Bicycle Safety and Engineering Study to and through South Norwalk

City of Norwalk, CT

FINAL REPORT

May 1, 2014

CDM Smith

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

Table of Contents

List of Tables

List of Figures

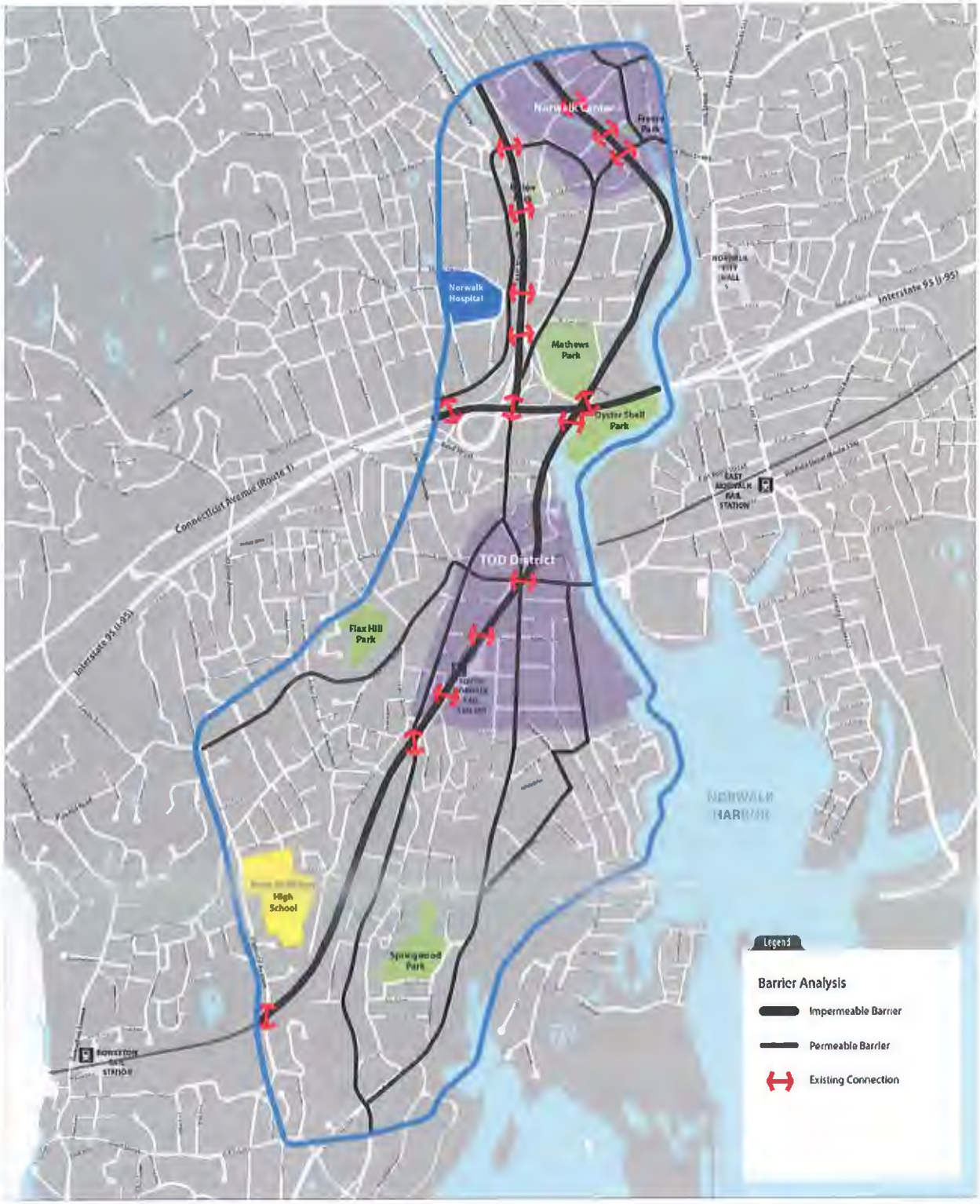
1. Purpose and Need

Bicycling has steadily increased in the U.S. over the past decade. According to the 2012 American Community Survey (ACS), bicycling has increased ten percent since 2011, which represents the largest year-on-year increase since 2007-2008. Since 2000, bicycle commuting has increased by 62%, as documented by the ACS. These shifts are even more dramatic in cities that are investing in bicycle infrastructure. Washington D.C. has seen a two year increase of 28% in commuting trips made by bike while New York has improved by 25% and Boston by 18%. There are a number of factors that have influenced this shift: high fuel costs, a sluggish economy, increased environmental awareness, health and fitness concerns, and a general change in attitude regarding automobile ownership and travel, especially among young Americans.

At both the state and federal level, "Complete Streets" planning and design is becoming the new benchmark by which the utility and success of streets, particularly those in urban areas, are measured. The Complete Streets approach to planning and design is multi-modal and seeks to improve access and connectivity to all users - transit vehicles, automobiles, bicyclists and pedestrians. Complete Streets principles can seamlessly complement Norwalk's efforts to revitalize Norwalk Center and South Norwalk with transit oriented development.

Norwalk's dense urban form, wide range of land uses and robust transit systems combine to create conditions that are very conducive to effective and efficient bicycle commuting and travel. However, the existing roadway network, with its narrow travel lanes and high volume of relatively fast traffic, presents challenges for bicycle connectivity and safety. This is particularly true in Norwalk Center and South Norwalk which are traversed by several high traffic roadways such as Connecticut and West Avenues. These areas also include multiple barriers to connectivity. These barriers include "permeable" barriers such as West Avenue which has heavy, relatively fast traffic and multiple lanes, and "impermeable" barriers such as I-95, Route 7, the Amtrak/Metro-North rail corridor, and the Norwalk River and Harbor (see **Figure 1**). These barriers restrict crossing bicycle traffic to a small number of locations such as bridges and underpasses. While the challenges to accommodate bicycles on Norwalk's busy and complex streets are many, an analysis of the area presents several opportunities for the development of a bicycle network that would connect Norwalk Center and South Norwalk and many other nearby destinations.

Figure 1 Barriers to Bicycle Travel



Barriers to Bicycle Travel
Norwalk TOD Pilot Program

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2. Recommended Bicycle Facilities

Several bicycle facility types are typically used to accommodate bicyclists in urban environments similar to South Norwalk and Downtown. These facilities include sharrows, bicycle lanes, cycle tracks, shared-use pathways, and shared streets. The selection of the appropriate facilities is influenced by several factors including pavement width, right-of-way width, number of travel lanes, presence of on-street parking, the street's functional classification, and traffic volume. In Norwalk, as in most urban areas, a hybrid of measures is needed to provide a connected bicycle network that offers many route options to numerous destinations and provides access for various levels of bicycling proficiency. The following is a brief description of each recommended bicycle facility.

Sharrow

A Sharrow is a shared roadway that is marked and signed for bikes. Sharrows operate on the principle that bicycles are entitled by law to operate as a vehicle on most streets. A sharrow symbol and/or sign informs drivers to expect the presence of bicyclists and of the anticipated location of the bicyclist on the roadway. A sharrow is most often used on a roadway where bicycle traffic is desirable but roadway width is insufficient for a dedicated bicycle lane.

Bicycle Lane

A bicycle lane designates a portion of the roadway for exclusive bicycle use through a dedicated lane, markings and signage. Bicycle lanes are typically located between the curb and travel lane or between a parking lane and travel lane.

Shared Use Path

A shared use path is physically separated from vehicular traffic by a curb, median or traverses a route that is independent of a street network (often through open space or along a river corridor). These facilities allow for shared use by bicyclists, pedestrians and skateboarders or roller-bladers. Pathways tend to be recreational in nature, although they are sometimes used for commuting and daily, routine trips.

Cycle Track

A cycle track is physically separated from vehicular and pedestrian traffic, for the exclusive use of bicyclists. Unlike bicycle lanes, cycle tracks are separated from traffic by a curb, parking lane, or other physical barrier.

Shared Street (Bicycle Boulevard)

A shared street, also known as a bicycle boulevard, is a low-volume, local street where pedestrian and bicycle movement is prioritized over vehicular movement. While automobiles are permitted to use a shared street, their speeds are sufficiently reduced by the street's design so that pedestrians and bicyclists can mix safely with the traffic. These streets are usually short in length and do not carry through-traffic.

Bike Box

Bike boxes are used in conjunction with bicycle lanes at high volume 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.

Bicycle Parking

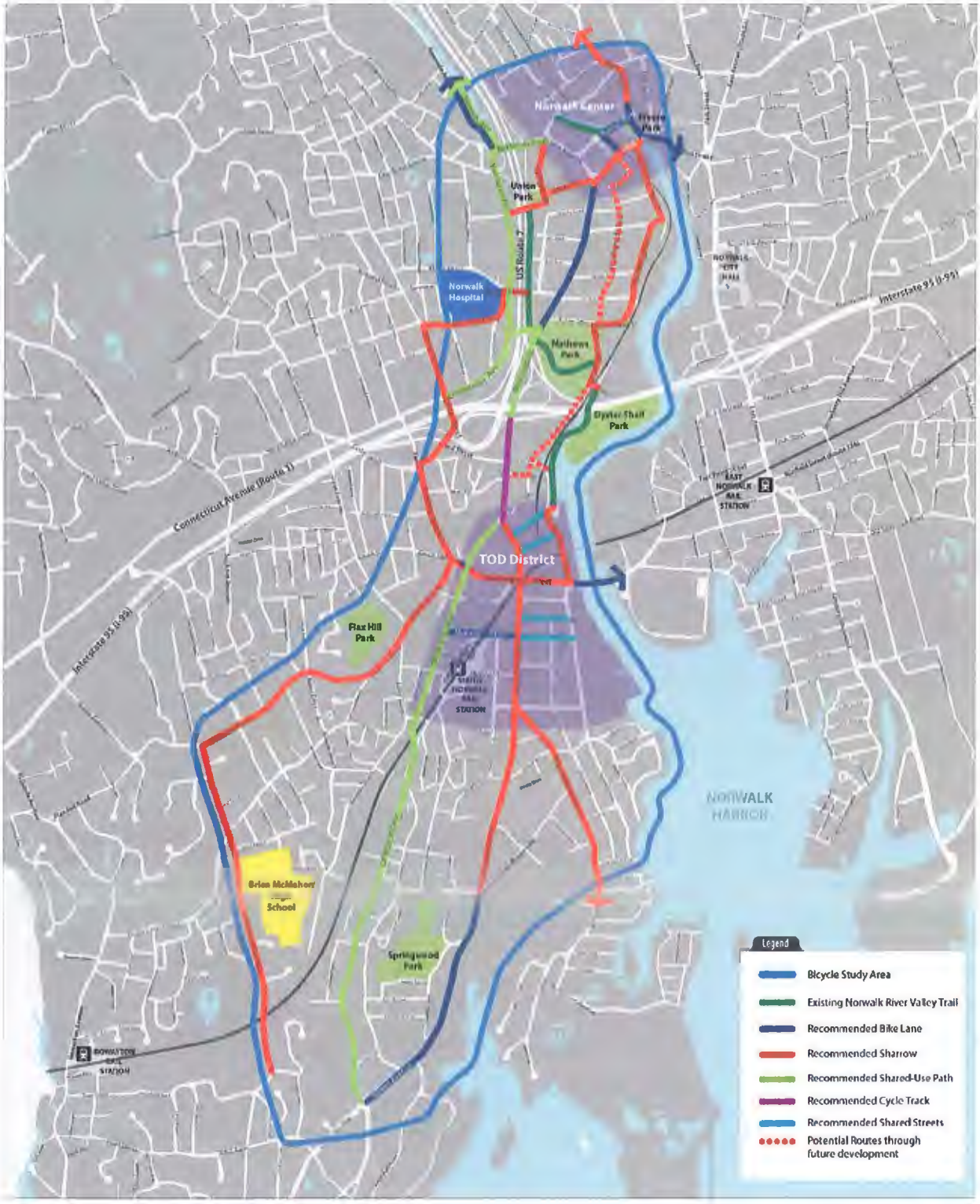
Parking facilities can be as simple as a bike rack or as sophisticated storage lockers that totally enclose and protect bikes. Bicycle parking is most effective when placed in well-lit, secure areas and is most convenient when located close to building entrances.

3. Recommended Bicycle Network

The recommended bicycle network would use a combination of the aforementioned facility types to strategically connect popular destinations such as the South Norwalk Rail Station, Norwalk Center, Washington Street, Norwalk Hospital, Mathews Park, Oyster Shell Park, and multiple other locations. The recommended network, which is diagrammed on **Figure 2** and characterized in **Table 1**, is divided into ten focus areas. These areas represent north-south connecting or east-west connecting corridors that are intended to create a series continuous and conveniently accessed bicycle-friendly routes throughout the study area. These areas include:

1. West Avenue
2. Dr. Martin Luther King Junior Drive
3. Southwest Connector: Maple Street, Stevens Street, Stuart Avenue, Cedar Street, Fairfield Avenue, Flax Hill Road, Highland Avenue
4. South Main Street/Wilson Avenue
5. Woodward Avenue
6. Harborside: Commerce Street, Harbor Avenue, Butler Street, Crescent Street, North Water Street
7. Northwest Connector: Riverside Avenue, Van Buren Avenue, Connecticut Avenue, Belden Avenue
8. Norwalk Center Circulation: Main Street, Burnell Boulevard, River Street, Wall Street
9. South Norwalk TOD East-West Connections: Washington Street, Monroe Street, Ann Street, Marshall Street, Elizabeth Street, Hanford Place
10. Future Route Potential: Academy Street Extension, Isaac Street, Crescent Street, 95/7 development area

Figure 2 Recommended Bicycle Network



Recommended Bicycle Network

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0 375 750 1,500 2,250 3,000 Feet

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Table 1 Matrix of Recommended Bicycle Corridors

Street	Typical Width	Lane Config.	On-Street Parking	ADT	Functional Class	Recommended Facility	Notes
Ann Street	24-26'	1+1	No	NA	Local	Shared Street	
Belden Avenue	46-80'	Multiple	No	13,100	Princ Arterial	Shared-Use Path	Short connection
Burnell Boulevard	48'	1 (one way)	Busses	NA	Local	Bike Lanes	Bus Station
Butler Street	26'	1+1	No	2,700	Min Arterial	Sharrow	Connection between Crescent and Harbor
Byington Place	30-35'	1+1	East Side	NA	Local	Sharrow	Connects Cross Street to Union Park
Cedar Street	30-34'	1+1	No	3,000	Min Arterial	Sharrow	Connects Fairfield to Stuart
Crescent Street	24-26'	1+1	No	NA	Local	Sharrow	Newly reconstructed
Commerce Street	30-32'	1+1	West side	3,600	Min Arterial	Sharrow	Route along the Harbor
Connecticut /Van Buren Avenue	40-50'	2+2	No	14,400-16,600	Princ Arterial	Shared-Use Path	Alternate to NRVT
Elizabeth Street	30'	Unmarked	Both sides	NA	Local	Shared Street	
Fairfield Avenue	24-40'	1+1	No	8,700	Min Arterial	Sharrow	Connection between SoNo and Hospital
Flax Hill Road	30-36'	1+1	South side	6,500	Min Arterial	Sharrow	Connects Rowayton to SoNo
Hanford Place	26'	1+1	No	NA	Local	Shared Street	
Harbor Avenue	24-26'	1+1	No	2,600	Min Arterial	Sharrow	Route along the Harbor
Highland Avenue	24-30'	1+1	No	4,300	Collector	Sharrow	Norwalk High School
Main Street	40-48'	1+1	Both sides	9,000	Min Arterial	Bike Lanes/Sharrow	Connection to north end of Norwalk
Maple Street	36-40'	1+2	No	3,300	Local	Sharrow	Short segment connecting Stevens Street to NRVT
Marshall Street	24-26'	1+1	Limited	NA	Local	Shared Street	
MLK JR Drive	48'	2+2	No	13,000	Min Arterial	Shared-Use Path or Bike Lanes	Connection to Rowayton
Monroe Street	40-44'	1+1	North side	5,800	Collector	Bike Lanes	New streetscape east of State Street
Mott Avenue	10'	1+1	Both sides	NA	Local	Sharrow	Connects Norwalk Center to Union Park
North Water Street	24'	1+1	No	5,300	Local	Sharrow	Harborside route between NRVT and Washington Street
River Street	48'	1+1	Both sides	NA	Local	Bike Lanes	Connects Wall Street to Burnell Blvd and Bus Depot
Riverside Avenue	30-38'	1+1	West side	5,000	Min Arterial	Bike Lanes/ Shared-Use Path	NRVT route, provides connection north
South Main Street	30-38'	1+1	Both sides	8,900-12,800	Min Arterial	Sharrow	Connects to train station
Stevens Street	30-44'	1+1	Both sides	3,400	Local	Sharrow	Connection to Norwalk Hospital
Stuart Avenue	24-32'	1+1	West side	2,600	Min Arterial/	Sharrow	Connection to Hospital
Union Park Place	30'	1+1	No	NA	Local	Sharrow	
Wall Street	50-58'	Multiple	Both sides	10,900	Princ Arterial	Sharrow	Connects SoNo to Wall Street area
Washington Street	36-52'	1+1, 2+2	Both sides	10,000	Min Arterial	Sharrow, Bike Lanes	Connects to East Norwalk
West Avenue	50-80'	Multiple	Both sides	16,900-36,600	Princ Arterial	Bike Lanes, Shared-Use Path, Cycle Track	Connects Norwalk Center to South Norwalk TOD
Wilson Avenue	32-44'	1+1	Limited, Both sides	5,300-5,800	Min Arterial	Bike Lanes	Connection to Rowayton
Woodward Ave.	28-32'	1+1	Both sides	5,000	Min Arterial	Sharrow	Connection to southeast

West Avenue

West Avenue is the most heavily travelled street within the study area. As a principal arterial, it carries an average of 16,900-36,600 vehicles per day. The northern segment of West Avenue between Belden Avenue and Maple Street is approximately 50' wide with two travel lanes on each side of the street and limited on-street parking. South of Maple Avenue, the roadway varies considerably, maintaining at least four travel lanes; however, due to multiple turning and queuing lanes, the width of this segment of West Avenue is as much as 80'. This segment carries the highest volume of traffic along the corridor. A median island is also a prominent feature of West Avenue south of Connecticut Avenue.

West Avenue provides the most direct connection between Norwalk Center and South Norwalk. This corridor is also the most challenging corridor within the study area for accommodating bicyclists due to multiple travel lanes, high volume traffic, perceptively high traffic speeds and limited right-of-way. Consequently, a number of capital intensive improvements are needed to allow the streets to safely accommodate bicyclists.

The recommended bicycle improvement on the northern segment of West Avenue is bicycle lanes. A shared use pathway is recommended for the middle segment on the west side of the roadway between Connecticut Avenue and the Route 7 off ramps. A center roadway protected cycle track is recommended on the southern segment of West Avenue.

The inclusion of bicycle lanes on the northern segment would require a "road diet" whereby the number of travel lanes are reduced in order to accommodate bicycle lanes. Bicycle lanes in that area would most likely be buffered from the travel lanes given the volume and speed of traffic on the corridor.

Figure 3 West Avenue

Dr. Martin Luther King Junior Drive

Dr. Martin Luther King Jr. Drive (MLK Drive) provides a direct connection between South Norwalk's commercial district (SoNo) and the southern edge of Norwalk approaching Rowayton. The roadway has two travel lanes in each direction and carries 13,000 vehicles per day at the northern end of the corridor. The eastern side of the corridor is relatively uninterrupted by driveways and has very few intersecting streets.

Figure 4 MLK Drive Map

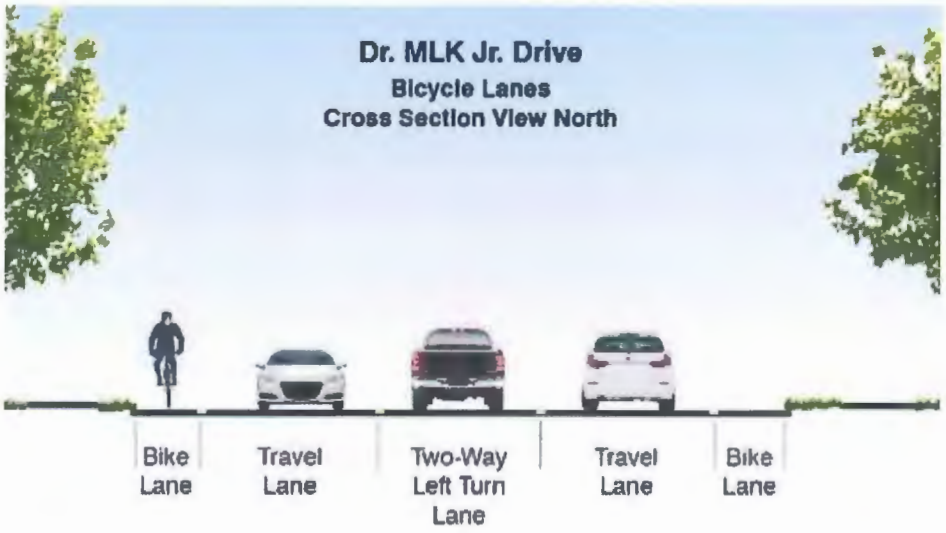
Figure 5 MLK Drive Rendering - view north (southeast of railroad)

Two options are recommended for this corridor. The first option, a shared use pathway, takes advantage of the existing sidewalk space at the eastern side of the roadway. This sidewalk can be widened and converted to a shared-use pathway that would accommodate bicyclists and pedestrians. With few driveway interruptions and few crossing streets, this facility would permit bicycle travel with minimum interruptions. The challenge to providing this type of facility on the side of the roadway is a right-of-way that is limited in width, topographic constraints, and physical constraints due to bridges and retaining walls structures. Construction of the pathway would likely require a reduction in the width of travel lanes and relocation of the curb thereby reducing the width of the roadway pavement and increasing the space availabe on the east side of the roadway. **Figure 5** is a rendering of this option.

The shared-use pathway option while relatively uninterrupted, does cross several roadways. At these intersections, bicyclists would cross by walking their bicycles in crosswalks as pedestrians either at an actuated pedestrian signal if the intersection is signalized. If not signalized, crossing bicycle traffic would also be required to stop and walk their bicycles through crosswalks once vehicular traffic yields or stops.

The alternative bicycle accommodation for MLK Drive would require a reduction of the through travel lanes from two in each direction to one in each direction with a two-way left turn lane in the center of the roadway. By eliminating a traffic lane, five to six foot wide bicycle lanes can be provided on either side of the roadway. (See **Figure 6**)

Figure 6 Road Diet Alternative for MLK Drive



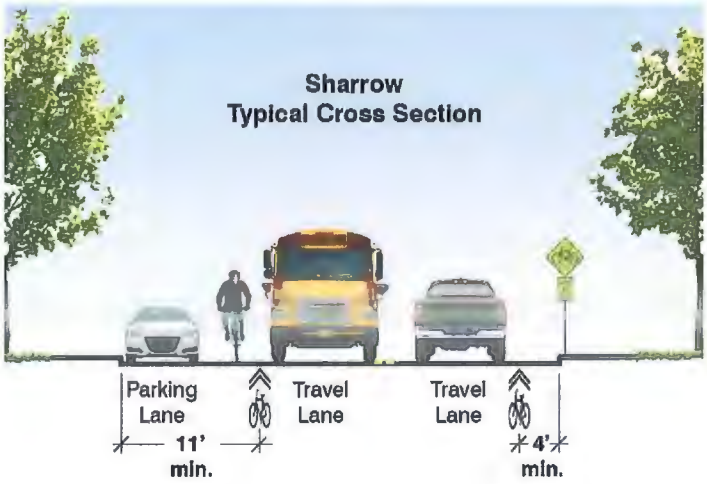
Southwest Connector

The "Southwest Connector" is comprised of several streets that form a single bicyle route on the west side of the study area, connecting Norwalk Hospital and the 95/7 area to Rowayton. The streets that comprise this route include (from north to south): Maple Street, Stevens Street, Stuart Avenue, Cedar Street, Fairfield Avenue, Flax Hill Road, and Highland Avenue. Roadway pavement width varies on this route from 24 to 44 feet and traffic volume is low to moderate ranging from 2,600 to 8,700 vehicles per day. The roadways included in this route have similar cross-sections with most roads having one travel lane in each direction with limited on-street parking.

Figure 7 Southwest Connector Map

Roadway width is relatively narrow along the corridor, with insufficient space for the provision of dedicated bicycle lanes. Accordingly, sharrows are recommended for the route. Traffic volumes along the corridor are sufficiently low to accommodate bicyclists while allowing vehicular traffic to encroach upon the opposing travel lane to pass bicyclists as needed. **Figure 8** is a typical cross section of this corridor.

Figure 8 Typical Sharrow Placement



South Main Street/ Wilson Avenue

The South Main Street and Wilson Avenue route parallels the recommended route on MLK Drive, connecting South Norwalk to southern areas of Norwalk and northern portions of Rowayton. This corridor is also designated as part of the East Coast Greenway Route which travels the length of Wilson Avenue and most of South Main Street before turning onto Washington Street and the Washington Street Bridge. The pavement widths of streets along this corridor vary between 30' and 44' with intermittent parking on one or both sides. Traffic volumes average between 5,300 and 12,800 vehicles per day. Of the two roadways, South Main Street carries the most traffic, particularly as it approaches West Avenue.

Figure 9 South Main Street/Wilson Avenue Map

Bicycle lanes are recommended for Wilson Avenue where on-street parking is limited and sufficient roadway width is present to accommodate 5' wide bicycle lanes on both sides of the roadway. A sharrow is recommended for South Main Street where the demand for on-street parking is high and parking lanes are present on one or both sides of the roadway. Due to limited pavement width and low volume and speed of traffic on South Main Street, the route should be signed to allow bicyclist to take the full traffic lane, requiring motorists to travel at the same speed of cyclists until they find opportunity to pass safely when there is a break in traffic in the opposing lane. "Bicyclists May Use Full Lane" signage is recommended on South Main Street to inform both bicyclists and drivers of this accepted practice. **Figure 10** illustrates these recommended improvements.

Figure 10 South Main Street Rendering view north (at Raymond Street)

Woodward Avenue

The Woodward Avenue route would extend from South Main Street to Longshore Avenue. This route parallels South Main Street and provides a connection between the Woodward area and the South Norwalk TOD area. This route can be extended to the power plant at Manresa Island where a proposed redevelopment will include waterfront recreational uses that will likely attract bicyclists.

Figure 11 Woodward Avenue Map

The roadway width varies from 28' to 32' with one lane of traffic in each direction. Woodward Avenue is a minor arterial and traffic volume is moderate with approximately 5,000 vehicles per day.

Sharrows are recommended as a solution for this corridor given the narrow width of the roadway and the demand for on-street parking in various locations. Typical sharrow placement would resemble that depicted in **Figure 8**.

Harborside

The "Harborside" route is comprised of Commerce Street, Harbor Avenue, Butler Street, Crescent Street and North Water Street. The route would provide a harborside connection between the South Norwalk TOD area and Norwalk Center. This route is already popular with local bicyclists despite the lack of bicycle facilities.

Figure 12 Harborside Map

Roadway width along the corridor varies from 24' to 32' with one lane of traffic in each direction. Of the four streets, Commerce Street is the only roadway that has on-street parking, with a limited amount of space on the west side of the roadway. With the exception of North Water Street and Crescent Street which are local roads, the roadways on this route are classified as minor arterials. Traffic volume on the route is relatively low, varying from 2,600 to 5,300 average vehicles per day.

A sharrow is recommended for this route due to insufficient space on the roadway for dedicated bicycle lanes. These sharrows should be accompanied by traffic calming measures such as speed humps so as to moderate traffic speeds and increase the safety of bicycling along the corridor.

Typical sharrow placement would resemble that depicted in **Figure 8.**

Northwest Connector

The "Northwest Connector" route is comprised of Riverside Avenue, VanBuren Avenue, Connecticut Avenue and Belden Avenue. This route parallels and provides an alternative to West Avenue. Combined with the "Southwest Connector" this route would provide a bicycle connection between Rowayton and Norwalk Center.

Figure 13 Northwest Connector Map

Traffic volumes along this corridor vary from 5,700 average vehicles per day on Riverside Avenue to 16,600 average vehicles per day on Connecticut Avenue (Route 1). All four roads are arterial roadways with Riverside Avenue classified as a minor arterial and Belden Avenue, Van Buren Avenue and Connecticut Avenue classified as principal arterials.

Belden Avenue varies in width from 46' to 80', Connecticut Avenue and Van Buren Avenue range in width from 40 to 50' with Riverside Avenue varying from 30' to 38' wide. Due to limited roadway pavement width, multiple lanes of traffic, and a high volume of traffic, a shared use pathway is recommended on the south side of Belden Avenue and on the east side of Connecticut and Van Buren Avenues. These corridors are suitable for a shared use pathway due to infrequent curb cuts, few intersecting streets, and available right-of-way.

A shared-use pathway on the east side of Riverside Avenue has been proposed in Norwalk's Bikeway and Pedestrian Masterplan. This recommendation is part of a long term vision for the Norwalk River Valley Trail. This pathway would extend north along the Norwalk River to New Canaan Avenue. As a near term measure, bicycle lanes are recommended for the length of Riverside Avenue. Riverside Avenue is sufficiently wide to accommodate 5' wide bicycle lanes with travel lanes that are 10' to 11' in width. **Figure 14** illustrates the bicycle lane concept for Riverside Avenue.

Figure 14 Riverside Avenue view north (near Belden Avenue)

Norwalk Center Circulation

The Norwalk Center circulation route is comprised of seven streets: Main Street, Wall Street, Burnell Boulevard, River Street, Union Park Place, Byington Place and Mott Avenue. Bicycle accomodation on these streets would provide a critical connection between the east and west sides of Norwalk Center, the Norwalk River Valley Trail, Union Park and a future West Avenue bicycle route. The challenges of accomodating bicyclists in this area include high volumes of traffic, multiple traffic lanes, numerous turning vehicles, high levels of pedestrian traffic, bus traffic, and on-street parking.

Figure 15 Norwalk Center Circulation Map

With the exception of the Union Park area, traffic volume in Norwalk Center is relatively high with an average of 9,000 vehicles per day on Main Street and 10,900 vehicles per day on Wall Street. Wall Street is classified as a principal arterial, Main Street is a minor arterial and Burnell Boulevard, River Street, Union Park Place, Byington Place, and Mott Avenue are local roadways.

Figure 16 Norwalk Center Circulation Map (zoom)

The recommended bicycle accomodations include a combination of sharrows and bicycle lanes. Sharrows are proposed for Wall Street and Main Street north of Hoyt Street as well as Union Park Place, Byington Place and Mott Avenue. Many of these roadways have insufficient width to accommodate bicycle lanes, but have traffic volumes that are conducive to the implemenation of sharrows. Bicycle lanes are proposed for River Street, Burnell Boulevard (between Main Street and River Street) and Main Street (south of Hoyt Street). These roadways (or segments thereof) have sufficient width to accommodate bicycle lanes without impacting on-street parking. **Figure 16** identifies the specific locations of recommended bicycle facilities in the Wall Street and Main Street area.

South Norwalk TOD East-West Connections

Several east/west bicycle connections are recommended for the South Norwalk TOD area. These routes are located on Washington Street, Monroe Street, Ann Street, Marshall Street, Elizabeth Street, and Hanford Place. These routes provide connections between north/south routes recommended for the area which include Flax Hill Road, MLK Drive, South Main Street, Water Street and North Water Street. Additionally, a "bicycle trough" will be installed in the newly constructed stairs that connect MLK Drive to Clay Street along the embankment on the west side of MLK Drive. The bicycle trough will allow bicyclists to walk their bicycle up or down the stairs by placing the wheels in a trough that allows them to roll smoothly.

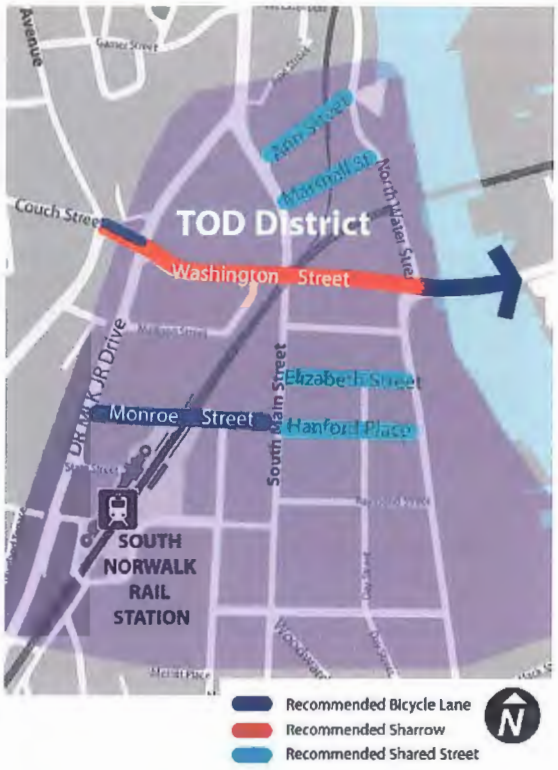


Figure 17 South Norwalk TOD East-West Connections Map

Washington Street would provide the most significant connecting route. The street is classified as an arterial roadway and carries approximately 10,000 vehicles per day. The cross-section of the roadway varies from east to west; the segment that travels over the Washington Street Bridge is 52' wide and carries two lanes of traffic in each direction while the segment west of North Water Street varies from 36' to 43' wide with one lane of traffic in each direction and parking on one or both sides of the street.

The recommended bicycle accomodations for Washington Street include sharrows and bicycle lanes. Sharrows are recommended for the corridor between Flax Hill Road and Water Street where the roadway width and presence of on-street parking prohibit the provision of bicycle lanes. The easternmost segment of Washington Street, which travels over the Washington Street Bridge, can accommodate 5' wide bicycle lanes by narrowing the width of all four travel lanes(two in each direction) from 13' to 10.5'. This improvement would assists those travelling on the East Coast Greenway Route which travels over the Washington Street Bridge. A bicycle lane should also be installed in the west bound direction of Washington Street between MLK Drive and Flax Hill Road where the grade climbs approximately 6% and bicyclists can use a dedicated lane as they slowly climb the ascent.

Monroe Street is similar to Washington Street, providing a connection between MLK Drive and South Main Street and connecting to the South Norwalk Rail Station. Monroe is designated as a collector roadway and carries an average of 5,800 vehicles per day. The roadway varies in width from 40' to 44' and has one lane of traffic in each direction with parking on the north side of the street. Bicycle lanes are recommended for Monroe Street as the roadway has sufficient width to accommodate 5' wide bike lanes without impacting traffic flow or on-street parking.

Ann Street, Marshall Street, Elizabeth Street, and Hanford Place are low volume local roadways that provide a connection between South Main Street, Water Street and North Water Street. Because these streets are short in length and primarily residential, a shared street (bicycle boulevard) design is recommended for one or more of these roads. This design would prioritize bicycle and pedestrian traffic and provide traffic calming sufficient to significantly reduce vehicular speeds.

Future Route Potential

As redevelopment occurs on significant privately owned parcels within the study area, new opportunities for bicycle accomodation should be studied and implemented in concert with private developers or land owners. City residents would benefit from an expanded and more interconnected bicycle network and private developers and end users of the future development would benefit by having better connectivity and additional ways for prospective custumers to access stores or other services in the developmet. One prime example of this potential public-private cooperation is the proposed redevelopment of the so-called 95/7 site which is located between I-95, West Avenue, Reed Street and the Danbury branch RR corridor. A new north/south connection can be provided along the east side ofthe 95/7 site (adjacent to the RR tracks) connecting the south end of Crescent Street near Matthews Park to Reed Street at North Water Street. Similar links can be constructed between Butler Street and Merwin Street which would connect Academy Street to Cresent Street and Matthews Park. While this route will need to be developed incrementally, a specific plan for this corridor should be developed to better define its merits and to build public and private acceptance. The most likely bicycle accomodation would be a sharrow, but bicycle lanes may also be feasible depending on roadway width and the demand for on-street parking.

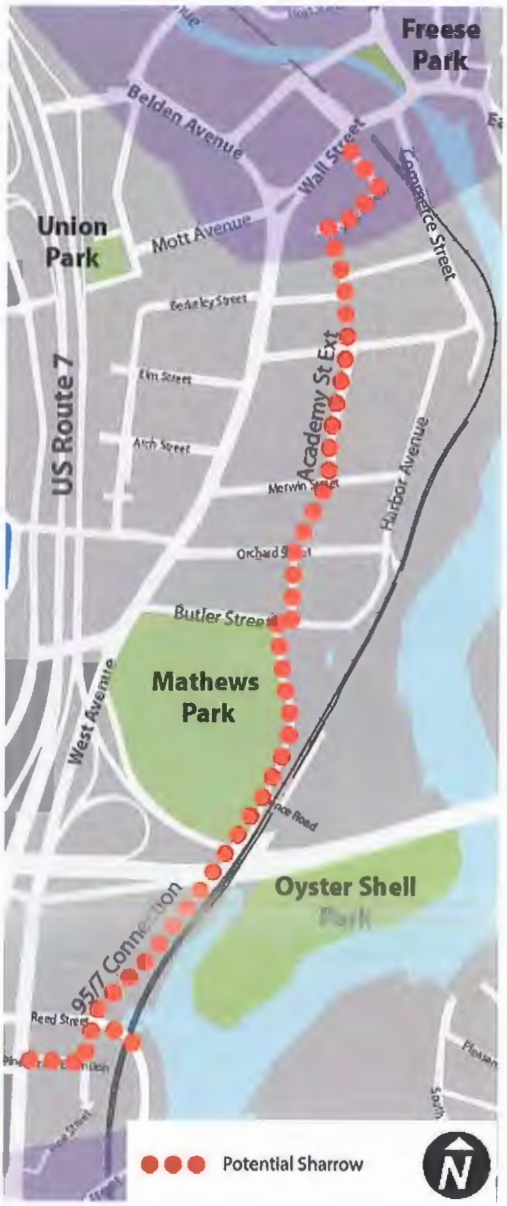


Figure 18 Future Route Potential Map

4. Bike Box Locations

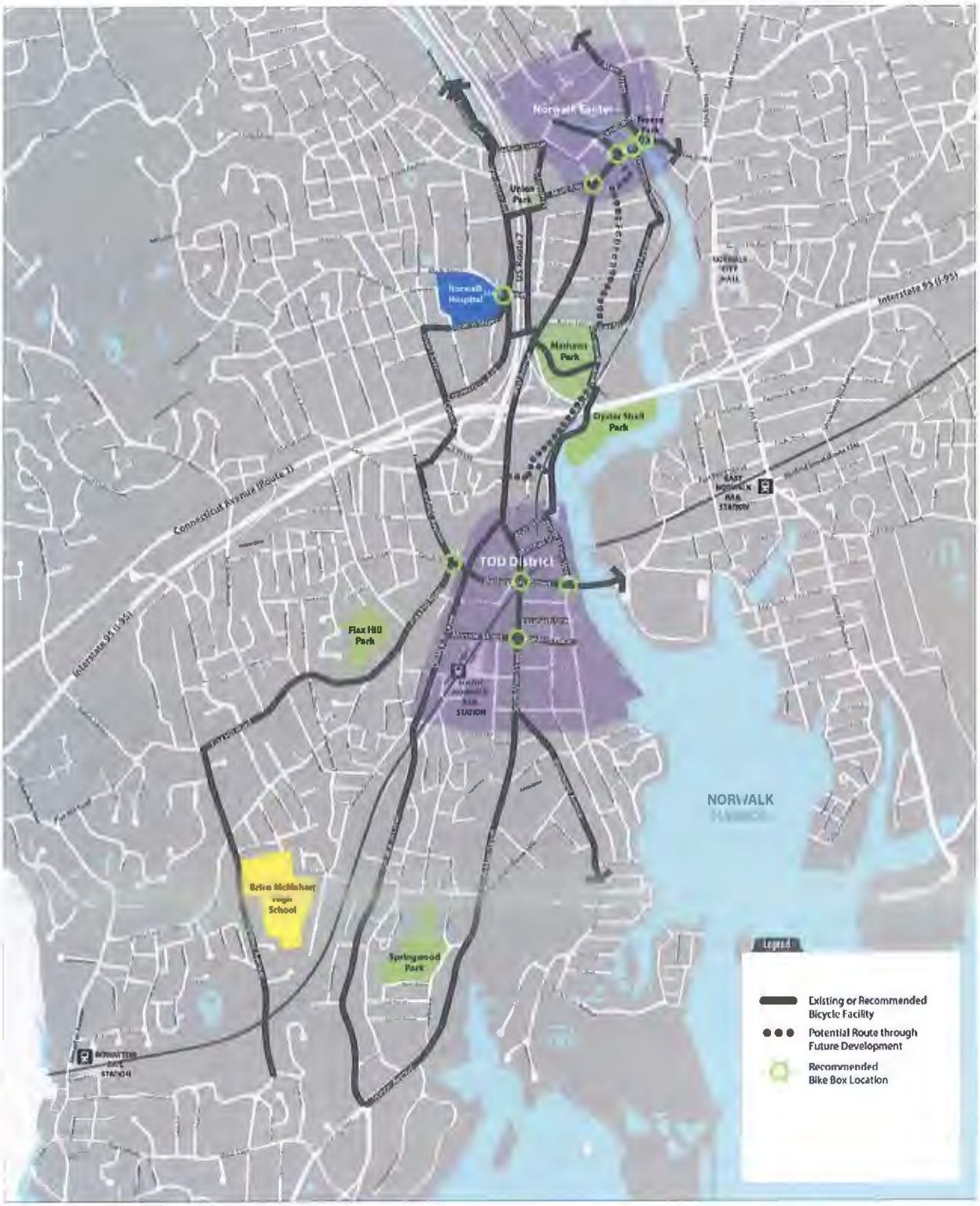
Bike boxes within the study area are recommended for signalized intersections where there are multiple queing lanes or significant left turn demand on the part of bicyclists. Seventeen bike boxes are recommended at nine intersections within the study area. Bike boxes would be located at one or more approaches at each intersection. The provision of bike boxes would provide queuing space for bicyclists that are turning left or are thru-riding past a dedicated right turn lane. Bike boxes should be installed upon the installation of bicycle facilities (i.e. sharrow, bicycle lane) on the roadway approaching the intersection where bike boxes have been recommended.

Recommended bike box locations are identified in **Table 2** and **Figure 19**.

Table 2 Bike Box Locations

Number of Bike Boxes	Intersection	Approach
3	Wall Street @ Main Street	All three approaches
2	Wall Street @ Commerce Street	Commerce Street and westbound Wall Street
1	Wall Street @ River Street	River Street
1	Wall Street @ Isaac Street	Eastbound Wall Street
2	West Avenue/Belden Avenue @ Wall St	West Avenue & Wall Street
1	Maple Street @ Stevens Street	Westbound Maple Street
1	Washington Street @ Flax Hill Road/Fairfield Ave	Washington Street
2	Washington Street @ North/South Main Street	North Main Street and eastbound Washington Street
2	Washington Street @ North Water/Water Street	Westbound Washington Street and Water Street
2	South Main Street @ Monroe Street	Eastbound Monroe Street and Southbound South Main St

Figure 19 Recommended Bike Box Locations



Recommended Bike Box Locations

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5. Bicycle Parking

Bicycle parking in the study area should be concentrated in areas that are likely for a "modal shift". A modal shift occurs when a bicyclist dismounts from their bicycle and becomes a pedestrian for the purposes of boarding a bus or train or entering a building.

Bicycle parking can take many forms, the most common of which is a bicycle rack. Other forms of bicycle parking include bike lockers and bike shelters. The most common type of bicycle rack is the "inverted U" which is also known as a loop style rack. These racks can be stand alone or grouped together to provide parking for many bicycles at one locations. Bike shelters are protective shelters for bicycle racks that include a roof and may also include side walls. Bike lockers, by contrast, are individual storage units that protect bikes from weather, theft and vandalism.

Within the bicycle study area, there are several locations that would benefit from additional bicycle parking. Within both the South Norwalk TOD area and the Norwalk Center area, bicycle racks should be provided along bicycle routes where shops, restaurants, and walk-in businesses are located. A typical practice is to locate bicycle parking in the same areas as paid on-street parking and in roughly the same quantity as the number of on-street parking spaces (each U-style bicycle rack can accommodate two bicycles).

Facilities such as bike shelters and bike lockers should be located in areas where bicyclists are likely to park their bicycles for significant periods of time. The most likely candidate for bike lockers or shelters is the South Norwalk Train Station where commuters who ride to the station park their bicycles for the duration of the day. Secure, weatherproof bike parking would provide would-be bicycle/train commuters with additional incentive to ride rather than drive to the station.

6. Implementation

The implementation of Norwalk's bicycle network will require a phased approach. Low-cost measures such as sharrows should be implemented in the near future whereas high-cost measures such as cycle tracks and shared-use paths require additional planning, design and the identification of funding sources. Three phases are recommended for the development of Norwalk's bicycle network. Phase one includes near-term improvements such as sharrows and bicycle lanes. Phase two improvements are mid-term improvements that include facilities such as bicycle lanes that require modification to traffic patterns (road diets) for implementation. Phase three improvements are long-term improvements such as shared-use paths and cycle tracks that require substantial investment. The recommended phasing is as follows:

Phase 1 (Near term, 1-3 years)

- Butler Street
- Byington Place
- Cedar Street
- Crescent Street
- Commerce Street
- Fairfield Avenue
- Flax Hill Road
- Harbor Avenue
- Highland Avenue
- Main Street
- Maple Street
- Mott Avenue
- North Water Street
- Monroe Street
- Riverside Avenue (bike lanes)
- South Main Street
- Stevens Street
- Stuart Street
- Union Park Place
- Wall Street
- Washington Street/ Couch Street
- Wilson Avenue
- Woodward Avenue
- Bicycle Parking

Phase 2 (Mid-Term, 3-5 years)

- Ann Street
- Elizabeth Street
- Hanford Place
- Marshall Street
- MLK Drive (bike lane option)
- Burnell Boulevard
- Belden Avenue

Phase 3 (Long-Term, 5-10 years)

- MLK Drive (shared-use path option)
- Connecticut, Van Buren and Belden Avenues
- Riverside Avenue (shared-use path option)

Undetermined Timeframe (refer to Sec. 8, "Conclusion")

- West Avenue

7. Estimated Implementation Costs

The total projected cost of implementing the recommended bicycle network improvements within the study area is estimated to be approximately $8.7 million. This cost estimate includes a $100,000 line item for bicycle parking. The cost estimate also varies depending on the alternative chosen for various corridors. For example, the cost would be reduced to $5.6 million if the bike lane option for MLK Drive were implemented in lieu of a shared use pathway.

The cost estimates are based upon typical unit costs for the various recommended improvements. The cost estimates include construction engineering, construction oversight, and contingencies. (See **Table 3** and **Table 4**)

Table 3 Cost Estimates per Focus Area

Corridor/Focus Area	Cost Estimate	Notes
1. West Avenue	--	Additional planning and design needed
2. Dr. Martin Luther King Junior Drive	$5,000,000	Shared-use path option
3. Southwest Connector	$131,000	
4. South Main Street/Wilson Avenue	$110,000	
5. Woodward Avenue	$38,000	
6. Harborside	$46,000	
7. Northwest Connector	$3,167,000	Includes Riverside Avenue pathway
8. Norwalk Center Circulation	$97,000	
9. South Norwalk TOD East-West Connections	$89,000	Excludes shared street improvements (extent of improvements yet to be determined)
10. Future Route Potential	$38,000	Cost of sharrow markings and signage only
Total Cost	**$8,716,000**	

Table 4 Cost of Improvements per Facility Type

Facility Type	Cost Estimate
Bicycle Parking	$100,000
Sharrows	$330,000
Bicycle Lanes and Bike Boxes (includes signal modification where necessary)	$246,000
Pathways	$7,970,000
Total Cost	**$8,646,000**

8. Standards

Sharrows

- Roadway speed limit of 35 mph maximum
- 12' minimum travel lane width (14' preferred) -*AASHTO*
- Space sharrow pavement markings 250' apart or less
- The center of sharrow marking should be located a minimum of 4' from edge of roadway if no parking is present and a minimum of 11' from the edge of roadway where on-street parking is present
- Use "Share the Road" signage where there is sufficient space for side-by-side operation or traffic volume is sufficiently low so as to permit encroachment of opposite side travel lane by vehicular traffic when passing bicyclists. Use "Bike May Use Full Lane" sign where there is not sufficient space for side-by-side operation and where traffic volumes are too high to allow encroachment of opposite side travel lane by vehicular traffic.

Bicycle Lanes

- Use on collector and arterial roadways, or on high volume local streets.
- 4' minimum width w/o curb, 5' minimum width with curb (15'-16' travel lanes), and 5' wide minimum width adjacent to on-street parking -*AASHTO*
- Pavement markings: 500' maximum spacing, can be used more frequently in dense urban settings.
- Use "Bike Lane" signage at the beginning of the lane and spaced every mile or at significant intersections.
- 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 a minimum of 12 feet from the curb, with 13 feet being a preferred dimension. If parking volumes are substantial or turnover is high, such as downtown locations or streets with metered parking, and if roadway width permits, the distance between curb and left hand bicycle lane stripe should be increased to 14 feet so as to avoid collisions in the door zone of parked cars.
- Bike lanes should be installed on both sides of roadway so as to discourage riding in the wrong direction.

Shared Use Paths

- 8' wide minimum at constricted areas, 10' wide minimum sustained width, 12' preferred width where high usage is anticipated.
- Bi-directional travel is preferred
- Minimize roadway and driveway crossings
- Sign for permitted uses

Cycle Tracks

- Use on streets that have minimal crossings and curb cuts.
- 5' wide min. for one-way riding, 8' wide min. for bi-directional riding.

- Intersections should be designed to include signage that alerts motorists of bicyclists crossing from the cycle track, and vegetation and parking should be limited near intersections so that bicyclists and motorists can see each other.
- Intersection treatments are needed to mitigate turn movement conflicts. Protective measures include retrofitting signalized intersections to provide separate left and right turn movements, adding bicycle-only signals, requiring no right-turn-on-red, and warning signage and special markings at unsignalized intersections.
- If cycle tracks are two-way, motorists should be alerted to the fact that bicyclists will be approaching from both directions.
- One-way cycle tracks should be paired so as not to encourage wrong-way riding.

Bike Boxes

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

Bicycle Parking

- Protected bicycle parking such as bike shelters or bike lockers should be installed in areas where bicycles are parked for the duration of the day.
- Bicycle parking should be located near building entrances but should 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.
- 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 that lack a horizontal top tube

9. Future Monitoring of Bicycle Travel

Purpose

The objective of a bicycle ridership monitoring program is to improve the safety and ease of bicycle travel in the City by tailoring bicycle infrastructure to projected bicycle travel demand and evolving user needs. With regular ridership information, the City can accommodate growing levels of ridership, and focus and prioritize investments commensurate with increasing levels of bicycle travel. The intent is to proactively and incrementally build a comprehensive, citizen-driven bicycle network that anticipates the needs of users. The program and methods used should identify how many people are biking, how frequently they use bicycles, where they are riding to and from, the time of day and day of week they travel, and the general purpose of their trip. It is also important to identify those areas with high rates of bicycle accidents. Such a regular and well-structured monitoring program will enable the City to determine what bike routes best serve the community, determine potential safety "hot-spots" (e.g. intersections that experience unusual accidents) and to better gauge the safety and effectiveness of new bicycle infrastructure.

Regular bicycle rider counts

The cornerstone of the bicycle monitoring program will be regular bicycle rider counts at predetermined locations throughout Norwalk. This is simply a count of the number of cyclists who pass a given location during a set period of time. Counts can be done by individuals (volunteers, city staff or contracted) or using technology. Intersection counts should be undertaken at frequent intervals using consistent methodology and should include counts of all turning movements.

As part of the SoNo Bicycle Safety and Engineering Study, bicycle counts were collected at six intersections. Counts were done on August 20th, 2013 between 7:00 A.M. and 9:00 A.M. at the following locations:

- Dr. Martin Luther King Jr. Drive at Wilson Avenue/Old Trolley Way
- Dr. Martin Luther King Jr. Drive at Washington Street
- Washington Street at North Main Street
- Washington Street at Water Street
- West Avenue at Belden Avenue
- West Avenue at Connecticut Avenue

In order to minimize variation due to weather, school schedules and seasonal influences, annual counts should be done during the same time of year on a Tuesday, Wednesday or Thursday and during the same time of day. The above locations can serve as a starting point and the City should consider establishing a wider range of count locations as the bicycle network grows.

Bicycle parking counts

To augment bicycle rider counts, bicycle parking counts can provide another metric of ridership growth and rider needs in the City. Parking counts should be conducted midday to give riders time to reach their destinations and conducted on days and time of the year similar to that of rider counts. In addition to counting parked bicycles at designated bicycle racks, a count of bicycles parked at or

locked to other make-shift parking fixtures (such as fences, trees, parking meters, etc.) should also be undertaken to identify unmet parking needs.

The following suggested locations were identified during the Bicycle Safety and Engineering Study to count parked bicycles.

- South Norwalk Railroad Station (2 bike racks adjacent to terminals on both sides of track)
- Oyster Shell Park at North Water Street/Reed Street (1 new bike rack to the right of footbridge adjacent to parking lot)
- IMAX theater entrance at SoNo Wharf at North Water Street/Washington Street (1 new bike rack at southern end of parking lot)
- Maritime Aquarium & Garage at North Water Street/Ann Street (1 new bike rack adjacent to Maritime Aquarium entrance)
- South Norwalk Library (1 bike rack in plaza along Marshal Street adjacent to side entrance)
- South Norwalk Post Office on Washington Street (1 bike rack adjacent to front entrance)
- NEON Community Center at 98 South Main Street (2 bike racks adjacent to front entrance)
- Mathews Park at 297 West Avenue (2 new bike racks adjacent to Visitor Center plaza and tennis courts)

Bicycle Crash Data

The City should also monitor police reports for automobile accidents and other incidents that involve bicyclists and create a database or map to serve as a reference. This reference should be used regularly to guide infrastructure decisions and monitor the success of improvements. Paying close attention to this data stream will allow the City to quickly identify trends and spot those locations that are most dangerous to cyclists.

Bicycle Usage Data

On top of accident data and bicycle rider and parking counts, cities across the country have gathered and utilized rider route and trip data to inform bicycle infrastructure decisions. One method of gathering this information is through surveys. The City may consider conducting regular surveys to establish riding habits and bicycle travel trends. Surveys can be conducted by phone, in person (i.e. intercept surveys) and on-line, however the accuracy and utility of on-line surveys may be limited due to self-selecting bias inherent in internet survey methods.

A more effective and more accurate method of not only determining bicycle travel demand but also identifying specific travel times and actual travel routes is to track a sampling of bicycle riders using remote, digital technology (i.e. global positioning service or GPS). In the recent past, cities and planning agencies distributed special GPS devices to individual bicycle riders who volunteered for the program, and then downloaded data from remote tracking stations. However, new cellular technology and the ubiquity of smart phones make the collection process much simpler. Bicycling travel data from smart phones can be gathered in two ways: 1) the City may approach the proprietors of a cycling app and procure available (anonymous) data about bicycle riders in Norwalk. This data may be limited as many applications of this nature are recreation focused and may not gather trip purpose data; or, 2) the City could distribute its own phone application and collect the data itself.

Dozens of cities in the U.S. have used free smart phone applications and html code to collect regular ridership data from cyclists. CycleTracks is one application cities have used successfully within the last 4 to 5 years. Originally developed by the San Francisco County Transportation Authority, the application has been used by cities across the country to gather ridership data, including Raleigh, NC, Lexington, KY, Austin, TX, and Minneapolis/St. Paul, MN. The SFCTA has made the application and associated html open source and may be used under the current branding or branding unique to the user city. The application Contact info and further information can be found here: http://www.sfcta.org/modeling-and-travel-forecasting/cycletracks-iphone-and-android

10. Conclusion

There is tremendous capacity for providing and improving accomodations within the study area. There is a clear demand for bicycling in Norwalk, particularly in the Norwalk Center and South Norwalk areas where commercial and recreational destinations are numerous and where connections to the key transit centers of the 'Wheels' Hub and South Norwalk Station are essential to improve intermodal travel. The challenges to bicycling in the study area include high traffic volumes, multiple travel lane roadways, large and complex intersections, and physical barriers such as I-95, Route 7, Metro-North rail corridor, the Harbor and the Norwalk River Valley Trail.

The most cost effective measure of accomodating bicyclists is through the use of sharrows and bicycle lanes. These facilities, on average, are one-tenth the cost of shared-use path or cycle track facilities. The use of sharrows and bicycle lanes is limited due to the design of roadways and intersections within the study area and the volume of traffic on those roadways.

Some corridors within the study area are likely candidates for "road diets". These road diets would result in a narrowing of travel lanes or in a reduction in the total number of travel lanes on each respective roadway. Within the study area, West Avenue is the most notable example of how a road diet can be used to accommodate bicycle travel. By reducing the number of travel lanes on selected segments of West Avenue, bicycle lanes can be provided without the need for reconstruction of the roadway or construction of a separate bicycle pathway and without greatly diminishing the carrying capacity of motor vehicle traffic on this important arterial.

While West Avenue is deemed to be an important bicycle "desire line", we recognize that the improvements needed to convert much of the length of West Avenue to a facility that can safely accommodate bicycle travel (as enumerated in this report) are extensive and costly and will require significant modifications to motor vehicle travel lanes, turning lanes and traffic signals. Accordingly, bicycle facilities on West Avenue will also require careful design and extensive public outreach to gain the public's acceptance. These changes will not be easy for the public to visualize and, we think, proponents of bicycle travel will need to build a compelling case that demonstrates that the benefits of bicycle improvements in this key travel corridor justify the costs. That case will likely not be compelling unless and until a higher level of bicycle activity is experienced in other areas of the City. For these reasons, the West Avenue bicycle accommodations will not likely be constructed within the near-, mid- or long-term timeframe identified in Section 5, "Implementation" of this report, rather, at some undetermined time beyond this foreseeable implementation timeframe.

On roadways and roadway segments where a reduction in the width or number of travel lanes is not possible, and space is not available for on-street bicylcle lanes, a separate facility is necessary to accommodate bicyclists. This facility may be exclusive to bicyclists (cycle-track) or shared between

bicyclists and pedestrians (shared-use pathway). These facilities remove bicyclists from traffic conflicts by removing them from the roadway and/or physically protecting them from traffic. Due to the significant cost of these facilities, which can range from $750,000 to $2 million per mile, they are strategically recommended for corridors that provide critical links in the bicycle network.

In seeking to accommodate the needs of bicyclists, the City should seek to implement low-cost measures such as sharrows and bicycle lanes in the near term, while planning and seeking financing for more complex and expensive measures. The installation of sharrows and bicycle lanes will likely encourage and increase ridership in the study area and provide a stronger rational for implementing more capital intensive measures such as shared use pathways and cycle tracks.

CDM Smith

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Downtown Norwalk Bicycle Survey, June 24th through July 9, 2013

Basic Statistics:

- 121 total responses (93 complete responses)
- 62.4% male
- 36.6% female
- 63.4% Norwalk residents
- 36.6% live elsewhere
    - 3 in Stamford
    - 2 in Bethel
    - 2 in Westport
    - 1 each in: Bridgeport, Bronx, Brookfield, Darien, Easton, Fairfield, Longboat Key FL, Milford, New Canaan, New Milford, Rye, Stratford, Westchester (girlfriend lives in South Norwalk), Weston and Wilton

Responses:

General Information

- What kind of bicyclist do you consider yourself to be?
    - 62.4% (58) of respondents chose "Recreational Rider"
    - 22.6% (21) of respondents chose "Commuter"
    - 12.9% (12) of respondents chose "Pro, I live on my bike"
    - 10.8% (10) of respondents chose "Occasional Rider"
- In what weather conditions will you not ride your bike?
    - 80.2% (73) of respondents chose "Heat, above 80 degrees"
    - 45.1% (41) of respondents chose "Cold, below 45 degrees"
    - 28.6% (26) of respondents chose "Dark"
    - 27.5% (25) of respondents chose "Rain"
    - 18.7% (17) of respondents chose "None of the Above"
- I am interested in cycling in Downtown Norwalk because... (choose all that apply)
    - 78.5% (95) of respondents support bicycle friendly communities regardless of whether they benefit them directly
    - 74.4% (90) of respondents ride recreationally
    - 47.1% (57) of respondents visit restaurants and/or bars downtown
    - 43.8% (53) of respondents live near downtown
    - 3 times – "A safe place to ride with children" was mentioned by those selecting the "other" response
- How many times per week do you use your bike for *commuting through* Downtown?
    - 67% (63) of respondents chose "Not at all"
    - 25.5% (24) of respondents chose "1-3 times per week"
- How many times per week do you use your bike for *running errands* in Downtown?
    - 66.7% (60) of respondents chose "Not at all"
    - 27.8% (25) of respondents chose "1-3 times per week"
- How many times per week do you use your bike for *shopping for non-staple items* in Downtown?
    - 67% (59) of respondents chose "Not at all"
    - 31.8% (28) of respondents chose "1-3 times per week"
- How many times per week do you use your bike to access *dining and nightlife* in Downtown?
    - 69% (58) of respondents chose "Not at all"

    - 31% (26) of respondents chose "1-3 times per week"
- How many times per week do you use your bike for *recreational purposes* in Downtown?
    - 55.8% (58) of respondents chose "1-3 times per week"
    - 36.5% (38) of respondents chose "Not at all"

Cycling Experiences

- Have you had the chance to use bicycle lanes in an urban area?
    - 55.9% (52) of respondents indicated "Yes"
    - 44.1% (41) of respondents indicated "No"
    - In what urban areas have you had the chance to ride your bike?
        - 82.5% (33) of respondents indicated New York City
        - 40% (16) of respondents indicated Washington, DC
        - 32.5% (13) of respondents indicated Boston
        - 17.5% (7) of respondents indicated Portland, OR
        - 10% (4) of respondents indicated Portland, ME
    - What did you like about the system in that urban area?
        - Wide open lane for cyclists, easily understood/marked and respected by pedestrians (mentioned at least 14 times)
        - That there was a system with numerous options and good signage; routes connecting to each other and major points of interest
        - Off road, park-like and safe
        - Portland, OR is the "gold standard" with lane accommodations for bikes that re-engineer the shared priorities of roadways – bicyclists and walkers definitely hold pride of place over vehicular traffic
        - Amsterdam and Copenhagen set the standard. Bike lanes are at higher grade than car lanes and are not adjacent to parked cars.
    - What did you dislike about the system in that urban area?
        - Too much traffic
        - Cars parking in bike lanes
        - Roads are too small to handle a dedicated lane
        - Disconnected bike routes
        - Poor wayfinding is even more dangerous than not having lanes
- Have you had the chance to ride any recreational trails?
    - 64.1% (61) of respondents chose "Yes"
    - 38.9% (35) of respondents chose "No"
    - What recreational trails have you ridden?
        - 68.5% (37) of respondents chose "Other"
        - 48.1% (26) of respondents chose "North Country Trail, NY"
        - 46.3% (25) of respondents chose "Farmington River Canal Trail"
        - 35.2% (19) of respondents chose "South Country Trail, NY"
    - Common recreational trails ridden by respondents included:
        - 10 times – Cape Cod Rail Trail
        - 4 times – D.C. area trails
        - 3 times – Harlem Valley Trail
        - 3 times – Housatonic Rail Trail, Trumbull, CT
        - 3 times – Trumbull Rail Trail
        - 3 times – Hudson River Trail
        - 2 times – Erie Canal Trail

        - 5 different Florida trails were listed
        - What were their best features?
            - 83.3% (45) of respondents chose "Paved"
            - 77.8% (42) of respondents chose "Scenic Vista"
            - 75.9% (41) of respondents chose "Clean"
            - 51.9% (28) of respondents chose "Easy Parking"
            - 35.2% (19) of respondents chose "Amenities at start or finish"
            - 20.4% (11) of respondents chose "Other"
            - Common "other" best features listed were:
                - 3 times – Off Road and natural
                - 2 times – Shade
                - 2 times – Signage and wayfinding
                - 2 times – Safe means of travel/Safe for kids
                - 2 times – Adequate width
                - 1 time each – Continuous leading to other connecting paths or the street, restrooms available, not too crowded, no vehicle traffic, very level, when they go through towns
- Have you used a bike share?
    - 75.8% (69) of respondents chose "No"
    - 24.2% (22) of respondents chose "Yes"
    - Respondents indicated having used a bike share in:
        - 54.5% (12) of respondents chose "Other"
        - 36.4% (8) of respondents chose "New York City"
        - 27.3% (6) of respondents chose "Washington, DC"
        - 18.2% (4) of respondents chose "Boston"
        - Common "other" locations for using a bike share included:
            - 4 times in Norwalk
            - 2 times in Paris
            - 1 time each in Bridgeport, Chicago, Denver, London, Montreal, New Milford

<u>Norwalk Locations for Cycling</u>

- Most frequently ridden North/South routes were identified as:
    - 38.8% (33) of respondents chose "I do not currently ride in Downtown Norwalk"
    - 30.6% (26) of respondents chose Commerce, Harbor, Oyster Shell Park, North Water
    - 18.8% (16) of respondents chose Belden, NRVT, North Water
    - 16.5% (14) of respondents chose Belden, NRVT, West Avenue, North Main
    - 16.5% (14) of respondents chose Belden, West Avenue, MLK Drive
    - 11.8% (10) of respondents chose Belden, West Avenue, North Main
    - 10.6% (9) of respondents chose "Other"
    - Common "other" North/South routes identified were:
        - East Avenue to (1 time each) Strawberry Hill/Yankee Doodle Bridge/Vets Park/SoNo
- Most frequently ridden East/West routes were identified as:
    - 38.8% (40) of respondents identified Washington Street
    - 35.9% (37) of respondents identified Wall Street
    - 33% (34) of respondents chose "None of the Above" routes
    - 24.3% (25) of respondents identified NRVT through Mathews Park
    - 19.4% (20) of respondents identified Reed/N. Water Street

- 13.6% (14) of respondents identified Marshall Street
- 12.6% (13) of respondents identified Ann Street
- 12.6% (13) of respondents identified Monroe Street
- 10.7% (11) of respondents chose "None of the Above" routes

- Do you use the Norwalk River Valley Trail?
  - 35.2% (31) chose "Yes"
  - 29.5% (26) chose "No, it's not on my way/convenient/or a direct route."
- Most Common Points of Entry were identified as:
  - 9 times - Water Street
    - 4 times – Water and Washington
    - 1 time – Water and Burritt
  - 4 times – East Avenue
    - 1 time – City Hall
    - 2 times – East Norwalk
    - 2 times – East Avenue and Wall Street
    - 1 time – East Avenue and Winfield
  - 4 times – Wall Street
    - 1 time – Wall Street by Trolley Barn
    - 2 times – Wall Street and East Avenue
    - 1 time – Main and Wall Street
  - 3 times – Dr. Martin Luther King, Jr. Drive
    - 1 time – MLK and Washington
  - 3 times – Main Street
    - 1 time – South Main Street
    - 1 time – Main Avenue
    - 1 time – Main and Cross
    - 1 time – Main and Wall Street
  - 3 times – Route 136
    - 1 time – 136 and Van Zant
    - 1 time – 136 and Washington Street
  - 3 times – Shorefront Park
  - 2 times – Washington Street
    - 1 time – Washington and MLK
    - 1 time – Washington and 136
  - 1 time – West Avenue
    - 2 times – Mathews Park
    - 1 time – West Ave and Belden
    - 1 time – West Ave and Route 1
  - 1 time – Meadow Street
    - 1 time – Meadow and Wilson
  - Route 1
    - 1 time – Route 1 from Darien
    - 1 time – Route 1 near Stew Leonard
    - 1 time – Route 1 and Richards Ave
    - 1 time – Route 1 and West Avenue
- Most Common Destinations were identified as:
  - 2 times – Beaches
    - 7 times – Calf Pasture Beach

        - 1 time – Rowayton Beach
        - 1 time – Veteran's Park Beach
    - Other Towns:
        - 8 times – Westport
        - 2 times – Stamford
        - 2 times – Darien
        - 2 times – New Canaan
        - 1 time – Weston
    - Museums:
        - 2 times – Maritime Aquarium
        - 2 times – Stepping Stones Museum
    - Parks:
        - 1 time – Mathews Park
        - 5 times – Oyster Shell Park
        - 1 time – Shorefront Park to Maritime Park
    - Neighborhoods:
        - 3 times – Rowayton
        - 6 times – South Norwalk
    - Attractions:
        - South Norwalk
            - 4 times – South Norwalk Train Station
            - 2 times – SoNo restaurants
        - 4 times – Restaurants
        - 3 times – Norwalk Library
        - 2 times – Saraswati's Yoga Studio
        - 2 times – Marina/Norwalk Yacht Club
        - 1 time – Hospital
        - 1 time – Post Office
        - 1 time – Movie Theatre
        - 1 time – Route 1 Grocery Stores
        - 1 time – Wells Fargo Bank
        - 1 time – Webster Lot

Safety Issues

- Currently, what roadways do you consider the safest for biking in Downtown? (select all that apply)
    - 53.6% (30) of respondents indicated NRVT through Mathews Park
    - 32.1% (18) of respondents indicated"Other"
    - 25% (14) of respondents indicated Reed / N. Water Street
    - 10.7% (6) of respondents indicated Haviland Street
    - 10.7% (6) of respondents indicated Washington Street
- Currently, what roadways do you consider the least safe for biking in Downtown? (select all that apply)
    - 57.4% (31) of respondents indicated West Avenue
    - 46.3% (25) of respondents indicated Washington Street
    - 38.9% (21) of respondents indicated Wall Street
    - 24.1% (13) of respondents indicated "Other"
    - Common "other" responses included:
        - 3 times – MLK Drive
        - 2 times – Belden

        - 2 times – Water Street
        - 2 times – West Avenue
- If the roads selected as least safe for biking had separate bicycle facilities like a bicycle lane, would you consider riding on them?
    - 85.3% (58) of respondents chose "Yes"
    - 11.8% (8) of respondents chose "Unsure"

Amenities

- Where do you keep your bike while in Downtown?
    - 60% (42) of respondents chose "locked to a fixed object like a tree or light post"
    - 22.9% (16) of respondents chose "I bring it inside my destination"
    - 10% (7) of respondents chose "locked to a bike rack"
- Would you use shower facilities... at the SoNo Station and the Wheels Bus Hub?
    - 85.1% (63) of respondents chose "no"
    - 14.9% (11) of respondents chose "yes"
- Would you use bike storage... at the SoNo Station and the Wheels Bus Hub?
    - 58.4% (45) of respondents chose "yes"
    - 41.6% (32) of respondents chose "no"
- How often do you use the racks on Wheels buses to transport your bicycle?
    - 83.7% (72) of respondents chose "Never"
    - 14% (12) of respondents chose "Rarely, less than once per month"
- If you received a demonstration on how the Wheels bike racks operate, would you be more likely to use them?
    - 39.8% (33) of respondents chose "No"
    - 36.1% (30) of respondents chose "Unsure"
    - 24.1% (20) of respondents chose "Yes"

Comments

- Positive
    - I am so happy with the Maritime Trail.
    - I think the shower idea is really good. Even better with locker facilities.
    - It is an excellent program to offer!
    - Please make Norwalk a bicycle-friendly place. We have an awesome opportunity here. It will raise the property values in Norwalk and the perception
    - It would be very nice if the existing path along the Norwalk River went all the way to Broad River. As a former graffiti artist as well as reptile freak, I know all of the bridges and other hidden magical spaces along the river. The intrinsic value of the river and all open spaces in the area need to be respected and shared with the public, not be covered with invasive species of weeds and trash. The Brad Street bridge for example is a beautiful space utilized mostly by fishermen who litter the place with beer cans and bottles. Most people don't even know these spaces exist. While you're at it, the Grist Mill bridge across from DMV is probably the most magical spot in all of Norwalk, but you can be arrested just for being there. This is wrong. It should have trash receptacles and should be made into a legal street art gallery. Giving kids a safe place to explore and have a creative outlet is key for a healthy population.
    - The shared roadway on Calf Pasture Beach Road was a good compromise.
    - It is a lovely idea worth pursuing.
- Constructive
    - 8 times – Safety and space from congested traffic is key.

- If you build it they will come!
- Improvement of pavement in many parts of Norwalk, not just Downtown.
- Paint is cheap!
- A bike car on the train to NYC, New Haven, Hartford.
- I want a destination trail that is safe from traffic and long enough to make it worth my while to get the whole family out and on their bikes...connecting to larger trail systems to the north (Wilton?).
- I think the area for bike improvement should be expanded to access Route 1 from Flax Hill and Strawberry Hill for those who would bicycle to shopping.
- If the NRVT was completed south of New Canaan Avenue, it would be ideal for commuting as well as recreational use to get downtown and bake. It is not desirable to ride on Riverside Avenue.
- Intersections and left-hand turns... all else is secondary. I think you have defined "Downtown" imprecisely.
- Yes, please look at the entire city for the easy streets to paint bike lanes into. You don't need a study to do this, just go look with the DPW head. I already mentioned a couple of easy ones like Strawberry Hill, Meadow Street, Martin Luther King BLVD, West Avenue... I'm sure there are many, many more easy ones. Build it and they will come, paint the bike lanes on streets, put up some signs and people will begin to use them.
- The most dangerous things in Norwalk are pot holes and badly fitted drains. Some roads have improved such as Meadow St. and the Water St. /Washington junction.
- We really don't bike to commute to work or errands. It is strictly recreational, but we have often talked about the need for bike trails for families.
- I'm not sure why we have to focus on just downtown Norwalk. Downtown Norwalk would be great to bike BUT ONLY if you can get there WITH A BIKE from where you live. That currently is not the case. Look at where everyone lives in Norwalk from West to East. It has to be connected in a way that makes sense to ride your bike there.
- I'm not exactly sure how the yellow area was drawn. I understand wanting to include the NCC, that makes sense, but omitting Norwalk High School and the beach and Vets Park seems like an oversight. Biking is about going someplace and people would want to ride their bike to the beach and to school. Maybe bikes instead of cars are income lost for the city, but that mentality is short-sighted. I recommend everyone go to NYC and experience the bike share system. It is not without flaws and struggles, but it is so exciting to be party of a major shirt in how we transport ourselves.
- Can facilities be improved to sufficiently make cycling in downtown safe for the elderly who are not as stable as young people?