Draft Plan & Recommendations

3

3.1 Project Objectives

At the project's first public meeting on November 19, 2014, a clear and strong message came from participants. In order for improvements to Broadway in the study area to achieve the first two of the project's stated goals to *improve mobility, accessibility, and safety, consistent with Complete Streets concepts*, providing a high-quality pedestrian and bicycle connection between the three pending/contemplated pedestrian and bicycle shared-use trails which enter the study area from the east, west and south, must be a priority in the adopted plan. Ideally, these connections would provide the same level of comfort and safety as the trails themselves. Those present cited several recent studies which indicate that unless trail users are provided a consistent experience across trail connections, use of the connections will be significantly less than their full potential. In particular, some of those present at the public meeting voiced concern that while parents might be willing to take their children for rides on the trails, they would not be willing to take them on the connections and into the Broadway study area, if there was a perception that the connections were markedly less safe than the trails.

This one issue directly addresses the study's third goal to *supplement the efforts of the Comprehensive Plan,* which (as of the January 2015 draft) envisions the transformation of midtown "into a socially and economically vibrant place where people in the City and surrounding region want to live, shop, work and be entertained". A key component will be to get families to stop in the downtown and support the mix of new development, including businesses and entertainment, contemplated both in the Comprehensive Plan and in the Mayor's BEAT (Business, Entertainment, Arts, and Technology) initiative. High-quality pedestrian and bicycle paths through the corridor would be one means of drawing in this key demographic. Numerous studies have documented the economic benefits of introducing shared-use trails into commercial neighborhoods.

3.2 Alternatives

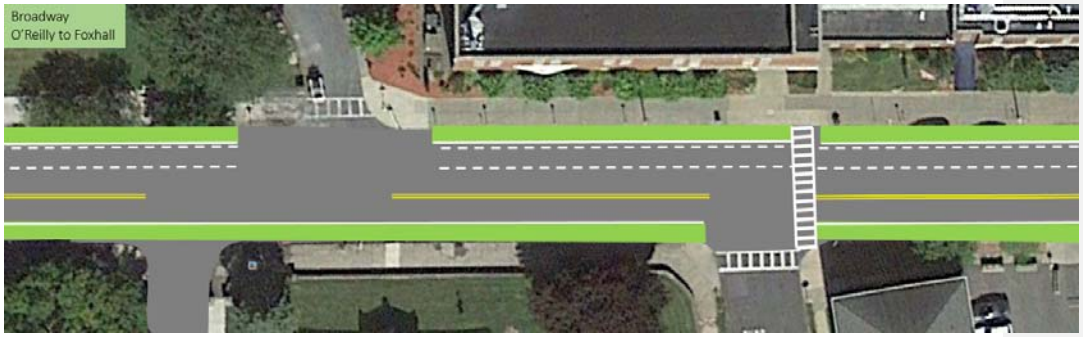
After the November public meeting, the project Technical Advisory Committee (TAC) extensively studied four options which might accomplish this goal while also supporting the other key components of the Comprehensive Plan for midtown, namely strengthening multi-modal connections and improving walkability; as well as making visual and physical enhancements to the streetscape. Through internal discussions, it became apparent that another critical element of the plan would be to preserve parking to support the continued use of automobiles by patrons of the businesses along the Broadway corridor.

The options evaluated included:

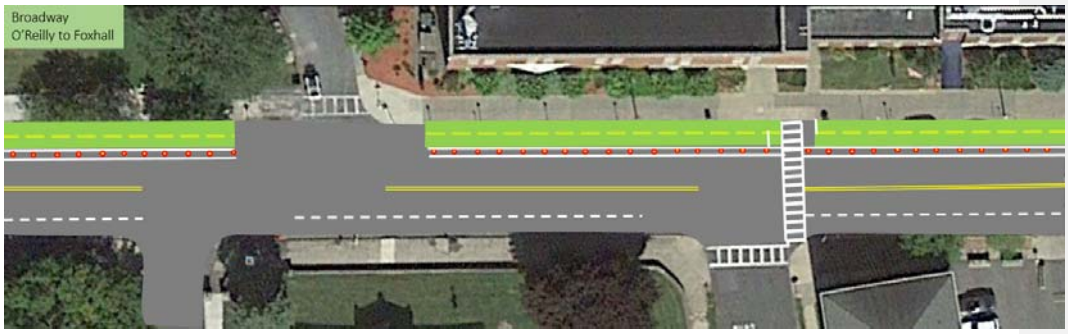
- Conventional bicycle lanes – between the parking lane and the travel lanes.
- Conventional bicycle lanes – between the parking lane and the sidewalk.
- Separated bike lanes – between the travel lanes and the sidewalk
- Separated bike lanes – between the parking lane and the sidewalk

Typical Section, Conventional Bicycle Lanes between the Parking Lane and Travel Lanes

Typical Section, Conventional Bicycle Lanes between the Parking Lane and Sidewalk



Typical Section, Separated Bicycle Lanes between the Travel Lane and Sidewalk



Typical Section, Separated Bicycle Lanes between the Parking Lane and Sidewalk

Each of the options developed included similar measures specifically to address identified pedestrian deficiencies (such as missing signing or non-compliant ramps) transit improvements and streetscaping options. The Detailed graphical depictions of these alternatives for the entire corridor are provided in the appendix.

3.3 Cost Considerations

Order-of-magnitude costs for these potential alternatives were developed and are presented in Table 3.1

Table 3.1 Cost Estimates of Alternative Bike Lanes Considered

Alternative	Price/Price Range		
Conventional Bike Lanes between parking and travel lanes	$55,000[1]	to	$1,453,000[2]
Conventional Bike Lanes between parking and sidewalk	$1,263,000[3]	to	$1,453,000[2]
Separated Bike Lanes between travel lane and sidewalk	$495,000		
Separated Bike Lanes between parking and sidewalk	$475,000		

1) With less than 3'foot buffers (and no buffer at all) in some sections.
2) With 3' buffers in all sections and widening occurring equally on either side.
3) With 3' buffers in all sections and widening occurring only on one side, where practical.

Through the course of the dialogue, it was determined that, while conventional bike lanes situated between the parking lane and the travel lanes would be the easiest (from a cost and potential impacts perspective) to implement, they would not fulfill the goal of providing a high-quality trail connection. They would also not provide the desired 3-foot buffer between cars and bicycles without considerable additional capital investment (aka street widening) at many sections along the corridor.

Conventional bicycle lanes situated between the parking lane and the sidewalk (which are required to have a 3-foot buffer) would be the most costly option and also not fulfill the goal of providing a high-quality trail connection. The additional six feet of widening would mean that the cross section would not fit in the existing roadbed for much more of the corridor, requiring considerable, additional, costly widening.

Separated Bike Lanes between the sidewalk and the travel lanes would require either that the bike lanes be raised to the elevation of the sidewalk or that delineator posts be placed between the bike lanes and the travel lanes. Either way, it was determined that this would require significant and hard-to-fund additional maintenance during the winter months.

Separated Bike Lanes between the parking lane and the s would not require any significant additional maintenance, however, it could make turning onto and off of the side streets east of Pine Grove Avenue more difficult. After further investigation, it was determined that this issue could be addressed by moving the stop lines back at

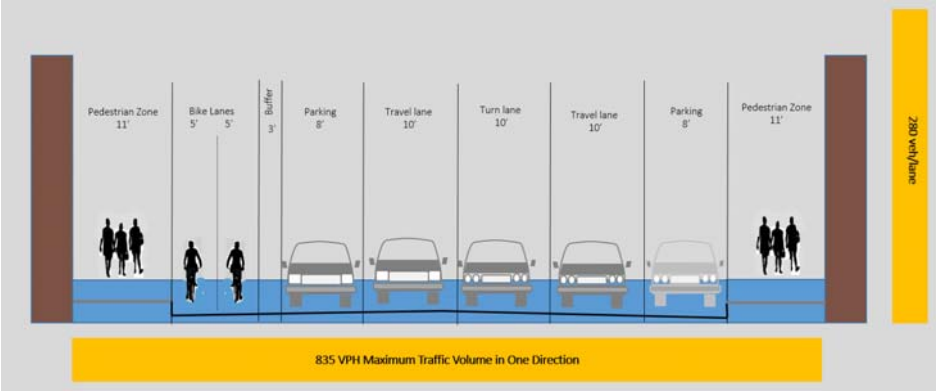
signalized intersections, prohibiting parking on the east side of one-way southbound side streets within 50 feet of Broadway or by modifying the turning radii moderately at the remaining, unsignalized intersections, which, upon inspection, was deemed feasible. Ultimately, the Technical Advisory Committee recommended this alternative to move forward to the public and City Council.

Typical Separated Bike Lanes

3.4 Parking Considerations

All alternatives would result in some loss of parking. To the west of Pine Grove Avenue, the loss of parking would be minimal, as, west of Cedar Street, the four-lane cross section could be reduced to three lanes to accommodate the bike lanes, while from Cedar Street to Dederick Street, the existing over-wide lanes could be reduced to accommodate bike lanes without the loss of parking.

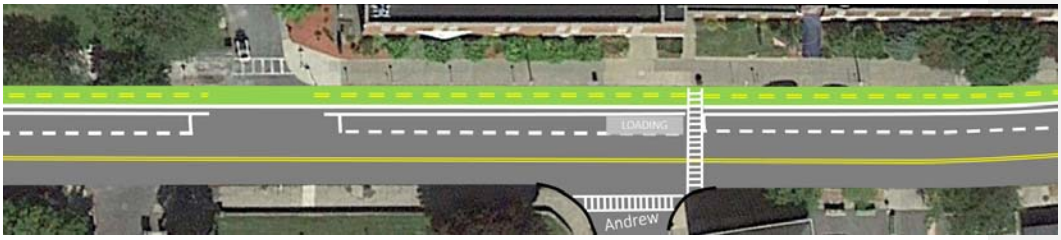
Proposed Cross Section of Broadway, Looking East from Liberty Street to Cedar Street



Proposed Section of Broadway, between Cedar and Dederick Street

The potential loss of parking would be most noticeable between Pine Grove Avenue and Staples Street, where 42 of the 104 on-street parking spaces would need to be eliminated to accommodate conventional or separated bike lanes. While the parking analysis conducted for this study revealed that there is adequate reserve capacity within 500 feet to accommodate the relatively small number of surveyed parked vehicles which would be displaced, the Technical Advisory Committee has recommended that any proposed bike lane be accompanied by measures aimed at mitigating this loss of parking. These measures could include improved signage to the existing municipal parking lots along the corridor, metering of the spaces in the municipal lots to discourage their long-term use (and make more spaces available) during business hours and, potentially providing a direct entrance from Broadway to the municipal parking lot accessed at the intersection of Jansen Avenue and Prince Street.

Proposed Section of Broadway between Pine Grove Avenue and Staples Street



In addition, detailed intersection Synchro Analyses, which are included in the appendix, were prepared for each of the alternatives to ensure that the lane reductions contemplated along the western portion of the corridor would be more than offset by proposed traffic signal improvements.

3.5 Draft Plan

Based on its extensive evaluation, the TAC has approved the following Draft Plan with the accompanying recommendations to be released for public comment and review. The Plan consists of providing separated bike lanes from the Kingston Point Rail trail terminus at the intersection of Jansen Avenue and East Chester Street, south along East Chester Street and then west along Broadway to its intersection with Elmendorf Street and Liberty Street. A separated bike lane spur will extend north from Broadway on Thomas Street for approximately two blocks to connect to the contemplated Wallkill Valley rail trail and the U&D corridor termini at the City Municipal Parking Lot bounded by Thomas Street, Cedar Street and Saccoman Lane. Additionally, a connection to the Roosevelt Park neighborhood at the Manor Place parking lot is proposed via sharrows on the low-volume route along Elmendorf Street, North and South Manor Avenue, and Manor Place. Future connections from the integrated trail system to the Stockade district will be possible via sharrows on Clinton Avenue, Fair Street or, perhaps, both as a one-way bike lane couplet. A graphic depicting the proposed and contemplated bike routes in the study area, with the bicycle facilities recommended in this study shown in green, is provide below and in the appendix.

Draft Plan Alignment

3.6 Draft Plan Recommendations

Specifically, the TAC is proposing the following recommendation to accompany the draft Plan:

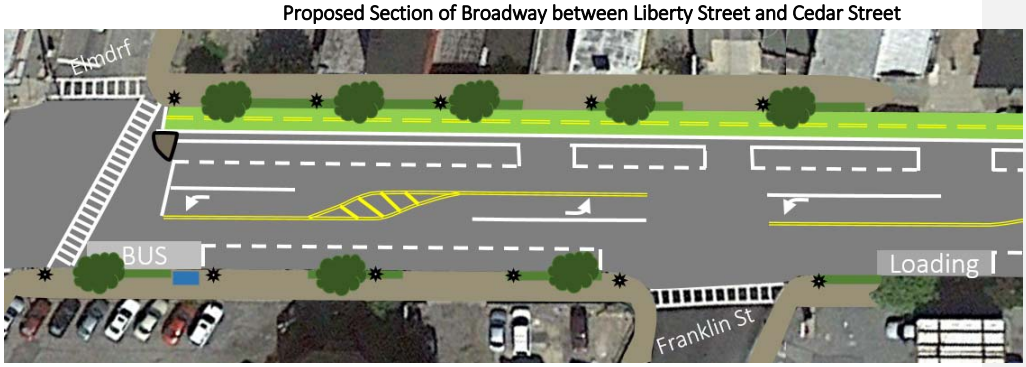
- Designate a Bike Route from the Manor Place parking lot to the intersection of Broadway with Liberty Street. New York Codes Rules and Regulations permits Bike Route Guide (D11-1) signs to be used to guide bicyclists along an unnumbered bicycle route that is part of a small local system, or that connects two places between which bicycle travel is common. The installation of W11-1 and W16-1 signs is proposed along with sharrows to warn drivers to watch for cyclists traveling along the Manor Place, N. Manor Avenue, S. Manor Avenue and Elmendorf Street.

- Rehabilitate Broadway from Liberty Street to Cedar Street to replace the four travel lanes and two parking lanes with two travel lanes, center turn lanes, two, separated bike lanes on the north side of the road, two parking lanes and a buffer between the bike lanes and the parking lane.

Commented [CJ1]: This is new, we need to have a logical terminus for the bike facilities and just ending at Liberty seemed to leave it hanging out there. This was the cheapest way to get to Bob's house (er, to a trail head of sorts)

Commented [CJ2]: Figure 9B-3 of 2009 MUTCD

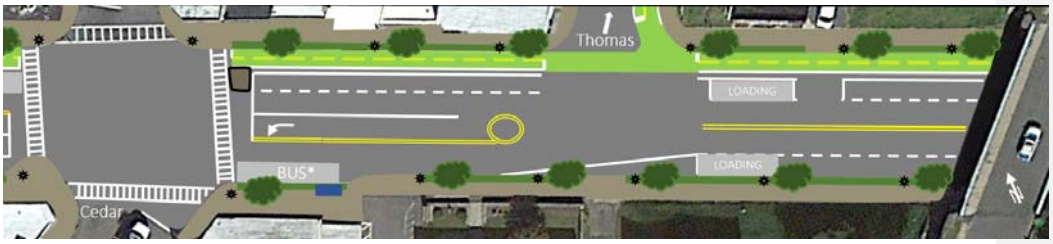
Proposed Section of Broadway between Liberty Street and Cedar Street



Based on available data, this will require a minor widening of Broadway (by approximately 1 foot) between Henry Street and Cedar Street. If all of the identified improvements are implemented along this section of the corridor, up to 8 of the existing 71 parking spaces on this section of Broadway will need to be eliminated. The remaining 63 spaces will be more than adequate to accommodate the observed parking demand of 24 vehicles.

- Rehabilitate Broadway from Cedar Street to Pine Grove Avenue to replace the two wide travel lanes and two parking lanes with two travel lanes, two, separated bike lanes on the north side of the road, two parking lanes and a buffer between the bike lanes and the parking lane. Center turn lanes will be retained at the approaches to Cedar Street and Pine Grove Avenue. To preserve parking to the greatest extent possible, the eastbound Broadway right-turn lane at Pine Grove Avenue will need to be eliminated. Detailed analysis revealed that the new, combined through/right-turn lane group is not a critical movement and adequate levels of service will be provided. If all of the identified improvements are implemented along this section of the corridor, up to 5 of the existing 40 parking spaces on this section of Broadway will need to be eliminated. The remaining 35 spaces will be more than adequate to accommodate the observed parking demand of 13 vehicles.

Proposed Section of Broadway between Cedar Street and Pine Grove Avenue



- Rehabilitate Broadway from Pine Grove Avenue to Chester Street to replace the two travel lanes and two parking lanes with two travel lanes, two, separated bike lanes on the north side of the road, one parking lane and a buffer between the bike lanes and the parking lane. Center turn lanes will be retained at the approaches to Chester Street. Based on available data, this will require a minor widening of Broadway (by approximately 1 foot) between O'Reilly Street and Foxhall Avenue.

Proposed Section of Broadway between Pine Grove Avenue & Chester Street

If all of the identified improvements are implemented along this section of the corridor, up to 42 of the existing 104 parking spaces on this section of Broadway will need to be eliminated. Although the remaining 62 spaces will be more than adequate to accommodate the observed parking demand of 42 vehicles, the Technical Advisory Committee has recommended several measures along this section of the corridor to address the loss of parking. Parking management measures include adding: additional signage directing motorist to existing, nearby municipal parking lots; metered parking in municipal lots to discourage long-term use (and make spaces more available during business hours); and potentially providing a direct entrance from Broadway into the municipal parking lot accessed from Jansen and Prince Street.

- Rehabilitate East Chester Avenue from Broadway to Chester Street Jansen Avenue to replace the two travel lanes with two travel lanes, two, raised, separated bike lanes on the west side of the road, one parking lane and a 3-foot buffer with delineator posts between the bike lanes and the southbound travel lane. Based on available data, this will require a minor widening of East Chester Street (by approximately 1.5 feet on either side).

Proposed Section of East Chester Street between Broadway & Jansen Avenue

- Upgrade the existing traffic signals along the corridor to accommodate the proposed bike lanes, to provide 12" lenses and to display countdown pedestrian signals. Separated bike lanes require traffic signals where cars may not turn across bike lanes at the same time that bikes are permitted to proceed. This will require a separate bike phase at some intersections and the prohibition of permissive eastbound left turns and all westbound right turns across the bike lanes at Cornell Street and Grand Street. Cyclists in the bike lanes will be prohibited from making westbound left turns and eastbound right turns - they may dismount and use the pedestrian signals for these movements. Adjustments to the signal timing can ensure that overall Level of

Service D or better conditions will continue to prevail and that no individual movements will operate at an F Level of Service. The upgraded traffic signals should take full advantage of the latest technology to ensure that the signals are optimally coordinated to moderate speeds, improve smooth flow and reduce travel time for motorists. The analyses indicate that the overall delay along the corridor will be reduces, as will fuel consumption and emissions.

Detailed Measures of Effectiveness

Network Totals

Number of Intersections	27
Total Delay / Veh (s/v)	17
Stops / Veh	0.33
Average Speed (mph)	8
Total Travel Time (hr)	278
Distance Traveled (mi)	2202
Fuel Consumed (gal)	303
Fuel Economy (mpg)	7.3
CO Emissions (kg)	21.17
NOx Emissions (kg)	4.12
VOC Emissions (kg)	4.91
Performance Index	235.8

Future Conditions, No Action

Detailed Measures of Effectiveness

Network Totals

Number of Intersections	25
Total Delay / Veh (s/v)	11
Stops / Veh	0.30
Average Speed (mph)	11
Total Travel Time (hr)	203
Distance Traveled (mi)	2186
Fuel Consumed (gal)	233
Fuel Economy (mpg)	9.4
CO Emissions (kg)	16.28
NOx Emissions (kg)	3.17
VOC Emissions (kg)	3.77
Performance Index	152.0

Future Conditions, Draft Plan

- Modify the turning radii at the intersections Broadway with Hoffman Street, Andrew Street and Staples Street, and make any necessary adjustments to the stop lines at O'Reilly Street and to parking at Brewster Street to accommodate truck and bus traffic.
- To improve safety prohibit right-turns on red at the following signalized intersections:
    - Eastbound and Westbound on Broadway at Liberty Street (in response to 1 bicycle accident and 27 other accidents)
    - All approaches to the intersection of Henry Street with Broadway (in response to 2 pedestrian accidents, 3 bicycle accidents and 28 other accidents)
    - All approaches to the intersection of Cedar/Cornell Street with Broadway (in response to 2 pedestrian accidents, 2 bicycle accidents and 57 other accidents)
    - Eastbound and on Broadway at Pine Grove Avenue (in response to 1 bicycle accident and 20 other accidents)
    - All approaches to the intersection of Chester Street with Broadway (in response to 2 pedestrian accidents, and 39 other accidents)

- To allow motorists more time for decision-making, replace existing substandard signing with signs with larger letters, improved reflectivity and illumination, where feasible. It is recommended that larger lettering be used and that the font be changed to the FHWA-approved "Clearview Hwy" font.

- Locate bus stops at the far side of key intersections on Broadway, install standardized bus stops with schedules and inviting shelters. Implement a frequent service along the corridor connecting the Rondout with the Stockade and Hannaford Plaza, perhaps by integrating City and County services. Upgrade the existing bus fleet to include real-time bus arrival and departure information (with app technology), bicycle racks, and alternative fuel technology.

- To improve the streetscape, rehabilitate the sidewalks along the corridor with a combination of bluestone (where already installed) and brick-imprint paving. Install attractive street furniture including bicycle racks, trash/recycling receptacles, public art and benches that encourage pedestrians and cyclists to stop and patronize local businesses.
- Plant street trees which will provide shade but not overwhelm the above or below ground infrastructure, or heave the sidewalks. Native species are preferred. Tree planters which manage storm water runoff should be incorporated, where possible. Best practices in urban tree propagation, such as CU-Structural Soil™ and other measures that will help ensure healthy growth of trees with reduced impact to the surface and surrounding infrastructure, should be used.

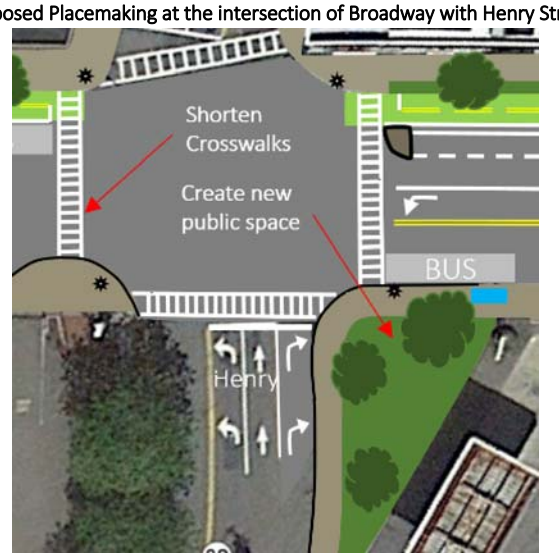
- Replace the existing light fixtures along the corridor with attractive, new, energy-efficient fixtures, consistent with recent improvements and which shed a warm glow on the sidewalks and buildings in the evenings when pedestrians and cyclists can enjoy the corridor after work.
- Prohibit parking between 7:00 a.m. and 11:00 a.m. in select locations (typically on the far side of unsignalized intersections) to permit commercial loading.

- Construct sidewalk bump outs at crosswalks to shorten the distance pedestrians must walk to cross Broadway in locations that do not interfere with bike lanes, bus and commercial loading zones.

Typical Curb Bump Out

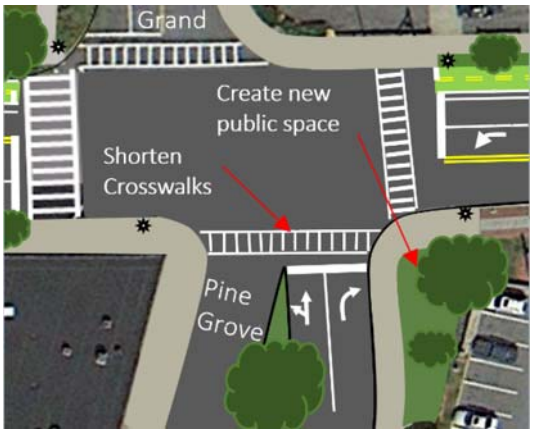
- Reconfigure the intersection of Henry Street with Broadway to shorten the crosswalks and to reclaim the space occupied by the northbound right-turn lane, creating a small public open space.

Proposed Placemaking at the intersection of Broadway with Henry Street



- Reconfigure the intersection of Pine Grove Avenue with Broadway to shorten the crosswalks and to reclaim space occupied by the northbound Pine Grove Avenue, creating a small public open space.

Proposed Placemaking at the intersection of Broadway with Pine Grove Ave



- Provide a gathering area outside of the Ulster Performing Arts Center by extending the sidewalk to the edge of the eastbound travel lane, relocating a loading area to the west of the gathering area and providing a second crosswalk across Broadway at the east side of Field Court.

Proposed Placemaking on Broadway in front of UPAC

- Upgrade those pedestrian crossings without ADA-compliant pedestrian ramps, including installing truncated domes/tactile warning strips, checking that the slope and landing areas on sidewalks conforms to ADA code, and that they are the proper width. Strongly consider the use of durable materials, such as stainless steel.

- Upgrade signing of existing unsignalized crossings of Broadway so that they are all consistent with MUTCD requirements.
- Finally, conduct additional pedestrian counts at the intersection of Franklin Street with Broadway to determine whether there is sufficient pedestrian traffic crossing Broadway at that location to justify the installation of a crosswalk.

3.7 Before & After Perspective

To provide a better understanding and appreciation of the benefits of the recommended improvements a before and after perspective was prepared showing how the corridor would look facing west from the Greenkill Avenue Bridge.

Before – Broadway looking west from Greenkill Avenue

After – With Separated Bike Lanes, Buffer, Parking, Street Trees and New Sidewalk

3.8 Cost Estimates

Estimates for cost for the construction/implementation of the improvements identified in the pages above were prepared based on NYSDOT unit price construction costs and other available data. These cost estimates, which are summarized in the table below, do not include construction inspection services or right-of-way acquisition. Little, if any, right-of-way acquisition is anticipated, although some minor easements or acquisition may permit optimal modification of turning radii at Hoffman, Andrew and Staples Streets. The cost for construction inspections services can vary widely depending on the requirements placed on this effort by the various funding sources. As can be seen from the table, it is estimated that the total cost for the construction of all of the recommended improvements is almost $5 million.

Draft Plan and Recommendations Cost Estimate

Commented [KE3]: Suggest reordering table to be consistent with implementation strategy table to prevent confusion by the reader.

Plan Component	Estimated Cost[1]
Sharrows and Signs - Manor Place Parking Lot to Broadway	$ 20,000
Separated Bike Lanes - Liberty Street to Cedar Street	$ 157,000
Separated Bike Lanes - Cedar Street to Pine Grove Avenue	$ 24,000
Separated Bike Lanes - Pine Grove Avenue to Chester Street	$ 194,000
Separated Bike Lanes - Broadway to Jansen Avenue	$ 100,000
Upgrade Existing Traffic Signals (7)	$ 1,400,000
Modify Turning Radii at Key intersections (Hoffman, Andrew and Staples Streets)	$ 60,000
Prohibit Right-turns on Red	$ 8,000
Replace Substandard Street Signs	$ 30,000
Bus Stop Infrastructure (Bus Fleet is considered a separate project cost)	$ 200,000
Streetscape infrastructure, including new sidewalk pavement and furniture	$ 1,500,000
Trees and Landscaping	$ 100,000
New Light Fixtures	$ 800,000
Loading Zones	$ -
Sidewalk Bumpouts	$ 150,000
Placemaking at Henry Street	$ 50,000
Placemaking at UPAC	$ 25,000
Placemaking at Pine Grove Avenue	$ 50,000
Update curb ramps to ADA requirements	$ 50,000
Upgrade existing midblock pedestrian crossings	$ 20,000
Pedestrian Study at Franklin Street	$ 20,000
Total	$ 4,958,000

1. Does not include construction inspection or Right-of-Way costs. Little or now ROW acquisition is expected

3.9 Implementation Strategy

The Draft Plan and Recommendations can be implemented primarily by the federal and state grants received by the City of Kingston in the next 3-5 years. The suggested implementation order of the plan components, its accompanying project cost, potential source of funding, and timeline are found in the below table. Many of the below plan components need to be implemented simultaneously (i.e. sidewalk bump outs and sidewalk infrastructure) and they would be installed on a block by block basis.

Commented [KE4]: Add information about the grants from Gregg here

Implementation Strategy

Implementation Order	Plan Component	Project Cost	Funding Source	Timeline
1	Pedestrian Study at Franklin Street	$20,000	Received Grant Funding	Year 1
2	Determine ROW Acquisition Needs, if any	TBD	Outside Source	Year 1
3	Update curb ramps to ADA requirements	$50,000	Received Grant Funding	Year 1
4	Modify Turning Radii at Key Intersections (Hoffman, Andrew and Staples Streets)	$60,000	Received Grant Funding	Year 1
5	Sidewalk Bump Outs	$150,000	Received Grant Funding	Year 1-2
6	Streetscape Infrastructure, including sidewalk pavement and furniture	$1,500,000	Received Grant Funding	Year 1 -2
7	Bus Stop Infrastructure	$200,000	Received Grant Funding	Year 1-2
8	Separated Bike Lanes – Liberty Street to Cedar Street Separated Bike Lanes – Cedar Street to Pine Grove Avenue Separated Bike Lanes – Pine Grove Avenue to Chester Street Separated Bike Lanes – Broadway to Jansen Avenue	$157,000 $24,000 $194,000 $100,000	Received Grant Funding	Year 1 -3
9	New Light Fixtures	$800,000	Received Grant Funding	Year 1 -3
10	Sharrows and Signs – Manor Place Parking Lot to Broadway	$20,000	Outside Source	Year 1-2
11	Trees and Landscaping	$100,000	Received Grant Funding	Year 1-2
12	Placemaking at Henry Street Placemaking at UPAC Placemaking at Pine Grove Avenue	$50,000 $25,000 $50,000	Received Grant Funding	Year 3
12	Loading Zones	-	N/A	Year 3
13	Replace Substandard Street Signs	$30,000	Received Grant Funding	Year 3
14	Upgrade Existing Traffic Signals	$1,400,000	Received Grant Funding	Year 3
15	Prohibit Right-turns on Red	$8,000	Received Grant Funding	Year 3
16	Bus Fleet	TBD	TBD	Year 3-5

APPENDIX

Synchro Analyses?

Bicycle Lane Alternatives

- Separated Bike Lanes via Broadway to Kingston Point Rail Trail (Option A)
- Separated Bike Lanes via Jansen Avenue to Kingston Point Rail Trail (Option B)
- Dedicated Bike Lanes from Liberty Street to Kingston Point Rail Trail (Option A)
- Dedicated Bike Lanes from Trail Hub to Kingston Point Rail Trail (Option B)

Decision-making Matrices

Urban Streetscape Improvement from Pittsfield, MA

Public Meeting 1 Comments