGH, Elm City Cycling, and All Walks DC all recommend developing partnerships.

**NURSE.
MOTHER.
RIDES A BIKE.**
OPERATE WITH CARE.

**CARPENTER.
FRIEND.
RIDES A BIKE.**
CUT HER A BREAK.

BIKE
PGH!

BIKEPGH.ORG

BIKE
PGH!

BIKEPGH.ORG

All Walks DC

All Walks DC is an organization based in Washington, DC that advocates for infrastructural, legislative, and social solutions to problems facing pedestrian travel. The organization's creation was driven by the occurrence of multiple pedestrian crashes on Arkansas Avenue. Even after safety measures were recommended by the Department of Transportation, it required petitions and community advocacy before the city took corrective action.

Participants in this successful movement realized there existed no organization in the area advocating for pedestrian rights and safety. All Walks DC takes on this task by advocating for the prioritization of pedestrian accommodations in design, traffic laws, and enforcement. Moreover, it seeks to both uphold and strengthen the city's commitment to "Vision Zero", which is a comprehensive action plan aimed at reaching zero fatalities and serious injuries along the transportation system by 2024. Lastly, All Walks DC encourages all city officials to continually share and provide the public with access to traffic and collision data.

All Walks DC was founded in 2014 and as a new organization fundraising has been limited to donations from board members and a "donate" option on their website. Partnerships have been a key element of their growth and have focused on "quasi-government organizations" such as Montgomery County's Action Committee for Transit, and non-profit organizations, such as the Alliance for Biking and Walking, a coalition of local and state bicycle and pedestrian advocacy organizations, as valuable resources. All Walks DC has reached out to corporate sponsors, but have found them often more focused on promoting walking rather than improving safety.



Photo: Jacob Mason



Lessons Learned

All Walks DC has identified certain events as effective for increasing involvement—booths at farmers markets and marches to which neighbors are invited. All Walks DC's attendance at a city council meeting led to the recruitment of a current board member who had given impressive testimony.

All Walks DC has found that use of social media and connections with the news media are the most crucial for making change. By frequently commenting on articles posted online and building relationships with journalists who cover urban planning topics and more specifically bicycle and pedestrian issues, the organization is able to be an important contact in the DC area.

All Walks DC plans to continue using Facebook, Instagram, and Twitter; Twitter handles often tweet at All Walks DC with photos of poor infrastructure and suggestions for location specific improvements. The also organization maintains a blog where pedestrian transportation planning problems and typical countermeasures are highlighted and explained. Due to a strong presence online, All Walks DC was invited by DDOT to help write legislation for the Bicycle and Pedestrian Safety Act, which has almost been completed.

Despite some successes in outreach and media involvement, the relatively new organization struggles to keep up the pressure to tackle the wide-ranging issues DC faces. All Walks DC is run solely by volunteers and finds it hard to balance full-time work and consistent blogging and advocacy. In addition, access to city transportation staff and plans for upcoming projects has been a challenge.

Bike Pittsburgh, Pittsburgh, PA

In early 2002, David Hoffman was hit by a car while riding his bicycle on his commute home from work. Hoffman used the media exposure from his accident to bring attention to bicycle safety by starting a website. Scott Bricker, current executive director of Bike Pittsburgh, and strong advocate of bicycle commuting, saw the attention Hoffman was receiving and suggested they meet. Within a few months, the two advocates, along with a few other community members were meeting regularly, laying the foundation for Bike Pittsburgh. Bike Pittsburgh, whose aim is to make Pittsburgh bicycle commuter friendly and promote and encourage bicycling as viable form of transportation, became a formal non-profit in January of 2003.

After a year and a half of operation, Bike Pittsburgh received a \$10,000 grant to install bike racks throughout the city. After installing their thirteenth bike rack, a business excited about the idea approached the group and funded the installation of several more. This created a lot of momentum within the community, which the organization capitalized on and began a formal membership program. The group continued to conduct outreach events and use media to bring attention to bicycle safety and the need for infrastructure. The group grew and continued to receive community support, including a grant to work with the City to adopt bike lanes, which were implemented in 2007. Since inception, the group has been a huge success; it now serves as a fiscal sponsor for other bicycle groups in the area and has helped bring 70 miles of bike lanes to Pittsburgh. The group is currently working with the City to adopt a complete streets policy.

Today, Bike Pittsburgh has an operating budget of just under one million dollars, nine employees, and 2,500 members. The group holds annual bike rides with



anywhere from 15-20,000 attendees. These events include bike to work days, networking bike happy hours, introductory bicycle commuting classes and lunchtime educational events at businesses. Typically bike valet services or temporary bike racks are also included

Lessons Learned

FUNDRAISING: Develop strong relationships with the local philanthropic and business community.

RESOURCES: Research what other organizations have done and utilize resources at the local and national level. For example, during their formation, Bike Pittsburgh relied heavily on information from the Alliance for Biking and Walking.



EVENTS: Strive to host more small or medium sized events rather than one or two large events so that you can keep people engaged year round.

PARTNERSHIPS: Make sure to work with the City rather than against it. Support the City's pedestrian and bicycle projects by providing resources, leveraging funds, and conducting outreach to increase attendance at public meetings. Take the time to get to know the City and advocacy community; learn what help is needed. Make sure to always bring some kind of resource to the table; do not make demands without investing your own resources in the solution. Know your audience, and before each meeting with the City or potential community partner, determine who is the best person to deliver your message and/or present your specific ask.

PROJECTS: Advocate for very specific projects rather than just better bike planning.

Elm City Cycling, New Haven CT

Elm City Cycling began in 2003 as Go-alition. It was started by a group of passionate community members and graduate students who wanted to bring bicycle infrastructure to New Haven. The founders of this group worked with the City of New Haven and successfully established the city's first bicycle lane. Go-alition continued to meet as an ad hoc group to discuss bicycle and pedestrian advocacy and in 2008, became a non-profit and changed their name to Elm City Cycling. Elm City Cycling adopted a mission of making New Haven a better place to bicycle by both advocating for better bicycling conditions and organizing fun events in order to develop a bicycle culture.

Since its inception, the group has worked with the City to add more bicycle lanes, a complete streets policy, and to develop a bicycle plan, adopted by the City, now on its fourth iteration. In 2013, a former board member of Elm City Cycling was appointed as Transportation Director by the city's mayor, further strengthening the partnership between the non-profit and the City. To date, Elm City Cycling has worked with the City of New Haven to implement standard bike lanes, the city's first separated bike lane in 2015, and a contraflow bike lane completed in early 2016.

Organizational Structure and Operations

While Elm City Cycling is an established non-profit they remain completely volunteer-run and operate on a very small budget. The majority of their money comes from small community grants. Many of their events are funded by partnering with other businesses. About fifteen to thirty committed members attend Elm City



Cycling's monthly meetings. The majority of this time is spent planning outreach and educational events. Elm City Cycling has created and distributed educational brochures for cyclists, held community events, and handed out free bike lights. The groups' events range in size from 20-100 attendees.

Lessons Learned

STRUCTURE: Elm City Cycling currently has no formal membership structure, however they advise that new organizations do not follow this path, and instead, take the time to develop an organizational structure in the beginning. While the loose structure might sound more appealing at first, the transition has been difficult and has led to inefficiencies in management. Recommendations also include starting the organization with a long term planning process to establish a vision and goals for the first five years.

EVENTS: The group recommends making sure to have an event for everyone. Elm City Cycling hosts a wide variety of unimimidating events that beginner cyclists feel comfortable attending as well as longer and more arduous training rides for the more advanced cyclists in the community. The group has been successful in partnering with local businesses to create alliances in the community and provide a range of events like informal bike to work breakfast rides and more formal art tours.

PARTNERSHIPS: Elm City Cycling believes in adopting a "quid pro quo" mantra and establishing partnerships with City staff. Establishing strong relationships and supporting bicycle and pedestrian advocates within City government is especially important.

KNOWLEDGE: Elm City Cycling recommends that groups take the time to learn and keep up-to-date with the city and state bicycle policies so as to hold the City accountable.

GROWTH: Elm City Cycling says to start small. A new group should pick one or two projects to work on and wait until they have completed those projects to take on more.

City of Charleston, SC

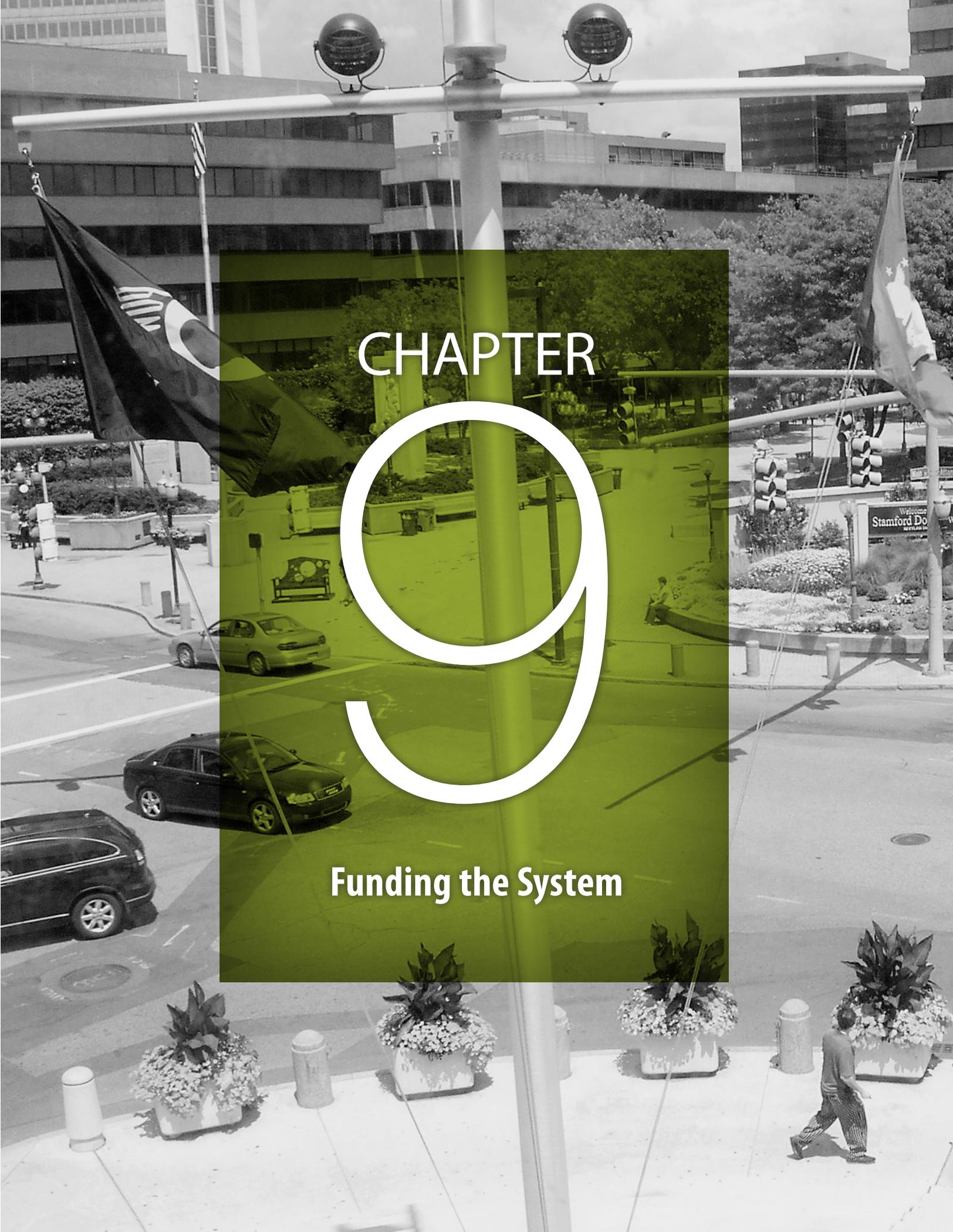
The area's movement towards creating a more attractive pedestrian and bicycle environment began in the 1990s with the City and County of Charleston jointly producing a bicycle and pedestrian plan which resulted in the development of basic design standards. This was followed by the city working with local bicycle and pedestrian advocacy groups to promote bicycling and walking, to provide safety education at events, and to encourage members of the public to bike or walk to city events and meetings. In 2007, the city created a Bicycle and Pedestrian Committee to advise mayoral and council decisions. The creation of this committee marked a switch from the city's focus on education and encouragement to bicycle infrastructure projects including reducing vehicle lanes, adding bike lanes and acquiring property to create trails. In 2008, the City passed a Complete Streets Resolution and in 2010 Charleston applied for and received Bronze status from the League of American Bicyclists as a Bicycle Friendly Community. The award served to bring staff across all departments together to focus on enhancing bicycle and pedestrian facilities.

Lessons Learned

Both community and city champions have played a major role in moving Charleston's bicycle and pedestrian projects forward. The most prominent champion was the city's mayor, Joseph P. Riley, who served for forty years beginning in 1975. The Ravenel Bridge, a 2.5-mile connection over the Cooper River and into downtown, would not have included bicycle and pedestrian infrastructure if it wasn't for the mayor's active support. The engineers and project managers of this eight lane bridge were hesitant to add a bike and pedestrian path; they had never done it before and the project was over budget before the \$12 million path was proposed. Mayor Riley was determined to get the path added and found the money to make it happen. Now that the project has been completed it has proven to be a huge success. Cyclists and pedestrians can be seen on the bridge all year long and the increase in connectivity has led to economic growth on both sides of the river. There has also been a clear shift in the city's support for bicycle and pedestrian planning. The thinking went

from "We've never done this before, why should we do it now?" to "In the future, how can we not do it?" Furthermore, this project has served as a model for other cities in the region. Mobile, Alabama looked to the Ravenel Bridge as a model when advocating for bicycle and pedestrian facilities on a new bridge over the Mobile River.

Charleston Moves, another community champion, is a recently formed non-profit organization that has gained a lot of momentum and played an important role in engaging the community to advocate for bicycle and pedestrian improvements in Charleston. This group was originally formed in the mid-1990s as the Charleston Bicycle Advisory Group which supported the Ravenel Bridge renovation project. Charleston Moves currently supports a variety of projects including new riders, bike infrastructure and safety improvements.

An aerial photograph of a city intersection, likely in Stamford, Connecticut, featuring a large traffic light pole with two spherical lights at the top. The scene includes cars, a pedestrian, and a sign that reads "Welcome to Stamford Do". A large, semi-transparent green rectangle is overlaid on the center of the image, containing a large white number "9".

CHAPTER

9

Funding the System

This chapter documents the variety of ways that bicycle and pedestrian projects can be included in private and public redevelopment projects. In addition, several federal, state, foundation and innovative funding means are provided as is highlighted below:

Page 9.3 » Pedestrian and Bicycle Funding from Federal Agencies

Page 9.4 » Federal Highway Administration (FHWA) Grant Programs

Page 9.5 » Federal Transit Administration (FTA) Grant Programs

Page 9.7 » Foundations and Innovative Sources for Pedestrian and Bicycle Facilities

Page 9.8 » Funding for Trails

Page 9.8 » Funding for Placemaking

Funding the System

The needs of people biking and walking should be supported as part of the City’s transportation investments. All transportation projects – except those on limited access roadways – should include sidewalks, bicycle facilities, and safe pedestrian and bicycle crossings. Specific bicycle and pedestrian projects identified in this Plan should be funded through the City’s transportation budget. Including pedestrian and bicycle facilities as part of routine transportation projects is the most cost-effective means of creating a multimodal system. And, increasing the number of people walking and bicycling is the most efficient way of moving people throughout Stamford at the least cost. Pedestrian and bicycle projects can be implemented in several ways:

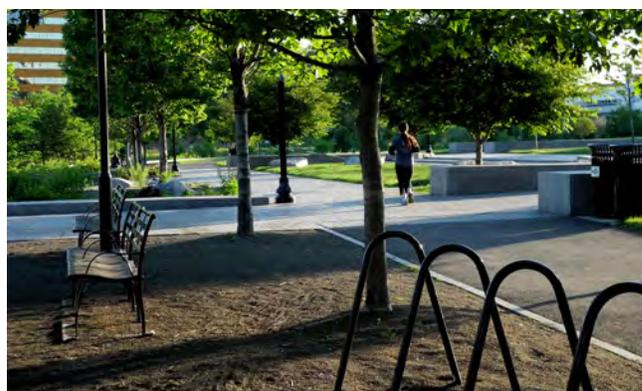
- Establish guidelines for the development of sidewalks, façade/café and amenity zones. Require developers and builders to include these facilities as part of new construction and major renovations. Short-term bike parking can also be included.
- Install bicycle facilities and crosswalk markings as part of roadway repaving projects. A process for including bicycle facilities as part of routine repaving can be found in the Federal Highway Administration’s workbook Incorporating On-road Bicycle Networks into Resurfacing Projects (2016). This process can also be used to install striping for pedestrian facilities.
- Include pedestrian and bicycle facilities in major reconstruction projects. These should include ample sidewalks with façade/café and amenities zones; separated bicycle facilities; protected intersections; curb extensions; tight curb radii; and safe crossing using raised crosswalks and pedestrian refuge islands.
- Establish a capital budget to install pedestrian and bicycle facilities throughout Stamford. Pedestrian facilities such as sidewalks, curb extensions and pedestrian refuge islands can be installed by focusing on a specific neighborhood each year or based on need such as crash rates, proximity to schools or senior centers, or in high-volume pedestrian areas such as downtown and near transit stations. Bicycle facilities can be focused on areas of greatest demand, high crash-rates and include neighborhood bikeways. Bicycle racks can be installed based on demand throughout the city.

Most local, state and federal funding for transportation can be used for the design and construction of pedestrian and bicycle-specific facilities or the inclusion of these facilities as part of larger programs – such as transit projects. A list of typical funding programs and sources is listed below.

Pedestrian and Bicycle Funding from Federal Agencies

Many federal funding sources exist for pedestrian and bicycle-only projects or the inclusion of these facilities in other projects. Funding is primarily available through the Federal Highway Administration and the Federal Transit Administration via the Fixing America’s Surface Transportation (FAST) Act, which was signed in 2015 and supports funding until 2020, and previous transportation fundings bills. The Department of Health and Human Services and the Department of Housing and Urban Development also provide funding support. The Federal Highway Administration created a data-table to assist communities in understanding which Federal funding programs could be used for bicycle and pedestrian projects (link below). Specific program requirements must be met and eligibility must be determined on a case-by-case basis. For example: transit funds must provide access to transit and Congestion Mitigation and Air Quality Improvement (CMAQ) funds must benefit air quality in eligible areas. More detailed information can be found under each program heading.

www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm



US Department of Transportation (USDOT) Grant Programs

Surface Transportation Block Grant

Federal Highway Administration

Under the FAST Act, the Surface Transportation Program (STP) was renamed the Surface Transportation Block Grant Program. Bicycle and pedestrian activities are broadly eligible under this large and flexible program. The Surface Transportation Block Grant program (STBG) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

Surface Transportation Block Grant Program Set-Aside

Federal Highway Administration

This set-aside, established in the FAST Act, replaces the Transportation Alternatives Program (TAP). Activities which were eligible under TAP, which itself included the former Transportation Enhancements Program, the Safe Routes to School Program, and the Recreational Trails Program are now eligible under this set-aside. Larger Metropolitan Planning Organizations control a share of the funds to distribute locally through a competitive process. Eligible activities include pedestrian and bicycle facilities and educational programs, landscaping, and rail-to-trail conversions, among others.

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

Federal Highway Administration

The CMAQ program supports surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief. Non-motorized projects can be funded through this program because of their link to air quality improvements. Projects must be located in areas that do not meet, or have recently not met, minimum air quality standards, which includes Stamford.

www.fhwa.dot.gov/environment/air_quality/cmaq

Highway Safety Improvement Program (HSIP)

Federal Highway Administration

HSIP funds are available for safety projects aimed at reducing traffic fatalities and serious injuries. Bike lanes, roadway shoulders, crosswalks, intersection improvements, underpasses and signs are examples of eligible projects. Projects in high-crash locations are most likely to receive funding. States that have identified bicycle safety and pedestrian safety as Emphasis Areas are more likely to fund bicycle and pedestrian safety projects.

<http://safety.fhwa.dot.gov/hsip>

Better Utilizing Investments to Leverage Development (BUILD) Grant

US Department of Transportation

BUILD grants (formerly known as TIGER grants) fund a broad array of road, rail, transit, and bicycle and pedestrian projects. The program focuses on capital projects that generate economic development and improve access to reliable, safe, and affordable transportation especially for disadvantaged communities. The grant funds projects that have gone through preliminary design stages and prioritizes projects with broad stakeholder support. Applicants are required to demonstrate that project benefits outweigh the costs. Projects in urban areas must request at least \$10 million (with a 20% match).

www.transportation.gov/buildgrants

Section 402 State and Community Highway Safety Grant Program

National Highway Traffic Safety Administration

The Section 402 program provides grants to states to improve driver behavior and reduce deaths and injuries from motor vehicle-related crashes. The program is jointly administered by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) at the federal level and by State Highway Safety Offices at the state level. Funds may be used to reduce impaired driving, reduce speeding, improve pedestrian and bicycle safety, and reduce school bus deaths and injuries, among other activities. Child and adult bicycle safety education is eligible for funding.

www.ghsa.org/html/stateinfo/programs/402.html

Section 405 National Priority Safety Programs

Federal Highway Administration
National Highway Traffic Safety Administration

Section 405 grants provide funding on a competitive basis to states to improve highway safety in a number of areas including impaired driving, occupant protection, distracted driving and more. States are eligible to apply if they have met certain qualifications that pertain to each subgrant. Under this section, Nonmotorized Safety grants are eligible to states where pedestrian and bicyclist fatalities exceed 15 percent of the state's total annual crash fatalities. The funds may be used for law enforcement training, enforcement campaigns, and public education to improve pedestrian safety.

Transit Funding Programs

Federal Transit Administration

The Fixing America's Surface Transportation (FAST) Act supports transit funding through fiscal year 2020, reauthorizes FTA programs and includes changes to improve mobility, streamline capital project construction and acquisition, and increase the safety of public transportation systems across the country. The act's five years of predictable formula funding also includes funding for new grant programs for buses and bus facilities, innovative transportation coordination, workforce training, and public transportation research activities.

https://www.transit.dot.gov/grants/13093_3549.html

The Federal Transit Administration has provided bicycle-specific program information, which can be found here:

<https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/livable-sustainable-communities/fta-program-bicycle>

Transit Oriented Development (TOD) Planning Pilot Grants

Federal Transit Administration

This program provides funding to advance planning efforts that support transit-oriented development (TOD) associated with new fixed-guideway and core capacity improvement projects. Projects that facilitate multimodal connectivity and accessibility or increase access to transit hubs for pedestrian and bicycle traffic can be funded.

Bus and Bus Facilities Program

Federal Transit Administration

This program provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. Bicycle projects receive a 90% federal share.

<https://www.transit.dot.gov/funding/grants/bus-and-bus-facilities-5309-5318>

Bus and Bus Facilities Program, Ladders of Opportunity Initiative (5309)

Federal Transit Administration

The funds in this program may be used to modernize and expand transit access specifically for the purpose of connecting disadvantaged and low-income individuals, veterans, seniors, youths, and others with local workforce training, employment centers, health care, and other vital services.

www.fta.dot.gov/grants/13077_16008.html

Enhanced Mobility of Seniors and Individuals with Disabilities Program

Federal Transit Administration

This program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve transit-dependent populations beyond traditional public transportation services and Americans with Disabilities Act (ADA) complementary paratransit services. (This program consolidates New Freedom eligible projects.) Bicycle and pedestrian improvements that provide access to an eligible public transportation facility and meet the needs of the elderly and individuals with disabilities can receive funding.

New Freedom Program (5217)

Federal Transit Administration

The New Freedom grant program funds projects that help Americans with disabilities participate in the work force and in society. Lack of adequate transportation is a primary barrier to work for individuals with disabilities.

www.fta.dot.gov/grants/13093_3549.html

Fixed Guideway Capital Investment Grants

Federal Transit Administration

This grant provides funding for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors and covers the cost (at 90%) of bicycle racks, bicycle shelters and bicycle equipment.

<https://www.transit.dot.gov/funding/grants/grant-programs/fixed-guideway-modernization-5309-b2>

Metropolitan & Statewide Planning and Nonmetropolitan Transportation Planning (FTA)

Federal Transit Administration

This grant provides funding for multimodal transportation planning in metropolitan areas and states. Plans should be cooperative, continuous, and comprehensive and result in long-range plans and short-range prioritized programs. Plans can and should incorporate bicycle and pedestrian facilities.

www.transit.dot.gov/funding/grants/metropolitan-statewide-planning-and-nonmetropolitan-transportation-planning-5303-5304

Urbanized Area Formula Program

Federal Transit Administration

This program provides grants to Urbanized Areas (UZA) for public transportation capital, planning, job access and reverse commute projects, as well as operating expenses in certain circumstances. These funds constitute a core investment in the enhancement and revitalization of public transportation systems in the nation's urbanized areas, which depend on public transportation to improve mobility and reduce congestion. Bicycle and pedestrian routes to transit, bike racks, shelters and equipment for public transportation vehicles can be funded.

Mobility on Demand Sandbox Program

Federal Transit Administration (FTA), Office of Research, Demonstration, and Innovation

This program provides funding for new service options in combination with available technologies that allow for greater individual mobility.

www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program

ADDITIONAL FEDERAL FUNDING OPPORTUNITIES INCLUDE:

Community Services Block Grant Program (CSBG)

Department of Health and Human Services

The Community Services Block Grant provides funds to alleviate the causes and conditions of poverty in communities and includes transportation projects. Administered by the Department of Health and Human Services, funding is allocated to states who then make it available to local communities. Funded projects have included: commercial district streetscape improvements; sidewalk improvements; safe routes to school; and neighborhood-based bicycling and walking facilities that improve local transportation options or help revitalize neighborhoods.

www.acf.hhs.gov/programs/ocs/programs/csbg/about

Sustainable Communities Regional Planning Grants and the Partnership for Sustainable Communities

Department of Housing and Urban Development (HUD)

This grant program supports locally-led collaborative efforts that bring together diverse interests to determine how best to target housing, economic and workforce development, and infrastructure investments to create more jobs and regional economic activity. The program places a priority on investing in partnerships, including nontraditional partnerships (e.g., arts and culture, recreation, public health, food systems, regional planning agencies and public education entities), with a focus on six livable principles, the first of which is "1. Providing more transportation choices: Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health." The program is a key initiative of the Partnership for Sustainable Communities, in which HUD works with the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to coordinate and leverage programs and investments.

http://portal.hud.gov/hudportal/HUD?src=/program_offices/economic_resilience/sustainable_communities_regional_planning_grants

www.sustainablecommunities.gov/partnership-resources

Foundations and Innovative Sources for Pedestrian and Bicycle Facilities

Several foundations provide funding that support walking and bicycling and there are many innovative means of funding programs as well.

People for Bikes Grant

People for Bikes Grants support bicycle infrastructure projects and advocacy initiatives that make it easier and safer for all people to ride. Most grant funds are awarded towards infrastructure projects such as bike paths, lanes, trails, and bridges, and end-of-trip facilities such as bike racks, bike parking, and bike storage.

www.peopleforbikes.org/pages/community-grants

Rockefeller Foundation Grants

The Rockefeller Foundation works to spread the benefits of globalization to more people in more places around the world. Funding inquiries must fit within four core issue areas: Advance Health, Revalue Ecosystems, Secure Livelihoods & Transform Cities. Within the Transform Cities issue is a focus on pushing the U.S. over the tipping point toward transportation planning and infrastructure policy that serves the needs of 21st century America.

www.rockefellerfoundation.org

Surdna Foundation

Through Surdna's Sustainable Transportation Networks & Equitable Development Patterns program, funds are available for clean, affordable, equitable, high-quality and efficient transportation and land use development that better connects critical services, jobs, schools, housing and other regional destinations.

www.surdna.org/what-we-fund/sustainable-environments/sustainable-transportation-networks-equitable-development-patterns.html

Bike Shop Sponsorships

Trail and bicycle programs have a positive effect on the economy. Many of those who benefit would like to give back. Bike shops are often willing to donate a portion of their proceeds towards community events or the completion of a particular project.

Crowdfunding

Crowdfunding focuses on raising money for projects through many small donations, typically via the internet. Websites, such as gofundme.com, ioby.com and indiegogo.com, allow fundraising campaigns to be easily established. In 2014, Memphis raised \$70,000 in this way to build a separated bicycle lane. In 2015, Denver launched a crowdfunding campaign focused on corporate donors for the planning and design of bicycle facilities.

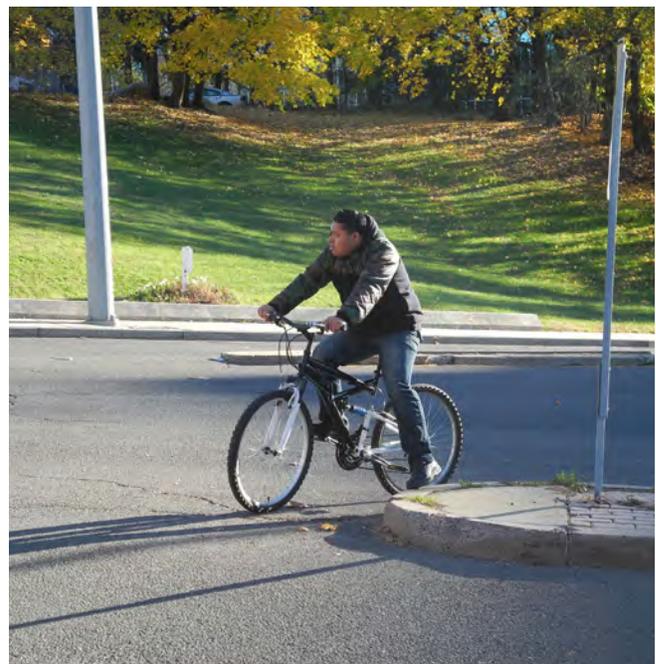
Specialty License Plates

States, such as North Carolina, have offered special license plates with proceeds funding specialized projects such as trail development and construction.

Workplace Giving

Workplace giving programs let employees donate to the charities they care about, primarily through payroll deductions, often contributing a few dollars per paycheck. Once a year the donor decides which issues and organizations are most important to them and contributes accordingly. Donations through workplace giving enables organizations to spend less time and money fundraising and more time working toward their goals. EarthShare is an example non-profit which coordinates campaigns focused on the environment. The Combined Federal Campaign (CFC) is another example program, which focuses on federal and military donors.

www.earthshare.org



Funding for Trails

Trail-focused funding at the federal-level is available from two primary sources listed below.

Recreational Trails Program (RTP)

The RTP provides funds to States to develop and maintain trails and trail-related facilities. Projects can include: planning and design; land acquisition; maintenance and the purchase of maintenance equipment; and educational programming. Although under the FAST Act the program has been consolidated into the Surface Transportation Block Grant Set-Aside, each state administers it independently with funding set at 2009 levels. In Connecticut, the Department of Energy and Environment administers the fund.

http://www.ct.gov/deep/cwp/view.asp?a=2707&q=513740&deepNav_GID=1650

www.fhwa.dot.gov/environment/recreational_trails

Land and Water Conservation Fund (LWCF)

The Land and Water Conservation Fund was established by Congress in 1964 to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities for all Americans. The fund, administered at the state-level, provides matching grants for the acquisition and development of public outdoor recreation areas and facilities. This program could be used to develop trails along the waterfront and waterways of Stamford. Additional information and state-level contact information can be found here:

Connecticut LWCF Contact: Deputy Commissioner
Department of Environmental Protection
79 Elm Street, 3rd floor; Hartford, CT 06106-5127
Tel: 860-424-3005

www.nps.gov/subjects/lwcf/stateside.htm

The Conservation Fund

In addition to federal funding, The Conservation Fund provides loans for land acquisition to support the creation of bicycle and pedestrian facilities. Their loan program offers flexible financing as well as sustained and expert technical assistance to organizations aiming to protect key properties in their communities which could be used for property acquisition for trails in Stamford.

conservationfund.org/what-we-do/land-conservation-loans

Funding for Placemaking

Numerous grants are also available for placemaking such as the establishment of gateways, adding art to curb extensions, installing pocket parks or developing artistic bicycle racks in Stamford.

ArtPlace National Creative Placemaking Fund

This program provides funding for projects that work with artists and arts organizations to help build stronger, healthier communities. The project should focus on a neighborhood or other geographic community and seek to work on a community challenge related to transportation, public safety, economic development, education/youth, environment/energy, agriculture/food, health, housing, immigration, or workforce development.

www.artplaceamerica.org/blog/national-creative-placemaking-fund-accepting-project-proposals

National Association of Realtors (NAR) Placemaking Grants and Smart Growth Grants

The NAR's Placemaking Initiative encourages REALTOR® associations and their members, to engage in Placemaking in their communities. Two programs are available: Placemaking Grant: to fund "lighter quicker cheaper" projects that improve a neighborhood with small, inexpensive, incremental placemaking projects which will help to make the neighborhood a better place to live, work and play; and, the Smart Growth Action Grant: for larger Placemaking activities, such as Better Block and Main Street, which support land-use related activities.

www.realtoractioncenter.com/for-associations/smartgrowth/placemaking

Stamford Board of Realtors Association: stamfordrealtors.org

Southwest Airlines Heart of the Community Program

Launched in 2014 with lead partner, Project for Public Spaces, the Heart of the Community grants provide financial and technical assistance to local community partners who seek to bring new life to their public spaces through collaboration. The program funds activities focused on place-making in a downtown core. Funded projects focus on physical and programmatic improvements to publicly accessible outdoor space that can be completed within one year of award.

www.pps.org/heart-of-the-community

National Endowment for the Arts - Our Town Program

The Our Town grant program supports creative placemaking projects that help transform communities into lively, beautiful, and resilient places. Support is available through two programs: the Arts Engagement, Cultural Planning, and Design Projects. These projects require a partnership between a nonprofit organization and a local government entity, with one of the partners being a cultural organization; and, the Projects that Build Knowledge About Creative Placemaking program. These projects are available to arts and design service organizations, and industry, policy, or university organizations that provide technical assistance to those doing place-based work.

www.arts.gov/grants-organizations/our-town/introduction

Kresge Foundation

The Kresge Foundation provides grants to nonprofit organizations and government agencies seeking financial assistance for projects that contribute to improving health at the community level. The goal of these grants is to create a comprehensive system that improves health outcomes, promotes health equity, reduces per-capita health costs, remove barriers to health and offers the greatest promise for adoption on a larger scale.

<http://kresge.org/programs/health/accelerating-community-centered-approaches-health>

Local Initiatives Support Collaborative (LISC) Creative Placemaking

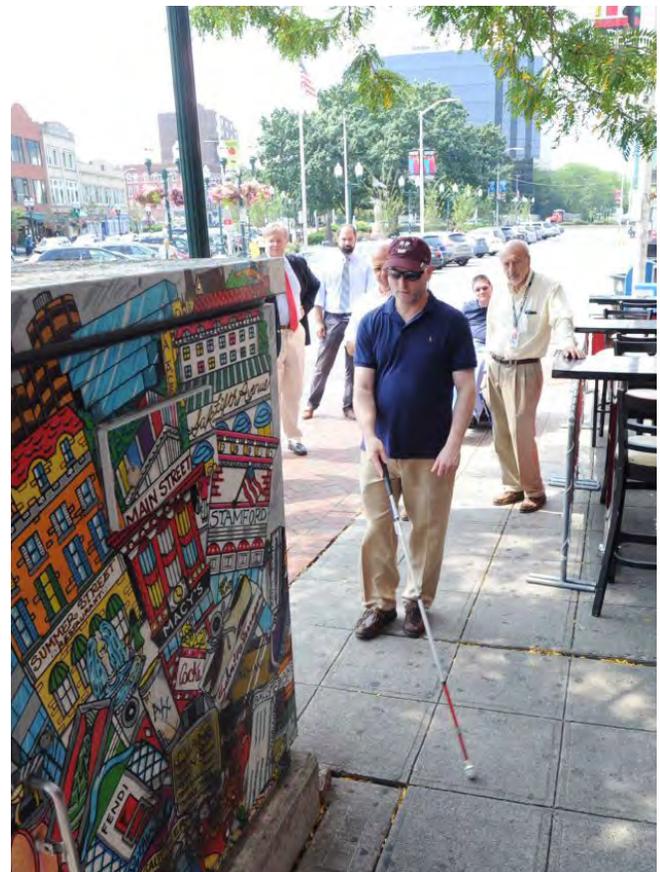
LISC provides financing for creative placemaking projects through loans, grants and equity investments. Additionally, technical assistance for local community groups to integrate the arts and culture into their revitalization activities and research and learning opportunities for community groups and funders to understand and support more enduring, equitable placemaking programs are available.

www.lisc.org/our-initiatives/economic-development/creative-placemaking

IOBY Crowdsourcing for Community Projects

IOBY helps neighbors grow and implement great ideas one block at a time. Their crowd-resourcing platform connects leaders with funding to make neighborhoods safer, greener, more livable and more fun by proving a web platform that gives everyone the ability to organize all kinds of capital—cash, social networks, in-kind donations, volunteer time, advocacy—from within the neighborhood.

www.ioby.org





SHARE
THE
ROAD

CHAPTER

10

Maintaining the System

Bicycle and Pedestrian Facility Maintenance

Overview

Maintaining bicycle and pedestrian facilities year-round in Stamford is critical to ensuring those facilities are accessible, safe, and functional. As Stamford develops additional bicycle facilities and expands existing pedestrian facilities, it will become increasingly important to proactively plan for maintenance. This includes equipment, material and staffing costs for routine maintenance as well as addressing emergency repairs. This section provides guidance on year-round maintenance for bicycle and pedestrian facilities, including sidewalks, crosswalks, curb ramps, trails/shared use paths, bicycle lanes and bicycle racks. This section is divided into two sub-sections:

- All-Season Maintenance
- Winter Maintenance

All-season maintenance covers topics such as general maintenance, pavement preservation and repair, pavement markings, and signage. Winter maintenance outlines best practices for maintaining bicycle and pedestrian facilities in the winter, including snow and ice removal, pre- and post-winter storm treatments, and winter maintenance programs.

All-Season Maintenance

General Maintenance

General maintenance includes on-going upkeep such as sweeping, vegetation management, signage and bike rack repair. Sweeping of bicycle and pedestrian facilities should be done on a routine basis, at least once in the spring and once in the fall, to clear bikeways and walkways of sand, leaves, or other debris. Special sweeping equipment, such as brooms attached to utility vehicles, can be purchased if needed.

Vegetation Management

Vegetation management includes the maintenance of grass, trees, shrubs, bushes, and other organic material.



Vegetation management is typically performed on an ongoing, as-needed basis. These tasks can be based on complaints from the public, or municipal staff can perform routine inspections to identify problem areas.

Signage

Signs along bike and pedestrian facilities also require maintenance, as they can become accidentally damaged, vandalized, or worn through natural aging. To mitigate graffiti vandalism, signs can be treated with an anti-graffiti coating that makes it easier to remove common forms of graffiti such as spray paint and marker pens. Signs that are replaced due to aging or accidental damage should be replaced on an as-needed basis, which varies based on sign type and level of damage.

Bicycle Racks

Bicycle racks may become worn through natural aging or damaged due to unexpected events. Depending on the severity of the damage, the racks may be able to be repaired. However, racks that are seriously damaged will

require removal and replacement. It is recommended that Stamford assume a small portion of the bike rack installation budget will be spent on replacing existing racks that have been damaged.

Abandoned Bicycles

Bicycles are also sometimes abandoned at racks. It is recommended that Stamford establish protocols for removing abandoned bikes and, ideally, donating them to organizations that can repair the bikes and find a new owner for them. Typically, abandoned removal programs include policies that state the length of time a bicycle can remain at one location in public space (whether a bicycle rack, fence, etc.); notification labels that are attached to bicycles stating the bicycle will be removed in a specific number of days; and a crew, typically public works staff, that removes labeled bicycles and drops them off at a donation point.



Bicycle rack at the Stamford Transit Station which includes abandoned bicycles.

Pavement Preservation and Repair

All types of bikeways and walkways will become damaged, worn, lifted, or cracked over time, and pavement preservation methods and repairs can help increase the lifespan of those facilities and delay the need for resurfacing or reconstruction. Just as importantly, many repairs will have an immediate impact on the safety of pedestrians and bicyclists by reducing current hazards.

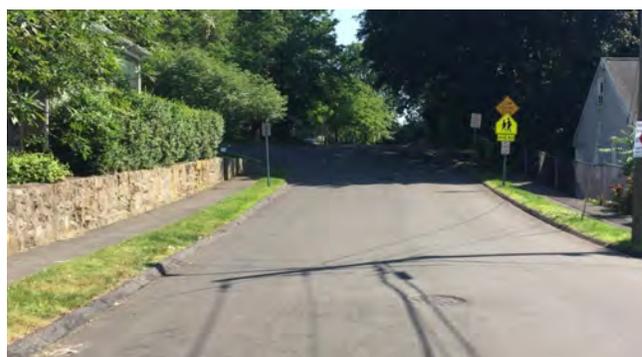
Sidewalks

Sidewalks are the most common pedestrian facility needing on-going maintenance attention. Ignoring repairs will often result in tripping hazards for pedestrians as well creating problems for snow and ice removal because of the uneven pavements. Sidewalks in Stamford are primarily concrete with some brick and asphalt south of the Merritt Parkway and narrow asphalt sidewalks or no sidewalks north of the Merritt Parkway.



Concrete residential sidewalk in Stamford in need of repair.

Abandoned bicycles could be donated to Northeast Community Cycles or the DOMUS Trafigura Work & Learn Center. Northeast Community Cycles is a nonprofit dedicated to providing refurbished bicycles free of charge to underprivileged people in the county and the DOMUS Trafigura Work & Learn Center teaches bicycle repair as part of their employment skills training program.



Four-foot asphalt sidewalks with 2.5-foot grass buffer on Oscar Street behind Stark Elementary School in Stamford.

Concrete sidewalks offer a long, serviceable life, but are prone to upheaving. Short-term repair measures used for concrete sidewalks include patching, grinding (or horizontal cutting), and wedges to temporarily address uneven sidewalk blocks. Mudjacking can be used and involves lifting the pavements back to their original position. Grinding and horizontal cutting methods are becoming more common when upheaved sidewalk pieces are showing minor vertical displacements. This works best when the displacement is even across the problem edge of the sidewalk.

Often, replacing sidewalk sections are the best fix and offers a longer-term solution. According to the FHWA *Guide for Maintaining Pedestrian Facilities for Enhanced Safety* replacing a sidewalk section is considered corrective maintenance since the underlying problem for the failure is normally addressed. Replacing just a small concrete sidewalk segment or panel (commonly 5 x 5-feet) is not always practical since an alignment problem often occurs at the joint of a sidewalk involving two or three sidewalk segments (10 to 15 feet). It is recommended that Stamford replace longer stretches of sidewalks as part of street reconstruction projects and that sidewalk and curb ramp replacement take place as part of roadways resurfacing projects as well.

In addition, the City should initiate a revolving inspection and sidewalk and curb ramp repair program. It is recommended that Stamford be split into four to six geographic areas and focus on one area per year. Splitting the city into sections allows annual resources to be targeted while administering a much more manageable program. This could be overseen by the Stamford Highways Department, which oversees sidewalk maintenance or the Engineering Department which used to have inspectors.

Asphalt Pathways

Since Stamford also has significant stretches of asphalt sidewalk and paths, a maintenance plan for pavement preservation is appropriate for the City to have in place. These include patching, microsurfacing, crack sealing, and seal coating. Patching is done to asphalt surfaces in much the same way as it is done for concrete surfaces. Sealcoating is a spray coating that is applied to dry, clean pavement to coat the surface and enhance the pavement's durability. Microsurfacing consists of the application of a mixture of water, asphalt emulsion, aggregate, and chemical additives to an existing asphalt pavement surface. In some cases, it might even be possible for a thin asphalt overlay to be used to preserve the pavement. This is becoming somewhat

more common for maintaining shared-use paths.

Some agencies use pavement condition indexes and rating systems to better understand the condition of walkways, trails and bikeways. These systems guide various types of pavement preservation and indicate when repair work is needed. Generally, agencies contract with private companies to initially evaluate the entire walkway, trail or roadway network.



Pavement Markings

Pavement markings include striping, hatching, and other markings that delineate bicycle and pedestrian facilities from other uses and provide wayfinding at key locations. Different types of pavement markings include paint, recessed inlay markings, and thermoplastic marking tape. Inlay markings are slightly recessed into the pavement so they do not get scraped off or worn down by snow plows, a common problem for surface markings. However, the downside to inlay markings is that they are less visible when it is raining at night because the retro-reflective beads that are used in the markings are diffused by the water, therefore lights do not reflect off them as well.

Thermoplastic marking tape is generally more durable than paint, but can cost up to 5-8 times the price per foot as paint. Paint is the cheapest form of pavement marking, but it gets worn off easily and therefore requires more frequent reapplication. Bike lane surface markings near intersections generally wear out faster than in the middle of a block, because vehicles are turning over the markings more often, or they stop on the markings and then accelerate and spin their tires on the marking. Recessed inlay markings are less prone to that problem because they have less surface exposure to car tires.



» Flex-Posts



» Parking Stops/Raised Oblong Bumps



» Planter Boxes



» Rigid Bollards

Maintenance of Vertical Elements in Separated Bike Lanes

Separated Bike Lanes are being successfully installed throughout the U.S. They often use simple pavement markings to create a wider separation between a bike lane and moving vehicles/door zone of parked cars supplemented with a vertical barrier. The vertical barrier can include parked cars placed between the bike lane and moving vehicular traffic. Additional barriers include flex-posts and boxes filled with flowering plants which can be maintained by adjacent businesses and residents. Sweeping and snow-removal can be easily accommodated if the facility is designed to accommodate the width of Stamford's street-sweeping/snow-plowing vehicles or if barriers are used seasonally. Barrier types, their cost and durability are listed below.

Barrier Type	Cost	Durability
Flex-Posts	Removable, inexpensive	Low durability; may require frequent replacement
Parking Stops/Raised Oblong Bumps	Removable, low visibility (due to lack of vertical element)	Durable, does not require frequent replacement if well-adhered to the roadway
Planter Boxes	Removable, inflexible vertical element may be problematic on high-speed roadways	Requires significant maintenance (of plantings)
Rigid Bollards	Usually permanent, relatively expensive, inflexible vertical element may be problematic on high-speed roadways	Durable, does not require frequent replacement

Winter Maintenance

Snow and Ice Clearing

Clearing or removing snow and ice from bicycle and pedestrian facilities promotes year-round use of those facilities and reduces hazardous conditions.

Snow Clearance of Bikeways

Snow clearance from on-street bikeways is typically performed at the same time as snow clearance from drive lanes. Typically, maintaining a high level of service for clearing on-street bike lanes is challenging as bike lanes are often placed adjacent to parked cars. However, as Stamford has a no on-street parking policy during snow emergencies (with cars being allowed to park free in City garages), plowing bicycle facilities is simpler.

Winter maintenance of off-street bikeways or shared-use paths should be prioritized to promote year-round use. Some communities have developed winter maintenance priority networks, which give bicyclists clear expectations of when they can expect bikeways to be clear of snow and ice. The City of Madison has a priority network of off-street trails, which includes paths that are primary bicycle commuter routes. This trail network is a top priority for snow and ice control in the winter, with the goal of having all priority trails cleared by 7 am on weekdays to facilitate bicyclists commuting to work or school.



Snow Clearance of Sidewalks

The most common practice in the U.S. is to require adjacent property owners to clear all snow and ice from sidewalks that abut their property within a given period, which generally varies from 4-24 hours after a snowfall has stopped. Stamford requires (Municode Sec. 214-16)

snow and ice to be removed by abutting owners within 12 hours with citations or verbal warnings given by the police or a citations officer from the Citizens Services Department based on citizen complaints. Many Cities often have inspectors that examine sidewalk snow clearing on a regular basis with a focus on areas receiving frequent complaints from the public. The level of enforcement varies significantly from City to City; some Cities very rarely issue citations, while other Cities issue citations for non-compliance the day after a snow event.

It is recommended that sidewalk snow and ice clearing practices in Stamford include the following:

1. The City should establish an education, inspection/reporting system to ensure property owners are aware of their responsibility and clear all snow and ice from sidewalks and/or spread sand or salt to mitigate slippery surfaces.
2. A City-led sidewalk snow and ice clearance program, which utilizes either City staff or hired contractors, should occur on public properties and at high-demand locations such as in downtown and near transit stations. Policies are usually put in place to address snow clearance once snowfall depth reaches a certain threshold.

City-led sidewalk snow and ice clearance practices are becoming more common as Cities understand the importance of and take responsibility for the safety and comfort of people walking and bicycling. Cities may hesitate to take on this responsibility as they are fearful of the perceived cost of implementation (labor and equipment), the number of sidewalks within a city's boundary, and the perception that City-led efforts are less timely than property-owner led efforts. However, City-led sidewalk clearing practices can be very effective in clearing snow from sidewalks in a timely, consistent, and quality manner. These practices are beneficial to those who cannot physically clear sidewalks abutting their properties and may cover winter sidewalk maintenance adjacent to abandoned properties a well. It is also particularly important in high-demand locations such as downtown Stamford and transit-center access routes. In areas such as downtown Stamford, it is suggested that Stamford require property owners to pay for the service through special fees.

Intersection corners are a particularly challenging issue for pedestrians in the winter because of the snow windrows (i.e. piles of snow) that are often left behind from snow plows and which restrict access and visibility. Having clear intersection corners and curb ramps is very important for all

pedestrians, but especially those with mobility limitations because traveling through a snow windrow is often impossible for a person in a wheelchair or a person using a mobility device. Clearing snow and ice from intersection corners and crosswalks is generally the responsibility of the City, although due to the number of corners this effort can take several days. Directing snow plows to deposit windrows either prior to or after an intersection (behind the crosswalk) rather than at the intersection corner addresses these issues. Implementing this practice in Stamford will save time and money in the long run, will enhance the environment for walking and will address potential liability issues of having curb ramps inaccessible long after snow has melted citywide.



Snow windrow restricting access from crosswalk to sidewalk at corner of Summer and Main Streets in Stamford.

Pre- and Post- Winter Storm Treatments

Treating bikeways and pedestrian facilities with salt, salt brine, or sand can help reduce icy and slippery conditions and make these facilities safer and more accessible. Most agencies treat bike and pedestrian facilities after a winter weather event with salt or sand, or a mixture of both, but increasingly agencies are using salt brine as a pre-treatment before a winter storm hits. Salt brine is a solution of water and diluted salt that is used to pre-treat roadways and other facilities about 48 hours before a winter weather event is anticipated. After the brine solution is sprayed on the pavement it prevents ice and snow from bonding with the pavement. It is recommended that Stamford adopt this policy.

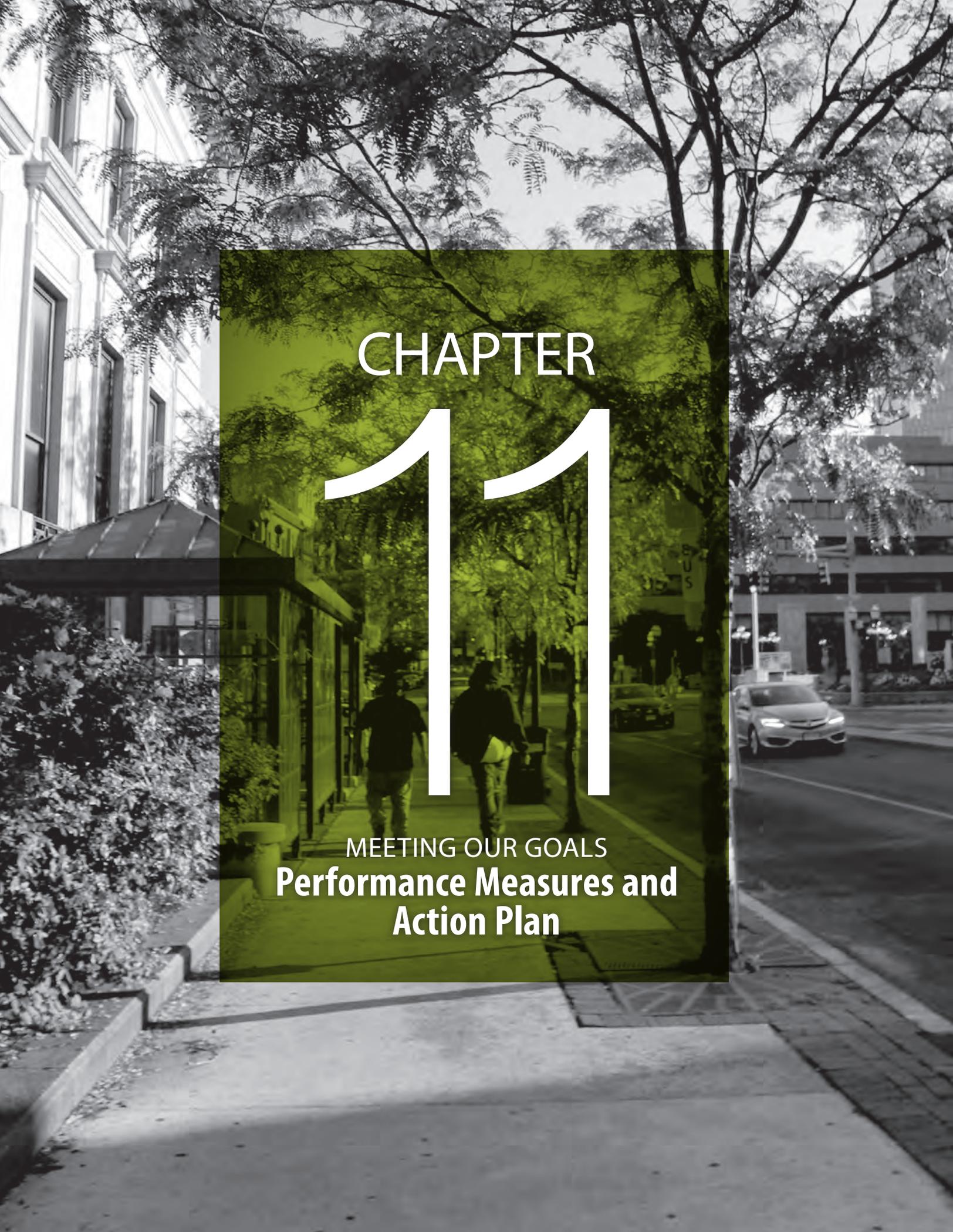
Salt is widely regarded as the most effective and low-cost solution for de-icing, however there are serious environmental concerns. Salt melts away with snow and ice and can make its way into water bodies, which pollutes the water and has many negative impacts. For that reason, many communities try to limit their salt use as much as they can, as well as encourage residents to limit their salt use on residential sidewalks. Moreover, salt is not effective if it's 15 degrees or colder, so using sand to treat icy sidewalks is advisable in those conditions. Due to the numerous waterways and waterbodies in Stamford, this use of salt is not recommended.

Winter Maintenance Programs

Programs relating to winter maintenance include public education, communication, reporting, and volunteer programs. Programs such as these in Stamford can complement winter maintenance practices and policies by providing information to residents or visitors about winter maintenance updates. Municipalities often have mechanisms for reporting snow and ice issues, as well as tools for tracking the progress of maintenance crews. Some cities have programs that provide free sand or salt to residents, which encourages property owners to eliminate slippery, hazardous sidewalks by providing them an inexpensive way to maintain sidewalks in the winter.

Snow and ice clearing is challenging for the elderly or physically disabled, so some communities organize and develop volunteer programs focused on those in need with shoveling their sidewalks. These programs, sometimes called "snow angels" or "snow buddies", mobilize volunteers who are physically able to shovel and scrape ice, which can help keep seniors safe from falls during the winter and would be an excellent program to implement in Stamford.





CHAPTER

11

MEETING OUR GOALS
**Performance Measures and
Action Plan**

This chapter documents the key metrics and action items that will guide the City's implementation of the Stamford Bicycle and Pedestrian Plan.

On the following pages, you will find:

Page 11.3 » Goals and Outcomes

Page 11.3 » Strategies and Outputs

Page 11.4 » Action Items

**Page 11.4 » Build support for changes to
citywide infrastructure**

Page 11.5 » Commit

Performance Measures and Implementation

The City of Stamford has many of the attributes necessary to become more walkable and bike-friendly. The City has a well-defined downtown with a growing residential population, several thriving local commercial and retail centers that are quite walkable, major rail and transit connections, and a wide variety of land uses from rapidly developing urban waterfronts to bucolic rural roads – all at a scale that makes walking and bicycling a practical alternative to driving, especially non-work trips.

Residents of the City want to see a more walkable and bike-friendly community so that they can enjoy the health, fitness, financial and environmental benefits of active transportation and recreation. Higher levels of walking and biking would help the City achieve its broader goals of economic vitality, neighborhood quality of life, mobility and access for all, downtown growth, maintaining community character, and sustainability.

The Bicycle and Pedestrian Master Plan has identified many of the reasons why Stamford today has quite low levels of bicycling and walking, as well as a perception of being an unsafe and/or uncomfortable place to walk or ride a bike. The plan has also identified a range of potential changes to the roadway network and pedestrian infrastructure – both site-specific and system-wide – that would improve this situation. Some of the most important potential changes have been identified in prior planning documents and await full implementation.

Many peer communities, including similar-sized cities in Connecticut, enjoy higher levels of active transportation because they have proactively, over time, implemented a complete streets approach to roadway design. More recently, an increasing number of US cities are adopting Vision Zero policies and embracing a “safe system” approach to traffic safety that places an emphasis on improving the safety of the most vulnerable road users – people on foot and on bicycle.

Goals and Outcomes

Today, approximately 5% of journeys to work in the City of Stamford are made by foot (4.7%) or bike (0.2%), an additional 15% are made by public transportation. The potential and desire exists to at least double the number of trips made by foot and bike within a decade.

The plan recommends the City establish a goal of eliminating traffic fatalities and serious injuries on city streets by 2030.

Strategies and Outputs

Several Connecticut communities have effectively used the Bicycle Friendly Community program administered by the League of American Bicyclists, and the Walk Friendly Community program offered by the UNC Highway Safety Research Center, as a roadmap and inspiration for guiding their actions in these areas. Stamford is not currently ranked as part of either program – the plan recommends establishing a milestone of becoming a Silver Level community in both programs by 2025. Both programs embrace a holistic approach and provide a range of tools and resources to help communities plan, implement and measure proven strategies and actions.

Similarly, the plan recommends the City consider adopting a Vision Zero policy and action plan, and joining the Vision Zero Network of cities pursuing this goal. This approach has proven effective in concentrating the limited resources of communities on data-driven, multi-disciplinary, transparent, and action-oriented implementation strategies.



Action Items

The plan also highlights a small number of specific action items that will help transform the City of Stamford in to a walkable, bike-friendly community and achieve the goals and objectives described above.

1. Build the bikeway network. The plan identifies an extensive list of minor and major network projects to create a citywide bike system to serve riders of all ages and abilities. Key strategies for building the network include:
 - integrating bikeway projects into ongoing street resurfacing and reconstruction projects
 - ensuring new developments routinely include bikeway infrastructure to complete or connect to sections of the bike network
 - working with the community to identify and support high-priority, stand-alone bicycle network projects
2. Fully implement the 2011 Traffic Calming Plan. Many of the detailed neighborhood plans developed as part of

this plan complement the goals and objectives of the Bicycle and Pedestrian Master Plan, in particular the emphasis on reducing vehicle speeds and improving the perception of safety for people on foot and bike.

Build support for changes to citywide infrastructure

The design solutions offered as part of the plan are proven, evidence-based countermeasures drawn from national, state and local manuals and best practices. However, many of the techniques are relatively new to Stamford residents, and people are naturally wary of change.

The plan recommends introducing people to new street designs by promoting a series of photo-visualizations that show potential and proposed changes to streets, and by pilot-testing specific projects to enable residents to see first-hand how proposed changes will operate on the ground.

As part of the plan, a series of photo-visualizations were completed and are provided in Appendix 1.



In addition to the photo-visualizations, several pilot projects were installed on a temporary basis in the Spring/Summer of 2018. A report on the lessons learned from these pilots is provided in Appendix 2.

Commit

Stamford has the potential, the need, and the desire to be a much more walkable and bike-friendly community. The strategies and actions necessary to make that transformation happen are technically well-known, tried and tested – and they are cost-effective investments with long-term benefits to the health and economic vitality of the community. The final piece of the puzzle is the firm commitment of the City and support of the community to make the change happen.

The City of Stamford will be a place where people of all ages and abilities can safely and conveniently walk and bicycle to access all destinations.



APPENDIX



The Appendix contains a series of “before” and “after” images depicting potential changes that could be made to implement the Stamford Bicycle and Pedestrian Plan.

Page A.3 » Implementation of Complete Streets Pilot Projects

Page A.10 » Parklet Pilot Project Details

Page A.17 » Photo-visualizations

Implementation of Complete Streets Pilot Projects

The project team worked with the City and WestCOG to prepare conceptual designs for five Complete Streets projects that demonstrate key elements of this Plan's findings and recommendations. The intent of these Complete Streets pilots is to construct low-cost, small scale traffic-calming and pedestrian and bicycle accommodations to demonstrate the effectiveness of multimodal solutions that will make Stamford's streets safer, more walkable, and more bikable.

All of these projects can be implemented using Tactical Urbanism. Tactical Urbanism- also known as street prototyping, quick builds, pop-up projects, and pilots—demonstrates what can be done when public space is designed with people in mind. Projects can range from parklets to pop-up plazas to demonstrations of a protected bike lane, and everything in between. Tactical Urbanism projects help community members see how a proposed design or idea will work in person.

Using low-cost materials (such as paint; flexible, reflective plastic posts or traffic lane delineators; traffic cones; planters with flowers or shrubs; hay bales; and moveable furniture), cities or neighborhoods create unique traffic-calming and pedestrian safety features as a demonstration project. The installations typically have vivid colors and artistic designs that reflect local history and culture.

Tactical Urbanism is a great way to brainstorm ideas for making our streets better places, and because these projects are temporary, they allow for easy changes and tweaks. Successful and popular tactical urbanism projects may become prime candidates for permanent, capital build-outs once monies become available in the future.

For more information on Tactical Urbanism visit www.tacticalurbanismguide.com

Following are descriptions of each recommended pilot project including proposed location, project objective, options considered, design factors and recommended solution.

Wherever possible, temporary installations should reflect current standards for signs, signals, and markings as well as for roadway design and layout. In some cases, this may not be possible due to existing conditions and practical considerations. Engineering judgement should be exercised to ensure the temporary installation is as safe as possible for all users.

Magee Avenue Bicycle Lanes

Location

The full length of Magee Avenue between Jefferson Street and Shippan Avenue, about one-half mile in length.

Project Objective

Bike lanes increase safety by separating cyclists from passing motorists. Motorists become more aware of the presence of cyclists and moderate their driving behavior accordingly. Visibility of bike lanes can be enhanced with colored pavement, and is typically used at potential areas of conflict between bicyclists and vehicles, such as intersections and driveways. Buffers can be added to bicycle lanes to further separate them from the adjacent travel lane and/or parking lane –providing improved safety.

Magee Avenue represents one opportunity, among few opportunities, for bicycle access between Shippan Point and downtown. The implementation of bicycle lanes on Magee Avenue using temporary, tactical urbanism-style bike lanes may be an effective way for property owners and various users of the street to experiment with the incorporation of bicycle travel on this key street without the expenditure of



Figure 1 - Low-cost bike lane in Montreal using flexible lane delineators. Photo credit: Dave Sousa.

higher cost, permanent bike lane construction. “Pop-up” bike lanes would allow the City to test the acceptability of bicycle travel on Magee Avenue; should the bike lanes meet with widespread disfavor or if the bike lanes result in undue impacts to businesses, the City would remove the lanes and consider other bicycle pathways.

Options Considered

Previous plans to provide bike lanes on parallel Shippan Avenue were opposed by residents. Magee is an industrial corridor but has adequate width to accommodate safe, bi-directional bike lanes. The team considered standard bike lanes, a one-way cycle track on both sides of street, and a two-way cycle track (bi-directional on one side of street). Due to business concentration and parking demand, options that require elimination of parking on both sides of the street were removed from consideration.

Design Factors

- Connection between new bike lanes in Magee and existing bike lanes in Jefferson will be tricky due to multiple travel and turn lanes, awkward road geometry and proximity of other intersections on Jefferson.
- Many businesses rely upon on-street parking, especially businesses on the east side of street between Jefferson and Hanover.
- Several businesses (especially auto dealerships) use Magee to park large trucks and offload product.
- Frontage of Magee with City’s wastewater plant has no need for on-street parking.

Recommended Solution

The Magee Street corridor provides a direct route between Shippan Point and downtown. Magee Avenue has an average cross section of ~40’, but only has one northbound and one southbound lane of traffic. On-street parking is provided on both sides of the street for some of its length.

Currently, between Jefferson and Hanover, there is unstriped on-street parking on both sides of the street. This parking is utilized by local business owners and is presumably used by employees and by customers. The auto dealerships also use the parking lane on the street to park large trucks and offload product.

In the proposed layout, a 5’ one-way bike lane would be added to each side of the street; bicyclists would travel in the same direction as vehicular traffic throughout the corridor. To provide needed width for safe bicycle lanes, on street parking on the west side of the street would be eliminated and a portion of on-street parking on the

east side of the street would also be eliminated. Between Shippan Avenue and the West Beach Park Entrance, there would be no lost on-street parking along the west side of the street due to the addition of the bike lanes, as no parking currently exists there.

Bell Street Bus Loading Zone

Location

The main entrance of the YMCA on Bell Street in Downtown Stamford.

Project Objective

Bell Street is a local roadway in Stamford that runs parallel to Route 1 between Atlantic Street and Washington Boulevard. Bell Street provides access to the Stamford YMCA, the Bell Street Parking Garage, and a surface parking lot. Currently, school buses and shuttles that provide transportation to and from the YMCA create obstructions for people on the sidewalk. By adjusting the location of some of the parking spaces, a bus loading area can be added to the street in front of the YMCA entrance, while minimizing the loss of parking spaces.

Options Considered

The team considered a painted bus loading zone along the curb, but determined that bulb-outs or sidewalk extensions on either side of the loading zone would better manage traffic and improve pedestrian safety.

Design Factors

- Currently, there is on-street parking on both sides of the street, although no on-street parking is provided in front of the city’s parking garage. This project will



Figure 2 - View of proposed bus loading zone on Bell Street and crosswalk enhancements at the intersection of Bell Street and Washington Boulevard.

require the removal of some on-street parking on the north side of the street close to its intersection with Washington Boulevard. Some of this loss of parking can be offset by delineating new parking spaces on the street in front of the parking garage.

- The Americans with Disabilities Act (ADA) requires a passenger loading zone of 5' x 8' on sidewalk at bus loading zone (where 8' is perpendicular to curb); there is not adequate space currently for this required passenger area.

Recommended Solution

Construct a temporary bus loading area at the YMCA entrance on the north side of Bell Street and a bulb-out or curb extensions on the north side of Bell Street. The bus loading area and the bulb-out would be delineated using colorful paint, flexible, reflectorized traffic delineators, and planters. The painted area would extend the pedestrian zone into the street to define the bus-loading area.

Paint, flexible traffic delineators and planters would define the bump-outs positioned at each of the loading zone to provide a safe transition. In addition, the City should install temporary curb ramps to provide ADA access from the existing sidewalk into this extended pedestrian zone.

Bell Street has an average cross section or curb-to-curb width of 33'. Parking spaces would be located on both the northern and southern side of the roadway on the eastern portion of the street, near the entrance to the Bell Street Parking Garage. These parking spaces require the travel way in that area to be 18', which means the street would function under a "yield street" condition.

To the west of the temporary bus loading area, three ride-hailing spaces are proposed for idling taxis, Uber, Lyft or

other ride sharing vehicles. West of the ride-hailing spaces, another bump-out would be constructed with paint, plastic cones, and planters is proposed to protect pedestrians crossing Bell Street.

To reduce loss of on-street parking, new spaces would need to be created on the north side of the street (in front of the public parking garage); this would reduce width available for two-way travel to 18 feet—which is justifiable as a "yield street" condition. A Yield Street is a local, two-way street with one narrow, shared travel lane (14' to 18' wide); the narrow width forces vehicles traveling in opposing directions to slow down before passing each other, or requires one vehicle to yield to the other.

School Zone Pedestrian Safety Improvements

Location

Trailblazers Academy and the Domus School at 83 Lockwood Avenue, Stamford.

Project Objective

The DOMUS Trailblazers School, located between Lockwood and Maple avenues, has recently been experiencing issues with high speeds and motorists' failure to yield to pedestrians in crosswalks, especially during school hours. This pilot project proposes to slow traffic and improve yielding behavior at the crosswalks and intersections near the entrances and drop-off points for the school.

Options Considered

The team considered traffic calming interventions on all four streets surrounding the Domus School, including a combination of the following devices or traffic-calming tools:

- **CROSSWALKS:** New crosswalks that are well-illuminated greatly improve pedestrian safety. The crosswalks might incorporate colorful, reflectorized paint to make them more visible to motorists. Warning signs are placed in advance of crosswalks to notify motorists of their presence.
- **SPEED HUMPS:** A speed hump is a 3- to 4-inch high raised area of pavement used to reduce vehicle speeds on low-volume streets by creating vertical deflection. They are generally 12 to 14 feet long, parabolic in shape and span the width of the road. Warning signs and pavement markings placed in advance of humps notify motorists of their presence. Temporary speed humps made of rubber can be used to test the effectiveness of the devices on a street prior to constructing a permanent version.



Figure 3 - View of a pop-up bump out at the intersection of Bell Street and Washington Boulevard.



Figure 4 - Mid-block crosswalk with temporary bump-outs, Beth, VT. Photo credit: Dave Sousa.

- RECTANGULAR RAPID FLASH BEACONS (RRFBs):** RRFBs are active warning beacons that have user-actuated (push button) flashing lights that supplement warning signs at un-signalized intersections or mid-block crosswalks. The beacons use an irregular flash pattern of strobe lights similar to emergency flashers on police vehicles. These devices alert drivers to yield where bicyclists and pedestrians have the right-of-way to cross a road. The rapid flashing provides increased visibility of pedestrians. The lights can be powered by solar photocells, allowing them to be installed with minimal construction effort.



Figure 5 - Moveable rubber speed hump. Photo credit: trafficlogix.com

- BUMP-OUTS:** Bump-outs or curb extensions extend the curb-line into the traveled way or on-street parking lanes to reduce crosswalk distances. Pedestrians in bump-outs are more visible to motorists because bump-outs improve sight lines between pedestrians and motorists (by bringing pedestrians out and away from parked vehicles). Also, because the waiting pedestrians are positioned in a protected zone in the street, crossing distances are reduced, thereby reducing the time or distance where

pedestrians are exposed to vehicular traffic. Bump-outs can be enlarged to provide amenities such as bicycle parking, bus shelters, benches and even sidewalk cafes. Temporary bump-out can be created without the need to build new curbs by delineating the expanded pedestrian zone with paint, plastic cones, flexible, reflectorized plastic posts or traffic lane delineators and/or colorful planters.

Design Factors

- Interventions should be focused on Lockwood Ave. (where the main entrance to the school is) and on William Street.
- Interventions are less necessary on Franklin Street because there are no pedestrian access points to the school from Franklin.
- Interventions on Maple Avenue would be problematic because of heavy truck traffic and narrow travel lanes.

Recommended Solution

- At existing crosswalk at main entrance to the school on Lockwood Avenue, just opposite Lillian Street; this T' intersection is not "stop" controlled:
 - Provide temporary bump-out on the east side of the existing mid-block crosswalk on Lockwood and on both sides of the existing crosswalk at Lillian. The bump-outs would displace some of the on-street parking spaces. This parking displacement would greatly improve the sight lines between pedestrians waiting to cross and approaching motorists. Pedestrian crossing distances would also be reduced.
 - Provide two temporary speed humps, one on each side of the mid-block crosswalk on Lockwood Avenue. Warning signs and pavement markings would be provided in advance of the speed humps to notify motorists of their presence.



Figure 6 - Temporary bump-out in New York City consisting of paint and aggregate epoxied to existing street pavement. Photo credit: Dave Sousa

- Delineate a pick-up and drop-off zone on both sides of Lockwood Avenue using a painted gore.
 - Provide new rectangular rapid flashing beacons (RRFBs) at the existing mid-block crosswalk at Lockwood (near Lillian).
2. Intersection of Lockwood Avenue and William Street:
- Provide three temporary bump-outs at existing crosswalks. The bump-outs would displace some of the on-street parking spaces. This parking displacement would greatly improve the sight lines between pedestrians waiting to cross and approaching motorists. Pedestrian crossing distances would also be reduced.
3. New Crossing on William Street:
- Provide a new crosswalk at a mid-block crossing point on William Street, just opposite Lee Street. This T' intersection is not "stop" controlled.
 - Provide temporary bump-outs at the new crosswalk. The bump-outs would be installed on both sides of the street and would displace some of the on-street parking spaces. This parking displacement would greatly improve the sight line between pedestrians waiting to cross and approaching motorists. Pedestrian crossing distances would also be reduced.
 - Provide new rectangular rapid flashing beacons (RRFBs) at the new crosswalk on William at Lee Street. The RRFBs would include pedestrian crossing signs.



Figure 7 - Temporary Bump-outs consisting of paint, rubber curbs and flexible lane delineator posts. Photo credit: Road Safe Traffic Systems

4. Intersection of Maple Avenue and William Street:
- Provide four temporary bump-outs at existing crosswalks. The bump-outs would be installed on both sides of William Street and would displace some of the on-street parking spaces. This parking displacement would greatly improve the sight

lines between pedestrians waiting to cross and approaching motorists. Pedestrian crossing distances would also be reduced.

- No bump-outs are proposed along Maple Avenue due to its high percentage of heavy truck traffic and narrow travel lanes.
5. Intersection of Maple Avenue and Frank Street:
- Provide new crosswalk across Maple Avenue.
6. Intersection of Lockwood Avenue and Frank Street:
- Provide new crosswalk across Lockwood Avenue.
 - Provide two temporary bump-outs at existing crosswalks. The bump-outs would be installed on both sides of Lockwood Avenue and would displace some of the on-street parking spaces. This parking displacement would greatly improve the sight lines between pedestrians waiting to cross and approaching motorists. Pedestrian crossing distances would also be reduced.

Bike Parking at the South End Branch Library

Location

The South End Branch Library on Henry Street and Woodland Street.

Project Objective

The library has no bike parking at the Henry Street entrance. The presence of formal, well-located bicycle parking facilities at schools and other key community facilities, makes bicycle travel more convenient and encourages people to use bicycles for routine trips, especially trips within a neighborhood. Bicycle parking needs to be visible, accessible, and conveniently located. Racks should support both wheels and enable the user to lock the frame and wheels of the bike with a cable or U-shaped lock. Long-term parking areas should be well lit, and visible.



Figure 8 -De facto bump-out in Reykjavik, Iceland consisting of planters with flowers. Photo credit: Dave Sousa

Options Considered

The design team considered a temporary bike corral in the street or more conventional bike parking on the grass edge adjacent to the school entrance walk.

Design Factors

Bicycle parking created in a bump-out on the street (i.e. in an on-street parking space) is deemed a more appropriate solution because the location of bike parking in the street would provide vertical elements (and an unusual feature) close to travel lanes which would help reduce travel speeds on the street. It would also be more visible which would bring attention to the City’s interest in accommodating bicycle travel and improve the security of bicycle parking (i.e. reduce risk of bike thefts).

Recommended Solution

Create temporary bicycle corral in an existing on-street parking space. The corral would have movable bike rack and would be defined at either end with traffic cones or planters that would buffer the bicycle parking from vehicle parking. The proposed bike corral could include colorful “super graphics” to make it more visible to motorists.

Downtown Parklet Demonstration

Location

A pilot parklet was constructed on PARK(ing) Day on September 21, 2018 at Lorca Coffee Bar, 125 Bedford Street, Downtown Stamford.

The parklet was built in two parallel parking spaces in front of Lorca Coffee using low cost but high impact materials to help bring positive attention to parklets for the City of



Figure 9 - On-Street Bike Corral, Ann Arbor, MI. Photo credit: Dave Sousa

Stamford. The design included landscaping with a sod base, flowers, small movable bistro tables, a standing bar which can be used from the sidewalk and parklet, a banner with a City slogan to include height and draw attention to the parklet, and cornhole as an interactive and fun game to help bring people into the parklet.

PARK(ing) Day is an annual event where citizens and community organizations temporarily transform on-street parking spaces into public spaces such as cafes, sitting areas or small game spaces. These spaces are known as “parklets.” PARK(ing) Day began in 2005 and has become a global movement. Some cities have established guidelines to allow private companies or community-based groups to create parklets on a more permanent basis.

Project Objective

Called “the next big tiny idea in urban planning,” a pop-up parklet is a temporary use of an on-street parking space for seating, sidewalk cafes or bicycle parking.

Parklets are intended to be publicly accessible and are typically privately constructed and maintained. They not only attract people and animate the street but also serve to calm traffic since motorists instinctively slow down to observe activity in parklets.

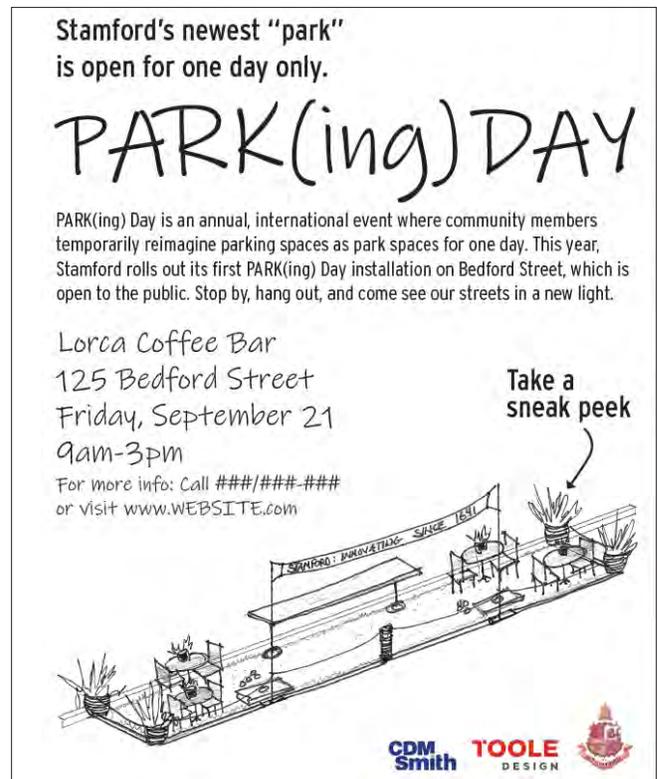


Figure 10 - Flyer created for Stamford’s PARK(ing) Day 2018.

Options Considered

Parklets are designed and built for a wide variety of functions using highly creative and artistic elements. Examples of innovative and successful parklets can be found at:

“Parklet DC,” Washington DC at: <http://parkletdc.org/>

“People Street,” LADOT at:
http://peoplest.lacity.org/app_material/PeopleSt_ParkletKOP.pdf

“Pavement to Parks,” San Francisco County and City at:
<http://pavementtoparks.sfplanning.org/parklets>

Design Factors

- Parklets should be designed to be easily removed, both to remove fixed vertical features during winter months to facilitate snow removal operations, and to allow their removal in the event the City needs to trench under them for utility work or to repave the street
- Design parameters for parklets include:
 - 18” – 24” setback from adjacent parking spaces and the travel way.
 - Provision of a buffer/barrier (such as traffic cones, wheel stops, reflectorized planters, fencing or bollards) between the parklet and adjacent parking spaces and between the parklet and the travel way.



Figure 11 - Parklet created for Stamford’s PARK(ing) Day in 2018.

Recommended Solution

The City should publish guidelines that enable the creation of parklets throughout Downtown Stamford and in other commercial districts in the City and that regulate the construction and maintenance of parklets by private entities. Draft parklet regulations titled “Stamford Downtown Parklet Program Guidelines” are provided in the appendix.



Figure 12 - Parklet on Broad Street in New Haven. Photo credit: David Sousa

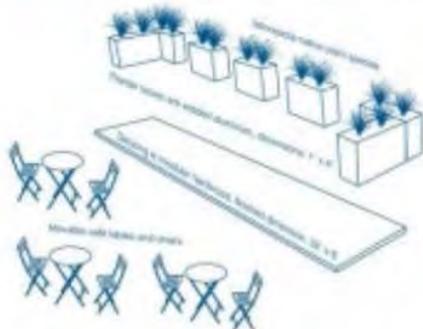
Parklet Pilot Project Details

Stamford Downtown Parklet Program Guidelines

Stamford Downtown Parklet Program Guidelines



A Collaboration between the
City of Stamford, Stamford
Downtown and Downtown
Eateries



Stamford Downtown Parklet Program Guidelines

PURPOSE & PARTICIPATION

The Stamford Downtown Special Services District (Stamford Downtown) and City of Stamford have created the [Bedford Street Parklet Program](#) to increase seating capacity for participating eateries while enhancing the vibrancy of the street-level environment within Downtown.

The [Parklet Program](#) permits participating eateries to utilize adjoining parking spaces as dining areas.

Participating eateries must meet and adhere to the attached guidelines formulated by a partnership between Stamford Downtown and the City of Stamford's Bureau of Transportation, Traffic & Parking



This is the
Place!
stamford-downtown.com

STEPS OF APPROVAL

Contact Michael Moore or Marisa Rogo of Stamford Downtown

Via phone (203) 348-5285

OR

In person at Five Landmark Square, Suite 110, Stamford, CT 06901

Sign liability release waiver, sign guidelines, and provide proof of insurance

Visit the City of Stamford's Department of Cashiering & Permitting and rent a meter bag for the duration of the program

Frank Fedeli - Customer Service Supervisor

(203) 977-4979

Stamford Government Center

888 Washington Boulevard, Ground Floor

Stamford, CT 06901

Buy bistro furniture and barriers

Install and begin!



This is the
Place!
stamford-downtown.com

GENERAL GUIDELINES

A Parklet must:

- Utilize a single parking space.
- Have a highly visible, secure barrier.
- Rented parking space, furniture, and bollards must be kept clean and graffiti free.
- Only logos and advertising representing the participating eatery are permitted.
- Parklet space may sit on top of critical infrastructure and utilities, it needs to be designed for easy removal.
- No smoking within the Parklet is permissible.
- Liquor consumption is permissible only in conformance with State and local requirements for outdoor dining
- The Parklet Program will operate in the warmer months of the year only, March 15th - Nov. 30th.
- Not all requests will be accepted due to safety and parking demands.

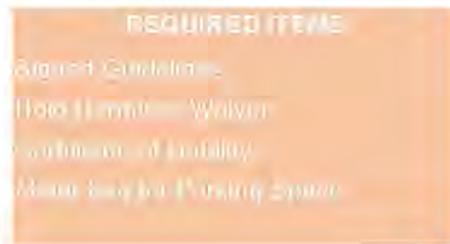
Parklets – located next to an active driveway – must be set back two feet from the outside edge of the driveway.

Parklet space must be located at least one parking space away from an intersection or street corner.

The City and Stamford Downtown proposal may reject a parklet if it conflicts with future program streetscape improvements.

Parklets are not permitted in bus zones or adjacent to a bus zone.

Participating eateries are responsible for all construction, maintenance, rental, permitting, and parking-related costs.



SIGNATURE

I/We hereby certify that I/We have fully read and fully understand the Parklet program guidelines, and hereby accept the terms of this Agreement. I/We understand that I/We must comply with these rules/regulations at all times or be subject to enforcement actions by the Parklet Committee.

I/We hereby indemnify, and hold harmless, the Stamford Downtown Special Services District and City of Stamford against any damage to property purchased for the associated Parklet or liability associated with the Parklet.

PRINT NAME

SIGNATURE

DATE

BUSINESS NAME AND ADDRESS

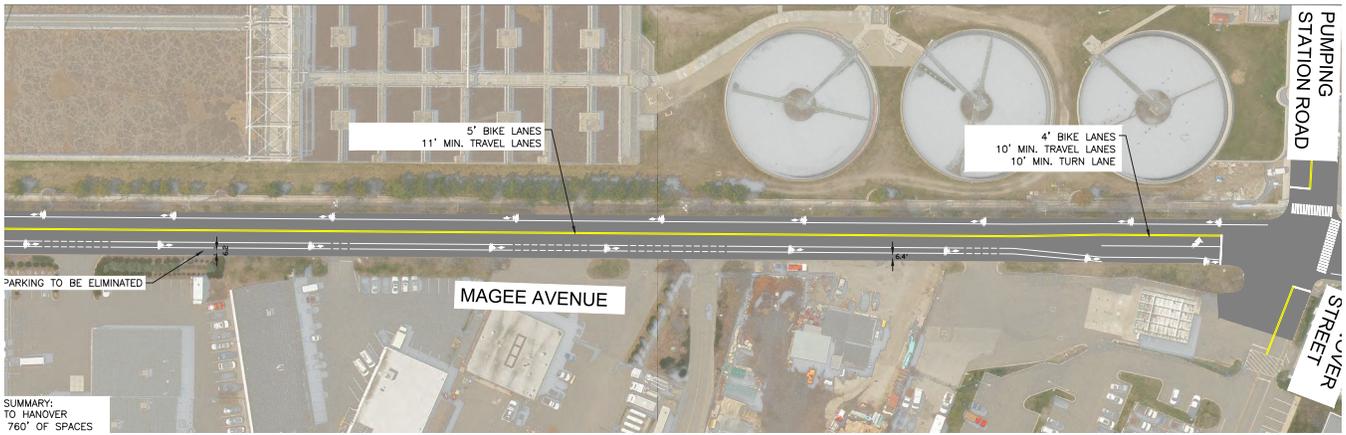
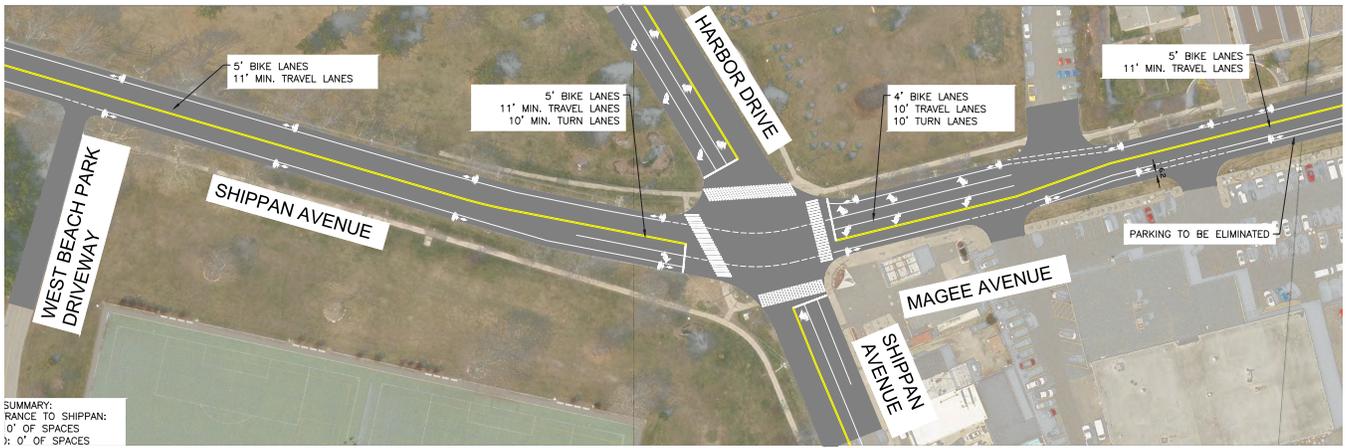
EMAIL

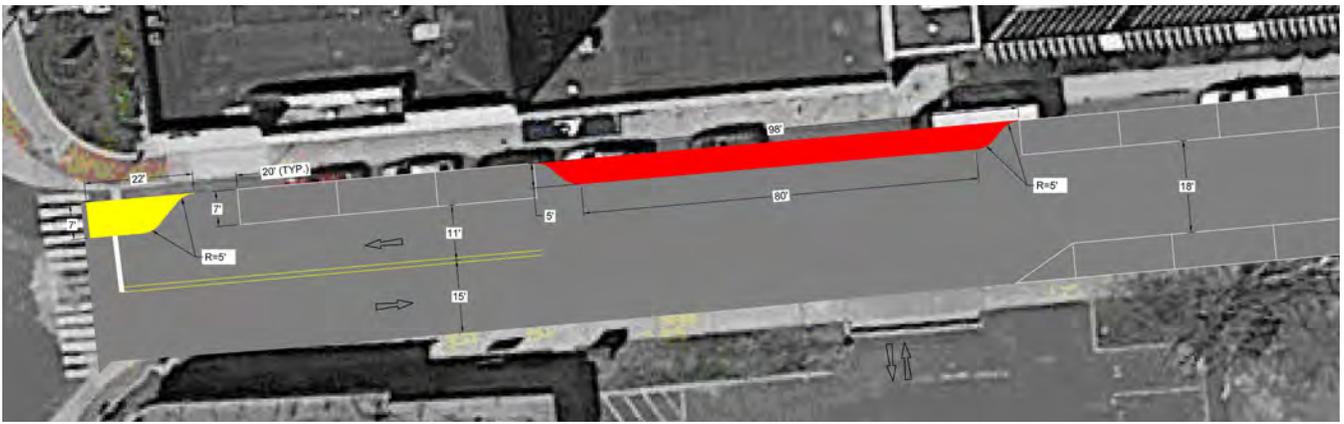
PHONE #

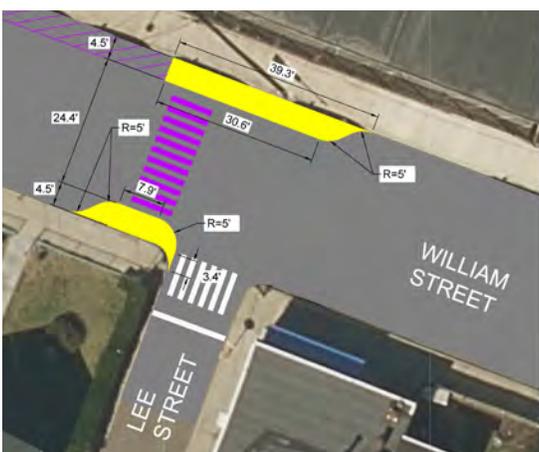
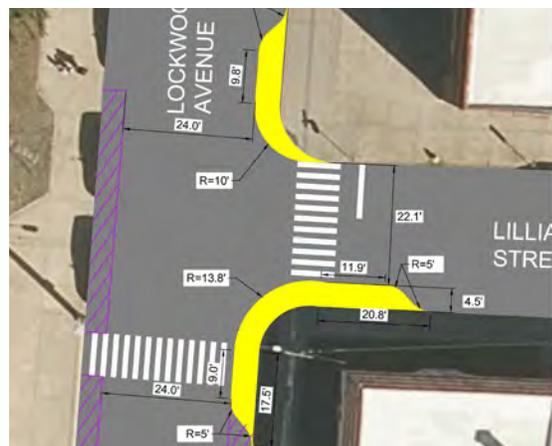
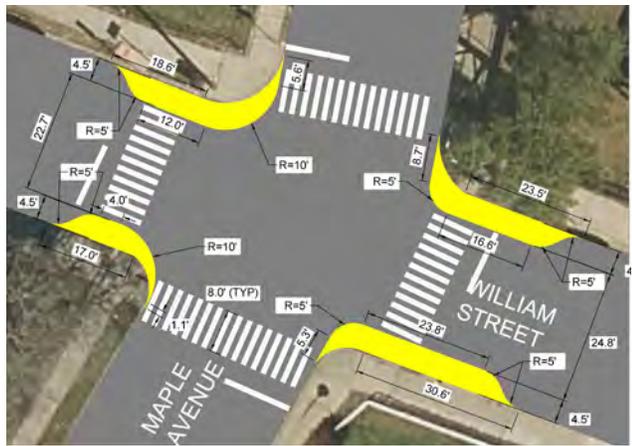
PROGRAM MANAGER:
Stamford Downtown Special Services District
5 Landmark Sq., Suite 110
Stamford, CT 06901
(203) 348-6285

PROGRAM PARTNER:
City of Stamford
Transportation, Traffic, and Parking Department
888 Washington Blvd., 7th Floor
Stamford, CT 06901









Disclaimer

These sketches were developed as examples of tactical urbanism or temporary pop-up projects only, they are not engineered long term solutions. These sketches were completed based on aerial images (not field surveys) and are intended to provide the City of Stamford with guidance only for the implementation of tactical urbanism or temporary pop-up projects.

Capacity analysis, clearance calculations, and sight lines were not reviewed at any of the project intersections. Additionally, vehicles turning templates were not applied to the proposed designs.

The bike lane on Magee Street is placed on either side of the roadway to utilize the existing on-street parking area and to minimize the shift in the roadway centerline, however the northbound approach at the signalized intersection of Magee Street with Pumping Station Road/Hanover Street and both the northbound and southbound approaches at the signalized intersection of Magee Street at Shippan Avenue/Harbor Drive have slight shifts in the centerline that may impact sightlines of turning vehicles. When the bike lanes are laid out, the City should conduct a visual assessment in the field to determine degree of potential impacts and/or remedial corrections.

Final intersection layouts would depend upon the feasibility of restriping the entire intersection to meet AASHTO recommendations or introducing the temporary installation into the existing striping pattern (as shown) or ending the bike lanes prior to the intersections and using bike symbols in the through lanes. Each leg of each intersection should be assessed separately to determine the most appropriate installation.

Photo-visualizations

Bedford Street



Before



After

Intersection of Broad Street and Atlantic Street



Before



After

Broad Street at East Main Street and Tresser Boulevard



Before



After

Cove Road



Before



After

Cove Road



Before



After

Davenport Street



Before



After

Eastbound Tresser Boulevard



Before

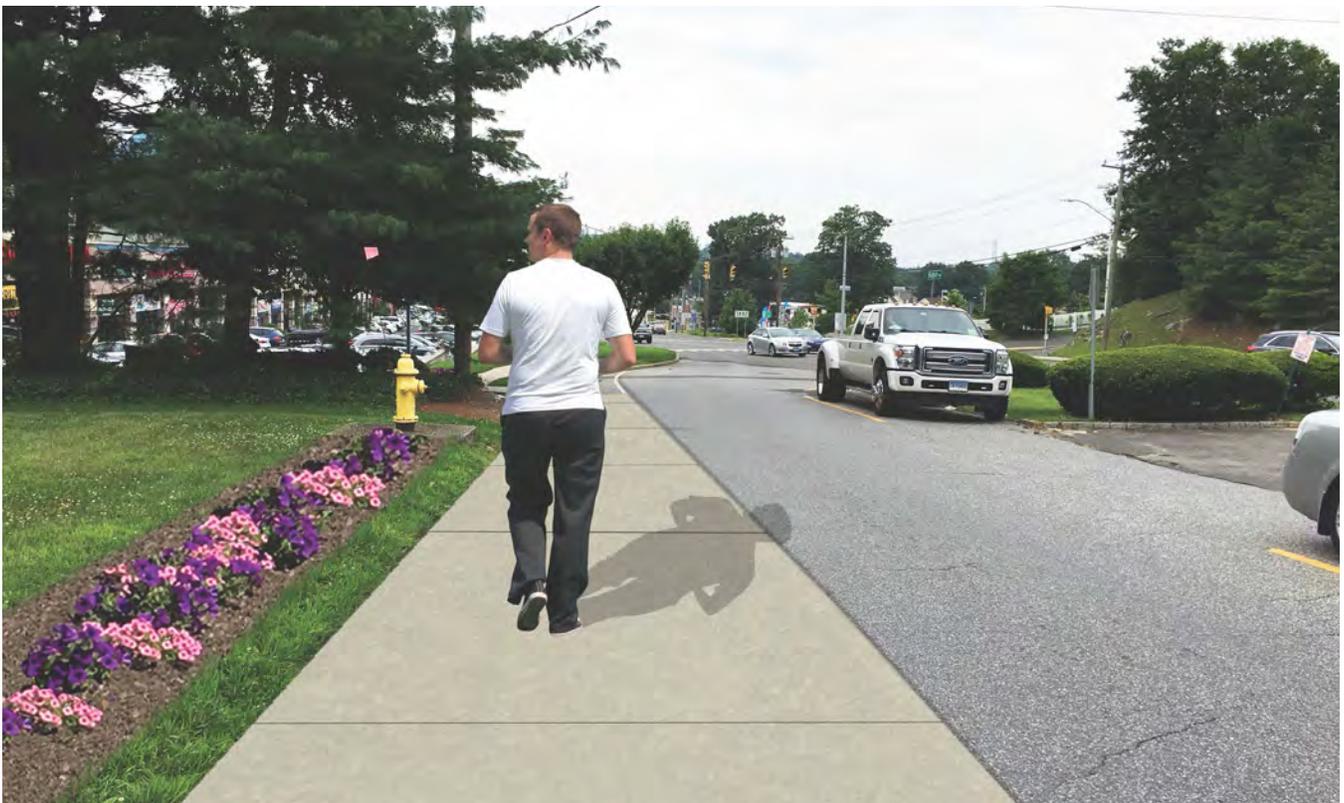


After

Halpin Avenue



Before



After

Harbor Drive



Before



After

Hope Street and Scofield Avenue



Before



After

Magee Avenue



Before



After

Intersection of Main Street and Clark Street



Before

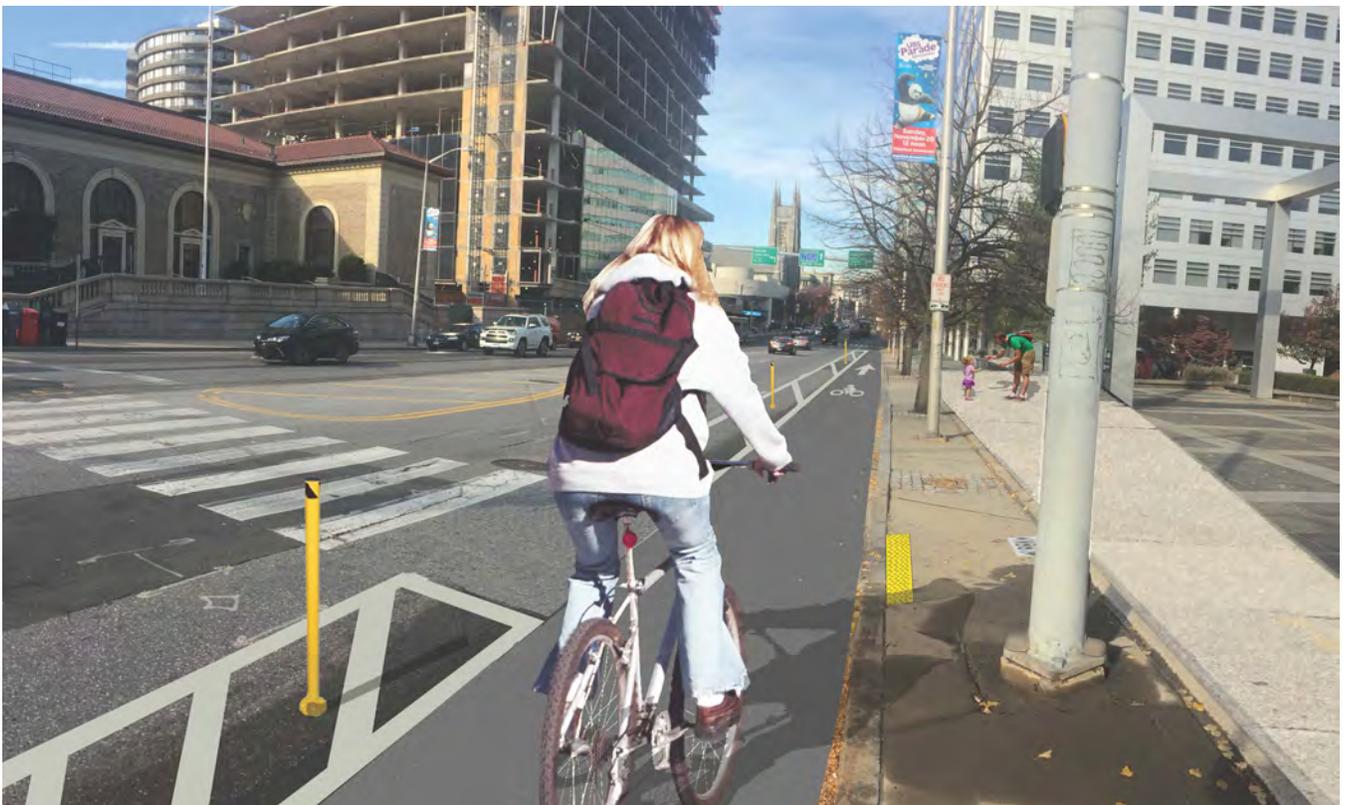


After

Northbound Atlantic Street

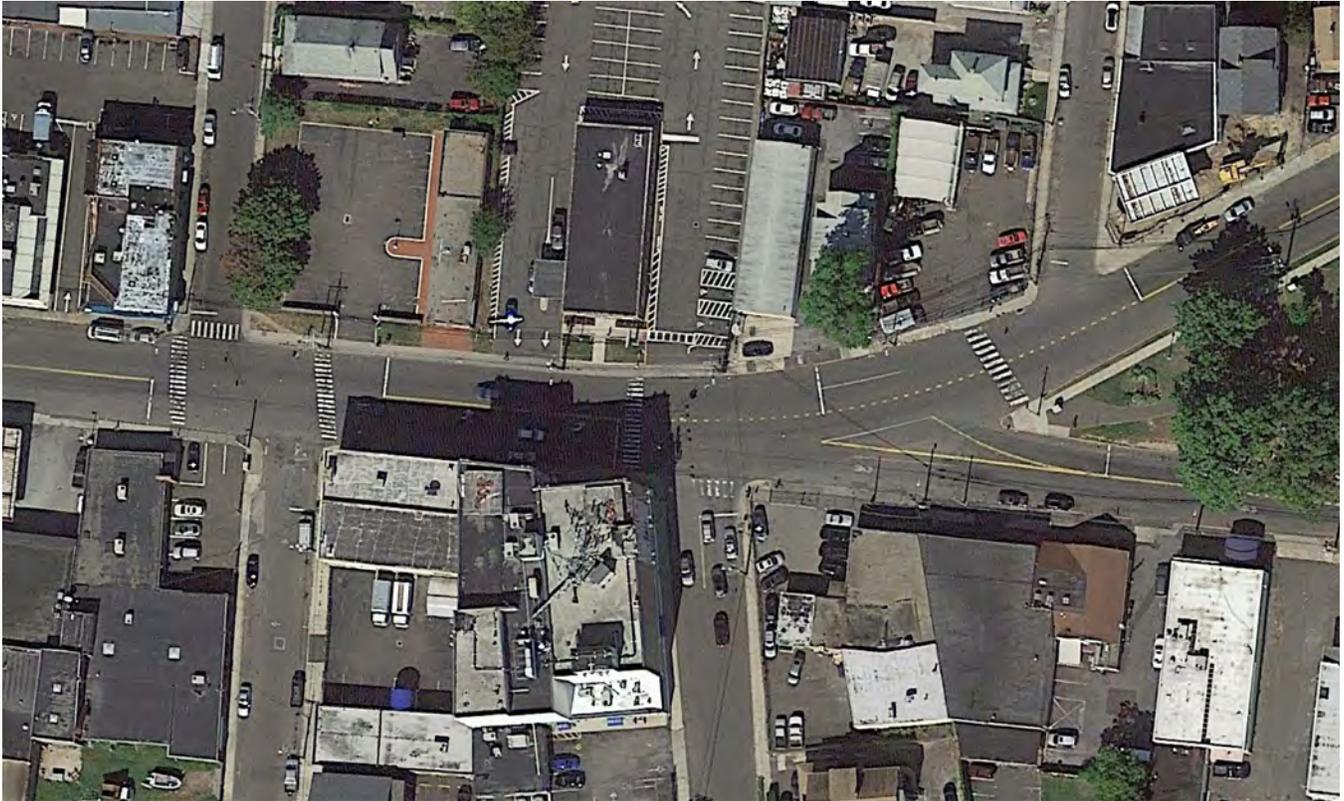


Before

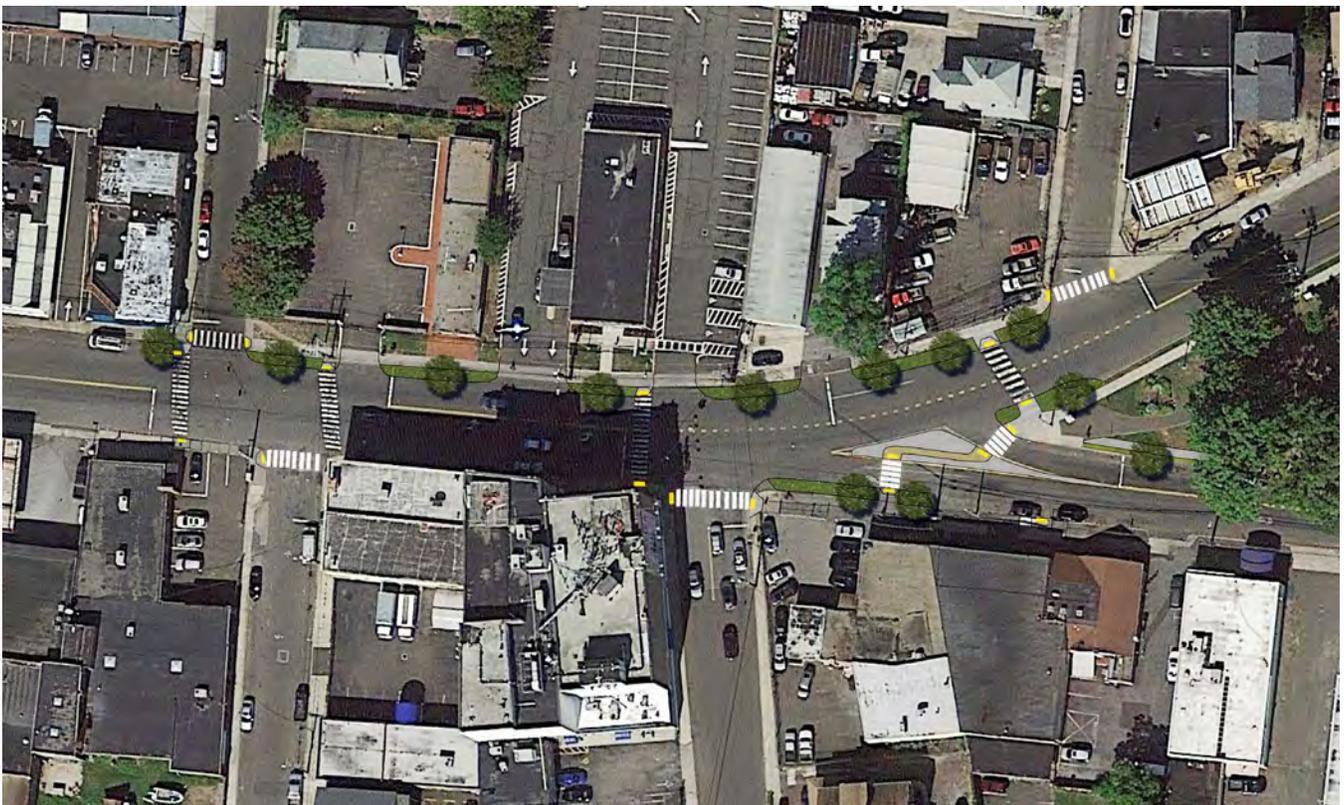


After

Intersection of Richmond Hill Avenue and West Main Street



Before



After

Selleck Street



Before



After

Intersection of Shippan Avenue and Warren Street



Before



After

Intersection of Summer Street and Main Street



Before



After

Summer Street



Before



After

West Broad Street



Before



After

Westover Road



Before



After