NORWALK PEDESTRIAN & BIKEWAY TRANSPORTATION PLAN

Recommended Improvement Plan

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Stantec

alta PLANNING + DESIGN

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Acknowledgements

This plan was produced under the leadership of Mayor Moccia, the Norwalk Common Council and Norwalk Planning and Zoning staff. Fitzgerald & Halliday Inc. of Hartford was the lead consultant in this effort with support from Alta Planning & Design and Stantec Inc.

Executive Summary

The purpose of the overall Norwalk Pedestrian and Bikeway Plan process was to make strategic recommendations for walking and bicycling in the City of Norwalk. The vision and priority walking and bicycling corridors were originally identified in data collection phase of the planning process and are described in detail in the Existing Conditions report. The Vision states:

All Norwalk residents and visitors have access to the benefits of walking and cycling. They are physically active and they and their children have learned to safely walk and bike, giving them mobility and independence. Norwalk is a community where people can walk or ride from their home to work, transit, to places for shopping and entertainment and for recreation.

Norwalk's streets are livable places that accommodate many activities. Neighborhood business districts are thriving with foot traffic from residents and visitors. A civic commitment to share the road is respected by drivers, cyclists, and pedestrians alike. Norwalk is the hub of a connected regional bicycle network that includes bike lanes, multi-use paths and greenways.

This Recommended Improvements Plan describes the process of ranking the priority corridors for analysis, analyzes improvement options for the top ranked corridors, and addresses costs, phasing, and other programs. Many of the priority corridors were divided into individual segments that were ranked separately depending on their attributes. In all, the priority corridors yielded 68 street segments that were then evaluated and ranked into one of three tiers. Tier 1 corridors were classified as such based upon meeting one or more of the following factors:

- Multiple pedestrian crashes
- Multiple bicycle crashes
- No sidewalk on either side of the roadway within ¼ mile of a school or transit center

Tier 2 corridors were classified as such based upon the following factors:

- Community generators such as retail, office, parks, schools, government
- Public support

The balance of the corridors was classified as Tier 3 corridors. Tier 3 corridors generally serve residential development.

Of the priority corridors, 18 were identified as Tier 1 priority corridors. Figure 1 (on page 8) highlights the three tiers of corridors. Tier 1 corridors are shown in red, Tier 2 corridors are shown in blue, and Tier 3 corridors are shown in green. The map on page nine provides an expanded view of the Tier 1 improvements.

Next, design concepts and implementation of design solutions were developed for all Tier 1 corridors and are included in this plan. Pedestrian and bicycle infrastructure improvements can vary considerably from a painted crosswalk to a multi-use path. New materials, methods, designs, and systems are being introduced to bicycle and pedestrian planning every year. The challenge for a city such as Norwalk is to select and implement a pallet of tools that will be safe, effective, fiscally responsible, and sustainable. The tools presented in the design concepts for each of the 18 corridors include well established components of pedestrian and bicycle infrastructure as well as systems that have been proven safe and effective in recent years. The design guide on page 46 of this report provides additional guidance on these measures. The tools recommended in this plan for improving pedestrian and bicycle facilities include:

- Marked crosswalks - guide the pedestrian to the safest crossing of the roadway and alert drivers to the expected presence of pedestrians. The "piano key" style crosswalk is recommended.
- Crosswalk signage- should be used at all crosswalks where traffic is not controlled by a traffic light or stop sign.
- Pedestrian actuated crossing signals - push buttons that pedestrians use to prompt a pedestrian crossing signal or a green light.
- Curb ramps - required by the American Disabilities Act at intersections and marked crosswalks.
- Sidewalks and footpaths - the core and most capital intensive infrastructure component of the network.
- Curb extensions - take many forms and are often referred to as bulb-outs.
- Pedestrian refuge islands - a highly effective tool for assisting pedestrians in crossing wide roadways, heavily trafficked roads, or at midblock locations.

- Sharrows - shared lane roadways that are marked by bicycle pavement markings and signed with "Share the Road" signage.
- Bicycle lanes - often found at the edge of the roadway and would otherwise appear to be a roadway shoulder.
- Bike boxes - provides bicycles with space to wait at the intersection to make a left turn or safely wait to continue straight ahead of right turning traffic.
- Bike pockets – marked bicycle lanes within the queuing area of intersections that safely guide bicyclists past right turning traffic and towards a bike box if present.
- Multi-use paths - tend to be recreational in nature, although they are sometimes used for commuting and daily trips.
- Bicycle racks - relatively inexpensive devices that can be installed on a wide sidewalk, at the edge of a sidewalk, in a plaza, at the front of a building, or even in lieu of an on-street parking space.
- Lane reductions - can create space on roadways where bicycle and pedestrian facilities often compete with automobiles for space.
- Wayfinding - typically comprised of three basic elements: maps, gateway signage, and directional signage.

The Tier 1 corridors and a brief summary of recommended improvements are listed below:

- Richards Avenue - Recommendations for improving this corridor for pedestrians and bicyclists include crosswalk improvements, sidewalk improvements, and the installation of bicycle lanes.
- Riverside Avenue - Recommendations for this corridor include crosswalk improvements, footpaths, and bicycle lanes.
- Connecticut Avenue - Improvements to the corridor are focused upon completing sidewalks and improving crosswalks in order to improve pedestrian access and safety.
- Westport Avenue - Improvements to the corridor are focused upon completing sidewalks and improving crosswalks in order to improve pedestrian access and safety.
- Main Avenue/Main Street - Completion of the sidewalk network is a recommended improvement for this corridor. Additionally, the crosswalk infrastructure on Main Avenue is lacking and completely absent at many locations.
- West Rocks Road - Improvements recommended for the corridor include marked bike lanes, share the road signage and pavement markings, wayfinding signage, and crosswalk improvements
- Linden Street - Recommended improvements for this roadway are focused upon completing the footpath network on the north side of the roadway.
- East Avenue - Improvements to this corridor are focused upon improving sidewalks and improving crosswalks in order to improve pedestrian access and safety.
- Strawberry Hill Avenue - Strawberry Hill Avenue has been the focus of Safe Routes to School planning efforts and thus has an improvement project scheduled for the intersection of Tierney Street and Strawberry Hill Avenue. The improvements at this location include a curb extension of the northwest corner, new sidewalks, new curb ramps, and new crosswalk and pavement markings. Additional improvements recommended in this plan include intersection improvements at both Westport Avenue (Rt.1) and Jennie Jenks Street.
- Sunset Hill Avenue/Tierney Street - Because Tierney Street is not suitable for bicyclists, sharrows are recommended for Beacon Street from Sunset Hill Avenue to Strawberry Hill Avenue.
- Winfield Street - Improvements for this corridor should focus on crosswalk improvements, sidewalk improvements and bicycle accommodations.
- Calf Pasture Beach Road – Recommended improvements for this roadway are focused upon bike lanes and limited sidewalk improvements.
- Rowayton Avenue - Footpath improvements should be concentrated on connecting the gap between Redbird and Woodchuck Lane and creating a connected network of footpaths south of Rowayton Station. Additionally, several crosswalk improvements are necessary.
- Highland Avenue – Recommended improvements to the corridor include bicycle lanes and sharrows as well as crosswalk improvements at Wilson Avenue.
- Flax Hill Road - Recommended improvements to the corridor include shared use lane designation (sharrows) on both sides of the roadway.
- Wilson Avenue/Martine Luther King Junior Drive - Improving this corridor for pedestrians and bicyclists requires two approaches. On Wilson Avenue a sharrow would be most effective in accommodating bicyclists while on MLK Drive, a separate facility is required to accommodate bicyclists.

In addition, several segments of the Norwalk River Valley Trail have been schematically designed and cost estimates have been produced for the proposed trail improvements as part of this planning effort. These locations of the Norwalk River Valley Trail include:

- Hendricks Avenue at St. Ann's Club
- 130 East Avenue
- 40 Cross Street
- Harbor Walk at North Water Street
- Broad Street to Grist Mill Road

The features and amenities that have been planned for the trail include an 8 - 10 foot asphalt surface, timber guardrails, chain link fence, boardwalk structures, and bridges. Projected costs for completing all segments of the Norwalk River Valley Trail would range between approximately $9.5 million to $12.5 million.

The total cost estimate for all Tier 1 improvements is approximately $4.1 million. The most substantial component of this cost estimate is sidewalk and footpath improvements with an estimated cost of approximately $1.4 million and includes four miles of new facilities. Other notable pedestrian improvements include 101 marked crosswalks, 25 pedestrian signal upgrades, 83 ADA accessible curb ramps, 5 pedestrian refuge islands, 5 curb extensions, and 6.4 miles of footpath maintenance. In addition to pedestrian facilities, 2 miles of multi-use paths have been recommended for Martin Luther King Junior Boulevard and on Grist Mill Road at a cost of $1 million.

On-street bicycle facilities recommendation costs include over 400 sharrow and bike lane pavement markings and 38 "Share the Road" and bike lane signs. These bicycle facility improvements would be accompanied by over six miles of pavement striping and re-striping. The on-street bicycle improvements component of this plan represents the lowest cost items with all on-street bicycle related improvements costing approximately $88,000.

The improvement concepts developed within this plan require a clear and strategic implementation process. It is critical that the cost of the proposed measures is balanced against the resources that are available and projected to be available within the City of Norwalk. A phasing for implementing the recommended improvements is recommended in this plan, based on the cost and cost effectiveness of improvements, complexity of improvements, requirements for additional design and engineering, number of potential users, and relevance to the broader pedestrian and bicycle network.

The strategy adopted herein includes three phases of implementation. This includes short-, mid-, and long-term improvements.

Short-term improvements (1-3 years) include:

- On-street bicycle facilities
- Crosswalk improvements including:
  - Curb ramp construction
  - Pedestrian signal upgrades
  - Curb extensions
  - Pedestrian refuge island
  - Sidewalk extensions
- Footpath maintenance
- Wayfinding signage on improved corridors
- Norwalk River Valley Trail improvements: Hendricks Avenue at St. Ann's Club

Mid-term (3-5 years) include:

- Construction of sidewalks and footpaths
- Norwalk River Valley Trail/Harbor Loop Trail improvements
- Wayfinding signage on improved corridors

Long-term improvements (6-10 years) include:

- Norwalk River Valley Trail/Harbor Loop Trail improvements
- Multi-Use paths
- Wayfinding signage on improved corridors

Beyond infrastructure improvements, improving walking and bicycling in Norwalk will also require growth in the City's walking and bicycling culture. The final chapter of this plan addresses education, walking and bicycling programs, Safe Routes to School programs, working groups, and the inclusion of walking and bicycling into the City's plans and policies. In particular, it is recommended that the City website be used to distribute additional educational materials about walking and bicycling safety. Bicycle safety is a key concern for Norwalk, and it was noted by members of the public that bicyclists could better exercise safe riding practices on the City's busy roadways.

All Norwalk residents and visitors have access to the benefits of walking and cycling. They are physically active and they and their children have learned to safely walk and bike, giving them mobility and independence. Norwalk is a community where people can walk or ride from their home to work, transit, to places for shopping and entertainment and for recreation.

Norwalk's streets are livable places that accommodate many activities. Neighborhood business districts are thriving with foot traffic from residents and visitors. A civic commitment to share the road is respected by drivers, cyclists, and pedestrians alike. Norwalk is the hub of a connected regional bicycle network that includes bike lanes, multi-use paths and greenways.

-Norwalk's Pedestrian and Bicycle Vision

The Approach

Selection of Priority Corridors

The purpose of the overall planning process was to make strategic recommendations for walking and bicycling within the City of Norwalk. The challenge of this planning effort was to make strategic recommendations for a land area of 23 square miles that is comprised of hundreds of miles of roadway. This required the identification of key corridors, each comprised of one or more streets, that were analyzed for their pedestrian and bicycle strengths, weaknesses, and potential use.

The process of identifying corridors for analysis was extensive and included: stakeholder interviews, public meetings, inventory of existing bicycle and pedestrian facilities, review of transportation facilities, review of land use and population densities, review of accident data, inventory or pedestrian generators and attractors, review of existing development and transportation plans, and direction from the Norwalk Planning Department. Priority walking and bicycling corridors were originally identified in data collection phase of the planning process and are described in greater detail in the Existing Conditions report.

The process yielded 68 street segments that were then evaluated and ranked into the priority tiers (see table at right or appendix for full data set). Many of these streets were divided into individual segments that were ranked separately depending on their attributes. Each priority corridor was classified into one of three tiers. Tier 1 corridors were classified as such based upon meeting one or more of the following factors:

- Multiple pedestrian crashes
- Multiple bicycle crashes
- No sidewalk on either side of the roadway with ¼ mile of a school or transit center

Tier 1 Corridors	
Calf Pasture Beach Road	Route 1 (Westport Avenue)
East Avenue	Route 123 (Main Street)
Flax Hill Road	Route 136 (Wilson Avenue)
Highland Avenue	Route 136 (Winfield Avenue)
Linden Street	Route 719 (Main Avenue)
Richards Avenue	Rowayton Avenue
Riverside Avenue	Strawberry Hill Avenue
Route 1 (Connecticut Avenue)	Sunset Hill Avenue/Tierney Street
Route 1 (Cross St & North Avenue)	West Rocks Road/France Street
Tier 2 Corridors	
1st Street	Park Street
2nd Street	Perry Avenue
Bayne Street	Richards Avenue
Cove Avenue	Route 1 (Westport Avenue)
Devils Garden Road	Route 1 (Cross Street)
East Avenue	Route 123 (Riverside Avenue)
Fillow Street	Route 136 (Burritt Avenue)
Flax Hill Road	Route 136 (McKinley Street)
Grandview Avenue	Route 53 (Newtown Avenue)
Gregory Boulevard	Saint Mary's Lane
Grumman Avenue	Scribner Avenue
Highland Avenue	Seaview Avenue
Maple Street	Van Buren Avenue
South Main Street	Wolfpit Avenue
Tier 3 Corridors	
Aiken Street	Redcoat Road/Lancaster Drive
Allen Road	Richards Avenue
Stuart Avenue/Cedar	Route 136 (Meadow Street)
County Street	Route 136 (Rowayton Avenue)
East Rocks Road	Route 136 (Wilson Avenue)
Fox Run Road	Route 136 (Woodward Avenue)
Hunters Lane	Scribner Avenue
Knapp Street/Oxford Street	Silvermine Avenue
Main Avenue	Ward Street
Murray Street	William Street
Ponus Avenue	Wilson Avenue

Table 1: Priority Corridors

Tier 2 corridors were classified as such based upon the following factors:

- Community generators such as retail, office, parks, schools, government
- Public support

The remaining corridors were classified as Tier 3 corridors. Tier 3 corridors generally serve residential development.

Figure 1 (at right) highlights the three tiers of corridors. Tier 1 corridors are shown in red, Tier 2 corridors are shown in blue, and Tier 3 corridors are shown in green. The map on the following page provides an expanded view of the Tier 1 improvements.

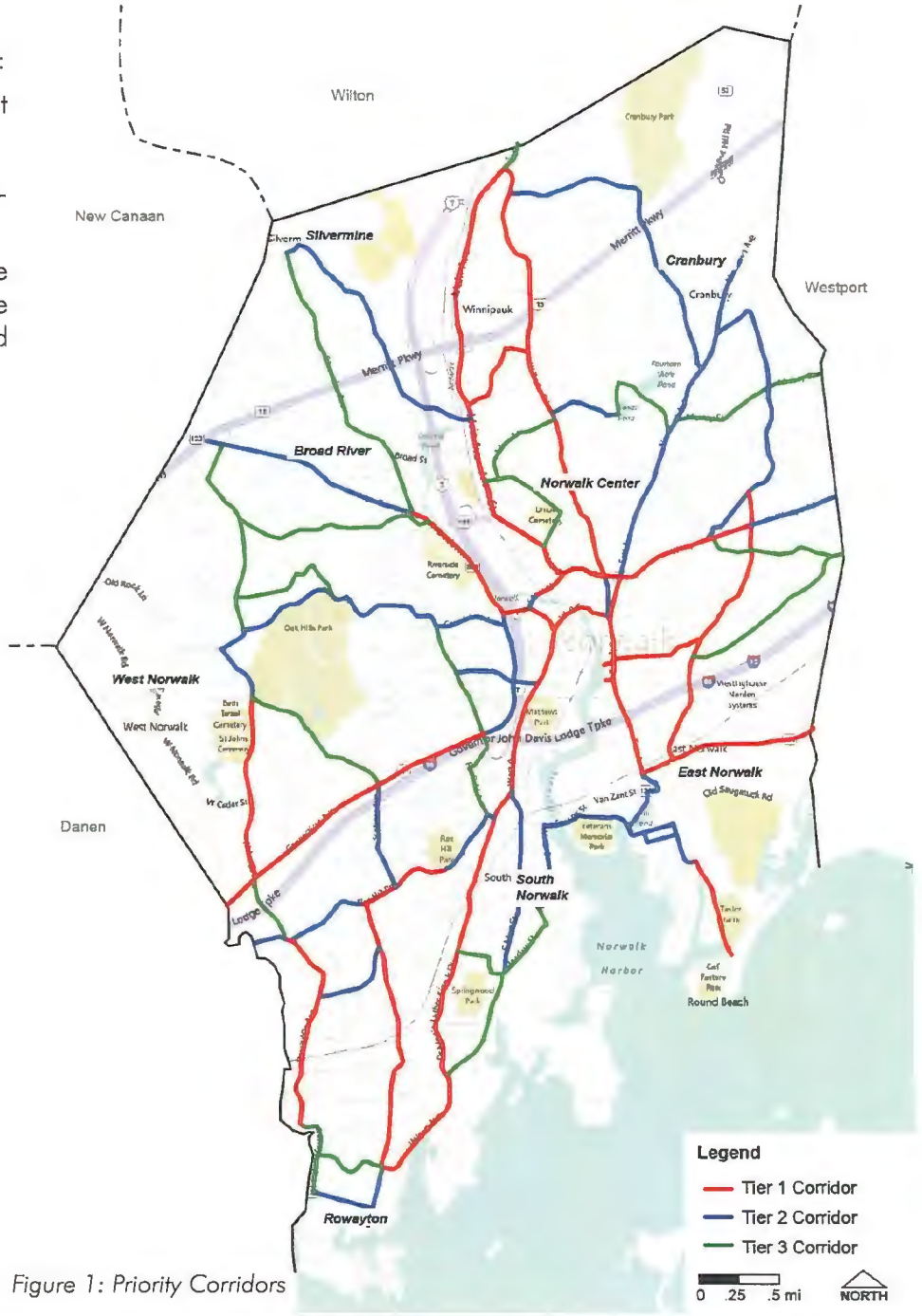
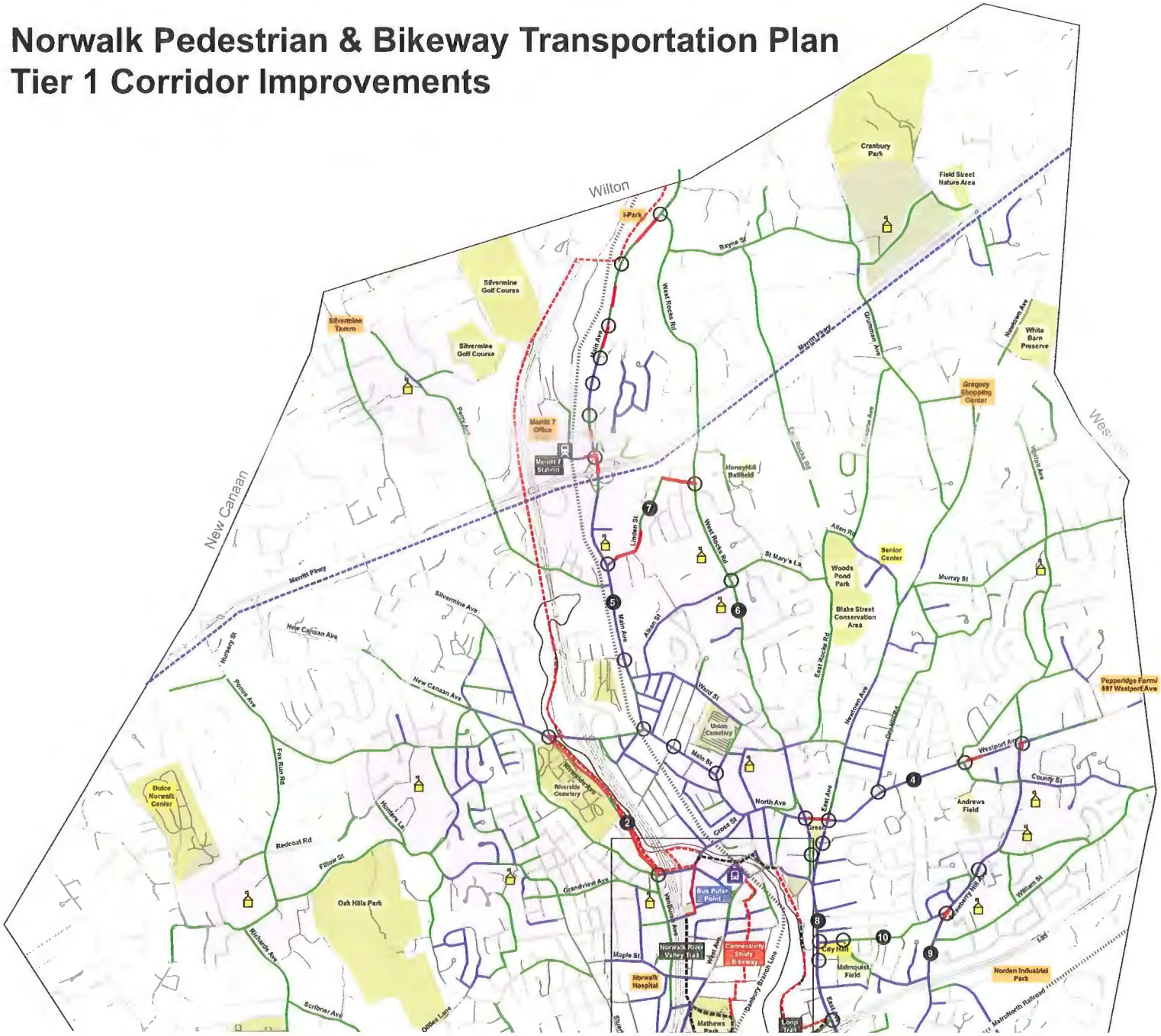


Figure 1: Priority Corridors

Norwalk Pedestrian & Bikeway Transportation Plan
Tier 1 Corridor Improvements



The Tools

Norwalk's streets and sidewalks can benefit from a number of improvements. These "tools" include:

- Marked crosswalks
- Crosswalk signage
- Pedestrian actuated crossing signals
- Curb ramps
- Sidewalks and footpaths
- Curb extensions
- Pedestrian refuge islands
- Sharrows
- Bicycle lanes
- Bike boxes
- Bike pockets
- Multi-use paths
- Bicycle racks
- Lane reductions
- Wayfinding

Tools for Improving Norwalk's Pedestrian and Bicycle Facilities

Pedestrian and bicycle infrastructure improvements can vary considerably from a painted crosswalk to a multi-use path. New materials, methods, designs, and systems are being introduced to bicycle and pedestrian planning every year. The challenge for a city such as Norwalk is to select and implement a pallet of tools that will be safe, effective, fiscally responsible, and sustainable. The tools presented herein include well established components of pedestrian and bicycle infrastructure as well as systems that have been proven safe and effective in recent years. The design guide on pages 52-67 of this report provides additional guidance on these measures.

The tools recommended in this plan for improving pedestrian and bicycle facilities include:

Marked crosswalks - Marked crosswalks are a critical component of the pedestrian network. They guide the pedestrian to the safest crossing of the roadway and alert drivers to the expected presence of pedestrians. The "piano key" style crosswalk, which consists of multiple white bars aligned perpendicular to the walking path, is currently in use in Norwalk and should be used for crosswalk locations identified in this plan.

Crosswalk signage - Crosswalk signage should be used at all crosswalks where traffic is not controlled by a traffic light or stop sign. This signage may also be used to supplement crosswalks at locations where sight-lines are an issue or where drivers fail to yield to pedestrians despite stop signs or traffic lights. The most common application of this sign would be a mid-block crosswalk. When located within a school zone, the school crossing sign should be used in lieu of the pedestrian crossing sign.

Pedestrian actuated crossing signals - Pedestrian actuated signals are push buttons that pedestrians use to prompt a pedestrian crossing signal or a green light. These signals are used at intersections controlled by traffic lights.

Curb ramps - Curb ramps are required by the American Disabilities Act at intersections and marked crosswalks. Any roadway that undergoes reconstruction is required, by federal law, to include these facilities. Curb ramps are integral to the pedestrian network and are a critical link between crosswalks and sidewalks.

Sidewalks and footpaths - Sidewalks and footpaths are the core of the pedestrian network and also the most capital intensive infrastructure component of the network. Sidewalks are typically concrete construction and a minimum of five feet wide (this width allows two adults to walk comfortably side by side). Footpaths (being somewhat unique to Norwalk) are typically asphalt construction and range from three to four feet wide. Footpaths are less expensive and intrusive than concrete sidewalks, but are a less permanent facility.

Curb extensions- Curb extensions are used to shorten the crossing distance for pedestrians. These structures have the added benefit of improving the visibility for and of pedestrians when crossing and can slow traffic when located at a street corner. These devices take many forms and are often referred to as bulb-outs.

Pedestrian refuge islands - Refuge islands are a highly effective tool for assisting pedestrians in crossing wide roadways, heavily trafficked roads, or at midblock locations. These islands can be as narrow as four feet and give the pedestrian a safe place to stop if they are unable to cross the road in one attempt. In addition to assisting pedestrians in crossing, these devices provide a location for the placement of pedestrian crossing signs and can slow the speed of traffic at crosswalks.

Sharrows - Sharrows are shared lane roadways that are marked by bicycle pavement markings and signed with "Share the Road" signage. These facilities are used where roadways are too narrow for dedicated bicycle lanes and when traffic speeds and volumes allow bicyclists to safely mix with traffic.

Bicycle lanes - Dedicated bicycle lanes are the preferred facility for most bicyclists. These lanes are often found at the edge of the roadway and would otherwise appear to be a roadway shoulder. They are marked by a white edgeline separating the bicycle lane from the traffic lane and by bicycle pavement markings within the lane. Signage is typically used at the beginning of the corridor and intermittently to inform drivers and bicyclists of the presence of the bicycle lane.

Bike boxes - Bicycle boxes are used in conjunction with bicycle lanes at intersections that are controlled by traffic signals. The bicycle box provides bicycles with space to wait at the intersection to make a left turn or safely wait to continue straight ahead of right turning traffic. These boxes are reserved for use at intersections with high traffic or high bicyclist volume.

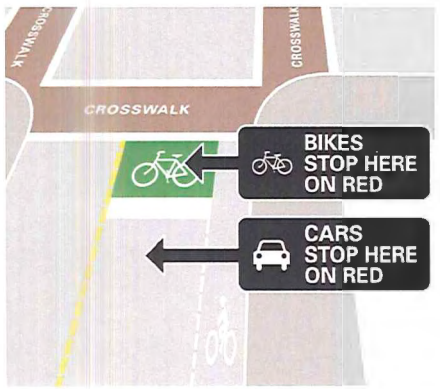
Bike pockets - Bike pockets are often used in conjunction with bike boxes. Bike pockets are marked bicycle lanes within the queuing area of intersections that safely guide bicyclists past right turning traffic and towards a bike box if present.

Multi-use paths - Multi-use paths serve both pedestrians and bicyclists. These facilities tend to be recreational in nature, although they are sometimes used for commuting and daily trips. Multi-use paths must be at least eight feet and preferably ten feet wide to accommodate both bicyclists and pedestrians. They are typically installed parallel to natural resources, highways, rail corridors and utility easements.

Bicycle racks - Bicycle racks are as critical to the bicycle as parking spaces are to the car. Bicycle racks are relatively inexpensive devices that can be installed on a wide sidewalk, at the edge of a sidewalk, in a plaza, at the front of a building, or even in lieu of an on-street parking space.

Lane reduction - Reducing the width of travel lanes can create space on roadways where bicycle and pedestrian facilities often compete with automobiles for space. Roadway space is usually constrained by the right-of-way, development, or physical constraints due to topography. It is therefore essential to create space within the existing roadway for bicycle and pedestrian facilities. This can often be accomplished by down-sizing automobile travel lanes.

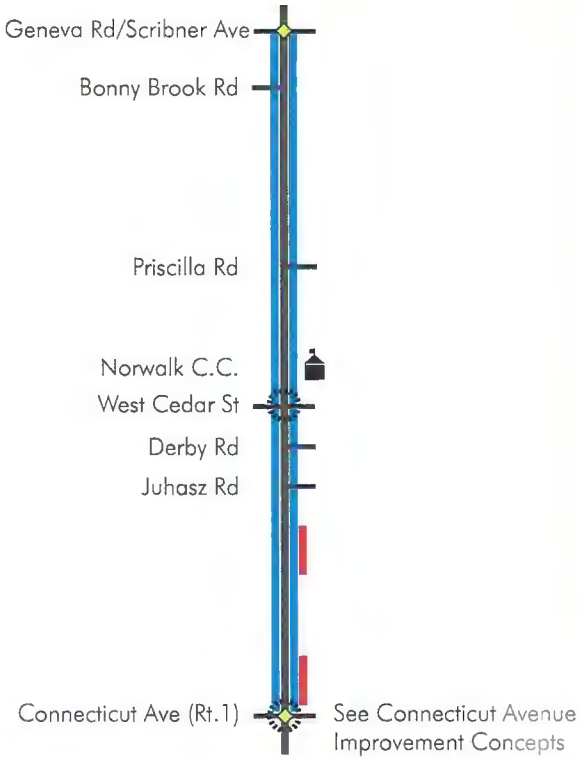
Wayfinding - Wayfinding allows people to determine their location within a setting, determine their destination, and develop a plan that will take them from their location to their destination. A wayfinding system is typically comprised of three basic elements: maps, gateway signage, and directional signage.



Improvement concepts have been developed for all Tier 1 corridors. The process of identifying these corridors was extensive and included: stakeholder interviews, public meetings, inventory of existing bicycle and pedestrian facilities, review of transportation facilities, review of land use and population densities, review of accident data, inventory or pedestrian generators and attractors, review of existing development and transportation plans, and direction from the Norwalk Planning Department. These corridors include:

- Richards Avenue
- Riverside Avenue
- Connecticut Avenue
- Westport Avenue
- Main Avenue/Main Street
- West Rocks Road
- Linden Street
- East Avenue
- Strawberry Hill Avenue
- Sunset Hill Avenue/Tierney Street
- Winfield Street
- Calf Pasture Beach Road
- Rowayton Avenue
- Highland Avenue
- Flax Hill Road
- Wilson Avenue/MLK Jr. Drive

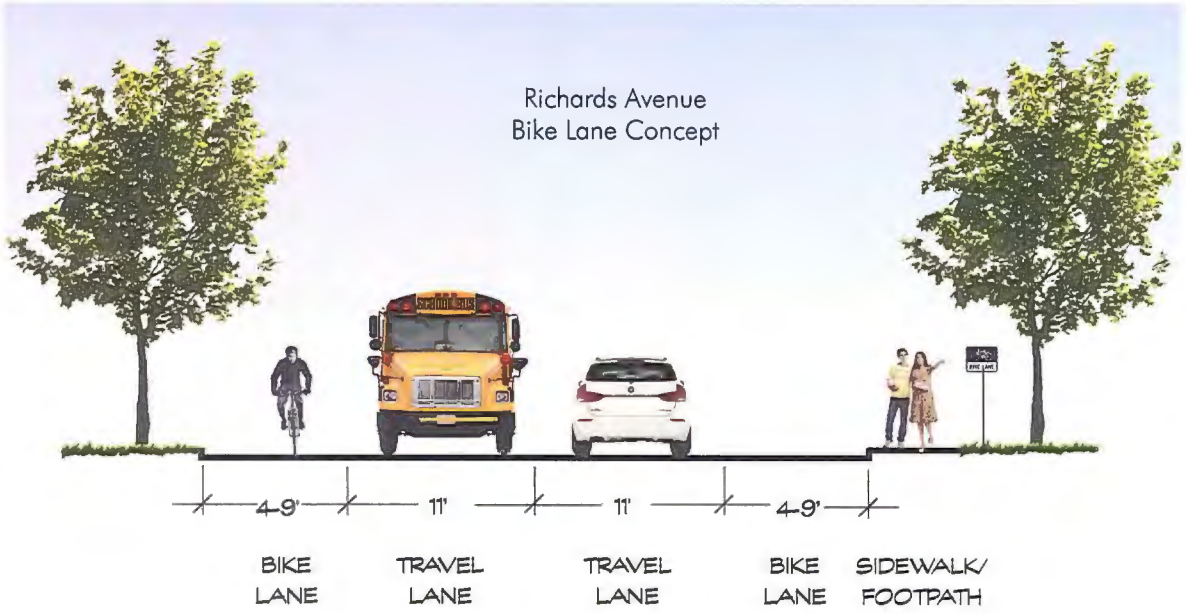
The Concepts



1. Richards Avenue

Richards Avenue connects Connecticut Avenue (Route 1) to Norwalk Community College and Scribner Avenue. Richards Avenue is minor arterial roadway that has one lane of traffic in each direction and averages 30 feet wide but ranges up to 40 feet wide. The road carries a relatively high volume of traffic (11,700 vehicles per day) between Route 1 and Norwalk Community College. Much of this traffic is attributed to the college. Roadway shoulders on Richards Avenue are relatively wide and con ti no us footpaths are present on at least one side of the roadway for much of the length of this corridor, with the exception of a gap at the former TransLux property and the Walmart property at Route 1.

Recommendations for improving this corridor for pedestrians and bicyclists include crosswalk improvements, sidewalk improvements, and the installation of bicycle lanes. Crosswalk improvements are needed only at the intersection of Richards Avenue and West Cedar Street where the southern leg of the intersection is absent a marked crosswalk. Sidewalk improvements are limited to the aforementioned location on the east side of Richards Avenue at the Walmart property and at the former TransLux property. Bicycle lanes are recommended on both sides of the roadway and can easily be accommodated by the wide shoulders on Richards Avenue. These bicycle lanes are recommended for both sides of the roadway from Route 1 to Scribner Avenue. The bicycle lanes would vary in width from 4 to 9 feet, allowing for 11 foot travel lanes on the roadway.

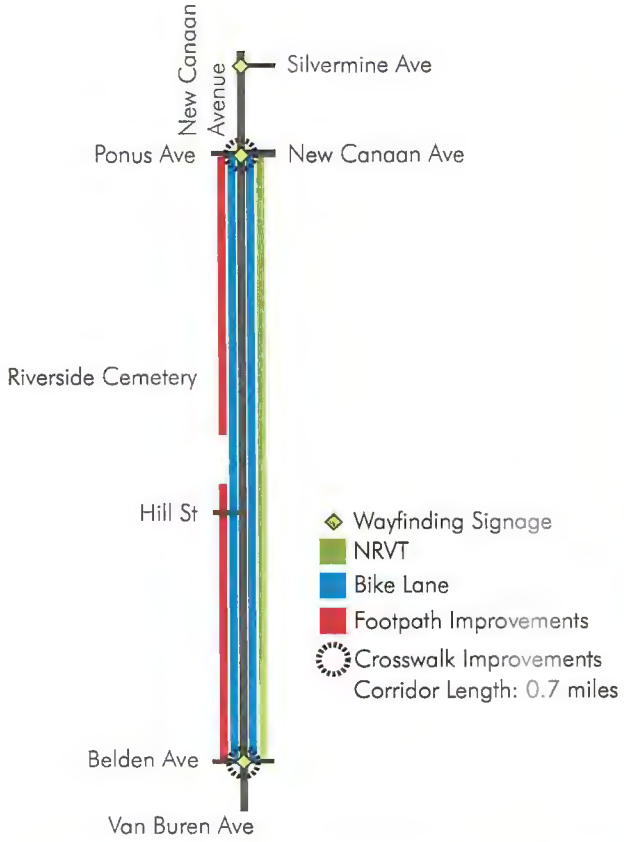


1. Richards Avenue

Richards Ave at West Cedar Street: Bike boxes

Richards Ave at former TransLux property: Complete sidewalk gap

Richards Ave at Walmart: Complete sidewalk gap

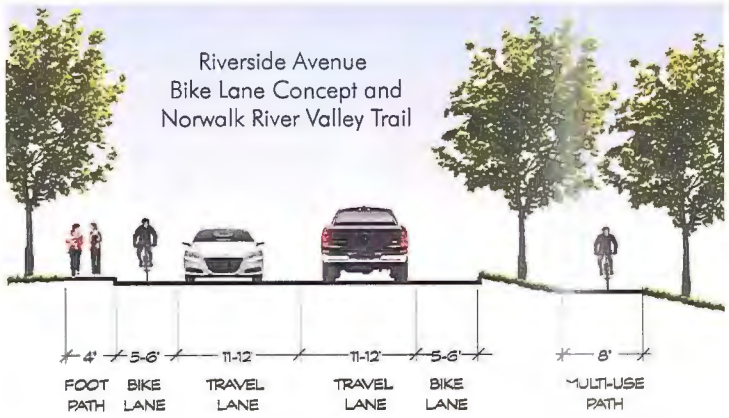


2. Riverside Avenue (Route 809)

Riverside Avenue is a state route that carries traffic north/south from Route 1 to New Canaan Avenue (Route 123). This roadway has a small amount of residential development on the west side of the road at the southern end of the corridor. To the east is a wooded area, the Norwalk River and Route 7. Despite its designation as a state route and the roadway connecting other state routes, the road carries a relatively moderate volume of traffic (5,000 vehicles per day). The roadway is relatively wide, varying in width between 32 and 36 feet.

The Norwalk River Valley trail is planned to travel parallel to Riverside Avenue just east of the roadway. While this trail will likely be accessible from Riverside Avenue, as a recreational facility, the trail would not substitute for on-street bicycle transportation facilities.

Recommendations for this corridor include crosswalk improvements, footpaths, and bicycle lanes. Footpaths are needed to connect residential development on the west side of Riverside Avenue to pedestrian facilities at the Belden Avenue intersection where an additional crosswalk is necessary. Bike lanes are recommended on both sides of the roadway between Belden Avenue and Ponus Avenue as the existing shoulders are sufficiently wide to accommodate a 5 to 6 foot wide bicycle lane on both sides of the roadway.



Footpath and crosswalk improvements at the Spring Hill Avenue/ Belden Avenue intersection

NRVT Trail connection at New Canaan Avenue

3. Connecticut Avenue (Route 1)

This corridor carries a significant amount of auto traffic (between 13,700 and 27,400 vehicles per day) as a result of Route 1 through traffic as well as retail and commercial businesses. Improvements to the corridor are therefore focused upon completing sidewalks and improving crosswalks in order to improve pedestrian access and safety.

There are a number of locations throughout the corridor where significant sidewalk gaps exist. One of these locations is on the north side of Connecticut Avenue at Kohl's. Additionally, a number of intersections are in need of crosswalk improvements. These locations include:

- Richards Avenue
- Scribner Avenue
- West Cedar Street
- Fairfield/Clinton Avenue
- Stuart Avenue

This corridor is unsuitable for bicyclists due to heavy traffic volume, multiple traffic lanes and frequent curb cuts and turning movements. Bicycle facilities should instead be developed on parallel corridors such as Flax Hill Road as an alternative to traveling on Connecticut Avenue.

Crosswalk improvements at Richards Avenue

3. Connecticut Avenue (Route 1)

Sidewalk improvements on north side of CT Ave at Kohl's

Crosswalk improvements at Scribner Avenue

Crosswalk improvements at West Cedar Street

Crosswalk improvements at Clinton/Fairfield Avenue

Crosswalk improvements at Stuart Avenue

4. Westport Avenue (Route 1)

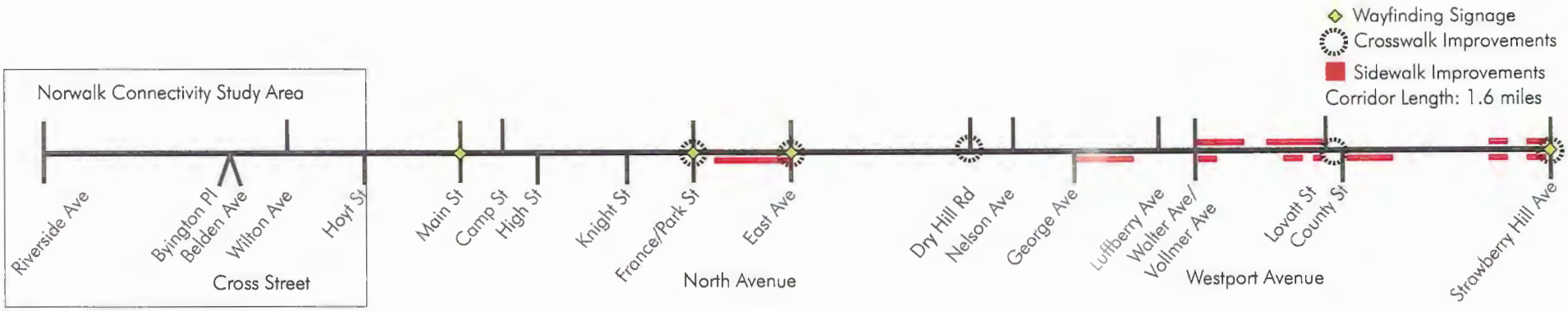
This corridor carries a significant amount of Route 1 through traffic. Additionally, the Westport Avenue segment of this corridor has a large number of retail establishments such as Stew Leonard's that generate pedestrian activity. Improvements to the corridor are therefore focused upon completing sidewalks and improving crosswalks in order to improve pedestrian access and safety. Locations in need of improvements are highlighted in the graphics below. These include:

- North Avenue at Park Street
- North Avenue at East Avenue
- Westport Avenue at Dry Hill Road
- Westport Avenue at County Street
- Westport Avenue at Strawberry Hill Road

Improvements at these locations include the provision of crosswalks, and the completion of sidewalk gaps on North Avenue west of East Avenue and at multiple locations on Westport Avenue.

Crosswalk improvements at France and Park Street

Sidewalk and Crosswalk Improvements at East Avenue



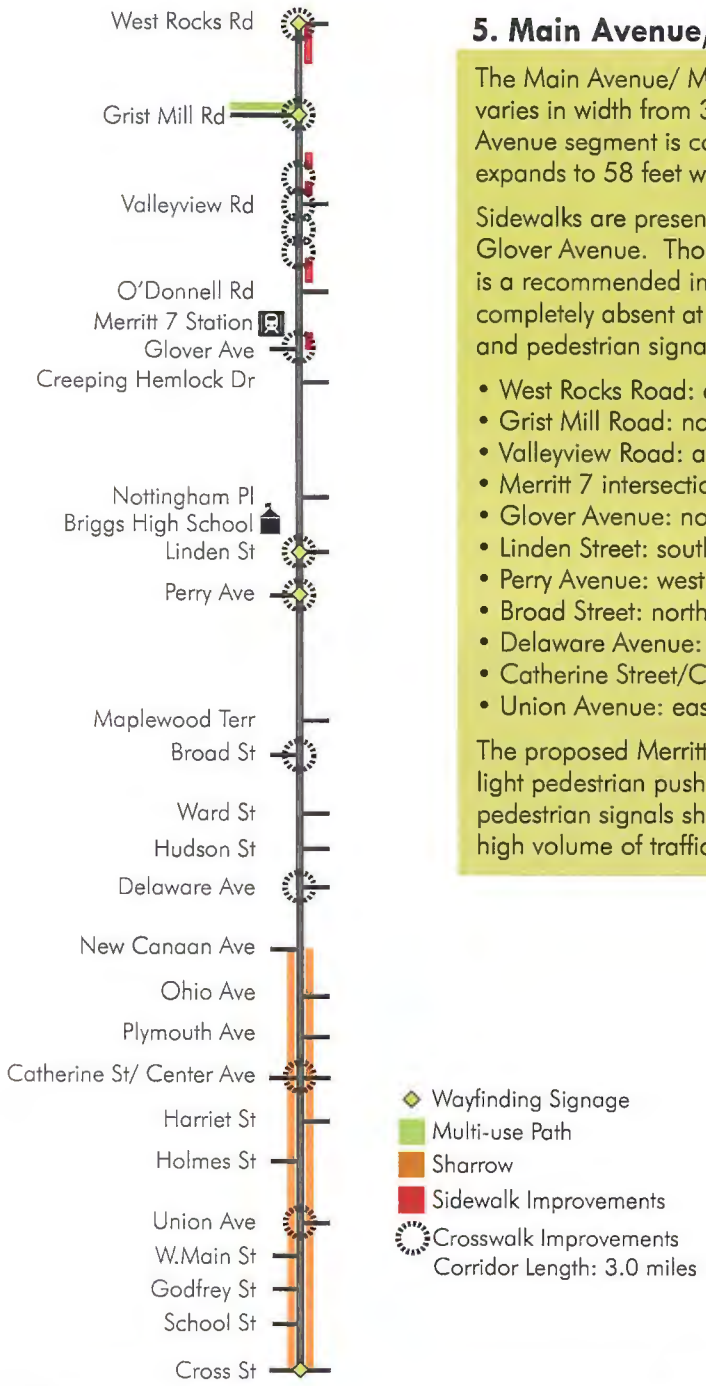
4. Westport Avenue (Route 1)

Crosswalk improvements at Dry Hill Road and Stew Leonard's

Sidewalk improvements on Westport Avenue between Vollmer Avenue and Lovatt Street

Sidewalk and crosswalk improvements at County Street

Sidewalk improvements on Westport Avenue west of Strawberry Hill Avenue



5. Main Avenue/Main Street (Route 123)

The Main Avenue/ Main Street corridor is a heavily trafficked arterial roadway. The Main Street segment of this corridor varies in width from 30 feet to 40 feet and has one travel lane in each direction with some on-street parking. The Main Avenue segment is comprised of two lanes of traffic in each direction and varies in width from 46 feet to 50 feet and expands to 58 feet where turn lanes are present.

Sidewalks are present throughout the corridor with relatively few gaps, those gaps being north of the Merritt Parkway and Glover Avenue. Those areas are noted in the graphic at left and in graphics below. Completion of the sidewalk network is a recommended improvement for this corridor. Additionally, the crosswalk infrastructure on Main Avenue is lacking and completely absent at many locations. Marked crosswalks are a critical component of pedestrian infrastructure. Crosswalks and pedestrian signals (where necessary) should be installed/improved at the following locations (from north to south):

- West Rocks Road: east leg
- Grist Mill Road: north, east
- Valleyview Road: all 4 legs
- Merritt 7 intersections (3 total excluding Valleyview): north, south, west
- Glover Avenue: north, west
- Linden Street: south, east
- Perry Avenue: west, north
- Broad Street: north, south, west
- Delaware Avenue: south, east
- Catherine Street/Center Avenue: convert to exclusive pedestrian phase
- Union Avenue: east

The proposed Merritt 7 crosswalk locations already have curb ramps on the west (Merritt 7) side of the roadway and green light pedestrian push-buttons on both sides of Main Avenue, yet no marked crosswalks across Main Avenue. The pedestrian signals should be upgraded to exclusive phases and pedestrian signal heads should be installed due to the high volume of traffic at these intersections.

Main Avenue at West Rocks Road: Sidewalk Improvements

5. Main Avenue/Main Street (Route 123)

Bicycle facilities are absent from this corridor despite the demand for bicycling through on the few north/south corridors within Norwalk. Main Avenue, due to four lanes of traffic, has shoulders that are less than three feet wide in most locations and therefore would not accommodate a bicycle lane. Traffic volume and speed on this segment of the corridor also prohibit a shared use lane. Main Street, however, most of which is comprised of two lanes, provides a generous amount of space for bicyclists which is occasionally interrupted by on-street parking. The most feasible bicycle accommodation in this corridor, given its constraints, would be sharrows and share the road signage. In this scenario, the sharrow marking would be place 10 feet from the curb which provides space for the bicyclist to ride when cars are parked. This shared lane would extend from Cross Street to New Canaan Avenue.

Main Avenue at Grist Mill Road:
Multi-use Path and crosswalk improvements

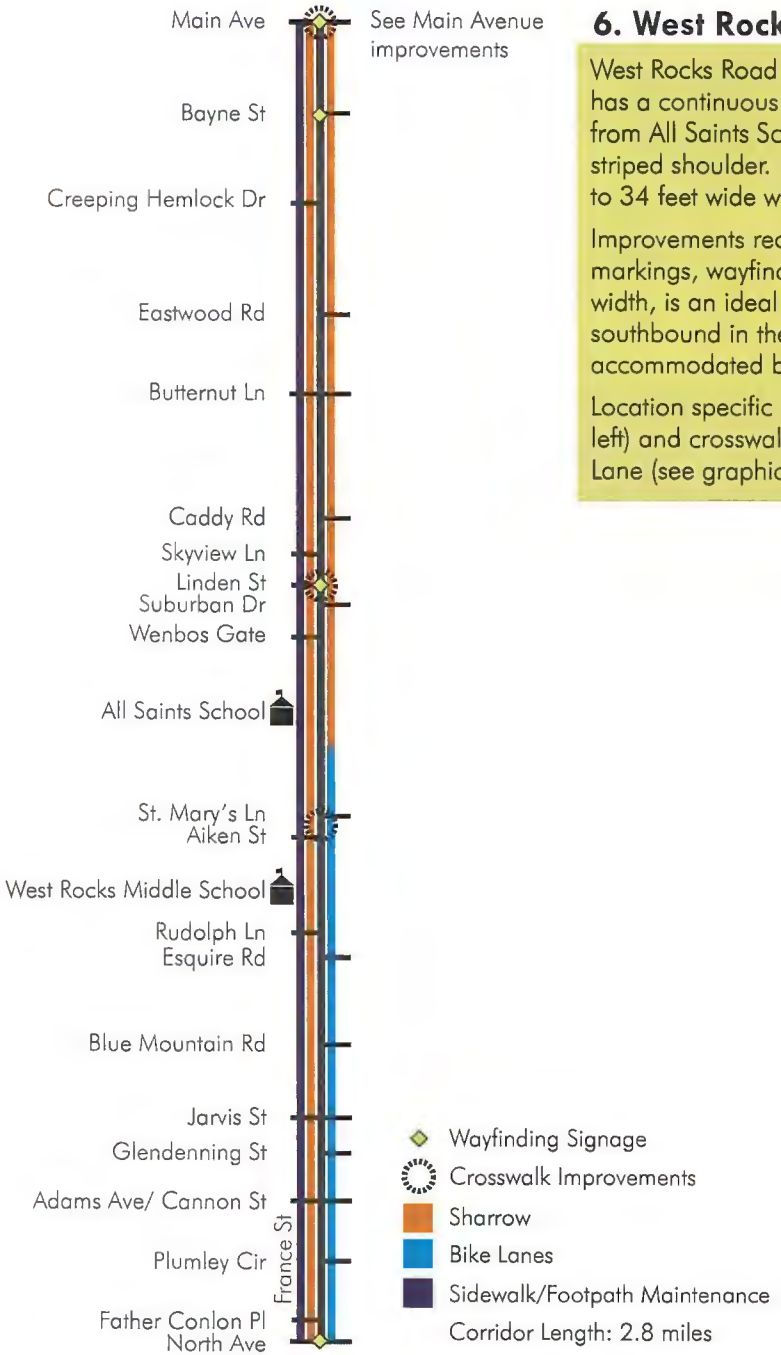
Main Avenue at Ethan Allen:
Sidewalk improvements

Main Avenue at Merritt 7:
Sidewalk and crosswalk improvements

Main Avenue at Valleyview Road:
Crosswalk improvements

Main Avenue at O'Donnel Rd & Merrit 7: Sidewalk and crosswalk improvements

Main Avenue at Glover Avenue:
Sidewalk and crosswalk improvements



6. West Rocks Road

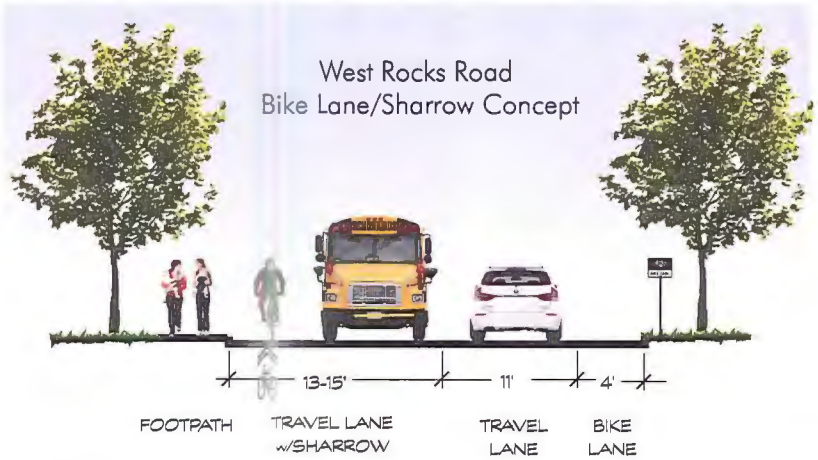
West Rocks Road (including France Street) is a 2.75 mile corridor that varies from 28 feet to 34 feet wide and has a continuous sidewalk or footpath on the west side of the roadway. The northern segment of the roadway from All Saints School to Main Avenue is approximately 28 feet wide with 11 feet travel lanes and a 3 feet striped shoulder. The southern segment, extending from All Saints School to North Avenue, varies from 28 feet to 34 feet wide with a striped shoulder that varies from 3 feet to 5 feet wide.

Improvements recommended for the corridor include marked bike lanes, share the road signage and pavement markings, wayfinding signage, and crosswalk improvements. The southern segment, given the existing shoulder width, is an ideal candidate for a marked bike lane northbound in the uphill direction and a shared bike lane southbound in the downhill direction. The northern segment, due to slightly narrower shoulders, is better accommodated by the provision of Share the Road signage and pavement markings.

Location specific improvements include the provision of wayfinding signage at several locations (see graphic at left) and crosswalk improvements at the intersections of Main Avenue, Linden Street, Aiken Street and St. Mary's Lane (see graphics below).

Linden Street crosswalk marking

Aiken & St.Mary's Lane crosswalk upgrades

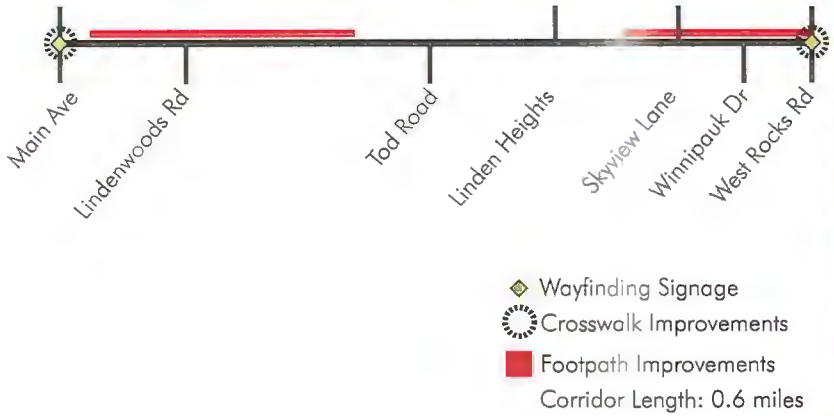


7. Linden Street

Linden Street is an important east/west connection between Main Avenue and West Rocks Road. The roadway is 24 feet wide with one 12 feet travel lane in each direction. Sidewalks are present on the north side of the roadway, although largely incomplete.

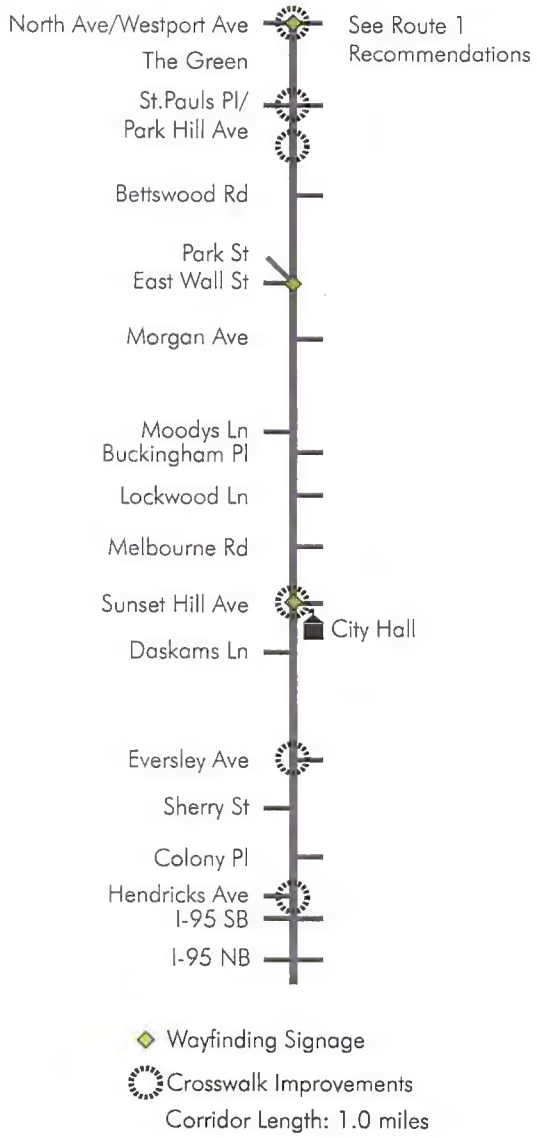
Recommended improvements for this roadway are focused upon completing the footpath network on the north side of the roadway. This includes completing the gap at the east end of the roadway from west of the Skyview intersection to West Rocks Road and completing a segment east of Main Avenue approaching Tod Road. Upon installation of the new sidewalk, the north south crossing across Linden Street at West Rocks Road should be marked.

As a result of the relatively low traffic volume on this corridor, bicyclists can ride safely without improvements to the existing facilities.



Footpath improvements at east end of Linden Street

Footpath improvements at east end of Linden Street



8. East Avenue (Route 53)

This corridor, like Route 1 or Main Avenue, carries a significant amount of auto traffic (between 18,000 and 27,600 vehicles per day) and his home to many retail and commercial businesses. Improvements to this corridor are therefore focused upon improving sidewalks and improving crosswalks in order to improve pedestrian access and safety.

Most of the corridor has sidewalks or footpaths, although there is a gap on the east side at the rail trestle. This area is currently planned for bridge improvements that will provide an opportunity to complete this sidewalk gap. Additionally, a number of intersections are in need of crosswalk improvements. These locations from north to south include:

- North Avenue/Westport Avenue
- St. Pauls Place
- Park Street at Lewis Street
- Sunset Hill Avenue
- Eversley Avenue
- Hendricks Avenue

This corridor is unsuitable for bicyclists due to heavy traffic volume, multiple traffic lanes and frequent curb cuts and turning movements. Bicycle facilities should instead be developed on parallel corridors such as Strawberry Hill Avenue (see Strawberry Hill Avenue recommendations) and West Avenue (as planned by the Norwalk Connectivity study).

Crosswalk improvements at The Green

8. East Avenue (Route 53)

Crosswalk improvements at Sunset Hill Avenue

Crosswalk improvements at Eversley Avenue

Crosswalk improvements Hendricks Avenue

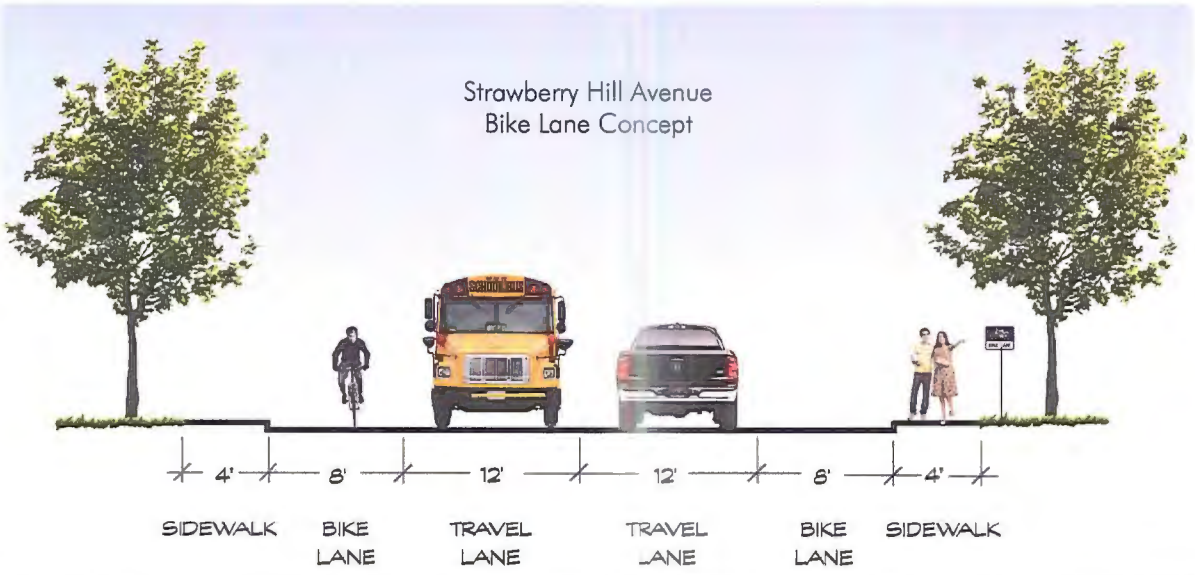
9. Strawberry Hill Avenue

Strawberry Hill Avenue is a heavily travelled roadway that provides access to Norwalk High School, Naramake Elementary School, and Nathan Hale Middle School. Sidewalks are present on both sides of the road between Fitch Street and Westport Avenue with most intersection having marked crosswalks. Strawberry Hill Avenue (between Fitch Street and Westport Ave) is 40 feet wide and is comprised of 12 feet travel lanes with 8 feet wide shoulders on each side of the road.

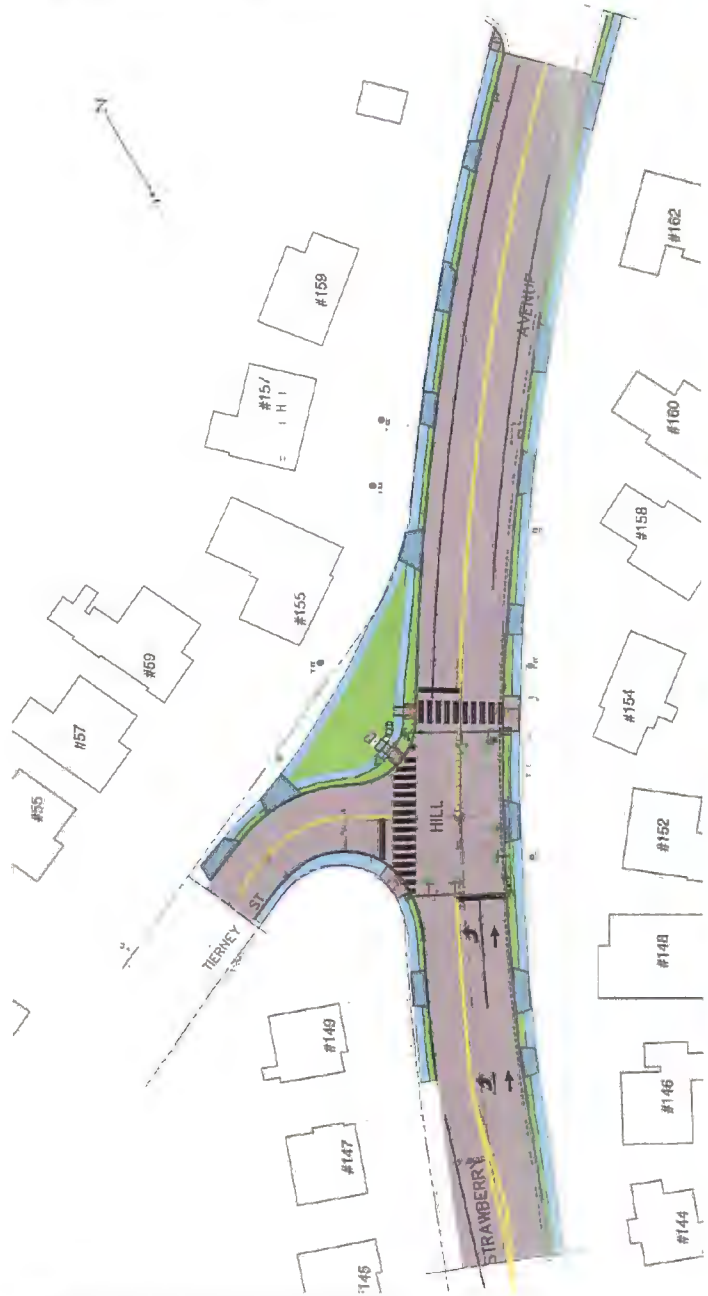
Strawberry Hill Avenue has been the focus of Safe Routes to School planning efforts and thus has an improvement project scheduled for the intersection of Tierney Street and Strawberry Hill Avenue. The improvements at this location include a curb extension of the northwest corner, new sidewalks, new curb ramps, and new crosswalk and pavement markings. These improvements will greatly benefit students walking to and from any one of Strawberry Hill's three schools.

Additional improvements recommended in this plan include intersection improvements at both Westport Avenue (Rt.1) and Jennie Jenks Street. The intersection at Westport Avenue would benefit from additional crosswalk markings as well as sidewalk improvements to the southwest corner of the intersection. The intersection of Jennie Jenks Street should be improved by extending the curb at the southeast corner thereby reducing the curb return radius, reducing turning speeds and reducing the crossing distance (see graphic below).

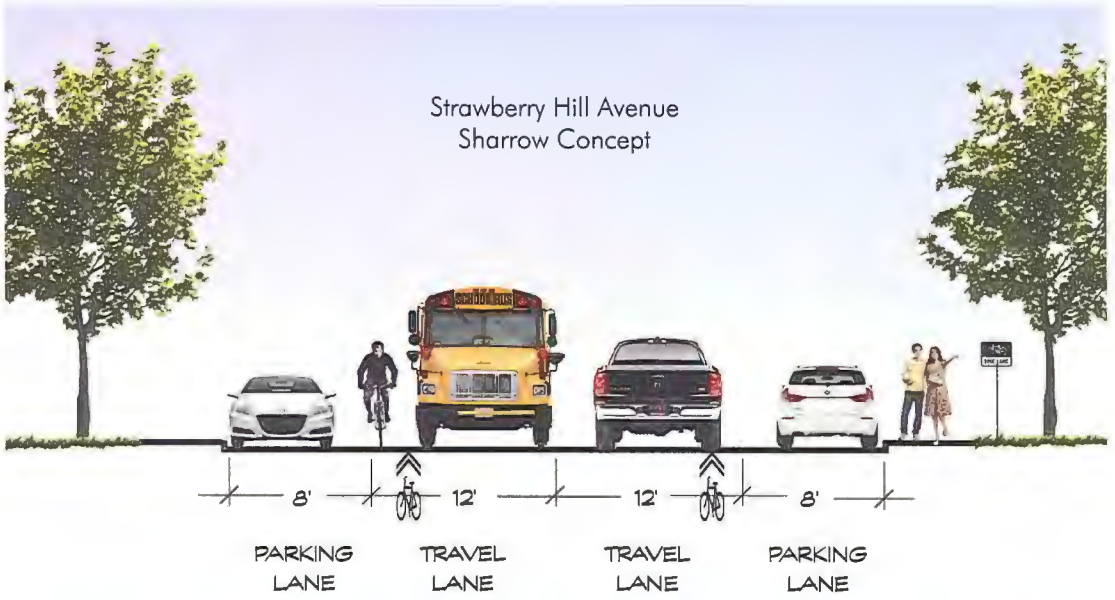
An additional recommendation for Strawberry Hill Avenue is the provision of bicycle lanes on both sides of the street between Fitch Street and Westport Avenue. The existing 8 feet wide shoulder provides ample space for bicycles. Designating this space as a bike lane would improve the awareness of drivers on Strawberry Hill Avenue and encourage bicyclists to use the shoulder space for riding. South of Norden Place, the shoulder on both sides of the roadway is periodically used for parking, so a sharrow concept should be employed.



9. Strawberry Hill Avenue



Safe Routes intersection improvements at Tierney Street

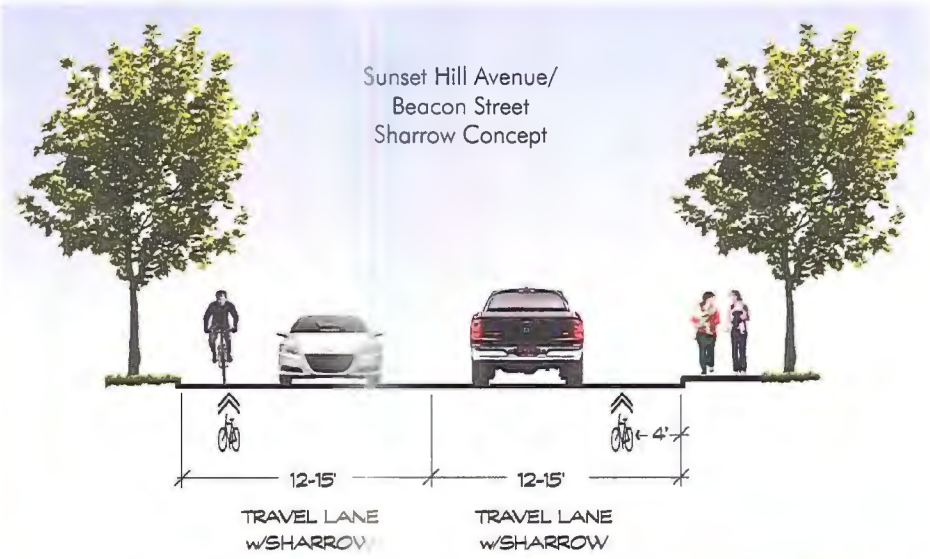


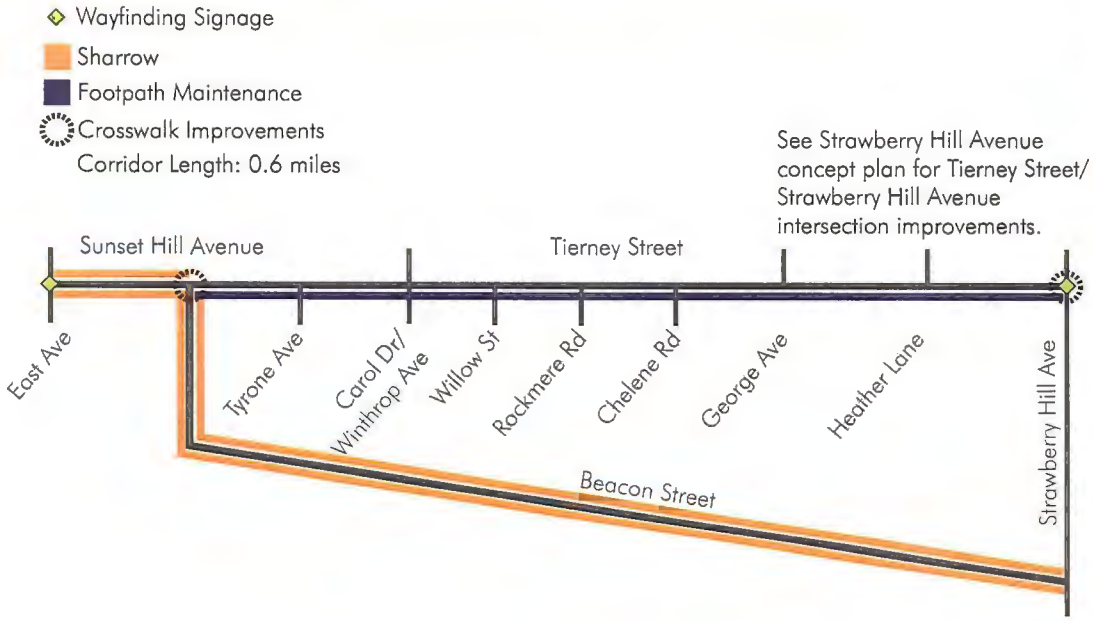
Sidewalk and crosswalk improvements at Westport Ave Curb extension at Jennie Jenks Street

10. Sunset Hill Avenue / Tierney Street

Sunset Hill Avenue and Tierney Street form a corridor that carry traffic from East Avenue to Strawberry Hill Avenue. As a collector roadway it carries a moderate volume of traffic (8,400 vehicles per day). The roadway is relatively narrow at times, varying in width between 24 and 30 feet. Abutting land use is primarily residential and the roadway is punctuated by many driveways. Sidewalks or footpaths are present on the south side of the roadway throughout the corridor. Due to its proximity to Strawberry Hill Avenue and the schools located on that street, the corridor is used by school children walking to and from school.

This corridor is an important east/west connection between East Avenue and Strawberry Hill Avenue and as such is a critical route for walking and bicycling. Tierney Street is not, however, well suited for use as a bicycle route due to steep grades. A preferred alternative to this route would be a parallel route on Beacon Street. Sharrows are recommended for this route from Sunset Hill Avenue to Strawberry Hill Avenue.





Sunset Hill Avenue at Beacon Street: New crosswalk

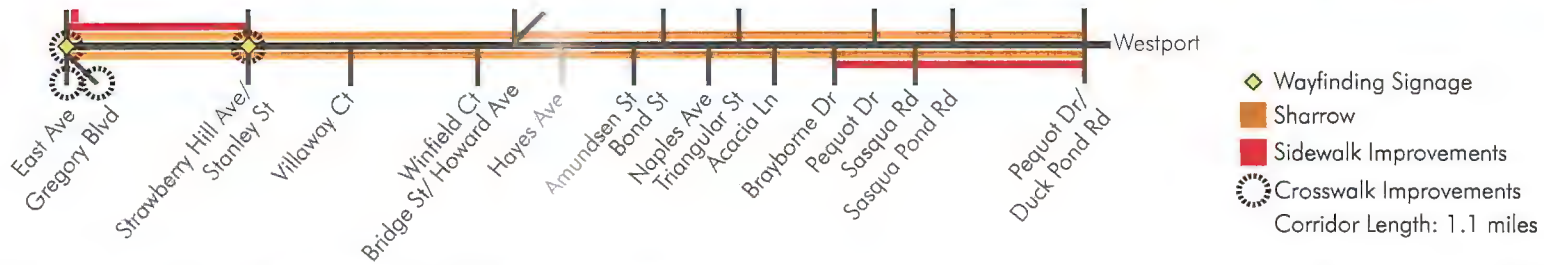
11. Winfield Street (Route 136)

Winfield Street is a state roadway that carries a moderate volume of traffic (6,200-7,200 vehicles per day) and connects East Avenue to Strawberry Hill Avenue and points east. The roadway varies in width between 26 and 32 feet and is therefore slightly too narrow for dedicated bicycle lanes.

Improvements for this corridor should focus on crosswalk improvements, sidewalk improvements and bicycle accommodations. Significant sidewalk gaps exist between East Avenue and Strawberry Hill Avenue, and Brayborne Drive and Duck Pond Road. Connecting these gaps would provide a continuous sidewalk network along the roadway. The intersection of Winfield Street, East Avenue and Gregory Boulevard (Cemetery Circle) is in need of substantial crosswalk improvements. As is, pedestrians have only two marked crosswalks through which they must negotiate the intersection of six different streets and the cemetery at the center of the intersection.

Bicycle accommodations should be provided on Winfield Street in the form of a shared use bicycle lane, thus providing an east/west bicycle alternative to Westport Avenue.

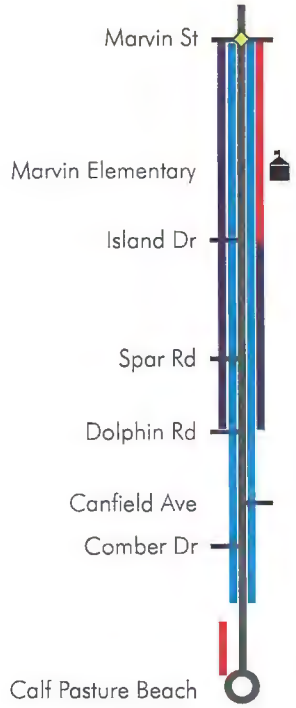
Winfield Street Improvements



11. Winfield Street (Route 136)

Sidewalk and crosswalk improvements at East Norwalk Station

Crosswalk improvements at East Norwalk Cemetery



Wayfinding Signage
Bike Lanes
Sidewalk Improvements
Sidewalk & Footpath Maintenance

Corridor Length: 1.5 miles
(includes beach access road)

12. Calf Pasture Beach Road

Calf Pasture Beach Road is a four lane roadway that connects Gregory Boulevard and Marvin Street to Calf Pasture Beach. This roadway is designated as a minor arterial and carries 8,300 vehicles per day. By comparison, Route 1 carries up to 27,400 vehicles per day and East Avenue carries up to 27,600 vehicles per day, both are four lane roadways.

Because of the roadway's terminus at Calf Pasture Beach, traffic growth on the roadway is limited. While the roadway becomes congested at peak hours during the summer beach season, roadway traffic is primarily constrained by the Marvin Street/Gregory Boulevard intersection. Demand for bicycle access to the beach is also high, yet there are no accommodations for bicyclists on Calf Pasture Beach Road.

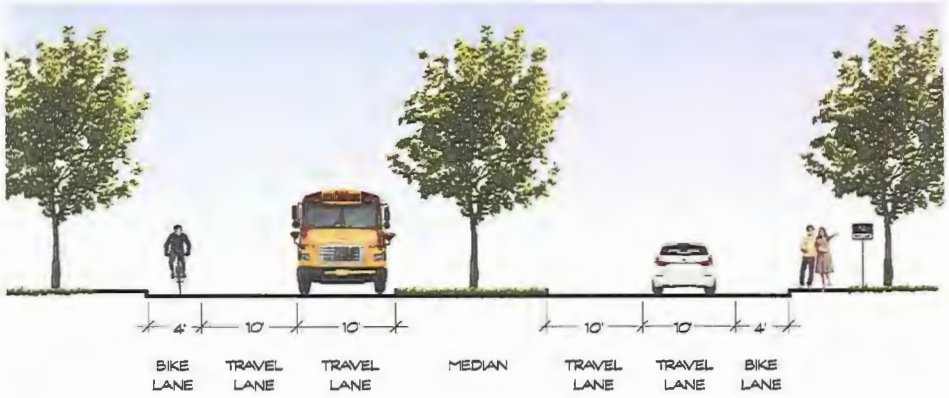
Bike lanes could be provided by reducing the existing travel lanes to 10 feet wide and providing a 4 feet wide bike lane. Ten foot wide travel lanes are suitable to Calf Pasture Beach Road due to relatively flat grades, good sight lines, minimal curb cuts and a low posted speed limit.

A more progressive approach to accommodating bicyclists on Calf Pasture Beach Road would be the "Road Diet" approach. The resulting roadway profile would include a 6 feet wide bicycle lane on both sides of the roadway, with a 14 feet travel lane and a 4 feet inside shoulder. These changes would not require reconstruction of the roadway, rather restriping and signage improvements. This solution has been proven highly effective on a number of projects throughout the country, having been used on roadways with average daily traffic volumes exceeding 20,000 vehicles per day.

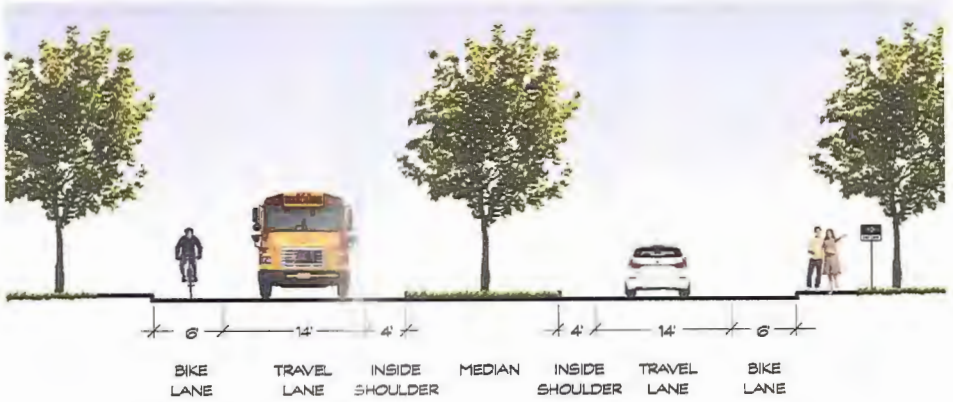
Additional improvements within this corridor include improving the existing footpath on the east side of Calf Pasture Beach Road north of Island Drive and the construction of a sidewalk connecting existing sidewalks on the northwest side of Calf Pasture Beach Road at Calf Pasture Beach.

Calf Pasture Beach Road: Sidewalk improvements on east side at Marvin Elementary School

12. Calf Pasture Beach Road

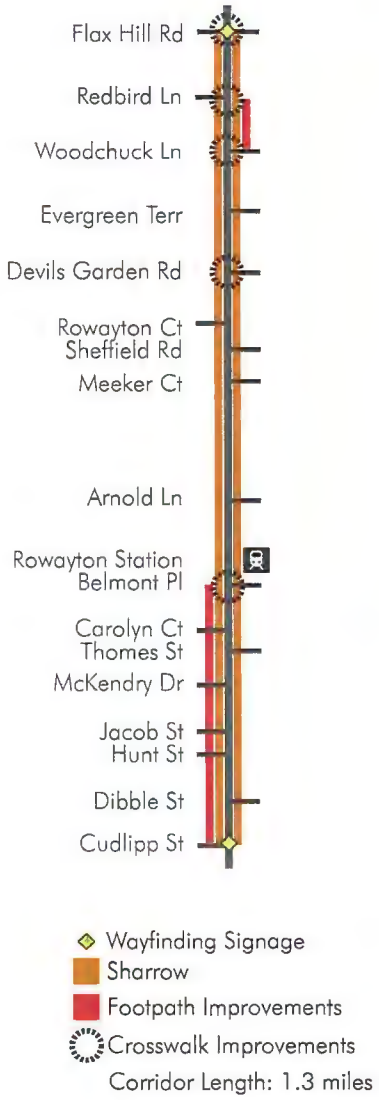


Calf Pasture Beach Road: Narrow travel lanes and bike lane concept



Calf Pasture Beach Road: Road diet concept

Sidewalk Improvements: Calf Pasture Beach Road at Calf Pasture Beach



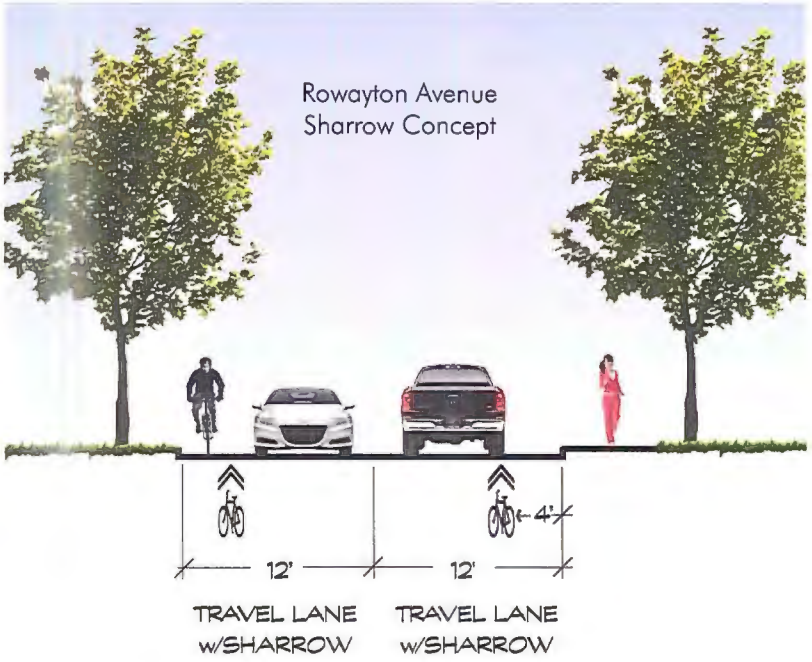
13. Rowayton Avenue

Rowayton Avenue is a minor arterial roadway that carries an average of 4,200 vehicles per day, which is similar to the traffic volume carried by Highland Avenue. The roadway width averages 24 feet wide and has one lane of traffic in each direction. Sidewalks or footpaths are present on Rowayton Avenue north of Belmont Place with the exception of a gap between Redbird and Woodchuck Lane. South of Belmont Place, the footpath network is sporadic with short segments on opposing sides of the road.

Footpath improvements should be concentrated on connecting the gap between Redbird and Woodchuck Lane and creating a connected network of footpaths south of Rowayton Station. Additionally, several crosswalk improvements are necessary at the following locations:

- Flax Hill Road
- Redbird Lane
- Woodchuck Lane
- Devils Garden Road
- Belmont Place

While there are no bicycle facilities on Rowayton Avenue, the relatively low traffic volumes allow for the implementation of shared traffic/bicycle lanes on Rowayton Avenue. In this scenario, Rowayton Avenue would operate as it does now, with bicyclist riding as far to the right as possible and auto traffic passing at a safe distance on the left. The presence of sharrow markings and share the road signage legitimizes the presence of bicyclists and increases driver awareness.



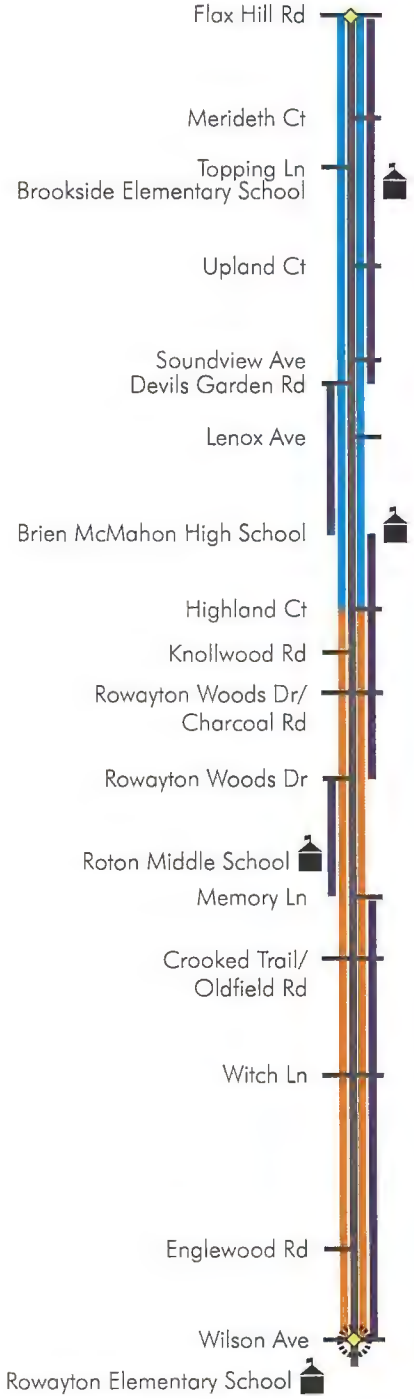
13. Rowayton Avenue

Crosswalk improvements at Flax Hill Road

Sidewalk improvements south of Rowayton Station

Footpath improvements between Redbird Lane and Woodchuck Lane

Crosswalk at Devils Garden Road

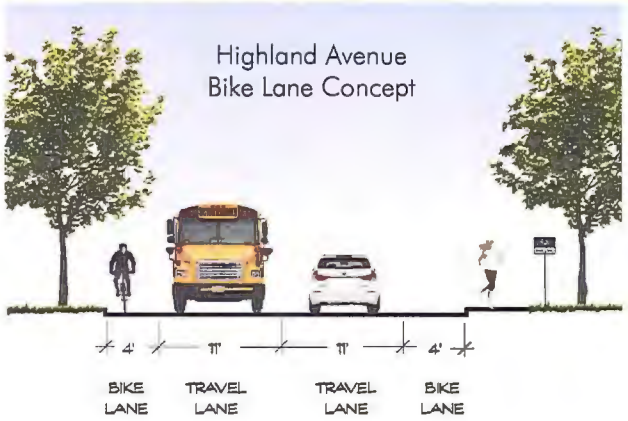


14. Highland Avenue

Highland Avenue is a collector roadway that runs north/south and connects Wilson Avenue to Flax Hill Road. This roadway carries an average of 4,000 to 5,000 vehicles per day. The existing roadway is 20-24 feet wide south of Highland Court and 30 feet wide north of Highland Court. Highland Avenue also connects four schools: Brookside Elementary School, Brien McMahon High School, Roton Middle School, and Rowayton Elementary School.

Highland Avenue has a footpath the entire length of the roadway, changing sides of the road several times. Crosswalks are well marked throughout the corridor. The only crosswalk improvement necessary is at the intersection of Wilson Avenue.

Bicycle facilities are notably absent within the corridor, although the corridor is suitable for both dedicated bicycle lanes and shared lanes. The width of Highland Avenue north of Highland Court allows for a 4 feet wide bike lane on each side of the road. South of Highland Court, a sharrow is recommended due to the relatively narrow roadway width.

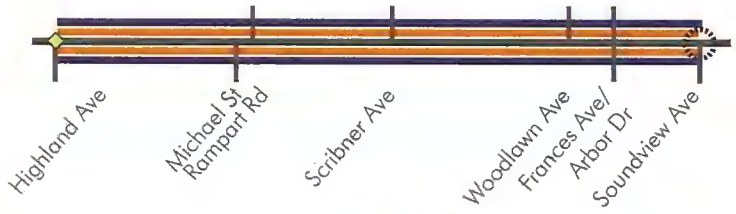


Crosswalk improvements at Wilson Avenue

15. Flax Hill Road

Flax Hill Road is a minor arterial roadway that travels east/west from Darien to South Norwalk. Flax Hill Road carries a moderate amount of traffic (8,200 vehicles per day) and varies in width between 28 feet and 36 feet. Footpaths are present on both sides of the roadway west of Soundview Avenue and concrete sidewalks are on both sides east of Soundview Avenue. On-street parking is present on the wider segments of the roadway east of Scribner Avenue.

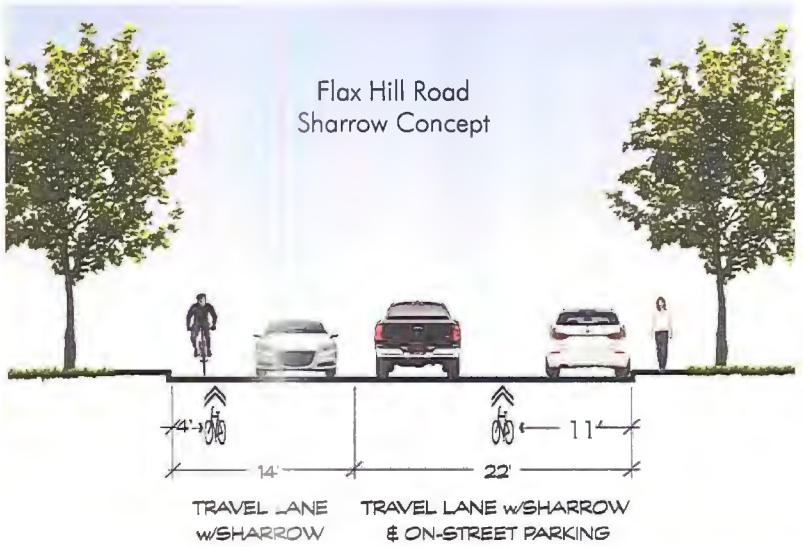
Recommended improvements to the corridor include shared use lane designation (sharrows) on both sides of the roadway. The sharrow designation of this corridor will be critical in connecting Highland Avenue to South Norwalk. Crosswalk improvements are recommended at Soundview Avenue and mid-block between Lowe Street and Taylor Avenue. A mid-block crosswalk at this location would allow pedestrians to safely cross from Lowe Street to Taylor Avenue.

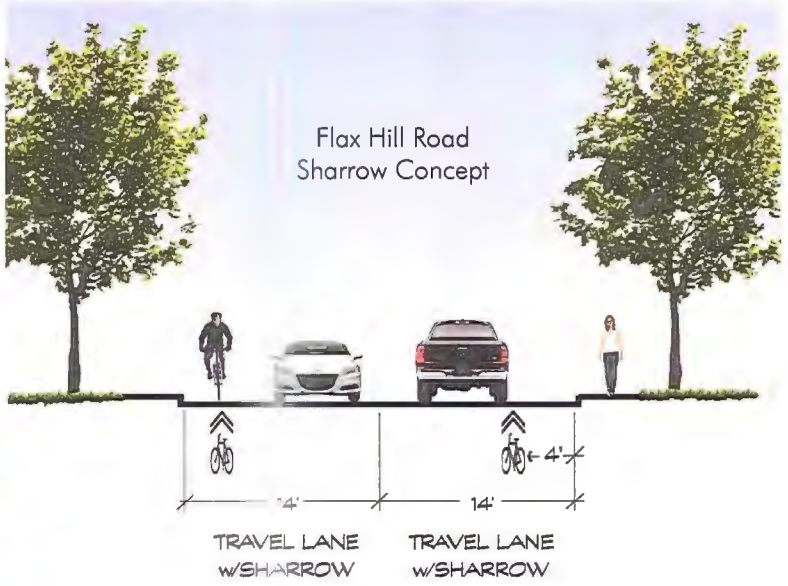


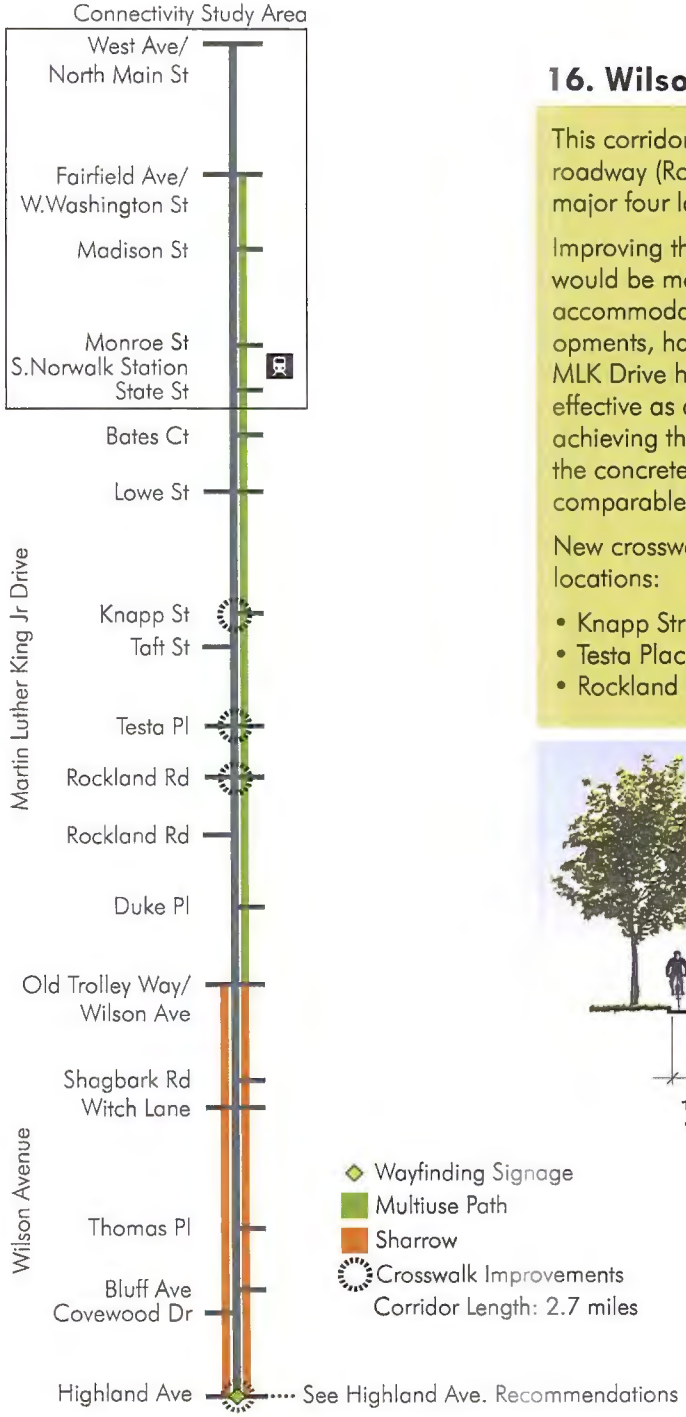
- Wayfinding Signage
- Crosswalk Improvements
- Sharrow
- Sidewalk & Footpath Maintenance

Corridor Length: 1.0 miles

Crosswalk improvements at Soundview Avenue







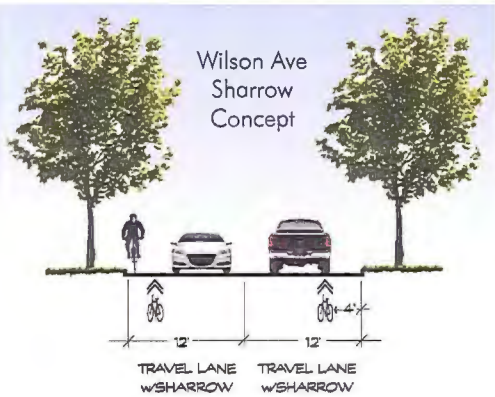
16. Wilson Avenue (Route 136) / Martin Luther King Jr Drive

This corridor is comprised of two distinct roadways. Wilson Avenue is a narrow collector street and state roadway (Route 136) that carries a relatively low volume of traffic. Martin Luther King Jr (MLK) Drive is a major four lane arterial with commercial and industrial land uses.

Improving this corridor for pedestrians and bicyclists requires two approaches. On Wilson Avenue a sharrow would be most effective in accommodating bicyclists while on MLK Drive, a separate facility is required to accommodate bicyclists. MLK Drive, because of its commercial land uses and few retail or residential developments, has long segments of roadway that are uninterrupted by intersections or driveways. The east side of MLK Drive has continuous sidewalks despite relatively low demand. This facility would therefore be more effective as a multi-use path that could be used for short trips, commuting, and recreational purposes. In achieving this aim, the existing concrete sidewalk could be expanded from 4-5 feet wide to 8-10 feet wide, or the concrete sidewalk could be removed and replaced with an asphalt surface. Both approaches would have comparable construction costs.

New crosswalk markings are needed at existing curb ramps on the east side of MLK Drive at the following locations:

- Knapp Street
- Testa Place
- Rockland Road



As a component of this plan, several segments of the Harbor Loop and Norwalk River Valley Trail have been schematically designed and cost estimates have been produced for the proposed trail improvements. Locations include:

- Hendricks Avenue at St. Ann's Club
- 130 East Avenue
- Harbor Walk at North Water Street
- 40 Cross Street
- NRVT: Broad Street to Grist Mill Road

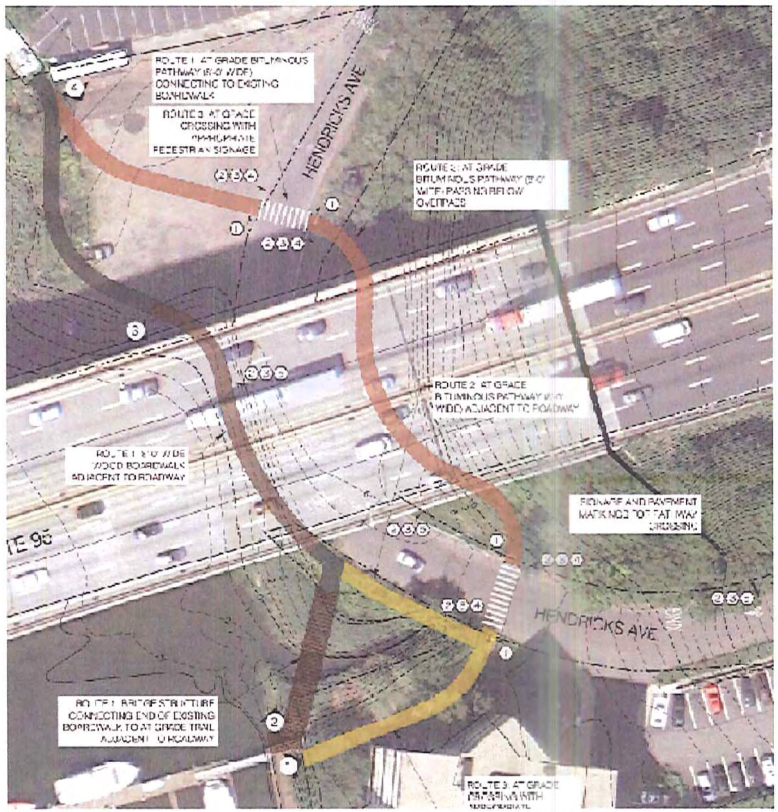
Harbor Loop & Norwalk River Valley Trails

Harbor Loop Trail Improvements

The Harbor Loop Trail consists of a series of disconnected waterfront pathways and trails. Proposed improvements would seek to complete critical gaps in this informal trail system. Improvement concepts have been developed for three segments of the Harbor Loop Trail. These locations include:

- Hendricks Ave. at St. Ann's Club
- 130 East Avenue
- Harbor Walk at North Water Street

The features and amenities that have been planned for the trail include an 8-10' asphalt surface, timber guardrails, chain link fence, boardwalk structures, and bridges. Projected costs for these three segments ranges between $1.1 million and $2 million.



Typical Improvement Schematic: Hendricks Ave at St. Ann's Club

Hendricks Ave. at St. Ann's Club

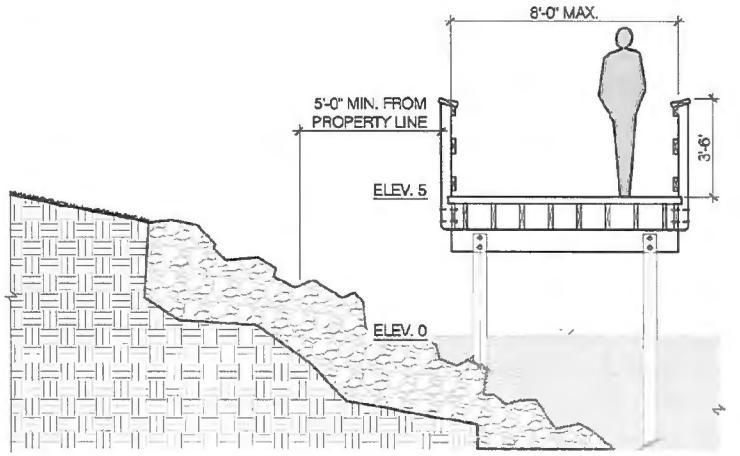
This proposed improvement would connect Saint Ann's Club to the Shore Point office building. This connection would be made by constructing a path along Hendricks Avenue and beneath I-95 that would connect to the boardwalk at St. Ann's club via a bridge or pathway. This connection would complete an approximately 400 foot long gap.

130 East Avenue

Improvements at this location include the construction of a pathway on the Harbor banks at 130 East Avenue connecting to Daskams Lane Park. This 200 foot long connection could be made via a pathway with a soft or paved surface or a boardwalk. Given the slope and site constraints, the pathway is expected to be relatively narrow at 4 to 8 feet in width.

Harbor Walk at North Water Street

This proposed trail would complete a 700 foot long gap along the banks of the harbor adjacent to North Water Street at the Maritime Aquarium. Most of the pathway would consist of a boardwalk built into the banks of the Harbor. This boardwalk would provide a connection below the railroad bridge.



TYPICAL BOARDWALK SECTION
SCALE: 1/4" = 1'-0"

Norwalk River Valley Trail Improvements

Improvement concepts have been developed for 8 segments of the Norwalk River Valley Trail from Broad Street to Grist Mill Road. An additional segment of trail improvements at Cross Street would provide access to the trail and future connection to proposed trail improvements at Riverside Avenue. Additional detail and information can be found on pages 82-91in the appendix.

The features and amenities that have been planned for the trail include an 8-10' asphalt surface, timber guardrails, chain link fence, boardwalk structures, and bridges. Projected costs for completing these segments would range between approximately $9.9 million to $12 million. Improvement segments include:

Broad Street to Grist Mill Road (8 segments)

The proposed trail along this segment would connect the existing trail at Broad Street to Grist Mill Road, a nearly two mile long segment. This 8-10 foot wide trail would be located on the west side of Route 7 and would, for the most part, follow an existing utility corridor. This trail would cross below the Merritt Parkway adjacent to Perry Lane and would require a tunnel to be constructed through one of the Parkway bridges.

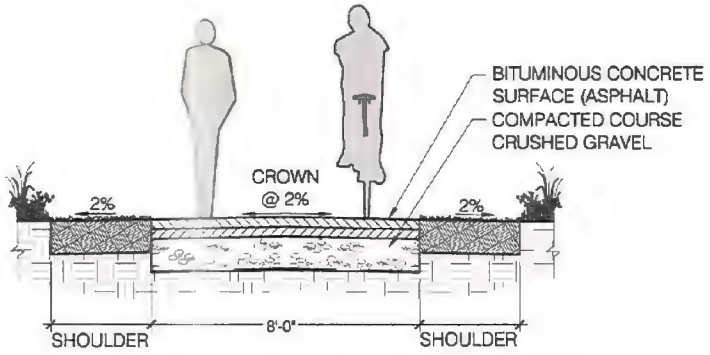
Riverside Avenue

Trail improvements at Riverside Avenue would be constructed on the west side of the Norwalk River, east of Riverside Avenue. The addition of this segment would connect the existing trail at New Canaan Avenue to proposed improvements at Belden Avenue and Cross Street. Proposed trail improvements at Riverside Avenue have not been schematically designed, but a cost estimate has been generated for this proposed trail segment. See page X for additional details.

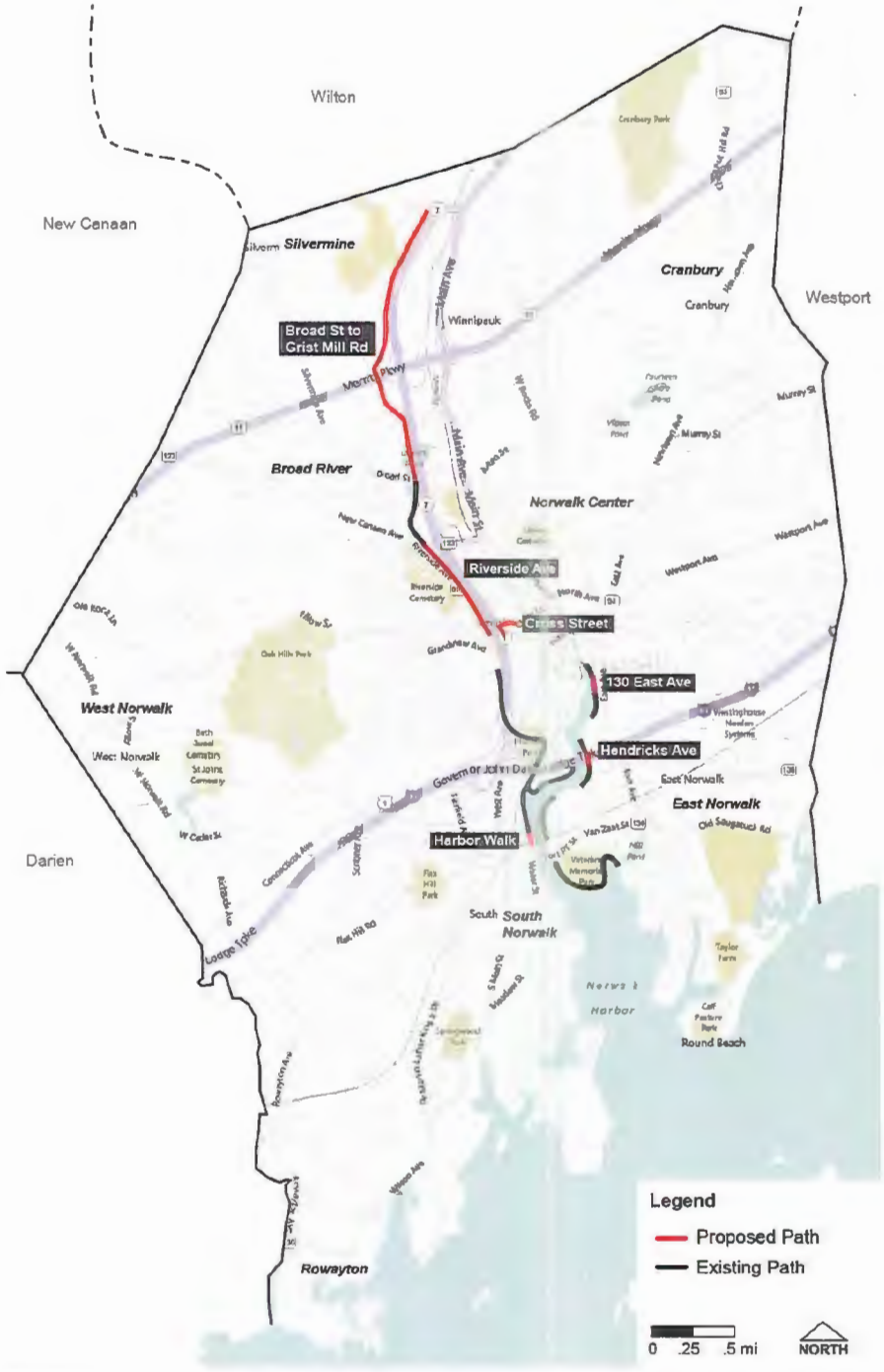
Cross Street

Cross Street trail improvements would provide access to the Norwalk River Valley Trail system via Cross Street or Belden Avenue. Improvements in this area would provide connections across Cross Street and below Route 7. This proposed trail would connect the development at 24 Belden Avenue to a City-owned easement.

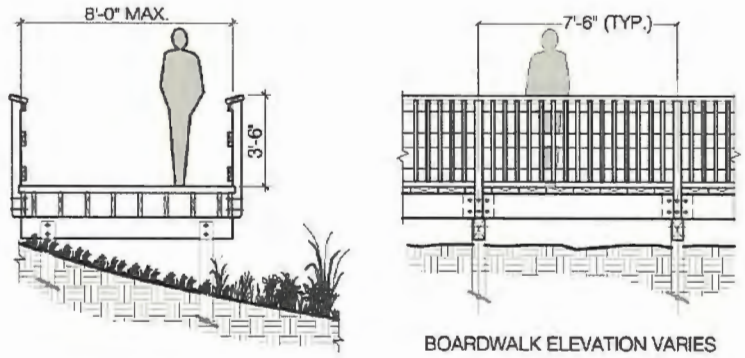
Typical Improvement Schematic: Cross Street at Belden Avenue



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE



The construction of these proposed measures would double the length of the Norwalk River Valley Trail and Harbor Loop trails and complete signficant gaps in the trail system. The map at left shows the extent of existing trails and proposed trails.



TYPICAL BOARDWALK SECTION

The improvement concepts developed within this plan require a clear and strategic implementation process. It is critical that the costs of the proposed measures are balanced against the resources that are available and projected to be available within the City of Norwalk. Additional funding sources should be pursued as a means of offsetting the cost of improvements and leveraging additional resources.

Implementation

Cost Estimates for Tier 1 Corridors and Multi-Use Path Improvements

The total cost estimate for all Tier 1 corridor improvements is approximately $4.1 million (see table 2). The most substantial component of this cost is sidewalk and footpath improvements with an estimated cost of approximately $1.6 million for 4.5 miles of new facilities (see table 4 on the next page for an itemized cost estimate).

The total cost estimate for multi-use path improvements is estimated to be $11 million to $14 million (see table 3). This includes various improvements to the Harbor Loop Trail system and the Norwalk River Valley Trail .

Quadrant	Corridor Number	Corridor	Improvement Cost
NW	1	Richards Avenue	$ 105,500
NW	2	Riverside Avenue (Route 09)	$ 175,900
NW	3	Connecticut Avenue (Route 1)	$ 603,600
NE	4	Westport Avenue (Route	$ 513,000
NE	5	Main Ave./Main Street (Route 123)	$ 489,600
NE	6	West Rocks Road	$ 188,500
NE	7	Linden Street	$ 65,500
SE	8	East Avenue (Route 53)	$ 149,200
SE	9	Strawberry Hill Avenue	$ 72,000
SE	10	Sunset Hill Avenue/Tierney Street	$ 38,700
SE	11	Winfield Street	$ 233,000
SE	12	Calf Pasture Beach Road	$ 406,800
SW	13	Rowayton Avenue	$ 162,600
SW	14	Highland Avenue	$ 105,500
SW	15	Flax Hill Road	$ 42,300
SW	16	Wilson Ave (Rt. 136)/ M. L. King Jr. Drive	$ 817,400
		Total Cost of Corridor Improvements	$ 4,169,100

Table 2: Corridor Cost Estimates

The combined cost of Tier 1 corridor improvements and Norwalk River Valley Trail and Harbor Loop Trail improvements is expected to be between $15 million and $18 million.

Corridor improvements would result in significant upgrades to the existing pedestrian and bicycle network. Pedestrian and bicycle improvements include (but are not limited to):

- 101 marked crosswalks
- 25 pedestrian signal upgrades
- 83 ADA accessible curb ramps (stand alone curb ramp improvements)
- 4.5 miles of new sidewalk and footpaths (includes necessary curb ramps)
- 5 pedestrian refuge islands
- 5 curb extensions
- 6.4 miles of footpath maintenance
- 400 Sharrow and bike lane pavement markings
- 38 "Share the Road" signs and bike lane signs
- 6 miles of bike lane striping and re-striping

Multi-Use Path Segment	Improvement Cost
St. Ann's Club to Shore Point Office Building	$198,000-$650,000
130 East Avenue	$29,500-$170,000
40 Cross Street	$727,500-$1,024,000
Harbor Walk	$914,300-$1,184,300
Norwalk River Valley Trail 1	$1,255,500
Norwalk River Valley Trail 2	$519,500-$607,000
Norwalk River Valley Trail 3	$216,500-$1,063,000
Norwalk River Valley Trail 4	$4,104,000-$3,991,000
Norwalk River Valley Trail 6	$543,500-$1,084,500
Norwalk River Valley Trail 7	$471,500-$571,000
Norwalk River Valley Trail 8	$746,400-$560,000
Norwalk River Valley Trail: Riverside Avenue	$1,500,000
Total Cost of Improvements	$10,926,800-$13,959,700

Table 3: Multi-Use Path Estimates

The on-street bicycle improvements component of this plan is a relatively low cost improvement with all on-street bicycle related improvements estimated to be approximately $88,000. Table 5 below displays an itemized cost estimate of bicycle improvements and is organized by corridor and improvement type.

The cost estimates provided below are based upon Connecticut DOT and industry cost data. These estimates represent 2011 costs and do not reflect the cost of administrating or financing improvements. These estimates reflect typical unit costs and are used for planning purposes only. Actual construction costs could differ significantly given site specific issues and constraints.

Quadrant	Corridor Number	Corridor	Crosswalks		Pedestrian Signal Upgrades		ADA Accessible Curb Ramp		4' Asphalt Footpath		5' Concrete Sidewalk		Sidewalk & Footpath Maintenance		Refuge Island		Curb Extension	
			Units	$ 500	Units	$ 30,000	Units	$ 2,000	Linear Feet	$ 36	Linear Feet	$ 100	Linear Feet	$ 10	Units	$ 20,000	Units	$ 20,000
NW	1	Richards Avenue	1	$ 500		$ -	2	$ 4,000		$ -	880	$ 88,000		$ -		$ -		$ -
NW	2	Riverside Avenue (Route 809)	3	$ 1,500	1	$ 30,000	3	$ 6,000	3,500	$ 126,000		$ -		$ -		$ -		$ -
NW	3	Connecticut Avenue (Route 1)	20	$ 10,000	6	$ 180,000	15	$ 30,000		$ -	3,600	$ 360,000		$ -	1	$ 20,000		$ -
NE	4	Westport Avenue (Route 1)	14	$ 7,000	4	$ 120,000	15	$ 30,000		$ -	2,900	$ 290,000		$ -	2	$ 40,000	1	$ 20,000
NE	5	Main Avenue/ MainStreet (Route 123)	22	$ 11,000	8	$ 240,000	14	$ 28,000	2,000	$ 72,000		$ -		$ -	1	$ 20,000		$ -
NE	6	West Rocks Road	2	$ 1,000		$ -	2	$ 4,000		$ -		$ -	14,800	$ 148,000	1	$ 20,000		$ -
NE	7	Linden Street	1	$ 500		$ -	1	$ 2,000	1,700	$ 61,200		$ -		$ -		$ -		$ -
SE	8	East Avenue (Route 53)	9	$ 4,500	3	$ 90,000	6	$ 12,000		$ -		$ -		$ -		$ -	2	$ 40,000
SE	9	Strawberry Hill Avenue	2	$ 1,000	1	$ 30,000	5	$ 10,000	100	$ 3,600		$ -		$ -		$ -	1	$ 20,000
SE	10	Sunset Hill Ave/Tierney Street	1	$ 500		$ -	1	$ 2,000		$ -		$ -	3200	$ 32,000		$ -		$ -
SE	11	Winfield Street	11	$ 5,500	2	$ 60,000	6	$ 12,000	1,800	$ 64,800	650	$ 65,000		$ -		$ -	1	$ 20,000
SE	12	Calf Pasture Beach Road		$ -		$ -	-	$ -		$ -	3,500	$ 350,000	3400	$ 34,000		$ -		$ -
SW	13	Rowayton Avenue	8	$ 4,000		$ -	9	$ 18,000	2,500	$ 90,000	400	$ 40,000		$ -		$ -		$ -
SW	14	Highland Avenue	1	$ 500		$ -	2	$ 4,000		$ -		$ -	9000	$ 90,000		$ -		$ -
SW	15	Flax Hill Road	3	$ 1,500		$ -	2	$ 4,000		$ -		$ -	3200	$ 32,000		$ -		$ -
SW	16	Wilson Ave (Route 136) / MLK Jr Drive	3	$ 1,500		$ -	-	$ -		$ -		$ -		$ -		$ -		$ -
		Total Cost Per Improvement Type	101	$ 50,500	25	$ 750,000	83	$ 166,000	11,600	$ 417,600	11,930	$ 1,193,000	33600	$ 336,000	5	$ 100,000	5	$ 100,000

Table 4: Pedestrian Improvements

Quadrant	Corridor Number	Corridor	Sharrow Markings		Sharrow Signage		Bike Lane Markings		Bike Lane Signage		Pavement Striping		Pavement Striping Removal		Directional signs		Bike Box Pavement Marking		8'-10' Asphalt Multi-Use Path	
			Units	$ 100	Units	$ 300	Units	$ 100	Units	$ 300	Linear Feet	$ 1	Linear Feet	$ 1	Units	$ 300	Units	$ 1,000	Linear Feet	$ 90
NW	1	Richards Avenue		$ -		$ -	24	$ 2,400	4	$ 1,200	2,500	$ 2,500	2,500	$ 2,500	8	$ 2,400	2	$ 2,000		$ -
NW	2	Riverside Avenue (Route 809)		$ -		$ -	16	$ 1,600	2	$ 600	3,900	$ 3,900	3,900	$ 3,900	8	$ 2,400		$ -		$ -
NW	3	Connecticut Avenue (Route 1)		$ -		$ -		$ -		$ -		$ -		$ -	12	$ 3,600		$ -		$ -
NE	4	Westport Avenue (Route 1)		$ -		$ -		$ -		$ -		$ -		$ -	20	$ 6,000		$ -		$ -
NE	5	Main Avenue/ MainStreet (Route 123)	28	$ 2,800	2	$ 600		$ -		$ -		$ -		$ -	24	$ 7,200		$ -	1,200	$ 108,000
NE	6	West Rocks Road	88	$ 8,800	3	$ 900	10	$ 1,000	1	$ 300		$ -		$ -	15	$ 4,500		$ -		$ -
NE	7	Linden Street		$ -		$ -		$ -		$ -		$ -		$ -	6	$ 1,800		$ -		$ -
SE	8	East Avenue (Route 53)		$ -		$ -		$ -		$ -		$ -		$ -	9	$ 2,700		$ -		$ -
SE	9	Strawberry Hill Avenue		$ -		$ -	32	$ 3,200	4	$ 1,200		$ -		$ -	10	$ 3,000		$ -		$ -
SE	10	Sunset Hill Ave/Tierney Street	24	$ 2,400	4	$ 1,200		$ -		$ -		$ -		$ -	2	$ 600		$ -		$ -
SE	11	Winfield Street		$ -	4	$ 1,200	24	$ 2,400		$ -		$ -		$ -	7	$ 2,100		$ -		$ -
SE	12	Calf Pasture Beach Road		$ -		$ -	12	$ 1,200	2	$ 600	13,200	$ 13,200	6,600	$ 6,600	4	$ 1,200		$ -		$ -
SW	13	Rowayton Avenue	52	$ 5,200	4	$ 1,200		$ -		$ -		$ -		$ -	14	$ 4,200		$ -		$ -
SW	14	Highland Avenue	40	$ 4,000	2	$ 600	16	$ 1,600	2	$ 600		$ -		$ -	14	$ 4,200		$ -		$ -
SW	15	Flax Hill Road	24	$ 2,400	2	$ 600		$ -		$ -		$ -		$ -	6	$ 1,800		$ -		$ -
SW	16	Wilson Ave (Route 136) / MLK Jr Drive	32	$ 3,200	2	$ 600		$ -		$ -		$ -		$ -	7	$ 2,100		$ -	9,000	$ 810,000
		Total Cost Per Improvement Type	288	$ 28,800	23	$ 6,900	134	$ 13,400	15	$ 4,500	19,600	$ 19,600	13,000	$ 13,000	166	$ 49,800	2	$ 2,000	10,200	$ 918,000

Table 5: Bicycle Improvements

Phasing of Improvements

Developing a strategy for implementing the recommended improvements of this plan is a critical step in the planning process. Factors included in phasing improvements include the cost and cost effectiveness of improvements, complexity of improvements, requirements for additional design and engineering, number of potential users, and relevance to the broader pedestrian and bicycle network.

The strategy adopted herein includes three phases of implementation. This includes short-term, mid-term, and long-term improvements.

Short-term improvements (1-2 years) include:

- On-street bicycle facilities
- Crosswalk improvements including:
  - Curb ramp construction
  - Pedestrian signal upgrades
  - Curb extensions
  - Pedestrian refuge islands
  - Sidewalk extensions
- Footpath maintenance
- Wayfinding signage on improved corridors
- NRVT improvements: Hendricks Avenue at St. Ann's Club

Mid-term improvements (3-5 years) include:

- Construction of sidewalks and footpaths
- Norwalk River Valley Trail/Harbor Loop Trail improvements
- Wayfinding signage on improved corridors

Long-term improvements (6-10 years) include:

- Norwalk River Valley Trail/Harbor Loop Trail improvements
- Multi-Use paths
- Wayfinding signage on improved corridors

The total cost of recommended improvements is approximately $4.1 million. A significant percentage of this cost has been approved by the Norwalk City Council for the 2011 through 2012 fiscal year with additional funding projected for fiscal years 2013 through 2016. The total projected funding over the next five years is expected to be approximately $4.5 million (see table below). These funds will be distributed to and administered by the Public Works and Planning and Zoning Departments. While a percentage of these funds are already committed to existing projects, a significant balance of the funds could be programmed for the improvements recommended in this plan.

	2011-12	2012-13	2013-14	2014-15	2015-16
Sidewalk & Curbing	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000
Footpath Replacement	$ 150,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Bikeway Plan	$ 125,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000
Waterfront Public Access	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Safe Routes to School	$ 125,000		$ 200,000		
Total	$ 950,000	$ 850,000	$ 1,050,000	$ 850,000	$ 850,000

Table 3: City of Norwalk Bicycle and Pedestrian funding

The cost estimate for Tier 1 Corridors does not include the cost of Norwalk River Valley Trail Improvements which ranges from $11 million to $14 million. Waterfront public access is included in Norwalk's budget for fiscal years 2011-2016, with $1.25 million projected for this five year period. In seeking funding for the balance of the cost necessary to complete the trail, the City should pursue grant funding.

Sources of Funding

There are several grants that are administered by federal and state agencies such as the U.S. Department of Transportation, The Federal Highway Administration, The Connecticut Department of Transportation, and the Connecticut Department of Energy and Environmental Protection. Information on these programs can be found on the proceeding page.

Grant Programs for Walking and Bicycling

There are several streams of funding available from the federal government for pedestrian and bicycle projects. These programs and funding mechanisms include:

- Tiger Grant Program
- Congestion Mitigation and Air Quality Program
- Surface Transportation Program
- Safe Routes to School
- Recreational Trails Program
- Highway Safety Program
- Community Development Block Grants

Tiger Grant Program

Administered by: U.S. Department of Transportation (DOT)
http://www.dot.gov/tiger/

The U.S. Department of Transportation oversees the Transportation Investment Generating Economic Recovery (TIGER) grant program. As a single program, TIGER resembles a microcosm of the activities that the DOT regularly supports with a wide range of established grants. Eligible projects include bicycle and pedestrian improvements. Eligible TIGER grantees include state, local, tribal and territorial government entities, such as transit agencies, port authorities and multijurisdictional coalitions. Award amounts range from a minimum of $20 million to a maximum of $300 million, although DOT may waive the minimum threshold in the case of small projects.

Three rounds of grants have been conducted since the introduction of the program. Future funding for this program is uncertain.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

Administered by: FHWA
http://www.fhwa.dot.gov/environment/air_quality/cmaq/

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program assists areas designated as nonattainment or maintenance under the Clean Air Act Amendments of 1990 to achieve and maintain healthful levels of air quality by funding transportation projects and programs.

Projects must be likely to contribute to the attainment of national ambient air quality standards (or the maintenance of such standards where this status has been reached) based on an emissions analysis. CMAQ has seven major project categories, one of which is pedestrian and bicycle projects.

Pedestrian and bicycle projects account for approximately 13 percent of CMAQ projects. CMAQ Improvement Program funds are available to a wide range of government and non-profit organizations, as well as private entities contributing to public/private partnerships. They are controlled by metropolitan planning organizations (MPOs) and state departments of transportation. Often, these organizations plan or implement their own air quality programs besides approving CMAQ funds for other projects. Funding is available for areas that do not meet the National Ambient Air Quality Standards (nonattainment areas) as well as former nonattainment areas that are now in compliance (maintenance areas). CMAQ-funded projects may include bicycle and pedestrian facility improvements, bicycle racks and lockers, and individualized marketing initiatives that promote bicycling and walking (such as maps, brochures, and public service announcements).

The Federal share for most eligible activities and projects is 80 percent; or 90 percent if used on certain activities on the Interstate System; or up to 100 percent for certain identified activities such as traffic control signalization and carpooling projects.

The CMAQ program has funded numerous bicycle and pedestrian improvements including bikeway networks in cities such as Philadelphia, Houston, and New York City, pedestrian and bicycle spot improvement programs, bicycle parking, bicycle racks on buses, sidewalks, trails, and promotional programs such as bike-to-work events. CMAQ funds have also been used to fund bicycle and pedestrian coordinator positions at the State and local level.

Surface Transportation Program (STP) & Transportation Enhancements

Administered by: FHWA
www.enhancements.org

STP funds may be used for either the construction of bicycle transportation facilities and pedestrian walkways, or nonconstruction projects (such as maps, brochures, and public service announcements) related to safe bicycle use and walking. TEA-21 added "the modification of public sidewalks to comply with the Americans with Disabilities Act" as an activity that is specifically eligible for the use of these funds.

Ten percent of each State's STP funds is set-aside for the Hazard Elimination and Railway-Highway Crossing programs, which address bicycle and pedestrian safety issues. Each State is required to implement a Hazard Elimination Program to identify and correct locations which may constitute a danger to motorists, bicyclists, and pedestrians. Funds may be used for activities including a survey of hazardous locations and for projects on any publicly owned bicycle or pedestrian pathway or trail, or any safety-related traffic calming measure. Improvements to railway-highway crossings "shall take into account bicycle safety."

Ten percent of each State's annual STP funds are set-aside for Transportation Enhancement Activities (TEs). The law provides a specific list of activities that are eligible TEs and this includes "provision of facilities for pedestrians and bicycles, provision of safety and educational activities for pedestrians and bicyclists," and the "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)."

Transportation Enhancement funding is available to local governments, communities, and non-profits that have projects directly related to surface transportation. As TE funds are administered to states, the details of individual state programs are different, but each state works with FHWA to ensure that projects meet the specified criteria. Descriptions and state profiles are available through the TE website. In addition to relating to surface transportation, projects also must pertain to one of the following twelve eligible activities:

- Provision of pedestrian and bicycle facilities
- Provision of pedestrian and bicycle safety and education activities
- Landscaping and scenic beautification
- Conversion of abandoned railway corridors to trails

TE are administered as a reimbursable cost share program that has standard Federal requirements regarding highways, environmental controls, planning, and accessibility. Generally, applicants can expect an 80 percent Federal share, but additional funding from other sources can contribute to the 20 percent required match. Funding administration can vary by state, with innovative measures including advance payment and consideration of the value of local land, services, and materials.

Safe Routes to School (SRTS)

Administered by the Connecticut Department of Transportation
www.ctsaferoutes.org

In August 2005, the Federal-aid Safe Routes to School (SRTS) program was created by Section 1404 of the SAFETEA-LU transportation bill. The FHWA Office of Safety administers the Safe Routes to School program funds and provides guidance and regulations about SRTS programs. Federal SRTS funds are distributed to states based on student enrollment, with no state receiving less than $1 million per year. SRTS funds can be used for both infrastructure projects and non-infrastructure activities. The FHWA allocates SRTS funding annually to each state in conjunction with Federal-aid Highway apportionments, and the federal SRTS Program is managed and administered by each state's Department of Transportation.

The Program provides funds to the States to substantially improve the ability of primary and middle school students to walk and bicycle to school safely. The purposes of the program are:

- To enable and encourage children, including those with disabilities, to walk and bicycle to school
- To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
- To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8)

The program establishes two distinct types of funding opportunities: infrastructure projects (engineering improvements) and non-infrastructure related activities (such as education, enforcement and encouragement programs). To be eligible for infrastructure grants, a Safe Routes to School Plan must be in place.

Recreational Trails Program (RTP)

Administered by Department of Environmental Protection
www.ct.gov/dep/cwp

The Recreational Trails Program (RTP) provides funds to the States to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA).

The RTP funds come from the Federal Highway Trust Fund, and represent a portion of the motor fuel excise tax collected from nonhighway recreational fuel use: fuel used for off-highway recreation by snowmobiles, all-terrain vehicles, off-highway motorcycles, and off-highway light trucks.

The RTP funds are distributed to the States by legislative formula: half of the funds are distributed equally among all States, and half are distributed in proportion to the estimated amount of nonhighway recreational fuel use in each State. Connecticut has received a total of $10.7 million since 1993, with $480,000 being apportioned for 2012.

Projects eligible for this program include: construction of new trails (motorized and non-motorized); maintenance and restoration of existing recreational trails (motorized and non-motorized); access to trails by persons with disabilities; purchase and lease of trail construction and maintenance equipment; acquisition of land or easements for a trail, or for trail corridors; operation of educational programs to promote safety and environmental protection as related to recreational trails.

Highway Safety Improvement Program (HSIP) (Section 402 funding)

Administered by: NHTSA and FHWA
www.safety.fhwa.dot.gov/policy/section402

Highway Safety Funds are used to support State and community programs to reduce deaths and injuries on the highways. In each State, funds are administered by the Governor's Representative for Highway Safety. Pedestrian Safety has been identified as a National Priority Area and is therefore eligible for Section 402 funds. Section 402 funds can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. Since the 402 Program is jointly administered by NHTSA and FHWA, Highway Safety Funds can also be used for some limited safety-related engineering projects.

Section 402 has been used to fund several bike and pedestrian safety programs across the country and is a good resource for bike advocacy groups to be aware of. Section 402 funds can be used for bike and pedestrian activities, examples of which are provided below:

- Comprehensive school based pedestrian and bike safety education programs
- Helmet distribution programs
- Pedestrian safety programs for older adults
- Training in use of ped/bike design guidelines
- Community information and education programs
- Public information in May, such as "Bike Safety Month", and in September, "Back to School Safety Month."
- Public information for school zone and crosswalk safety
- Public information about older adults and impaired pedestrians

States are allocated Section 402 funds using a formula which bases 75 percent of funding on the state's population and 25 percent on total public road miles; however, all states are entitled to no less than one half of 1 percent of total Section 402 funds. A minimum of 40 percent of Section 402 funds must go directly to local governments.

Community Development Block Grant (CDBG)

Administered by Department of Housing and Urban Development
www.hud.gov

The Community Development Block Grant (CDBG) program, is a flexible program that provides communities with resources to address a wide range of unique community development needs, specifically directed toward revitalizing neighborhoods, economic development, and providing improved community facilities and services. Sidewalk improvements, bike lanes, paths and trails are all eligible under the guidelines.

The program provides annual grants on a formula basis to entitled cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.

HUD awards grants to entitlement community grantees to carry out a wide range of community development activities directed toward revitalizing neighborhoods, economic development, and providing improved community facilities and services.

Entitlement communities develop their own programs and funding priorities. However, grantees must give maximum feasible priority to activities which benefit low- and moderate-income persons. A grantee may also carry out activities which aid in the prevention or elimination of slums or blight. Additionally, grantees may fund activities when the grantee certifies that the activities meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community where other financial resources are not available to meet such needs.

Summary Table of Funding Programs

The following table provides a summary of federal funding programs for pedestrian and bicycle programs and projects.

	Transportation Enhancements (TE)	High-Priority Projects (HPPs)	Congestion Mitigation and Air Quality Improvement (CMAQ)	Non- TE Surface Transporation Program (STP)	Safe Routes to Schools (SRTS)	Recretational Trails Program (RTP)	Highway Safety Improvement Program (HSIP)	Section 402-- State and Community Highway Safety Grant Program
Percent of Federal Bike/Ped Funding[1]	41.0%	20.8%	16.0%	9.9%	6.8%	3.0%	0.8%	n/a
Program Purpose	To expand travel choice and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure.	To fund key transportation projects deemed important by elected officials.	To fund transportation projects to improve air quality and reduce traffic congestion in areas that do not meet air quality standards.	To provide flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the NHS, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities.	To enable and encourage children to walk and bicycle to school; and to facilitate the planning, development and implementation of projects that will improve safety, and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.	To provide funds to the States to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses.	To fund highway safety projects aimed at reducing highway fatalities and serious injuries.	To create safety programs aimed at reducing crashes, deaths, injuries, and property damage.
Eligible Infrastructure	All bike/ped infrastructure that has a relationship to surface transportation (as opposed to recreation alone)	All bike/ped infrastructure	Most bike/ped infrastructure including bike paths, lanes, racks, lockers, bike sharing programs	All bike/ped infrastructure	Bike/ped infrastructure within a 2 mile radius of the school	Bike trails trailside and trailhead facilities, both development and maintenance	Bike lanes, bike parking, crosswalks and signage	None
Eligible Non-Infrastructure	Safety and educational programs for pedestrians and cyclists are also eligible	None	Most bike/ped programs and "outreach related to safe bicycle use," and "establishing and funding State bicycle/pedestrian coordinator positions..."	All bike/ped programs	Encouragement, Enforcement and Education activities, for children in grades K-8	Trail construction and maintenance equipment; land and easement acquisition; safety and environmental education; assessment of trail conditions; state program administration	States can spend 10 percent of their HSIP funds on public awareness campaigns, education programs and enforcement activities	Safety programs such as bike or pedestrian safety education, helmet distribution, or distribution of safety information
Key Project Requirements	Must relate to surface transportation, and must comply with all federal administrative laws that apply to highway projects	No official requirements, but offices need to know how the project will help their community and that local officials endorse the project	1) Must be spent in non-attainment and maintenance areas. 2) Will be evaluated on air quality emissions	n/a	Focus is on making it safer for more children (grades K-8) to walk and bicycle to school	30% of state's funding must be used for nonmotorized trail projects; 30% for motorized; 40% for projects that encourage diversity of use of trail corridor, trailhead, etc. (categories may overlap); projects encouraged to have environmental benefit and use youth conservation and service corps	Project must address goals written in State Highway Safety Plan (SHSP)	Project must address goals written in State Highway Safety Plan (SHSP)
Process Timing	Different in every state; see www.enhancements.org/Stateprofile.asp to learn about your state	HPPs are decided every 6 years with the transportation bill; Appropriations projects are similar to HPPs, but are decided annually with the appropriations bill	Different in every state and MPO	n/a	Different in every state	Varies by state	HSIP Projects decided every year. SHSP updated every year as well.	n/a
Local Match Required	Varies, usually 20%	No match requirement, but projects with a local match are generally prioritized	Typically 20%	20%	None	Typically 20%; some 50%	10%	n/a
Who Should I Talk to About This?	State TE Coordinator	Congressional Office	MPO to find out who runs your CMAQ Program	Bike/Ped Coordinator	DOT SRTS Coordinator	State Trail Administrator	Bike/Ped Coordinator, HSIP Manager	DOT Traffic Safety Office
For More Info:[2]	National Transportation Enhancements Clearinghouse	Congressional Office	"Congestion Mitigation and Air Quality Improvement Program," Advocacy Advance Report	n/a	Safe Routes to School National Partnership	FHWA Web site: www.fhwa.dot.gov/environment/rectrails/index.htm	"Highway Safety Improvement Program," Advocacy Advance Report	"Section 402," Advocacy Advance Report

[1] FY2009. Does not include Recovery Act funds.

[2] All Advocacy Advance Reports can be found at www.bikeleague.org/resources/reports

Source: America Bikes, www.americabikes.org

Designing the Improvements

Ensuring the success of improvements to Norwalk's pedestrian and bicycle infrastructure requires that improvements are built with a full understanding of the specific benefits and applications of those improvements. Specifications and best practices for the following improvement "tools" are included herein.

- Marked crosswalks
- Crosswalk signage
- Pedestrian actuated crossing signals
- Curb ramps
- Sidewalks and footpaths
- Curb extensions
- Pedestrian refuge islands
- Sharrows
- Bicycle lanes
- Bike boxes
- Bike pockets
- Multi-use paths
- Bicycle racks
- Lane reductions
- Wayfinding

Marked Crosswalks

Marked crosswalks are a critical component of the pedestrian network. They guide the pedestrian to the safest crossing of the roadway and alert drivers to the expected presence of pedestrians. The "piano key" style crosswalk, which consists of multiple white bars aligned perpendicular to the walking path, is currently in use in Norwalk and should be used for crosswalk locations identified in this plan.

"Crosswalk markings provide guidance for pedestrians crossing the roadway by defining and delineating the most appropriate crossing path. Crosswalk markings also alert road users to a pedestrian crossing point not controlled by traffic signals or stop signs. At non-intersection locations, these markings legally establish the crosswalk." –Institute for Transportation Engineers - Traffic Safety Toolbox

"In general, crosswalk markings at unsignalized intersections appear to have several positive effects and no observed negative effects. Specifically, drivers appear to be aware that pedestrians are in a marked crosswalk and drive slightly slower. Crosswalks also have the positive benefit of channeling pedestrians to the intersection. Also, there appears to be no evidence to support the contention that pedestrians feel protected in marked crosswalks and act more carelessly. In conclusion, it appears that marking pedestrian crosswalks at relatively narrow, low-speed, unsignalized intersections is a desirable practice."-Federal Highway Administration -RD-00-103

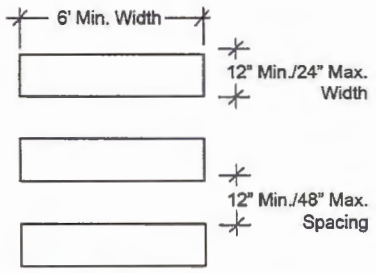
"Crosswalks can be raised or can be designed in conjunction with speed tables, medians, crossing islands, curb extensions, and other supplemental measures. With these measures, unsignalized crossings may be feasible at additional location types. –Institute for Transportation Engineers - Traffic Safety Toolbox

Benefits

- Encourages pedestrians to cross the street at regular locations.
- Improves visibility of pedestrians, alerts drivers to the presence of pedestrian traffic.

Application

- Crosswalk locations should be located approximately 300 feet apart. Increased distances decrease pedestrian conformity, decreased distances may decrease driver conformity.
- Crosswalks should be a minimum 6 feet wide to 10 feet wide or width of sidewalk if greater.
- Curb ramps, if present, should be aligned with crosswalk.
- Crosswalks are most effective when crossing roadway at a right angle.
- Crosswalks should be accompanied by signage or signalization where conditions warrant.



Bar Style Crosswalk
(Also known as Piano Key or Continental Type)

Crosswalk Signage

Crosswalk signage should be used at all crosswalks where traffic is not controlled by a traffic light or stop sign. This signage may also be used to supplement crosswalks at locations where sight-lines are an issue or where drivers fail to yield to pedestrians despite stop signs or traffic lights. The most common application of this sign would be a mid-block crosswalk. When located within a school zone, the school crossing sign should be used in lieu of the pedestrian crossing sign. The Manual for Uniform Traffic Control Devices (MUTCD) provides the following guidance:

Non-Vehicular Warning (W11-2) signs may be used to alert road users in advance of locations where unexpected entries into the roadway might occur or where shared use of the roadway by pedestrians *might occur. These conflicts might be relatively confined, or might occur randomly over a segment of roadway.*

If used in advance of a pedestrian crossing, the W11-2 signs should be supplemented with plaques with the legend AHEAD or XX FEET to inform road users that they are approaching a point where crossing activity might occur.

The W11-2 and W11-9 signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border.

When a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a selected site area should be avoided. Crossing signs should be used only at locations where the crossing activity is unexpected or at locations not readily apparent. - Pedestrian relevant excerpts from MUTCD Section 2C.5

Benefits

- Increases driver awareness
- Assists pedestrians in locating crosswalks

Application

- Signage typically used at mid-block crossing locations
- Signage must not interfere with sidewalk function
- School crossing sign should be used when crosswalk is located within a school zone or has a high number of students in route to school

School Crossing Sign
S1-1 sign with W16-7P arrow

Pedestrian Crossing Sign
W11-2 sign with W16-7P arrow

Pedestrian Actuated Signals

Pedestrian actuated signals are push buttons that pedestrians use to prompt a pedestrian crossing signal or a green light. These signals are typically used at intersections controlled by traffic lights.

Exclusive signal phases, where all traffic is stopped and pedestrians are allowed to cross on all legs of the intersection, is a commonly used crossing scheme. Exclusive phases are typically used at established school crossings and in areas where a high volume of pedestrian traffic would be exposed to a high volume of turning vehicles.

According to the Manual on Uniform Traffic Control Devices (MUTCD):

Pedestrian signal heads shall be used in conjunction with vehicular traffic control signals under any of the following conditions:

- If a traffic control signal is justified by an engineering study and meets either Warrant 4, Pedestrian Volume or Warrant 5, School Crossing. -or-
- If an exclusive signal phase is provided or made available for pedestrian movements in one or more directions, with all conflicting vehicular movements being stopped; at an established school crossing at any signalized location; or where engineering judgment determines that multi-phase signal indications would tend to confuse or cause conflicts with pedestrians using a crosswalk guided only by vehicular signal indications.

Pedestrian signal heads should be used under any of the following conditions:

- If it is necessary to assist pedestrians in deciding when to begin crossing the roadway in the chosen direction or if engineering judgment determines that pedestrian signal heads are justified to minimize vehicle-pedestrian conflicts;
- If pedestrians are permitted to cross a portion of a street, such as to or from a median of sufficient width for pedestrians to wait, during a particular interval but are not permitted to cross the remainder of the street during any part of the same interval; and/or
- If no vehicular signal indications are visible to pedestrians, or if the vehicular signal indications that are visible to pedestrians starting a crossing provide insufficient guidance for them to decide when to begin crossing the roadway in the chosen direction, such as on one-way streets, at T-intersections, or at multi-phase signal operations.

In general, shorter cycle lengths and longer WALK intervals provide better service to pedestrians and encourage greater signal compliance. For optimal pedestrian service, fixed time signal operation usually works the best. Pedestrian push buttons may be installed at locations where pedestrians are expected at intermittent intervals. Quick response to the button or feedback to the pedestrian should be programmed into the system. When used, push buttons should be well-signed and should be fully accessible to pedestrians in wheelchairs. They should be conveniently placed in the area where pedestrians wait to cross. -Institute for Transportation Engineers - Traffic Safety Toolbox

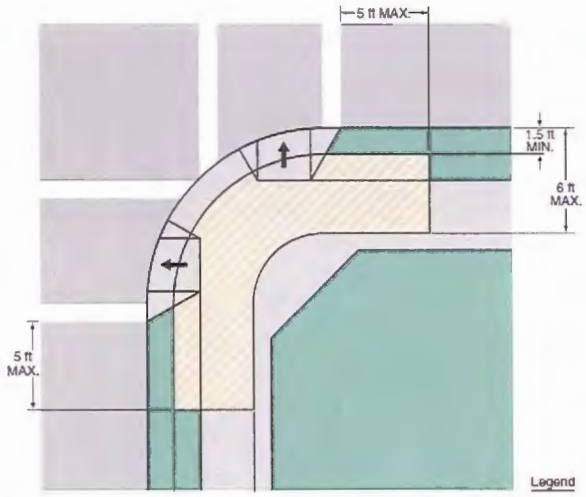
Benefits

- Gives pedestrians dedicated crossing time

Application

- Keep pedestrian waiting time to 30 seconds or less.
- Set crossing time to pedestrian crossing speed of 3 ft/second versus standard 4 ft/second.
- Walk interval should be at least 7 seconds in length
- Provide signed instructions of light operation for pedestrians
- Pedestrian detectors should be located as close to practical to the curb

Typical signal head



Push-button location relative to crosswalk

Curb Ramps

Curb ramps are required by the American Disabilities Act at intersections and marked crosswalks. Any roadway that undergoes reconstruction is required, by federal law, to include these facilities. Curb ramps are integral to the pedestrian network and are a critical link between crosswalks and sidewalks.

According to the Connecticut Highway Design Manual, when determining the need for a curb ramp, the designer should consider the following:

1. If at least one curb will be disturbed by construction at an existing intersection, then curb ramps shall be constructed at all crosswalks which extend from a paved sidewalk in that intersection.
2. For all projects, curb ramps will be constructed at all crosswalks which provide pedestrian access in that intersection and will be provided on all corners. At T-intersections, the designer must ensure that curb ramps are located on the side opposite the minor intersecting road.
3. Opposing ramps must always be provided on adjacent legs of an intersection even if outside project limits.
4. Curb ramps shall be positioned so as not to cause a safety hazard for blind pedestrians.
5. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.
6. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.
7. A diagonal curb ramp shall be wholly contained within the painted markings, including any flared sides. There shall be at least 610 mm of full-height curb within the crosswalk. In addition, there shall be at least 1220 mm between the gutter line and the corner of the two intersecting crosswalks.
8. The function of the curb ramp must not be compromised by other highway features (e.g., guide rail, catch basins, utility poles, signs).
9. Curb ramps are required at all curbed intersections with sidewalks or along all accessible routes.
10. The location of the curb ramp must be consistent with the operation of pedestrian-actuated traffic signals, if present. In addition, a pedestrian push-button must be located so it can be reached by wheelchair-bound individuals.
11. The designer will provide the Division of Traffic Engineering with a set of plans at the preliminary design stage and before the preliminary design review. The Division of Traffic Engineering, in its review, will determine the need and location of mid-block curb ramps.

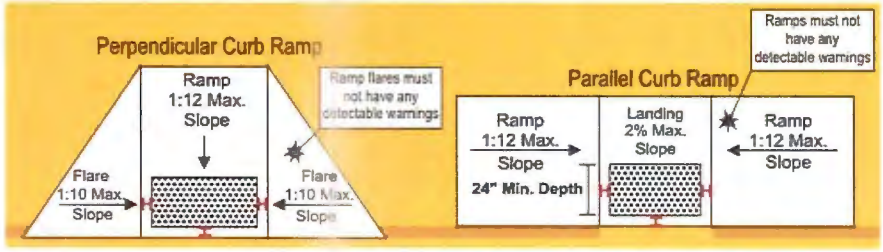
Benefits

- Improves accessibility for people with mobility aids.
- Improves the mobility of people with carriages, strollers, carts, and children on bicycles.
- Encourages pedestrians to cross roadway at a fixed point.

Application

- Ramp perpendicular to curbline
- 1:12 maximum running slope
- 1:48 (2%) maximum cross slope
- 36 inch minimum width
- Level landing at top
- Landing 36 inch long if toe room available
- Landing 48 inch long if constrained
- Ramp within crosswalk at foot
- No exposure to moving traffic lane
- Flush (no lip) connection at street

Curb Ramps in the Public Right-of-Way
Surface Texture/Contrast (Detectable Warnings)



H = Max. 4" border allowed on all sides to frame paver inserts, Per TM 99-02
Detectable Warnings must extend the full width and have a minimum depth of 24 inches.
At Parallel Curb Ramps, ONLY the landing must have detectable warnings.
Note: At diagonal curb ramps, the detectable warnings may be on the ramp or the landing.

Sidewalks and Footpaths

Sidewalks and footpaths are the core of the pedestrian network and also the most capital intensive infrastructure component of the network. Sidewalks are typically concrete construction and a minimum of five feet wide (this width allows two adults to walk comfortably side by side). Footpaths (being somewhat unique to Norwalk) are typically asphalt construction and range from three to four feet wide. Footpaths are less expensive and intrusive than concrete sidewalks, but are a less permanent facility.

"Sidewalks used for pedestrian access to schools, parks, shopping areas, and transit stops and placed along all streets in commercial areas should be provided along both sides of the street. In residential areas, sidewalks are desirable on both sides of the street but need to be provided on at least one side of all local streets." – American Association of State and Highway Transportation Officials (AASHTO)

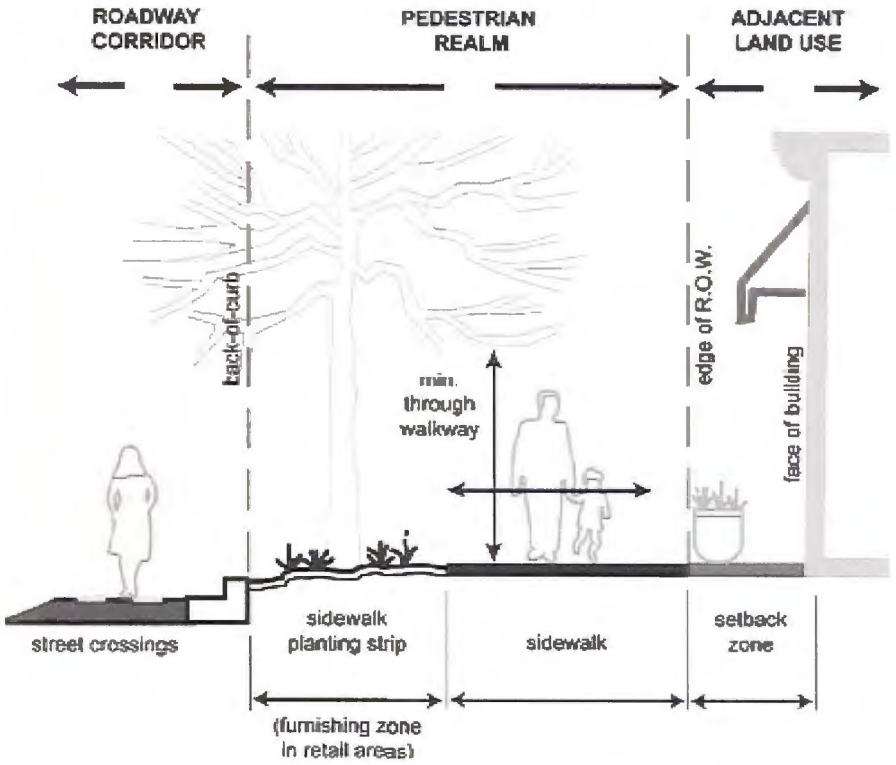
"Sidewalks and walkways separate pedestrians from the roadway and provide places for children to walk, run, skate, ride their bikes, and play. Sidewalks have been found to be associated with significant reductions in pedestrian collisions with motor vehicles. Such facilities improve mobility for pedestrians and should be provided for all types of pedestrian travel: to or from home, work, parks, schools, shopping areas, transit stops, etc. Walkways should be part of every new and renovated facility and every effort should be made to retrofit streets that currently do not have sidewalks or walkways." -Institute for Transportation Engineers - Traffic Safety Toolbox

Benefits

- Minimizes pedestrian exposure to vehicles by providing walking space off of roadway.
- Encourages walking trips

Application

- Minimum sidewalk width of 5 feet is necessary for two adults to comfortably walk side-by-side.
- Sidewalk most effective when separated from curb by a buffer space.
- Buffer provides space for street trees, utilities, & snow storage.
- Buffer most effective at 6 feet wide, thus allowing the placement of an accessible curb ramp between curb line and sidewalk.
- Maximum 2% cross-slope
- Sidewalk zone should be kept clear of obstructions, providing a minimum clear width of 32 inches at spot locations and 36 inches for the length of the walk.
- A protected zone of 27 inches to 80 inches in height must be kept clear of vegetation, signage, and other structures.



When installed in commercial and retail environments, the sidewalk is placed between many adjacent uses such as storefronts, street trees, lights and furniture.

Multi-Use Paths

Multi-use paths serve both pedestrians and bicyclists. These facilities tend to be recreational in nature, although they are sometimes used for commuting and daily trips. Multi-use paths must be at least eight feet and preferably ten feet wide to accommodate both bicyclists and pedestrians. They are typically installed parallel to natural resources (such as the Norwalk River) or highways, rail corridors and utility easements.

Benefits

- Provides recreation facilities for many user groups including pedestrians, wheel chair users, joggers, skaters, and bicyclists.
- May be used for trips and commuting depending on location.

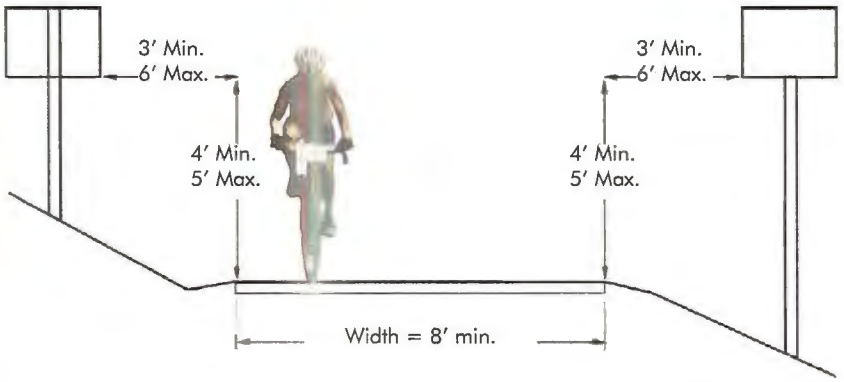
Safe facility for teaching children to ride.

Application

- Asphalt is preferred surface although stone dust or concrete may also used.
- 8 feet is minimum width, 10-12 feet is preferred width.
- Bidirectional travel should be allowed.
- Roadway crossings should be kept to a minimum and must have adequate pavement markings and warning signage.
- Wayfinding should be incorporated.

Shared use paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serves as a necessary extension to the roadway network. Shared use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes.
-AASHTO - Guide for the Development of Bicycle Facilities

Norwalk River Valley Trail



Sign placement at paths

Pedestrian Refuge Islands

Refuge islands are a highly effective tool for assisting pedestrians in crossing wide roadways, heavily trafficked roads, or at midblock locations. These islands can be as narrow as four feet and give the pedestrian a safe place to stop if they are unable to cross the road in one attempt. In addition to assisting pedestrians in crossing, these devices provide a location for the placement of pedestrian crossing signs and can slow the speed of traffic at crosswalks.

Cross islands, also known as center islands, efuge islands, or median slow points, are raised islands placed in the center of the street at intersection or midblock locations that help to protect pedestrians from motor vehicles. Crossing islands allow pedestrians to be concerned with only one direction of the street and wa for an adequate gap in traffic before crossing the second half of the street. Where midblock or intersection crosswalks are to be installed at uncontrolled locations (i.e., where no traffic signals or stop signs exist), crossing islands should be strongly considered as a supplement to the crosswalk. If there is sufficient width, crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing.
-Institute of Transportation Engineers - Traffic Safety Toolbox

Pedestrian refuge island and mid-block crosswalk

Benefits

- Reduces vehicle speeds
- Decreases pedestrian crossing distance
- Increases visibility of crossing

Application

- For use at intersections or mid-block
- Use only on streets with speed limit below 45 mph unless signalization is provided
- Mid-block island crossing should be located at least 300 feet from nearest crossings
- Appropriate signage required
- Adequate lighting required
- Minimum width of 4 feet

Curb Extension

Curb extensions are used to shorten the crossing distance for pedestrians. These devices have the added benefit of improving the visibility for and of pedestrians when crossing and can slow traffic. These devices take many forms and are often referred to as bulbouts.

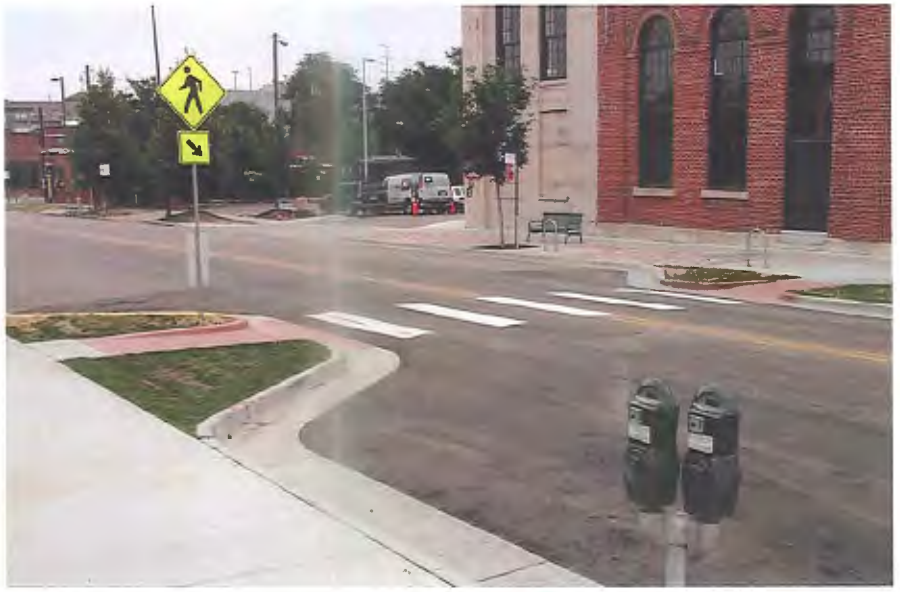
Curb extensions, also known as bulbouts or neckdowns, involve extending the sidewalk or curb line into the street, reducing the effective width. Curb extensions significantly improve pedestrian crossings by reducing pedestrian crossing distance, improving the ability of pedestrians and motorist to see each other, and reducing the time that pedestrians are in the street. Curb extensions that are placed at an intersection essentially prevent motorists from parking in a crosswalk or blocking a curb ramp. Motor vehicles parked at corners present a serious threat to pedestrian safety because they block sight lines, hide pedestrians, and other vehicles, and make turning particularly difficult for emergency vehicles and trucks. Motorists are encouraged to travel more slowly at intersections or midblock locations with curb extensions, because the restricted street width sends them a visual cue. Turning speeds at intersections are reduced with curb extensions (curb radii should be as tight as practicable). Curb extensions are appropriate only where there is an on-street parking lane (curb extensions must not extend into travel lanes, bicycle lanes, or shoulders). -Institute for Transportation Engineers - Traffic Safety Toolbox

Benefits

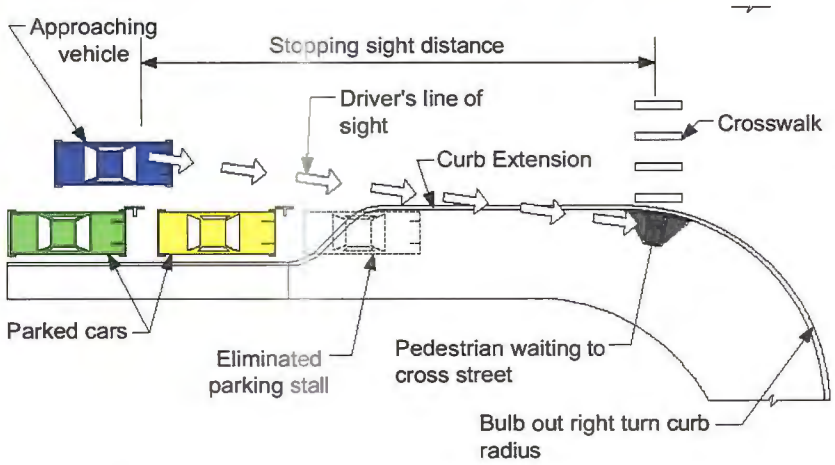
- Encourages pedestrian conformity to marked crosswalks
- Shortens crossing distance for pedestrians
- Provides additional space for curb ramps
- Improves pedestrian visibility by extending past parked vehicles
- Improves driver's visibility of pedestrians
- Slows turning vehicles
- Prevents parking at corner

Application

- For use where wide curb lanes, shoulders, or on-street parking result in wide pavement widths.
- Curb extension should not extend beyond 6 feet of existing curb line and should not obstruct bike or travel lane.
- Adequate vehicle turning radii must be maintained when used at intersections.



Mid-block curb extension and crosswalk



Improved line of sight with curb extension

Sharrows

Shared lane pavement markings (or "sharrows") are bicycle symbols carefully placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists. Unlike bicycle lanes, sharrows do not designate a particular part of the street for the exclusive use of bicyclists. They are simply a marking to guide bicyclists to the best place to ride and help motorists expect to see and share the lane with bicyclists. These facilities are used where roadways are to narrow for dedicated bicycle lanes and when traffic speeds and volumes allow bicyclists to safely mix with traffic.

Benefits

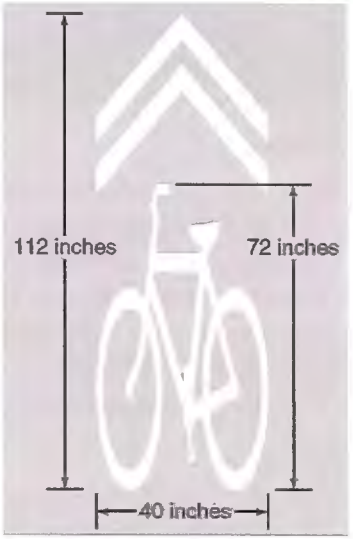
- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way
- Encourage safe passing of bicyclists by motorists
- Reduce the incidence of wrong-way bicycling

Application

- The sharrow should not be placed on roadways that have a speed limit above 35 mph.
- Sharrows shall not be used on shoulders or in designated bicycle lanes.
- If used in a shared lane with on-street parallel parking, sharrows should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the sharrows should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- The sharrow should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.
- "Share the Road" signage should be placed at the beginning of a shared roadway and proceeding major intersections within that roadway.

Shared lane roadway

Share the road signage



Sharrow pavement marking

Bicycle Lanes

Dedicated bicycle lanes are the preferred facility for most bicyclists. These lanes are often found at the edge of the roadway and would otherwise appear to be a roadway shoulder. They are marked by a white edgeline separating the bicycle lane from the traffic lane and by bicycle pavement markings within the lane. Signage is typically used at the beginning of the corridor and intermittently to inform drivers and bicyclists of the presence of the bicycle lane.

Bicycle Lane Safety Benefits - City of Cambridge, MA

Bike lanes help define road space, decrease the stress level of bicyclists riding in traffic, encourage bicyclists to ride in the correct direction of travel, and signal motorists that cyclists have a right to the road. Bike lanes help to better organize the flow of traffic and reduce the chance that motorists will stray into cyclists' path of travel. Bicyclists have stated their preference for marked on-street bicycle lanes in numerous surveys. In addition, several real-time studies (where cyclists of varying abilities and backgrounds ride and assess actual routes and street conditions) have found that cyclists are more comfortable and assess a street as having a better level of service for them where there are marked bike lanes present.

The Purpose of Bicycle Lanes - Connecticut Statewide Bicycle and Pedestrian Plan

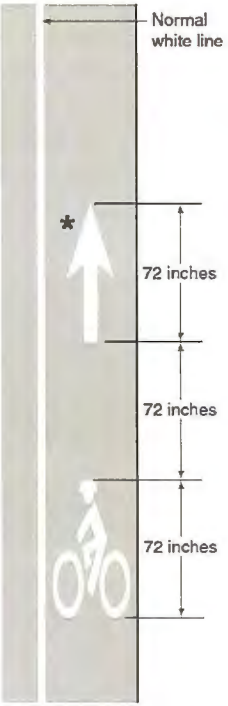
- *Create on-street separated travel facilities for bicyclists.*
- *Provide space for vehicles to safely overtake bicyclists.*
- *Reduce or prevent problems associated with bicyclists overtaking vehicles in congested or narrow streets.*
- *To encourage lower motor vehicle speed by narrowing available lanes.*

Application

- For use on collector and arterial roadways, or local streets in urban areas where bicyclists cannot safely ride with traffic.
- Bike lanes should be one way facilities carrying bicyclists in the same direction as adjacent traffic and located on the right side of the travel lane.
- Bike lanes generally should be installed in both directions of the roadway. Bike lanes installed on only one side of the roadway may encourage riding in the wrong direction.
- In some instances, on one-way roads, the bike lane may be installed on the left side of the travel lane if this provides better safety to the bicyclist.
- 4 feet wide minimum
- 5 feet wide if vehicle speeds exceed 50 mph or the lane is adjacent to a guardrail or tall barrier
- When placed adjacent to on-street parking, the left hand lane stripe (the stripe that separates the bicycle lane from the travel lane) should be no less than 12 feet from the curb. If parking volumes are substantial or turnover is high, such as downtown locations or streets with metered parking, this width should be increased to 14 feet so as to avoid collisions in the door zone of parked cars.
- Bike symbol pavement marking should be spaced every 500 feet and can be used more frequently in dense urban setting.
- Bicycle lane signage should be used at the beginning at the lane and spaced every mile or at significant intersections.

Bike Lane

Bike Lane Sign



Pavement Marking

Bike Box

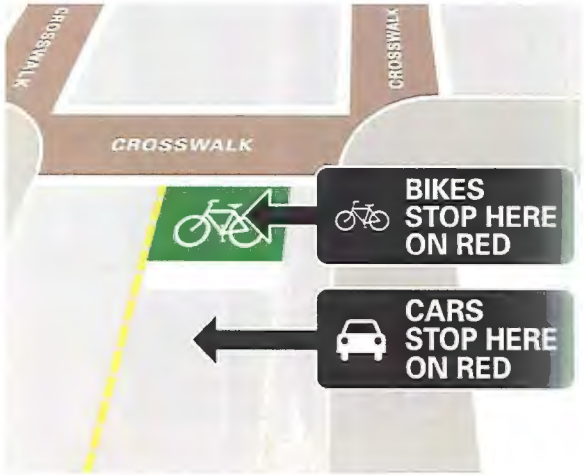
Bike boxes are used in conjunction with bicycle lanes at intersections that are controlled by traffic signals. The bike box provides bicycles with space to wait at the intersection to make a left turn or safely wait to continue straight ahead of right turning traffic. These boxes are reserved for use at intersections with high traffic or high bicyclist volume.

Benefits

- Allows bicyclists to safely negotiate a left turn at intersections.
- Provides storage space for cyclists traveling straight past a right turn lane.

Application

- Locate between crosswalk and stop bar.
- Bike box should have a minimum depth of 8 feet.
- Bike boxes should only be used when traditional intersection treatments do not adequately address bicycle safety or mobility.
- Bike boxes have been used at intersections with high left turn and right turn crash rates.
- Bike boxes may be used in conjunction with bicycle signals to give bicyclists preference on a given roadway.
- Colored bike boxes have been used for extra visibility. Green markings may be used, however maintenance needs must be considered. Blue bike box pavement markings are not recommended for use, as this color is reserved for public safety use.



Bike Pockets

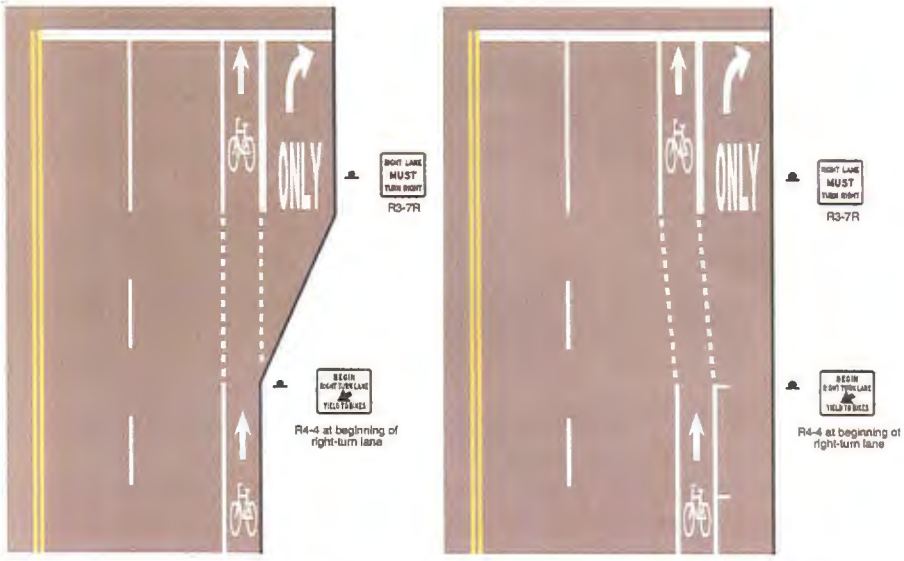
Bike pockets are often used in conjunction with bike boxes. Bike pockets are marked bicycle lanes within the queuing area of intersections that safely guide bicyclists past right turning traffic and towards a bike box if present.

Benefits

- Assist bicyclists in riding past right turning traffic.
- Assist bicyclists in accessing bicycle box for left turns or through riding.

Application

- Bike pocket should be a minimum of 4 feet wide.
- Traffic queuing lanes can be reduced to 10 feet wide to accommodate bike pocket.
- Dashed lines, while optional, should be used to increase the awareness of crossing traffic.
- Colored paint may be used for pavement surface within bike pocket.



Bike pockets use and signage guidance -AASHTO

Bicycle Racks

Bicycle racks are as critical to the bicycle as parking spaces are to the car. Bicycle racks are relatively inexpensive devices that can be installed on a wide sidewalk, at the edge of a sidewalk, in a plaza, at the front of a building, or even in lieu of an on-street parking space.

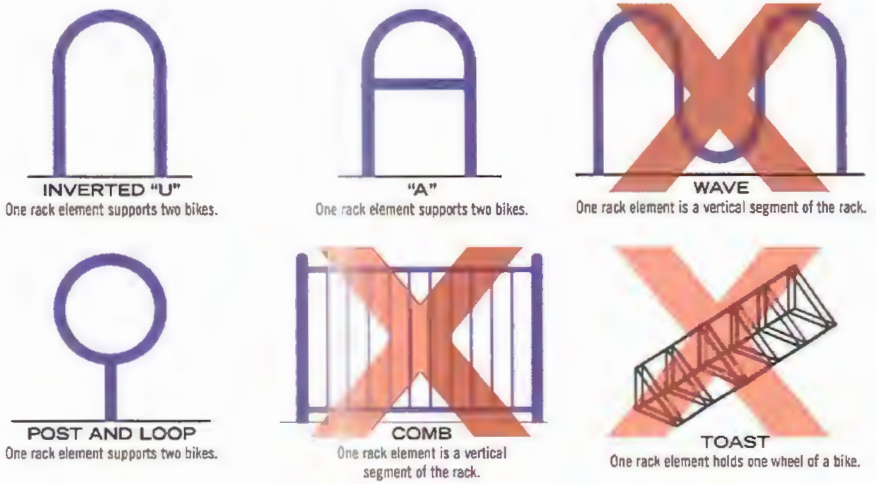
Benefits

- Provides secure place to park bicycles

Application

- Bicycle parking should be convenient to building entrances but not obstruct pedestrian movement.
- Bicycle parking should be installed in a secure, visible, lighted area
- "Post and Loop", "U", and "A" style racks should be installed in series, parallel and spaced 30 inches apart
- Comb, toast, schoolyard, and other wheel bending racks that provide no support for the bicycle frame are not recommended.
- Wave style racks are not recommended. Bicyclists commonly use a "wave" rack as if it were a single inverted "U." This limits the actual capacity of the rack to two bikes regardless of the potential or stated capacity. Bicycles parked perpendicular to a wave rack (as intended by the manufacturer) are not supported in two places and are more likely to fall over in the rack.
- The bike rack should:
  - Support the bicycle upright by its frame in two places
  - Prevent the wheel of the bicycle from tipping over
  - Enable the frame and one or both wheels to be secured
  - Support bicycles without a diamond-shaped frame with a horizontal top tube
  - Allow front-in parking: a U-lock should be able to lock the front wheel and the down tube of an upright bicycle
  - Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle
  - Resist being cut or detached using common hand tools, especially those that can be concealed in a backpack. Such tools include bolt cutters, pipe cutters, wrenches, and pry bars.

"U" style rack



Lane Reduction

Bicycle and pedestrian facilities often compete with automobiles for space on or adjacent to the roadway. This space is usually constrained by the right-of-way, development, or physical constraints due to topography. It is therefore essential to create space within the existing roadway for bicycle and pedestrian facilities. This can often be accomplished by down-sizing automobile travel lanes. These lanes are often 12 feet wide or wider although the typical passenger vehicle is less than 6 feet wide with the large trucks and buses being 8.5 feet wide.

Roadway design guidelines and standards set forth by the American Association of State and Highway Transportation Officials (AASHTO) and the Institute for Transportation Engineers (ITE) allow much more flexibility in roadway design. Both AASHTO and ITE support lane widths as low as 9 feet wide:

Although lane widths of 3.6m (12') are desirable on both rural and urban facilities, there are circumstances that necessitate the use of lanes less than 3.6m (12') wide. In urban areas where right-of-way and existing development become stringent controls, the use of 3.3m (11') lanes is acceptable. Lanes 3.0 m (10') wide are acceptable on low-speed facilities. Lanes 2.7m (9') wide are appropriate on low-volume roads in rural and residential areas. -AASHTO

The lane widths can be reduced (to 9, 10, or 11 ft.), with excess asphalt then striped with a bicycle lane or paved shoulders. Travel lanes cab be removed, and the street can be physically narrowed by extending sidewalks, landscaped areas, or by adding on-street parking within the former curb lines. This can often reduce vehicle speeds along a roadway section and enhance movement and safety for pedestrians. -ITE- Traffic Safety Toolbox

To design for continuous opportunities for free-flowing vehicles (as is the case with 10 feet wide and greater travel lanes) is to create situations where most of the time passenger cars-far and away the predominant vehicle-will travel at speeds greater than are desirable for nearby pedestrians. This becomes a self-worsening situation of degradation of the pedestrian environment: faster vehicles are noisier and more dangerous to pedestrians; faster vehicles generally mean fewer pedestrians; and fewer pedestrians generally mean even faster vehicles. –ITE - Traditional Neighborhood Development: Street Design Guidelines

Lane reduction, Ridgefield, CT

Benefits

- Provide space for bicycle accommodations
- Increase distance between traffic and pedestrians on sidewalk
- Reduce traffic speed

Application

- 10 feet wide travel lanes can be used on facilities that: have a posted speed limit at or below 40 mph; have good sight-lines; and do not have extreme changes in grade or roadway curvature. 10 feet travel lanes are generally excluded from use on state roadways except in queuing areas at intersections.
- 11 feet wide travel lanes may be used in most conditions including state roadways.

Wayfinding

Wayfinding is a system of communicating place and geography to people. Successful design to promote wayfinding allows people to: determine their location within a setting, determine their destination, and develop a plan that will take them from their location to their destination. For the purposes of pedestrian and bicyclist movement through Norwalk, a wayfinding system is comprised of three basic elements: maps, gateway signage, and directional signage. While smart phones and GPS units are increasingly being used to assist in wayfinding, these devices are not accessible to all and perpetuate a socioeconomic barrier to information access.

Maps: Maps are placed at locations that have a high volume of pedestrians. They are placed at significant nodes such as train station, retail environment, park or plaza. Beyond providing orientation, maps are placemarkers for environments that are friendly to pedestrians.

Typical Wayfinding Map

Gateway Signage: Gateway signage is used to welcome travelers, whether they are local or first-time visitors. These signs reinforce sense of place within the City, and assist with orientation. These signs should be used on corridors that lead into Norwalk from neighboring towns and should also be considered for use approaching distinct areas or districts within Norwalk such as South Norwalk.

Typical Gateway Sign

Directional Signage: Directional signage is used at strategic locations within an area to assist in finding key destinations and assist in route choice. Directional signage is most effective when placed at the intersection of bicycle and -pedestrian corridors. While this signage is especially valuable for visitors, it would also be helpful to residents not familiar with certain areas of the city.

Directional signage should reference local destinations such as parks, schools, transit, retail centers, and multi-use paths. This signage is pedestrian scaled and is legible to both pedestrians and bicyclists. As such, these small signs (approximately 1.5 feet wide x 2 feet high) can be installed on utility poles, street sign posts, state route markers, or installed as a freestanding sign.

Typical Directional Sign

Beyond infrastructure improvements, improving walking and bicycling in Norwalk will also require growth in the City's walking and bicycling culture. This growth can be fostered through education, walking and bicycling programs, Safe Routes to School programs, working groups, and the inclusion of walking and bicycling into the City's plans and policies.

Growing Change

Educational Programs

The City of Norwalk's website is currently used to distribute information on pedestrian activities including the NorWalker Program and links to Public access areas on the waterfront, etc. The website could also be used as a platform to distribute educational material about walking and bicycling safety. It would ideally be a clearinghouse for educational and safety material that would be relevant to Norwalk's residents in addition to providing a link to the Statewide Bicycle Plan.

Bicycle safety is a key concern for Norwalk. Many bicyclists do not exercise safe riding practices. This is due in part to a lack of knowledge regarding safe riding and the lack of facilities available to bicyclists. The improvement of bicycle facilities as recommended in this plan should be joined by additional bicycle safety education opportunities.

The City should post links on its website to bicycle safety education sites such as bicyclinginfo.org, which is a site maintained by the Pedestrian and Bicycle Information Center (PBIC). This site provides content for both children and adults and can be accessed via the following links:
www.bicyclinginfo.org/education/goals.cfm
www.bicyclinginfo.org/bikemore/motivated.cfm

Additionally, the City of Norwalk should link to or post Connecticut bicycle laws on the City's website. These laws can be found at www.bikewalkct.org/resources/CTBikeLaws.htm.

Pedestrian safety educational material is available from the FHWA (Federal Highway Administration). FHWA developed and hosts a "Safer Journey" web program that could be linked from the Health Department and/or Schools and Recreation Department home pages. Safer Journey is an interactive website that takes the user through various pedestrian safety scenarios. It has been developed to improve the level of pedestrian knowledge for all road users (including schools, driver education groups, enforcement, etc.) and safety practitioners. The website can be found at: http://safety.fhwa.dot.gov/saferjourney/.

Bicycle Outreach Programs

Norwalk is fortunate to have an active bicycle club, Sound Cyclists, in the region. The Sound Cyclist Bicycle Club provides organized rides and other cycling related activities for its members and the community. These activities stress safety, fun and fitness for all levels of riders. The club also provides the opportunity for cyclists to improve their riding skills. The club is an advocate of safe cycling in Fairfield County and the State of Connecticut. Its aims are to offer well-organized rides, promote a general interest in cycling, provide a cycling-related social forum and encourage safe bicycling. Sound Cyclists Bicycle Club has been around since 1977 and since that time the club has grown to be one of the largest cycling clubs in New England.

While Sound Cyclist hosts a number of recreational rides, the organization is not focused on bicycle commuting and is not engaged with employers on bike to work programs. Additionally, there is no other organization in Norwalk that fulfills this role, and no significant employer sponsored programs.

The League of American Cyclists provides guidance on developing bicycle programs and encouraging ridership within the workplace and community-wide as well. These programs are listed below.

Employer Sponsored Bicycle Programs

Bike mentors — This ride-matching service provides novice cyclists with names of experienced commuters in their community who can accompany them on their commute.

Commuter convoys — Identify several meeting locations for suburban commuters to group and ride into the city together. Make arrangements for an experienced bike commuter to lead from each location and ride to the Breakfast Rally celebrating their successful trip.

Breakfast or energizer rally — Work with local restaurants and grocery stores for sponsorship or donation of various food items. Be considerate of the time requirements of community employers when selecting the time for your meal. Remember to consider bicycle parking and restroom facilities and trash collection.

Company commuter challenge — Employers, grouped by the total number of employees, compete for the highest percentage of bike commuters. Winning company employees are awarded prizes donated by local vendors or certificates of achievement. The company receives a plaque and is featured in the local press.

Bike commuting incentives — Work with local vendors to provide prizes for Bike to Work Day participants. Possible prizes include: bikes, accessories, lights, racks, bags, airline tickets, and gift certificates to various local businesses. If sponsorship permits, have T-shirts or reflective commuter vests produced promoting the sponsors.

Citywide Bicycle Initiatives

Commuter challenge — Salem, Oregon, Olympia, Washington and many other cities host commuter challenges where businesses compete to have the highest percentage of employees who pledge to Bike to Work every day of bike week. Bonus points are given to companies with bicycle parking, safety materials, and showers and changing facilities.

Ride with the Mayor (or Council Member) — It is helpful to put local politicians on bikes to show their support for Bike to Work Day. Use this opportunity to showcase good facilities in your area, tour the local trail system, and show elected officials how important it is to maintain facilities.

Host a smart cycling class — Reduce bicycle crashes, increase ridership, boost rider confidence, improve bicycling for transportation, and have fun through League Smart Cycling classes in your community. League Cycling Instructors offer a wide variety of classes for any audience. Classes include Commuters, Group Rides, Bicycle Rodeos, Traffic Skills and more. Recreational clubs can sponsor group-riding clinics and advocacy organizations can sponsor classes for public officials. Schools can use LCIs to offer safe riding classes or organize a Bike to School Day.

Bike to ... events — Encourage the use of the bicycle for transportation by working in partnership with local retailers and event promoters to offer special discounts to customers arriving by bicycle. Remember to consider bicycle parking availability and security when working with merchants.

Proclamation of May as National bike Month — Officially proclaim May as National Bike Month.

Walking Outreach Programs

The Centers for Disease Control and Prevention and the Partnership for Prevention provides guidance on establishing a walking program within a community. This guidance could be used to increase participation in the City's Norwalker program.

The Norwalker program, as described in the existing conditions analysis, is an effort to encourage physical activity in Norwalk. The program was created by the Healthy Lifestyles Committee of the Healthy Norwalk Partnership, a neighborhood walking program.

The CDC guide can be downloaded at the following url: www.prevent.org/downloadStart.aspx?id=36. It includes a number of action steps and a host of resources for developing and strengthening programs such as the Norwalker. The steps outlined in the CDC guide can be used to set up walking programs for each one of the Norwalker walking routes. The action steps are as follows:

CDC Guidance for establishing a walking program

1. Canvas your community to determine the fit of your potential walking group program within current community activities.
2. Begin organizing the human, material, and financial resources that you will need for establishing a walking group program.
3. Engage existing partners and key stakeholders by informing them about your plans to develop a walking group program and educating them about its benefits.
4. Bring together committed partners and stakeholders in the form of a core team to oversee the walking group program, and begin planning for the evaluation component.
5. Recruit individuals to serve as walking leaders.
6. Work with your core team to establish goals for participation and total number of walking groups.
7. Train walking leaders.
8. Select, map, and measure potential walking routes in your community with help from walking leaders.
9. Collaborate with your core team and walking leaders to review and refine your program evaluation activities.
10. Create a registration/welcome kit for walkers.
11. Publicize the walking group program throughout the community to raise awareness and attract participants.
12. Organize a kick-off event and walk to launch the program.

13. After walking groups begin meeting, encourage walking leader to focus on maximizing social support for physical activity among participants and to be creative in maintaining each group's interest.
14. Organize other relevant social activities in addition to regularly scheduled walking sessions.
15. Maintain an active link between walking groups and other activities in your community to increase program visibility and to ensure that participants feel connected to a bigger movement.
16. Provide ongoing support to walking leaders and continue working with them to improve program performance.
17. Work with your core team in applying walking group program experience to overall community development and improvement activities.

Bicycle and Pedestrian Coordination

In order to facilitate the programs and initiatives outline above, Norwalk should consider establishing a bicycle and pedestrian advisory committee. The following guidance is based upon a policy from the City of Coeur D'Alene, ID, and has been modified to suit Norwalk.

Bicycle and Pedestrian Advisory Group

Establish a working group or subcommittee to an existing board; most likely the Public Works Committee of the Common Council. This group would work with existing staff at the Department of Public Works and meet at least twice a year to specifically review pedestrian and bikeway issues, maintenance and planning and implementation for Capital projects. DPW should invite public and other City Boards to participate in these meetings.

Members of the Committee shall be appointed by the Mayor and confirmed by the City Council and any members may, in a like manner, be removed. The members should include one City Council member, one engineer or landscape architect, one representative from the school district, one representative from the walking community, one representative from the running community, one representative from the bicycling community, one person representing Senior Citizens and one person representing the special needs/physically challenged community. One additional member should be a high school student that attends Norwalk Public Schools.

Duties and Responsibilities of Advisory Group

The purpose of the Pedestrian and Bicycle Advisory Group shall be to promote non-automotive forms of travel and the development of safe pedestrian and bicycle facilities into a well-designed, integrated transportation network for all citizens. In doing so, the duties and responsibilities of the group shall be as follows:

1. To promote walking, bicycling and people-powered transportation
2. To review and make recommendations on long-range transportation plans as related to pedestrian and bicycle issues of the city.
3. To promote safety education programs for pedestrians, bicyclists and motorists.
4. To review and make recommendations on transportation projects as related to pedestrian and bicycle issues in the city.
5. To review and recommend transportation project prioritization and funding as related to pedestrian and bicycle issues in the city.
6. To assist and advise the planning commission with respect to pedestrian and bicycle facilities and parking.
7. To assist in the implementation of the Transportation Element of the Comprehensive Plan.
8. To develop and recommend to the city council and planning commission adoption of ordinances and policies for the planning and maintenance of pedestrian and bicycle facilities throughout the city.
9. To advise the city administrator and city departments regarding pedestrian and bicycle issues in the city.
10. To monitor and promote implementation of the Bicycle and Pedestrian Plan.
11. To coordinate with regional public entities to promote creation of networked pedestrian and bicycle facilities.
12. To develop and implement a Safe Routes to Schools Program.
13. To seek grant money and other State and Federal monies for pedestrian and bicycle project enhancements.
14. To comply with all City policies, procedures and regulations.

Safe Routes to School Guidance

While Norwalk has been progressive in promoting Safe Routes projects on Strawberry Hill Avenue and Highland Avenue, the city would benefit from a city or schools-wide Safe Routes to School program.

In achieving this aim, the City should consult the National Safe Routes to School guide for creating a Safe Routes to School program. This guide was developed by the Pedestrian and Bicycle Information Center (PBIC) with support from the National Highway Traffic Safety Administration (NHTSA), Federal Highway Administration (FHWA), Centers for Disease Control and Prevention (CDC) and Institute of Transportation Engineers (ITE). This guide is maintained by the National Center for Safe Routes to School at www.saferoutesinfo.org and can be accessed at: http://guide.saferoutesinfo.org/pdf/SRTS-Guide_Steps.pdf

The steps outlined in this guide provide guidance by providing a framework for establishing a SRTS program based on what has worked in communities throughout the country. Additional guidance on establishing a Safe Routes to School program and applying for Safe Routes grants can be found at Connecticut DOT's website at: http://www.ct-saferoutes.org/

This guidance should be utilized in establishing a program that includes all Norwalk Public Schools.

Pedestrian and Bicycle Policies

There are several means by which municipal government can support pedestrian and bicycle transportation through policy and code. The following list is from Planning and Policy Models for Pedestrian and Bicycle Friendly Communities in New York State, SUNY at Albany.

Pedestrian and Bicycle policies can take many forms. This includes general policies that are applied city wide through:

- Resolution or Proclamation
- Zoning Laws
- Comprehensive Plan
- Agency Policy
- Subdivision Regulations
- Site Plan Review

Additionally, policies can be adopted that are specific to the facility. This includes policies for:

- Sidewalks and Crossings
- School Zones
- On-Street Bikeways
- Greenways and Trails
- Operations and Maintenance
- Snow Removal
- Bicycle Parking
- Pedestrian / ADA Compliance

Issue-based policies may also support and encourage pedestrian and bicycle transportation. This can be accomplished through the following policies:

- Health and Fitness
- Energy Conservation
- Environment and Air Quality
- Transportation / Mobility
- Safety

City of Norwalk Plan of Conservation and Development

The City of Norwalk Plan of Conservation and Development contains several planning goals that could be strengthened by including language that reflects the importance of bicycle and pedestrian accommodations. These goals and the recommended pedestrian and bicycle language include:

A.1.1 Promote balanced growth in Norwalk
• This section would benefit from a statement recognizing the importance of a friendly bicycle and pedestrian environment in promoting balanced growth.

A.2.1 Provide for the creation and continuation of diverse housing opportunities
• Recognize the role of strong bicycle and pedestrian connections to employment and transit in supporting diverse and affordable housing.

A.4.1 Expand the retail sector
• New retail should have bicycle and pedestrian accommodations.

B.9.1 Achieve the Clean Air Act ambient air quality standards
• Acknowledge the importance of bicycle and pedestrian facilities in decreasing auto emissions by providing an alternative to the single occupant vehicle as a means of transportation.

C.4.1 Create a network of walking and bicycle trails among neighborhoods, points of interest, and opposite sides of the river and harbor
• Support recommendations set for in the Pedestrian and Bikeway Transportation Plan

D.2.1 Provide Norwalk citizens with efficient, well-kept buildings
• Public buildings should be accessible by pedestrians and bicyclists

D.6.1 Accommodate and encourage active lifestyles
• Support recommendations set for in the Pedestrian and Bikeway Transportation Plan

E.1.1 Provide an efficient and effective system of transportation
• Bicycle and pedestrian facilities should be identified as an integral component of an efficient and effective system.

E.2.1 Encourage the use of public transit by supporting convenient, reliable, and efficient transportation services
• Public transit should have strong pedestrian and bicycle connections to the surrounding communities (The Federal Transit Administration has issued a policy statement in the Federal Register establishing that pedestrian improvements within a half-mile radius of a transit facility and bicycle improvements within a three-mile radius of the transit facility are considered to have a de facto relationship to the transit facility.)

E.3.1. Provide a safe and efficient vehicular transportation system
• Improvements to the transportation system should be consistent with the safety needs of all users as set forth in the Pedestrian and Bikeways Transportation Plan

E.3.2 Preserve the character of residential neighborhoods by minimizing traffic impacts from surrounding uses
• Improve pedestrian and bicycle infrastructure as a means of preserving neighborhood character and reducing traffic

E.5.1 Support economic growth in the city with appropriate parking strategies
• Norwalk's parking strategies should include bicycle parking provisions.

F.2.1 Examine and modify existing zoning where necessary to achieve the goals of this plan
• The goal provides an opportunity for the inclusion of bicycle parking standards within Norwalk's existing parking code.

City of Norwalk Zoning Regulations

Norwalk's zoning regulations include measures such as mixed use parking and fee-in-lieu of parking in urban development. The mixed use language reads as follows:

> *(a) Twenty percent (20%) of the parking required for the residential use may be met by the parking provided for the nonresidential use. However, where it can be sufficiently demonstrated to the satisfaction of the Commission that a nonresidential use occurs predominantly during the weekday and daytime hours, for example, offices, then up to fifty percent (50%) of the parking required for the residential use may be met by the parking provided for such nonresidential uses. A use which occurs predominantly during the weekday and daytime hours shall not be changed to a use which does not occur predominantly during the weekday and daytime hours.*

While this language seeks to minimize excessive auto parking, Norwalk's zoning code does not include language that provides incentives for bicycle parking. In addressing this deficit, Norwalk's zoning codes should be amended to support pedestrian and bicycle facilities, specifically provisions for bicycle parking. Article 120, Off-Street Parking and Loading Regulations, could be amended to include bicycle parking facilities.

Model Zoning Law: Bicycle Parking

There are multiple bicycle parking ordinances around the country that would provide useful models for the City of Norwalk. While there is no Connecticut enabling legislation regarding bicycle parking, there is no expressly forbids the use of parking incentives in municipal ordinance or zoning code. The following excerpt is a typical ordinance drafted by the State University of New York at Albany.

Planning and Policy Models For Pedestrian and Bicycle Friendly Communities in New York State (University at Albany, 2007)

Bicycle Parking Facilities

1. Bicycle parking shall be provided in accordance with the following guidelines. All projects submitted for site plan approval shall identify bicycle racks and lockers in accordance with these guidelines.

2. Bicycle parking types:
   a. Type 1 Bicycle Parking shall be defined as bicycle racks intended for short-term parking.
   b. Type 2 Bicycle Parking shall be defined as bicycle lockers intended for long-term parking.

3. Bicycle Parking Specifications: All bicycle parking devices shall be provided in accordance with guidelines published by the Association of Pedestrian and Bicycle Professionals (APBP).

Bicycle Parking Schedule (Planning and Policy Models For Pedestrian and Bicycle Friendly Communities in New York State, University at Albany, 2007)

The following minimum amounts of bicycle parking shall be provided:
- Residential (Multi – Family): 1 bicycle parking space per dwelling unit
- Commercial Uses: bicycle parking spaces = 10% of required auto parking
- Institutional (Schools): 1 bicycle parking space for every 10 students and staff Government: 1 bicycle parking space per every 10 employees
- Industrial Uses: 1 bicycle parking space per 1000 sq. ft.

Note: For bicycle parking areas greater than 10 bicycles, 50% of the parking shall be provided in a covered area protected from the weather. Developers may reduce the amount of car parking spaces provided by the following factor: 1 car parking space may be reduced by providing parking for 10 bicycles.

Additional ordinances, from which examples and language are presented below, have been adopted by Burlington, Vermont and Ann Arbor, Michigan. Both towns are home to large state universities and as such have relatively high bicycle commuter populations. These model ordinances come from a need to accommodate those users and include regulations and polices supporting bicycle parking and bicycle parking facilities.

Burlington, Vermont Bicycle Parking Ordinance

Bike Parking Requirements at Parking Facilities (sec 9, p.4)

Vehicular parking structures and surface lots shall provide bicycle parking in accordance with the table (see *Burlington Bicycle Parking Ordinance*).

Bicycle parking provided in a structure or under cover shall be:
- Provided at ground level
- Provided free of charge
- Clearly marked as such
- Located in a location that:
- Is illuminated with twice the amount of light as a the auto parking spaces
- Is separated from auto parking by some form of barrier to minimize the possibility of parked bicycles being hit by a car
- Either, no farther from the vehicular entrance/exit than the nearest vehicular parking space OR no farther from the pedestrian entrance/exit than the nearest vehicular parking space.

Signs (sec 8, p.4)

If required bicycle parking is not visible from the street or main building entrance, a sign must be posted at the main building entrance indicating the location of the parking. In parking structures, signs shall be installed to indicate the location of the bicycle parking.

City of Ann Arbor, Michigan

Lighting *(An Ordinance Regulating Off-Street Parking, 5:168.1)*

Bicycle parking spaces shall be illuminated from one-half hour after sunset to one half hour before sunrise, at the levels specified below. The lighting of such parking areas must be designed to provide illumination levels at all unobstructed points of the bicycle parking area in accordance with the following table (See Ann Arbor Ordinance). Illumination levels shall be measured 3 feet above the lot surface.

Norwalk's Progress to Date: Plans and Corridor Studies

There are multiple plans and studies outlined in the Existing Conditions section of this report. The inclusion of pedestrian and bicycle facilities are, in many cases, specific to the purpose of the plan or, at the very least, a critical component of these plans. A review of these plans finds their recommendations to be adequate and, in some cases, progressive in their support of pedestrian and bicycle improvements. These plans include:

DPW Transportation Management Plan

This project is being prepared by the City of Norwalk through their Department of Public Works working in close partnership with members of the Common Council, City Staff, and residents of the community and with other local, state and federal agencies. This project is critically important to the future quality of life and economic viability within the City of Norwalk. It will reach across all modes of transportation (bus, rail, bike, pedestrian, auto, etc.) and seek to make modal connections and improvements consistent with sound land use planning - all in an effort to increase overall mobility, modal choice, and safety for our residents, businesses, employees, and visitors while decreasing traffic congestion and its negative impacts on our environment, economy and quality of life. The Transportation Management Plan will unify the recommendations set forth by the plans that follow below.

Public Input Summary:
Pedestrian/Bicycle Concerns

- **Lack of Crosswalk and/or Sidewalks/Footpaths**
- **Lack of Bicycle Accommodations**
- **Difficult Crossings**
  - **Roadway Width**
  - **Vehicle Speeds**
  - **Turning Vehicles**
- **Poor Ped/Bike Access**
- **Lack of Bicycle and/or Pedestrian Plans**

Norwalk Connectivity Plan

This report includes bicycle and pedestrian opportunities and constraints for South Norwalk and the Harbor Area. The Connectivity Study offers guidance for future bicycle and pedestrian-related projects and improvements, as well as recommended programs and policies that will improve local biking and walking conditions. The aim of the study is a safe, accessible bicycle and pedestrian system that includes sidewalks, greenways and safe intersections, as well as programs and policies that encourage residents and visitors alike to walk and bike, rather than drive, around downtown Norwalk. The study builds upon several plans that are listed below in crafting a unified vision for South Norwalk.

Norwalk Connectivity Study

Central Norwalk Transportation & Pedestrian Masterplan

The focus of this plan is improvement of traffic operations on Route 1, West Avenue and multiple intersections within study area. The plan includes an inventory of pedestrian facilities on Washington St., South Main St., South Water St., North Main St., Wall Street, Burnell St., Route 1, and West Avenue. Pedestrian recommendations are made for the several intersections within this study area and include: accessible curb ramps, pedestrian signals, 10 foot wide ladder type crosswalk markings.

Mid Harbor Plan

Mid Harbor Plan

This plan calls for a continuous, clear system of pedestrian access along and to the Harbor. Additional recommendations include the extension of the Harbor trail (where industrial land uses don't prohibit access) and enhancement of pedestrian river crossings.

Norwalk Connections

This report includes pedestrian and trail improvement concepts in South Norwalk and West Avenue/Wall Street areas. The report also cites the importance of wayfinding in making people aware of the different walking paths, parks and attractions in the district. Specific areas targeted for pedestrian and bicycle improvements include: Crescent Street, Reed Street and Mathews Park. These study areas coincide with and are superseded by the Norwalk Connectivity Study.

Norwalk Masterplan of Parks and Open Space

This document supports the development of multi-use trails in Norwalk. Specifically, it references the Route 7 Linear Park (Norwalk River Valley Trail) and includes long term (1995-2000) budget for the development of the Route 7 Linear Park, Merritt Parkway Regional Trail, and Riveredge Park & Bikeway.

South Norwalk Planning Study

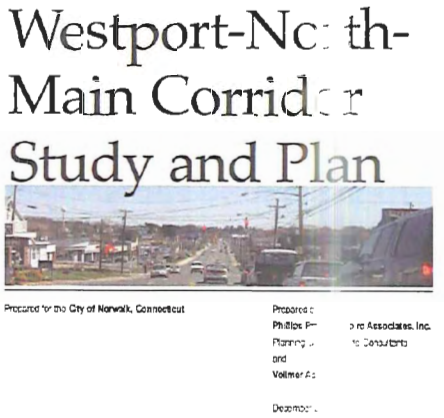
The core of this plan is transit oriented development around the South Norwalk Intermodal Center. To quote from the plan: "Providing better pedestrian—and bicycle—connections to the station from the immediate neighborhood will help enhance its effect upon and service to nearby residents."

Strawberry Hill Safe Routes to School Plan

This plan includes bike, pedestrian and traffic calming recommendations. Recommended improvements include upgraded traffic lights with a pedestrian phase, new pedestrian crossings, curb ramps, bicycle lanes and raised intersections.

Westport-North Main Corridor Study and Plan

This report recommends pedestrian oriented design and improvements in the Westport Ave (Route 1) and Main Street corridor. Specific recommendations include: pedestrian oriented building design, regulation of parking lots and curb cuts, street trees and street lamps, utility undergrounding, pedestrian amenities, curb extensions, on-street parking, smaller curb radii, human scaled building facades.



- Corridor Tier Summary
- Summary of Public Meetings
- NRVT Design Schematics

Appendix

Corridor Tier Summary Table

Corridor Name	Priority Tier	To	From	Corridor Type	Attractors/Generators	Pedestrian Facilities	Considerations for Priority Tier Ranking
Calf Pasture Beach Road	1	Gregory Boulevard	Beach driveway	Bicycle/Pedestrian	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park, Shady Beach	Both sides of roadway	Public input, Proximity to schools and community facilities
East Avenue	1	Route 1 (Westport Avenue	East Wall Street	Bicycle/Pedestrian	The Green, City Hall, Churches & Synagogue & businesses	Both sides of roadway	Proximity to community facilities, businesses
East Avenue	1	East Wall Street	Interstate 95	Bicycle/Pedestrian	The Green, City Hall, Churches & Synagogue & businesses	Both sides of roadway	Multiple pedestrian crashes, Proximity to community facilities, businesses
East Avenue	1	Interstate 95	Route 136 (Winfield Street)	Bicycle/Pedestrian	East Norwalk Rail Station, businesses, churches	Both sides of roadway	Multiple pedestrian crashes, Rail station proximity, Proximity to businesses
Flax Hill Road	1	Highland Avenue	Soundview Avenue	Bicycle/Pedestrian	Schools on Highland Avenue	Both sides of roadway	Proximity to schools
Highland Avenue	1	Flax Hill Road	Route 136 (Wilson Avenue)	Bicycle/Pedestrian	Four schools, Rowayton Library, Rowayton waterfront and businesses	Intermittent on west side of roadway	Proximity to schools, Roton Middle School Safe Routes to School Plan
Linden Street	1	Route 123 (Main Avenue)	West Rocks Road	Pedestrian	West Rocks Middle School, All Saints School, Notre Dame Nursing Home	Primarily north side of roadway	Sidewalk gap on pedestrian corridor within 1/4 mile of school
Richards Avenue	1	West Cedar Street	Route 1 (Connecticut Avenue)	Bicycle/Pedestrian	Norwalk Community College, RiverPark offices, Route 1 businesses, retail	Intermittent on both sides of roadway	Proximity to schools and businesses, Sidewalk gaps
Richards Avenue	1	Scribner Avenue	West Cedar Street	Bicycle/Pedestrian	Norwalk Community College, churches, Fox Run School	West side of roadway	Multiple pedestrian crashes, School zone
Riverside Avenue	1	Silvermine Avenue	Belden Avenue	Bicycle/Pedestrian	Jefferson Elementary School, businesses, Riverside Cemetary	Intermittent	Sidewalk gap on pedestrian corridor within 1/4 mile of school
Route 1 (Connecticut Avenue)	1	Scribner Avenue	Darien Town Line	Bicycle/Pedestrian	Businesses, retail	Intermittent on both sides of roadway	Multiple bicycle crashes, Public input, Sidewalk gaps
Route 1 (Connecticut Avenue)	1	Van Buren Avenue	Scribner Avenue	Bicycle/Pedestrian	Businesses, retail	Intermittent on both sides of roadway	Multiple pedestrian and bicycle crashes, Public input, Sidewalk gaps
Route 1 (Cross St & North Avenue)	1	Wilton Avenue	East Avenue	Pedestrian	Businesses, retail	Primarily both sides of roadway	Multiple bicycle crashes, Public input
Route 1 (Westport Avenue)	1	East Avenue	Strawberry Hill Avenue	Bicycle/Pedestrian	Businesses, retail, Norwalk High School	West side of roadway	Sidewalk gap on pedestrian corridor within 1/4 mile of school, Public input, Multiple bicycle crashes
Route 123 (Main Street)	1	Route 1 (Cross Street)	Ward Street	Pedestrian	Businesses, retail	Primarily both sides of roadway	Multiple pedestrian and bicycle crashes
Route 136 (Wilson Avenue)	1	Highland Avenue	Martin Luther King Drive	Bicycle/Pedestrian	Rowayton School, Rowayton Library	None	Sidewalk gap on pedestrian corridor within 1/4 mile of school

Corridor Name	Priority Tier	To	From	Corridor Type	Attractors/Generators	Pedestrian Facilities	Considerations for Priority Tier Ranking
Route 136 (Winfield Avenue)	1	East Avenue	Westport Town Line	Bicycle/Pedestrian	East Norwalk Rail Station, East Norwalk Westport	Intermittent on both sides of roadway on western portion only	Sidewalk gap on pedestrian corridor within 1/4 mile of rail station
Route 719 (Main Avenue)	1	Ward Street	Wilton Town Line	Pedestrian	Merritt 7 Corporate Park, Merritt 7 Rail Station, businesses, retail	Primarily both sides of roadway except at Merritt Parkway Interchange	Sidewalk gap on pedestrian corridor within 1/4 mile of rail station
Rowayton Avenue	1	Route 136	Flax Hill Road	Pedestrian	Rowayton Rail Station	West side of roadway on middle portion only	Sidewalk gap on pedestrian corridor within 1/4 mile of rail station
Strawberry Hill Avenue	1	Route 136 (Winfield Avenue)	Route 1 (Westport Avenue)	Bicycle/Pedestrian	Nathan Hale School, Norwalk High School, Naramake Elementary School, Rail Station	Both sides of roadway	Proximity to schools and rail station, Strawberry Hill Safe Routes to School Plan
Sunset Hill Avenue/Tierney Street	1	East Avenue	Strawberry Hill Avenue	Pedestrian	Nathan Hale School, Government facilities, nursery school, businesses, retail	Both sides of roadway on western portion, Primarily south side of roadway on eastern portion	Proximity to school, Many trip generators
West Rocks Road/France Street	1	Main Avenue	Route 1 (Westport Avenue)	Bicycle/Pedestrian	West Rocks Middle School, All Saints School, Churches, Notre Dame Nursing Home	West side of roadway	Proximity to schools
1st Street	2	Seaview Avenue	Gregory Boulevard	Bicycle/Pedestrian	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park/Beach	Both sides of roadway	Public input
2nd Street	2	Cove Avenue	Gregory Boulevard	Bicycle	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park/ Beach	Both sides of roadway	Public input, Proximity to trip generators, Safety (as compared to bicycling on 1st Street between Cove Avenue and Gregory Blvd)
Bayne Street	2	Grumman Avenue	West Rocks Road	Bicycle/Pedestrian	Churches, Cranbury Elementary, Cranbury Park	Primarily north side of roadway	Proximity to schools and parks
Cove Avenue	2	1st Street	2nd Street	Bicycle	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park and Beach	Both sides of roadway	Public input, Proximity to trip generators, Safety (as compared to bicycling on 1st Street between Cove Avenue and Gregory Blvd)
Devils Garden Road	2	Highland Avenue	Rowayton Avenue	Pedestrian	Schools on Highland Avenue	South side of roadway	Proximity to Brookside and McMahon schools
East Avenue	2	Seaview Avenue	Route 136 (Winfield Street)	Bicycle/Pedestrian	Veterans Memorial Park, Rail Station, businesses	Both sides of roadway	Multiple pedestrian crashes, Rail station proximity
Fillow Street	2	Fox Run Road	Grandview Avenue	Pedestrian	Fox Run School, Ponus Ridge School, Oak Hills Park, Kendall School	South side of roadway on western portion, intermittent sidewalks on both sides of the roadway on eastern portion	Proximity to schools and parks
Fillow Street	2	Fox Run Road	Richards Avenue	Bicycle/Pedestrian	Fox Run School, Oak Hills Park	South side of roadway	Proximity to school and parks
Flax Hill Road	2	Soundview Avenue	Washington Street and extend to MLK	Bicycle/Pedestrian	South Norwalk Rail Station	Both sides of roadway	Proximity to rail station; Connectivity Plan connection
Flax Hill Road	2	Darien Town Line	Highland Avenue	Bicycle/Pedestrian	Schools on Highland Avenue	Primarily south side of roadway	Proximity to schools
Grandview Avenue	2	Fillow Street	Van Buren Avenue	Pedestrian	Jefferson School, Oak Hills Park, Kendall School	Both sides of roadway on western portion, North side of roadway only on eastern portion	Proximity to schools and parks
Gregory Boulevard	2	1st Street	Calf Pasture Beach Road	Bicycle/Pedestrian	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park and Beach	Both sides of roadway	Public input

Corridor Name	Priority Tier	To	From	Corridor Type	Attractors/Generators	Pedestrian Facilities	Considerations for Priority Tier Ranking
Grumman Avenue	2	Route 53 (Newtown Avenue)	Bayne Street	Bicycle/Pedestrian	Cranbury Elementary, Cranbury Park, East Avenue	Primarily west side of roadway	Proximity to school and park
Highland Avenue	2	Route 136 (Wilson Avenue)	Samiss Street	Bicycle/Pedestrian	Rowayton Elementary School, Rowayton Library, Rowayton waterfront and businesses	East side of roadway	Proximity to school and other community facilities, businesses
Maple Street	2	Stuart Avenue	West Avenue	Pedestrian	Norwalk Hospital, multifamily residential area	Both sides of roadway	Multiple pedestrian crashes, Norwalk Hospital proximity
South Main Street	2	Monroe Street	Wilson Avenue (Route 136)	Pedestrian	Side by Side School, South Norwalk businesses and retail	Both sides of roadway in middle portion, intermittent on both sides of roadway on northern and southern portions	Proximity to school
Park Street	2	East Wall Street	Route 1 (Westport Avenue)	Pedestrian	City Green, church, preschool, businesses, retail, Historical Society	Both sides of roadway on northern portion, East side of roadway only on southern portion	Many trip generators
Perry Avenue	2	Route 123 (Main Street)	Silvermine Avenue	Pedestrian	Silvermine Elementary	Primarily east side of roadway	Proximity to school
Richards Avenue	2	Fillow Street	Scribner Avenue	Bicycle/Pedestrian	Fox Run School, Oak Hills Park	East side of roadway	Proximity to school and park
Route 1 (Westport Avenue)	2	Strawberry Hill Avenue	Westport Town line	Bicycle/Pedestrian	Pepperidge Farm, businesses, retail, Norwalk High School	West side of roadway	Sidewalk gap on pedestrian corridor within 1/4 mile of school, Public input, Multiple bicycle crashes
Route 1 (Cross Street)	2	Route 123 (Main Street)	Van Buren Avenue	Pedestrian	Businesses, retail, bus pulse point	Both sides of roadway	Public input
Route 123 (Riverside Avenue)	2	Town Line	Silvermine Avenue	Bicycle/Pedestrian	Kendall Elementary School	Intermittent on north side of roadway on eastern portion only	Proximity to school
Route 136 (Burritt Avenue)	2	Route 136 (Woodland Avenue)	Route 136 (Water Street)	Bicycle/Pedestrian	South Norwalk businesses and retail	Both sides of roadway	Proximity to businesses and retail
Route 136 (McKinley Street)	2	Highland Avenue	Route 136 (Rowayton Avenue)	Bicycle/Pedestrian	Springwood Park, Rowayton School, Rowayton Library, Darien	South side of roadway on eastern portion, North side of roadway on western portion	Proximity to school and other community facilities, businesses
Newtown Avenue	2	Grumman Avenue	Town Line	Bicycle/Pedestrian	White Barn Preserve, Cranbury Park, East Avenue and beyond	East side of roadway	Public input supporting bicycling
Route 53 (Newtown Avenue)	2	Route 1 (Westport Avenue)	Grumman Avenue	Bicycle/Pedestrian	Cranbury School, Cranbury Park	Intermittent on both sides of roadway	Public input supporting bicycling
Saint Mary's Lane	2	West Rocks Road	East Rocks Road	Pedestrian	West Rocks Middle School, All Saints School, Woods Pond Park	Primarily north side of roadway	Proximity to schools and parks
Scribner Avenue	2	Flax Hill Road	Route 1 (Connecticut Avenue)	Pedestrian	Businesses on Route 1, Fodor Farm Park, Residential	Primarily east side of roadway	Limited trip generators
Seaview Avenue	2	Washington Street	1st Street	Bicycle/Pedestrian	Veterans Memorial Park, Harbor Bike Path, Marvin Elementary School, Calf Pasture Park and Beach	Both sides of roadway	Public input
Van Buren Avenue	2	Belden Avenue	Route 1 (Connecticut Avenue)	Bicycle/Pedestrian	Jefferson School, Norwalk Hospital	Primarily east side of roadway	Proximity to hospital and school
Wolfpit Avenue	2	Route 1 (Westport Avenue)	Patrick Road	Pedestrian	Wolfpit School, STAR residential facility	Primarily east side of roadway	Proximity to school
Aiken Street	3	Ward Street	West Rocks Road	Pedestrian	West Roskcs Middle School	Intermittent both sides of roadway	Proximity to school
Allen Road	3	East Rocks Road	Route 53 (Newtown Avenue)	Pedestrian	Norwalk Senior Center, Woods Pond Park	Both sides of roadway in middle portion, North side of roadway on northern and southern portions	Limited trip generators

Corridor Name	Priority Tier	To	From	Corridor Type	Attractors/Generators	Pedestrian Facilities	Considerations for Priority Tier Ranking
Stuart Avenue/Cedar Street/Fairfield Avenue	3	Flax Hill Road	Grandview Avenue	Pedestrian	Norwalk Hospital, Retail areas, South Norwalk Rail Station	Both sides of roadway	Proximity to businesses and retail and rail station
County Street	3	Route 1 (Westport Avenue)	Town Line	Pedestrian	Retail areas, Norwalk High School, Naramake Elementary School	Both sides of roadway	Proximity to schools
East Rocks Road	3	St. Marys Lane	Allen Road	Pedestrian	Norwalk Senior Center, All Saints/West Rocks Schools, Woods Pond Park	West and north side of roadway	Proximity to schools and parks
Fox Run Road	3	Ponus Avenue	Fillow Street	Bicycle/Pedestrian	Fox Run School, Oak Hills Park	East side of roadway	Proximity to school and park
Hunters Lane	3	Lancaster Drive	Fillow Street	Pedestrian	Ponus Ridge Middle School, Kendall School	Along school property	Ponus Ridge Middle School
Knapp Street/Oxford Street	3	Route 136 (Wilson Avenue)	Martin Luther King Drive	Pedestrian	Retail areas	Intermittent est side of roadway	Proximity to businesses and retail
Main Avenue	3	Bayne Street	Wilton Town Line	Pedestrian	Businesses and retail	Intermittent both sides of roadway	Proximity to businesses and retail
Murray Street	3	Route 53 (Newtown Avenue)	Town Line	Pedestrian	Residential	Primarily north side of roadway	Limited trip generators
Ponus Avenue	3	Fox Run Road	Route 123 (Riverside Avenue)	Bicycle	Ponus Ridge Middle School	Intermittent on both sides of roadway	Proximity to Middle School
Ponus Avenue	3	Along Nursey Street	Fox Run Road	Bicycle/Pedestrian	Residential	Intermittent on east side of roadway	Limited trip generators
Redcoat Road/Lancaster Drive	3	Fox Run Road	Hunters Lane	Pedestrian	Ponus Ridge Middle School, Oak Hills Park, Fox Run Elementary School	Intermittment on north side in middle portion only	Proximity to schools
Richards Avenue	3	Route 1 (Connecticut Avenue)	Flax Hill Road	Bicycle/Pedestrian	Route 1 businesses, retail	Intermittent on both sides of roadway	Limited trip generators
Route 136 (Meadow Street)	3	Route 136 (Wilson Avenue)	Woodward Avenue	Bicycle/Pedestrian	South Norwalk businesses and retail	Both sides of roadway	Proximity to businesses and retail
Route 136 (Rowayton Avenue)	3	Route 136 (McKinney Street)	Town Line	Bicycle/Pedestrian	Rowayton waterfront and businesses	Primarily both sides of roadway	Proximity to businesses and waterfront
Route 136 (Wilson Avenue)	3	Martin Luther King Drive	Route 136 (Meadow Street)	Bicycle/Pedestrian	Springwood Park	Intermittent on east side of roadway on northern portion only	Proximity to park
Route 136 (Woodward Avenue)	3	Route 136 (Meadow Street)	Route 136 (Burritt Avenue)	Bicycle/Pedestrian	South Norwalk businesses and retail	Both sides of roadway	Proximity to businesses and retail
Scribner Avenue	3	Route 1 (Connecticut Avenue)	Richards Avenue	Pedestrian	Church, residential	Both sides of roadway in middle portion, Intermittent on both sides of roadway on northern and southern portions	Limited trip generators
Silvermine Avenue	3	Comstock Hill Avenue	Route 123 (Riverside Avenue)	Bicycle/Pedestrian	Silvermine School, Silvermine Tavern, Residential	Primarily both sides of roadway on southern portion only	Limited trip generators
Silvermine Avenue	3	New Canaan Town Line	Comstock Hill Avenue	Bicycle/Pedestrian	Silvermine School, Silvermine Tavern, Residential	East side of roadway on northern portion only	Limited trip generators
Ward Street	3	Main Street	Route 123 (Union Street/Main Street)	Pedestrian	Union Cemetary, retail and businesses	Intermittent both sides of roadway	Proximity to businesses and retail
William Street	3	Strawberry Hill Avenue	County Street	Pedestrian	Retail areas, Norwalk High School, Naramake Elementary School, Nathan Hale Middle School	South side of roadway	Proximity to schools
Wilson Avenue	3	Route 136 (Highland Avenue)	Route 136 (Rowayton Avenue)	Pedestrian	Rowayton School, Rowayton Library	North side of roadway	Proximity to school and library

Norwalk River Valley Trail Schematic Designs

NOTES

ROUTE 1	
CLASSIFICATION OF TOPOGRAPHY:	<5%
ACHIEVABLE WIDTH:	8'-0"
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	NONE
ROADWAY GEOMETRIC MODIFICATIONS	NONE
GENERAL TRAFFIC MODIFICATION	NONE
WETLAND ENCROACHMENT:	YES
ROUTE 2:	
CLASSIFICATION OF TOPOGRAPHY:	<5%
ACHIEVABLE WIDTH:	8'-0"
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	YES (RELOCATE LIGHTS ALONG BUILDING)
ROADWAY GEOMETRIC MODIFICATIONS	NO
GENERAL TRAFFIC MODIFICATION	CROSSWALKS SIGNAGE PAVEMENT MARKINGS
WETLAND ENCROACHMENT:	YES
ROUTE 3	
CLASSIFICATION OF TOPOGRAPHY:	<5%
ACHIEVABLE WIDTH:	8'-0"
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	YES (RELOCATE LIGHTS ALONG BUILDING)
ROADWAY GEOMETRIC MODIFICATIONS	NONE
GENERAL TRAFFIC MODIFICATION	CROSSWALKS SIGNAGE PAVEMENT MARKINGS SIGHT LINE CLEARING
WETLAND ENCROACHMENT:	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. ELEVATION 10 IS THE 100 YEAR STORM ELEVATION
2. DEPENDING ON FLOODPLAIN IMPACTS, FLOOD PLAIN REVIEW MAY BE REQUIRED.
3. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED.
4. CTDEEP COASTAL CONSISTENCY REVIEW (CUSP) MAY BE REQUIRED.
5. IF WORK IS IN WETLANDS, ARMY CORPS OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED

LEGEND

PHOTO KEY
BOUNDARY LINES
MINOR CONTOUR
MAJOR CONTOUR
ROUTE 1
ROUTE 2
ROUTE 3
PATH-WAY ON STRUCTURE

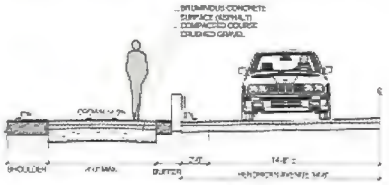
SIGN SCHEDULE

NO.	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)

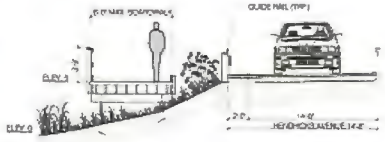
* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS

PHOTOS

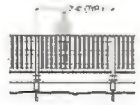
TYPICAL DETAILS



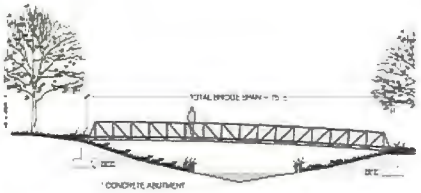
TYPICAL TRAIL SECTION - HARD SURFACE PARALLEL TO HENDRICKS AVENUE
SCALE: 1/4" = 1'-0"



TYPICAL BOARDWALK SECTION - AT GRADE
SCALE: 3/16" = 1'-0"



TYPICAL BOARDWALK ELEVATION - AT GRADE
SCALE: 3/16" = 1'-0"



TYPICAL BRIDGE ELEVATION - OVER WATERCOURSE
SCALE: N.T.S.

St. Ann's Club • Concept at Cost

Item	Route 1	Route 2	Route 3
Site Work	$ 8,485.80	$ 21,506.80	$ 21,489
Mobilization/Contingency	$ 8,485.80	$ 8,506.80	$ 8,489
Trail Surfacing and Edging	$ 5,565.80	$ 12,006.80	$ 11,489
Boardwalk Structure	$ 62,565.80	$ 62,506.80	$ NA
Bridge Structure	$ 215,565.80	N/A	N/A
Pavement Markings and Signage	N/A	N/A	$ 7,565
Amenities	$ 60,565.80	$ 60,506.80	$ 60,489
Additional Construction Items (15%)	$ 67,565.80	$ 93,506.80	$ 93,489.80
Lump Sum Items (20%)	$ 47,565.80	$ 62,506.80	$ 62,489.80
Mobilization/Contingency (25%)	$ 130,565.80	$ 193,506.80	$ 193,489.80
Total	$ 450,000.00	$ 529,000.00	$ 490,000.00

ST. ANN'S CLUB TO SHORE POINT OFFICE BUILDING

16 HENDRICKS AVENUE TO 1 SELLECK STREET

Stantec

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY	<5%
ACHIEVABLE WIDTH	4'-0" TO 8'-0"
CLASSIFICATION OF ROUTE.	OFF ROAD
UTILITY IMPACTS:	NONE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION	NONE
WETLAND ENCROACHMENT.	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. DEPENDING ON FLOODPLAIN IMPACTS, FLOOD PLAIN REVIEW MAY BE REQUIRED
2. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED.
3. CTDEEP COASTAL CONSISTENCY REVIEW (CLISP) MAY BE REQUIRED
4. IF WORK IS IN WETLANDS, ARMY CORPS OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED.

130 East Ave - Opinion of Cost

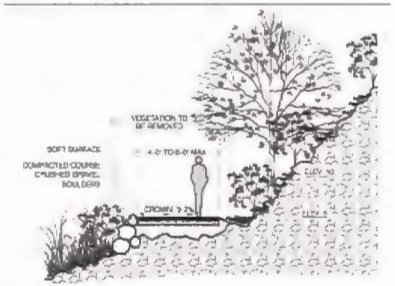
Item	Option 1	Option 2	Option 3
Site Work	$ 4,000.00	$ 5,000.00	$ 1,500.00
Reclamation Contingency	$ 4,000.00	$ 5,000.00	$ 6,000.00
Tree Surfacing and Edging	$ 3,000.00	$ 7,000.00	$ 400.00
Boardwalk Structure	N/A	N/A	$ 90,000.00
Afterbed	N/A	N/A	N/A
Additional Construction Items (25%)	$ 4,500.00	$ 5,500.00	$ 25,000.00
Lump Sum Items (10%)	$ 2,000.00	$ 2,000.00	$ 10,000.00
Incidentals/Contingency (25%)	$ 6,000.00	$ 7,000.00	$ 34,000.00
Total	$ 20,500.00	$ 35,500.00	$ 170,000.00

LEGEND

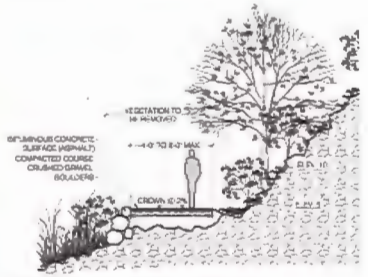
- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- OPTION 1 OR OPTION 2 SOFT SURFACE OR BITUMINOUS PATHWAY
- OPTION 3. PATHWAY ON STRUCTURE

PHOTOS

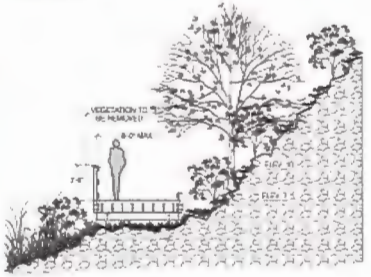
TYPICAL DETAILS



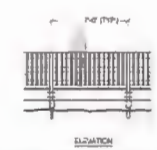
OPTION 1: SOFT SURFACE PATHWAY (WIDTH VARIES)
SCALE: 3/16" = 1'-0"



OPTION 2: BITUMINOUS PATHWAY (WIDTH VARIES)
SCALE: 3/16" = 1'-0"



OPTION 3: TYPICAL BOARDWALK SECTION (WHERE REQUIRED)
SCALE: 3/16" = 1'-0"



OPTION 3: TYPICAL BOARDWALK ELEVATION
SCALE: 3/16" = 1'-0"

130 EAST AVENUE

134 EAST AVENUE TO 128 EAST AVENUE AND DASKAMS LANE PARK

Stantec

MATCHLINE 1-1

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY	<5% - 10%
ACHIEVABLE WIDTH	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION:	CROSSWALKS SIGNAGE PAVEMENT MARKINGS
WETLAND ENCROACHMENT	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS.

1. COORDINATION, AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY CORRIDOR.
2. DEPENDING ON FLOODPLAIN IMPACTS, FLOOD PLAIN REVIEW MAY BE REQUIRED.
3. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED
4. CTDEEP COASTAL CONSISTENCY REVIEW (CUSIP) MAY BE REQUIRED.
5. IF WORK IS DONE IN WETLANDS, ARMY CORP OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED

LEGEND

↑	PHOTO KEY
— · — · —	BOUNDARY LINES
- - - - - -	MINOR CONTOUR
- - - - - -	MAJOR CONTOUR
	MAIN ROUTE
	PATHWAY ON STRUCTURE

SIGN SCHEDULE

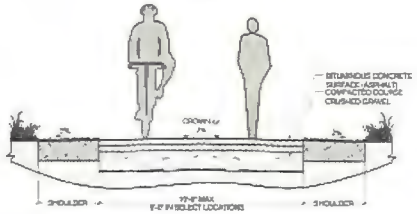
NO	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)

* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS

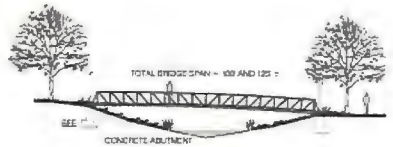
GRAPHIC SCALE

PHOTOS

TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE
SCALE 3/8" = 1'-0"



TYPICAL BRIDGE ELEVATION
SCALE: N.T.S.

ROUTE 1 - Opinion of Cost

Item		Route 1
Site Work	$	[illegible]
Engineering Contingency	$	[illegible]
Trail Surfacing and Edging	$	[illegible]
Beamwalk Structure	$	[illegible]
Bridge Structure	$	[illegible]
Pavement Markings and Signage	$	[illegible]
Amenities	$	[illegible]
Additional Construction Items (25%)	$	[illegible]
Lump Sum Items (10%)	$	[illegible]
Incidentals/Contingency (25%)	$	[illegible]
Total	$	[illegible]

NORWALK RIVER VALLEY TRAIL - 1

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	CROSSWALKS SIGNAGE PAVEMENT MARKINGS SIGHT LINE CLEARING
WETLAND ENCROACHMENT:	NONE

ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD 8'-0" IN ROAD R.O.W
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION:	CROSSWALKS SIGNAGE PAVEMENT MARKINGS SIGHT LINE CLEARING
WETLAND ENCROACHMENT:	NONE

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. COORDINATION, AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY CORRIDOR
2. DEPARTMENT OF TRANSPORTATION APPROVALS FOR PROPOSED 8'-0" SIDEWALK ON NORTH SIDE OF PERRY AVENUE.

LEGEND

- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- ROUTE 1
- ROUTE 2
- PATHWAY ON STRUCTURE

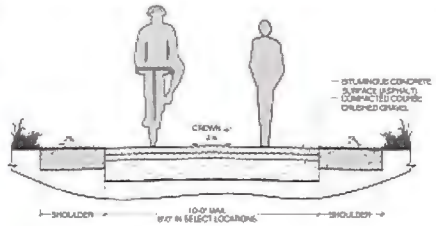
SIGN SCHEDULE

NO.	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6	PATH NARROWS	(W5-2)
7	SHARE THE ROAD	(W16-1P)

* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS

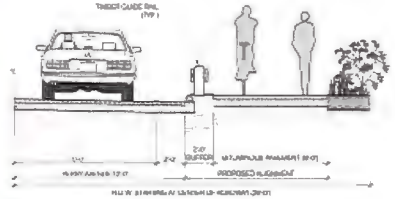
PHOTOS

TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE

SCALE: 3/8" = 1'-0"



TYPICAL PATHWAY SECTION - ALONG NORTH EDGE OF PERRY AVENUE

SCALE: 3/4" = 1'-0"

NRVT 2 - Opinion of Cost

Item	Route 1	Route 2
Site Work	$ 73,500.00	$ 58,000.00
Excavation Contingency	$ 60,000.00	$ 60,000.00
Trail Surfacing and Edging	$ 94,500.00	$ 82,500.00
Boardwalk Structure	$ 42,500.00	$ 42,500.00
Pavement Markings and Signage	$ 5,500.00	$ 5,500.00
Timber Guiderail	N/A	$ 26,000.00
Amenities	$ 8,000.00	$ 47,000.00
Additional Construction Items (25%)	$ 91,000.00	$ 90,000.00
Lump Sum Items (10%)	$ 34,500.00	$ 36,000.00
Incidentals/Contingency (25%)	$ 130,000.00	$ 121,500.00
Total	**$ 510,500.00**	**$ 567,000.00**

NORWALK RIVER VALLEY TRAIL - 2

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS	NONE
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	NONE

ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" IN ROAD R.O.W.
CLASSIFICATION OF ROUTE:	ON ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION	CROSSWALKS SIGNAGE PAVEMENT MARKINGS
WETLAND ENCROACHMENT	NONE

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS

1. COORDINATION AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY CORRIDOR
2. DEPARTMENT OF TRANSPORTATION APPROVALS FOR PROPOSED 8'-0" SIDEWALK ON NORTH SIDE OF PERRY AVENUE.

LEGEND

PHOTO KEY
BOUNDARY LINES
MINOR CONTOUR
MAJOR CONTOUR
ROUTE 1
ROUTE 2
PATHWAY ON STRUCTURE

SIGN SCHEDULE

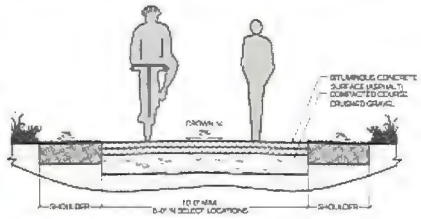
NO.	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6	SHARE THE ROAD	(W16-1P)

* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS.

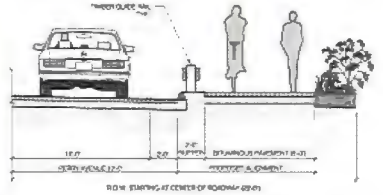
GRAPHIC SCALE

PHOTOS

TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE



TYPICAL PATHWAY SECTION-NORTH SIDE OF PERRY AVENUE

REVT 3 - Opinion of Cost

Item	Route 1	Route 2
Site Work	$ 22,500.00	$ 62,000.00
Excavation Contingency	$ 60,000.00	$ 200,300.00
Trail Surfacing and Edging	$ 30,000.00	$ 131,300.00
Boardwalk Structure	N/A	$ 90,000.00
Pavement Markings and Signage	$ 5,500.00	$ 2,500.00
6'-0" Black Chain Link Fence	$ 19,000.00	N/A
Timber Guiderail	N/A	$ 40,000.00
Amenities	$ 1,000.00	$ 104,000.00
Additional Construction Items (25%)	$ 32,000.00	$ 158,000.00
Lump Sum Items (10%)	$ 13,000.00	$ 63,000.00
Incidentals/Contingency (25%)	$ 43,300.00	$ 210,300.00
Total	**$ 216,300.00**	**$ 1,063,000.00**

NORWALK RIVER VALLEY TRAIL - 3

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD 8'-0" ON ROAD
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION:	SIGNAGE
WETLAND ENCROACHMENT:	NONE

ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" IN ROAD R.O.W. 8'-0" TO 10'-0" OFFROAD
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION:	SIGNAGE
WETLAND ENCROACHMENT:	NONE

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. COORDINATION AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY CORRIDOR.
2. DEPARTMENT OF TRANSPORTATION APPROVALS FOR PROPOSED 8' SIDEWALK ON NORTH SIDE OF PERRY AVENUE UNDERNEATH ROUTE 15 ON AND OFF RAMPS AS WELL AS FOR PROPOSED TUNNEL UNDERNEATH ROUTE 15.

MMY 4 - Summary of Cost

Item	Route 1	Route 2
Site Work	$ 124,000.00	$ 93,560.00
Excavation Contingency	$ 60,000.00	$ 40,000.00
Trail Surfacing and Edging	$ 114,500.00	$ 100,000.00
Roadside Structure	N/A	N/A
Pavement Markings and Signage	$ 1,000.00	$ 1,000.00
Tunnel Under Route15 Pavement	$ 2,000,000.00	$ 2,000,000.00
6'-0" Black Chain Link Fence	$ 20,000.00	$ 20,000.00
Timber Guiderail	$ 17,500.00	$ 12,000.00
Amenities	$ 45,000.00	$ 67,000.00
Additional Components Items (20%)	$ 660,000.00	$ 655,000.00
Lump Sum Items (15%)	$ 243,000.00	$ 236,340.00
Incidentals/Contingency (21%)	$ 821,000.00	$ 800,000.00
Total	$ 4,104,000.00	$ 3,991,000.00

LEGEND

- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- ROUTE 1
- ROUTE 2
- PATHWAY ON STRUCTURE

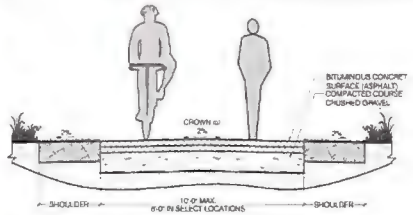
SIGN SCHEDULE

NO	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6	PATH NARROWS	(W5-4a)
7	SHARE THE ROAD	(W16-1P)

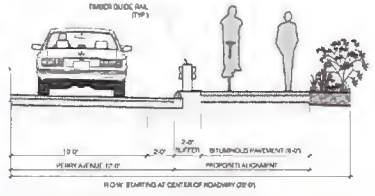
* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION *MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS*, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS

PHOTOS

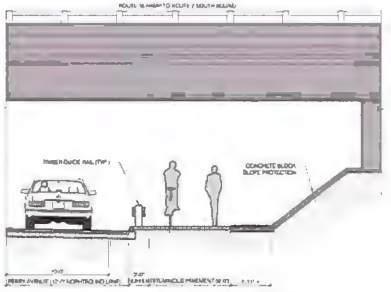
TYPICAL DETAILS



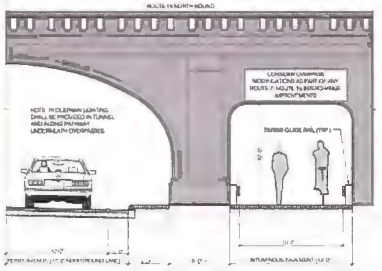
TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE
SCALE: 3/8" = 1'-0"



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE
SCALE: 1/4" = 1'-0"



TYPICAL TRAIL SECTION - UNDERNEATH ROUTE 15 RAMPS
SCALE: 3/16" = 1'-0"



TYPICAL TRAIL SECTION - TUNNEL UNDERNEATH MAIN ROADWAY ROUTE 15
SCALE: 3/16" = 1'-0"

NORWALK RIVER VALLEY TRAIL - 4

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

NOTES

MAP IS SHOWN FOR CONTEXTUAL PURPOSES

LEGEND

PHOTO KEY

BOUNDARY LINES

MINOR CONTOUR

MAJOR CONTOUR

GRAPHIC SCALE

NORWALK RIVER VALLEY TRAIL - 5

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

GRAPHIC SCALE

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE	OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	YES

ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. COORDINATION, AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY CORRIDOR.
2. DEPENDING ON FLOODPLAIN IMPACTS, FLOOD PLAIN REVIEW MAY BE REQUIRED
3. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED.
4. CTDEEP COASTAL CONSISTENCY REVIEW (CLISP) MAY BE REQUIRED.
5. IF WORK IS DONE IN WETLANDS, ARMY CORP OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED.

RIVT 6 - Opinion of Cost

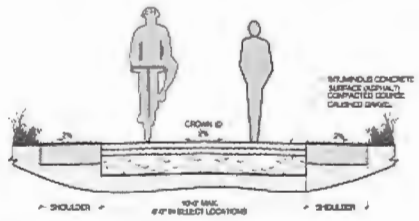
Item	Route 1	Route 2
Site Work	$ 88,200.00	$ 33,600.00
Excavation Contingency	$ 90,000.00	$ 90,000.00
Trail Surfacing and Edging	$ 83,000.00	$ 55,000.00
Boardwalk Structure	N/A	$ 240,000.00
Bridge Structure	N/A	$ 227,000.00
Pavement Markings and Signage	N/A	N/A
6'-0" Black Chain Link Fence	$ 90,300.00	$ 17,500.00
Amenities	N/A	N/A
Additional Construction Items (25%)	$ 90,300.00	$ 190,300.00
Lump Sum Items (10%)	$ 33,000.00	$ 65,000.00
Incidentals/Contingency (25%)	$ 110,000.00	$ 217,300.00
Total	**$ 543,500.00**	**$ 1,084,500.00**

LEGEND

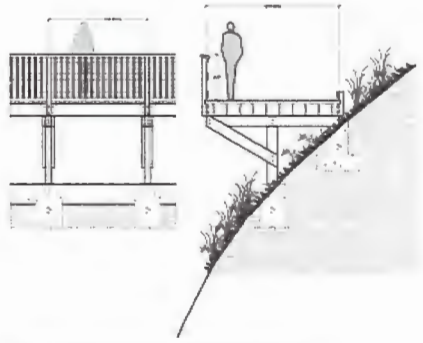
- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- ROUTE 1
- ROUTE 2
- PATHWAY ON STRUCTURE

PHOTOS

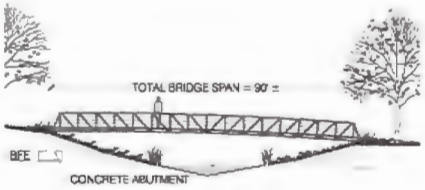
TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE



TYPICAL TRAIL SECTION - STRUCTURE ON STEEP SLOPE



TYPICAL BRIDGE ELEVATION - OVER WATERCOURSE

NORWALK RIVER VALLEY TRAIL - 6

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

GRAPHIC SCALE

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	NONE

ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD 8'-0" ± ON ROAD
CLASSIFICATION OF ROUTE:	ON/OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL CURB RELOCATION
GENERAL TRAFFIC MODIFICATION:	SIGNAGE
WETLAND ENCROACHMENT:	NONE

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. COORDINATION AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY WIRES.
2. DEPARTMENT OF TRANSPORTATION APPROVALS FOR PROPOSED 8' RIGHT OF WAY ALONG EAST SIDE OF NORTH SEIR HILL ROAD.

LEGEND

- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- ROUTE 1
- ROUTE 2
- PATHWAY ON STRUCTURE

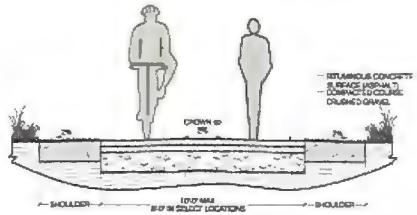
SIGN SCHEDULE

NO	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6	PATH NARROWS	(W5-4a)
7	SHARE THE ROAD	(W16-1P)

* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS.

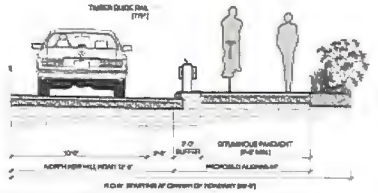
PHOTOS

TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE

SCALE: 3/8" = 1'-0"



TYPICAL TRAIL SECTION ALONG EAST SIDE OF NORTH SEIR HILL ROAD

SCALE: 1/4" = 1'-0"

RRVT 7- Opinion of Cost

Item	Route 1	Route 2
Site Work	$ 94,000.00	$ 83,500.00
Excavation Contingency	$ 60,000.00	$ 60,000.00
Trail Surfacing and Edging	$ 83,000.00	$ 90,000.00
Pavement Markings and Signage	N/A	$ 1,000.00
6'-0" Black Chain Link Fence	$ 97,500.00	$ 37,500.00
Timber Guiderail	N/A	$ 28,500.00
Amenities	N/A	$ 88,000.00
Additional Construction Items (25%)	$ 84,000.00	$ 97,000.00
Lump Sum Items (10%)	$ 38,000.00	$ 40,000.00
Incidentals/Contingency (25%)	$ 113,000.00	$ 121,000.00
Total	**$ 471,500.00**	**$ 571,000.00**

NORWALK RIVER VALLEY TRAIL - 7

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

MATCHLINE 6-6

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	GUARDRAIL
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	YES

ROUTE 2:

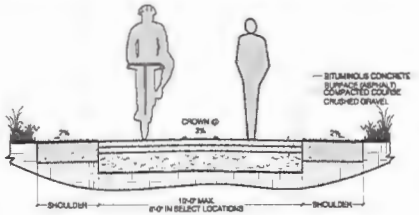
CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" TO 10'-0" OFF ROAD
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	OVERHEAD WIRES UTILITIES DRAINAGE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	NONE
WETLAND ENCROACHMENT:	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

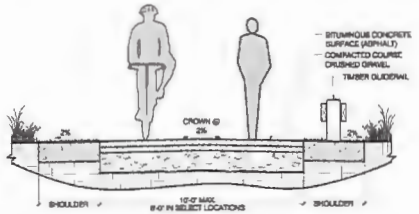
1. COORDINATION AND APPROVALS FROM THE UTILITY COMPANY FOR UTILIZATION OF THE EXISTING ACCESS ROUTES ALONG THE OVERHEAD UTILITY WIRES.

PHOTOS

TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE
SCALE: 3/8" = 1'-0"



TYPICAL TRAIL SECTION - HARD SURFACE (WITH TIMBER GUIDE RAIL)
SCALE: 3/8" = 1'-0"

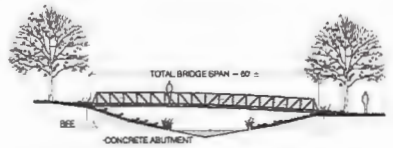
LEGEND

1	PHOTO KEY
	BOUNDARY LINES
	MINOR CONTOUR
	MAJOR CONTOUR
	ROUTE 1
	ROUTE 2
	PATHWAY ON STRUCTURE

SIGN SCHEDULE

NO.	DESCRIPTION	
1.	STOP SIGN	(R1-1)
2.	PEDESTRIAN/BIKE SIGN	(W11-15)
3.	TRAIL CROSSING	(W11-15P)
4.	LEFT ARROW	(W16-7P)
5.	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6.	PATH NARROWS	(W5-4a)
7.	SHARE THE ROAD	(W16-1P)
8.	TRAIL ENDS	

* NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON *UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS*, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS.



TYPICAL BRIDGE ELEVATION
SCALE: N.T.S.

ARVT 8 - Opinion of Cost

Item	Route 1	Route 2
Site Work	$ 94,000.00	$ 25,000.00
Excavation Contingency	$ 40,000.00	$ 80,000.00
Trail Surfacing and Edging	$ 83,000.00	$ 32,500.00
Bridge Structure	$ 197,000.00	$ 197,000.00
Pavement Markings and Signage	$ 500.00	$ 500.00
8'-0" Black Chain Link Fence	$ 52,500.00	N/A
Timber Guiderail	$ 6,400.00	N/A
Amenities	$ 4,000.00	$ 8,000.00
Additional Construction Items (25%)	$ 125,000.00	$ 88,000.00
Lump Sum Items (10%)	$ 50,000.00	$ 33,000.00
Incidentals/Contingency (25%)	$ 168,000.00	$ 119,000.00
Total	**$ 740,400.00**	**$ 560,000.00**

GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft

N

NORWALK RIVER VALLEY TRAIL - 8

BROAD STREET TO GRIST MILL ROAD & WILTON TOWN LINE

Stantec

LEGEND

- PHOTO KEY
- BOUNDARY LINES
- MINOR CONTOUR
- MAJOR CONTOUR
- ROUTE 1
- ROUTE 2
- ROUTE 3
- PATHWAY ON STRUCTURE

SIGN SCHEDULE

NO.	DESCRIPTION	
1	STOP SIGN	(R1-1)
2	PEDESTRIAN/BIKE SIGN	(W11-15)
3	TRAIL CROSSING	(W11-15P)
4	LEFT ARROW	(W16-7P)
5	XX FEET UNTIL CROSSING SIGN	(W16-2aP)
6	4 WAY CROSSING	(W3-1)
7	PATH NARROWS	(W5-4a)

*NOTE: SEE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION, FOR SIGNAGE TABLES AND TYPICAL PAVEMENT MARKING/SIGNAGE LAYOUTS

NOTES

ROUTE 1:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" (4'-0" IN EASEMENT)
CLASSIFICATION OF ROUTE	ON/OFF ROAD
UTILITY IMPACTS.	NONE
ROADWAY GEOMETRIC MODIFICATIONS	NONE
GENERAL TRAFFIC MODIFICATION:	CROSSWALK PAVEMENT MARKINGS SIGNAGE
WETLAND ENCROACHMENT	YES

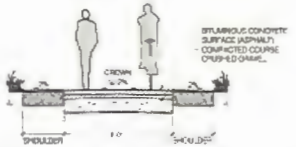
ROUTE 2:

CLASSIFICATION OF TOPOGRAPHY:	<5% - 10%
ACHIEVABLE WIDTH:	8'-0" (4'-0" IN EASEMENT)
CLASSIFICATION OF ROUTE	ON/OFF ROAD
UTILITY IMPACTS.	NONE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION:	CROSSWALK PAVEMENT MARKINGS SIGNAGE
WETLAND ENCROACHMENT	YES

ROUTE 3:

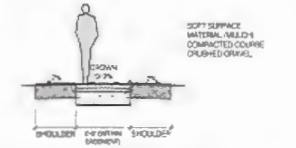
CLASSIFICATION OF TOPOGRAPHY:	<5% - 33%
ACHIEVABLE WIDTH:	8'-0" (4'-0" IN EASEMENT)
CLASSIFICATION OF ROUTE:	OFF ROAD
UTILITY IMPACTS:	NONE
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION	NONE
WETLAND ENCROACHMENT:	YES

TYPICAL DETAILS



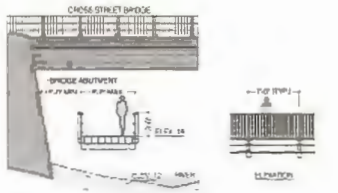
TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE

SCALE: 1/4" = 1'-0"



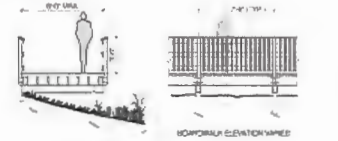
TYPICAL TRAIL SECTION - SOFT SURFACE AT GRADE

SCALE: 1/4" = 1'-0"



TYPICAL BOARDWALK SECTION BENEATH CROSS STREET BRIDGE

SCALE: 1/8" = 1'-0"



TYPICAL BOARDWALK SECTION

SCALE: 3/16" = 1'-0"

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. DEPENDING ON FLOODPLAIN IMPACTS FLOOD PLAIN REVIEW MAY BE REQUIRED
2. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED.
3. CTDEEP COASTAL CONSISTENCY REVIEW (OUSP) MAY BE REQUIRED
4. IF WORK IS IN WETLANDS, ARMY CORPS OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED

GRAPHIC SCALE

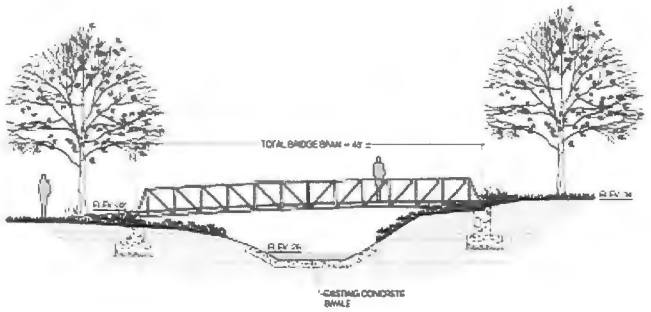
N

PHOTOS

40 CROSS STREET - 1

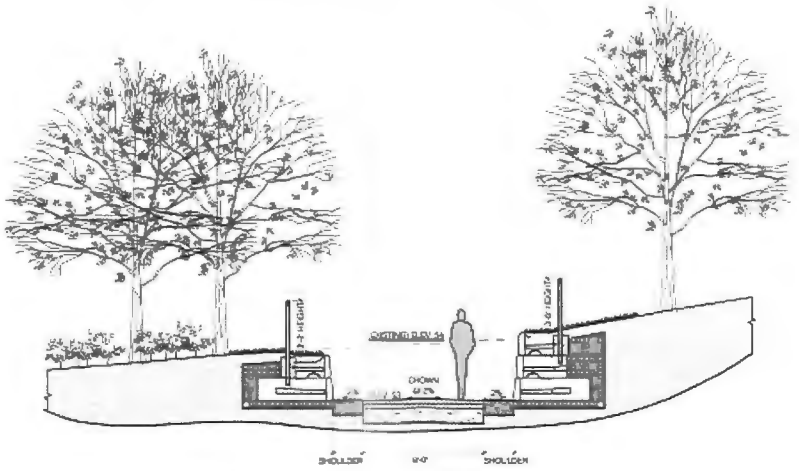
24 BELDEN AVENUE TO EASEMENT OWNED BY THE CITY OF NORWALK

Stantec



TYPICAL BRIDGE ELEVATION - OVER EXISTING CONCRETE SWALE

SCALE: 1/8" = 1'-0"

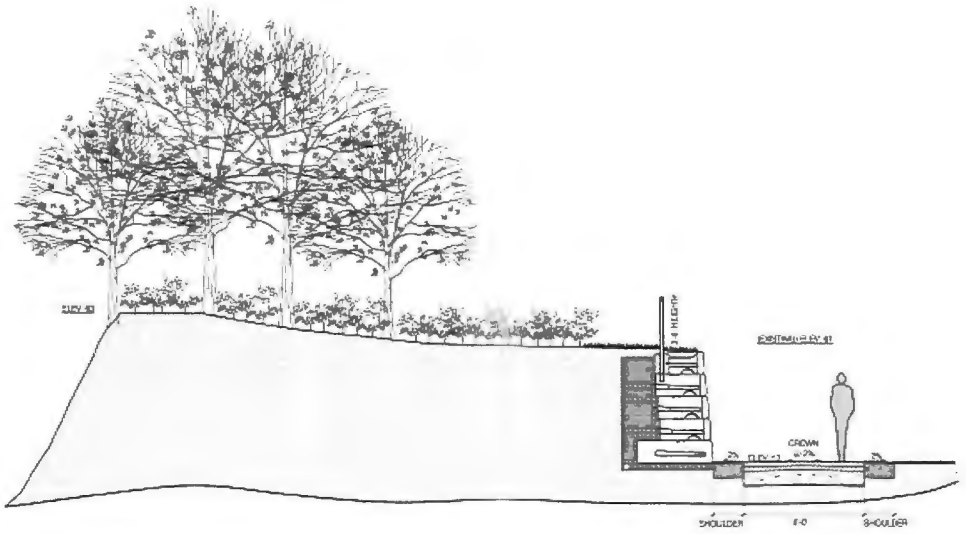


TYPICAL TRAIL SECTION - CUT WITH TWO WALLS

SCALE: 1/4" = 1'-0"

40 Cross Street - Opinion of Cost

Item	Route 1	Route 2	Route 3
Site Work	$ 70,000.00	$ 70,000.00	$ 65,000.00
Excavation Contingency	$ 140,000.00	$ 140,000.00	$ 140,000.00
Trail Surfacing and Edging	$ 35,000.00	$ 40,000.00	$ 35,000.00
Precast Concrete Wall	$ 60,000.00	$ 60,000.00	$ 60,000.00
Boardwalk Structure	N/A	N/A	$ 120,000.00
Bridge Structure	N/A	$ 173,000.00	N/A
Pavement Markings and Signage	$ 6,000.00	$ 6,000.00	$ 1,000.00
Amenities	$ 120,000.00	$ 120,000.00	$ 120,000.00
Additional Construction Items (25%)	$ 108,000.00	$ 150,000.00	$ 135,000.00
Lump Sum Items (10%)	$ 43,000.00	$ 60,000.00	$ 54,000.00
Incidentals/Contingency (25%)	$ 145,500.00	$ 205,000.00	$ 183,000.00
Total	**$ 727,500.00**	**$ 1,024,000.00**	**$ 913,000.00**



TYPICAL TRAIL SECTION - CUT WITH ONE WALL

SCALE: 1/4" = 1'-0"

40 CROSS STREET - 2

24 BELDEN AVENUE TO EASEMENT OWNED BY THE CITY OF NORWALK

GRAPHIC SCALE

NOTES

ROUTE 1

CLASSIFICATION OF TOPOGRAPHY	<5%
ACHIEVABLE WIDTH:	8'-0"
CLASSIFICATION OF ROUTE.	OFF ROAD
UTILITY IMPACTS:	UTILITIES
ROADWAY GEOMETRIC MODIFICATIONS:	NONE
GENERAL TRAFFIC MODIFICATION	NONE
WETLAND ENCROACHMENT.	YES

POTENTIAL REGULATORY APPROVALS FOR SUGGESTED ALIGNMENTS:

1. ELEVATION 10 IS THE 100 YEAR STORM ELEVATION
2. DEPENDING ON FLOODPLAIN IMPACTS, FLOOD PLAIN REVIEW MAY BE REQUIRED.
3. IF STATE FUNDED, A FLOOD MANAGEMENT CERTIFICATION IS REQUIRED
4. CTDEEP COASTAL CONSISTENCY REVIEW (CUSP) MAY BE REQUIRED.
5. IF WORK IS IN WETLANDS, ARMY CORPS OF ENGINEERING PERMITTING AND CTDEEP 401 WATER QUALITY CONTROL CERTIFICATION MAY BE REQUIRED

Harbor Walk - Opinion of Cost

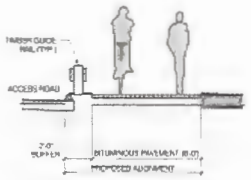
Item	Route 1	Route 2
Site Work	$ 17,000.00	$ 6,000.00
Excavation Contingency	$ 32,000.00	$ 32,000.00
Trail Surfacing and Edging	$ 14,000.00	$ 7,000.00
Boardwalk Structure	$ 392,000.00	$ 370,000.00
[illegible]	$ [illegible]	$ [illegible]
Amenities	$ 47,000.00	$ 47,000.00
Additional Construction Items (20%)	$ 139,000.00	$ 144,000.00
Lump Sum Items (10%)	$ 67,000.00	$ 68,000.00
Escalation/Contingency (20%)	$ 210,000.00	$ 275,000.00
Total	**$ 914,300.00**	**$ 1,184,300.00**

LEGEND

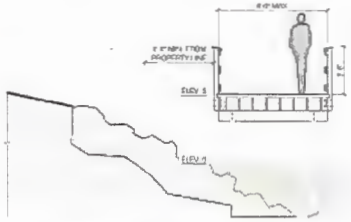
1	PHOTO KEY
	BOUNDARY LINES
	MINOR CONTOUR
	MAJOR CONTOUR
	ROUTE 1
	ROUTE 2
	PATHWAY ON STRUCTURE

PHOTOS

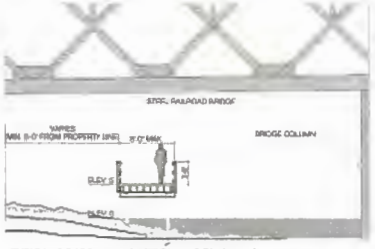
TYPICAL DETAILS



TYPICAL TRAIL SECTION - HARD SURFACE AT GRADE
SCALE 1/8" = 1'-0"



TYPICAL BOARDWALK SECTION
SCALE 1/8" = 1'-0"



TYPICAL BOARDWALK SECTION UNDER RAILROAD BRIDGE
SCALE 1/8" = 1'-0"

TYPICAL BOARDWALK ELEVATION
SCALE 1/8" = 1'-0"

HARBOR WALK

10 WATER STREET TO 4 NORTH WATER STREET

Stantec

Summary of Public Meeting and Comments

Norwalk City Hall, Community Room
October 12, 2011

Presentation Summary:

Dori Wilson, of Norwalk Planning & Zoning Department, and Mayor Richard Moccia welcomed the guests and thanked everyone for coming out to the meeting. Mayor Moccia stated the importance of creating a safe bicycling and walking environment in Norwalk in that it provides opportunities for residents and visitors alike to enjoy Norwalk on foot or bicycle. Dori provided a background of the Pedestrian & Bikeway Transportation Plan, including what the consultant team has been working on, as well as what will be presented that night and the interest in obtaining feedback on the Plan. She noted that that the team will spend much of the presentation discussing the improvements to specific corridors throughout Norwalk and the schematic designs developed for five specific areas.

Ken Livingston, of Fitzgerald & Halliday, Inc. (FHI), began the presentation by providing an overview of the Plan's various parts. He stated that the Plan will include a 10-year guide which will identify issue areas and have conceptual plans for select Tier One corridors. He also stated that another major product of this plan is the schematic designs for five detailed areas, identified early on by the City of Norwalk. He stated that there are sample conceptual plans at the back of the meeting room, as well as the five schematics for the detailed areas. The team would be looking for comments on these tonight.

Ken discussed the vision for walking and bicycling in Norwalk. This vision was developed, with public input, early in the study process. Ken also presented a brief overview of the existing conditions documentation and report. He noted that this report documents existing sidewalks, footpaths, and multiuse facilities, as well as gaps in Norwalk. Based on the existing conditions work, he presented an overview of the pedestrian and bicycle corridors that were identified throughout Norwalk. He reviewed how each of the pedestrian and bicycle corridors were ranked for needed improvements. Each corridor was given a one (1), two (2), or three (3) based on pedestrian crashes, bicycle crashes, public input, proximity to schools, transit stations, and identified need in other town plans. A score of one (1) essentially has the greatest need for pedestrian and/or bicycle improvements. A select number of these "Tier One" corridors will have the detailed conceptual designs completed for them.

Francisco Gomes, of FHI, ne: discussed types of improvements that could be applied to specific areas c Tier One corridors. He discussed sidewalk improvements and pedestrian crossings. In particular, he described the pedestrian crossing needs on Main Avenue, stating that crosswalk improvements such as curb ramps, re ge islands, curb extensions, raised crosswalks, streetscape improvem ts could make it a safer and more pleasant street to walk on. In addition Francisco noted that pedestrian and school signage is an effective tool to create safer and more walkable environments. Signage can be an effective t ol from a cost perspective, given that an individual sign costs approximate $300.

Related to bicycle improveme s, shoulder improvements and bike lanes are effective tools to make certa corridors more bicycle-friendly. The southern portion of West Rocks, south the Middle School, could be a good candidate for bicycle lanes. The n thern portion of West Rocks is narrower and could benefit from sharrows. Sharrows are symbol pavement markings, every few hundred feet, whic delineate where a bicyclist should ride in that corridor. Sharrows not only c vise cyclists where to ride, but also advise motorist to share the road. F ncisco noted that roadway signs can accompany the pavement markings.

In addition to West Rocks Ro , sharrows could be a good candidate on Main Street just north of Rou 1, where there is one lane of traffic in each direction. Here, bicyclist cou also benefit from intersection improvements and bicycle parking. Francisc noted that wayfinding would also greatly improve the quality of walkin and bicycling in key areas of the city. Francisco finished with a general scussion of the typical costs of pedestrian and bicycle improvements.

Ken next discussed the schem ic designs, asking attendees to review them and provide comments to the consultant team. He discussed the next steps in the Plan development, wh includes costs for improvement options, a final report of recommendat s, and suggestions for implementation (funding, committee, and construc on).

Comments:

Ken next opened up the mee g for pubic questions and comments. The following questions and com ents were raised immediately following the presentation:

- There was a comment on e bicycle and pedestrian component of the Norwalk Transportation Plan also under development. The City should think about how to better inte rate these two things. Is it beneficial to have

a final integrated plan just for the pedestrian a- bicycles portion of both plans? Ken answered that a firm, VHB, is work g with the Norwalk Department of Public Works (DPW) on a transportatio- plan that largely consider vehicular movements. There is a goal of both c ojects to work together so that there are no conflicts. Mike Greene notec at the Common Council ultimately makes decisions on where to put reve ues, and they will make decisions based on both plans. It is a great ide to make an ultimate pedestrian and bicycle plan that incorporates b n plans, but time and resources are constrained.

• There was a question about Safe Routes to Sc ool (SRTS) and if there is thought to integrating this into the Plan. Ken n ed that SRTS is considered in the Tiering process. The programs are com mentary, and SRTS is not precluded from this planning process. SRTS pl s are typically very specific for each school.

• There was a concern about bus rapid transit RT). The commenter does not want to implement BRT while promoting bic cling adequately, and have a death or injury from the BRT.

• There was a comment that bicyclists came up with the Harbor Loop Trail, a 3-mile loop trail. Regarding Hendricks, there needs to be a path through the woods to get to the top of I-95 to get over to Mathews Park. There are other comments regarding the DPW trail conne tor, which were provided in writing to the City staff.

• There was a question about how Norwalk sta ks up to other communities with respect to amount of bike lanes. Francisc noted that there are currently no bicycle lanes in Norwalk, but at least e City is planning for them. Why are they paving roads but not putting in lo es? Francisco noted that it is a process, but we are seeing the City beginn g to create narrower lanes and wider shoulders. Gregory Boulevard is an example of this.

• There was a comment that none of this will w k unless bicyclists drop their attitude. They should be encouraged to o ey all traffic laws.

• There was a question on whether Norwalk s uld have an ordinance that requires councilors and departments to review number of plans before repaving? Council members are not professio al transportation planners and only have two-year term. How can they u erstand what they need to look at? Ken noted that this plan does discuss oning and regulations, and makes recommendations to address this. Mike Greene stated that departments and councilors do use these plans as res urce.

• The pedestrian button at Main / Catherine / Center Street is not working properly.

• There was a comment that in 1979, the city recommended the Harbor Loop Trail. There are process problems because sections are still missing. We need bike advocate in city hall. Someone needs to stand up for bike lanes.

Individual Discussion Comments:

The following comments were provided to various members of the project team at the meeting:

• The plan should make the construction of multi-use trails the highest priority. These are popular with just about everyone.

• There are missing links on the chart and map for some portions of the Norwalk Harbor Trail. In addition, there were concerns that portions of the Norwalk Harbor Trail had a Tier Two ranking.

• There are concerns regarding the design of the NRVT trail under the Merritt Parkway Bridge on Perry Avenue.

• There is concern about neglected maintenance of the city's footpaths. Broken asphalt and debris covering the walks is commonplace.

Attendees:

Members of the Public:

Anthony Ray-Hall
Allan Raymond
Diane Lauricella
Brian Boland
Patsy Bresan
Caleb Engelken
Victor Cavallo
David Marcus
Bill Bunne
Paul Cantor
Yvonne Lopaur
Joe Santo
David Park
Andy Conroy
Jerry Petrini
Leigh Grant
Peter Schuerch
Scott Fletcher
David McCarthy
David Hulse
Alex Modica
Will Palmquist
Brian Meek
Nancy Rosett
Peter Libre
Zvi Cole
Diane Cece
Peter Schuerch

Project Team:

Mike Greene - Norwalk Planning & Zoning
Dori Wilson - Norwalk Planning & Zoning
Ken Livingston – FHI
Francisco Gomes – FHI
Marcy Miller – FHI
Gary Sorge – Stantec