7.2.2 Community Streets

Plans for Community Streets were developed based on the functions of streets discussed in the Street Management Framework in *Section 5.3.2.* As discussed in *Section 5.3.*2, overall objectives for Community Streets are to:

- Facilitate pedestrian crossings,
- Improve the street environment for pedestrians, bicyclists, businesses and residents,
- Discourage excessive vehicle speeds and aggressive driving, and
- Improve access to businesses and reinforce neighborhood commercial cores.

7.2.2.1 Columbia Street

Columbia Street and Van Brunt Street are the subject of a separate ongoing planning effort by NYCDOT and the Department of Design and Construction and therefore are not addressed as part of this strategy. However, any plan for the Columbia Street/Van Brunt Street corridor should explore the possibility of building a pedestrian/bicycle pathway that connects Red Hook to the planned Brooklyn Bridge Park.

7.2.2.2 Court Street

As Court Street is an important neighborhood center running through the heart of the study area, its management is of critical importance. Like many Community Streets, it serves multiple functions: it is an important retail destination over much of its length, it serves as an important commuter traffic route in the evening peak period and it is an important bus route. It carries 11,900 vehicles per day (vpd). While the idea of eliminating commuter traffic is an attractive one for those who use Court Street for other purposes, this is not feasible in the scope of a traffic calming effort such as this. Accordingly, the focus must be on minimizing the adverse effects of such traffic on the street and on ensuring that the street's other functions are not compromised by this traffic. At the same time, it should be recognized that the presence of traffic, in itself, is not necessarily uniformly negative. Some of the most attractive and vibrant shopping streets in New York City carry plenty of traffic. Parked vehicles on a shopping street provide pedestrians with an increased perception of safety as they create a buffer between the sidewalk and travel lanes. So, as everywhere, a balance must be struck between the needs of the various users of the street in advancing these plans.

Figure 7.5 Court Street: Buses stopped far from curbs force passengers to board in street

Figure 7.6 Court Street: Buses partially blocking the travel lane encourage vehicles to straddle two lanes while passing

In developing ideas for Court Street, the starting point was the aim to retrieve as much road space as possible without compromising traffic capacity or eliminating on-street parking. Preservation of the on-street parking supply is a sensitive issue throughout the study area – initially a trial of neckdowns was suggested at several locations on Court Street as part of the pilot program (see *Section 6*), but these were rejected by Community Board 6 because of nearby merchants' concerns about lost parking.

In addition, evaluation of the current operations of Court Street showed that buses were experiencing the kinds of problems that beset them on many roads of this type. Buses in many cases do not pull into designated bus stops either because illegally parked vehicles block the stops

or because bus drivers do not feel that they will be able to pull back into the traffic stream when leaving the stop. As a result, buses commonly stop either in the rightmost of the two travel lanes or are pulled only partially into the bus stop. This results in passengers having to walk into the road to board and exit buses. Moreover, when a bus partially pulls into a bus stop following drivers are tempted to pass it by creating two lanes of traffic in less than two lanes of remaining road space.

A solution to this problem is to consider the issue of travel through the Court Street corridor in a broader context. The corridor's existing traffic capacity, which may be defined as the number of vehicles able to travel its length in the peak hour, should not be compromised. In heavily developed urban areas such as Downtown Brooklyn's, this capacity is governed by the capacity of the most congested intersections. In the case of Court Street, the most congested intersections are at Atlantic Avenue and at Hamilton Avenue. Provided the amount of traffic that reaches these intersections in the peak hour is not compromised, the traffic efficiency of the corridor is maintained.

It is in this context that bus bulbs have been included in the strategy for the Court Street corridor. Bus bulbs are curb extensions at bus stops that are approximately as long as a single bus and that allow buses to pick up and drop off passengers without leaving the travel lane. Following traffic in the rightmost travel lane is forced to wait behind the bus while passengers are dropped off and picked up. The benefits for buses and bus passengers are obvious. Buses would no longer have to negotiate exit and entry from the traffic stream and therefore benefit from less problematic operations and improved schedule adherence. Bus passengers would be able to enter and exit buses without having to walk into the road. Other road traffic would benefit as well. Traffic traveling the length of Court Street would take no longer than it does currently as the corridor's capacity and travel time along it are governed by the operations of the intersections at its two ends. Safety benefits would accrue from the improved certainty for vehicles following buses – at no point would drivers be tempted to squeeze past a stopped bus partially pulled into a bus stop.

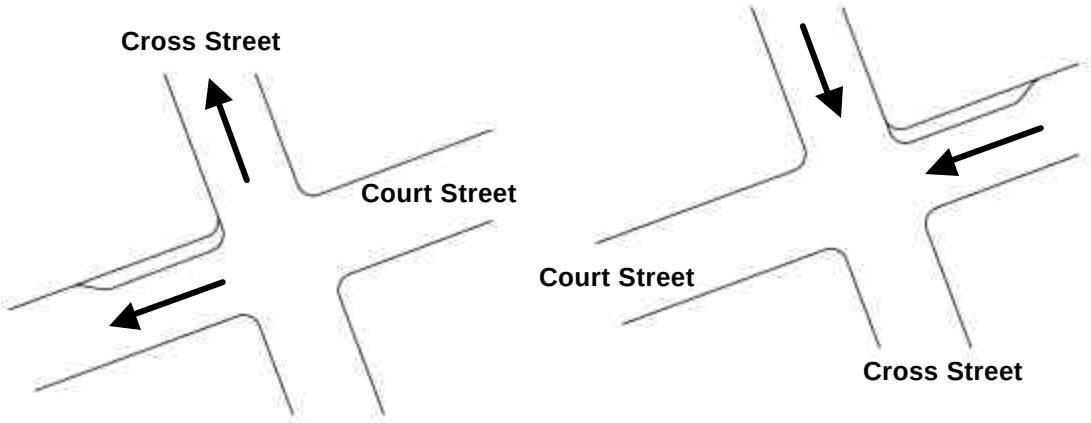
Care must be taken in the placement of bus bulbs. It is important that drivers looking to turn right from Court Street not be tempted to pull past a stopped bus and cut in front of it to turn right. The team initially suggested placing all bus bulbs upstream of intersections of Court Street with streets running one-way eastbound (where right turns are impossible), in order to avoid this problem. In their discussions with the Community Board 6 Transportation Committee, the relative merits of bus stops on the near side and far side of intersections were reviewed. It was agreed that on balance far side bus stops are most appropriate for New York City because of New Yorkers' tendency to cross the road immediately on exit from the bus – a move that could be dangerous if passengers do so in front of a stopped bus. But given that this will be less disruptive since existing bus stop locations can be retained, it was deemed appropriate that the bus bulbs should be placed to the far side of intersections (see *Figure 7.7*).

A final benefit of bus bulbs is that they can increase the number of legal parking spaces in Court Street. Existing designated bus stops are 90 ft long; a bus bulb can be shorter than this because no room needs to be provided for buses to pull in or out of stops. A typical bus bulb design (and the one adopted for this strategy) is approximately 70 ft long. In general, this creates a parking space wherever a bus bulb replaces an existing curbside bus stop.

However, it should be noted that illegal standing at a bus bulb, if it forces the bus to stop in the outer travel lane, could result in the blockage of all travel lanes. This may in turn result in motorists making dangerous and illegal maneuvers in order to avoid the blockage - in other words, a worse operational condition than exists today. Bus bulbs are still recommended because they are designed to discourage illegal standing, and because the potential for infrequent illegal use exists with any traffic control device and thus should not be used as an argument against traffic calming device that will result in better and safer roadway operations.

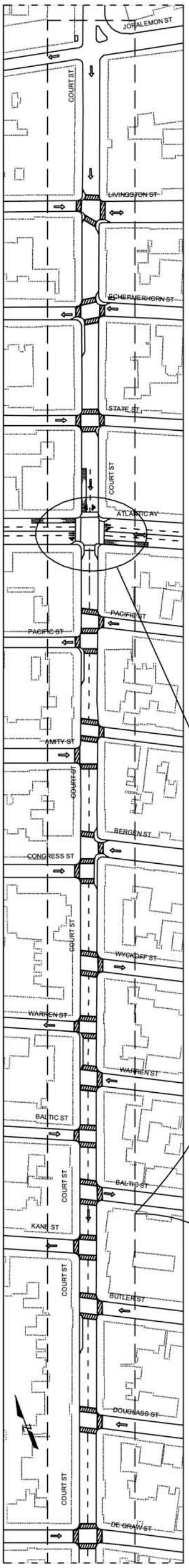
Elsewhere on Court Street, a number of neckdowns aimed at further retrieving road space for use by pedestrians are part of the strategy. As with the bus bulbs, certain intersections can be narrowed because turns are prohibited due to the pattern of one-way streets.

Figure 7.7 Far side (left) and original near side (right) design of Court Street bus bulbs. The far-side design was chosen due to concerns about the safety of exiting passengers.



COURT STREET (COMMUNITY STREET)

JORALEMON STREET TO HAMILTON AVENUE



ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

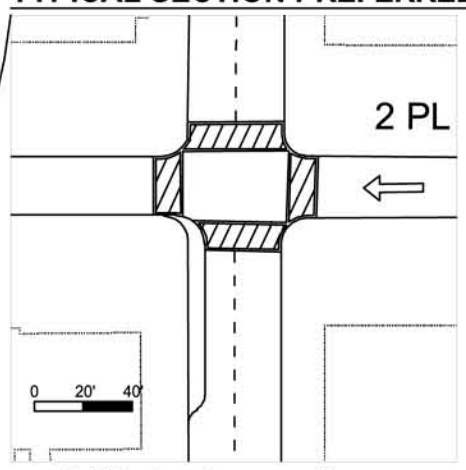
- With the high number of pedestrians, a primary action is to install neckdowns on side streets where possible to minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Install bus bulbs on the portion of Court Street that the B75 uses. These bus bulbs will have localized pedestrian safety and transit benefits.
- A distinct streetscaping program could be implemented.

Overview of Operational Improvements

- Modify signal timing and phasing to maximize protected pedestrian phases where possible.
- Specific improvements include an exclusive pedestrian phase with no vehicular conflicts, Leading Pedestrian Intervals (LPI) to give pedestrians a head start free of vehicular conflict, longer crossing times and protected left turn phases to further reduce vehicular conflicts.

- *Add neckdowns*
- *Add a dedicated WB left-turn lane and phase*
- *Add LPI*
- *Increase pedestrian time at Atlantic Ave in the PM peak period*

TYPICAL SECTION PREFERRED OPTION:



Pros:

- Enhance benefits for pedestrians, transit users, and bus drivers
- Reclaim space for pedestrians
- Create safer crossing areas
- Create more parking area or a loading zone

Cons:

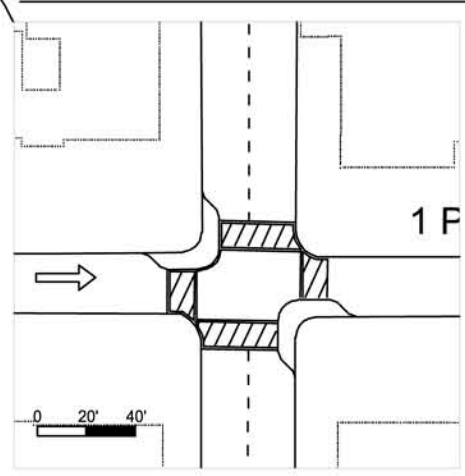
- Minor reduction in street capacity

NOTE: Relocating bus stops contingent upon MTA approval.

- *Add textured crosswalks*
- *Add neckdowns where possible*

1A. Add bus bulbs at appropriate locations

TYPICAL SECTION DISCARDED OPTION:



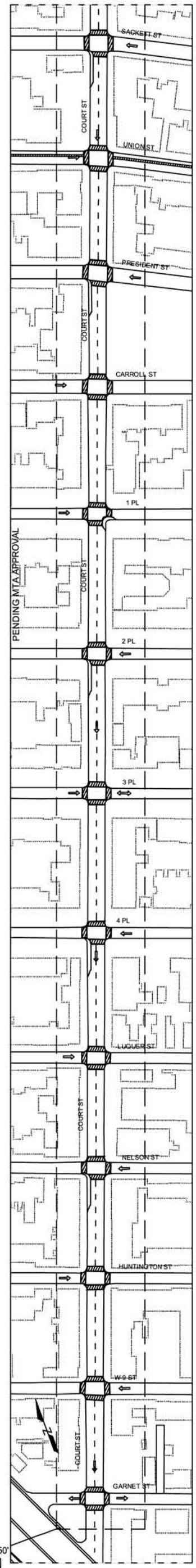
Pros:

- Create safer crossing areas

Cons:

- Reclaims less streetpace for non-auto uses

- *Add textured crosswalks*
- *Add neckdowns where possible*



7.2.2.3 DeKalb Avenue

DeKalb Avenue is a Community Street with a residential focus and frequent bus service. Community-identified concerns include controlling the speed of vehicles on DeKalb Avenue, especially during off-peak periods. Reduced (25 mph) progression speed was tested as part of the pilot program and remains in place. This measure could be augmented with clear signage warning drivers of the timing change, as noted in *Section 6.* A Class II bicycle lane is recommended on the left hand side of the road west of Cumberland Street. This lane can be accommodated in the existing cross-section without removing parking or travel lanes. East of Cumberland Street, the roadway width is narrower (40 feet). For this segment, a Class III bicycle route is recommended. This is consistent with the New York City Bicycle Master Plan, which currently shows DeKalb Avenue as a Class III bicycle route.

Neckdowns are also recommended on DeKalb Avenue as a means of creating additional pedestrian space and facilitating pedestrian crossings. Bus bulbs are recommended at each of the bus stops. The benefits of bus bulbs are discussed in *Section 7.2.2.2* above. As on Court Street, the bus bulbs recommended for DeKalb Avenue are located on the downstream (far) side of the intersection. This is consistent with NYCT policy, which holds that downstream bus stops prevent passengers from crossing in front of the stopped bus. Because of these concerns, a bus bulb is not recommended for the near side bus stop at Flatbush Avenue.

7.2.2.4 Fulton Street

Fulton Street's angled orientation with respect to the street grid in this area creates unusual intersections and opportunities to reclaim road space. A pilot program treatment was installed at South Oxford Street on the north side of Fulton Street. By itself, this measure was successful at changing the image of the intersection, but it forms only part of a larger scheme to reclaim road space and rationalize traffic movement at the intersection of Fulton, Greene and South Oxford Streets. The plan calls for substantial extensions of the sidewalk on the southern side of the intersection that improves traffic control and provides a much safer and more orderly pedestrian environment. This work should maintain loading access for storefronts along Fulton, and would not compromise access to the Brooklyn Academy of Music (BAM) complex. The pilot treatment at South Oxford Street included a raised crosswalk as part of the gateway treatment protecting the residential area to the north. The crosswalk was removed accidentally as part of routine road maintenance, but it is recommended that it be reinstalled. A similar treatment is recommended at Fulton Street's intersection with Lafayette Avenue and Fort Greene Place. The objective of this treatment is to promote driver discipline for east-west traffic, and to prevent sweeping turns onto Fort Greene Place.

A final recommendation for this corridor involves reversing the directions of Hudson Avenue (currently one-way northbound) and Rockwell Place (currently one-way southbound). Hudson Avenue intersects Fulton Street just east of its intersection with Flatbush Avenue. Currently, eastbound vehicles wishing to turn left onto northbound Hudson Avenue can cause traffic to back up all the way down the short block to Flatbush Avenue. Shifting this turning movement one block east, to Rockwell Place, would alleviate this condition. This improvement to traffic movement and safety for all road users on a Travel Street (Flatbush Avenue) and a Community Street (Fulton Street) would come at the expense of the small number of drivers wishing to exit Hudson Avenue onto Fulton Street, who would experience longer wait times trying to turn onto Fulton Street.

The Fulton Street/Flatbush Avenue intersection is discussed in detail in *Section 7.2.1.6*.

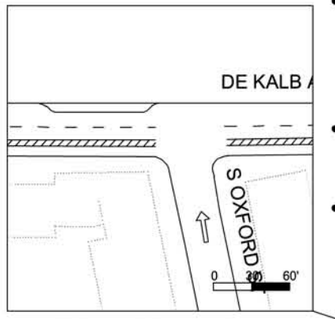
DEKALB AVENUE (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

General Improvement Strategies

- Reduce traffic speeds to levels appropriate for a community street (25 mph) by lengthening the signal offsets on DeKalb.
- Neckdown busy intersections to shorten crossing distance, improve pedestrian visibility, and encourage vehicles to turn at lower speeds.

PREFERRED TYPICAL SECTION:



- *Add neckdowns where possible*

1A *Add bus bulbs*

1B *Add a 5' Class II (on-street) bicycle lane on the left hand side*

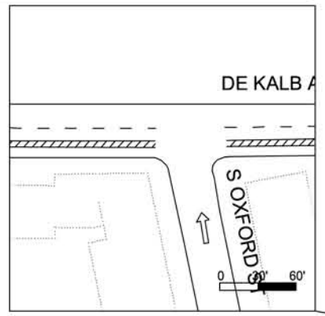
Pros:

- *Enhances benefits for pedestrians, transit users, and bus drivers*
- *Provides improved bicycling facilities*
- *Creates more parking or a delivery zone compared to a regular bus stop*

Cons:

- *Minor reduction in capacity*

DISCARDED TYPICAL SECTION:



2A *Add a 5' Class II (on-street) bicycle lane on the left hand side*

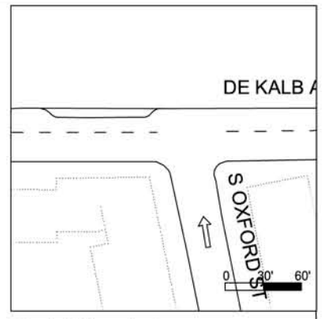
Pros:

- *Provides better bicycling facilities*

Cons:

- *No improvement to transit operations*

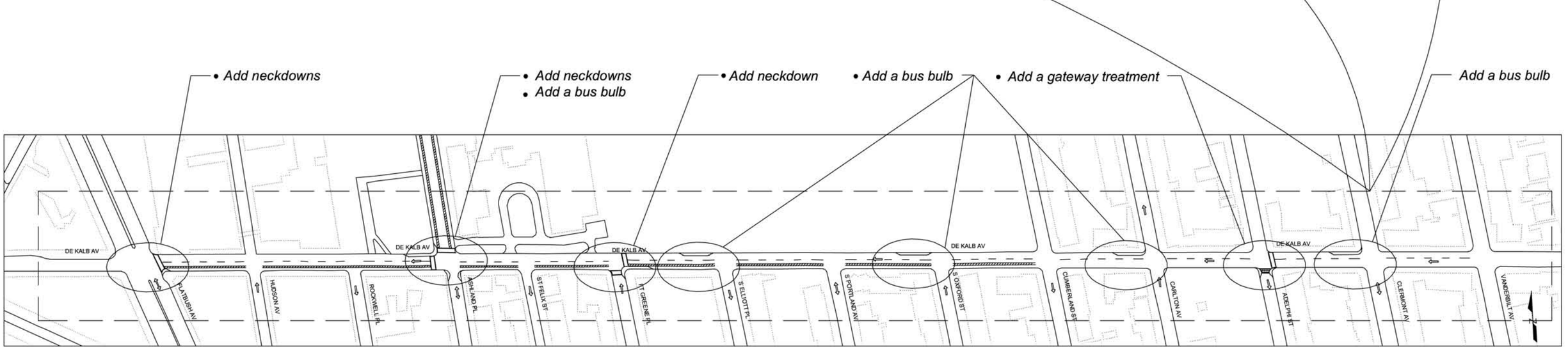
DISCARDED TYPICAL SECTION:



3A Add bus bulbs

Pros:

- *Enhances benefits for pedestrians, transit users, and bus drivers*
- *Creates more parking or a delivery zone compared to a regular bus stop*



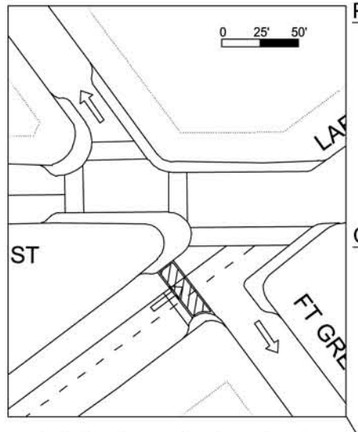
FULTON STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Use neckdowns and gateways to reduce crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Prevent vehicles turning onto eastbound Fulton St from cutting across the westbound travel lane by installing a raised median island in Fulton St between Flatbush Ave and Hudson Ave, separating the east and west travel lanes.
- Prevent through movement on Fort Greene Pl by extending the west curb of Fort Greene Pl into the intersection as a triangle. Build a new crosswalk connecting this triangle to the north curb of Fulton St between Fort Greene Pl and Lafayette Ave.
- Reclaim roadspace and discourage cut-through traffic by building medians, neckdowns, and curb widenings.

PREFERRED TYPICAL SECTION:

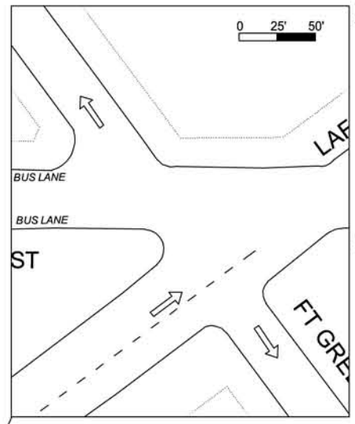


Pros:
- Enhanced pedestrian environment
- Better channelization of traffic
- Prevents cut-through traffic movement

Cons:
- Some loss of parking

- *Install gateway treatment and neckdowns where possible*
- *Extend curbs and reclaim roadspace*
- *Add LPIs where possible*

DISCARDED TYPICAL SECTION:



Pros:
- Enhanced pedestrian environment
- Better channelization of traffic
- Prevents cut-though traffic movement
- Improved transit operations

Cons:
- Some loss of parking
- Less streetscape reclaimed than in option 1
- No buffer between pedestrians and traffic

- *Add LPIs where possible*
- *3A Add bus lanes*

- *Add bollards around plaza*
- *Install raised median*

- *Reverse street direction on Hudson Ave*
- *Move stop bar*
- *Paint crosswalk*

- *Extend curbs*
- *Install neckdowns and gateway treatments*

Note: Angled Parking Requires DOT Analysis

7.2.2.5 Jay Street

Jay Street presents a number of challenges. Between Fulton Street and Tillary Street it carries heavy pedestrian volumes bound for the MetroTech area, serves multiple bus routes, carries a Class III (designated, not striped) bike route, and carries private and service vehicle traffic. Two options for this section of Jay Street were investigated:

- a configuration that introduced a median, the aim of which is to better direct traffic and make crossing easier for pedestrians; and
- a configuration with a 11 foot curbside bus lane between 7am and 7pm, a marked 5 foot Class II (on-street) bike lane and a regular 10 foot travel lane in each direction. This latter option would extend the transit-friendly environment of Fulton Mall north to Tillary Street.

NYCDOT's bicycle planner and the NYCT Bus Operations office endorsed the second option, since it would improve the level of service for cyclists and bus riders, two groups who suffer from Downtown Brooklyn's current traffic conditions. However, consultation with Community Board 2 revealed a preference for the first option, as concerns were raised with the idea of dual bus and bike lanes, and some parking spaces would be lost just south of Tillary.

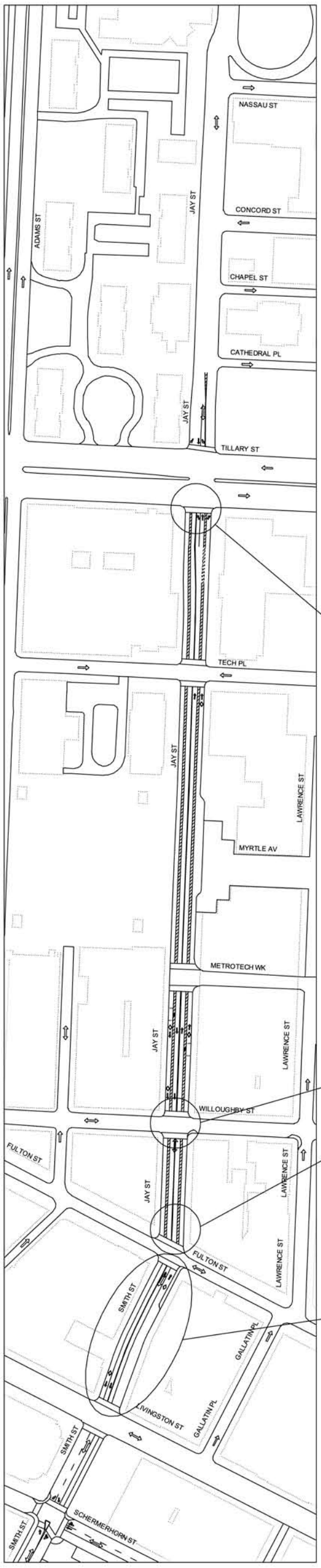
North of Tillary Street, Jay Street serves the local area and acts as a ramp between the Manhattan Bridge/Flatbush Avenue Extension and the BQE. While Jay Street is not wide enough to carry a Class II bike lane north of Tillary Street it was suggested that this area could be made safer for cyclists by installing a signal at the base of the off ramp from the Manhattan Bridge. This ramp leads traffic north on Jay Street to Sands Street – the only way drivers can reach the northbound BQE. However, NYCDOT studied and rejected this signal due to safety concerns, including the potential for rear end and side collisions on the bridge. This conflict could be removed, however, by constructing a direct connection from the Manhattan Bridge to the BQE.

7.2.2.6 Lafayette Avenue

The objectives for Lafayette Avenue are to slow all traffic (but particularly off-peak traffic) and to reinforce the idea for drivers turning off Lafayette Avenue that they are entering Living Streets. To manage traffic speeds, the traffic signal timing progression on Lafayette Avenue was reduced to 25 mph. NYCDOT's analysis indicates that this treatment has been effective in reducing speeds, without the need for signage to inform drivers about the signal timing pattern.

To manage turning traffic, gateway treatments on intersecting streets are recommended. These gateways would include neckdowns and raised crosswalks and would resemble the pilot measure at the intersection of Fulton and South Oxford streets. Construction of bus bulbs along Lafayette Avenue's length is also recommended to improve bus flow and regularize the movement of buses in travel lanes (issues surrounding bus bulbs are discussed at length in *Section 7.2.2.2)*. The treatment of the Lafayette Avenue/Fulton Street intersection is discussed in *Section 7.2.2.4*.

JAY STREET (COMMUNITY STREET)



ACTIONS SUPPORTING STRATEGY

Overview of Improvements

- Stripe a Class II bike lane on Jay Street from Livingston to Tillary to improve north-south cycling conditions.
- Add neckdowns to improve crossing conditions where possible.

Begin new cross-section:

- *Add two 5' Class II (on-street) bicycle lanes*

Add a Neckdown

End of new cross-section

- *Restripe roadway to provide a bus lane during the daytime*
- *Create an extra wide curb lane with a bus-bulb for buses maneuvering around parked buses*

LAFAYETTE AVENUE (COMMUNITY STREET)

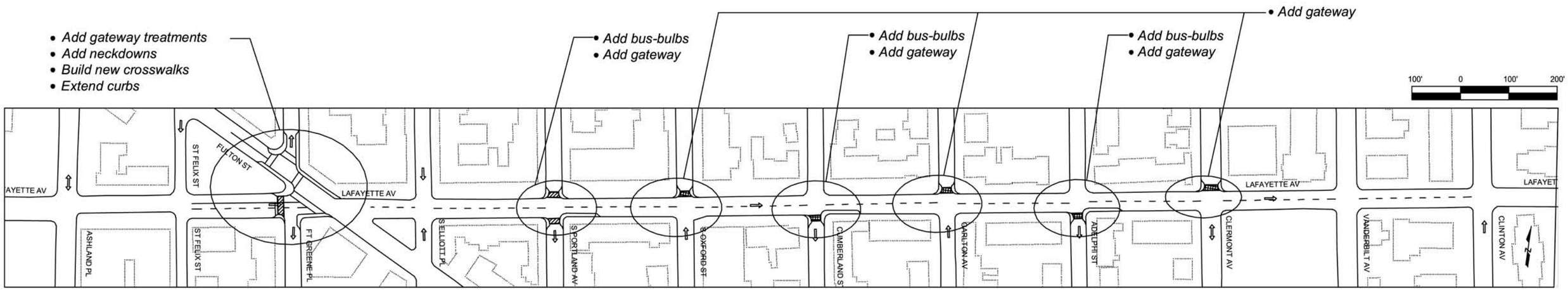
ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Channelize Fulton-Lafayette intersection and prevent through-traffic movement on Fort Greene Pl.
- Use neckdowns and gateways to reduce crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Extend the curb to slow down traffic moving through the newly channelized intersection.

Overview of Operational Improvements

- Reduce through traffic speeds by adjusting offsets of signals from Fulton St to Clermont Ave so the traffic flows at 25 mph.
- Add a leading pedestrian interval to the signal timing to allow pedestrians to cross the new crosswalk before right-turning vehicles from Lafayette Ave enter the intersection.



7.2.2.7 Livingston Street

No significant recommendations are made for Livingston Street. The main issue to address is the high vehicle speed prompted by its long, uninterrupted blocks. NYCDOT has already installed the recommended signalized mid-block crossings at Livingston Street and Elm Place, and at Livingston Street and Hanover Place. These provide benefits for shoppers and workers by making the Fulton Mall area more accessible from the south for pedestrians. A Leading Pedestrian Interval at Livingston Street's intersection with Smith Street is recommended to improve crossing conditions for pedestrians at this major bus stop. This will require further study by NYCDOT's Signal Timing Division, which is monitoring the needs for signal timing changes in this area to support its implementation of one-way Smith Street north of Atlantic Avenue (see *Section 7.2.2.12*).

7.2.2.8 Montague Street

Montague Street is an important commercial street in Brooklyn Heights and serves a mixture of restaurants, shops and residential buildings. Accordingly, the strategy's focus is on making pedestrian crossings as safe and easy as possible. Recommendations are concentrated at the cross streets, where a combination of neckdowns and textured crosswalks are recommended to minimize crossing distances and highlight the visibility of pedestrians, thereby encouraging slower vehicle speeds. At the signalized intersections Leading Pedestrian Intervals and/or longer pedestrian crossing times could be provided to augment the neckdowns and textured crosswalks. However, the need for LPIs may be obviated by the short crossing distance as there would only be one lane to cross once the neckdowns are installed.

At Montague Street's western end color-textured repaving of three entire intersections – Montague Terrace/Remsen Street, Montague Street/Montague Terrace/Pierrepont Place and Pierrepont Street/Pierrepont Place – is recommended to provide visual reinforcement of pedestrian crossing areas in the vicinity of the Promenade. Because this is a City landmarked historic district, care should be taken to choose a pavement color in keeping with the character of the neighborhood's architecture.

7.2.2.9 Myrtle Avenue

Myrtle Avenue is a mixed use corridor whose character transitions from CBD to neighborhood center as one moves east. It is the site of several high-density housing projects, as well as an important local shopping strip. It is a difficult corridor for pedestrians to use. The strategy addresses this through a series of neckdowns. Together these increase the number of crossing opportunities and increase the safety and ease of crossing. Also recommended is a treatment of the intersection of Carlton Street and Myrtle Avenue that reclaims a swath of underutilized road space that the community perceives as promoting speeding between Fort Greene and Park Avenue. Such reclamation would improve pedestrian safety with no loss of parking.

A Class II on-street bicycle lane is recommended running eastbound on Myrtle Avenue; this lane would complement the westbound lane on DeKalb Avenue (see *Section 7.2.2.3*). This lane can be accommodated in the existing cross-section without removing parking or travel lanes.

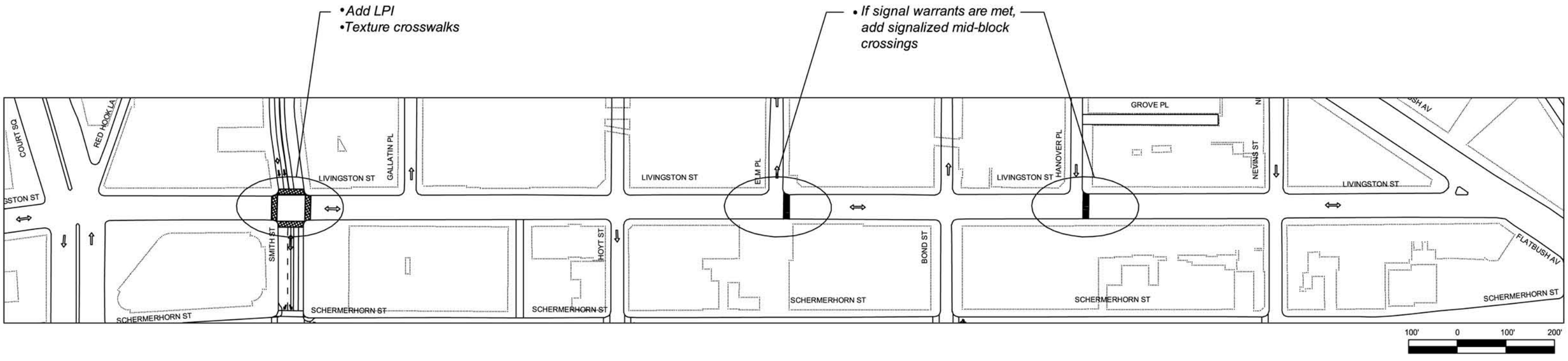
LIVINGSTON STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

Overview of Improvements

- If signal warrants are met, install signalized midblock crossings to break up long blocks on Livingston Street and to serve north-south desire lines between Fulton and Livingston Streets.

- Add a leading pedestrian interval at Smith St and Livingston St to improve crossing conditions for pedestrians.



MONTAGUE STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

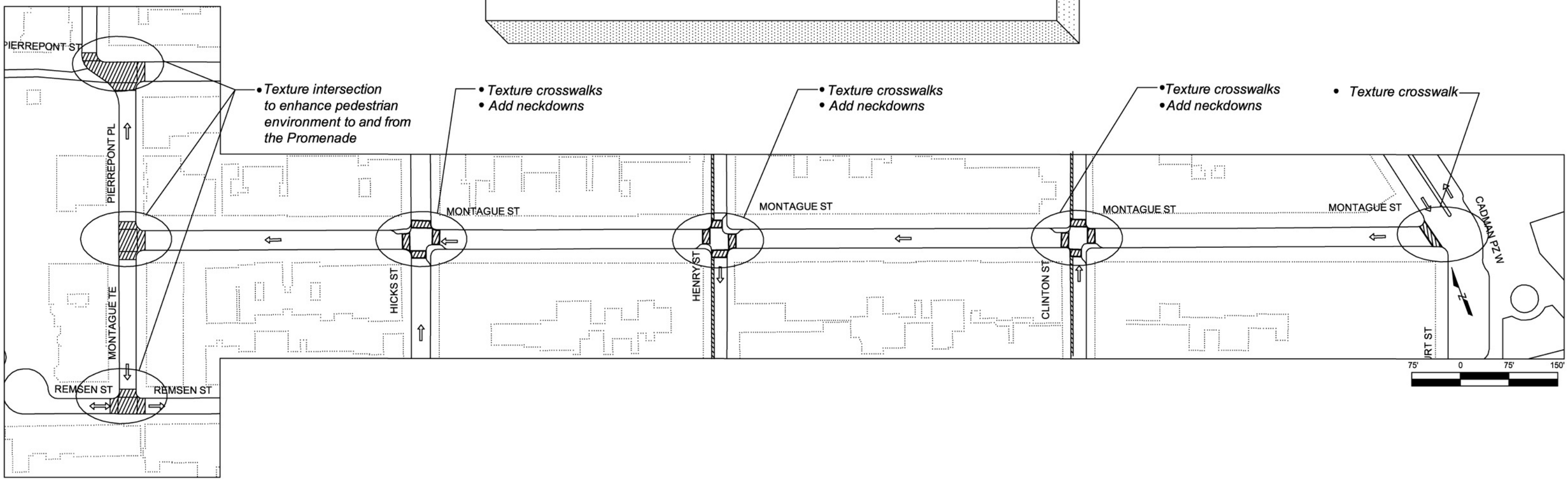
Overview of Physical Improvements

- Install neckdowns where possible to minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.

- Texture crosswalks along Montague St as well as the entire intersections of Remsen St/Montague St, Montague St/Pierrpont Pl and Pierrpont St/Pierrpont Pl to visually enforce pedestrian crossing areas.

Overview of Operational Improvements

- Provide LPI's and longer crossing times if possible.

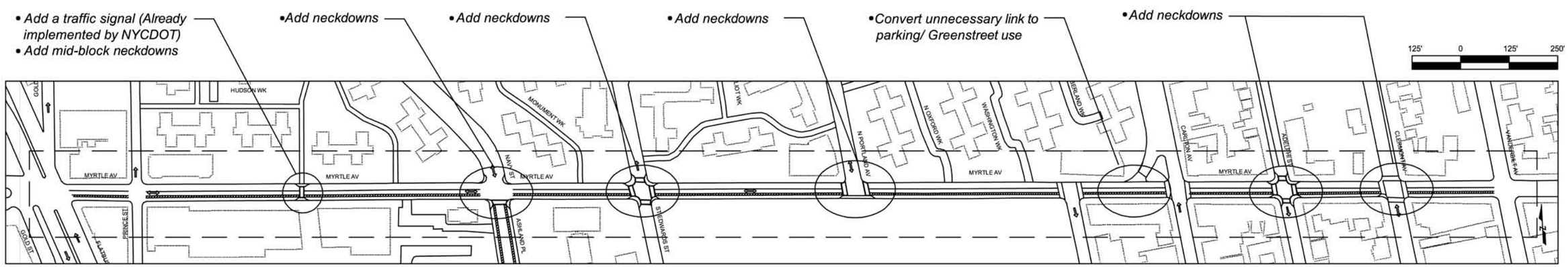


MYRTLE AVENUE (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

General Improvement Strategies

- Improve safety and ease of crossing Myrtle Avenue by adding mid-block crossings on long blocks by parks or housing projects.
- Neckdown busy intersections to shorten crossing distance, improve pedestrian visibility, and encourage vehicles to turn at lower speeds.
- Add an eastbound bicycle lane on Myrtle Avenue to complement the proposed westbound lane on DeKalb Avenue.
- If signal warrants permit, add a traffic signal at Myrtle Avenue that is offset with the signals at Prince Street and Ashland Place to allow continuous traffic flow. (Already implemented by NYCDOT)



7.2.2.10 Old Fulton Street

Like Tillary Street, Old Fulton Street provides a great opportunity to reclaim road space and put it to use in creating community space at an important historic site, while at the same time rationalizing traffic operations in this area.

Old Fulton Street also illustrates many of the street management conflicts that arise when an older manufacturing area is reborn as a mixed-use infill community. New residents have succeeded in transforming the image of the area to one of arts, shopping, and restaurant use. These uses require parking and a calm street environment to flourish, creating a conflict between the desire to maintain parking space and the desire to reclaim underused street space for plazas and greening. Meanwhile, enduring industrial uses continue to require truck access which conflicts directly with the neighborhood's emerging residential character. Finally, unique traffic issues like commuters using Furman Street in the evening and tour buses that park at the foot of Old Fulton Street for the views of the Brooklyn Bridge and Lower Manhattan must be addressed.

NYCT and tour bus operations need to be altered in this area to reduce their impact on the Fulton Ferry Landing. NYCT buses could use their off peak counter-clockwise loop via Main and Water Streets at all times in order to reduce the number of turning buses at the Water Street/Old Fulton Street intersection. Tour bus storage can be rationalized on Water Street as part of the Parks Department's redevelopment of that area. It is possible further bus storage could be created as part of the implementation of the Brooklyn Bridge Park.

The recommendations reflect the preference that Furman Street revert to two-way operation although the plans for Old Fulton Street could be adapted to suit conditions in which Furman Street operates only one-way. Community Board 2 has endorsed converting Furman Street to two-way operation (see *Section 7.2.1.8)*. If Furman Street were to revert to two-way operation, it is possible and desirable to retrieve much additional road space in the vicinity of the Fulton Ferry Landing and additional road space along Old Fulton Street's full length. The action plan shows a road with one lane in each direction separated by a median and with curb lines significantly closer together than at present. Limiting Old Fulton Street to a single through lane in each direction would reduce the current intrusion of evening peak commuter traffic and limit the temptation for motorists to use it in the morning commuter peak period. Parking lanes on both north and south sides would provide greater separation between traffic and pedestrians on both sides of the road. Two options were designed for this area: one with and one without an on-street Class II bicycle lane in each direction.

Currently pedestrians must contend with discontinuous sidewalk conditions. Continuous and predictable pedestrian routes on Old Fulton Street's sidewalks would ease these conditions and promote greater pedestrian access to Fulton Ferry Landing and the Brooklyn Bridge Park. On the south side of Old Fulton Street and moving from east to west, a gateway treatment should be installed at Henry Street to facilitate pedestrian flow. The arrangement of ramps on and off the BQE should also be modified to rationalize flow and facilitate pedestrian crossing the ramps. Provided the signal warrant is met, the northbound off ramp can be signalized and modified to provide two approach lanes. The current wide throat for southbound traffic entering the BQE with effectively two entry points can be consolidated into a single two-lane ramp. This will force drivers to enter this ramp more slowly and with more care for pedestrians and will reduce pedestrians' exposure to traffic. The sidewalk on the approach to Fulton Ferry can also be widened. On the north side of Old Fulton Street and moving from east to west, a widening and better alignment of the traffic islands in and around Front Street is recommended to accomodate pedestrian movement to and from the water. Between Front Street and Water Street substantial road space exists that is used only for parking. The plans show that space retrieved for sidewalk

(and by implication, community uses), although members of the community have identified the importance of its current use for restaurant parking.

Residents of this area are understandably concerned about the potential for their area to be dominated by traffic should Furman Street revert to two-way use. The plans provide a means of avoiding adverse consequences of such a decision while providing the opportunity for a substantially enhanced street environment. Synchro analysis of these proposed changes can be found in *Appendix F*.

OLD FULTON STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

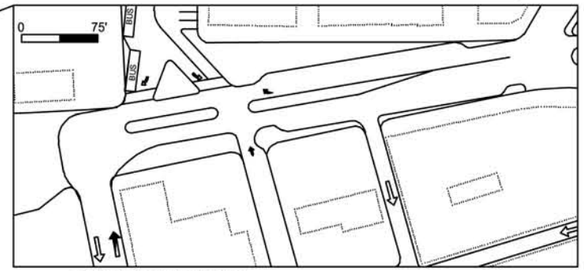
Overview of Physical Improvements

- Reclaim large amounts of the unused road space for bicycle lanes, pedestrian refuges/medians, wider sidewalks, and landscaping.

Overview of Operational Improvements

- Modify signal timing and phasing to maximize protected pedestrian phases where possible. Specific improvements include longer crossing times and protected left turn phases to further reduce vehicular conflicts. Also, by bringing together and rationalizing close intersections, pedestrian safety will improve.

OLD FULTON STREET DISCARDED OPTION:



- *Widen sidewalks*
- *Add medians*
- *Add neckdowns where possible*

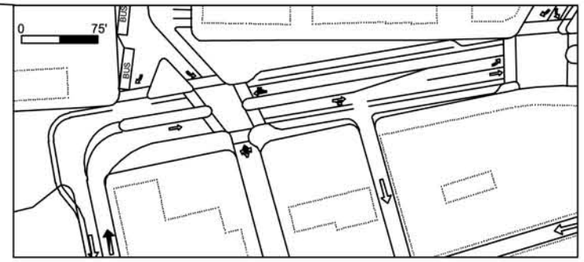
Pros:

- Improve pedestrian environment
- Substantial sidewalk space created
- Rationalized traffic movement

Cons:

- Some loss of parking
- No provision for cyclists

OLD FULTON STREET PREFERRED OPTION:



- *Widen sidewalks*
- *Add medians*
- *Add neckdowns where possible*

2A. Add a Class II (on-street) bicycle lane

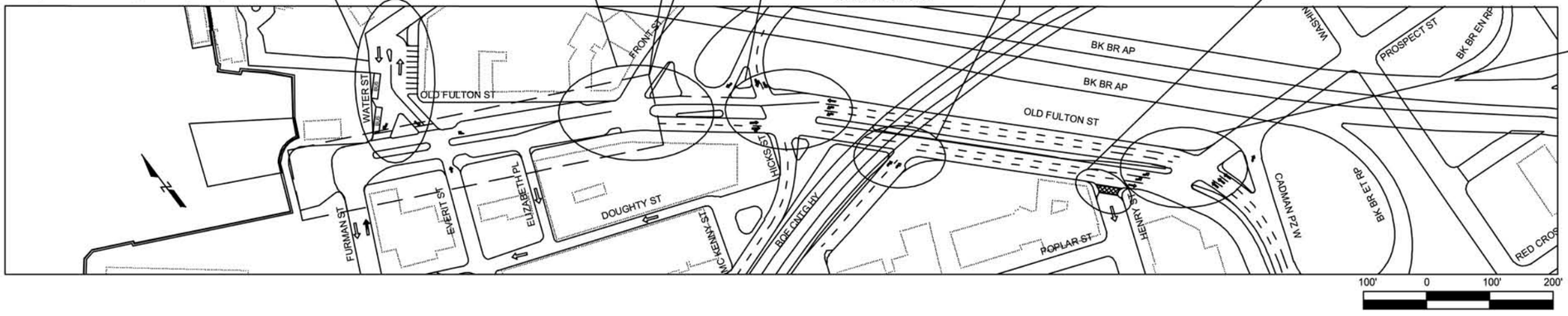
Pros:

- Improve pedestrian environment
- Substantial sidewalk space created
- Rationalized traffic movement
- Provides bicycle facilities along this NYC Bicycle Masterplan route

Cons:

- Some loss of parking

- *Rationalize intersection and allow two-way movement on Water Street for block immediately north of Old Fulton.*
- *Re-align parking on Water St to provide bus parking bays*
- *Add medians*
- *Add neckdowns*
- *Modify island to improve traffic mobility*
- *Combine intersections*
- *Close east slip ramp on south side of intersection to reduce the number of pedestrian crossings.*
- *Channel all southbound on-ramp traffic through west slip ramp south of intersection.*
- *If the signal warrant is met, signalize intersection and modify to provide two approach lanes from the BQE*
- *Provide a gateway entrance*
- *Widen existing medians*
- *Modify lane configurations and signal timings to improve operations*



7.2.2.11 Schermerhorn Street

Schermerhorn Street provides a useful and potentially important east-west route parallel to Atlantic Avenue. Its ability to provide significant traffic capacity is constrained by congestion at its eastern end at 3rd Avenue and Flatbush Avenue and by its one-way designation immediately to the east of Boerum Place. The unsuccessful attempts to find a low-cost traffic calming solution to its eastern bottleneck are discussed in *Sections 7.3* and *7.5*. Synchro analysis of the proposals for the Schermerhorn-Flatbush-Third Avenue intersection can be found in *Appendix F*.

The section of Schermerhorn Street between Smith Street and Boerum Place is currently one-way westbound. An important idea and one that has general community support is to convert this to two-way operation. There are no insurmountable physical constraints to this idea. Indeed, the current problem of poorly disciplined parking may well be solved through greater traffic use of this section of Schermerhorn Street. A novel median treatment that provided vehicles with a third parking lane to address this issue was suggested, although Community Board 2 did not adopt this scheme.

Conversion to two-way operation would allow Schermerhorn Street to operate more effectively to relieve traffic demands on Atlantic Avenue, although unless the bottleneck at its eastern end is removed, peak period traffic that shifts from Atlantic Avenue westbound to Schermerhorn Street westbound will largely need to rejoin Atlantic Avenue using Hoyt Street or Nevins Street. It is instructive in this context to think of Atlantic Avenue and Schermerhorn Street as a corridor through which traffic passes and which should be managed in a coordinated way – which may mean designing traffic flows on Schermerhorn Street in such a manner as to more evenly distribute the long queues that now back up at its and Atlantic Avenue's eastern ends. The community strongly endorsed the idea of distributing some of Atlantic Avenue's peak hour traffic onto Schermerhorn Street.

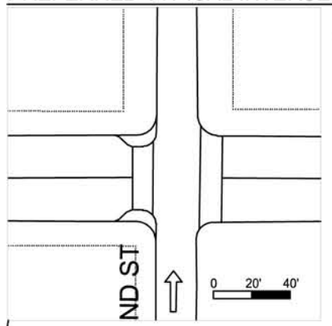
SCHERMERHORN STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

Overview of Improvements

- Build neckdowns or raised pedestrian refuges with a parkable median to reduce driving speeds and reorganize street space on Schermerhorn Street.
- Could add a median along Schermerhorn St that allows for parking along the westbound side.
- Add a leading pedestrian interval at Smith St and Schermerhorn St, to improve crossing conditions for pedestrians.

PREFERRED TYPICAL INTERSECTION:



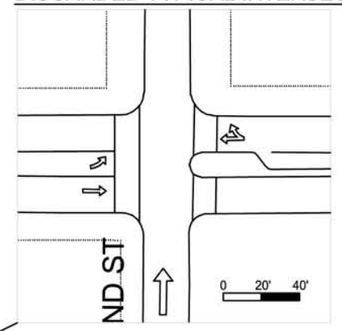
Pros:

- *Provides safer crossing facilities for pedestrians*

Cons:

- *Does not take advantage of this wide street or address vehicle speeds*

DISCARDED TYPICAL INTERSECTION:



Pros:

- *Provides safer crossing facilities for pedestrians*

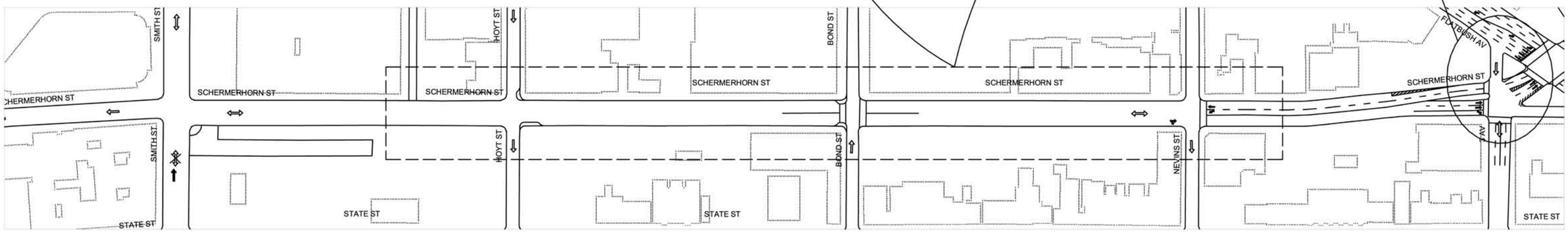
Cons:

- *Could create an unfamiliar driving environment*

1A. Add neckdowns

2A. Add left-turn bays
2B. Add pedestrian refuges
2C. Add parking along the westbound side of the median

- *Re-align roadways and modify signal timings to help relieve congestion on Flatbush Avenue*



7.2.2.12 Smith Street

Smith Street and Court Street are a pair of one-way pair of streets that provide north-south capacity through the middle of the study area. Smith Street provides northbound capacity, which is used most heavily in the morning peak. Court Street provides parallel southbound capacity, which is used most heavily in the evening peak. However, the conflict between commuters and other users is not as great on Smith Street as it is on Court Street, because non-commuter uses of the street especially shopping and socializing) are less pronounced in the morning peak period when northbound commuter traffic is heaviest. This implies that a different balance may be struck here between the needs of commuters and other users of the street. Smith Street carries 8,700 vehicles per day (vpd).

Smith Street suffers substantial congestion on its approaches to Atlantic Avenue. This congestion stems from the present configuration of this intersection, which presents traffic conflicts – Smith Street north of Atlantic Avenue is two-way, while south of Atlantic Avenue it is one-way. Traffic flows approaching the intersection from north and south are centered on the same line.

Figure 7.8 Current traffic conditions at Atlantic Avenue and Smith Street (looking southwest) – north and westbound traffic in conflict in the a.m. peak

The recommended action plan for this intersection involves extending the one-way section of Smith Street north to Schermerhorn Street and reconfiguring Smith Street north of Atlantic Avenue accordingly. This improves the operations of the intersection of Atlantic Avenue and Smith Street, which benefits all users of this street space, with the possible exception of buses. The B61 bus service previously passed through this intersection; extension of the one-way section of Smith Street north to Schermerhorn Street means that southbound buses now need to divert to

Boerum Place by way of Schermerhorn Street or Livingston Street (Schermerhorn Street was the route of the B61 until 1997). It is noted that New York City Transit has concerns about the enforcement of "No Standing" rules on Schermerhorn Street between Smith Street and Boerum Place (in front of the Criminal Courts building). Prior to the 1997 reroute, illegal standing on this block often hampered bus movement.

The extension of one-way Smith Street to Schermerhorn Street, with associated signal timing, marking and sign changes, was implemented in November 2003. Roadway space was reclaimed for angled parking as a short-term alternative to the sidewalk extensions and neckdowns (drawn) that require capital construction. The B61 bus was rerouted to Livingston Street.

Table 7.3 shows the traffic impacts of the one-way Smith Street proposal on the peak hour operations of the Smith Street-Atlantic Avenue intersection. Detailed Synchro analysis of these improvements can be found in *Appendix F*.

Table 7.3 Current and Proposed Traffic Conditions at Atlantic Avenue/Smith Street Intersection

Approach	Existing (2000)				Proposed Changes			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Int. Delay	LOS	Int. Delay	LOS	Int. Delay	LOS	Int. Delay
Smith St NB	F	100.1 sec	F	158.7 sec	F	93.4 sec	D	38.0 sec
Smith St SB	F	204.4 sec	C	23.8 sec	N/A			
Atlantic Ave EB	D	48.9 sec	E	77.3 sec	E	76.3 sec	C	27.9 sec
Atlantic Ave WB	C	24.7 sec	B	14.9 sec	E	58.3 sec	C	24.3 sec

Source: Traffic volumes from 330 Jay Street EIS

South of Atlantic Avenue in the Cobble Hill-Carroll Gardens commercial core, the action plan focuses on eliminating unproductive traffic capacity, facilitating pedestrian crossing of the street, and introducing markings to improve driver discipline.

In November 2003, morning peak period No Standing regulations on the west curb were removed between 9th Street and Dean Street. This serves to discourage through traffic and provides on-street parking for residents, short-term parkers, and commercial operations.

Proposals for pedestrian crossing improvements are focused near subway stations at Bergen and Carroll Streets. These included combinations of neckdowns and textured crosswalks at existing crossings to raise the visibility of pedestrians and to reduce their exposure.

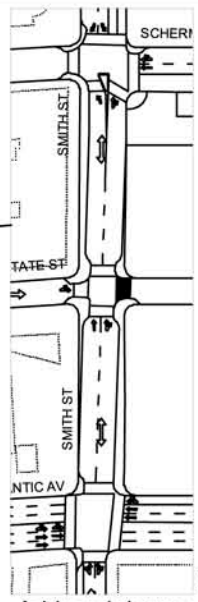
Between Bergen Street and Atlantic Avenue a Class II bike lane is recommended, consistent with the New York City Bicycle Master Plan. This lane could be accommodated in the existing cross-section without removing parking or travel lanes. This lane would be striped on the left side of the road, as per the community's preference and typical practice on one-way streets elsewhere in the city; cyclists riding to the left of traffic on one-way streets are closer, and thus more visible, to drivers. Furthermore, this configuration reduces the problem of cyclists being caught by a

suddenly opened car door. The bike lane and the change in parking regulations would combine to improve lane discipline in this area.

SMITH STREET (COMMUNITY STREET)

CONTINUED FROM BOTTOM LEFT

NORTH OF ATLANTIC PREFERRED:



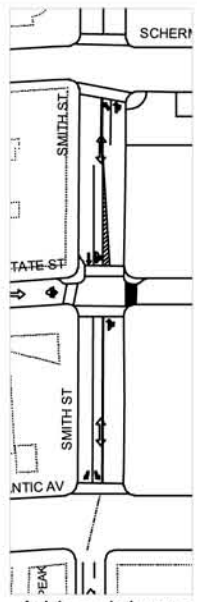
Pros:
- Rationalizes the intersection of Atlantic Ave and Smith St
- Provides more sidewalk space for pedestrians Improves operations along Atlantic Ave and Smith St

Cons:
- Involves re-routing some traffic
- Involves re-routing part of a bus route subject to MTA approval

- *Add neckdowns*
- *Add gateways*

1A. Convert Smith Street to one-way northbound to Schermerhorn St. to improve street alignment and reduce conflicts

NORTH OF ATLANTIC DISCARDED:



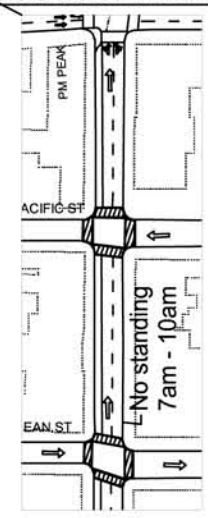
Pros:
- Provides some pedestrian benfits

Cons:
- Does little to improve the intersection of Atlantic Ave and Smith St

- *Add neckdowns*
- *Add gateways*

2A. Re-stripe streets to improve traffic flow

SOUTH OF ATLANTIC DISCARDED:



Pros:
- Improves pedestrian safety
- Provides all day parking on the west side

Cons:
- Not many improvements for cyclists on this NYC Bicycle Masterplan route

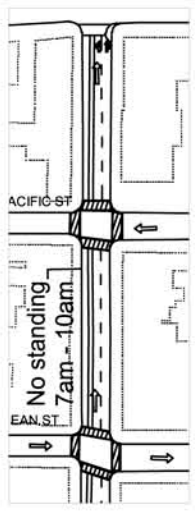
- *Add pedestrian phases*
- *Add neckdowns/gateway treatments where possible*

1A. Allow all day parking on the left hand side

Start of textured crosswalks at every existing crosswalk southbound along Smith St.

- *Add neckdowns adjacent to subway stations*

SOUTH OF ATLANTIC PREFERRED:



Pros:
- Improves pedestrian safety
- Provides all-day parking on the east side
- Provides safer bicycling facilities

Cons:
- Poor connections to other cycling facilities

- *Add pedestrian phases*
- *Add neckdowns/gateway treatments where possible*

2A. Allow all day parking on the right hand side

2B. Provide a 5' class 2 bike lane on the right hand side

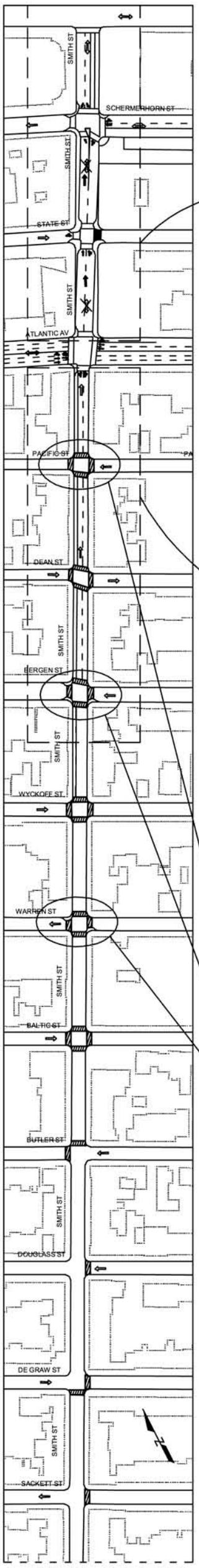
- *Add neckdowns adjacent to subway stations*

ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Install neck-downs near subway stations and on side streets where possible to minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Stripe parking and travel lanes to reduce ambiguous driving conditions.
- Texture existing crosswalks to reinforce the pedestrian safety areas to the drivers.

End of textured crosswalks along Smith St.



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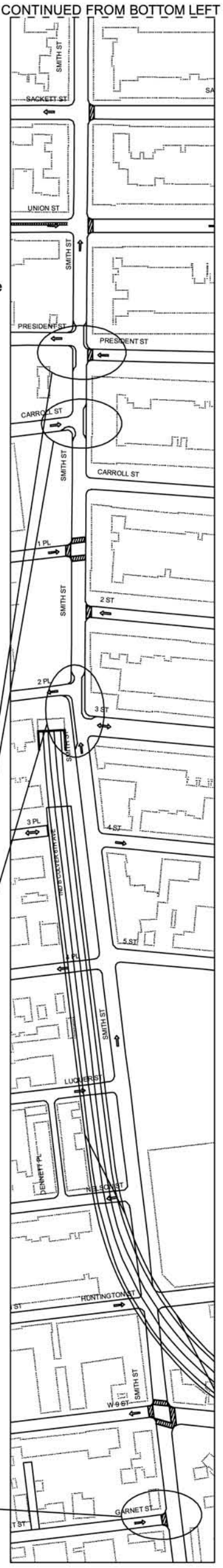
125' 0 125' 250'



7.2.2.13 Willoughby Street

Pedestrians on Willoughby Street have insufficient sidewalk space, especially near the Lawrence Street subway entrances. In order to counteract this, the action plan recommends neckdowns along the length of the street. In addition to providing needed space for pedestrians on the sidewalk, these neckdowns will slow turning traffic, which is important as it transitions from narrow Willoughby Street to the wider cross streets into the MetroTech complex. While these neckdowns will slow trucks down, they will not preclude them from accessing MetroTech; indeed, it is recognized that despite its narrow section, Willoughby Street necessarily acts as the final distributor of truck trips among the various loading areas in the CBD and many parts of MetroTech.

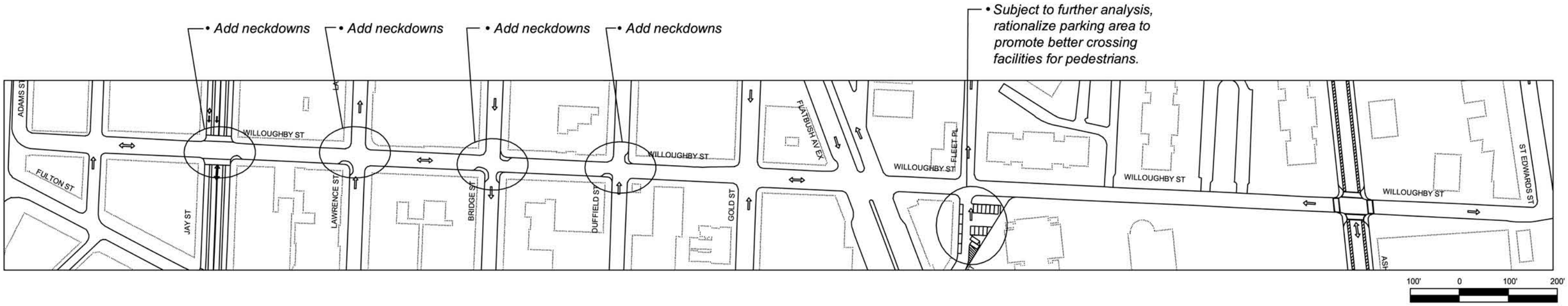
In the aftermath of the September 11, 2001 attacks, several streets leading into Willoughby Street were closed due to security considerations. These street closures may be permanent and provide the opportunity to enhance these locations by installing neckdowns and other traffic calming treatments. These treatments should be integrated with measures identified in the Downtown Brooklyn Redevelopment plan being performed by The Department of City Planning and the New York City Economic Development Corporation. NYCDOT is coordinating with EDC/Department of City Planning as it advances its redevelopment plan for the Brooklyn Central Business District. NYCDOT has already identified funds for improving Willoughby Street and put this work in its capital budget.

WILLOUGHBY STREET (COMMUNITY STREET)

ACTIONS SUPPORTING STRATEGY

Overview of Improvements

- Build neckdowns to increase pedestrian space on congested sections of Willoughby Street, especially near the Lawrence Street subway station. These will also serve to reduce turning speeds for vehicles transitioning from narrow Willoughby to wider cross streets into the MetroTech complex.



7.2.3 Living Streets

Plans for Living Streets were developed based on the functions of streets discussed in the Street Management Framework in *Section 5.3.3*. As noted in *Section 5.3.3*, the objectives for Living Streets are to:

- Protect the street environment,
- Discourage excessive speeds and aggressive driving,
- Discourage through traffic, and
- Discourage inappropriate truck activity.

7.2.3.1 3rd Street

Although 3rd Street is designated as a Living Street, it provides one of a limited number of east-west crossings of the Gowanus Canal; together with 2nd Place, it forms a continuous east-west route through the study area. While 3rd Street has a strongly industrial character east of Bond Street, it is strongly residential west of Bond Street. Residents report a problem of truck traffic, as Smith Street provides an alternative route from the east to industrial sites in the Gowanus Canal area when the approaches from the west – 3rd and 4th Avenues – are congested.

The action plan for 3rd Street is designed to separate the operations of the sections east and west of Bond Street. To this end, a strong gateway treatment has been defined for the western side of the 3rd Street/Bond Street intersection to signal to westbound traffic that this section of the street has a primarily residential nature. NYCDOT has implemented signage that directs trucks to use 4th Street east to Hoyt Street, then Hoyt Street one block north to 3rd Street for access to the industrial areas.

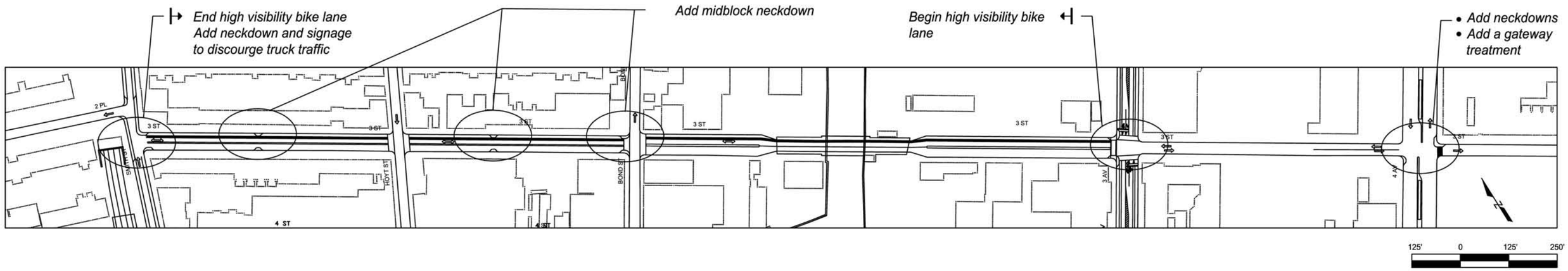
7.2.3.2 Ashland Place

Ashland Place is a wide street with only limited traffic demands. Its width exposes pedestrians to traffic and its long block lengths encourage drivers to speed. Installation of neckdowns at each of its three intersecting streets (DeKalb Avenue, Willoughby Street and Myrtle Avenue) is recommended together with creation of a Class II on-street bicycle lane in each direction. This latter device will serve to link the bicycle lanes recommended for DeKalb Avenue and Myrtle Avenue and called for in the NYC Bicycle Master Plan. In addition, a high visibility bicycle lane will visually narrow the street and encourage less aggressive driving. These lanes can be accommodated in the existing cross-section without removing parking or travel lanes.

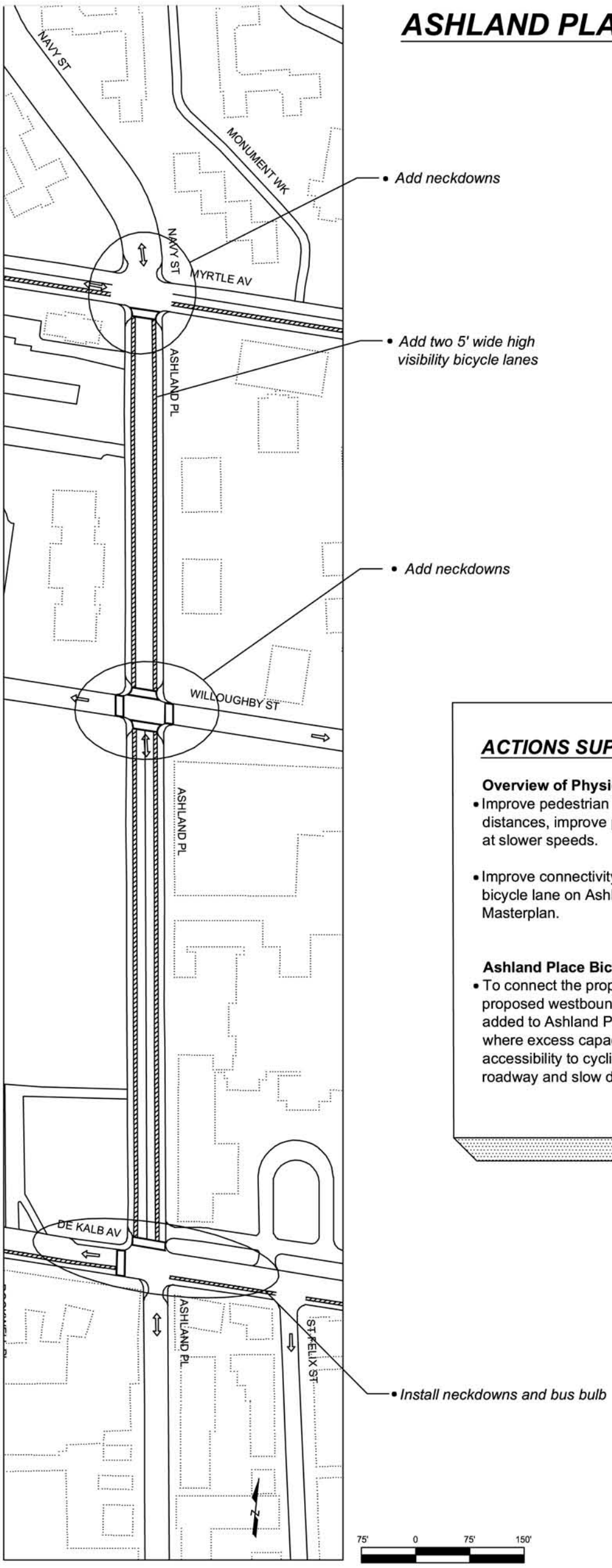
3RD STREET (LIVING STREET)

ACTIONS SUPPORTING STRATEGY

- Discourage 3rd Street as a through street for trucks wanting to cross Gowanus canal.
- Protect bicyclists with a high visibility bike lane.



ASHLAND PLACE (LIVING STREET)



ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Improve pedestrian safety by installing neck-downs to reduce crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Improve connectivity of bicycle network in Fort Greene by adding a bicycle lane on Ashland Place - as recommended in the NYC Bicycle Masterplan.

Ashland Place Bicycle Lane

- To connect the proposed eastbound bicycle lane on Myrtle and the proposed westbound lane on DeKalb, Class II bicycle lanes should be added to Ashland Place in both directions between Myrtle and DeKalb, where excess capacity exists. In addition to providing safety and accessibility to cyclists, the lane would narrow the effective width of the roadway and slow down north-south traffic.

7.2.3.3 Bergen Street/Dean Street/Pacific Street

Bergen Street, Pacific Street and Dean Street all experience traffic intrusion because of their east-west connectivity through Boerum Hill and the congestion on Atlantic Avenue. While these corridors offer marginal improvements to east-west vehicle throughput, their traffic levels are inconsistent with the idea that a Living Street should be about creating a safe environment for residents first, and accommodating traffic second. Indeed, a more appropriate place to store east-west traffic is Schermerhorn Street, if a reasonable management strategy for the Atlantic Avenue/Schermerhorn Street corridor can be worked out – see *Section 7.2.2.11*.

In a situation such as this, where the street network provides an opportunity for drivers to use Living Streets as alternate through routes to Travel Streets, very restrictive measures to prevent this traffic intrusion may be considered. However, it is more important to retain permeability of the network for those who need to use it every day, including residents of the impacted blocks. To this end, the capacity for through traffic intrusion on Dean Street was reduced significantly with the removal of peak hour parking restrictions in 1999. Additionally, the installation of Class II (on-street) bicycle lanes on Bergen and Dean Streets began in Fall 2003. The lanes visually narrow these streets and discourage speeding while accommodating the needs of cyclists.

The remainder of the action plan is the recommended construction of a raised intersection with neckdowns is recommended for diagonal corners at the Bergen Street/Hoyt Street, Dean Street/Bond Street and Pacific Street/Nevins Street intersections. These treatments will force very slow movement through these intersections, which will discourage through traffic use effectively without compromising the permeability of the network. They will also reinforce drivers' awareness that they are passing through a residential area, reinforcing the concept that Living Streets are inappropriate for regional traffic.

7.2.3.4 Boerum Place (south)

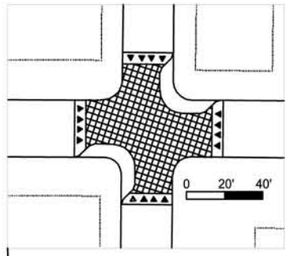
Boerum Place changes capacity and nature radically when it crosses Atlantic Avenue. The busy and wide Travel Street north of Atlantic Avenue becomes a narrow Living Street south of Atlantic. However, apart from the difference in cross section, there is no traffic management recognition of this difference. Cars can travel south through Boerum Place's intersection with Atlantic Avenue without losing speed. Peak hour parking regulations are in place to facilitate traffic flow. This regulation complemented a similar regulation along Dean Street that was in place to provide an alternate eastbound route in the evening peak. In the early stages of the study in 1999, NYCDOT met with local residents and removed the rush hour regulations along Dean Street, replacing them with street cleaning regulations. This change reflected the Living Street character of Dean Street and discouraged its use for through traffic.

One means of augmenting this strategy would be to close the southern section of Boerum Place to southbound traffic at Atlantic Avenue; however, maintenance of traffic permeability is more important than preventing intrusion, and so street closures are an inadequate solution. Instead it is recommended that a gateway treatment be constructed at Atlantic Avenue to signal drivers that they are entering a residential area; that peak period parking restrictions be removed from Boerum Place south of Atlantic Avenue; that neckdowns be implemented at each intersecting street; and that a high visibility on-street bicycle lane be marked on the road. These measures will force drivers to enter the southern section of Boerum Place slowly and will restrict traffic capacity to one lane within a visually narrow street environment. In concert with the previously implemented removal of peak parking restrictions on Dean Street, this popular cut through route will become less attractive and the traffic less intrusive. In addition, the bicycle lane on Boerum Place will

provide connectivity with the bicycle lanes north of Atlantic Avenue and with the recently installed bicycle lanes on Dean and Bergen Streets.

PACIFIC STREET/DEAN STREET/BERGEN STREET-(LIVING STREET)

PACIFIC/NEVINS, DEAN/BOND,
PREFERRED OPTION:

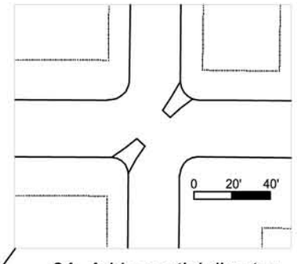


1A. Add a raised intersection
1B. Add neckdowns
1C. Add all-way stops

Pros:
- All traffic would be slowed at critical intersections, but the entire Boerum Hill grid south of Atlantic would remain permeable to both local and through vehicles.

Cons:
- Drivers might not change routes, since travel times would change only marginally.

PACIFIC/NEVINS, DEAN/BOND,
DISCARDED OPTION:



2A. Add a partial diverter

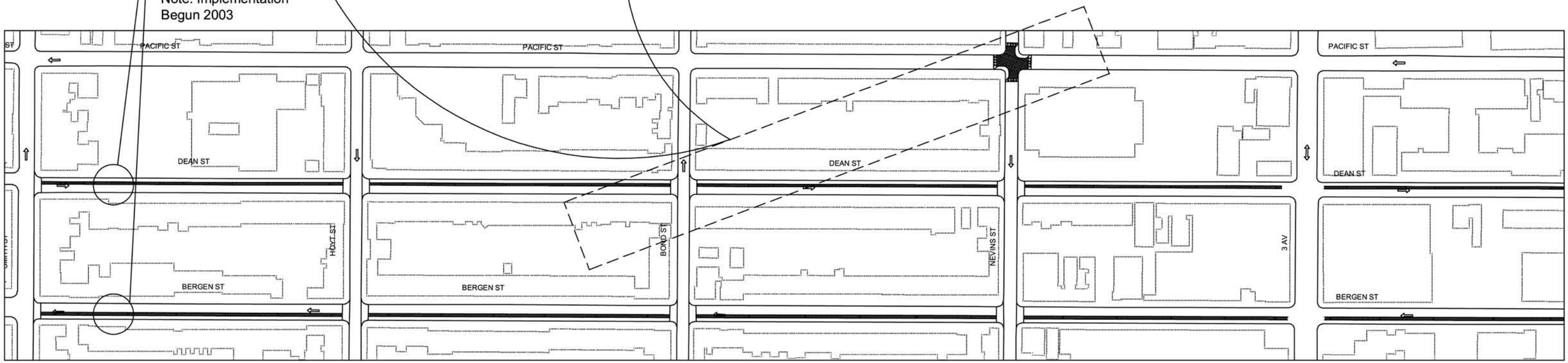
Pros:
- The grid would remain permeable, but all vehicles would have to stop at each intersection, then proceed one at a time at even slower speeds than at a raised intersection. Through traffic would be deterred by a more visible, physical barrier.

Cons:
- The intersections would have to be signed as four-way stops, and the design might be unfamiliar to drivers.

ACTIONS SUPPORTING STRATEGY

- Reduce peak-hour through traffic on living streets by improving traffic operations on Atlantic Avenue and slowing traffic on parallel living streets.
- East-west traffic can be calmed throughout this living streets corridor by focusing on three intersections for speed reduction or traffic diversion: Pacific and Nevins Streets, Dean and Bond Streets, and Hoyt and Bergen Streets.
- Stripe bicycle lanes along the Dean St and Bergen St bicycle routes outlined in the NYC Bicycle Masterplan.
  Note: Implementation begun 2003.

Add high visibility bicycle lanes along the Dean St and Bergen St bicycle routes outlined in the NYC Bicycle Masterplan.
Note: Implementation
Begun 2003



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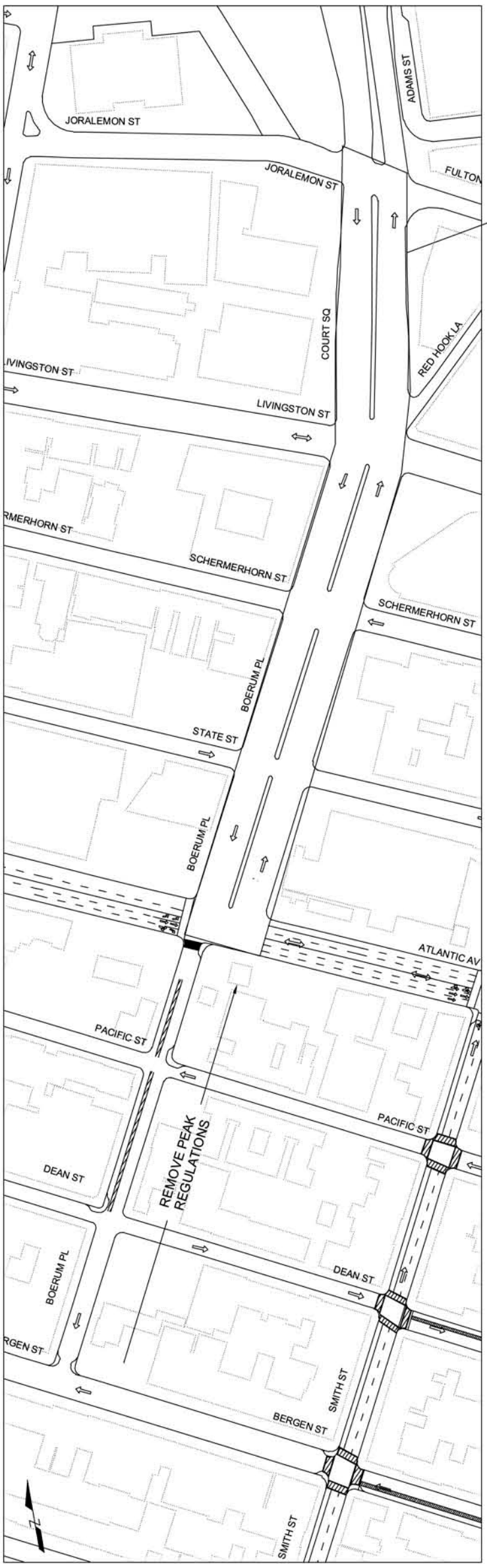
BOERUM PLACE (LIVING STREET)

SOUTH OF ATLANTIC AVENUE



• *Streetscape project to be implemented by EDC.*

ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Reduce peak hour traffic on this living street by providing a gateway treatment into Boerum Place south of Atlantic Avenue and adding neckdowns where possible.

- Stripe a bicycle lane south of Atlantic Ave that connects to the Dean St bicycle route to encourage bicyclists to use this route that is part of the NYC Bicycle Masterplan.

Overview of Operational Improvements

- Reduce peak hour traffic on this street, as well as Dean Street, by removing peak hour parking restrictions resulting in only one travel lane.

7.2.3.5 Clinton Street

Clinton Street provides south-to-north connectivity through the Cobble Hill and Brooklyn Heights neighborhoods. It also carries substantial AM peak hour northbound traffic. This de facto peak hour traffic carrying function is at odds with its Living Street designation and its width and design. Ideally, through traffic should travel on parallel Travel Streets (the BQE) or even nearby Community Streets, such as Smith Street. However, the reality is that Clinton Street provides a convenient connection to the Brooklyn Bridge, by way of its connection to Tillary Street. Clinton Street carries 6,800 vehicles per day (vpd).

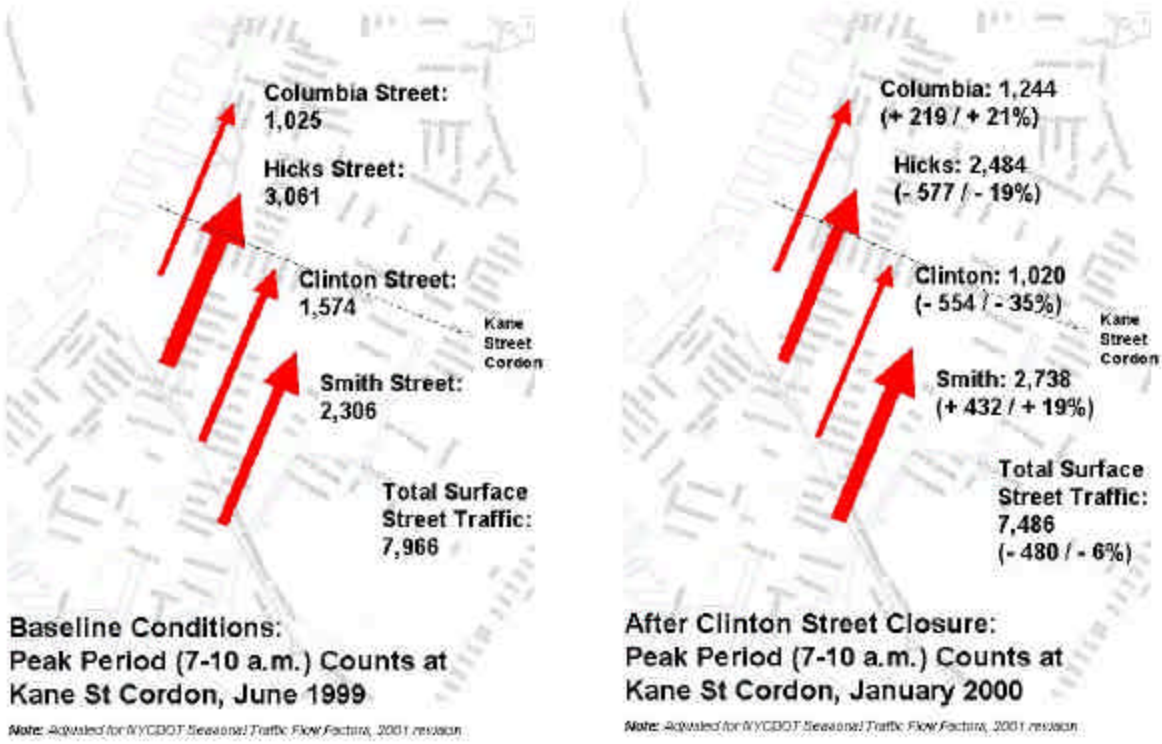
Those who live and travel in the area value this connection, both when they are driving and because it encourages use of the street by taxis; surveys revealed a number of people that found it useful to know that northbound taxis could generally be found on Clinton Street. When the option of closing Clinton Street's southern connection to Hamilton Avenue was investigated, opposition was encountered from residents of both Cobble Hill and Brooklyn Heights (see Section 7.5.6).

Figure 7.9 Peak hour traffic on Clinton Street

However, connectivity comes at a cost. Perceived problems of speeding arise in the southern section of Clinton Street through Cobble Hill. In the northern section on either side of Atlantic Avenue, traffic bound for Tillary Street forms a solid line in the morning peak. Traffic counts in 1999 found 1,574 vehicles traveling north on Clinton Street past Kane Street between 7:00 a.m. and 10:00 a.m. In an effort to accommodate this traffic, morning commuter peak period parking restrictions were used in the past to increase the amount of vehicle storage on Clinton (whose capacity is still governed by its intersections with Tillary Street and Atlantic Avenue), but were removed north of Atlantic Avenue as part of the pilot program and south of Atlantic Avenue soon

after. The impact of closing Clinton Street at Hamilton Avenue during water main construction is shown in Figure 7.10.

Figure 7.10 Effect of Clinton Street closure on northbound traffic, 1999-2000



Accordingly, the focus of the action plan for Clinton Street is not to close off the street, but to discourage speeding in its southern section and to end the rewards further north for those commuting into the area by car.

Specific actions therefore include the following elements:

- Rationalize the layout of the Clinton Street/Hamilton Avenue intersection and in the process reconfigure the curb line to prevent high speed turns into Clinton Street from Hamilton Avenue, which are encouraged by the current design. Implement a raised crosswalk at the intersection to further reinforce the idea that drivers are entering a residential area.
- Remove the 7am-10am parking restrictions in the area south of Atlantic Avenue in order to increase the useful parking supply for residents of the street and discourage parking by those commuting into the area by car, after 10 a.m. NYCDOT implemented this initiative in 2000 due to the construction that occurred along the corridor. These changes were made permanent after construction ended. Additionally, the *7am-11am No Standing* regulations were removed from both the east and west curbs in the area north of Atlantic Avenue as part of the plan to discourage through traffic on Clinton Street.
- Increase the green time for Clinton Street at Atlantic Avenue. In January 2004, NYCDOT increased the green time for Clinton Street by 12 seconds. This is designed to

help alleviate the back-up at the intersections that immediately precede the Clinton Street/Atlantic Avenue intersection.

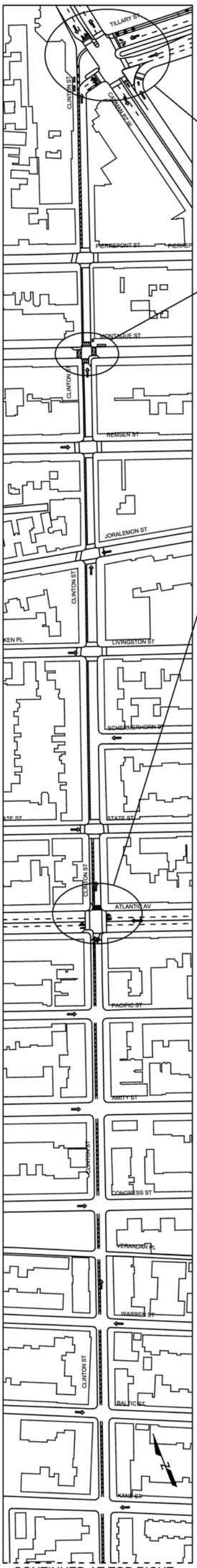
- Reduce the signal progression speed to 20 mph. This change was implemented along Clinton Street between Nelson Street and Pacific Street to encourage through-traveling motorists to use more appropriate routes (such as the BQE) and may reduce speeding by motorists during low volume periods.

- "Feather" the Clinton Street signal progression from Kane Street to Pacific Street. As discussed in *Section 6.3.6.3*, feathering refers to the strategy of giving drivers slightly less green time at successive intersections in a corridor in order to store vehicles evenly across intersections. The intended results are a steadier progression along the corridor, shorter queues at Atlantic Avenue, and decreased driver frustration. This change was implemented in March 2004.

- Reconfigure the intersection of Clinton Street and Tillary Street to return more of the street space to pedestrian use. However, it should be noted that the initial plan to recapture a large area of road space at the northwestern corner of this intersection for pedestrian use by returning it to sidewalk has been modified, in light of advice from Community Board 2 that this space serves a useful purpose for drop off and pickup of disabled and elderly people in the area. Accordingly, this space has been retained in a redesign of the initial suggestions.
- Mark an on-street color-textured Class II bicycle lane on the west side of the street. This does not affect parking availability but provides a visual narrowing of the street and so will encourage drivers to travel more slowly in the southern section of the street.

During street cleaning periods, the bike lane is problematic because residents are permitted to double-park informally on one side of the street while the other is being cleaned. If a bike lane is present, double-parked vehicles are subject to summons for a moving violation (blocking a bike lane), not a parking violation (double-parking); moreover, cyclists are subject to a moving violation summons for riding outside a bike lane on a street where one is provided. Because this conflict between cyclists and parked cars occurs only once a week, for two hours, and because common sense should prevail in this situation it is believed that enforcement of the bike lane is manageable.

CLINTON STREET (LIVING ST)



- *Widen sidewalks and median*
- *Modify lane configuration*
- *Create new island*
- *Modify signal timing*
- *Maintain access to apartment buildings on corner*

End high visibility bike lane

- *Add neckdowns*
- *Texture crossing*
- *Reduce signal progression speed*

- *Add neckdowns*
- *Add a gateway treatment on the north side of Atlantic Ave*

ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Install neck-downs on side streets and where possible minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Texture a 5' wide bicycle lane along the entire length of Clinton Street to match the route indicated in the NYC Bicycle Masterplan

Overview of Operational Improvements

- Modify signal timing and phasing where possible and provide pedestrian phases.

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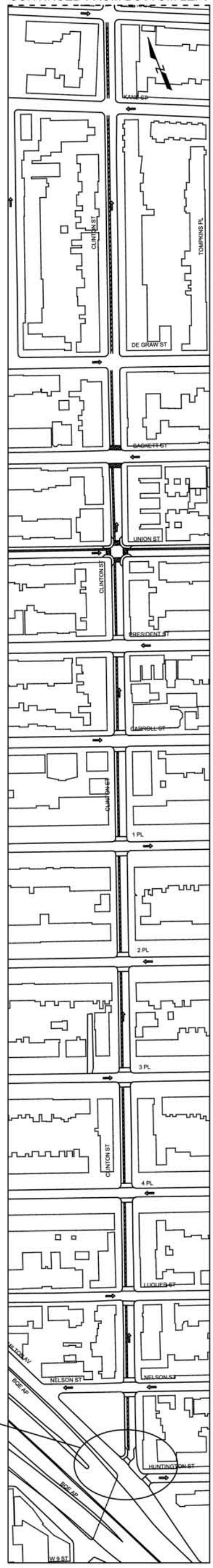


- *Tighten up radius and entrance to discourage cut-through traffic*

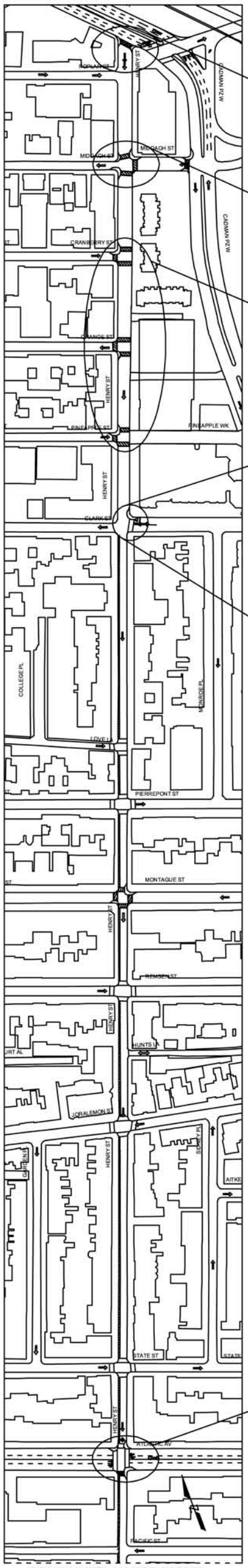
Start high visibility bike lane

7.2.3.6 Henry Street

Though it is designated as a Living Street, Henry Street carries moderate volumes of southbound traffic, particularly south of Atlantic Avenue – 3,500 vpd at the Kane Street cordon. Throughout the corridor, the objectives are to protect pedestrians and increase their visibility and to encourage less aggressive driver behavior. From Old Fulton Street to Clark Street neckdowns and textured crosswalks are recommended where possible to support these objectives.

Henry Street is also the major southbound cycling route through Brooklyn Heights. A successful high visibility, blue color-textured on-street bicycle lane was marked for two blocks south of Atlantic Avenue as part of the pilot program (see *Section 6.3.5*). It is recommended that this color-texturing be extended north along the existing, poorly delineated Class II bike lane, in accordance with the New York City Bicycle Master Plan. South of Amity Street, Henry Street is too narrow to accommodate a parking, travel, and bicycle lane. In this section, where traffic volumes are lower but travel speeds are a community concern, clear signage informing motorists that cyclists have equal rights to use the travel lane are recommended. While this signage is appropriate for immediate installation on Henry Street, over the long term NYCDOT might develop and install a "Share The Road" sign that differs from the current MUTCD version (DOT sign #SW-522). Pennsylvania has recently deployed "Share The Road" signs that show not only those words but also equal-size images of a car and a bicycle riding together. The concept of all users sharing the road is, of course, a traffic calming goal for all streets.

HENRY STREET (LIVING STREET)



ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- From Old Fulton Street to Clark Street, install neck-downs where possible to minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Texture crosswalks in the commercial portion of this street to enhance pedestrian crossing towards the Brooklyn Heights Promenade.
- Provide a high visibility bike lane along the portion of this street that is part of the NYC Bicycle Masterplan route to delineate bicycling area and also to visually narrow the vehicular road width.

Overview of Operational Improvements

- Modify signal timing and phasing to maximize protected pedestrian phases where possible.
- If warrants are met, provide all-way stops at unsignalized intersections between Middagh Street and Clark Street to protect pedestrians crossing towards the Brooklyn Heights Promenade.
- Provide a Bike Box at Clark Street with, if possible, a Leading Bike Interval (LBI) to reduce bicycle/vehicular conflicts.

7.2.3.7 Hicks Street

Hicks Street runs parallel to the BQE between Hamilton Avenue and Atlantic Avenue and experiences intrusion by overflow traffic from the Gowanus Expressay/BQE, particularly at times of peak hour congestion (northbound average daily traffic is 11,000 vpd at the Kane Street screenline). In the northbound direction, this problem is exacerbated by the unconstrained operations of Hicks Street, which has no traffic signals south of Summit Street (see *Section 7.2.1.9*). Hicks Street's proximity to the BQE trench creates some visibility problems for pedestrians crossing Hicks Street because of high walls and narrow sidewalks. The action plan for Hicks Street is built on the Living Street idea that it could be managed in a way that does not encourage through traffic intrusion and that access to properties could take precedence over moving traffic through the corridor.

This approach begins at the south end of Hicks Street, at its intersection with Hamilton Avenue. (see *Section 7.2.1.9*) Discussions with the community indicated that the more restrictive option for managing the Hamilton Avenue/BQE/Hicks Street off-ramps was too intrusive and had the potential for an unintended and adverse consequence of forcing traffic traveling from the Gowanus Expressway to the local area north of Hamilton Avenue into Red Hook. The agreed measure addresses the most severe safety concerns at this intersection but does not protect Hicks Street. NYCDOT has implemented this design, as noted in *Section 7.2.1.9*.

South of Atlantic Avenue the action plan focuses on breaking up the potential for high-speed progression by cut-through drivers attempting to jump the BQE queue, while raising the status of east-west movement across Hicks Street. This has the advantage of improving the safety for pedestrians crossing Hicks Street and of improving the connection between neighborhoods east and west of the BQE trench. The signalized intersections of Hicks Street with Union, Sackett, Kane and Congress Streets – which provide the few road and pedestrian crossings of the BQE trench – could be redesigned to include high profile, color-textured crosswalks on Hicks Street and leading pedestrian intervals for east-west pedestrians (signal timing changes may require further study by NYCDOT's Signal Timing Division). Gateway treatments are also suggested on these east-west streets, as well as on the western legs of President and Summit Streets, to reinforce the residential ambience of the area.

In November 2003, NYCDOT implemented several improvements for the area of Hicks Street south of Atlantic Avenue. They consisted of modified traffic signals to provide leading pedestrian intervals and new roadway markings to designate recommended crosswalks. In addition, on the west roadway, which operates southbound, markings were installed to provide a buffer between pedestrians and motorists and to reduce the number of travel lanes from two to one. These markings were installed between Congress and Woodhull Streets.

From Atlantic Avenue northwards, Hicks Street's Living Street environment could be reinforced by raised intersection treatments at a number of intersections and neckdowns at Atlantic Avenue and Montague Street. A raised intersection was constructed as a pilot project at Hicks and Pierrepont Streets, but removed due to community concerns about noise. The design of future raised intersections should take note of the lessons learned from the Hicks/Pierrepont experience *(see Section 6.3.3)*. Reduced progression speeds are also recommended along the length of Hicks Street to discourage high speeds. On a street such as Hicks Street, which attracts a high level of through traffic, traffic calming measures should be designed to be mutually reinforcing. The traffic signal NYCDOT installed in 2002 at the intersection of Hicks Street and Pierrepont Street complements the raised intersections suggested throughout the corridor – a pattern which could be repeated throughout the section of Hicks Street north of Atlantic Avenue.

There was substantial discussion with Community Board 6 about the possibility of converting the current eastbound Congress Street bridge to two-way operation, as the DOT considered. Congress Street could provide convenient two-way access between Columbia Street and Cobble Hill and – should Furman Street be converted to two-way operation as suggested – to the northern end of the study area and to the Brooklyn Bridge. One drawback would be that two-way traffic on the bridge would require removal of parking spaces. A benefit of this measure would be improved permeability of and accessibility to the area.

7.2.3.8 Joralemon Street

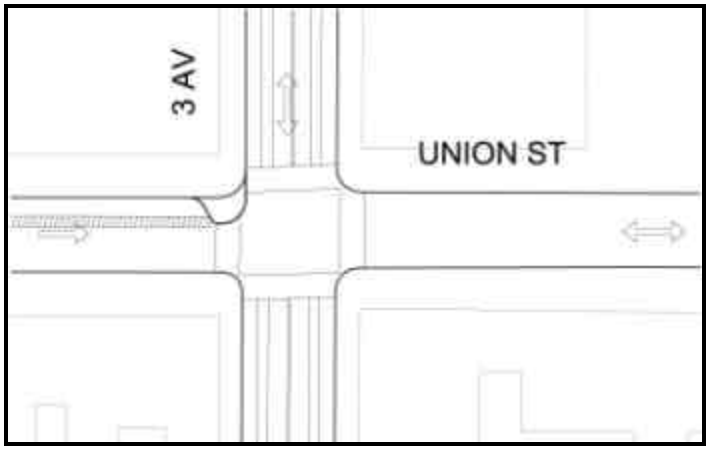
Joralemon Street provides one of the few connections from Brooklyn Heights to the waterfront. Its slope and surface discourage high traffic speeds, although the fact that it provides one of the few connections to Furman Street encourages its use as a cut-through route. In fact, Community Board 2 noted that it welcomes having a street that is able to quickly release traffic from the congested Brooklyn Heights grid. Joralemon Street's intersection with Furman Street is currently designed to allow sweeping turns onto southbound Furman Street. It is recommended that this intersection be squared off to provide some refuge for pedestrians in all directions and to discourage cut-through traffic.

A series of neckdowns at Joralemon Street's intersection with Hicks Street are also recommended, as discussed in *Section 7.2.3.7* above.

7.2.3.9 Union Street

East of 3rd Avenue, Union Street is a two-way road; west of 3rd Avenue it is one-way eastbound. At present the layout of the Union Street/3rd Avenue intersection does not indicate to westbound drivers heading towards 3rd Avenue on the two-way section that they must turn off Union Street. It is recommended as an important matter of safety that this intersection be redesigned to provide an extra-wide neckdown that would channelize traffic safely and indicate the new traffic pattern to drivers. Design and implementation of such a neckdown is subject to NYCDOT Highway Design approval.

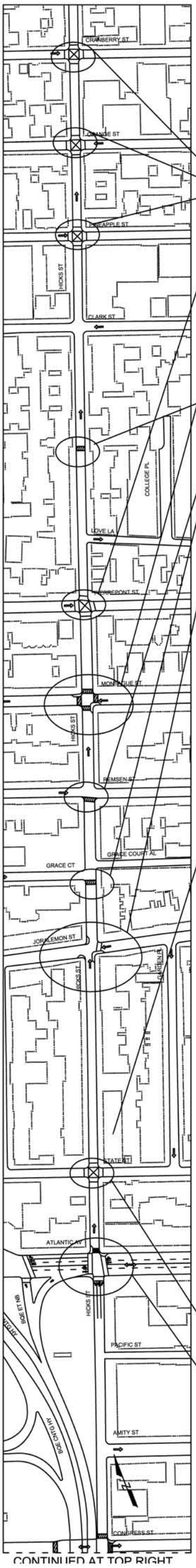
Figure 7.11 Proposed neckdown on Union Street at 3rd Avenue



Union Street is also a proposed cycling route designated in the NYC Bicycle Master Plan. It is recommended that the existing lane be marked as a high-visibility lane. This will draw attention

to motorists' and cyclists' equal right to use the road space and will visually narrow the road, slowing through traffic.

HICKS STREET (LIVING STREET)



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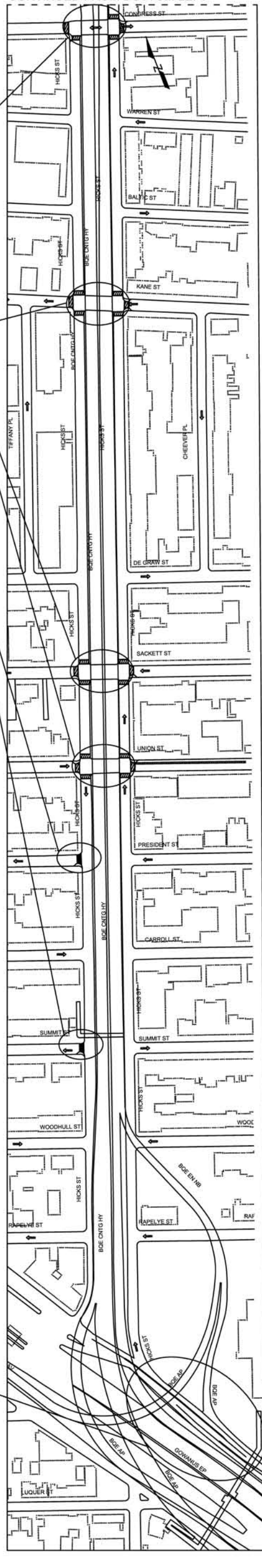

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- *Add raised intersections*
- *Add neckdowns and textured crosswalks*
- *Add textured crosswalks*
- *Add neckdowns and progression breaks*
- *Add a raised intersection*
- *Add neckdowns*
- *Add a gateway treatment*
- *Add LPI*

- *Add gateway treatments*
- *Texture crosswalks*
- *Add a LPI*
- *Allow 2-way traffic over the bridge*
- *Add gateway treatments*
- *Texture walkways*
- *Add a LPI*
- *Add gateway treatments*
- *Re-channelize roads to reduce/eliminate cut-through traffic*
- *For more information see Hamilton Ave sheet*

ACTIONS SUPPORTING STRATEGY

Overview of Physical Improvements

- Install neckdowns on side streets and where possible minimize crossing distances, improve pedestrian visibility, and encourage vehicles to turn at slower speeds.
- Install gateway treatments - on the neighborhood side of intersections which cross the BQE - to discourage through-traffic and speeding.
- Texture crossings at key intersections to visually break-up long stretches of roadway and to enhance crosswalk locations.
- At the intersection of Hamilton Avenue/Hicks Street and the Gowanus Expressway exit, physical improvements should be placed to encourage the use of the BQE and Hamilton Avenue/Van Brunt as a through street as opposed to Hicks Street.
- Vehicles exiting from the Gowanus will be discouraged from using Hicks Street as well as the BQE on-ramp from Hamilton Avenue.

Overview of Operational Improvements

- Modify signal timing and phasing to maximize protected pedestrian phases where possible.
- Longer crossing times should be given to pedestrians trying to cross the BQE/Hicks Street.
- Implement Leading Pedestrian Intervals (LPI) to allow pedestrians time to cross streets while traffic halts.
- Allow two-way traffic on the Congress Street bridge over the BQE to encourage vehicles to use Columbia Street/Furman Street as opposed to Hicks Street.

150' 0 150' 300'

JORALEMON STREET (LIVING STREET)

ACTIONS SUPPORTING STRATEGY

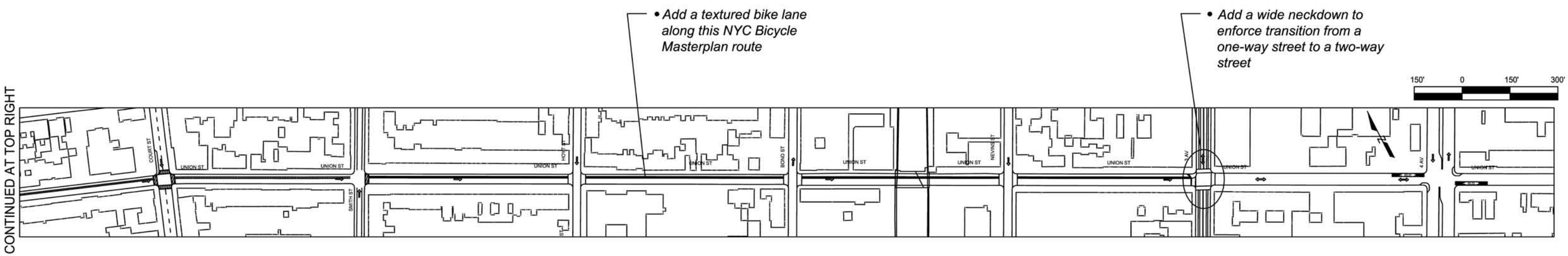
- Discourage cut-through traffic and speeding as well as improve pedestrian safety with the use of neckdowns and raised crosswalks.

UNION STREET (LIVING STREET)

ACTIONS SUPPORTING STRATEGY

Overview of Improvements

- Convert the bike lane between Henry Street and 3rd Avenue to a high-visibility, textured bike lane.
- Build an extra-wide neckdown on eastbound Union Street at 3rd Avenue, to channelize traffic at the point where Union changes from a one-way to a two-way street.



7.2.3.10 Prince Street/Johnson Street/Gold Street

The current arrangements of Gold and Prince Streets (southbound and northbound, respectively) encourage cut-through traffic between Flatbush Avenue and Tillary Street to use Prince Street during peak hours, and tempts drivers to make an illegal right turn across free-flowing traffic from northbound Prince Street to the BQE on-ramp off Tillary Street.

Converting Gold Street from southbound to northbound, and Prince Street from northbound to southbound, will eliminate these illegal movements. This scheme requires that Johnson Street, currently eastbound east of Gold Street but westbound west of Gold Street, be converted to run westbound all the way from Prince Street to Flatbush Avenue.

The management of these streets needs to be coordinated with the Downtown Brooklyn Development plan.

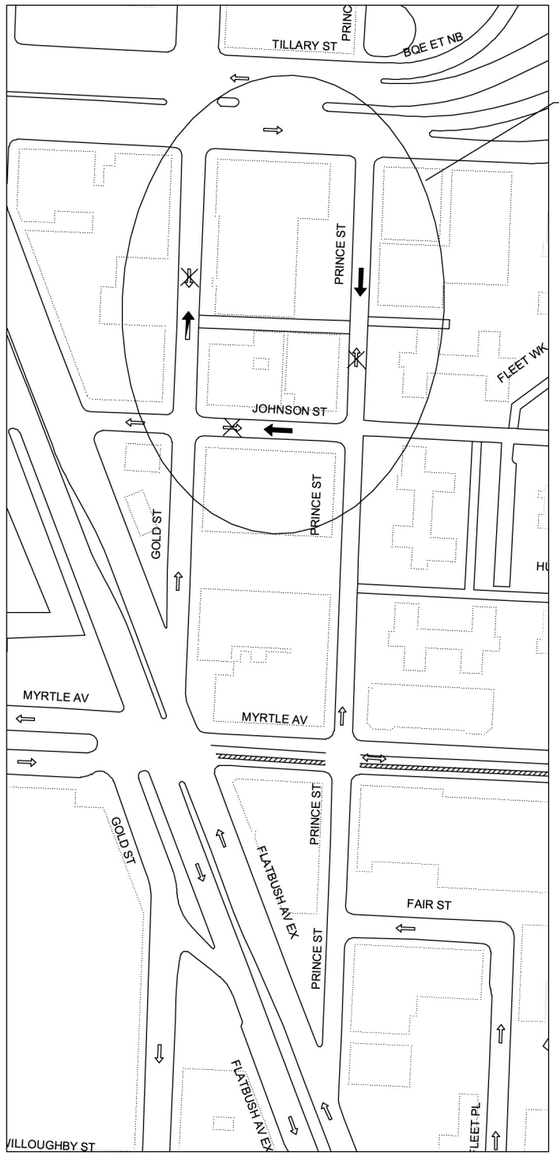
7.2.3.11 Other Fort Greene streets

Local residents have long complained of a speeding problem on certain north-south streets through Fort Greene. This is inconsistent with these streets' Living Street character. On Adelphi, Clermont and Carlton Streets, it is recommended that neckdowns and controlled mid-block crossings adjacent to schools and residential buildings be introduced. These treatments will control through travel speeds and indicate to drivers that they are traveling on Living Streets.

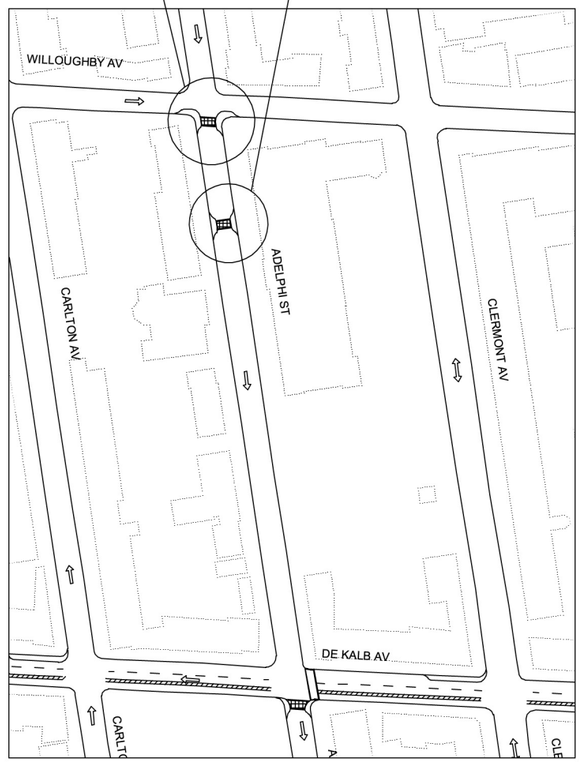
7.2.3.12 Other Southeast area streets

South of the Pacific Street/Dean Street/Bergen Street corridor (see *Section 7.2.3.3*), only a few opportunities exist for east-west movement. Two of these streets, Wyckoff Street and Baltic Street, were widened when the Gowanus Houses were built in the 1950s. To control speeds, improve crossing opportunities, and provide the community with more parking spaces, mid-block crossings (pending NYCDOT warrant analysis) and back-in diagonal parking between Hoyt and Bond Streets are recommended. This treatment will narrow the available road space. Community Board 6 preferred this scheme to a more radical chicane treatment, which would have reduced the available road space further.

OTHER FORT GREENE STREETS (LIVING STREETS)

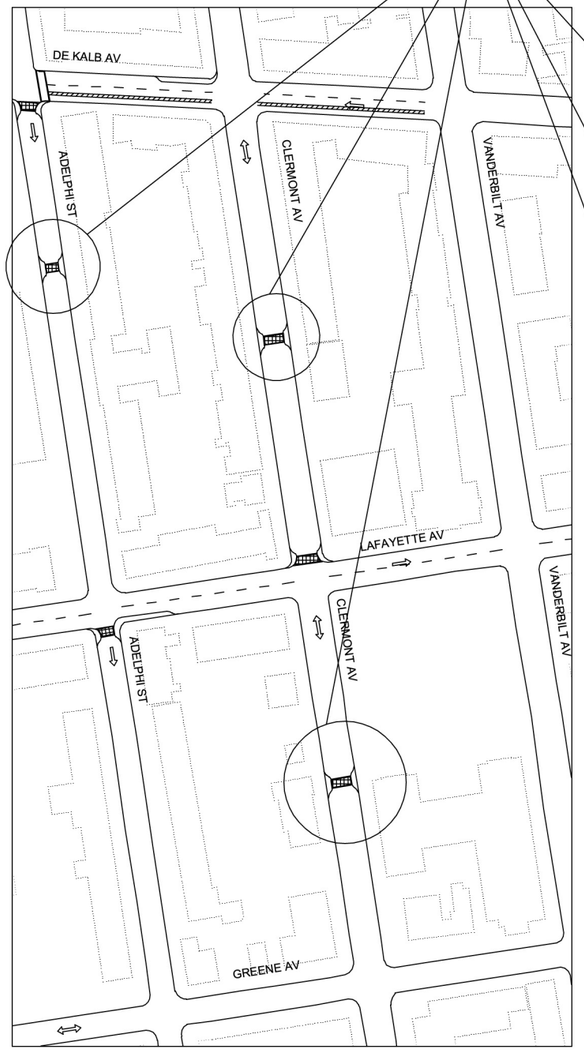


- *Change street directions to eliminate cut-through traffic on Prince St from Flatbush Ave to the BQE*

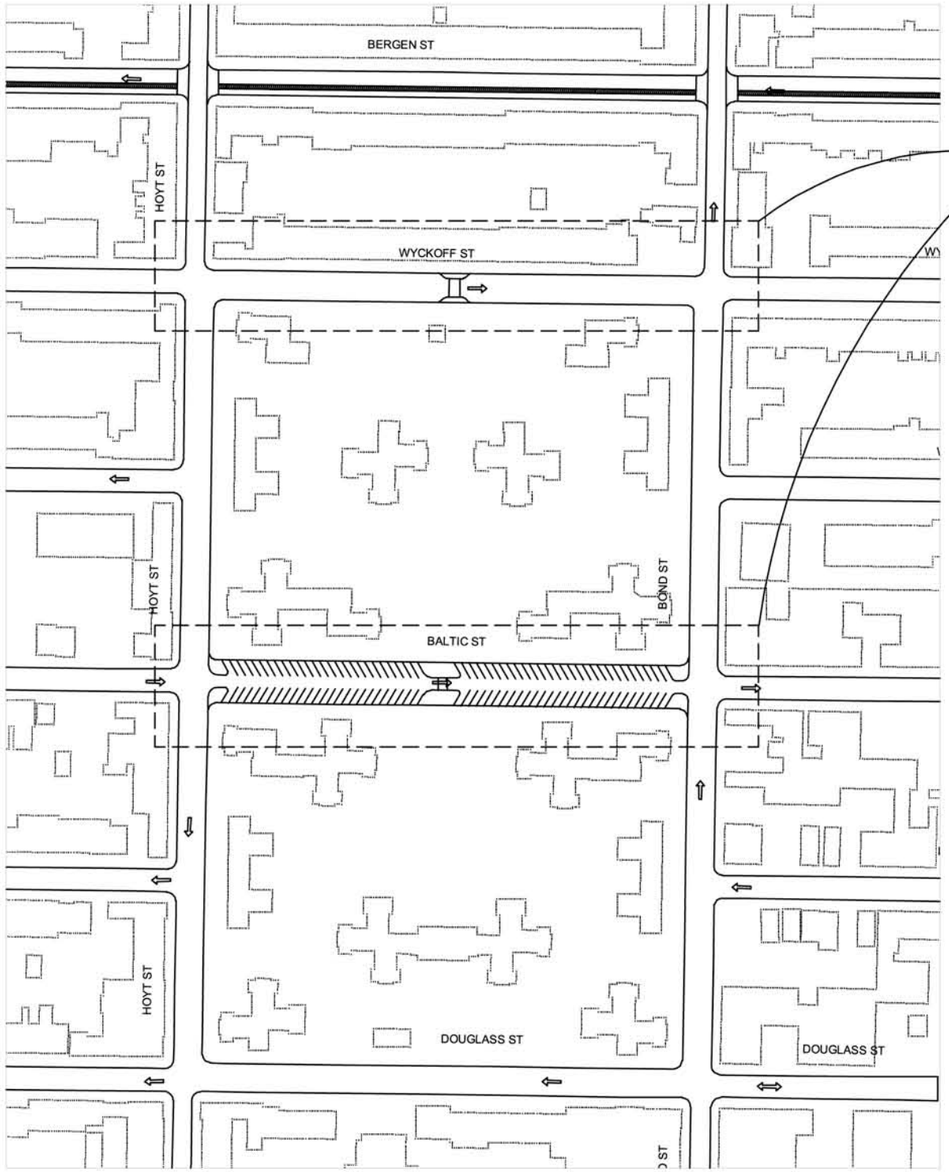


- *Add a gateway treatment*
- *Add a mid-block crossing (subject to further analysis)*

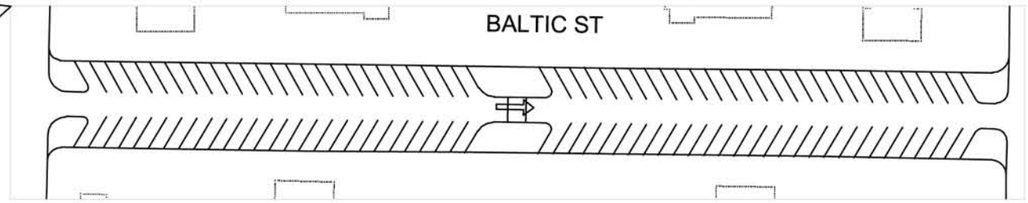
- *Add mid-block crossings for schools and other pedestrian desire lines (subject to further analysis)*



OTHER SOUTHEAST AREA STREETS (COMMUNITY STREET)



BALTIC AND WYCKOFF STREETS PREFERRED OPTION:



- *Add neckdowns and perhaps gateway treatments*
- *Stripe 60° reverse-in parking (on Baltic Street only)*

1A.Add a mid-block crossing

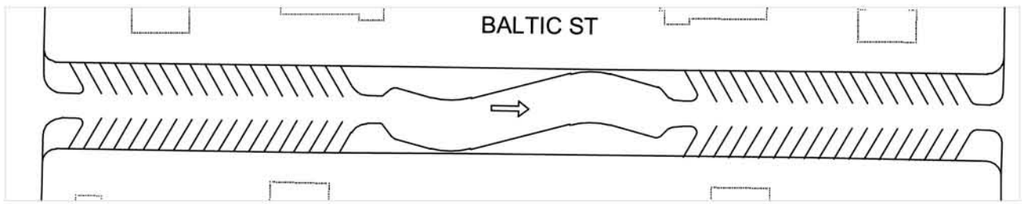
Pros:

- Maintain majority of parking
- Provide narrow streets and midblock crossing opportunities

Cons:

- Some loss of parking
- Not a major deterrent of cut-through traffic

BALTIC AND WYCKOFF STREETS DISCARDED OPTION:



- *Add neckdowns and perhaps gateway treatments*
- *Stripe 60° reverse-in parking (on Baltic Street only)*

1A.Add a mid-block chicane

Pros:

- Maintain majority of parking
- Provide narrow streets and midblock crossing oppurtunities
- Chicane breaks up the long straight block

Cons:

- Some loss of parking
  Design might be unfamiliar to drivers

7.3 Areas Requiring Further Consideration

Inevitably some areas could not be resolved through this process, either because the issues are too broad to be resolved within the ambit of a traffic calming study such as this (for example Tillary and Adams Streets) or because decisions about specific traffic calming tactics logically need to be deferred until other matters that govern areawide traffic management strategies are resolved (such as the area around the Brooklyn Bridge Park). However, useful discussion took place and ideas for treating these areas are discussed here and in *Section 7.*6. Areas deferred to a different forum include:

7.3.1 Flatbush Avenue/Atlantic Avenue/4th Avenue

This large and complex intersection represents the greatest point of traffic congestion in the study area. This stems from the confluence of major traffic flows on Flatbush Avenue, Atlantic Avenue and 4th Avenue throughout the day, but especially during commuter peak periods. The effects of this congestion are felt for substantial distances along each of the roads that approach this intersection and on surrounding streets as a result of intrusion by vehicles seeking to avoid the congestion. A solution to this problem would provide opportunities to improve street operations over a wide area.

The project team spent considerable effort seeking a low-cost traffic management solution to this congestion. A range of schemes based on better managing the traffic passing through the intersection was investigated but no effective solution of this type could be found. It was reluctantly concluded that the solution to the traffic problems at this intersection relies on more substantial measures than can be contemplated as part of a traffic calming program such as this.

A solution to the traffic problems at this intersection could well be found if the range of potential solutions is widened to include more substantial road construction than was considered for this traffic calming study; however, any reconfiguring of this intersection should address the needs of cyclists and pedestrians, especially those who seek to cross Flatbush Avenue in this vicinity, as well as the needs of motorized traffic. A summary of the options considered for this intersection and surrounding areas is provided in *Section 7.6.*

7.3.2 Flatbush Avenue/Schermerhorn Street

Congestion at this intersection constrains NYCDOT's ability to better manage traffic in the Atlantic Avenue/Schermerhorn Street corridor – if additional capacity could be found for eastbound traffic approaching the intersection on Schermerhorn Street then more aggressive measures could be adopted to address traffic problems on Atlantic Avenue and on parallel residential streets such as Dean Street. The project team expended substantial effort in seeking a low-cost traffic management solution to this problem. However, potential solutions exhibited problems at adjacent intersections. A summary of the options considered for this intersection and surrounding areas is provided in *Section 7.6*.

As above, any reconfiguration of this intersection should address the needs of cyclists and pedestrians, especially those who seek to cross Flatbush Avenue in this vicinity, as well as the needs of motorized traffic.

7.3.3 Tillary Street/Adams Street

This is a critical intersection in the road network and is the gateway into Downtown Brooklyn for traffic arriving on the Brooklyn Bridge. The traffic congestion problems at this intersection have

been the subject of debate and analysis for years. Some low-cost ideas for improving the operations of this intersection were advanced but agreement among all stakeholders could not be reached.

There is, however, general agreement that the Tillary Street/Adams Street intersection and the northern Adams Street approach needs to be reconfigured not only to improve traffic operations and to accommodate all motorists, pedestrians, and cyclists, but also to declare to arriving drivers that they have arrived in Brooklyn's dense urban fabric. However, agreement on a physical and management solution that achieves this aim could not be found. It is important, however, that the momentum of discussion that has been created as part of this study be maintained.

In addition, security concerns in the wake of the World Trade Center disaster have impinged on the operations of the roadway in front of the new Federal Court House soon to be completed on the intersection's northwest corner. Development of a rational management plan that meets security needs while accommodating the area's traffic demands must be a high priority.

7.3.4 Fulton Ferry/Two-way Furman Street

Two important elements of the proposed action plan were reconverting Furman Street to two-way operation (in place of the current one-way southbound operation) and reconfiguring the Fulton Ferry area to create a space more in keeping with its important historic and community role. The community saw Furman Street's role in the upcoming Brooklyn Bridge Park master plan (the park will run between between Atlantic Avenue and the Brooklyn Bridge and will become an important regional resource), and Community Board #2 endorsed the two-way operation of Furman Street. However, this corridor will require more attention as the park's design evolves. A master plan has been developed for the park and implementation will begin soon. Traffic access should be at the forefront of any consideration for development of the park, and NYCDOT should play a leading advisory role in the traffic access study for that park, to ensure that the broader road network issues be taken into account in that study.

7.4 Cost Estimates

This section describes the assumptions used in developing unit costs for traffic calming devices. The costs themselves were developed from the project team's experience in implementing the Downtown Brooklyn Traffic Calming pilot program and from engineer's estimates of material costs for typical traffic calming treatments. A summary of the estimated construction cost, including materials and labor, of each corridor is given in *Section 7.4.9*. It was assumed that intersections would be partially closed during construction.

7.4.1 Neckdown

The unit cost for a neckdown assumes that on two corners, sidewalks are extended 7 feet in each direction. The cost allows for the reconstruction of the concrete corner sidewalk and the removal and reinstallation of steel-face curb with six inches of reveal (unless a raised intersection or crosswalk is proposed). Since neckdowns are typically planned at several intersections in a corridor, the cost estimate allows for the fact that catch basins must be relocated whenever neckdowns are built at corners to which drainage flows, but not at all corners.

7.4.1.1 Unit Cost

$18,000 for neckdowns on two corners; $27,000 to neckdown all four corners.

7.4.2 Bus Bulb

The unit cost for a bus bulb assumes a sidewalk extension 7 feet wide and 55 feet long (the length of a single-unit NYCTA coach). As with neckdown costs, bus bulb costs include the cost to reconstruct the sidewalk, relocate the steel-faced curb, and relocate catch basins at sites where drainage is toward the bus bulb.

7.4.2.1 Unit Cost

$30,000 per bus bulb

7.4.3 Raised Intersection

The unit cost for a raised intersection assumes that the intersection is raised 4" above the existing roadway crown, and that the raised portion of the intersection is built in concrete, not asphalt. The raised section of the intersection is assumed to reach all four corners of the intersection.

7.4.3.1 Unit Cost

$10,000 per raised intersection

7.4.4 Full Gateway

The unit cost for a gateway is a combination of the cost of necking down two corners and the cost of building an asphalt (not concrete) raised crosswalk with color-textured markings. As with neckdown costs, gateway costs include the cost to reconstruct the sidewalk, relocate the steel-faced curb, and relocate catch basins at sites where drainage is toward the gateway.

7.4.4.1 Unit Cost

$21,000 per gateway

7.4.5 Chicane or Mid-block Crossing

The unit cost for a chicane or a mid-block crossing is the same as the unit cost for necking down two corners of an intersection. As with neckdown costs, chicane and mid-block crossing costs include the cost to reconstruct the sidewalk, relocate the steel-faced curb, and relocate catch basins at sites where drainage is toward the chicane or mid-block crossing. Additionally, as with all signal timing changes, NYCDOT should confirm that a signal is warranted where a signalized mid-block crossing is proposed.

7.4.5.1 Unit Cost

$25,000 per chicane or mid-block crossing

7.4.6 High-visibility bike lane

The unit cost for a high-visibility bike lane is a per-block cost, assuming a 5 foot-wide lane and a 200 foot-long block. The unit cost includes the costs of powersweeping and the lane, installing ColorSet or a comparable color-texturing product, and laying all lane striping and symbols.

7.4.6.1 Unit Cost

$7,860 per block (based on a 200-foot long block).

7.4.7 High-visibility crosswalk

The unit cost for a high-visibility sidewalk is given for a single leg of an intersection, assuming a 10 foot wide crosswalk. The unit cost includes the costs of power sweeping and the lane, installing ColorSet or a comparable color-texturing product, and restoring all striping.

7.4.7.1 Unit Cost

$1,690 per leg of intersection

7.4.8 Median

The unit cost for a median treatment is a per-block cost, assuming a 4 foot-wide median and a 200 foot-long block at a construction cost of $50/square foot. The unit cost assumes a basic raised concrete median with steel-faced curb at intersections and concrete-faced curb mid-block. It does not include the cost of landscaping or otherwise beautifying the median.

7.4.8.1 Unit Cost

$40,000 per block

7.4.9 Implementation costs by street

Table 7.4 (see next page) summarizes the estimated cost of implementing the Downtown Brooklyn Traffic Calming Strategy for each street in the study area. These estimates are compiled based on the unit costs described in *Sections 7.4.1* through *7.4.8*. The table shows three cost estimates – a low end, midpoint, and high end cost. The midpoint cost is a direct sum of the unit costs described above multiplied by the quantities specified in the strategy. A detailed breakdown of the quantities used to arrive at the estimates is shown in *Table 7.5* (see following page)

The unit costs used in both tables are, as noted, based on actual field experience, and include allowances for such contingencies as catch basin relocation. The low end and high end costs

show 25% decreases and increases, respectively, from the midpoint cost. A low end cost can be used where existing curbs are not steel-faced and no catch basin relocations are required. A high end cost can be used where, in addition to steel-faced curb replacement and catch basin relocation, relocation of some utilities and manholes are also required. All cost estimates are rounded to the nearest $1,000.

Table 7.4 Estimated implementation cost of Downtown Brooklyn Traffic Calming Strategy, by street

Street	Cost Estimate		
	Low end	Midpoint	High end
3rd Avenue	$ 505,000	$ 674,000	$ 842,000
4th Avenue	$1,147,000	$1,529,000	$ 1,911,000
Adams Street	$ 15,000	$ 20,000	$ 25,000
Atlantic Avenue	$ 272,000	$ 362,000	$ 453,000
Court St/Cadman Plaza	$ 62,000	$ 83,000	$ 104,000
Flatbush Avenue	$ 360,000	$ 480,000	$ 600,000
Furman Street	$ 60,000	$ 80,000	$ 100,000
Hamilton Avenue	$ 121,000	$ 161,000	$ 201,000
Old Fulton Street	$ 231,000	$ 308,000	$ 385,000
Tillary Street	$ 191,000	$ 255,000	$ 319,000
Court Street	$ 900,000	$1,200,000	$ 1,500,000
DeKalb Avenue	$ 339,000	$ 452,000	$ 564,000
Fulton Street	$ 273,000	$ 364,000	$ 455,000
Jay Street	$ 48,000	$ 65,000	$ 81,000
Lafayette Avenue	$ 296,000	$ 395,000	$ 494,000
Livingston Street	$ 2,000	$ 3,000	$ 4,000
Montague Street	$ 89,000	$ 119,000	$ 148,000
Myrtle Avenue	$ 224,000	$ 299,000	$ 373,000
Schermerhorn Street	$ 110,000	$ 147,000	$ 184,000
Smith Street	$ 371,000	$ 495,000	$ 619,000
Willoughby Street	$ 91,000	$ 121,000	$ 151,000
3rd Street	$ 106,000	$ 141,000	$ 176,000
Ashland Place	$ 52,000	$ 69,000	$ 86,000
Pacific/Dean/Bergen Streets	$ 149,000	$ 199,000	$ 249,000
Boerum Place	$ 32,000	$ 42,000	$ 53,000
Clinton Street	$ 198,000	$ 264,000	$ 330,000
Henry Street	$ 197,000	$ 263,000	$ 328,000
Hicks Street	$ 320,000	$ 427,000	$ 534,000
Joralemon Street	$ 20,000	$ 27,000	$ 34,000
Union Street	$ 74,000	$ 99,000	$ 124,000
Other Fort Greene Streets	$ 172,000	$ 230,000	$ 287,000
Other Southeast Streets	$ 20,000	$ 27,000	$ 34,000
Total Cost, All Streets	**$7,047,000**	**$9,397,000**	**$11,746,000**

DOWNTOWN BROOKLYN TRAFFIC CALMING DETAILED COST ESTIMATE, BY CORRIDOR

Example	Hicks/ Atlantic	(based on neckdown)	Hicks/ Pierrpont	Fulton/S. Oxford	(based on neckdown)	Henry per block	Hicks/ Atlantic	Atlantic/ Bond	Tillary-Adams										
Generic Cost	$ 18,000	$ 30,000	$ 10,000	$ 21,000	$ 25,000	$ 7,860	$ 1,690	$ 40,000	$ 10,000										
								per block	per corner										
Quantities by Corridor										**Sum**		**Component Cost**							
Corridor	**Neckdown two corners**	**Bus bulb**	**Raised intersection**	**Full gateway**	**Chicane**	**High-visibility bike lane**	**High-visibility crosswalk**	**Medians/ Road reclamation**	**Bollards/ Ped Fencing**	$ 9,404,520		**Neckdown two corners**	**Bus bulb**	**Raised intersection**	**Full gateway**	**Chicane**	**High-visibility bike lane**	**High-visibility crosswalk**	**Medians/ Road reclamation**	**Bollards/ Ped Fencing**
3 Av	13			14		18.5				$ 673,410		$ 234,000	$ -	$ -	$ 294,000	$ -	$ 145,410	$ -	$ -	$ -
4 Av	44			27.5				4		$ 1,529,500		$ 792,000	$ -	$ -	$ 577,500	$ -	$ -	$ -	$ 160,000	$ -
Adams								0	2	$ 20,000		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000
Atlantic	11			4				2		$ 362,000		$ 198,000	$ -	$ -	$ 84,000	$ -	$ -	$ -	$ 80,000	$ -
Cadman							2	2		$ 83,380		$ -	$ -	$ -	$ -	$ -	$ -	$ 3,380	$ 80,000	$ -
Flatbush								11.5	2	$ 480,000		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 460,000	$ 20,000
Furman								2		$ 80,000		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 80,000	$ -
Hamilton	4.5							2		$ 161,000		$ 81,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 80,000	$ -
Tillary						2		6		$ 255,720		$ -	$ -	$ -	$ -	$ -	$ 15,720	$ -	$ 240,000	$ -
Court	33	9					104	4		$ 1,199,760		$ 594,000	$ 270,000	$ -	$ -	$ -	$ -	$ 175,760	$ 160,000	$ -
DeKalb	6	6		1		13		1		$ 451,180		$ 108,000	$ 180,000	$ -	$ 21,000	$ -	$ 102,180	$ -	$ 40,000	$ -
Fulton	2			8				4		$ 364,000		$ 36,000	$ -	$ -	$ 168,000	$ -	$ -	$ -	$ 160,000	$ -
Jay	1					6				$ 65,160		$ 18,000	$ -	$ -	$ -	$ -	$ 47,160	$ -	$ -	$ -
Lafayette	1	3		6			1	4		$ 395,690		$ 18,000	$ 90,000	$ -	$ 126,000	$ -	$ -	$ 1,690	$ 160,000	$ -
Livingston							2			$ 3,380		$ -	$ -	$ -	$ -	$ -	$ -	$ 3,380	$ -	$ -
Montague	4						28			$ 119,320		$ 72,000	$ -	$ -	$ -	$ -	$ -	$ 47,320	$ -	$ -
Myrtle	7					17		1		$ 299,620		$ 126,000	$ -	$ -	$ -	$ -	$ 133,620	$ -	$ 40,000	$ -
Old Fulton	6							5		$ 308,000		$ 108,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -
Schermerhorn	6							1		$ 148,000		$ 108,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,000	$ -
Smith	14					22	41			$ 494,210		$ 252,000	$ -	$ -	$ -	$ -	$ 172,920	$ 69,290	$ -	$ -
Willoughby	4.5							1		$ 121,000		$ 81,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,000	$ -
3 St	4			2		3.5				$ 141,510		$ 72,000	$ -	$ -	$ 42,000	$ -	$ 27,510	$ -	$ -	$ -
Ashland	3					2				$ 69,720		$ 54,000	$ -	$ -	$ -	$ -	$ 15,720	$ -	$ -	$ -
Pac/Dean/Berg	4		2			13.5				$ 198,110		$ 72,000	$ -	$ 20,000	$ -	$ -	$ 106,110	$ -	$ -	$ -
Boerum	1.5					2				$ 42,720		$ 27,000	$ -	$ -	$ -	$ -	$ 15,720	$ -	$ -	$ -
Clinton	2					29				$ 263,940		$ 36,000	$ -	$ -	$ -	$ -	$ 227,940	$ -	$ -	$ -
Dean										$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Henry	6.5			1		11	23			$ 263,330		$ 117,000	$ -	$ -	$ 21,000	$ -	$ 86,460	$ 38,870	$ -	$ -
Hicks	10.5		5	7			24			$ 426,560		$ 189,000	$ -	$ 50,000	$ 147,000	$ -	$ -	$ 40,560	$ -	$ -
Joralemon	1.5									$ 27,000		$ 27,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Union	1					8	11			$ 99,470		$ 18,000	$ -	$ -	$ -	$ -	$ 62,880	$ 18,590	$ -	$ -
Other NE stree	11			1			7			$ 230,830		$ 198,000	$ -	$ -	$ 21,000	$ -	$ -	$ 11,830	$ -	$ -
Other SE stree	1.5									$ 27,000		$ 27,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

7.5 Staging implementation of the action plan

A staging strategy for implementing the Downtown Brooklyn Traffic Calming strategy has been developed. The staging strategy balances several considerations:

- costs must be spread evenly over several years of construction,
- strategies must be implemented to prevent sudden increases or decreases in capacity that might induce additional driving in Downtown Brooklyn, and
- visible progress must be made in order to build and maintain momentum (see *Section 8.3*).

The staging program outlined in the Final Report spreads out the strategy's $10 million cost over four distinct phases, each roughly equal in cost. Estimated costs include all individual physical works associated with the treatments and any necessary utilities relocation. The actions in each phase are coordinated so that traffic impacts result in a logical fashion consistent with the Street Management Framework, and so that visible locations are treated early in the process to maintain visibility and enthusiasm. The order of the phases is not meant to imply a hierarchy of importance among the corridors or an indication of priorities. Instead, it is intended to group corridors on a systematic basis for implementation. Implementation phasing should be based on community priorities and coordination with the City's Capital Plan. In fact, the phases are interchangeable in two senses – each phase bundles a coordinated set of actions that can stand alone from a traffic operations point of view, and the costs are roughly equal among phases. A summary of costs, by phase, is given in *Section 7.5.5*. Note that this plan constitutes the project team's recommendation, and is subject to change if community or NYCDOT priorities change.

7.5.1 Phase 1

Phase 1 focuses on two of the corridors that generated the most discussion during the Downtown Brooklyn Traffic Calming process – Atlantic Avenue (east-west) and Brooklyn Heights (north-south). The approximate total cost of Phase 1 is expected to range between $1.9 million and $3.2 million.

7.5.1.1 Atlantic Avenue east-west corridor

This phase begins by improving pedestrian conditions and rationalizing traffic flow and queuing patterns along Atlantic Avenue. The introduction of operational measures like LPIs and 24-hour parking (currently, only off-peak parking exists), and physical measures like neckdowns on intersecting Living Streets will improve pedestrian conditions on Atlantic Avenue. Meanwhile, as traffic operation improvements allow Atlantic to carry and store peak hour traffic more efficiently, traffic pressure on parallel Living and Community Streets like Pacific Street, Dean Street, Bergen Street, Livingston Street, and Schermerhorn Street will decrease. This will create an opportunity to introduce new physical treatments that slow travel speeds and discourage through traffic on the Living and Community Streets.

Improvements in the Atlantic Avenue corridor include the traffic calming strategies for:

- Atlantic Avenue
- Pacific/Dean/Bergen Streets
- Schermerhorn Street

- Livingston Street

7.5.1.2 Brooklyn Heights north-south corridor

Building on the improved east-west operations on Atlantic Avenue, a Travel Street, Phase 1 continues to reduce through traffic impacts and improve conditions for non-motorized street users on the Living Streets that run north-south across Atlantic Avenue west of Court Street. Many of these improvements would begin as far south as Hamilton Avenue, improving conditions on both sides of Atlantic Avenue, but the primary operational focus will be to slow traffic and discourage through travel north of Atlantic Avenue.

Improvements in the Brooklyn Heights corridor include the traffic calming strategies for:

- Hicks Street
- Henry Street
- Clinton Street
- Hamilton Avenue
- Court Street/Cadman Plaza West
- Old Fulton Street
- Furman Street
- Joralemon Street
- Montague Street
- Jay Street
- Adams Street

7.5.2 Phase 2

Phase 2 complements the work completed in Phase 1 by extending traffic calming improvements to the north-south Court/Smith Streets corridor through Cobble Hill. The approximate total cost of Phase 2 is expected to range between $1.5 million and $2.5 million.

7.5.2.1 Cobble Hill north-south corridor

Phase 2 aims to rationalize traffic and transit operations and to improve conditions for pedestrians, cyclists, bus riders, and motorists along Smith and Court Streets and the intersecting Living Streets in Cobble Hill. When combined with the actions undertaken in Phase 1, this phase will prevent traffic discouraged from using the north-south streets west of Court Street (Hicks, Henry, and Clinton Streets) from simply diverting to Court and Smith Streets.

Improvements in the Cobble Hill corridor include the traffic calming strategies for:

- Court Street
- Smith Street
- Columbia/Van Brunt Streets
- Union Street

- 3rd Street
- Baltic/Wyckoff Streets

7.5.3 Phase 3

Phase 3 focuses on improving street management within and east of the Downtown Brooklyn Central Business District (CBD). The centerpieces of this phase are traffic management measures to improve the operations of Flatbush Avenue and physical measures that will reinforce the neighborhood character of Fort Greene's Living and Community Streets. The approximate total cost of Phase 3 is expected to range between $2 million and $3.3 million.

7.5.3.1 Fort Greene east-west corridor

Phase 3 will improve pedestrian conditions and bus operating conditions on the east-west avenues through Fort Greene. This phase will also slow traffic traveling crosstown on the north-south Living Streets, reducing the volume and impact of through traffic on residential areas.

Improvements in the Fort Greene corridor include the traffic calming strategies for:

- Myrtle Avenue
- DeKalb Avenue
- Lafayette Avenue
- Fulton Street
- Ashland Place
- Other Fort Greene Streets

7.5.3.2 Flatbush Avenue and the Central Business District

Phase 3 will introduce operational improvements and physical measures along Flatbush Avenue and Tillary Street to make traffic flow and queue more efficiently, reducing drivers' temptation to use adjacent Living and Community Streets to access Manhattan and the Downtown Brooklyn CBD. The strategies for Flatbush Avenue specifically address it role as a safe, efficient vehicular gateway to MetroTech and the entire Brooklyn CBD, while still reaping substantial benefits for pedestrians to travel along and across the avenue.

Improvements in the Central Business District (CBD) include the traffic calming strategies for:

- Flatbush Avenue
- Willoughby Street
- Tillary Street

7.5.4 Phase 4

Phase 4 addresses the traffic management and safety issues in the north-south corridor formed by two Travel Streets, 3rd and 4th Avenues. The approximate total cost of Phase 4 is expected to range between $1.7 million and $2.8 million.

7.5.4.1 3rd/4th Avenue corridor

Phase 4 will allow 3rd and 4th Avenues to continue their role as Travel Streets, distributing regional trips into the study area. This phase also introduces physical measures that will improve pedestrian safety and crossing conditions along the avenues.

Improvements in the 3rd/4th Avenue corridor include the traffic calming strategies for:

- 3rd Ave
- 4th Ave

7.5.5 Costs by phase

Table 7.6 summarizes an estimated cost range for each implementation phase of the Downtown Brooklyn Traffic Calming strategy. Unit costs and assumptions are described in *Section 7.4.*

Table 7.6 Summary of cost estimates, by implementation phase

Phase	Corridor locations	Cost estimate (millions)		
		Low end	Midpoint	High end
1	Atlantic Avenue, Brooklyn Heights	$ 1.9	$ 2.5	$ 3.2
2	Cobble Hill	$ 1.5	$ 2.0	$ 2.5
3	Fort Greene, CBD	$ 2.0	$ 2.7	$ 3.3
4	3rd and 4th Aves	$ 1.7	$ 2.2	$ 2.8
Total		**$ 7.0**	**$ 9.4**	**$ 11.7**

Note: Columns may not sum due to rounding

7.6 Ideas Considered But Not Advanced

A great deal of investigation and analysis effort was expended on ideas that ultimately did not find their way into the final strategy. This effort was not without value, of course, and is reported here in order that the value is not lost. All of the measures presented in this section were considered seriously and only dismissed if the community expressed its dislike, or if analysis showed that the measure's impacts on safety and traffic movement were too great.

7.6.1 Flatbush Avenue/Atlantic Avenue/4th Avenue

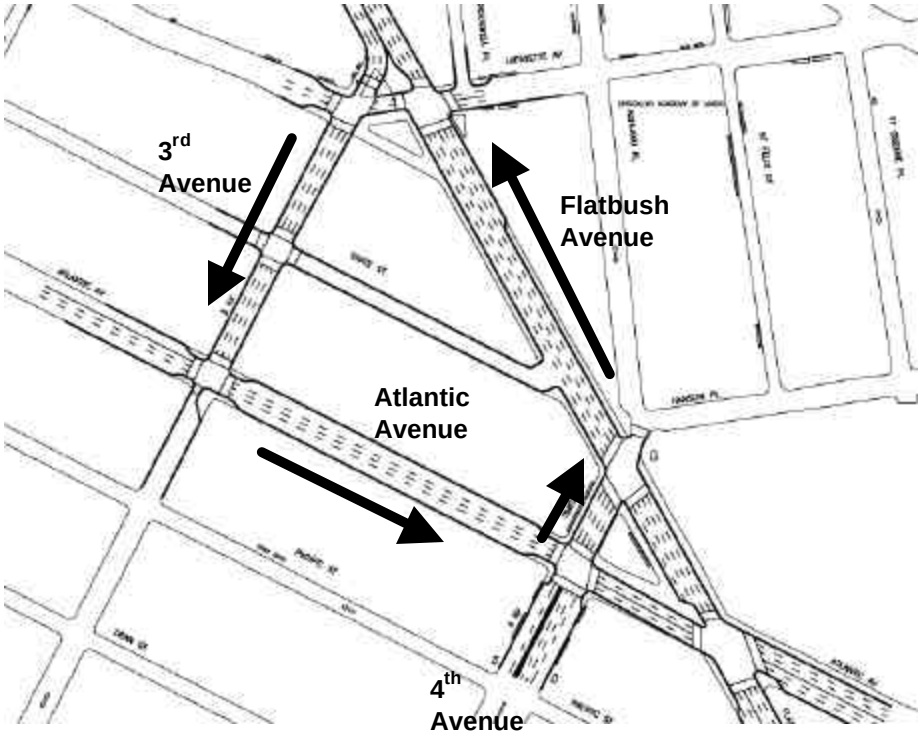
Section 7.3 contains a discussion of how this location was identified as one that required further attention beyond the duration of this study. This reflects the project team's inability to find a traffic calming solution to its problems only after a substantial amount of analytical effort. It is likely that the intersection can be made to operate more effectively, but only through more substantial construction activity than fits comfortably under the heading of traffic calming.

The intersection of Flatbush Avenue, Atlantic Avenue and 4th Avenue routinely experiences substantial congestion, which extends west to include the intersection of 3rd Avenue and Atlantic Avenue. These intersections, together with the congested intersection of Schermerhorn Street and Flatbush Avenue provide a major traffic bottleneck whose effect is felt over a wide area. Clearly, the traffic congestion at this location could be addressed through substantial road construction.

However, the focus of this traffic calming investigation was on managing traffic better and innovatively.

The focus was on implementation of a gyratory, a traffic control technique used with great success elsewhere in the world. This involved creating a traffic loop running one-way counter clockwise southbound on 3rd Avenue from Flatbush Avenue to Atlantic Avenue, eastbound on Atlantic Avenue to 4th Avenue, northbound on 4th Avenue to Flatbush Avenue and northwest on Flatbush Avenue to 3rd Avenue. The scheme is illustrated in *Figure 7.12.*

Figure 7.12 Gyratory proposal for Atlantic, Flatbush, Third, and Fourth Avenues. Though it would reduce conflicts and improve traffic flow, this plan is impossible, without taking land for additional road space.



This proposal built on the idea that an effective means of reducing congestion at individual locations is to reduce the number of conflicting traffic movements. At present, each of these intersections is configured to allow almost all movements. This provides desirable flexibility for drivers to travel exactly where they want through the congested area, but with the substantial impacts of traffic congestion and an unpleasant street environment. The Gyratory option suggested that it might be possible to sacrifice some of the movement flexibility, in return for a congestion reduction, as well as an improvement in street conditions and reduction in road width. Since it had the potential to benefit all street users, the Gyratory option was investigated seriously here.

In this option, traffic northbound on 4th Avenue and westbound on Atlantic Avenue heading for Flatbush Avenue would not have to deviate from its current route, but would experience less congestion than currently in the morning peak because of the reduced conflicts at the intersections of Flatbush Avenue and Atlantic Avenue and Flatbush Avenue and 4th Avenue. Traffic currently heading for Atlantic Avenue west of the area from 4th Avenue and Atlantic Avenue east of the area could do so by traveling northwest on Flatbush Avenue and then south on 3rd Avenue, or

(more desirably) could divert to Flatbush Avenue northwest. Traffic heading north on 3rd Avenue would need to travel counter clockwise around the gyratory in order to reach either Flatbush Avenue northwest or Atlantic Avenue west; while circuitous, the movement from 3rd Avenue south to Atlantic Avenue west is currently banned, therefore this scheme provides greater connectivity between what are designated as two truck routes than currently exists.

Traffic traveling away from Brooklyn's downtown likewise would experience a mix of greater convenience and slight deviation. All traffic traveling southeast on Flatbush Avenue would deviate south on 3rd Avenue to Atlantic Avenue, generally east on Atlantic Avenue and from there either to Atlantic Avenue east, Flatbush Avenue southeast or 4th Avenue south. Traffic traveling east on Atlantic Avenue could reach Atlantic Avenue east, Flatbush Avenue southeast, 3rd Avenue south and 4th Avenue south without deviation and with fewer conflicting traffic movements than at present.

The northbound and westbound traffic streams described above generally benefit strongly from this scheme, particularly in the morning peak commuter period. By virtue of the slightly circuitous route required to reach Atlantic Avenue west, this major shopping street may be somewhat protected from westbound through traffic.

The proposal's major flaw occurs in the evening commuter peak period at the Atlantic Avenue/3rd Avenue intersection, where there is simply not enough current road space to accommodate evening commuter peak traffic. To store evening peak volumes, land acquisition for road widening would be required. Given the focus on improvements to the area's traffic that do not rely on major property acquisition, this innovation had to be abandoned. Notwithstanding this, it is felt that the scheme has some merit and offers a possible means of dealing with the chronic traffic congestion in this area at the same time as offering means to reduce road widths and create the potential for pedestrian presence in what is currently an unpleasant pedestrian area. Apart from the road space problems at the Atlantic Avenue/3rd Avenue intersection, substantial opportunities presented themselves to reclaim road space, simplify traffic movements and improve the street environment. Current (2000) and Gyratory conditions are described in *Table 7.6*.

Table 7.7 Comparison of current traffic conditions at Flatbush-Atlantic-Fourth Avenue intersection with conditions under the proposed gyratory

Intersection	*Existing (2000)*				*With Gyratory*			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	*Int. Delay*	*LOS*	*Int. Delay*	*LOS*	*Int. Delay*	*LOS*	*Int. Delay*
Flatbush Ave – Fourth Ave	C	26.3 sec	C	20.0 sec	C	29.8 sec	C	26.3 sec
Flatbush Ave – Atlantic Ave	C	23.4 sec	C	29.2 sec	C	23.4 sec	C	28.9 sec
Atlantic Ave – Fourth Ave	D	49.7 sec	D	43.4 sec	E	60.8 sec	D	50.7 sec

Source: Traffic volumes from 330 Jay Street EIS

In the long term, it is recommended that this option be explored further as part of the ongoing studies of this area recommended in *Section 7.3*.

7.6.2 Flatbush Avenue/Schermerhorn Street/3rd Avenue realignment

Besides experiencing chronic congestion, the intersection of Schermerhorn Street with Flatbush and 3rd Avenues is unwelcoming for pedestrians. An attempt was made to reorganize the street space, and improve throughput, by banning left turns from 3rd Avenue to Schermerhorn Street, changing signal timings, and expanding the traffic island by closing the slip ramp between Schermerhorn Street and Flatbush Avenue. However, while some of these measures would improve pedestrian crossing conditions, no amount of realignment can increase the capacity of this intersection, short of actually acquiring more property for road space. Since acquiring property is beyond the scope of traffic calming, and since the junction of two Travel Streets needs to be managed with traffic throughput in mind, this option was not pursued. Such a plan may be possible in the context of the EDC/Department of City Planning's Downtown Brooklyn Redevelopment Plan.

7.6.3 State Street reversal

Residents of State Street between Court and Hoyt Streets are concerned that redevelopment of the Municipal Parking Garage site will increase traffic on their blocks. They voiced that State Street, which is one-way eastbound, suffers from as much traffic intrusion in the evening peak as streets that parallel Atlantic Avenue to the south (Pacific, Dean, and Bergen Streets). They suggested reversing the direction of State Street for one block to prevent this intrusion.

Such a reversal is not recommended for two reasons:

- Such a reversal would reduce the permeability of the Boerum Hill grid, frustrating drivers unfamiliar with the area, and
- The scheme would place additional traffic onto already congested intersections like Smith Street and Atlantic Avenue, Hoyt Street and Atlantic Avenue, and 3rd Avenue and Schermerhorn Street. Additional traffic would be forced to take circuitous routes on State Street and adjacent streets, including Atlantic Avenue, Hoyt Street, Bond Street, Court Street, Smith Street and 3rd Avenue.

Notwithstanding these concerns, some attention should be given to mitigating the traffic impacts of the garage site redevelopment during that project's planning process.

7.6.4 Two-way Court Street

Converting Court Street to two-way operation was suggested as a way of making the street less useful for commuters and more useful for local circulation and non-drivers. However, Court Street is not a Living Street, and the presence of traffic is not something to be avoided at all costs. Indeed, as noted elsewhere, many successful shopping streets in New York carry high traffic volumes. Since making Court Street two-way would reduce southbound capacity in the study area, it would lead to further intrusion into Living Streets like Henry, Nevins and Hoyt Streets. Moreover, a two-way scheme would do nothing to improve the operations of buses on Court Street – an issue that is addressed by the suggested bus bulbs.

8. IMPLEMENTATION

8.1 Building Support

There is nothing magic about traffic calming. It is merely an approach to managing streets by acknowledging the needs of all users of the great store of public space contained between property lines (primarily roadways and sidewalks). Just as this approach recognizes and accommodates the needs of those who live and work and shop and play on the City's streets, so it also recognizes the need to accommodate motorized traffic adequately. Drivers of cars and other motorized vehicles are legitimate users of streets, but they are not the only users. This idea, perhaps not articulated in exactly this way, underpins the community groundswell that created the Downtown Brooklyn Traffic Calming Study.

When thought of as a rational sharing of limited space among all users rather than as a battle between cars and pedestrians, it is hard to disagree with the idea of traffic calming. It is important to maintain this concept. Traffic calming does not represent a radical new approach to managing streets, but a more balanced one – an approach that reflects a clearer perception of broad community objectives. Promoting the debate over traffic calming in these terms is an important element underpinning continued and expanded support for implementation of Downtown Brooklyn's Traffic Calming program and development of similar projects elsewhere in the City. This project has helped to break down some of the barriers of distrust that were erected many years ago and that have provided the framework for conflict ever since. It would be easy but counterproductive for stakeholders to raise these barriers again.

Of course, it would be inaccurate to imply that the Downtown Brooklyn Traffic Calming study has created a harmonious environment of uniform agreement. In spite of extensive community involvement with the project, some people feel disenfranchised; others feel the project has not met their aspirations. So there is plenty of work to do both in engaging those people who think in this way and in refining and developing the details of the strategy to more broadly meet the community's needs.

A key element of continuing progress, however, is that people continue to embrace the idea of change. As has been shown through the course of this study, change is not necessarily threatening and it is only through change that improvements to the urban environment can occur.

8.2 Expanding the Envelope

Some stakeholders have criticized the actions identified in this study for not going far enough, for not representing the radical change that they had hoped for.Yet it must be recognized that change inevitably is slow and proceeds by increments. A review of the different ways in which streets are managed in other countries or in other parts of the United States shows that these differences were not created instantaneously, but came about either because of a difference in the initial philosophy of street management or because of a program of change that has lasted a number of years. Nowhere has a city changed its street management approach radically and overnight and nowhere has such a change occurred in the absence of broad community support. Implementation of sophisticated traffic management schemes elsewhere has in almost all cases followed a long period of development of support, understanding and sophistication in use of the road system.

Brooklyn is no different. New York City has gone some way in the process of improving its management of traffic to meet broader community needs and this process will continue. However, it is unrealistic to expect that the city's first areawide traffic calming plan can immediately change the street environment in a radical way. This report outlines a strategy that delivers important

benefits in relation to the livability of the study area and that is achievable over a short time period. Some parts of it may be regarded initially as challenging; however, it should be possible over time to implement the strategy in its entirety with the support of all stakeholders.

To do so, it will be necessary to continue the education process begun as part of this strategy development process and to harness the support of all stakeholders in gradually developing the strategy until it is achieved.

8.3 Maintaining Enthusiasm

It is also important that active steps be taken to maintain the enthusiasm generated through the course of this project. Many traffic calming programs around the world have foundered as focus has been lost and enthusiasm waned. In general, programs that are directed and supported work better than those that are not.The best means of maintaining drive in implementing this traffic calming program must be determined by the community and NYCDOT. A small joint committee with a representative from each of NYCDOT, the office of the Brooklyn Borough President, and Community Boards 2, 6, and 8 could adopt responsibility for ensuring that implementation proceeds. Such a committee could be charged with:

- setting and monitoring implementation targets;
- ensuring that implementation proceeds in accordance with the implementation program;
- monitoring the effects of the program;
- refining the program as knowledge accumulates;
- publicizing progress;
- making progress on the difficult issues identified in *Section 7.3;* and
- reinvigorating the process periodically.