Evaluation of Selected Corridor and Recommendations

Cyclists generally prefer the safety of a dedicated bicycle facility while riding on-street. This study explores and evaluates the potential bicycle facilities under consideration for the study area and provides recommendations for on-street bicycle routes that can best connect neighborhoods to the sites of attractions.

Existing conditions information pertinent to the study area such as street width, number of travel lanes, traffic direction etc. are summarized and tabulated in this repot in Appendix B: Street Network.

Forest Park (Memorial Drive and/or Freedom Drive)

Memorial Drive travels into the park from the Myrtle Avenue/ Park Lane South intersection. It is a quiet roadway, closed to traffic that leads to Forest Park's greenway path. It is the easiest access point for cyclists to get to and from Forest Park (refer to following picture of road).

Freedom Drive was considered as another option to begin the bicycle route from Forest Park, but because of the changing width of Freedom Drive and its curved configuration the bicycle route would have to be a shared use path on the east sidewalk instead of an on-street bicycle lane. There is another disadvantage in having Freedom Drive as a recommended bicycle route: cyclists would have to dismount his or her bicycle as they reach Forest Park. The path of Forest Park becomes an overpass at this location and the only access point is through a steep staircase about 100 feet west of the intersection of Myrtle Avenue and Freedom Drive (staircase on south side of Myrtle Avenue). Refer to the picture below showing the stairs.

Therefore the best starting point for cyclists from Forest Park to the Woodhaven area is from Memorial Drive.

Memorial Drive looking north from Park Lane South

Stairs to Forest Park's greenway path, west of intersection of Myrtle Ave. and Freedom Dr.

Park Lane South

It is recommended to continue the route with Park Lane South as a signed bicycle route due to the restricted width of the road and the parking observed on the south side of the street.

Shared use arrows or "sharrows" may be used in this portion of the bike route, alerting drivers to

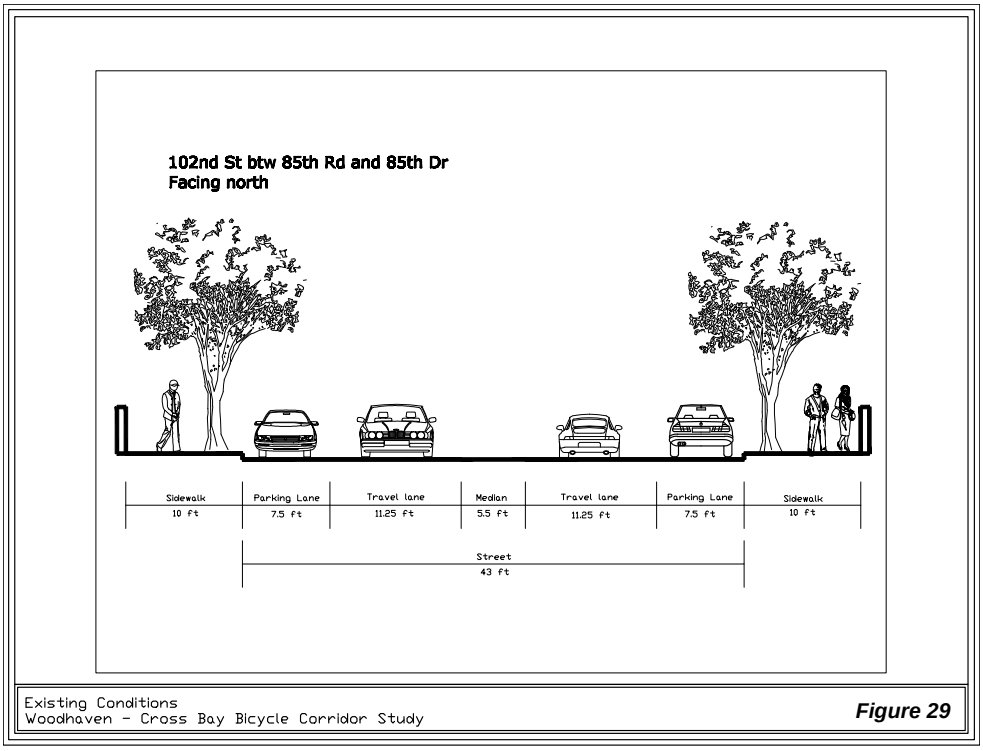
the presence of bicyclists on the road. In addition, an advanced stop box (bike box) would be useful on Park Lane South at the intersection of Myrtle Avenue and Memorial Drive for eastbound cyclists heading towards Forest Park.

102nd Street

102nd Street due to its variation in width and traffic direction will have two types of proposed bicycle facilities: a signed bicycle route (Class 3) and a striped bicycle lane (Class 2). A continuation of the signed bicycle route from Park Lane South is recommended for 102nd Street until Jamaica Avenue. Then a striped bicycle lane is to be installed on 102nd Street from Jamaica Avenue to 97th Avenue. South of 97th Avenue 102nd Street narrows, therefore the signed bicycle route would resume until Rockaway Boulevard. Figures 35 through 37 represent typical cross sections of 102nd Street for existing and recommended conditions.

At the intersection of 102nd St and Jamaica Avenue, it may be useful to put in a "bike box" (advanced stop box) allowing southbound bicyclists to move ahead of motorists in order to make the left turn onto Jamaica Avenue safely when the traffic signal changes to green.

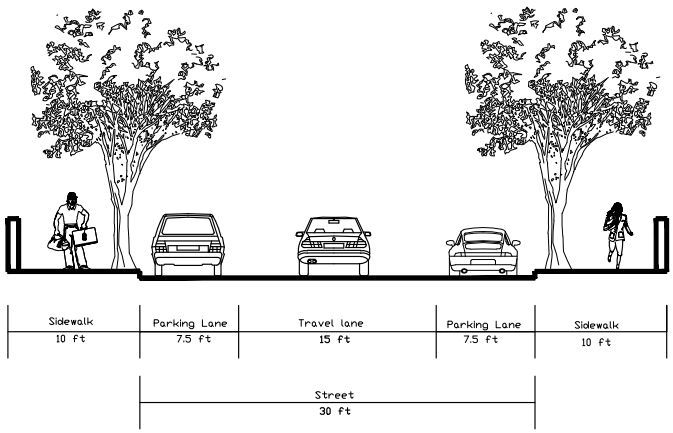
An alternative to this proposal would be to remove one of the parking lanes on the one-way segment of 102nd Street and replace it with a bicycle lane and a buffer. This would create a continuous dedicated lane for cyclists on 102nd Street from Jamaica Avenue to Rockaway Boulevard. However an assessment of the demand on-street parking and its capacity would be necessary to determine if there would be any adverse impact (see following Figure 38 for more detail). This alternate proposal would also require involvement of local community for approval.



Existing Conditions
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 29

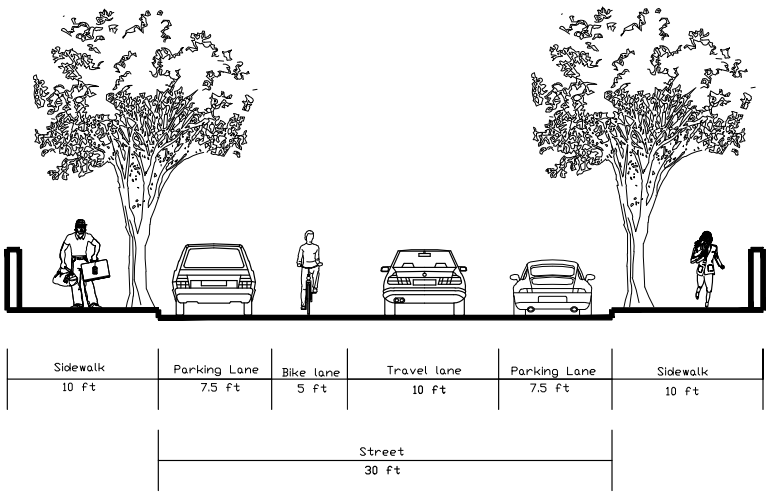
102nd St btw Jamaica Ave and 87th Ave
Facing north



Existing Conditions
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 30

Proposed Bike Lane on
102nd St btw Jamaica Ave and 87th Ave
Facing north



Recommendations
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 31

104th St

104th Street being 30 feet wide can accommodate a 5-foot wide striped bicycle lane (refer to Figure 37). Traffic is southbound from Jamaica Avenue to Rockaway Boulevard. It is recommended for southbound cyclists, arriving from Park Lane South, to make use of 102nd Street first then transfer to 104th Street after Jamaica Avenue.

The alternate proposal for 104th Street is to remove one parking lane and replace it with a striped bicycle lane and a buffer (see Figure 38 for an example of this proposal).

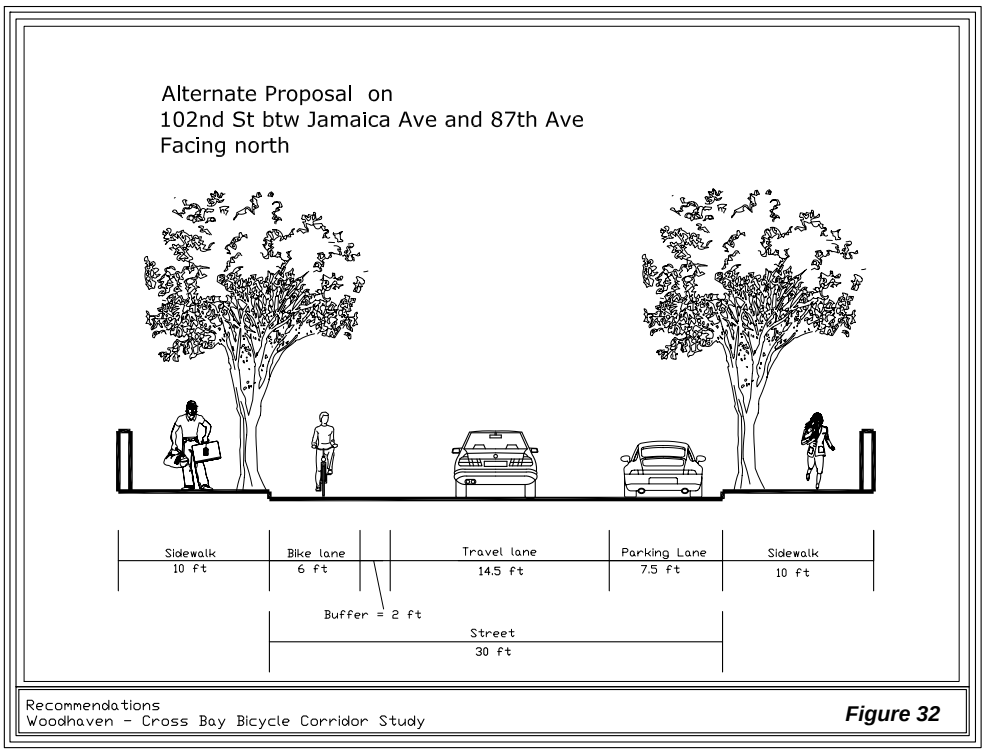


Figure 32

Jamaica Avenue

A transition route for cyclists is proposed on Jamaica Avenue as they travel from 102nd Street to 104th Street. A proposal to have a striped bike lane adjacent to the south curb was considered for this block but the presence of a bus stop and metered parking made it not feasible. A practical solution would be to install a signed bicycle route with appropriate signage and pavement markings “sharrows” informing motorists and cyclists to share the road on Jamaica Avenue.

Rockaway Boulevard

Rockaway Boulevard has also been recommended to include a signed bicycle route with "sharrows" that would link cyclists from 104th and 102nd Streets to 101st and Centerville Streets due to the variation in roadway and median widths.

Woodhaven Boulevard

Woodhaven Boulevard was considered and evaluated as a possible bicycle corridor in the study area, however to make recommendations for this route would require further analysis as a separate report which was beyond the scope of this study.

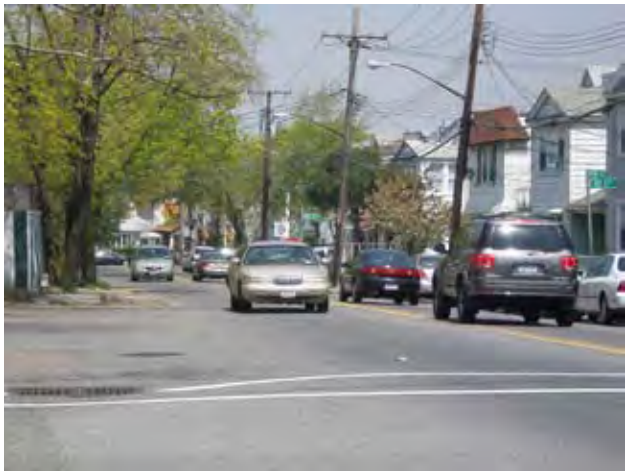
New York City Department of Transportation (NYCDOT) has undertaken a congested corridor study of Woodhaven Boulevard (part of the Citywide Congested Corridors Programs). An analysis of bicycle users and bicycle traffic will be included in NYCDOT's study of Woodhaven Boulevard.

101st Street and Peconic Street

A signed bicycle route is proposed for 101st Street since it is less than 40 feet wide. South of 133rd Avenue 101st Street becomes a one-way street and is called Peconic Street. With this change there is room for a 5-foot wide Class 2 bicycle lane. See cross section drawing of 102nd Street, figure 37 as a reference for this recommendation.

Centerville Street

Centerville Street varies in width (30 – 40 feet wide) and is a two-way street. The current street geometry will only allow for a signed bicycle route. Currently there is space on both sides of the road at the edge to put in striped bicycle lanes. But this space will most likely be used for the construction of sidewalks in the future if the community or the city decides to have them installed (see following pictures of road).



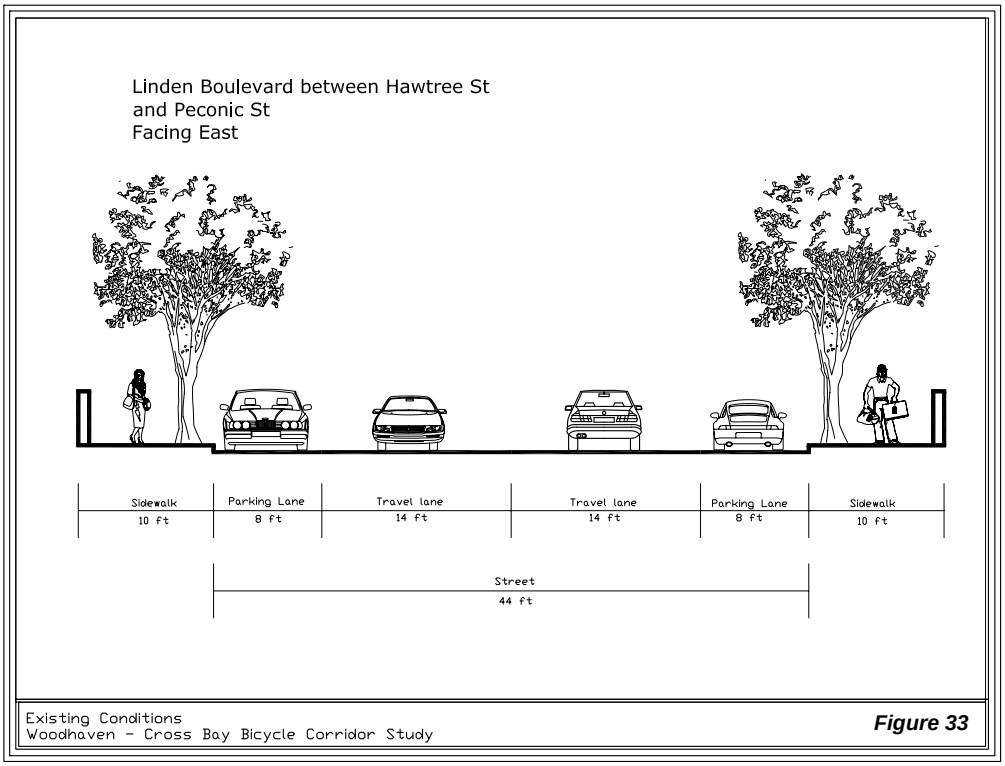
Centerville Street north of Linden Boulevard

Centerville Street south of Pitkin Avenue

Linden Boulevard

A striped bicycle lane is recommended for one block on Linden Boulevard between Hawtree Street and Centerville/ Peconic Streets. It would connect the bicycle facilities proposed for Centreville and Hawtree Streets.

This block of Linden Boulevard is adjacent to the Aqueduct Racetrack where there are currently no signs indicating parking and vehicles usually do not park at this location. It is also at a certain distance from the residential area (1 - 2 blocks). It is proposed to restrict parking at all times on this block and to have a bicycle lane and a buffer along the curb for cyclists. See Figures 39 and 40 for existing and recommended conditions.



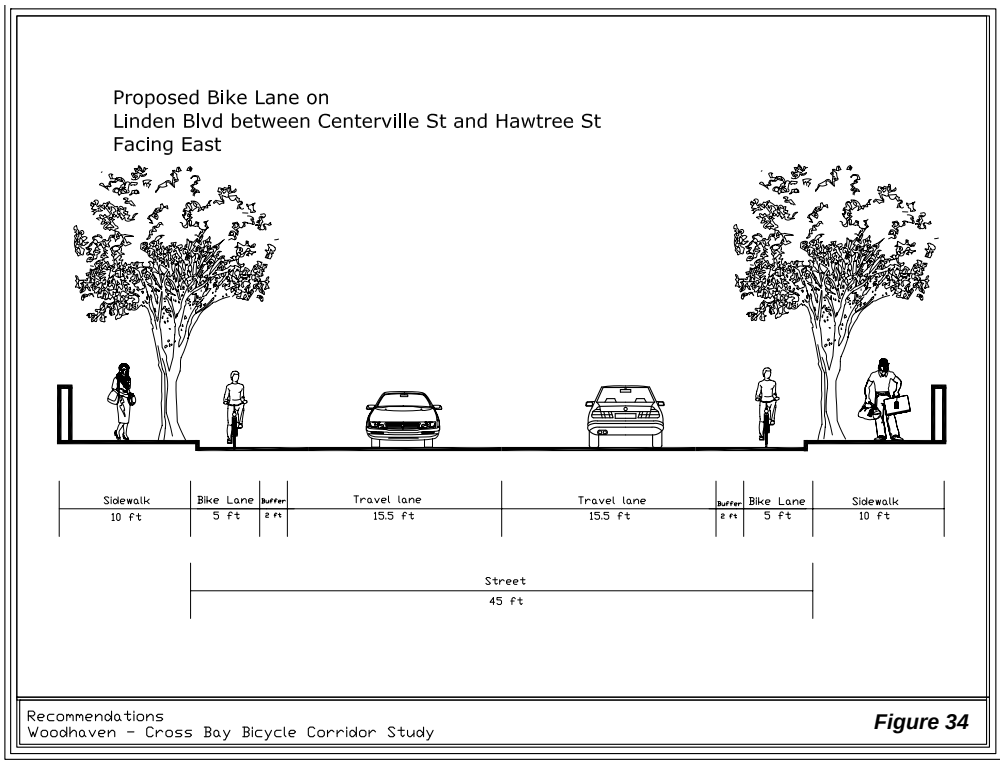


Figure 34

Hawtree Street

Hawtree Street exists in two segments along this corridor. For the northern section of Hawtree Street (south of Linden Boulevard) a signed bicycle route is recommended for cyclists since it is only 38 feet wide. Shared use pavement markings can be added to get motorists' attention to share the roadway.

The southern section of Hawtree Street (continuation of Eckford Avenue) is a one-way street that varies from 30 to 55 feet. There is sufficient space to install a striped bicycle lane. A buffer can be added on the widest block which is between Huron Street and 99th Place. See Figures 41 and 42 for existing and recommended conditions.

Eckford Avenue

Eckford Avenue (30 ft wide) can easily accommodate a bicycle lane and is recommended for a designated Class 2 bicycle facility (similar to 102nd St – refer to Figure 37).

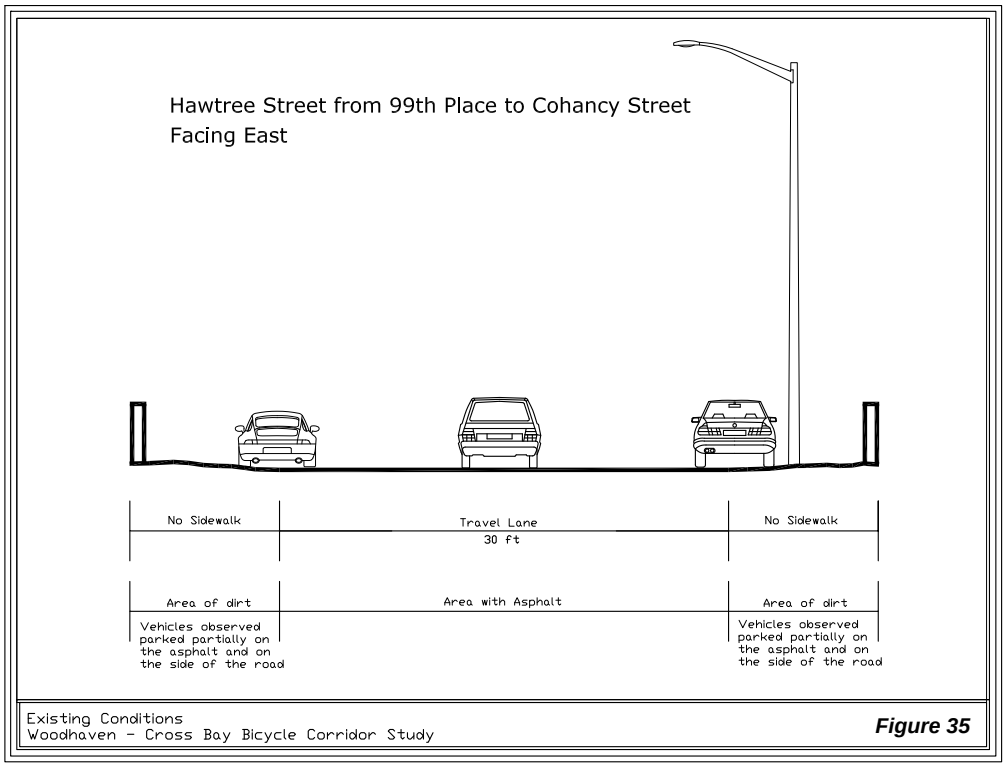


Figure 35

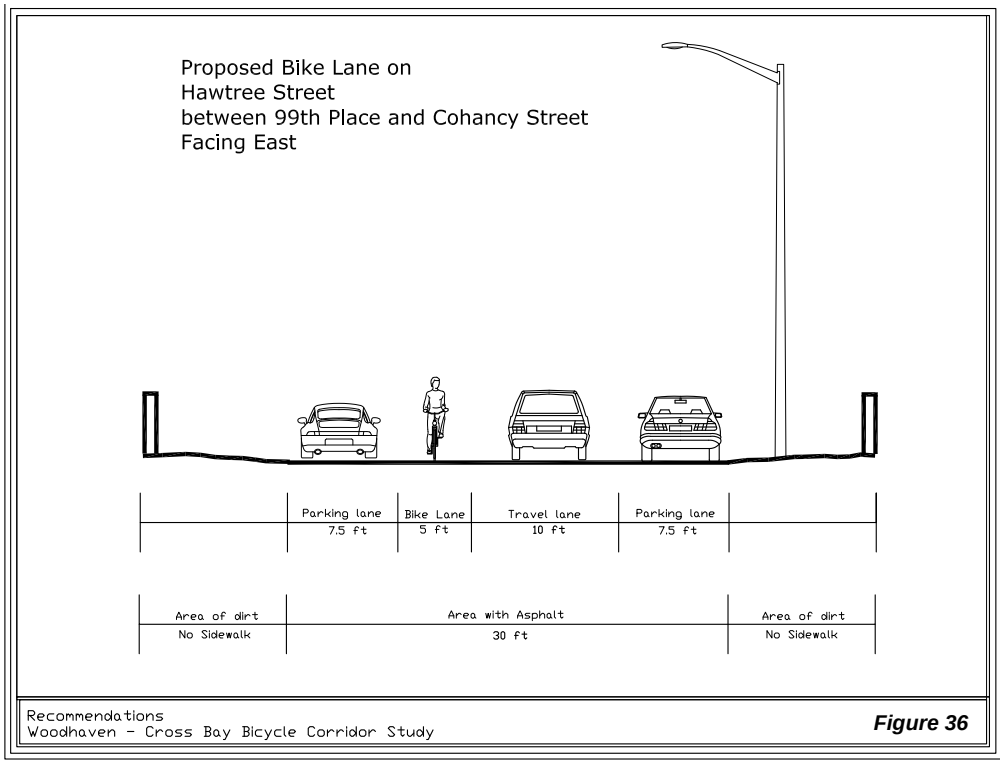


Figure 36

Hawtree Street looking north, between Huron St and 99th Pl - Width close to 55 ft

Hawtree Street looking south at west shoulder of road

Albert Road

Albert Road is barely 30 feet wide (variation 24 – 28 feet). It can only be recommended for a signed bicycle route. This road can include signs and marked sharrows on the pavement to inform users to share the road.

Cohancy Street

The recommendation for Cohancy Street is to have two types of bicycle facilities: a shared bicycle-pedestrian path and a striped bicycle lane.

The shared use path is proposed for both sidewalks on Cohancy Street at the overpass located over the South Conduit (between North Conduit Avenue and 155th Ave.). Due to vehicular traffic volumes, traffic conditions and the limited space available on-street at this location, there is insufficient room to accommodate a dedicated on-street bicycle facility for cyclists. Shared-use sidewalks would be appropriate for this block of Cohancy Street where cyclists and pedestrians can share the sidewalk (see Figure 43 for existing conditions). The width of each sidewalk is 10 feet and the volume of pedestrians is very light on both sidewalks. A sample count of users was conducted on December 9, 2008 from 2:00 – 2:30 PM. The number of pedestrians counted was low: six (6) on the west sidewalk and three (3) on the east sidewalk. However one cyclist was observed riding on the east sidewalk during that time period. Therefore pedestrians and cyclists would most likely be able to share the sidewalk.

A striped bicycle lane is recommended for the rest of Cohancy Street, where the direction of traffic changes a few times. Between 155th and 156th Avenues a striped bicycle lane is proposed for northbound Cohancy Street, which would take cyclists to the northern portion of the study area. Bridgeton Street an adjacent southbound street can have a Class 2 bicycle lane for cyclists heading south.

The last blocks of Cohancy and Bridgeton Streets between 156th and 157th Avenues are also recommended for dedicated bicycle lanes, but the traffic direction changes again (Cohancy Street becomes southbound while Bridgeton Street becomes northbound). Refer to Figure 32 at the beginning of the recommendations section of the report for traffic direction.

Installation of directional signage would be necessary to guide cyclists as they travel through this area.

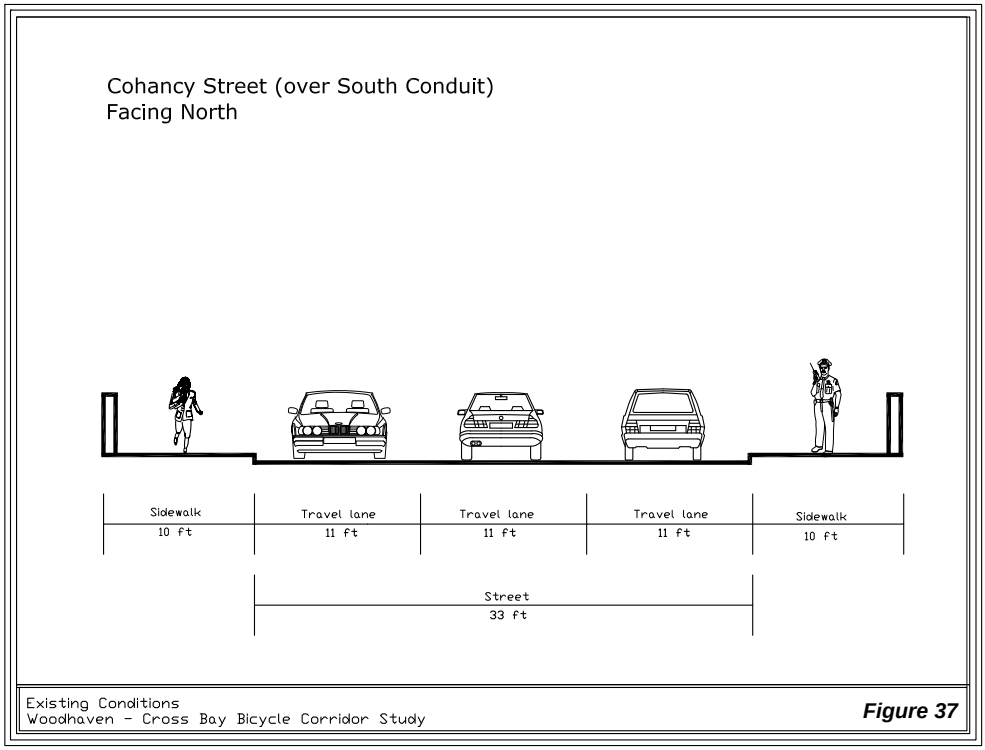


Figure 37

155th Avenue and 156th Avenue

Both of these avenues can connect cyclists to Cohancy and Bridgeton Streets as they transfer from one street to the other. These avenues measuring 50 – 51 feet in width can each accommodate two on-street bicycle lanes, one for each direction of traffic, similar to the existing bicycle lanes on 157th Avenue. Refer to the picture below of the 157th Avenue bicycle lanes as an example.

Existing Bicycle Lanes on 157th Avenue

91st and 92nd Streets

The proposal was to stripe a bicycle lane on 91st and 92nd Streets that would link residents of Howard Beach to the Woodhaven and Cross Bay areas. Since this study launched New York City Department of Transportation has installed 5-foot wide bicycle lanes on these streets, as shown in picture below of 91st Street.

96th and 97th Streets

On-street bicycle lanes are being proposed for 96th and 97th Streets which can take cyclists directly to the waterfront, a fishing and recreational spot called the F.M. Charles Memorial Park. These streets are similar to 91st and 92nd Streets in traffic volume, traffic condition and street geometry; therefore a bicycle lane can be installed without a buffer. Use as a reference following picture of the 91st Street bicycle lane.

Existing Bicycle Lane on 91st Street

FM Charles Memorial Park - recreational spot with baseball field, sitting and fishing area

165th Avenue

165th Avenue has also been selected in this study for a proposed striped bicycle lane, one in each direction of traffic that will lead cyclists directly from/to 91st, 92nd, 96th and 97th Streets to the bicycle lane on Cross Bay Boulevard.

165th Avenue is the last street at the end of the northern portion of the study area just before the Joseph P. Addabbo Bridge (see Figures 44 and 45).

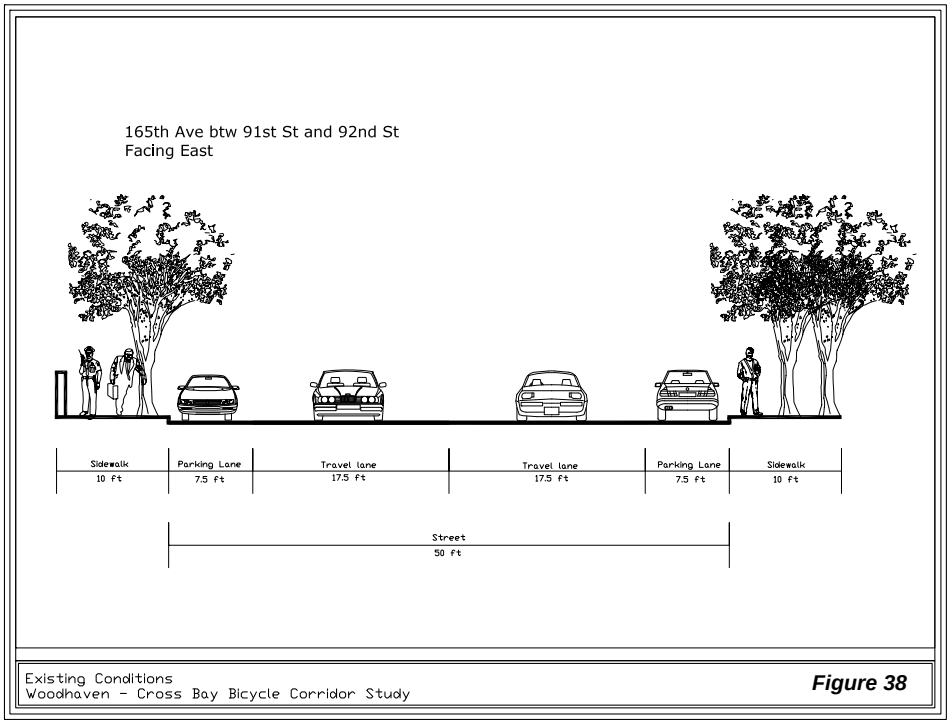


Figure 38

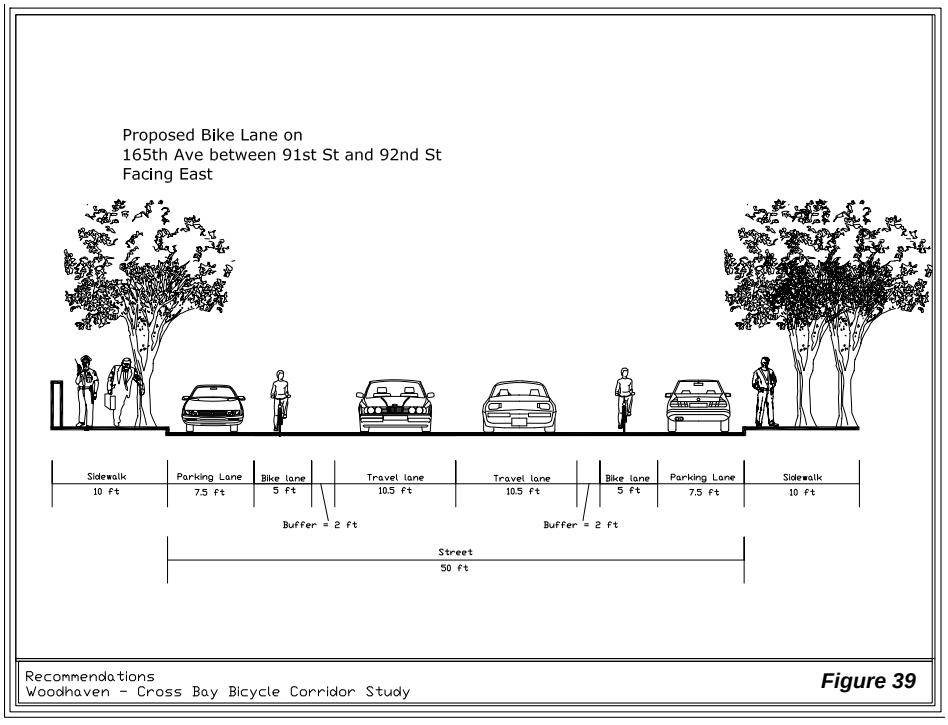


Figure 39

Path along Esplanade

As bicyclists exit the Cross Bay Veterans Memorial Bridge, they have no guidance to find a route to the parks and waterfront area on the Rockaway Peninsula. It is proposed to transform the pedestrian esplanade located between the bridge and the high school's property into a shared use path for pedestrians and cyclists by adding an 8-foot wide two-way bike path south of the existing sidewalk on the esplanade (see picture below).

The esplanade ends at the high school's property. From there the path would be extended across the open space onto the sidewalk where the cyclists would access the street to ride on Beach Channel Drive. At that point bicyclists would also have the option to proceed towards Beach 101st Street to head to the bicycle route on Shore Front Parkway.

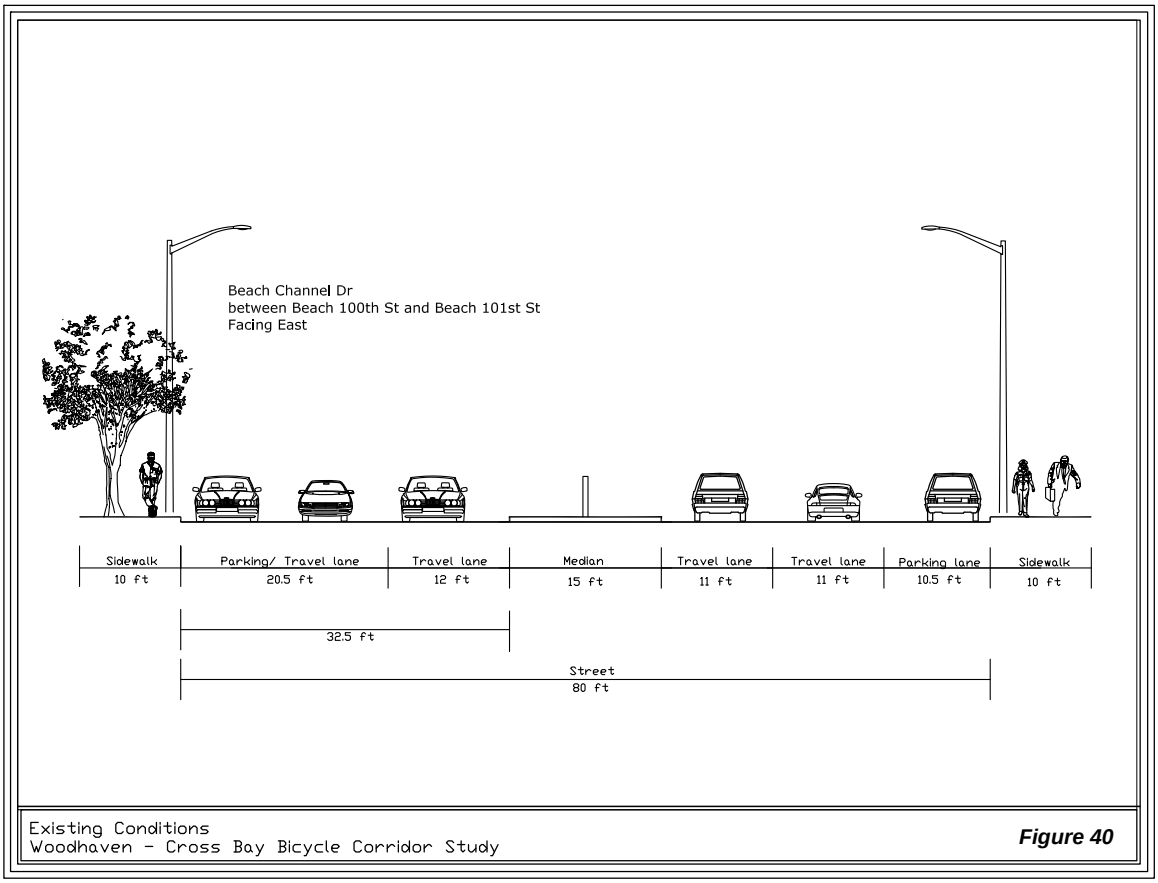
This proposal after several field visits and observations appears to be the best solution. An alternate route from the bridge to the Shore Front Parkway using Beach 94th and Beach 95th Streets was examined, but a high level of conflicts with vehicles exiting and entering the ramps to/from the bridge was observed and created an unsafe transition point for cyclists.

Accessible esplanade located under ramps of Veterans Memorial Bridge

Beach Channel Drive (from Beach 98th Street to Beach 116th Street)

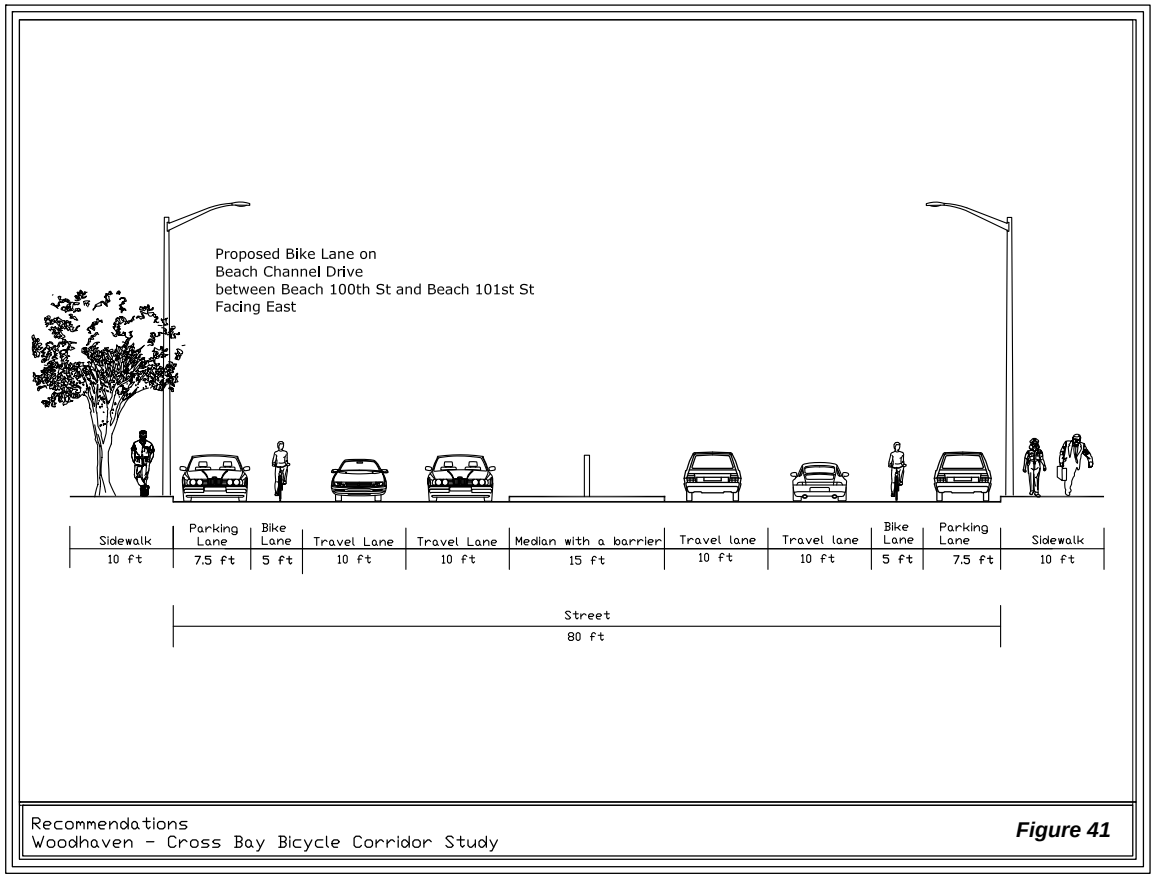
Beach Channel Drive travels along the northern shore of the Rockaway Peninsula from the Cross Bay Veterans Memorial Bridge to Jacob Riis Park. It provides great views of the Jamaica Bay Area and of Brooklyn.

This part of Beach Channel Drive, without the segment between Beach 108th Street and Rockaway Freeway, can be striped with a 5-foot wide bicycle lane in each direction of traffic if the travel lanes are reduced to a width of 10 feet each. Signs and sharrows (pavement markings) would be necessary to inform motorists to share the road with bicyclists. For the segment between Beach 108th Street and Rockaway Freeway, only a signed bicycle route is possible due to the street width (70 - 75 ft) and the median (6 - 12.5 ft). Only 4 feet can be captured, which is below the standards of the 1999 AASHTO (American Association of State Highway and Transportation Officials) Guidelines for bicycle lanes.



Existing Conditions
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 40



Recommendations
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 41

Having a buffer would give cyclists additional protection from vehicles. An alternate proposal for Beach Channel Drive between Beach 98th and Beach 116th Streets (about 20 blocks) would be to make space for a bicycle lane and a buffer by removing the parking lane on both sides of the road. Currently there are some restrictions in terms of parking, but an assessment of the on-street parking would be necessary to determine if there would be any adverse impact on the capacity especially for the north side between Beach 116th and Rockaway Freeway where metered parking and many businesses are located (refer to Figures 46 - 48 for details). Consultation with the local community would also be essential for their approval of this recommendation.

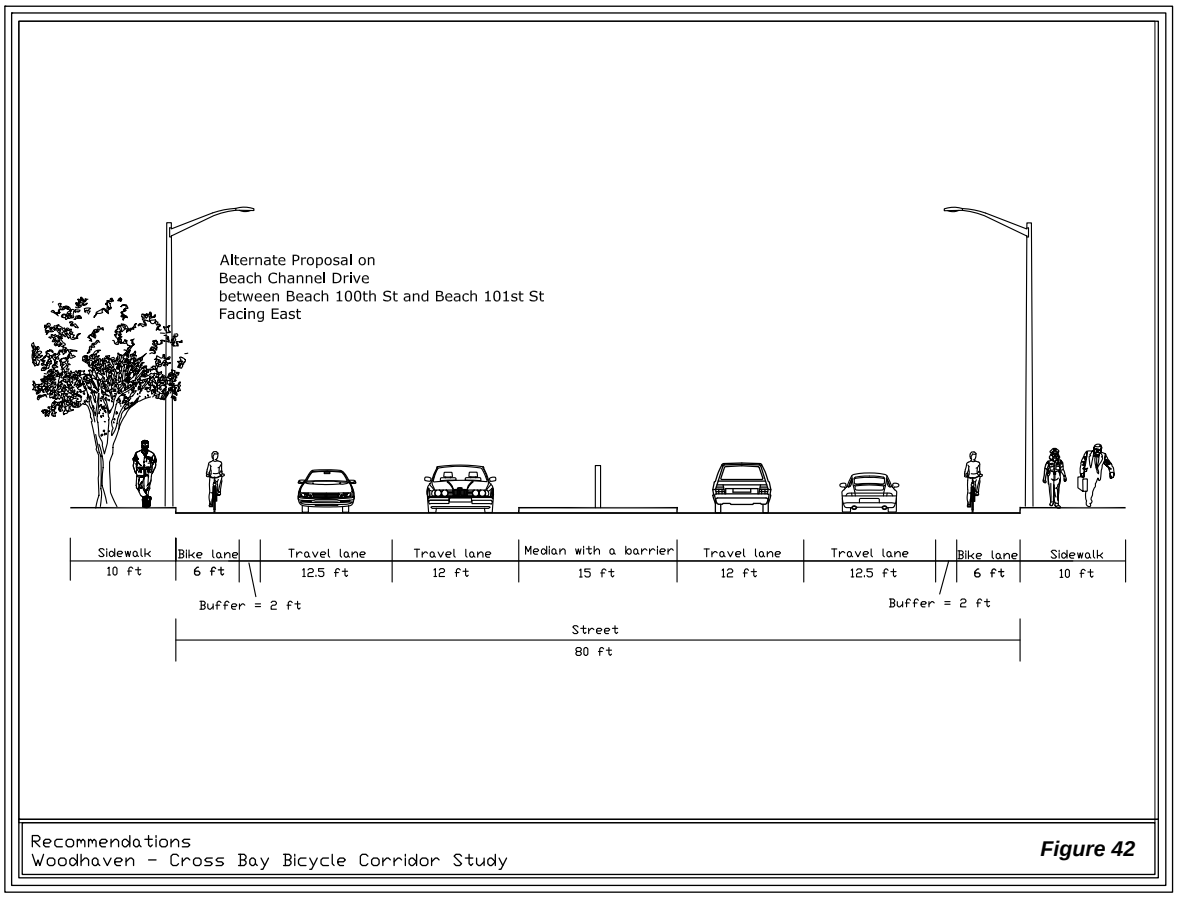


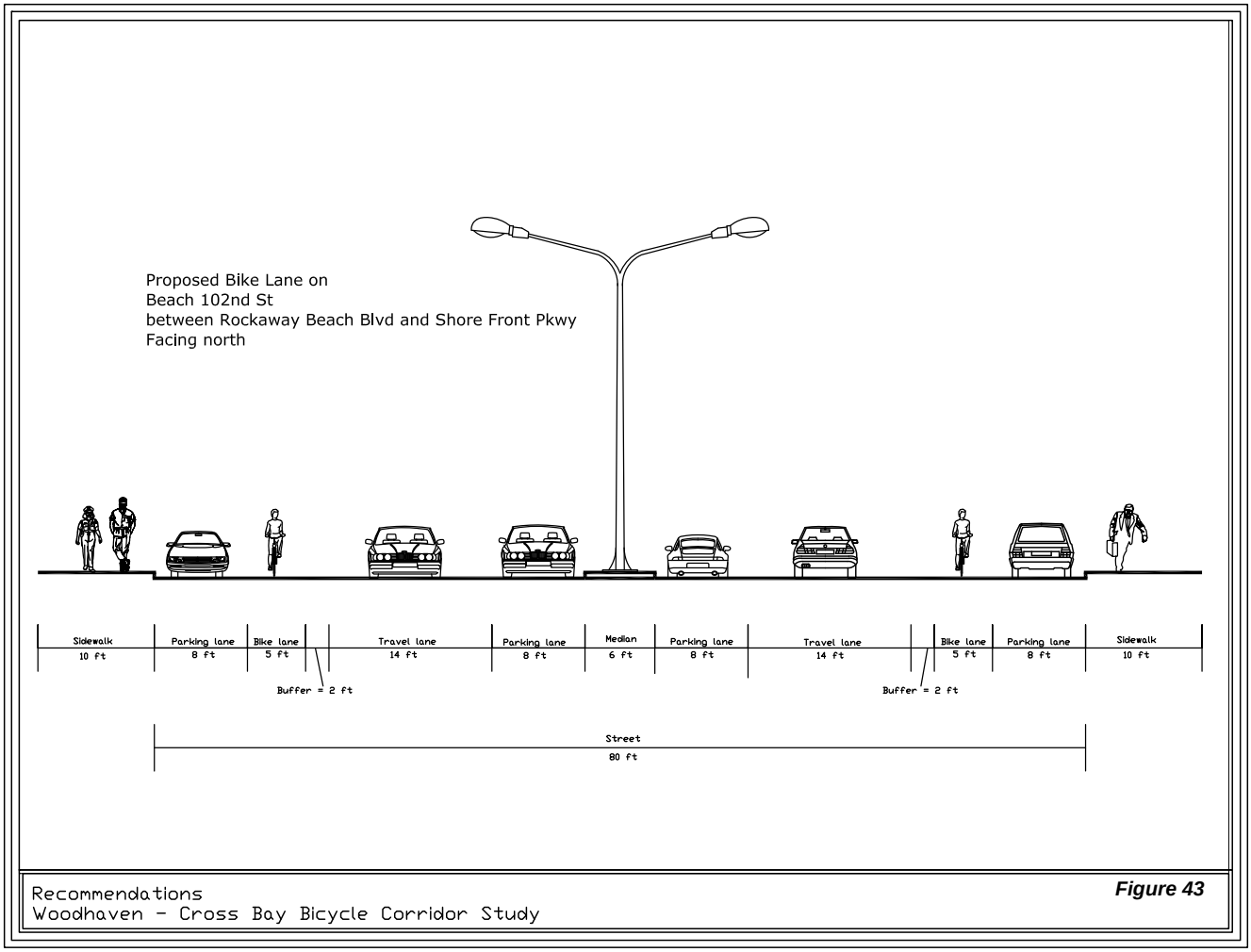
Figure 42

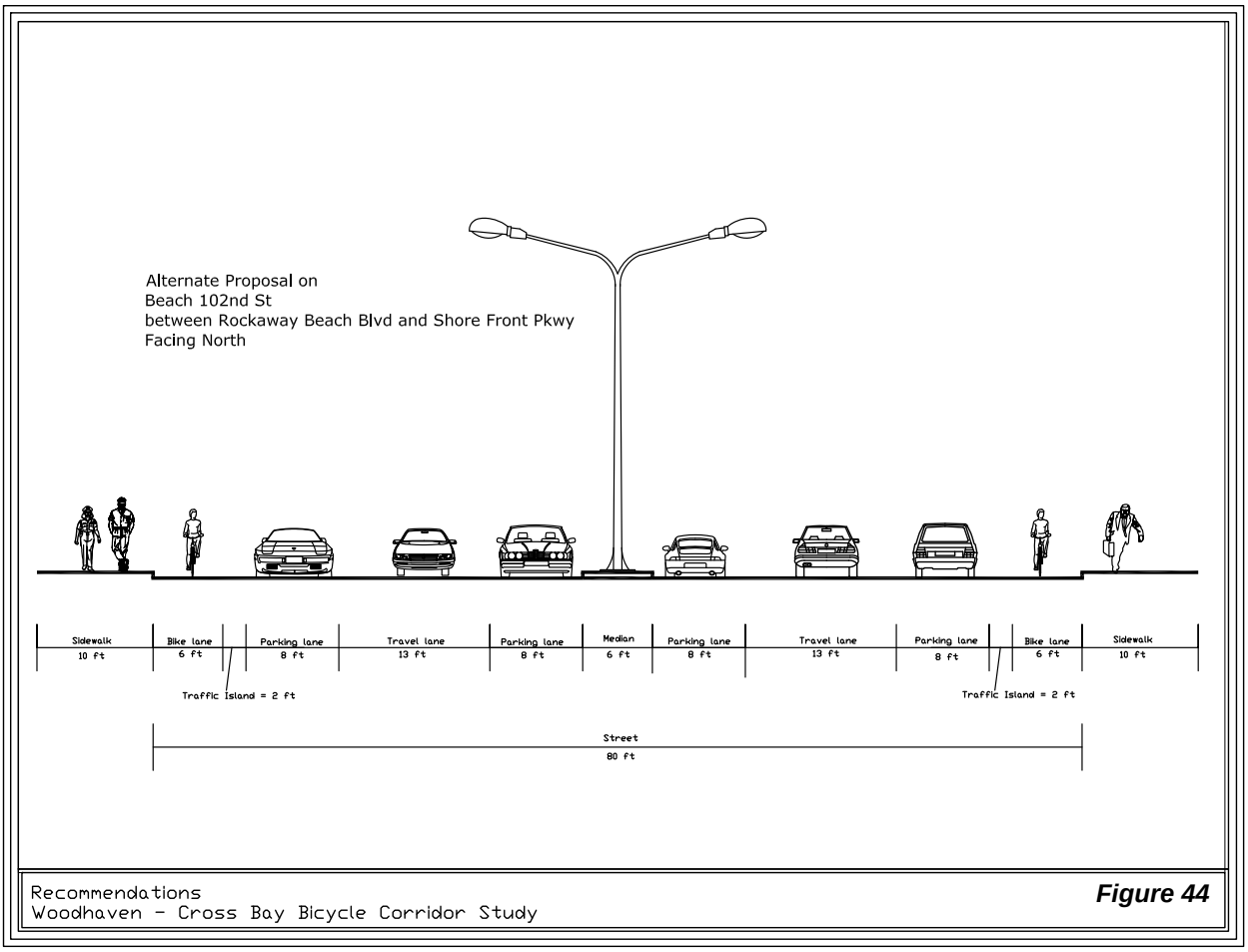
Beach 101st Street and Beach 102nd Street

Beach 101st Street and Beach 102nd Street were selected to provide a connection from the proposed route on Beach Channel Drive to the bicycle lane on Shore Front Parkway. The proposal for these streets is similar to the other one-way streets in the study area with a recommended 5-foot wide bicycle lane to be placed between the parking lane and the travel lane. This new bicycle facility would give bicyclists the option to link from the north side to the south side of the Rockaway Peninsula (refer to Figures 37 - 38 provided in this report as an example).

Beach 102nd Street, south of Rockaway Freeway, changes to a wide two-way street. A bicycle lane for each direction of traffic is recommended (see Figure 49). An alternate proposal for this two-way portion of B. 102nd Street is to install a bicycle lane along the curb on both sides of the road and move the parking lane in between the bike lane and the travel lanes. The parking lane would become a buffer for cyclists and eliminate conflicts between motorists and cyclists as they travel on this segment. See Figure 50 for details. This design treatment would provide cyclists with a separate and protected lane from motorists along this north-south route

To make the transition safer and easier for northbound cyclists traveling from the two-way segment to the one-way segment of B. 102nd St, a bike box can be added at the intersection of Rockaway Freeway and B. 102nd St.





Rockaway Freeway

This roadway was considered for a bicycle lane. The road is 45 feet wide and one travel lane exists in each direction of traffic close to the curb, away from the columns. It has an elevated subway line that runs above it for many blocks. This street is usually deserted due to the structural steel columns that hold up the rail lines and separate Rockaway Freeway from the rest of the neighborhood. The back of buildings, walls and fences generally line this street. In addition, sidewalks provided are narrow or do not exist. Pedestrians often walk down the middle of the street along the columns where the marked traffic islands are located.

This roadway in terms of space available, low traffic volume and limited left turns permitted would be great for a Class 2 bicycle lane, but its lack of attractiveness compared to the other streets in the area is found not to be the best corridor for a bicycle route.

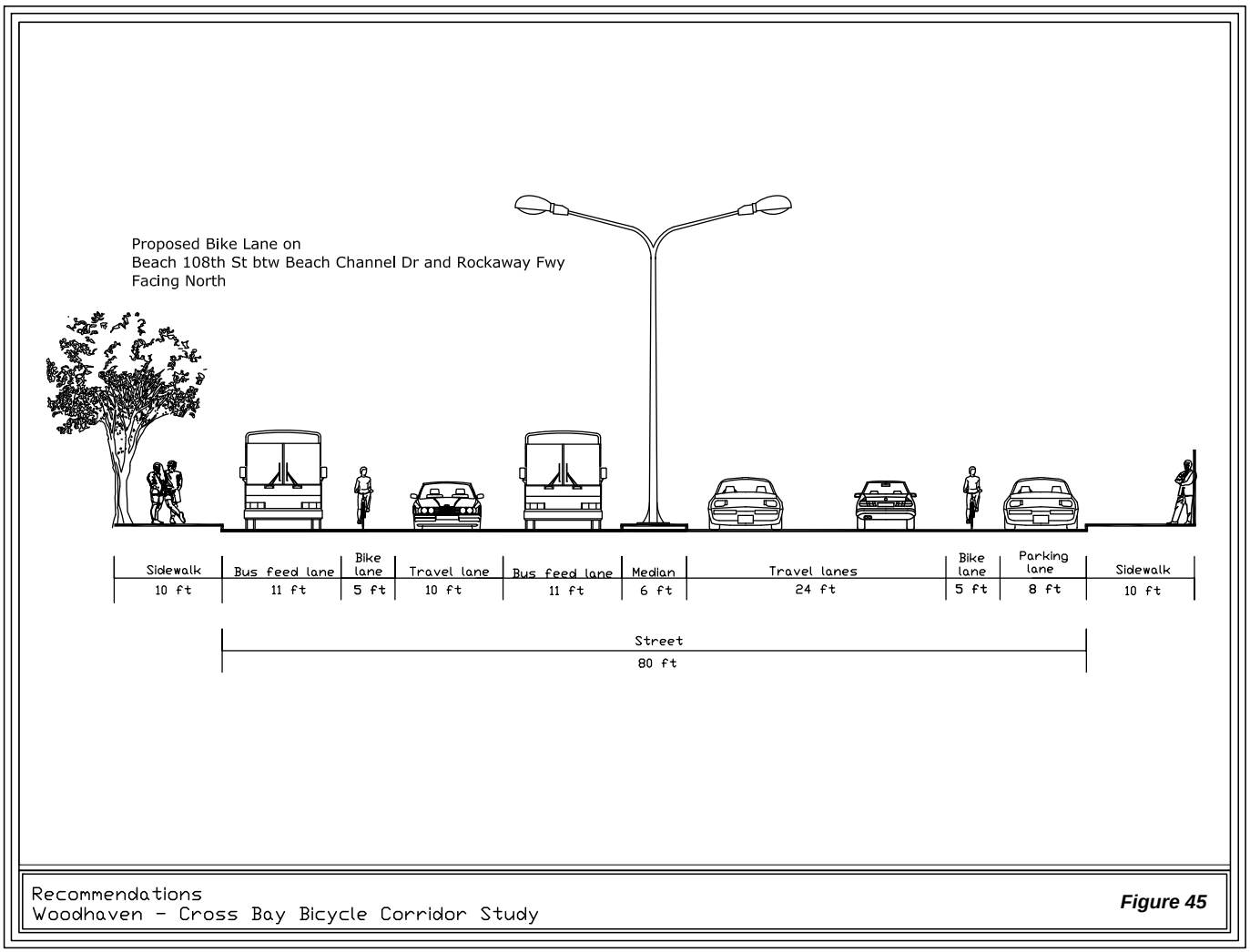
However for one block between Beach 101st and Beach 102nd Streets, information signs are necessary to direct cyclists transferring from the proposed bike lanes on Beach 101st and Beach 102nd Streets.

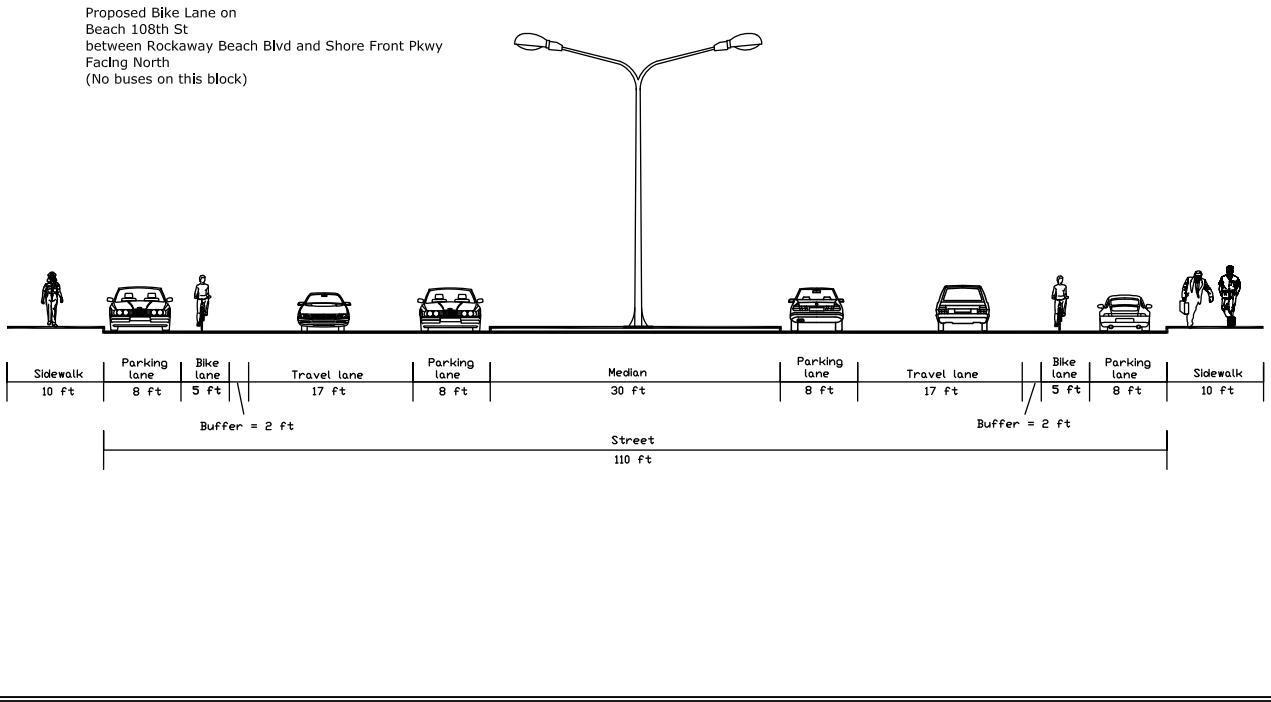
Beach 108th Street

For Beach 108th Street, the installation of a north-south connection is recommended. A bicycle lane per direction of traffic can easily be added to create dedicated facilities for cyclists between the parking lane and the travel lane. See Figures 51 and 52.

An alternate design treatment for B. 108th St between Rockaway Beach Blvd and Shore Front Parkway is to have a separate bicycle lane adjacent to the curb where the parking lane is used as a buffer from motorists.

In addition a bike box for northbound and southbound cyclists at the intersection of Rockaway Beach Blvd and B. 108th St can be useful in order to allow cyclists to move ahead of traffic when the light turns green.





Recommendations
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 46

Beach Channel Drive (from Beach 116th Street to Jacob Riis Park)

The second half of Beach Channel Drive from Beach 116th Street to Beach 143rd Street is also recommended for the installation of a bicycle lane, but it is to be striped in the lane adjacent to the curb. Generally vehicles do not park along this segment. In addition, the few signs that are up indicate "No Parking Anytime". Motorists as they drive on this street remain in the two travel lanes closest to the middle of the road. This practice by motorists leaves the curb lanes on Beach Channel Drive empty and makes it possible to capture 6 feet on each side of the road for the proposed bicycle lanes. See Figure 53.

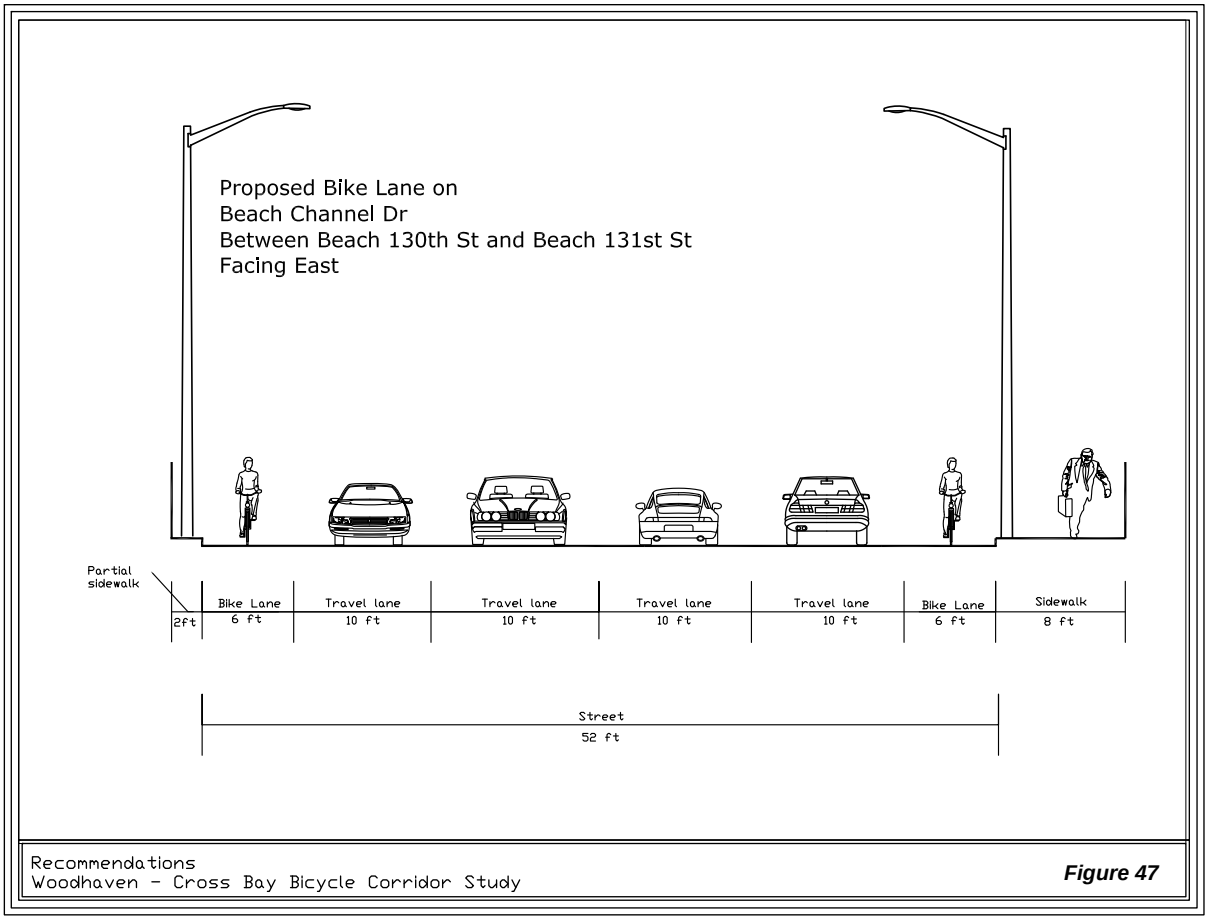
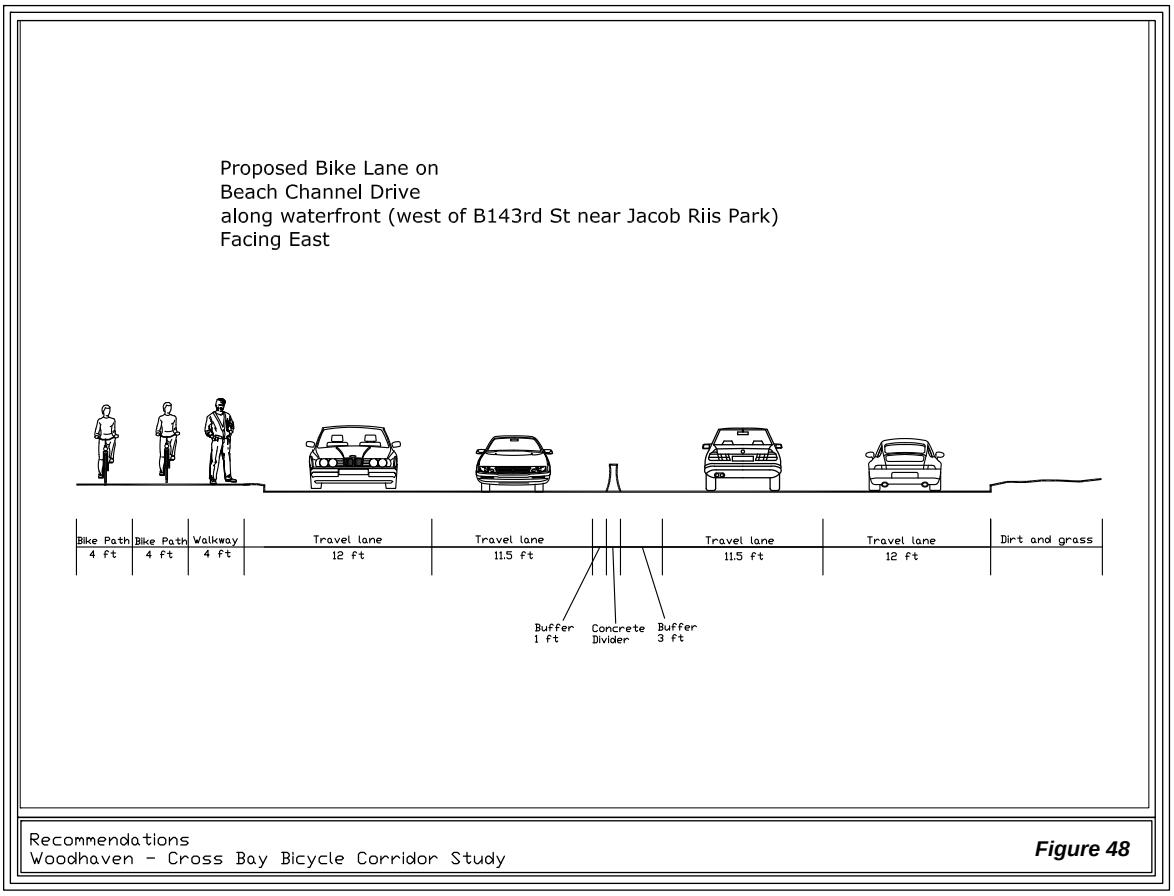
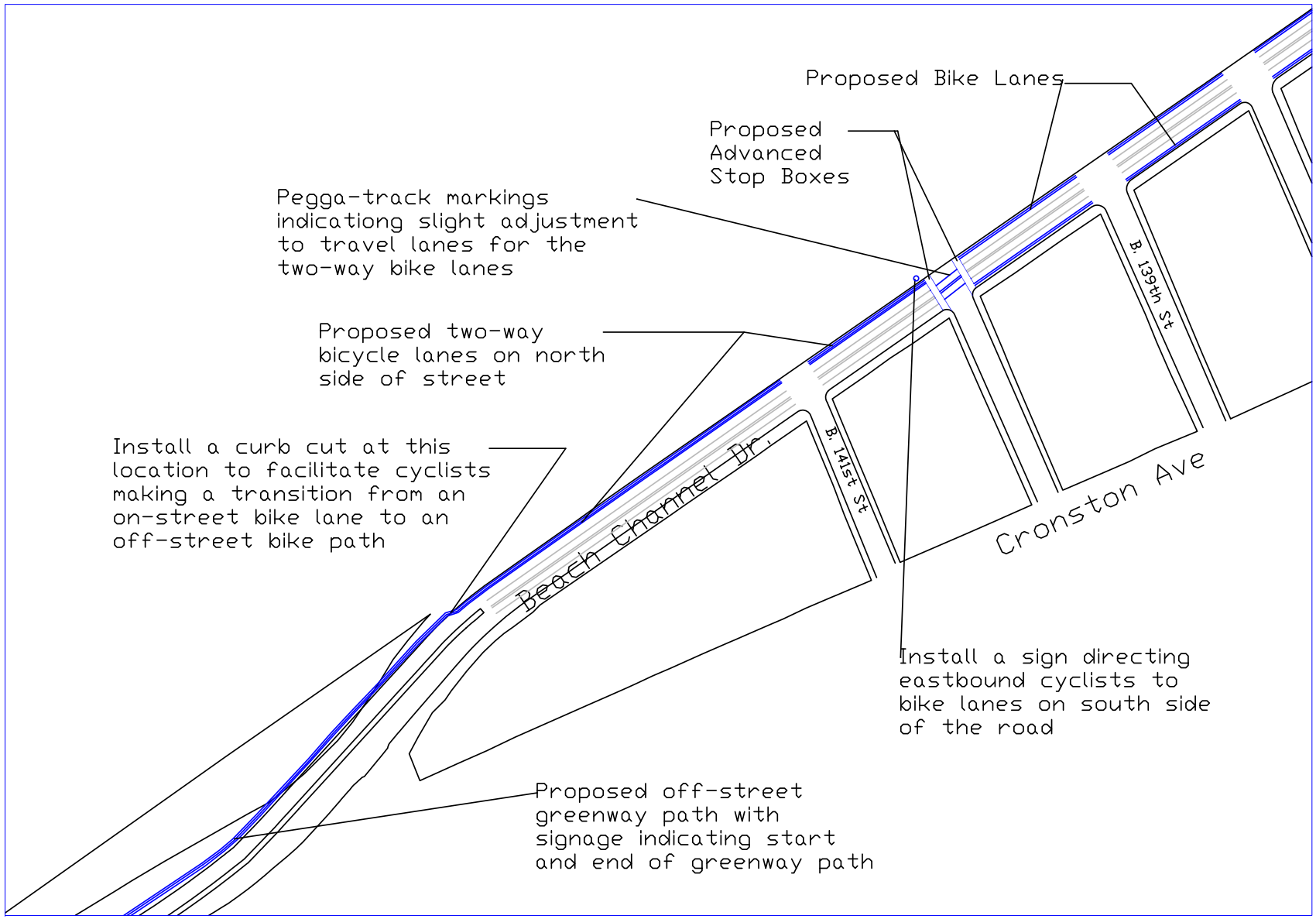


Figure 47

On Beach Channel Drive at B. 140th Street, it is recommended to have the on-street bicycle lanes converge towards the waterfront area on one side of the road (north side). Then a path for bicyclists can be added to the existing pedestrian walkway which starts between Beach 143rd Street and Beach 144th Street. It would be developed as a greenway path with a two-way bicycle path 8 feet wide and a pedestrian path (4 feet wide). See Figure 54 for a sectional drawing of the road. This path would then continue along the waterfront north of Jacob Riis Park, and go through an underpass under the Marine Parkway Bridge before connecting to the paths of Jacob Riis Park at Beach 169th Street. Pegga-

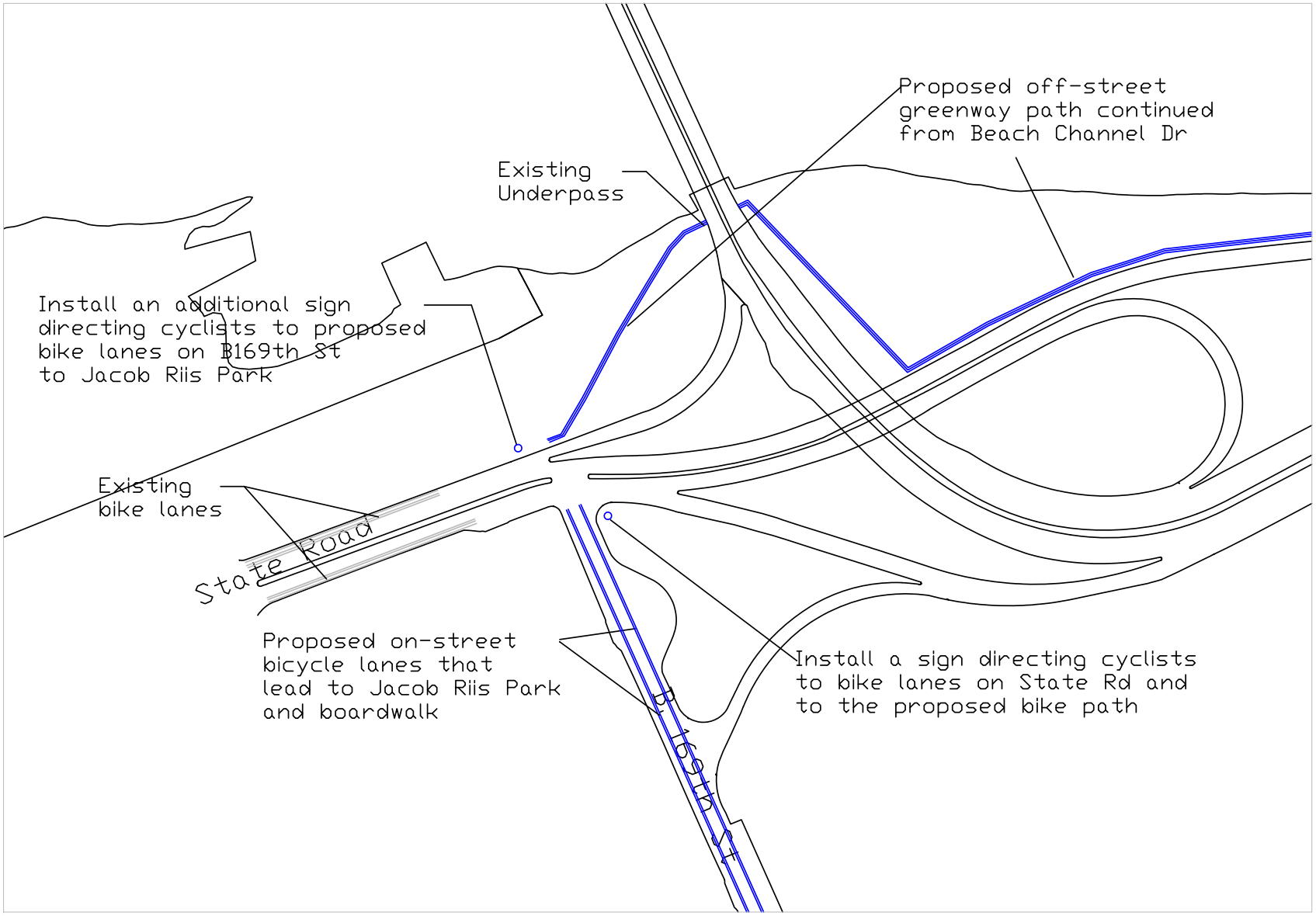
tracked pavement markings and signage are recommended at the intersection of State Road and Beach 169th Street to make motorists aware of cyclists crossing at this intersection. This is the most direct route to the park without having to cross the travel lanes of the roadway connecting to the bridge (refer to Figures 55 and 56 - plan drawings of area for details).





Recommendations - Beach Channel Dr between B. 138th St and B. 145th St
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 49



Recommendations - Intersection of State Road and B. 169th Street
Woodhaven - Cross Bay Bicycle Corridor Study

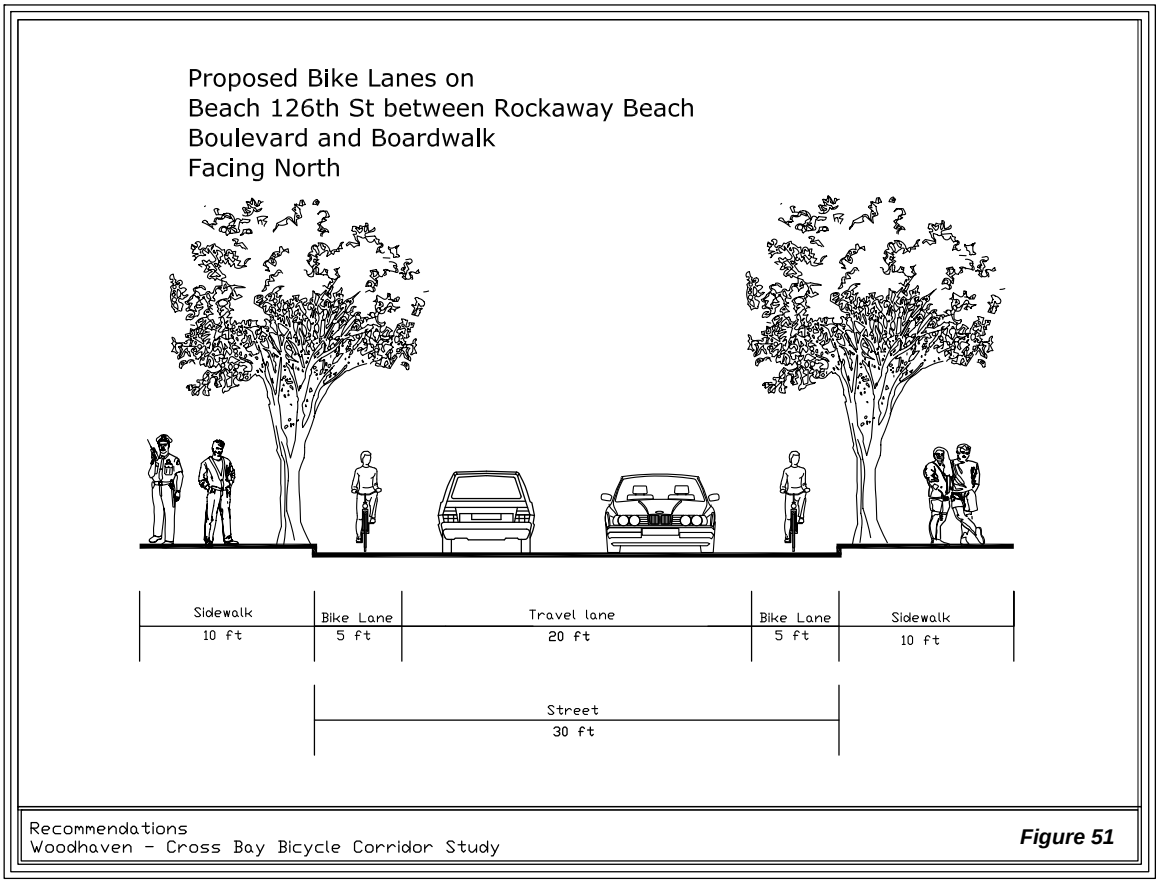
Figure 50

Beach 126th Street and Beach 127th Street

These streets are similar to each other and are proposed as the north-south links between Beach Channel Drive and Rockaway Beach Boulevard for this area. A Class 2 bicycle lane can be added on Beach 126th St and Beach 127th St between the parking lane and the travel lane.

An alternate solution is to have a bicycle lane and a buffer against the curb in place of the parking lane. Since parking is not permitted on these streets from May 15 – September 30 on Saturdays, Sundays and holidays (peak period usage with the nearby beach attraction), it is proposed to make it a year-round regulation for one side of the street since most houses in this residential area have garages and driveways to park their vehicles (see Figures 38 of 102nd Street as an example). This alternate proposal would require the involvement of the local community and the community board prior to implementation.

On the other hand bicyclists on Beach 126th Street between Rockaway Beach Boulevard and the boardwalk can ride in both directions with the "No Parking Anytime" signs posted on both sides of the street. Five-foot wide bicycle lanes can be striped against the curb in each direction and sufficient space would be left for vehicular traffic (See Figure 57 below).



Rockaway Beach Boulevard

A proposal for Rockaway Beach Boulevard from Beach 126th Street to Beach 149th Street is to have a two-way striped bicycle facility and to place each bicycle lane between the bus/ parking lane and the travel lane (see Figure 58 and 59 for existing and recommended conditions).

As an alternate solution, it is recommended for this segment of Rockaway Beach Boulevard to stripe a bicycle lane in each direction of traffic and to place them adjacent to the landscaped center median. This would eliminate conflicts between cyclists and buses pulling in and out along this roadway to drop off or pick up passengers. It is highly recommended in this situation to put in pigmented bicycle lanes along this route to visually define the bicycle facility for motorists and cyclists (see Figure 60).

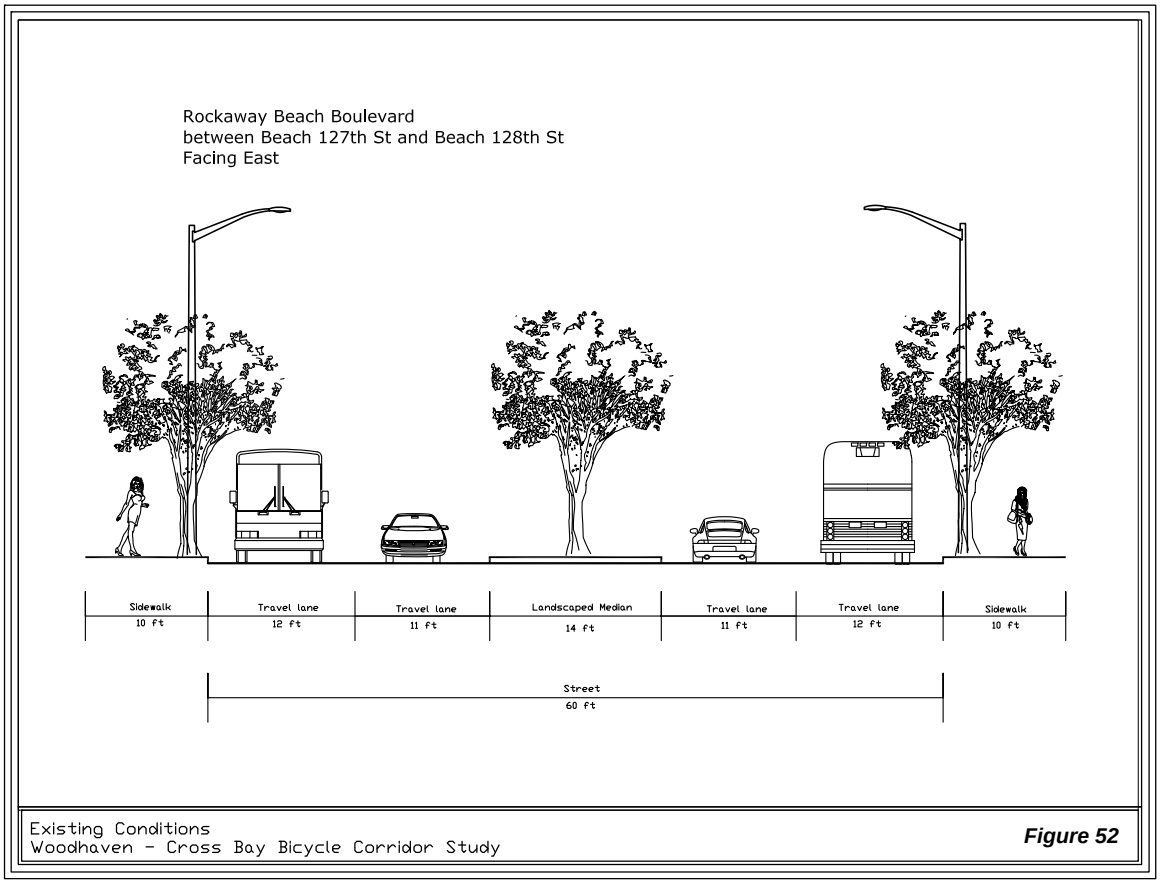
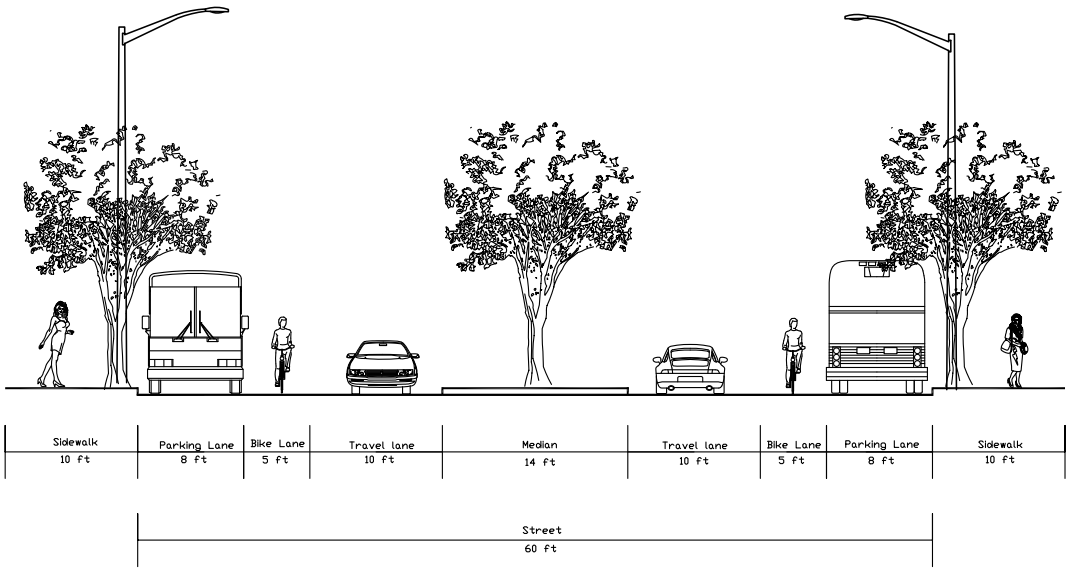


Figure 52

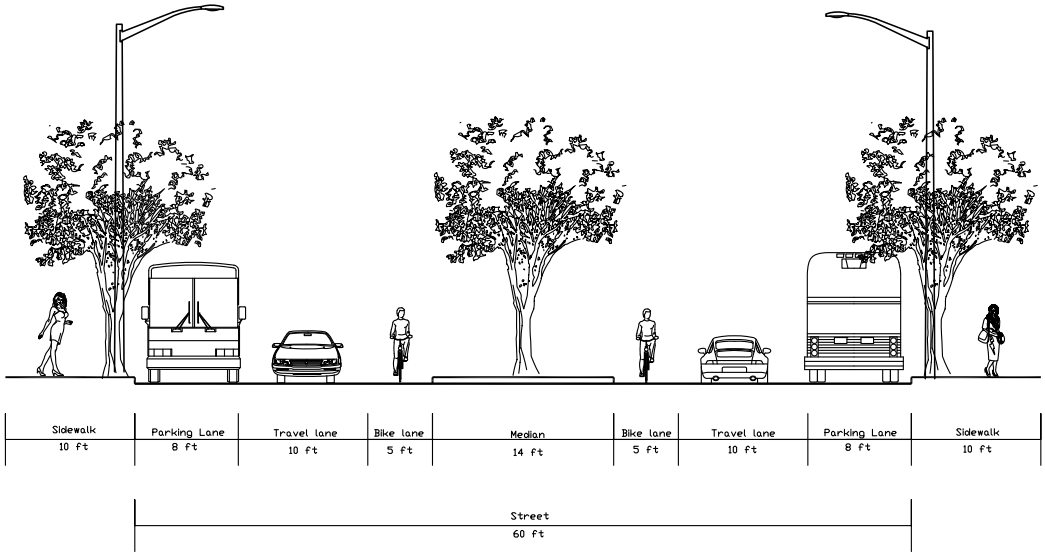
Proposed Bike Lane on
Rockaway Beach Boulevard
between Beach 127th St and Beach 128th St
Facing East



Recommendations
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 53

Alternate Proposal on
Rockaway Beach Blvd
between Beach 127th St and Beach 128th St
Facing east



Recommendations
Woodhaven - Cross Bay Bicycle Corridor Study

Figure 54

Conclusion

The Woodhaven – Cross Bay Bicycle Corridor Study is a first step towards the implementation of a series of bicycle routes for cyclists within the area of study and to link the residents of Woodhaven to the Cross Bay area with connections to local parks, the Shore Parkway Greenway path and the Rockaway Beach area.

This study analyzed the existing conditions of the roadways considered for a bicycle facility including a level of service analysis, bicycle accidents analysis etc. Problems were identified within the area of study in terms of accessibility and connectivity to the bicycle network. Recommendations were made to build on the existing network and create links for cyclists wanting to travel to the different and many attractions of the study area.

As a next step, further assessment is necessary to determine the feasibility of the proposed bicycle facilities. New York City Department of Transportation and the New York City Department of Parks and Recreation which are the implementing agencies will review and further evaluate the recommendations of this study. In addition, the New York City Department of City Planning will work in coordination with the community and any relevant agencies towards the implementation of the proposed bicycle routes. Funding will be required and sought for the execution of this project.