

06 BICYCLE NETWORK CONCEPTS

With its compact layout and network of low-speed, low-volume residential streets, Fair Haven is an attractive community for bicycling, as evidenced by the large numbers of children who bicycle to school. To advance the goals of this Plan, the bicycle network improvements present opportunities to build upon the community's strengths and existing assets to continue to improve cyclist safety and comfort, enhance access and connections to key destinations, and provide linkages to the regional bicycle network. The following sections discuss different types of bicycle facilities and proposed bicycle network and bicycle parking improvements for Fair Haven.

BICYCLE FACILITY DESIGN

Bicycle treatments should be implemented in a standardized manner in order to create uniform, effective, and recognizable treatments throughout the Borough. Adhering to best practices helps ensure universal understanding of bicyclist and motorist behavior and expectations for a given facility type among all roadway users.

As the Borough implements elements of the Plan, facility design should refer to current best practice guidance for more detailed information, including:

- » *New Jersey Complete Streets Design Guide*
- » *NACTO Urban Bikeway Design Guide*
- » *FHWA Small Town and Rural Multimodal Networks*
- » *AASHTO Guide for the Development of Bicycle Facilities*

The following sections provide a brief overview of common types of bicycle facilities, summarizing the main characteristics, applications, and benefits of each, including:

- » Conventional bicycle lanes
- » Buffered bicycle lanes
- » Separated bicycle lanes
- » Advisory bicycle lanes
- » Bicycle boulevards
- » Shared-lane markings

While not all of these treatments may be applicable in Fair Haven today, they are included to illustrate the range of bicycle treatments that are available for different contexts, needs, and constraints.



Fair Haven, NJ

Conventional Bicycle Lane

Bicycle lanes provide an exclusive space for bicyclists through the use of pavement markings and signage. They enable bicyclists to ride at their preferred speed, free from interference from motorists, and help facilitate predictable behavior and interaction between bicyclists and motorists. Bicyclists may leave the bicycle lane to pass other bicyclists, make turns, or avoid obstacles and conflicts. Motorists may pass through the bicycle lane to access parking or make other turning movements, but they may not stand or park in the lane.



Newark, NJ

Buffered Bicycle Lane

Buffered bicycle lanes can enhance conventional bicycle lanes by providing a marked buffer space and creating additional horizontal separation between bicyclists and motorists. Buffers can be used where there is extra roadway width in order to visually narrow the travel lanes and calm traffic. While buffers are typically used between bicycle lanes and travel lanes to increase bicyclist comfort, they can also be used between bicycle lanes and parking lanes to discourage cyclists from riding too close to parked vehicles, decreasing the risk of conflicts with drivers opening their car door.



Newark, NJ (source: City of Newark)

Separated Bicycle Lane

A separated bicycle lane provides vertical separation to improve safety, prevent encroachment, and deter double-parking. Physical separation from passing traffic can be provided by bollards, planters, on-street parking, curbing, or medians. This extra separation from motor vehicle traffic makes a separated bicycle lane more attractive for bicyclists of all ages and abilities. Typically used to enhance bicyclist comfort on streets with higher traffic speeds and/or volumes, they also require additional street width and consideration of street maintenance needs.

Advisory Bicycle Lane

Advisory bicycle lanes prioritize bicycle movement by creating a usable space for bicycle lanes that would otherwise be too narrow for dedicated lanes. Unlike other mixed-traffic facilities, such as shared-lane markings or bicycle boulevards, advisory lanes function similarly to conventional bicycle lanes. The lanes are delineated with dashed striping, which can be supplemented with signage or colored pavement. Motorists share a two-way center travel lane, and only encroach into the bicycle lane when necessary to pass other vehicles. Advisory bicycle lanes are typically applied on local streets with relatively low speeds and low to moderate traffic volumes.

Although common internationally, advisory bicycle lanes (also referred to as advisory shoulders or dashed bicycle lanes) are

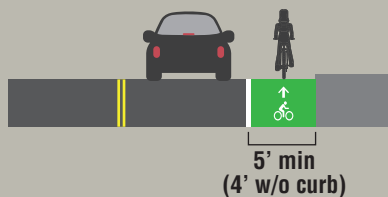


Edina, MN (source: FHWA's Guide to Small Town and Rural Multimodal Networks)

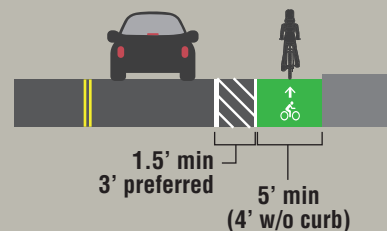
relatively new in the United States. As such, they currently require a Request to Experiment from the Federal Highway Administration (FHWA), as they track projects and gather data on implementation.

TYPICAL DIMENSIONS

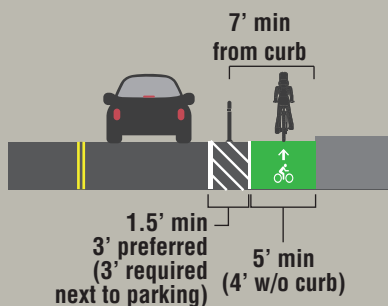
Conventional Bicycle Lane



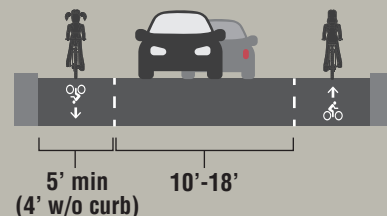
Buffered Bicycle Lane



Separated Bicycle Lane



Advisory Bicycle Lane





Ocean City, NJ

Bicycle Boulevard

Bicycle boulevards, also referred to as neighborhood greenways or quiet streets, are traffic calmed streets that prioritize bicycle travel and create a more comfortable bicycling environment. While bicyclists share the street with motor vehicles, the low speed and low volume character of a bicycle boulevard creates a low-stress facility for bicyclists of all ages and all abilities.

Many neighborhood, residential streets provide the basic components of a bicycle boulevard. These streets can be enhanced to create a bicycle boulevard by a variety of design treatments that deter high vehicle speeds and discourage through trips by motor vehicles. Many of these treatments benefit not only bicyclists, but by creating a safe and quiet environment, they benefit all users of the street.

Where constraints prevent bicycle improvements on arterial roadways, utilizing parallel neighborhood streets as bicycle boulevards can often provide convenient, attractive alternative routes for bicyclists.

Key elements of a bicycle boulevard include:

- » **Reduced Speed Limits:** The preferred speed limit of a bicycle boulevard is 20 mph, common among many of Fair Haven's neighborhood streets
- » **Signage and Markings:** Pavement markings and wayfinding signage highlight the corridor as a priority route for bicyclists and that the roadway is intended as a shared, slow street
- » **Speed Management:** Traffic calming elements appropriate for the context, such as curb extensions, speed cushions, chicanes, or mini-roundabouts, should be used to reinforce the low speed limit and discourage cut-through traffic
- » **Access Management:** Depending on the context, elements such as diverters or medians can be used to deter or prevent vehicular through-traffic, while still accommodating local access and prioritizing bicycle through-trips
- » **Intersection Crossings:** Appropriate intersection treatments, especially at crossings of major streets, are crucial to minimize bicyclist delay and ensure a safe, comfortable street for bicyclists of all ages and all abilities

Shared-Lane Markings

On roadways where it is not feasible or appropriate to provide dedicated bicycle facilities, shared-lane markings may be used to indicate a shared environment for bicycles and automobiles. Shared-lane markings alone do not reduce bicycle level of traffic stress or create an “all ages and abilities” facility; however, they can provide several benefits, including:

- » Assert the legitimacy of bicyclists on the roadway
- » Provide directional and wayfinding guidance
- » Direct bicyclists to ride in the most appropriate location on the roadway
- » Provide motorists with visual cues to anticipate the presence of bicyclists

Shared-lane markings can be used to complete gaps in a bicycle network and provide connections to major destinations where there is limited cartway width or other constraints that limit implementation of other bicycle facilities.

Shared-lane markings are typically applied on streets with a speed limit of 25 mph or less. The markings typically consist of a bicycle and chevron symbol (photo above right). Shared-lane markings should also be paired with traffic calming treatments to reinforce the low speed limit and support a more comfortable environment conducive to sharing the roadway with motorists and other traffic.

To increase the visibility and effectiveness of the marking, the marking can be applied on a green background, such as the example from Newark shown to the right. This “enhanced” or “green back” shared-lane marking is particularly useful on streets with higher traffic volumes and more activity, which may benefit from the improved visibility.



Princeton, NJ



Newark, NJ

PROPOSED BICYCLE NETWORK

The proposed Fair Haven bicycle network provides a framework to support the goals of this Plan. The network utilizes several of the bicycle facilities summarized in the previous section, where feasible, and identifies a series of improvements guided by:

- » Public input: Incorporates input from the Study Advisory Committee, Wikimap, and public meetings on existing issues and desired routes
- » Bicycle level of traffic stress (LTS): Utilizes the existing conditions LTS analysis as a guide to identify high traffic stress roadways and develop targeted recommendations to improve user comfort and connectivity of the low stress network
- » Existing bicycle lanes: Builds upon existing facilities to enhance network connectivity and leverage existing infrastructure
- » Major destinations: Seeks opportunities to provide convenient access to key destinations
- » Regional linkages: Identifies opportunities to create more comfortable bicycle connections to neighboring communities. Although improvement recommendations are limited to Fair Haven itself, linkages are identified with the Red Bank's *Bicycle/Pedestrian Planning Project*, as well as key connections to the east
- » Roadway constraints: Prioritizes easily implementable improvements that can be constructed within existing roadway widths with minimal disruption to current roadway configurations and existing on-street parking. Fair Haven is a built out community, with very limited opportunities for new path connections or widening of existing streets

The proposed bicycle network is illustrated in Map 2 on the opposite page. The following sections summarize the proposed improvements for each key corridor in the network.





MAP 9 - PROPOSED BICYCLE NETWORK

Fair Haven Network

- Bicycle Lane
- - - Advisory Bicycle Lane
- Bicycle Boulevard
- Shared-Lane Marking

Red Bank Planned Network

- Bicycle Lane
- Shared-Lane Marking
- Multi-Use Path



*The Park Rd / Third St /
Linden Dr corridor provides
a continuous, comfortable
route across the Borough
for bicyclists of all ages and
abilities*

RIVER ROAD (CR 10)

River Road serves as the Main Street of Fair Haven, but also plays an important role for regional mobility, linking Red Bank to the Jersey Shore. With an average annual daily traffic (AADT) count of approximately 12,000 vehicles per day, River Road is the busiest roadway in the Borough.

With a bicycle level of traffic stress between 3 and 4, River Road acts as a barrier to casual or unexperienced bicyclists in Fair Haven. Crossing the road can be difficult at unsignalized intersections and bicycling along the road can be uncomfortable due to high volumes, presence of large vehicles, and relatively high travel speeds.

As discussed in the River Road Corridor section (page 49), a speed limit reduction to 25 mph is proposed, in keeping with the main street business district context.

Due to width constraints and stakeholder feedback regarding the importance of retaining on-street parking in the business district, enhanced shared-lane markings are proposed for the segment of River Road that adjoins the two business districts (Smith Street to Oak Place). The lane widths for the travel lanes and the parking lane remain unchanged on these two sections of roadway.

For the remainder of the corridor, bicycle lanes are proposed in both directions. To accommodate five-foot bicycle lanes, travel lanes should remain at a width of eleven feet and the parking lane would be removed.

The Borough may also consider extending the western bicycle lane segment from Smith Street to Church Street, through the western commercial node. Due to the existing development pattern in this area, businesses generally have off-street parking options and are less reliant on on-street parking. Since there are numerous driveways and wide curb-cuts, there are only approximately nine

Existing Roadway Characteristics

Speed Limit / 30-35 mph

Typical Cartway Width / 32 ft

AADT / 12,000 vehicles

Travel Lanes / 2 (with marked center line)

Parking / on-street permitted westbound

Existing LTS / 3-4

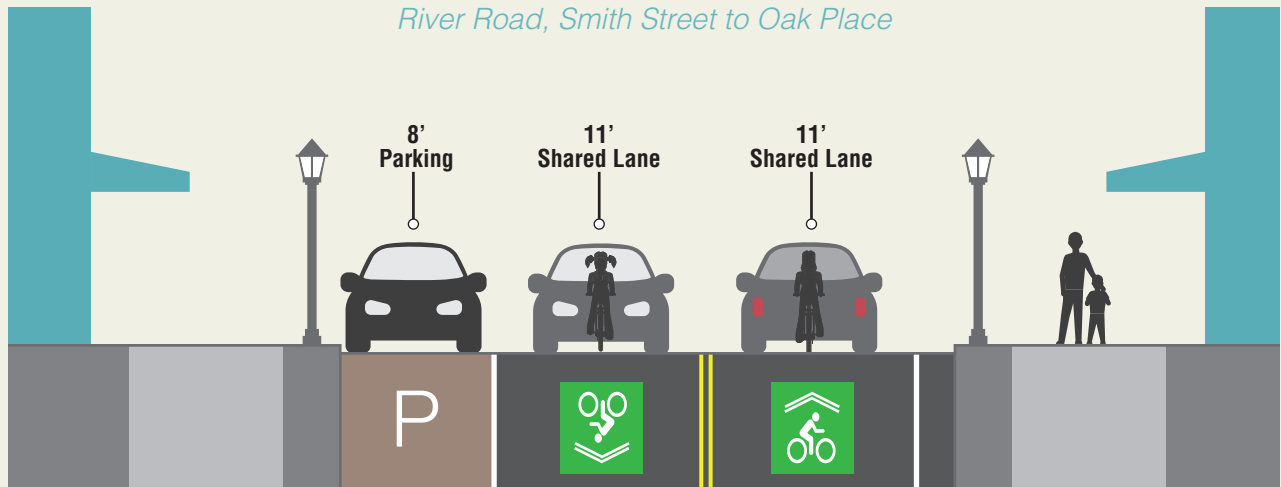
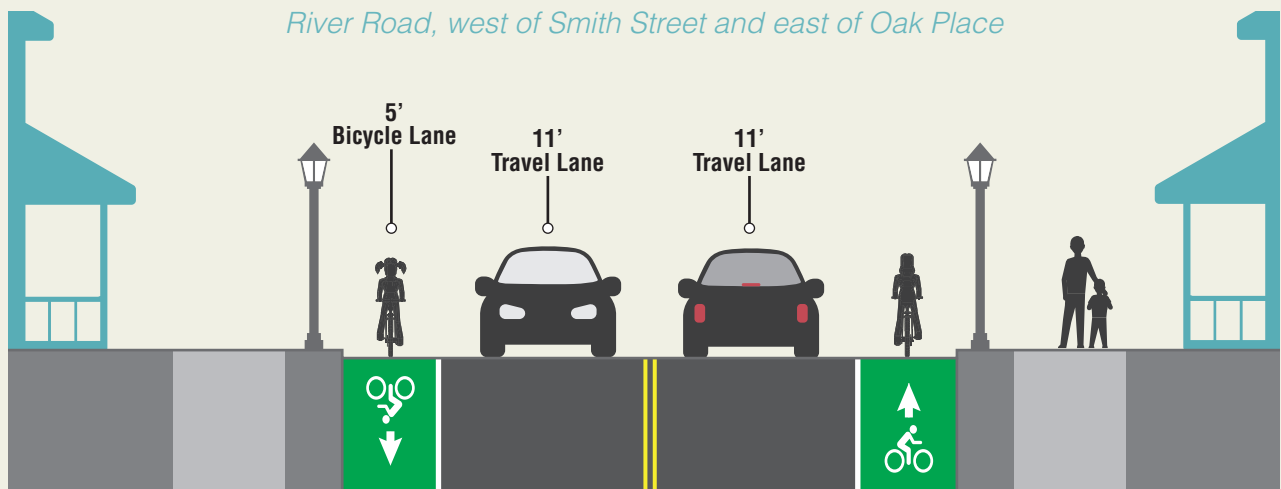
Proposed LTS / 1/3

marked on-street spaces in the heart of the western commercial node (Smith Street to Locust Avenue) that would require removal.

Over the long-term, redevelopment planning, particularly in the western node, could support a cohesive main street-style built-environment, with a wider pedestrian-oriented streetscape, buildings adjacent to the street frontage, limited driveways, and shared-parking provided behind the buildings. If not already implemented in the mid-term, additional rear parking would enable existing on-street parking to be removed and bicycle lanes to extend through the western commercial node. Alternatively, raised bicycle lanes could be integrated into the streetscape as a part of the redevelopment scheme to create a separated bicycle facility, which would provide a more attractive and comfortable facility for casual bicyclists, children, and families.

Segments with bicycle lanes would reduce the level of traffic stress to LTS 1, making the route more attractive to a much larger cohort of bicyclists, whereas sections with shared-lane markings would remain LTS 3 due to high traffic volumes.

The cross-sections on the following page illustrate both sets of recommendations.

River Road, Smith Street to Oak Place*River Road, west of Smith Street and east of Oak Place**River Road, near Navesink Avenue (existing condition)*

HANCE ROAD

Hance Road is a main north-south artery through central Fair Haven, connecting River Road and Ridge Road to the Knollwood School, Sportsman's Field, and two places of worship. Hance Road also serves residences to the north of River Road and terminates near the Navesink River.

Hance Road has a varying width as it traverses the Borough. Between the northern terminus and River Road, Hance Road is a narrow two-way street (approx. 21 feet) with very low traffic volumes, on-street parking permitted, and no bicycle or pedestrian facilities. Between River Road and Ridge Road, Hance Road is wider and carries significantly higher traffic volumes. While portions of the corridor are wider than the 30 feet necessary to accommodate bicycle lanes, the width is variable, with multiple segments approximately 24 feet wide.

Because Hance Road has two distinct widths and it plays an important role providing access to schools, parks, and places of worship, the following recommendations are proposed for the roadway:

- » North of River Road: shared-lane markings to increase driver awareness of bicycle activity and establish a bicycle friendly route to the future waterfront park that is in development at

Existing Roadway Characteristics

Speed Limit / 25 mph

Typical Cartway Width / 20-34 ft

AADT / 5,000 vehicles

Travel Lanes / 2 (with marked center line)

Parking / Permitted intermittently

Existing LTS / 1-2

Proposed LTS / 1-2 (1 long-term)

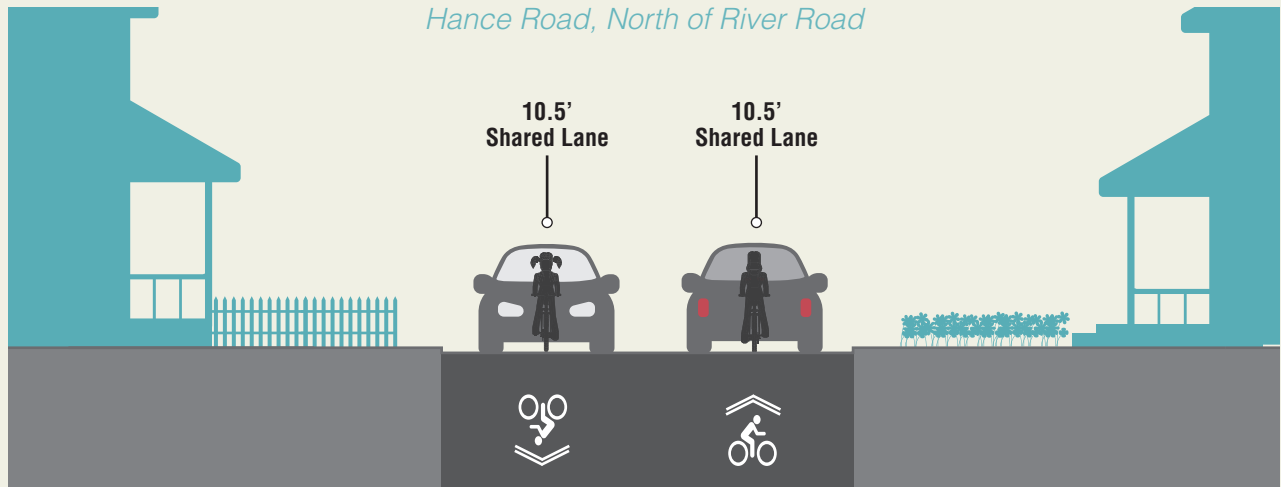
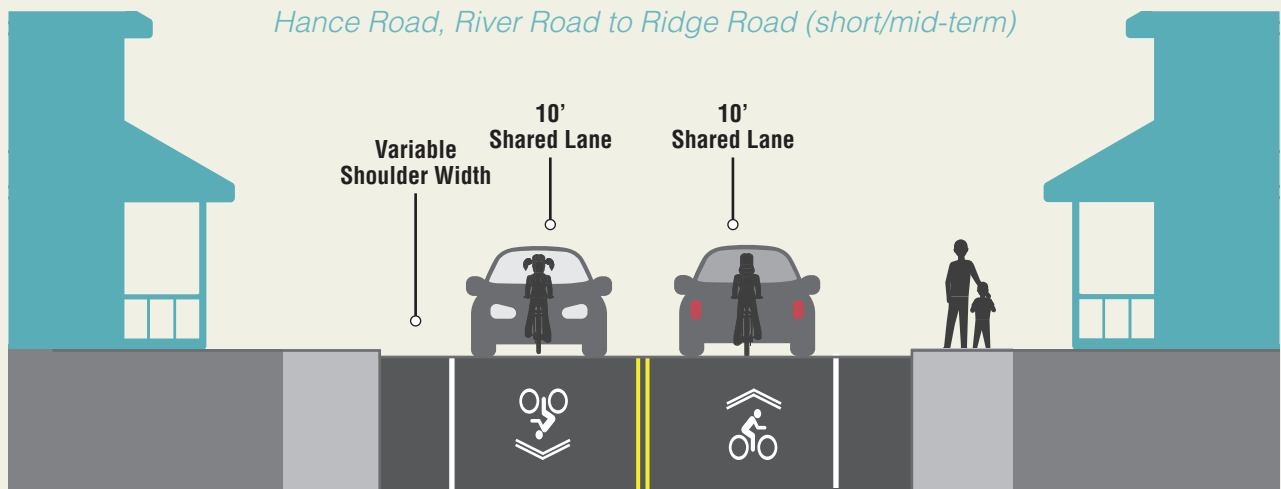
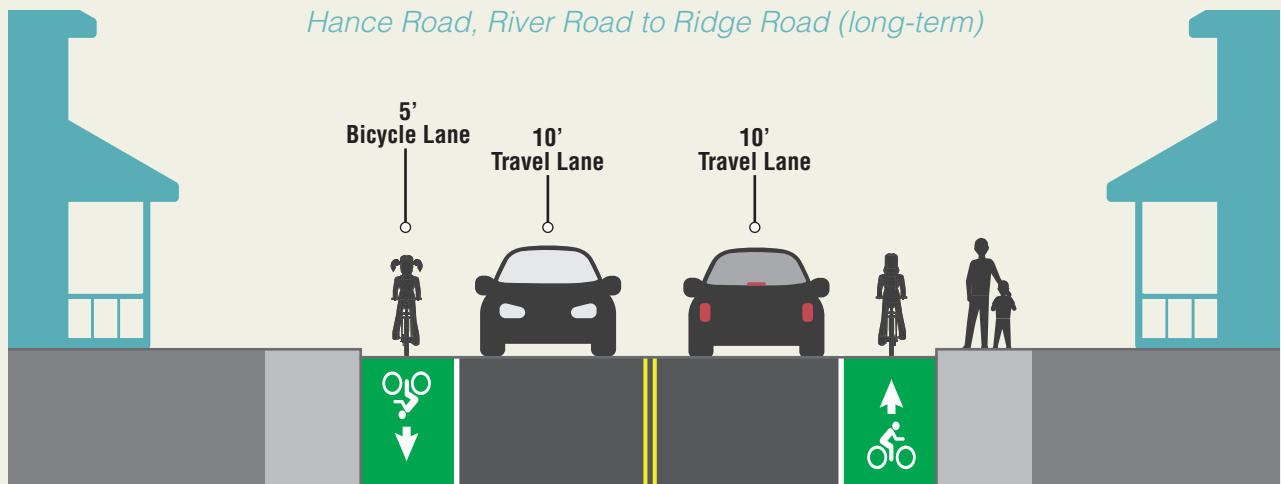
the street's northern terminus. Maintains LTS 1.

- » River Road to Ridge Road: A variable cartway width precludes the installation of consistent bicycle lanes both directions of travel. Therefore, shared-lane markings supported by traffic calming measures are recommended for the corridor. Traffic calming may include striping an edge line to define 10-foot travel lanes, radar speed signs, raised intersection at the Third Street intersection, and median islands. Maintains an overall LTS 2 rating.

In the long-term, investigate widening current pinch points to provide a minimum cartway width of 30 feet, which would accommodate bicycle lanes. This treatment would achieve an LTS 1.

The cross-sections on the following page illustrate the three recommendations for Hance Road.



Hance Road, North of River Road*Hance Road, River Road to Ridge Road (short/mid-term)**Hance Road, River Road to Ridge Road (long-term)*

FAIR HAVEN ROAD

Like Hance Road, Fair Haven Road is a main north-south artery across the Borough, connecting River and Ridge Roads and providing access to the Sickles School. Fair Haven Road also provides access to the business district and two Borough parks. Public input indicated concern about bicycle and pedestrian safety along the roadway, especially between Third Street and River Road, where many children walk and bicycle. The connection to Third Street, in particular, is a critical route to school.

Space constraints make the implementation of continuous bicycle lanes infeasible without roadway widening, which similarly would be constrained by utilities, limited right-of-way, and higher costs. The street's function as a primary north/south route for vehicular traffic also makes it not well-suited for advisory bicycle lanes or a bicycle boulevard treatment. Therefore, shared lane markings are recommended for the entire corridor within the Borough. While the markings would not reduce traffic stress, they will increase driver awareness of bicycle activity and help assert the legitimacy of bicyclists using the roadway.

As discussed on page 34, this street

Existing Roadway Characteristics

Speed Limit / 25 mph

Typical Cartway Width / 27-31 ft

Travel Lanes / 2 (with marked center line)

Parking / Not Permitted

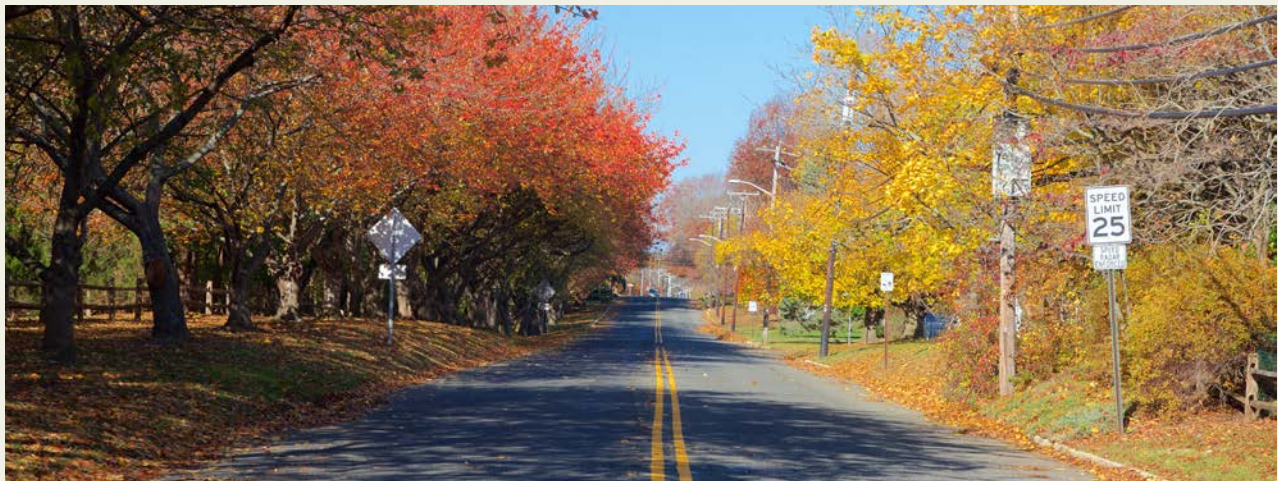
Existing LTS / 2

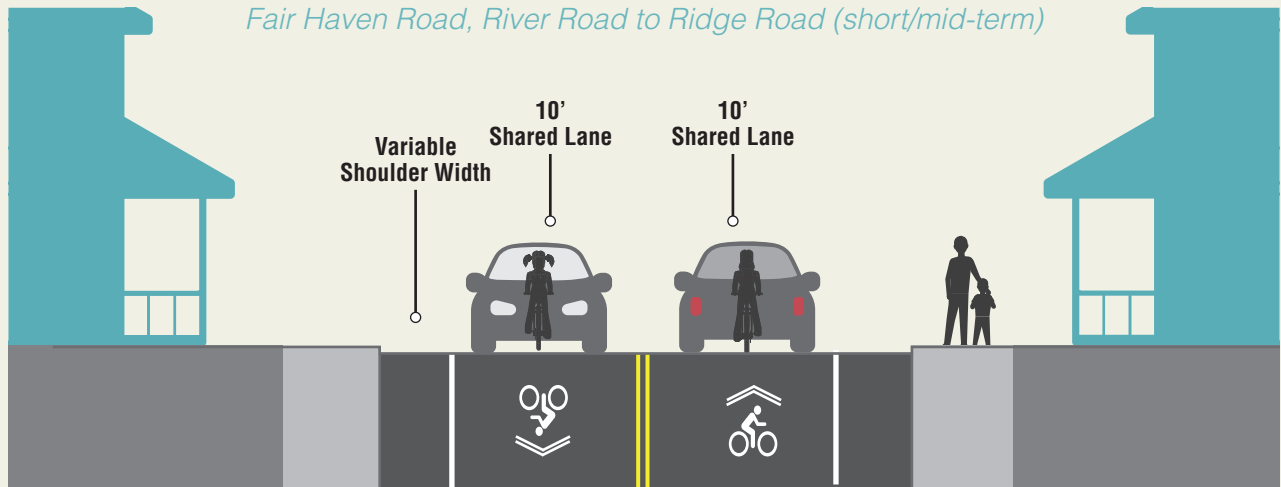
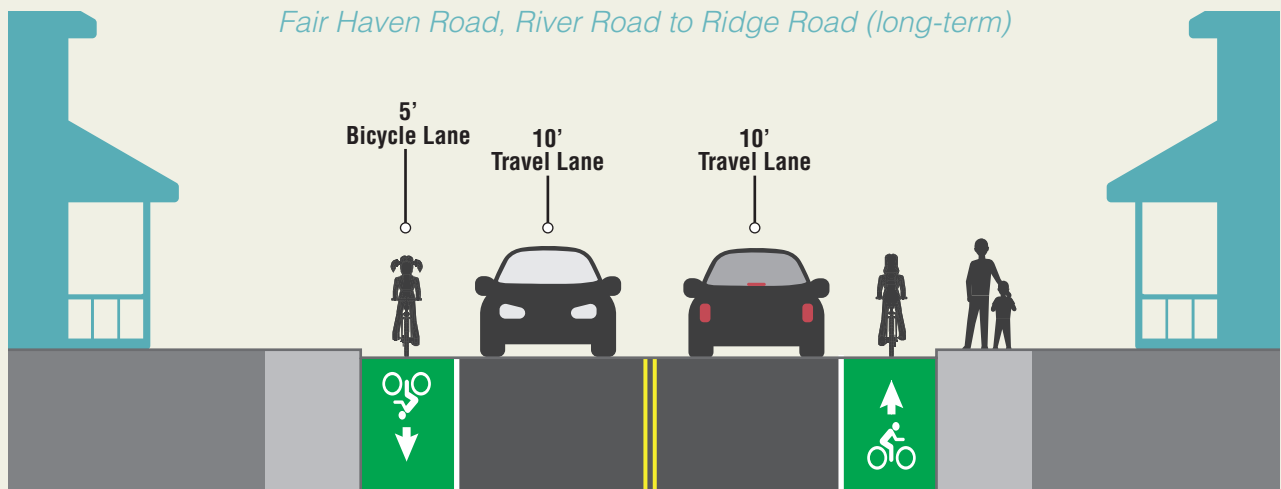
Proposed LTS / 2 (1 long-term)

is also a candidate for traffic calming to reinforce the roadway's 25 mph speed limit and support the shared-lane markings. Shoulder striping would define 10-foot travel lanes, visually narrowing the roadway and providing separate space that could be used by bicyclists as an informal bicycle lane. Additional traffic calming measures could include radar speed signs, median islands, and/or speed cushions.

Implementation of bicycle lanes may be considered in the long-term as part of a widening project to create a minimum cartway width of 30 feet. This treatment would achieve an LTS 1.

The cross-sections on the opposite page illustrate the recommendations for Fair Haven Road.



Fair Haven Road, River Road to Ridge Road (short/mid-term)*Fair Haven Road, River Road to Ridge Road (long-term)*

THIRD STREET

Third Street is one of the most heavily bicycled and walked streets in Fair Haven. It is closed to vehicular traffic during school arrival and dismissal times, and it is a primary route to school for many students who reside to the east of the Knollwood School.

Outside of school arrival and dismissal, the route is still a popular bicycle route for east/west trips within the community, providing an alternative to the busier River and Ridge Roads, linking residential neighborhoods, and providing access to several parks and playgrounds.

There are no existing dedicated bicycle facilities along Third Street. While the roadway has a low speed limit and relatively low traffic volumes, the street also serves local vehicular trips and provides access to the Borough's Public Works yard and recycling center. As a result, stakeholder input indicated a need to improve the differentiation of street space among different street users.

Due to the spatial constraints of the street, there is insufficient space to provide fully dedicated bicycle lanes. Therefore, advisory bicycle lanes are proposed. Third Street's travel speeds and volumes are conducive to advisory bicycle lanes, which will help

Existing Roadway Characteristics

Speed Limit / 20 mph

Typical Cartway Width / 25 ft

Travel Lanes / 2 (no marked center line)

Parking / on-street permitted intermittently

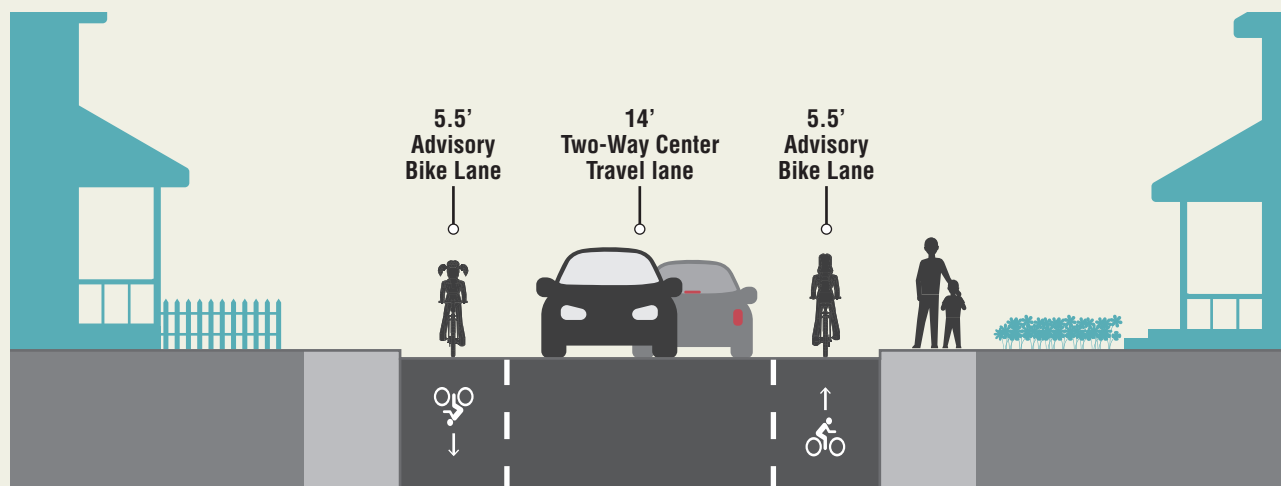
Existing LTS / 2

Proposed LTS / 1

prioritize bicycle movement along the street. Due to the enhanced bicycle priority of this low speed roadway, the proposed improvements would reduce the traffic stress to LTS 1.

Due to limited roadway width, on-street parking would need to be prohibited along much of the corridor to accommodate advisory bicycle lanes. The cross-section below illustrates the recommendations for Third Street.

As an alternative, the street is also a candidate for a bicycle boulevard, featuring pavement markings and traffic calming. Such a treatment would not provide the desired differentiation of space among bicyclists and vehicles that advisory bicycle lanes would create, but would allow for the retention of informal on-street parking.



BEEKMAN PLACE / FORREST AVENUE / PARK ROAD

This route, consisting of Beekman Place, Forrest Avenue, Park Road, Cambridge Avenue, and Oxford Avenue, winds its way from the west side of the Borough to the Knollwood School. In combination with the proposed Third Street and Linden Drive improvements, it provides a continuous, bicycle priority east/west route through the center of Fair Haven. It provides a lower traffic, more comfortable alternative to River Road and Ridge/Harding Road and access to schools, parks, and residential neighborhoods. It also connects to Red Bank's planned bicycle network, facilitating access to downtown Red Bank via local streets rather than higher traffic county roads.

With a variable roadway width, portions of the roadways are too narrow to accommodate dedicated bicycle lanes, particularly where on-street parking is permitted. However, as local residential streets with low traffic speeds and volumes, the route is well-suited to serve as a bicycle boulevard.

As a bicycle boulevard, all segments of this corridor should have speed limits reduced to 20 mph, context sensitive traffic calming elements installed to keep vehicular speeds

Existing Roadway Characteristics

Speed Limit / 25 mph

Typical Cartway Width / 27 - 35 ft

Travel Lanes / 2 (no marked center line)

Parking / on-street permitted intermittently

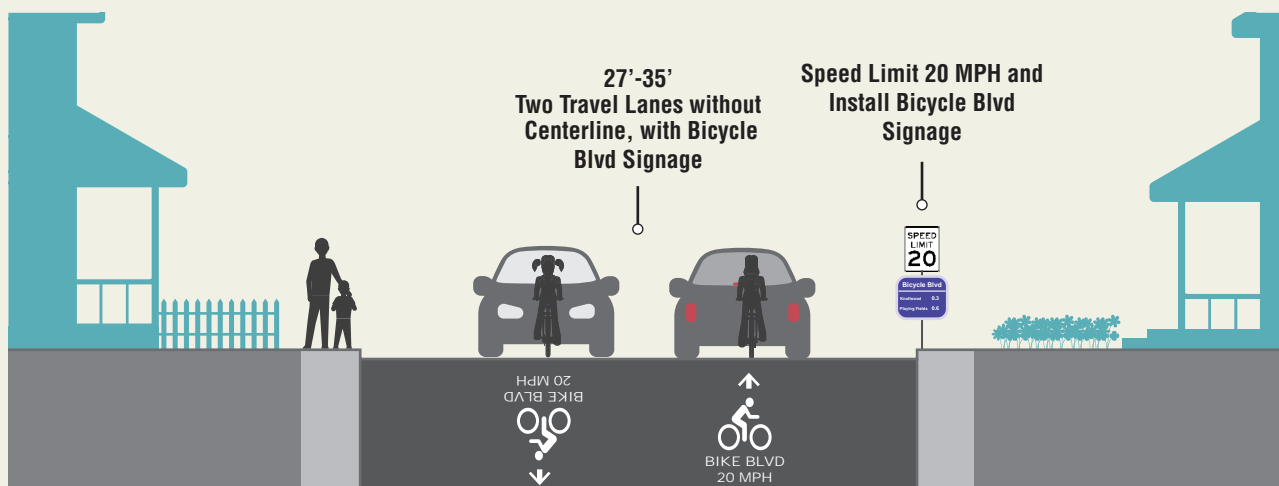
Existing LTS / 1

Proposed LTS / 1

low (e.g., speed cushions, neighborhood roundabout, median islands), and signage and striping to reinforce the bicycle boulevard concept among drivers and cyclists alike. Other strategies could include two-way stop control for Lake Avenue only at its intersection with Beekman Place, thereby prioritizing bicycle movement along Beekman Place.

Already an LTS 1 roadway, the bicycle boulevard will enhance a bicycle-priority corridor and improve wayfinding to clearly identify the route. These improvements address a desire for a family-friendly route linking Fair Haven and Red Bank, as indicated through public input activities.

The cross-section below illustrates the recommendations for all roadways included in this corridor, with varying widths.



LINDEN DRIVE / PARK LANE / LAUREL DRIVE

This route, consisting of Linden Drive, Park Lane, and Laurel Drive, connects the east side of the Borough to Fair Haven Road at Third Street. In combination with the proposed Third Street and Beekman Place/Park Road improvements, it provides a continuous, bicycle priority east/west route through the center of Fair Haven. The route provides a lower traffic, more comfortable alternative to River Road and Ridge/Harding Road and access to schools, parks, and residential neighborhoods. It also provides linkages to Rumson Borough and regional connections east towards the Shore.

As with the Beekman Place/Park Road corridor, the roadway width is typically too narrow to accommodate dedicated bicycle lanes, particularly where on-street parking is permitted. However, as local residential streets with low traffic speeds and volumes, the route is well-suited to serve as a bicycle boulevard.

As a bicycle boulevard, all segments of this corridor should have speed limits reduced to 20 mph and context sensitive traffic calming elements to keep vehicular speeds low. With many wide intersections along the corridor,

Existing Roadway Characteristics

Speed Limit / 25 mph

Typical Cartway Width / 29 ft

Travel Lanes / 2 (no marked center line)

Parking / on-street permitted both sides

Existing LTS / 1

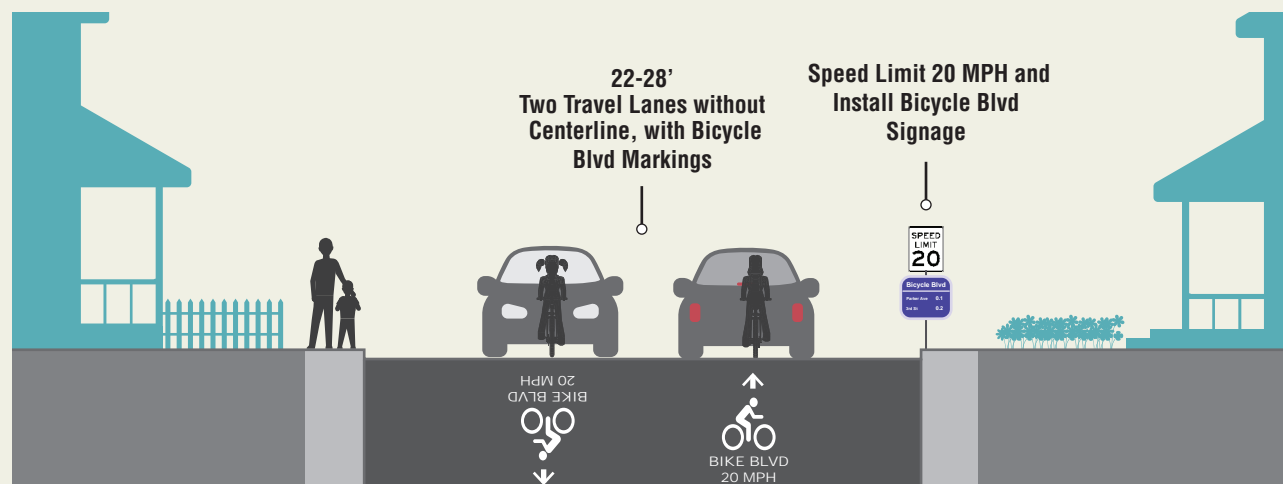
Proposed LTS / 1

strategies such as neighborhood roundabouts and tighter curb radii may be applicable, supplemented with speed cushions, median islands, or neckdowns, as needed.

Signage and striping should reinforce the bicycle boulevard concept among drivers and cyclists alike, improve wayfinding, clearly identify the route for cyclists, and brand the street as a bicycle-priority corridor. Already an LTS 1 roadway, the bicycle boulevard will enhance the street for bicycle travel.

These improvements help address a desire for a continuous, family-friendly route linking Fair Haven to Red Bank and Rumson, as indicated through public input activities.

The cross-section below illustrates the recommendations for all roadways included in this corridor, with varying widths.



CEDAR AVENUE

Cedar Avenue provides an important connection between Fair Haven's western business district, the Youth Center, and the proposed Third Street improvements and associated east/west bicycle route across the Borough. The street is heavily utilized by school children before and after school hours.

With a typical roadway width of only 22-28 feet, Cedar Avenue is too narrow to accommodate bicycle lanes. However, as a local residential street with low traffic speeds and volumes, the route is well-suited to serve as a bicycle boulevard.

As a bicycle boulevard, this corridor should have context sensitive traffic calming elements installed to keep vehicular speeds low and support the existing 20 mph speed limit. The street's narrow width and on-street parking policy already support low traffic speeds. Alternating on-street parking from one side of the street to the other on alternate blocks functions as a chicane to calm traffic. This may be supplemented with additional strategies, such as speed cushions or curb extensions, as needed.

Existing Roadway Characteristics

Speed Limit / 20 mph

Typical Cartway Width / 22-28 ft

Travel Lanes / 2 (no marked center line)

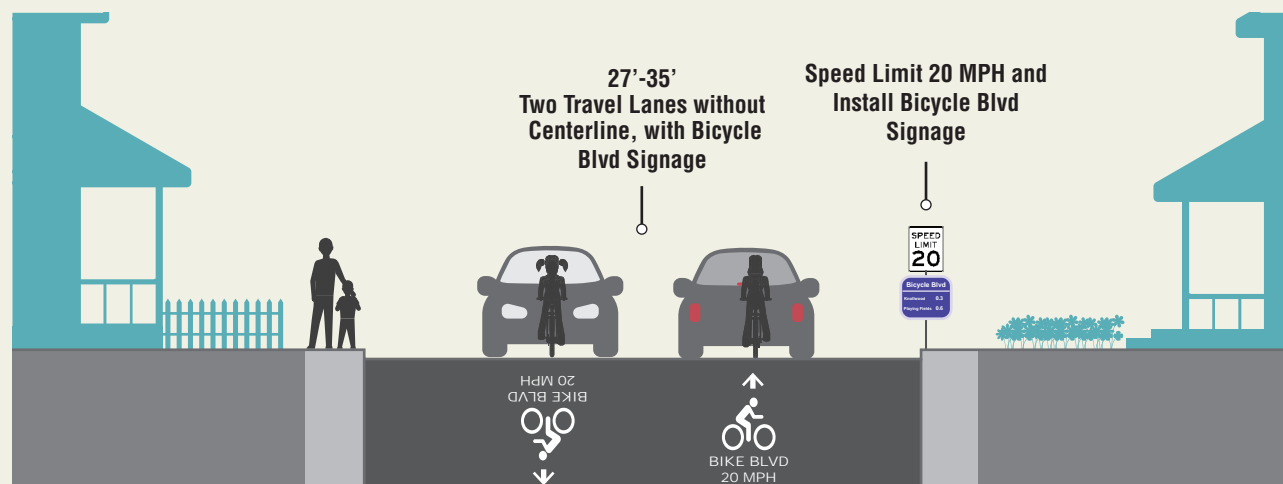
Parking / on-street permitted one side

Existing LTS / 1

Proposed LTS / 1

Signage and striping should reinforce the bicycle boulevard concept among drivers and cyclists alike, improve wayfinding, clearly identify the route for cyclists, and brand the street as a bicycle-priority corridor. Already an LTS 1 roadway, the bicycle boulevard will enhance the street for bicycle travel.

The cross-section below illustrates the recommendations for Cedar Avenue.



HARRISON AVENUE

Harrison Avenue straddles the border between Fair Haven and Red Bank. While not a high volume roadway, Harrison Avenue is one of a handful of roads that directly connects River Road and Ridge Road within the Borough. It is also an important corridor to facilitate connections into Red Bank and its proposed bicycle network.

The roadway width is sufficient to support bicycle lanes while retaining on-street parking on one side of the street. In addition to having sufficient width, the relatively low volumes provide for a low-stress bicycling experience. For these reasons, bicycle lanes are recommended on Harrison Avenue between Harding Road and Beekman Place (Red Bank boundary). This is consistent with the recommendations of Red Bank's *Bicycle and Pedestrian Plan*.

The cross-section below illustrates the recommendations for Harrison Avenue.

Existing Roadway Characteristics

Speed Limit / 25 mph

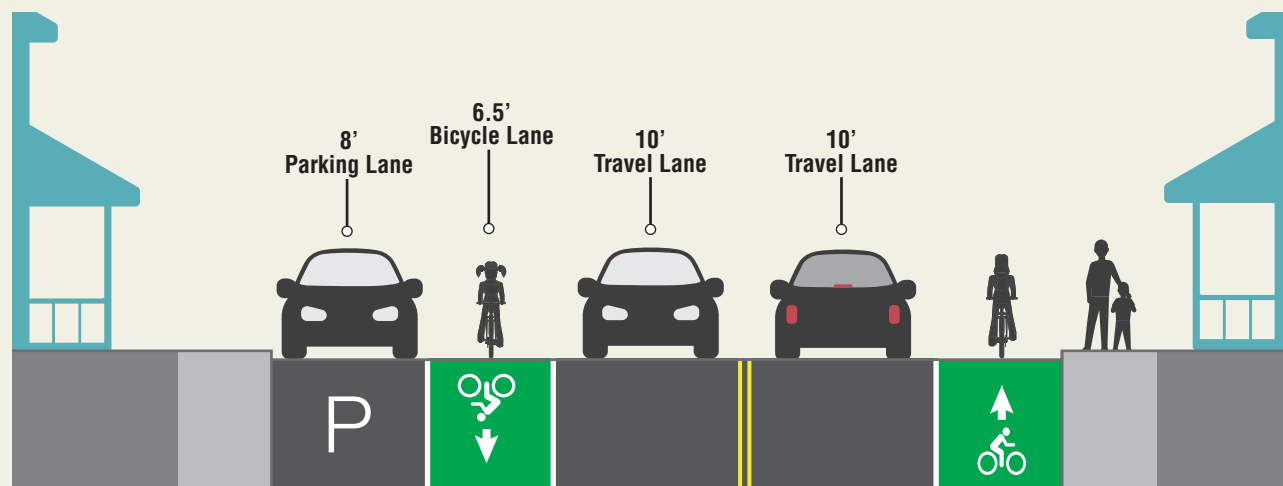
Typical Cartway Width / 41 ft

Travel Lanes / 2 (with marked center line)

Parking / on-street permitted both sides

Existing LTS / 1-2

Proposed LTS / 1





BICYCLE LTS REVISITED

The proposed program of improvements described in the previous section are intended to create a more comfortable, convenient, and interconnected bicycle network for cyclists of all ages and abilities. Improving the bicycle facilities for the roadways mentioned in the previous section will create a more comprehensive bicycle network for Fair Haven. As shown in Map 2, the proposed bicycle network builds upon existing bicycle facilities, connects major destinations for residents and school-children, and improves linkages between Red Bank and Rumson.

Re-evaluating the bicycle level of traffic stress (LTS) for the proposed network is one way to measure the anticipated benefits to user comfort. Map 3 shows the revised LTS analysis with all the recommended bicycle improvements implemented, both short term and long term. The result is a network composed almost entirely of LTS 1 or 2 roadways.

The most significant change in the network is an LTS decrease from 3 and 4 to a 1 along River Road. This is the result of the proposed bicycle lanes along much of the corridor and speed limit reduction to 25 mph. The improvement between Smith and Church Streets illustrated in Map 3 also assumes the implementation of the long-term concept to integrate standard or raised bicycle lanes along River Road through corridor redevelopment. With these conditions met, the roadway, and several intersecting roadways, would drop to an LTS of 1. In the interim, due to high traffic volumes, the LTS would remain at an LTS 3 for segments where shared-lane markings are used in place of bicycle lanes.

Other improvements include:

- » Third Street, where proposed advisory bicycle lanes would help prioritize bicycle movement along the corridor, reducing LTS from 2 to 1
- » Hance Road and Fair Haven Road, where the long-term proposed bicycle lanes would reduce the LTS from 2 to 1. In the interim, proposed shared-lane markings and traffic calming would maintain LTS 2.

The highest LTS roadway in the Borough, Ridge Road, will likely remain an LTS 3. Even though the roadway currently has bicycle lanes, the speeds remain high enough to create an uncomfortable environment for many cyclists (35 mph posted speed limit). Only additional separation between bicyclists and motor vehicles would improve the LTS in this segment. Because the roadway serves through traffic and has little direct access to businesses or residential development, it is unlikely that the speed limit will be reduced further, or that the roadway will undergo widening to accommodate separated bicycle facilities.

The level of traffic stress metric measures the comfort level of a roadway for different types of users. By focusing on providing connections that are either LTS 1 or 2, the network better accommodates current cyclists and is more attractive to potential new bicyclists.



MAP 10 - PROPOSED BICYCLE LEVEL OF STRESS

- Level of Stress 1
- Level of Stress 2
- Level of Stress 3
- Level of Stress 4
- LTS Change from Existing



*Twelve roadway segments
would experience a measurable
reduction in bicycle level of
traffic stress in the long-term*

BICYCLE PENALTY METRIC

Along with the updated LTS analysis, the bicycle penalty metric was also revisited to estimate the impact of the proposed improvements. As discussed in Chapter 4, the bicycle penalty metric helps evaluate and illustrate the connectivity of the low stress bicycle metric. A reduction in the bicycle penalty indicates that more of the roadway network is accessible and comfortable for casual cyclists, families, and children.

Using only LTS 1 roadways and limiting trip distance to two miles, the maps to the right illustrate the changes in the bicycle penalty analysis assuming implementation of the proposed bicycle network recommendations. The short/mid-term recommendations include all improvements that would not require significant changes to the roadway width. The long-term recommendations include the proposed bicycle lanes along Hance and Fair Haven Roads, which would require roadway widening in some sections, as well as bicycle lanes or raised bicycle lanes along River Road between Smith and Church Streets, which could accompany redevelopment.

While access along Ridge Road remains limited due to high traffic speeds, network connectivity is significantly improved elsewhere in the Borough. As illustrated in the interim recommendations, the proposed Third Street improvements support a continuous east/west bicycle-priority corridor that would significantly enhance Borough-wide connectivity. Similarly, bicycle lane improvements along segments of River Road significantly improve access to the downtown and enhance linkages between the neighborhoods north of River Road and the rest of the community.

The proposed long-term improvements would further enhance connectivity of the low stress network, particularly in the downtown and northeastern neighborhoods.





BICYCLE PARKING

Bicycle parking facilities are needed to extend bicycle use from an opportunity for recreation to a feasible mode of transportation. Providing adequate, secure bicycle parking is an important measure to accommodate and encourage cycling. Proper parking facilities increase the convenience of cycling for commuting, utilitarian, or recreational purposes while also alleviating the threat of theft. Appropriate infrastructure design and siting standards, additional bicycle parking capacity, and a bicycle parking ordinance can all help improve options for bicycle parking in Fair Haven.

PRIORITY LOCATIONS

The inventory of existing conditions indicated that there are opportunities to expand bicycle parking throughout the community. Key locations include:

- » Knollwood and Sickles Schools: while there is ample bicycle parking provided at the Borough's two schools, additional capacity could be provided to accommodate the high numbers of students who bike to school
- » 3rd Street fields and playground: currently lacks parking facilities
- » River Road business district: Limited existing capacity exists through the downtown; encourage and work with local businesses to implement additional parking

RACK DESIGN

Parking should be conveniently located, well lit, and easily visible for cyclists arriving at a destination. There are a variety of bicycle parking racks available to meet different capacity needs or accommodate space constraints. The majority of existing bicycle racks in Fair Haven are an older design. As they are replaced and additional capacity is added, new racks should meet the following

guidelines provided by the Association of Pedestrian and Bicycle Professionals (APBP):

- » Be intuitive to use
- » Support the bicycle upright by its frame in two locations
- » Prevent the wheel of the bicycle from tipping over
- » Enable the frame and one or both wheels to be secured
- » Accommodate a variety of bicycles and attachments, including bicycles without a diamond shaped frame and horizontal top tube
- » Allow both front-in and back-in parking with a U-lock through the frame and front or rear wheel
- » Resist the cutting or detaching of any rack element with hand tools

Older style racks, such as the “comb”/ “schoolyard”, “toast”, and “wave” are not recommended because they do not properly support the bicycle frame, generally do not facilitate locking of the frame to the rack, and frequently cause interference between the handlebars of adjacent bikes when the rack is near capacity. The preferred rack is the “inverted U”. Other acceptable designs include the “post and ring”, and “wheelwell secure.” These rack types are illustrated in the figure on the following page.

Bike racks should also be properly spaced to allow easy, independent access to each bike. This includes providing sufficient space between racks and buildings, walls and parked cars, as well as between other bikes. Additional guidance on bike rack design and placement can be found in the Association of Bicycle and Pedestrian Professionals' (APBP) guide: *Essentials of Bicycle Parking* (2015).



RECOMMENDED BIKE RACK DESIGNS

Preferred Design



Inverted U

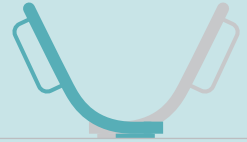
Common style appropriate for many uses; two points of ground contact. Can be installed in series on rails to create a free-standing parking area in variable quantities. Available in many variations.

Other Acceptable Designs



Post and Ring

Common style appropriate for many uses; one point of ground contact. Compared to inverted-U racks, these are less prone to unintended perpendicular parking. Products exist for converting unused parking meter posts.



Wheelwell Secure

Includes an element that cradles one wheel. Design and performance vary by manufacturer; typically contains bikes well, which is desirable for long-term parking and in large-scale installations (e.g. campus); accommodates fewer bicycle types than other recommended designs.



RACKS TO AVOID

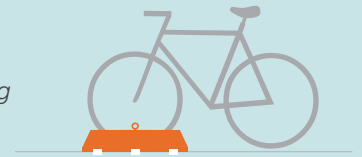
Wave

Not intuitive or user-friendly; real-world use of this style often falls short of expectations; supports bike frame at only one location when used as intended.



Wheelwell

Racks that cradle bicycles with only a wheelwell do not provide suitable security, pose a tripping hazard, and can lead to wheel damage.



Schoolyard (comb)

Does not allow locking of frame and can lead to wheel damage. Inappropriate for most public uses, but useful for temporary attended bike storage at events and in locations with no theft concerns.



Coathanger

This style has a top bar that limits the types of bikes it can accommodate.



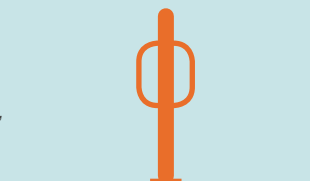
Spiral

Despite possible aesthetic appeal, spiral racks have functional downsides related to access, real-world use, and the need to lift a wheel to park.



Bollard

This style typically does not appropriately support a bike's frame at two separate locations, which limits its framelock capability and bicycle stability.



Images and descriptions courtesy of APBP *Essentials of Bicycle Parking*

ENHANCED BICYCLE PARKING OPTIONS

Covered Parking

To further enhance bicycle parking options, the Borough should consider providing covered bicycle parking at the local schools. Covered parking helps protect bicycles from inclement weather and is particularly appealing for people parking for longer periods of time, such as students, commuters, or employees. Having covered parking available can make bicycling a more practical and attractive option if rain is forecast during the day, but not during commuting or travel times.

While covered parking requires more capital investment than racks alone, a variety of pre-fabricated shelters are available for a relatively low cost. Installation of covered parking could be a long term improvement, either implemented incrementally or integrated into larger capital projects at the schools.

Bicycle Corrals

Bicycle corrals are rows of bike racks installed in the parking lane of the street instead of on the sidewalk. Bicycle corrals help provide highly visible and ample bicycle parking without occupying sidewalk space, making them particularly useful in areas with constrained sidewalk space and/or high pedestrians activity. They can convert a parking space for a single automobile to parking for 8 to 12 bicycles, creating more convenient access for more customers of nearby businesses. Additionally, bicycle corrals help “daylight” an intersection by preventing motor vehicles from parking close to the intersection. This helps improve the visibility of all road users at the intersection and creates an easier crossing for pedestrians. Corrals are also temporary, and can be easily removed during the winter.

Bicycle corrals are one tool to provide additional parking in the downtown. The Borough should explore opportunities for bicycle corrals near commercial nodes along River Road, such as in the vicinity of the intersections with Cedar Avenue and



Examples of covered bicycle parking at Rutgers University (left) and a school in London, UK (right, source: guide.saferoutesinfo.org)



Bicycle corral in New Brunswick (source: njbikeped.org)

Fair Haven Road. Bicycle corrals can be an amenity for local shops and cafes, and there may be opportunities for businesses to partner with the Borough or sponsor corrals adjacent to them.

Bicycle Parking Ordinance

The Borough should also consider adopting a bicycle parking ordinance to further integrate bicycling into the Borough's planning process and development regulations. The ordinance would ensure that appropriate bicycle parking is provided as redevelopment occurs, supporting additional parking capacity throughout the community and increasing the convenience of bicycling.

Similar to automobile parking requirements, the ordinance should reflect different demands for different types of land uses and scaled based on an appropriate metric for the land use, such as square footage, number of bedrooms, or number of employees. The ordinance should also address both short-term and long-term parking needs. While customers or visitors making quick trips may require a simple bicycle rack, employees and residents often desire more secure parking options protected from the weather.

In addition to setting capacity requirements, the ordinance should also stipulate the design standards summarized in this chapter and reference best practice design guidelines from the Association of Pedestrian and Bicycle Professionals.

As an incentive, the Municipality may also consider allowing developers to provide additional bicycle parking and/or higher quality facilities (e.g., covered parking) to offset vehicular parking requirements.

