

***THE VILLAGE OF HASTINGS-ON-HUDSON INVITES
RESIDENTS and OTHER INTERESTED PARTIESTO***

**TRANSPORTATION PLAN AND
PEDESTRIAN ENHANCEMENTS
Presentation of Final Draft Plan**

***ON MONDAY, JUNE 25, 2007 AT 7 PM IN
HASTINGS-ON-HUDSON
MUNICIPAL BUILDING MEETING ROOM***

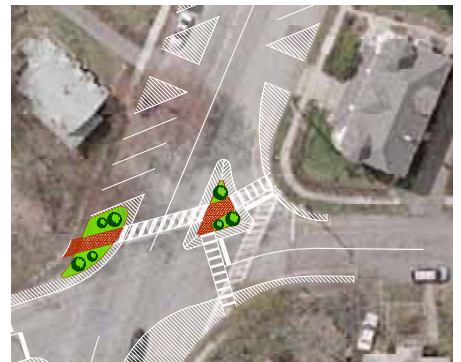
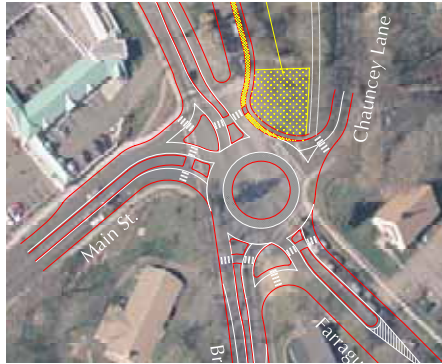


Georges Jacquemart of Buckhurst Fish and Jacquemart Inc. (BFJ) will present the Final Draft Transportation Plan and Pedestrian Enhancements which is posted on the Village website (www.hastingsgov.org) for review. The numerous suggestions and comments made by the workgroups at the workshops and additional comments that were made thereafter were investigated further by BFJ. Results of the further study along with input from Department of Transportation and Westchester County Departments of Planning and Public Works form the basis for the recommendations and this final draft plan. Questions and comments will be addressed at the meeting. Further information may be obtained from the Village Director of Planning via e-mail (awitkowski@hastingsgov.org) or by phone at 914-478-3400 Ext. 630.

Village of Hastings-on-Hudson

Transportation Plan

Draft Final Report



BFJ Planning

May 2007

Village of Hastings-on-Hudson

Transportation Plan

Prepared for the
Village of Hastings-on-Hudson

Final Report

May 2007

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1. Introduction

1.1 Purpose of Study

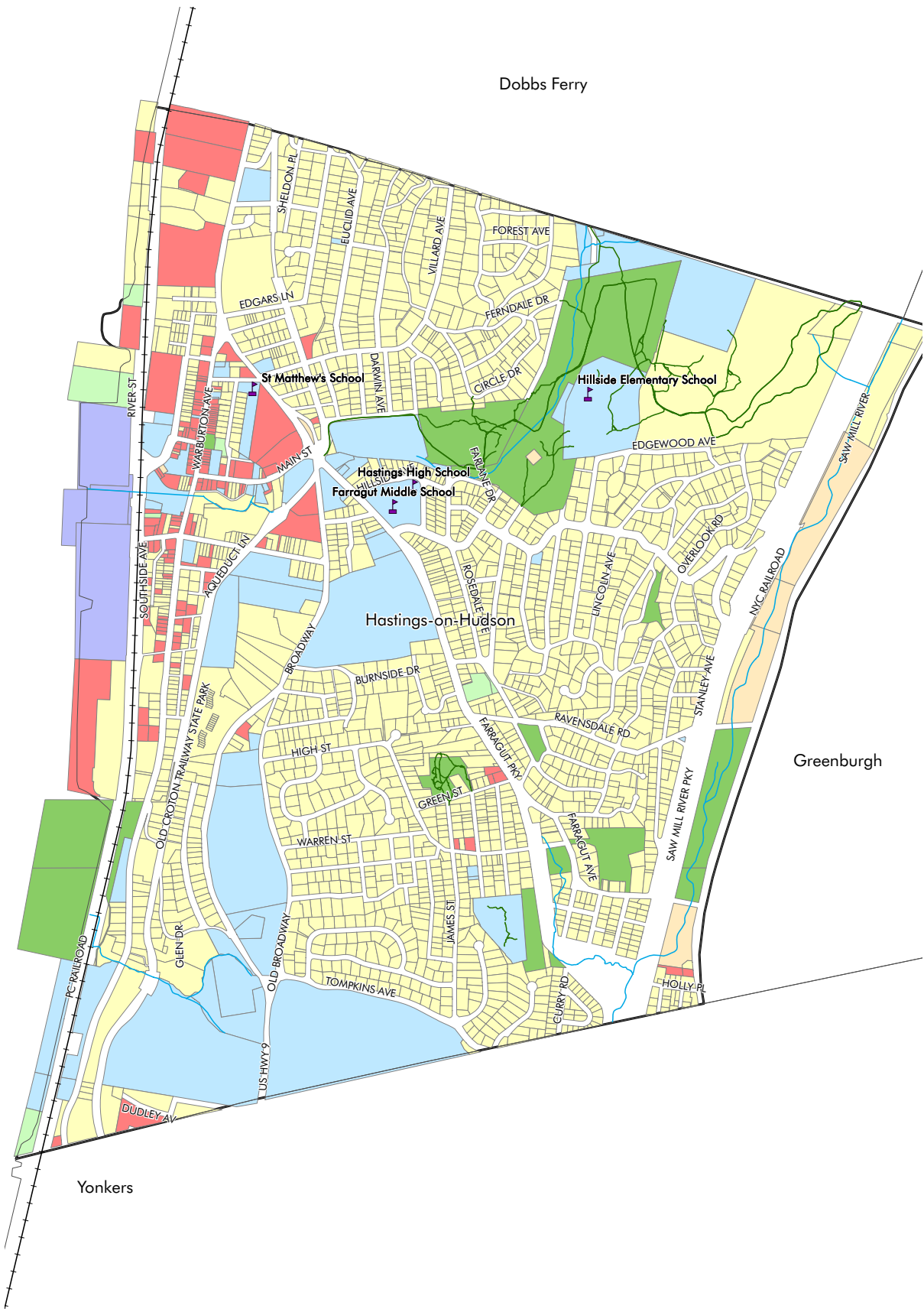
Buckhurst Fish & Jacquemart (BFJ Planning) was retained by the Village of Hastings-on-Hudson to perform a study of transportation and prepare a Transportation and Pedestrian Improvements Plan for the Village.

This study involved a comprehensive analysis. The first task was to study and present the Village's reported accidents, key pedestrian and vehicular conflict points, traffic volumes, and existing sidewalk conditions. The second task was to propose a set of improvement projects based on the collected information and technical observations. The vision for the proposed transportation projects was elaborated through two public planning workshops held as part of this study.

1.2 Study Area

The Village of Hastings-on-Hudson is located in Westchester County on the east bank of the Hudson River. The Village is situated north of the City of Yonkers, south of the Village of Dobbs Ferry and is served by the Saw Mill River Parkway as the regional highway system, see Figure 1.1.

The study area encompassed the entire Village, with a focus on the areas in close proximity to the central business district, and around the four schools: Hillside Elementary School, Farragut Middle School, Hastings High School, and St. Mathews School. These areas were chosen due to their high levels of pedestrian and bicycle traffic, and the potential for improvements. A review of the data revealed that the areas with the greatest pedestrian and bike trip generation were within a quarter mile radius of each of the Village's three public schools, and the central business district. These quarter mile distances are demarcated on maps where relevant.



2. Existing Transportation Conditions

As part of this study, BFJ Planning prepared a series of maps illustrating the Village's reported pedestrian and vehicular accidents, traffic volumes, and existing sidewalk conditions. Data for these maps was provided by the Village of Hastings and Westchester County, and included maps, Geographical Information Systems (GIS) data on existing conditions, and traffic counts. Additional information on road widths, traffic flows, and sidewalk conditions was collected during several site visits to the area.

2.1 Crash Data

Figure 2.1 illustrates the locations of recorded motor vehicle accidents between 2000 and 2005. As can be seen, the greatest concentration of accidents occurred along Warburton Avenue, Main Street, Farragut Parkway, Broadway, with a high number taking place at the Five Corners intersection (Broadway, Farragut Parkway, and Main Street). A number of accidents were also concentrated on the stretch of Farragut Parkway running alongside the Middle and High Schools.

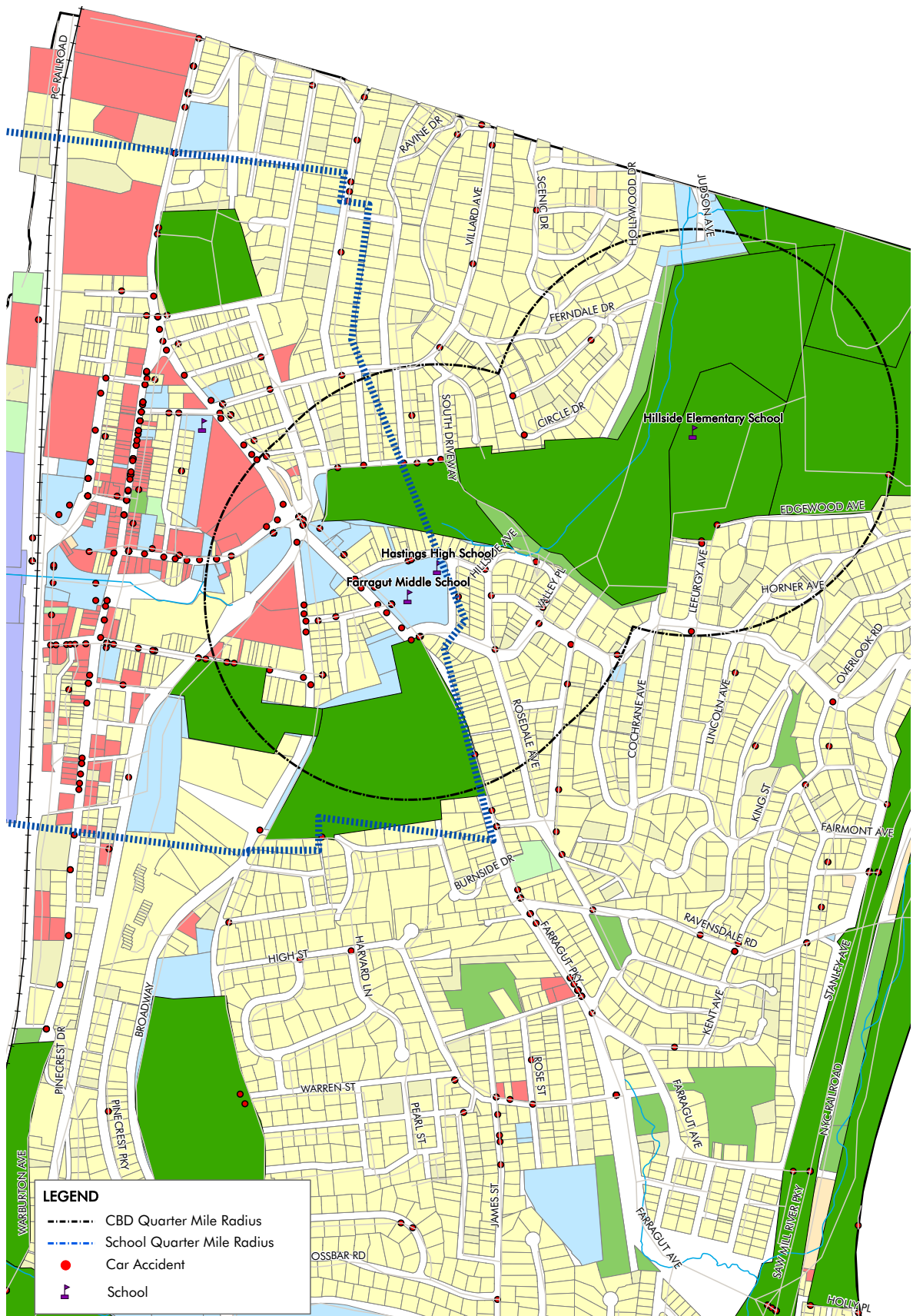
Figure 2.2 illustrates the pedestrian and bike accidents for the same period. These are also concentrated in the central business district and around the Middle and High Schools.

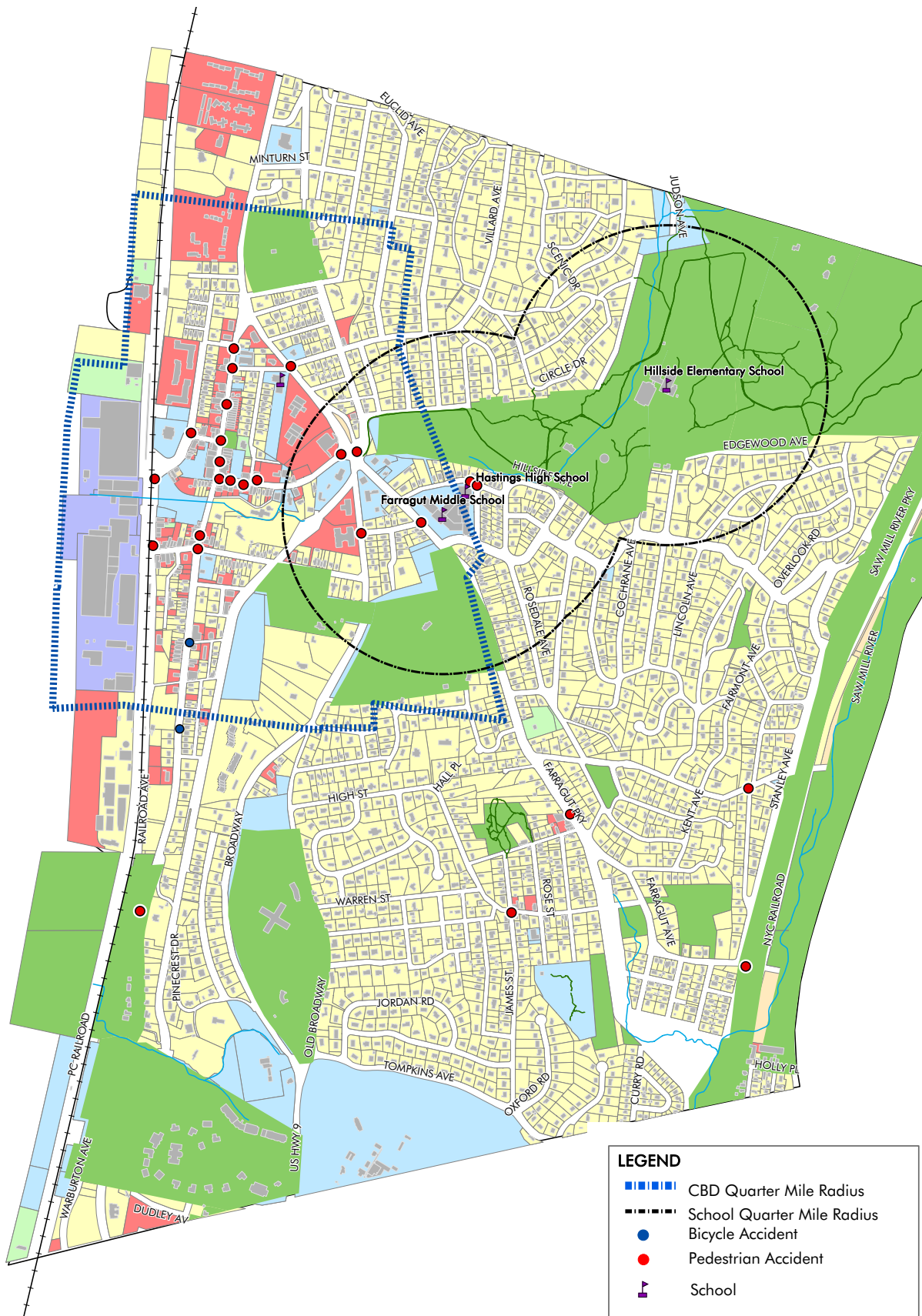
2.2 Traffic Conditions

To determine the traffic conditions in the Village, the traffic counts conducted by the Westchester County Department of Public Works (DPW) and New York State Department of Transportation (NYSDOT) were analyzed. These counts were performed during the morning and evening peak period at key intersections and on State routes that traverse the Village (see Table 2.1). The results of these counts are shown in Figure 2.3 (Peak hour traffic volumes) and Figure 2.4 (Daily traffic volumes). See Appendix C for detailed counts.

Table 2.1: Date and Location of Traffic Counts

Carried out by	Date	Location
Westchester County D.P.W	9/2004	Tompkins Avenue E/Marianna Avenue
	6/2003	Ravensdale Road E/Farragut Parkway
	6/2003	Farragut Parkway W/ Ravensdale Road
	6/2004	Warburton Avenue S/Pinecrest Road
NYSDOT	2003	Route 9/ Farragut Parkway
	2003	Route 9A/Saw Mill River Pkwy
Village of Hastings	2005	Warburton Ave & Main St.



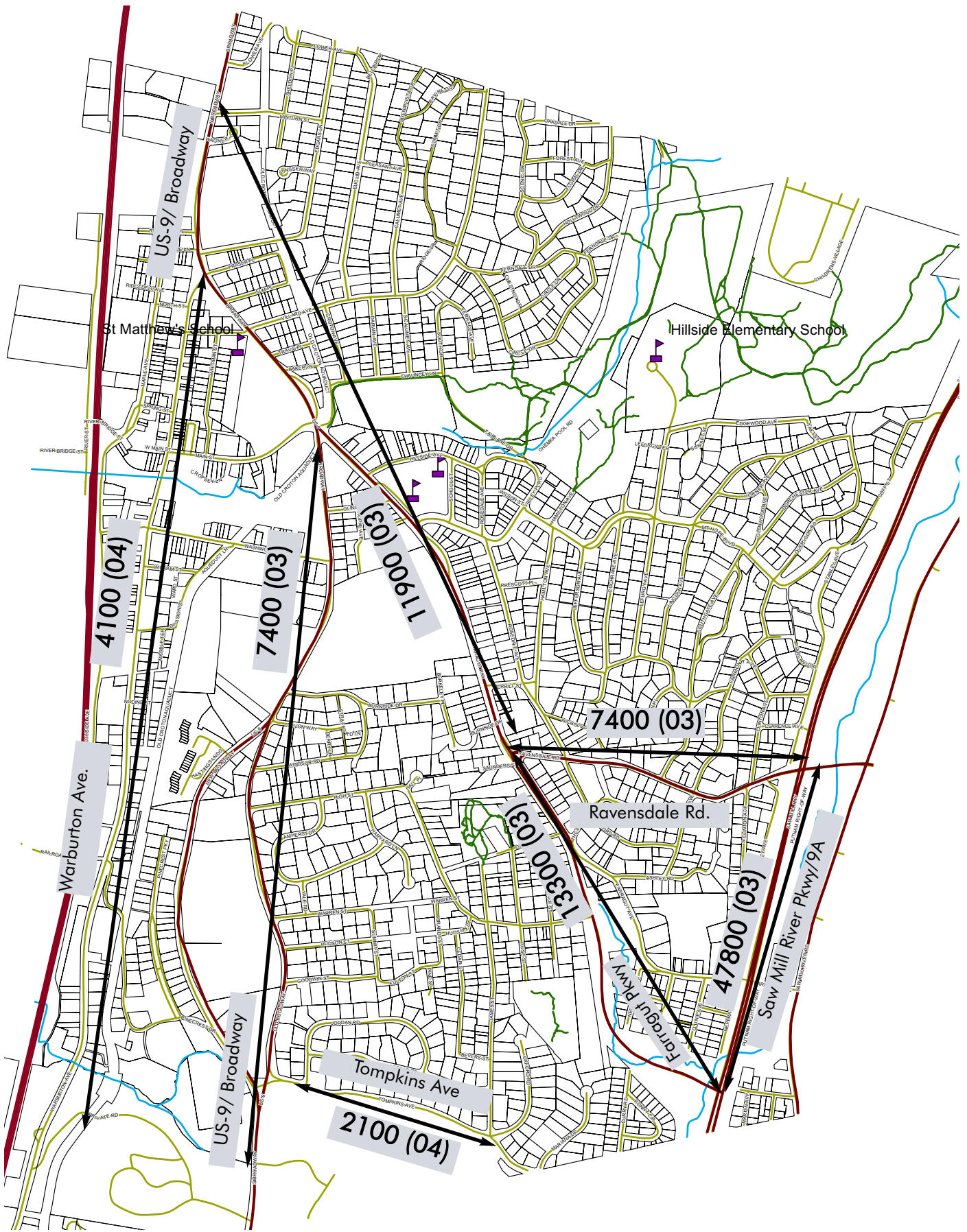




TRANSPORTATION PLAN

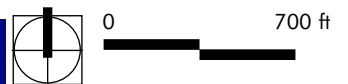
FIGURE 2.3: PEAK HOUR TRAFFIC VOLUMES





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FIGURE 2.4: DAILY TRAFFIC VOLUMES



2.3 Sidewalk Condition Inventory

The width and surface conditions of sidewalks in the Village were surveyed on August 5 and August 12, 2005. The photos below depict three different sidewalk conditions. The results of this analysis are displayed in Figures 2.5 using a color coded system. Each stretch of sidewalk within the study area received a rating of "good" (green), "fair" (purple), or "poor" (orange) based on the appearance, width, and smoothness of the pathway. The photos below serve as an example of typical sidewalks associated with each rating.



Sidewalk Conditions

The criteria for each grade are as follows:

Good. Sidewalks possessing three out of these four factors received a “good” rating:

- Sidewalk is even and smooth for its entire length or at least nearly its entire length;
- Concrete slabs are leveled, at least 3 feet wide;
- Width is adequate for easy wheel chair maneuvering and/or two way traffic flow;
- Seamless transition from sidewalk curb to street;
- Grass medians do not obstruct pathways.

Fair. Sidewalks that displayed moderate evidence of four out six of the following traits were rated “fair”:

- Adequate width for most of the length, but not completely level or smooth,
- Obstructed by protruding pipes,
- Cracks in the concrete,
- Overgrown trees, bushes, and shrubs,
- Angled street parking extends onto sidewalks,

- Wheelchair maneuvering and strollers require more effort to smoothly traverse the sidewalks.

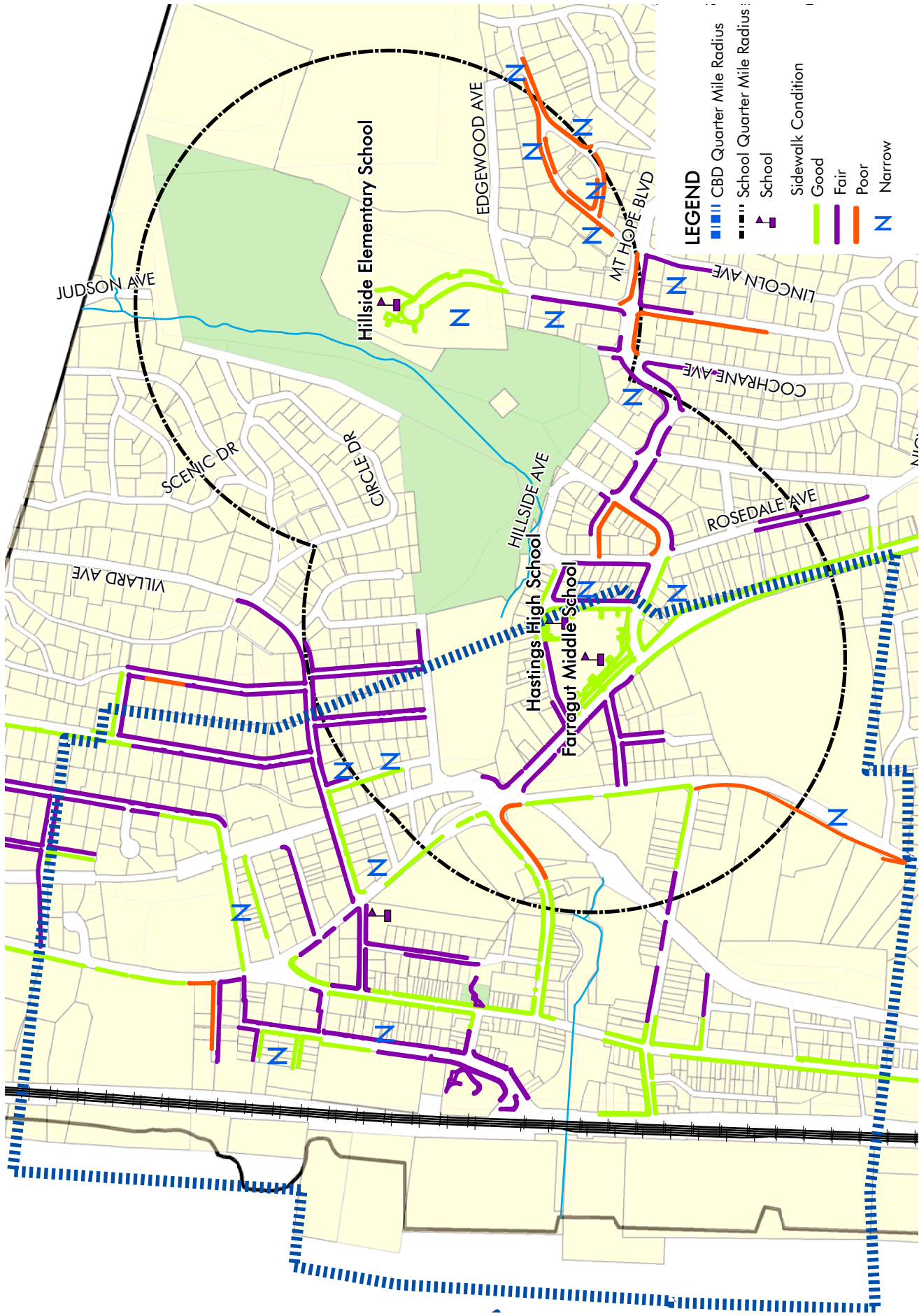
Poor. Sidewalks with extensive evidence of at least half of the factors listed below were rated as “poor”:

- Inadequate width for most of the length,
- Not completely level or smooth,
- Obstructed by protruding pipes,
- Cracks in the concrete,
- Overgrown trees, bushes, and shrubs,
- Angled street parking extends onto sidewalks,
- Inadequate for wheelchair maneuvering and strollers

Sidewalks where narrowness was a concern were identified with an "N". Guidelines used to grade a sidewalk as narrow include a 36" minimum width set by the Americans with Disabilities Act (ADA). In addition, sidewalks should have a 32" minimum clearance from obstacles, (power poles, trees, etc.), cross-slopes visibly less than 2%, uplifts no greater than 1/4" high, and tree/landscape grates flush with the sidewalks.

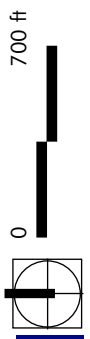
Approximately 40 percent of the sidewalk network was rated as in good condition. Nearly one half of the sidewalks were fair and the remaining portion of the sidewalks was graded as poor. The widths of the sidewalk vary from six feet along Warburton Avenue, Main Street, School Street and portions of Broadway and Hillside Avenue to two feet wide near Horner and Lincoln Avenues and in the eastern end of the study area. The majority of sidewalks are four feet to five feet in width and generally have a green strip buffer which varies in width from one and a half feet to approximately ten feet.

Figure 2.6 shows the streets in the study area that have no sidewalks. With the exception of a section of streets northwest of Hillside Park (South Drive, Terrace Avenue, Circle Drive, Chestnut Drive, Ferndale Drive, Hollywood Drive) most of the study area has a continuous sidewalk network. A few other streets lacking sidewalks are dispersed throughout the southern portion of the study area (including Ridge St., William St., Ward St., Division St., Marble Terrace, Hopke Avenue, Olinda Avenue, Hillside Avenue, Valley Place Road, Hamilton Avenue, Prescott Place, Rosedale Avenue, Sunset Street, Edgewood Avenue, and Lefurgy Avenue). Broadway lacks a sidewalk on the east side between Farragut Parkway and Washington Avenue. The same is true for both sides of Broadway from Washington Avenue to Devon Way.



- LEGEND**
- CBD Quarter Mile Radius
 - School Quarter Mile Radius
 - School
 - Sidewalk Condition: Good
 - Sidewalk Condition: Fair
 - Sidewalk Condition: Poor
 - Sidewalk Condition: Narrow

TRANSPORTATION PLAN
 VILLAGE OF HASTINGS-ON-HUDSON, NY
 SOURCE: WESTCHESTER GIS
 BEJ Planning



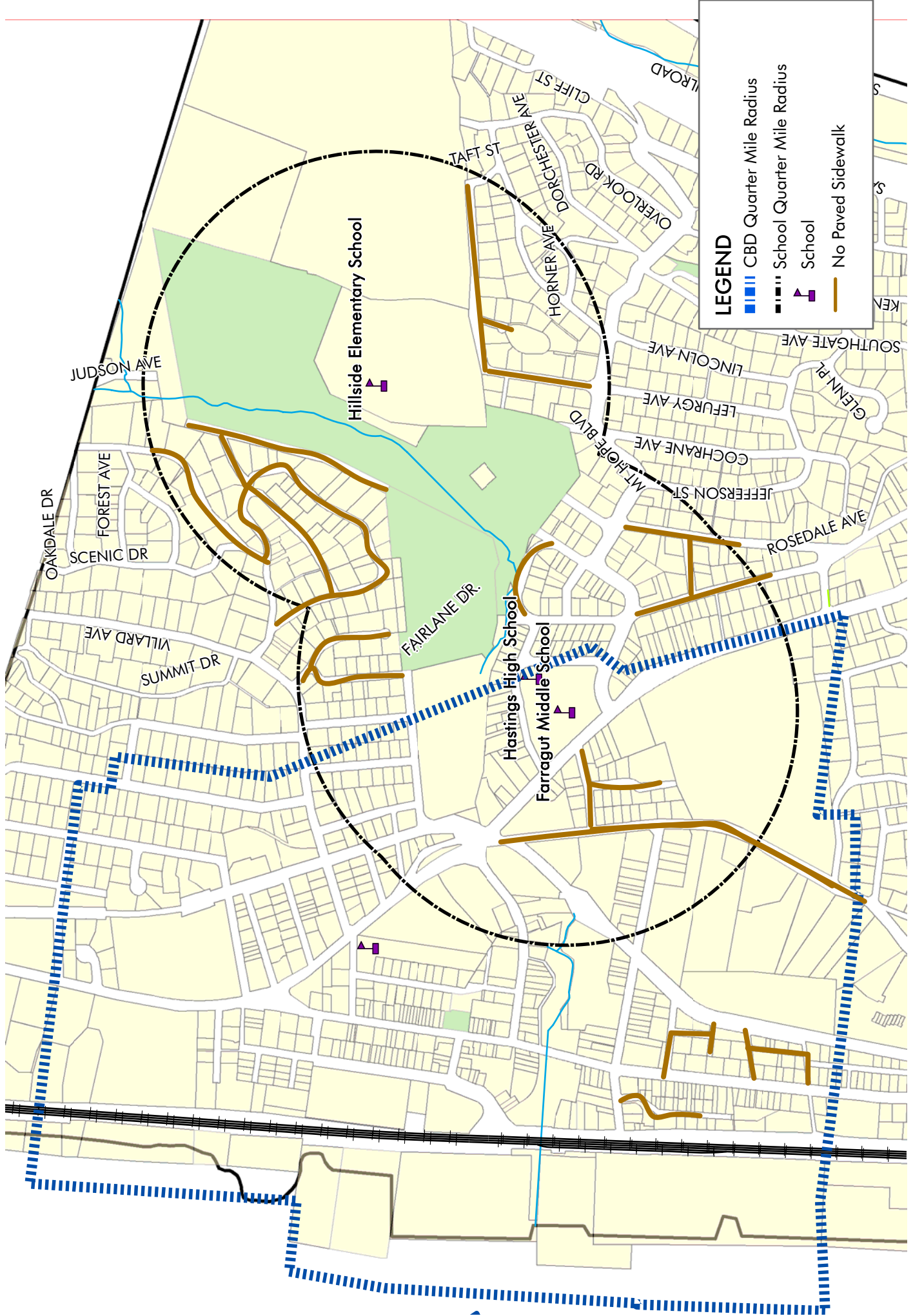


Figure 2.6: Street Lacking Sidewalks

Map Source: Westchester GIS



3. Public Participation – Public Workshop 1

Two public workshops were held to gauge public concerns regarding transportation and traffic issues, and to utilize these concerns as input to the study.

The first public workshop was held on Wednesday November 16, 2005 at the Hastings-on-Hudson Public Library. The purpose of the workshop was to obtain feedback from the public regarding the preliminary findings and proposed improvements, and to use these as inputs to the next stage of this study. The workshop was interactive and designed to elicit public response.

The format of the workshop was a presentation followed by a discussion. The presentation first outlined the existing conditions for traffic and transportation in the Village. Proposed improvements were then introduced. The improvements included a raised median on Broadway and Farragut Parkway and a roundabout at the intersection of Broadway, Farragut Parkway, and Main Street (Five Corners). These traffic improvements would serve to increase the pedestrian and vehicular safety and reduce delays.

The participants were then divided into five groups and were asked to outline what they thought were the traffic and pedestrian issues, and what their opinion was of the preliminary proposals. Some general concerns that emerged from this discussion are summarized in Table 3.1.

Table 3.1: Summary of First Public Workshop

Subject	Public Opinion	Concerns
Broadway Raised Median	Majority agreed	Parking on Sundays Project budget
Roundabout at Broadway/ Farragut/ Main St.	Majority agreed	Kids and pedestrian safety without signal Snow removal Impact on Old Croton Aqueduct
Pedestrian safety in school areas	Major priority	Congestion at Farragut & Olinda Pedestrian Safety along Broadway

4. Proposed Improvements

Following the analysis of the existing conditions and using the input gained at the public workshop, the proposed improvements were refined as described below.

4.1 Raised Median

A raised median is proposed for Broadway, from Devon Way in the south to Flower Avenue in the north. A median island with a raised landscaped bed would be effective in reducing crashes, as it would reduce speeds and left turns, which are the major causes of crashes. The raised median would not be continuous and would be interrupted to allow for left turns at intersections and major driveways. Where needed we may also insert left-turn lanes in the median lane. The photos below show how Broadway exists at the moment, and how it would look with the addition of a raised landscaped bed.



Broadway – Existing Condition

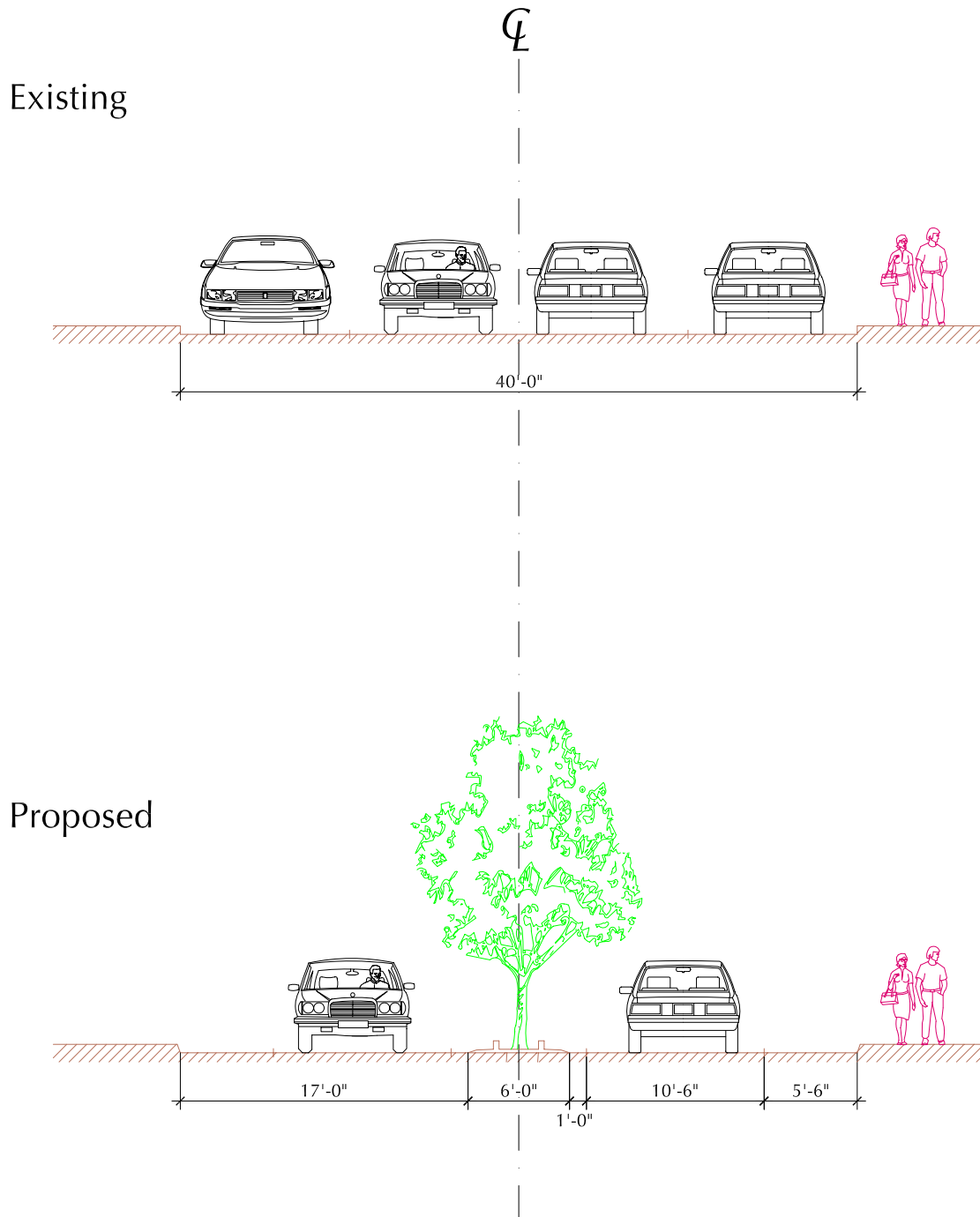


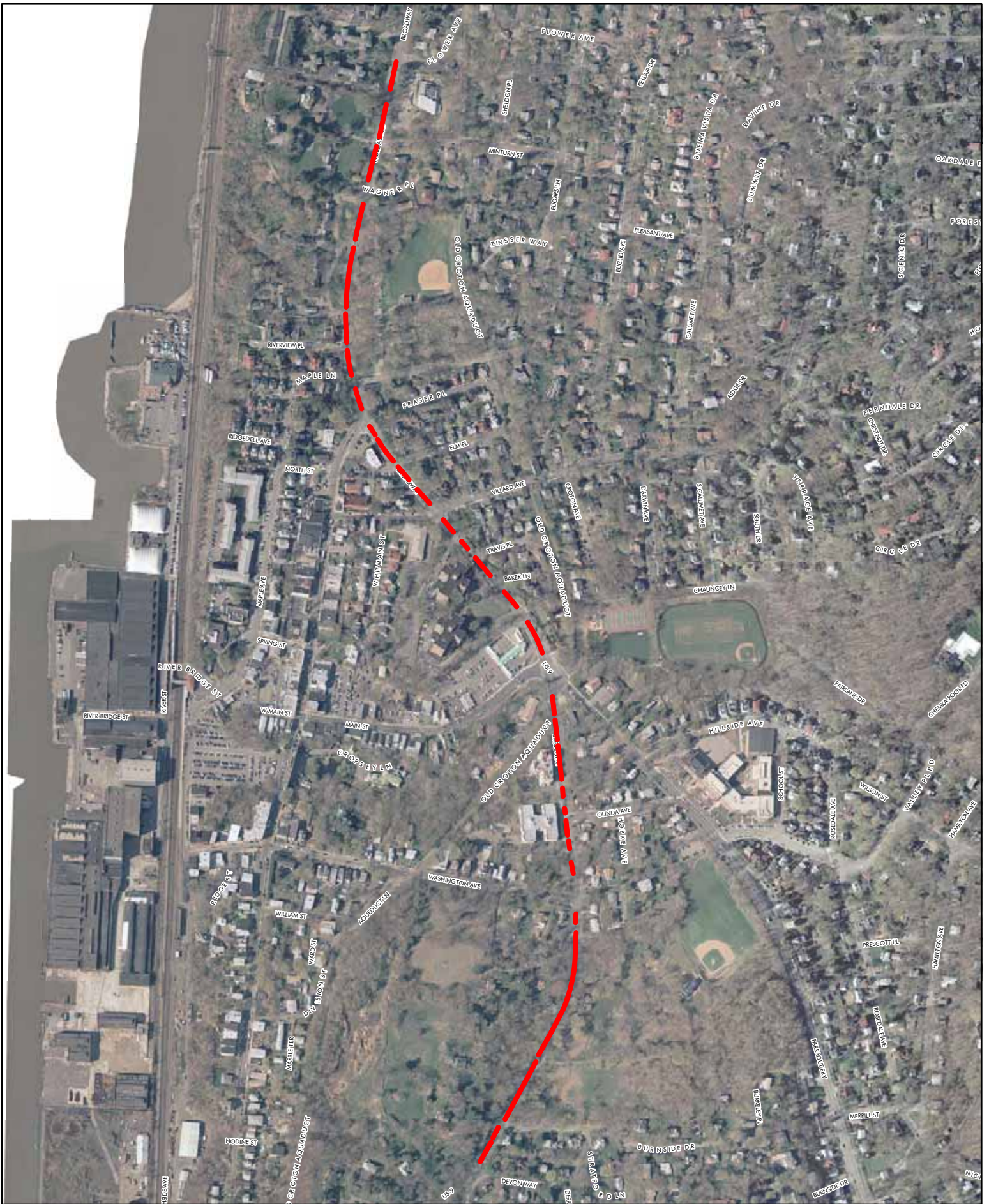
Broadway – with addition of landscaped median

Broadway from Devon Way to Flower Avenue

This section of Broadway is currently 40 feet wide and has two lanes in each direction. Figure 4.1 shows the proposed cross-section. This includes a 6-foot wide raised median in the middle with a 10.5-foot travel lane. A 1-foot shoulder is provided between the travel lane and the median, and a 5.5-foot shoulder is provided between the travel lane and the sidewalk. This shoulder would provide room for snow plowing, for bicycles, and for trucks to pass cars in emergency situations. The raised median would be replaced with a flush median where needed to allow left turns.

The length of median along the roadway from Devon Way to Farragut Parkway would be 1,61feet. From Farragut Parkway to the Village’s northern limit (Flower Avenue) it would be 1,34feet. Figure 4.2 shows the recommended locations for the raised median along Broadway.





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Figure 4.2 Proposed location for Raised Median

4.2 Sidewalks along Broadway

There is no sidewalk or the sidewalk is in poor condition on the east side of Broadway between Farragut Parkway and Washington Avenue. The same is true for both sides of Broadway from Washington Avenue to Devon Way. A sidewalk improvement is recommended for the east side of Broadway from Devon Way to Farragut Parkway. The approximate total length is 2,050 feet. Figure 4.3 shows the proposed location for sidewalk improvements.

4.3 Farragut Parkway Raised Median

At present Farragut Parkway has a raised median along some of its length. An extension of this median is recommended along its entire length, to reduce travel speeds and improve safety. Figure 4.4 indicates the proposed location of the new raised median along Farragut Parkway. The total length of proposed median along the roadway would be 2,805 feet. Figure 4.5 shows the proposed cross-section.

4.4 Mount Hope Boulevard

Neckdowns are recommended for the pedestrian crossing along the eastern side of Farragut Parkway, at the intersection with Mount Hope Boulevard. Neckdowns or bulbouts are traffic calming devices that improve pedestrian safety and convenience. They are curb extensions located at the corners of intersections which give pedestrians more room at the corner and a shorter distance to cross. Figure 4.6 shows how this would operate at the intersection of Mount Hope Boulevard and Farragut Parkway.

4.5 Farragut Middle School and High School Drop-off/Pick-up

The number of parking spaces reserved for faculty and staff located in front of the school entrance on Farragut Parkway should be reduced to allow for more room for parents to drop-off and pick-up. The faculty and staff spaces should be shifted to Mount Hope Boulevard, see Figure 4.6.

4.6 Olinda Avenue Turning Restriction

The roadway currently has a 40-foot width and parking is prohibited on the south side. A restriction on left turns from Olinda Avenue to Farragut Parkway north is recommended during school peak hours. The left-turning vehicles would have to use the Five Corners intersection.



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FIGURE 4.3: PROPOSED SIDEWALK IMPROVEMENTS ON BROADWAY





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Figure 4.4. Farragut Parkway Raised Median

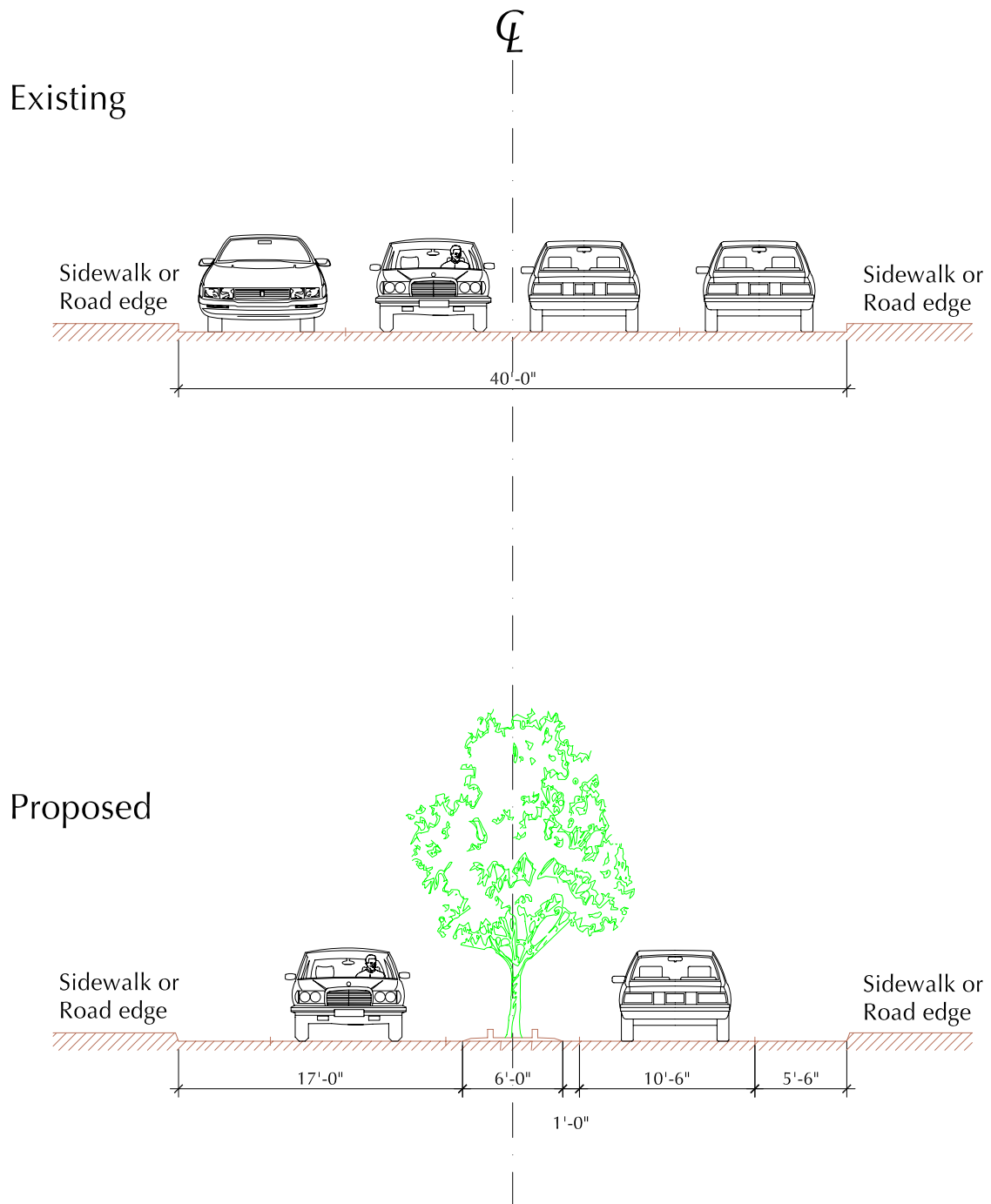
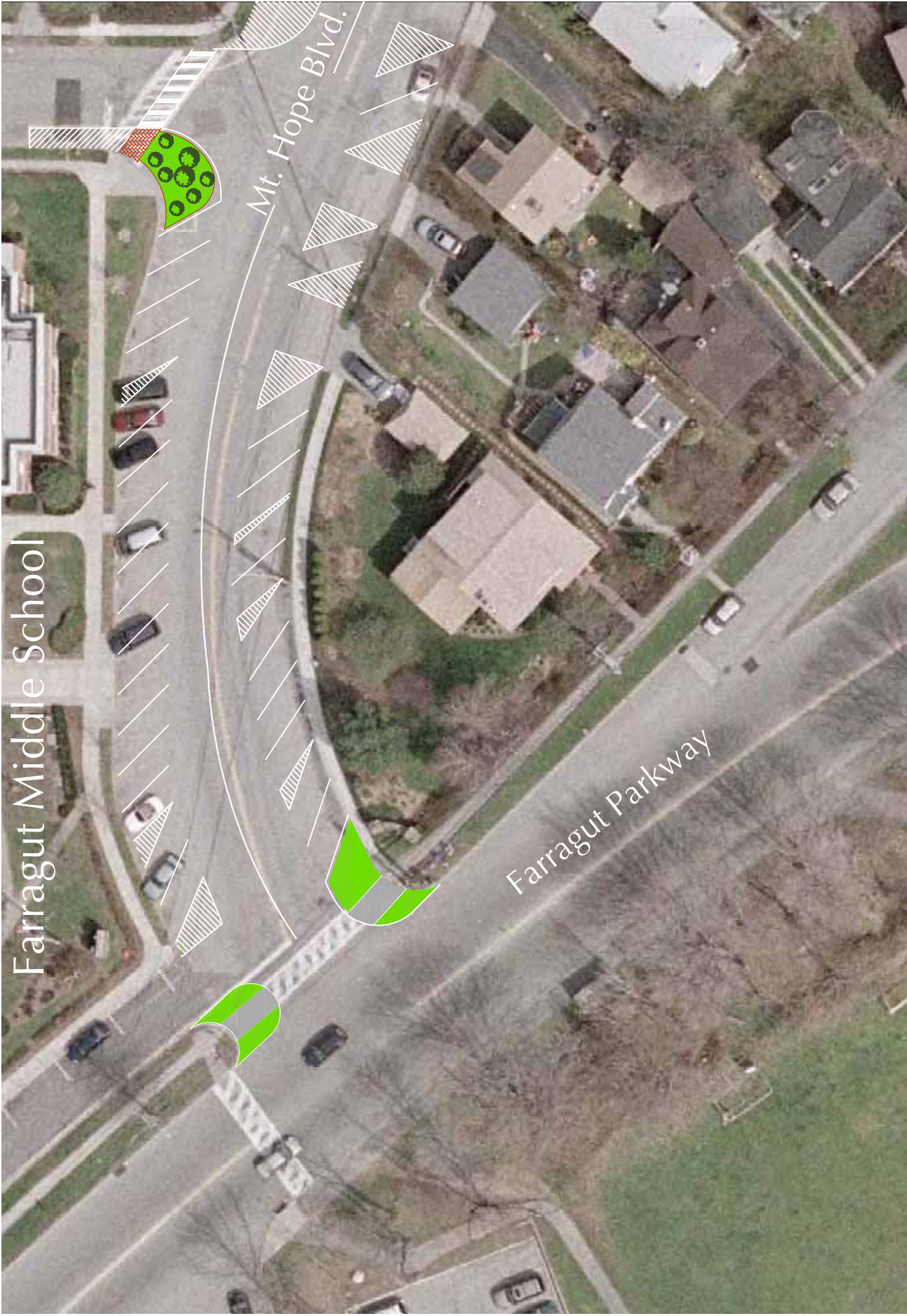


FIGURE 4.5: PROPOSED CROSS-SECTION OF RAISED MEDIAN FOR FARRAGUT PARKWAY





Farragut Middle School

Mt. Hope Blvd.

Farragut Parkway

TRANSPORTATION PLAN

VILLAGE OF HASTINGS-ON-HUDSON, NY

FIGURE 4.6: PROPOSED NECKDOWN AND REDESIGN OF PARKING ON MOUNT HOPE BLVD.

SOURCE: WESTCHESTER GIS

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4.7 Fairlane Drive Sidewalk Improvement

At present the roadway width of Fairlane Drive varies from 17 feet at the south to 21 feet at the north, without sidewalks. The roadway is closed to traffic during school hours to allow for pedestrian circulation. A 4-foot sidewalk should be added along its length (920 feet). This sidewalk could be added on either side of the street, depending on the cost estimation. Figure 4.7 shows the recommended cross-section for the two alternatives for the roadway.

4.8 Hillside Avenue Sidewalk Improvement

Hillside Avenue serves the Hillside Elementary School along the Chemka Pool Road and Hillside trail. There is no sidewalk along Hillside Avenue from the intersection with Rosedale Avenue to Fairlane Drive. The provision of a 4-foot sidewalk on the north side of Hillside Avenue is recommended. The approximate length is 340 feet. Figure 4.8 shows the recommended location.

4.9 Edgewood Avenue Sidewalk Improvement

There is no sidewalk along Edgewood Avenue, to connect Hillside Elementary School to Taft Street. A 4-foot sidewalk on the north side of Edgewood Avenue is recommended. See Figure 4.9.

4.10 Maple Avenue Traffic Calming

The roadway width along Maple Avenue is 50 feet. At present there is parallel parking on the east side and perpendicular parking on the west side. The wide roadway causes high speeds. The perpendicular parking from west to east along Maple Avenue should be alternated to create a serpentine-type alignment. This channelization of vehicles would have the effect of reducing traffic speeds on this street. See Figure 4.10 for more detail.

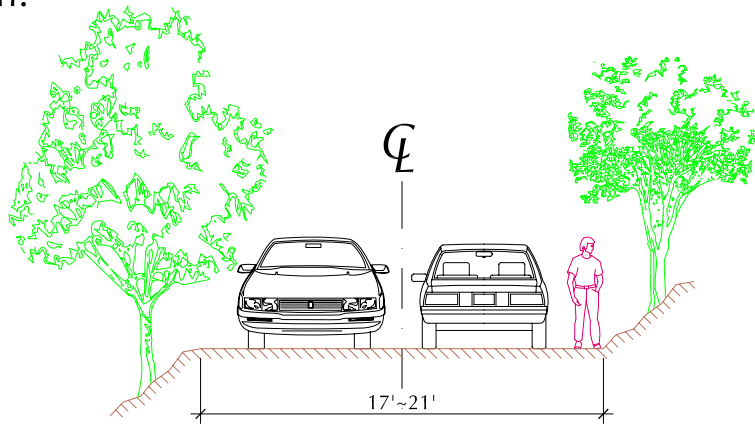
4.11 River Street Sidewalk Improvement

There is no sidewalk on River Street to connect McEachron Park to the River Street Bridge. A five-foot sidewalk should be provided on the west side of River Street from McEachron Park as far as the Metro-North train station entrance and then on the east side of River Street to connect to the existing sidewalk on River Street Bridge. The parking along River Street should change from perpendicular to parallel alignment on the west side of the roadway. Figure 4.11 shows the recommended location for this sidewalk improvement.

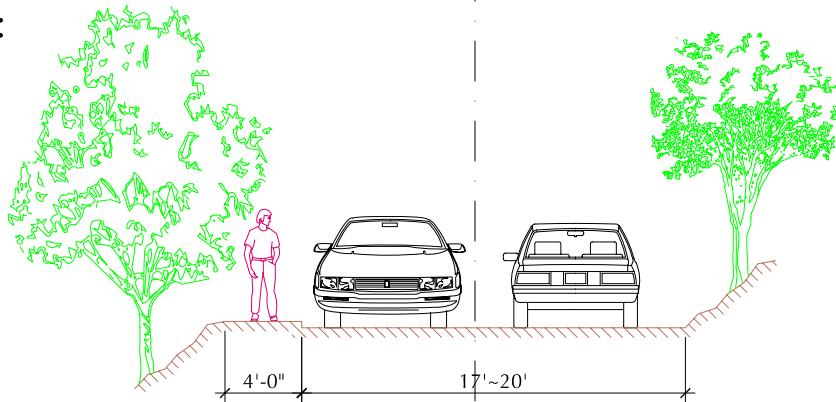
4.12 Broadway and Farragut Parkway Intersection (Five Corners)

The Five Corners intersection is currently operating with a four-phase signal that causes significant delays for both vehicles and pedestrians. A roundabout at this intersection is recommended to reduce the delay, improve safety and improve aesthetics. Unlike the old traffic circles and rotaries the "modern" roundabouts are designed such that every entering vehicle is forced to slow down. Research by the Insurance Institute of Highway

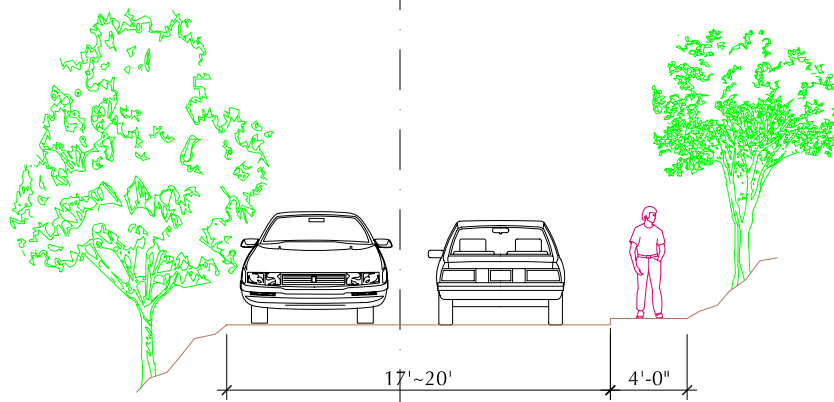
Existing Condition:



Proposed Cross-Section
Alternative 1:



Alternative 2:





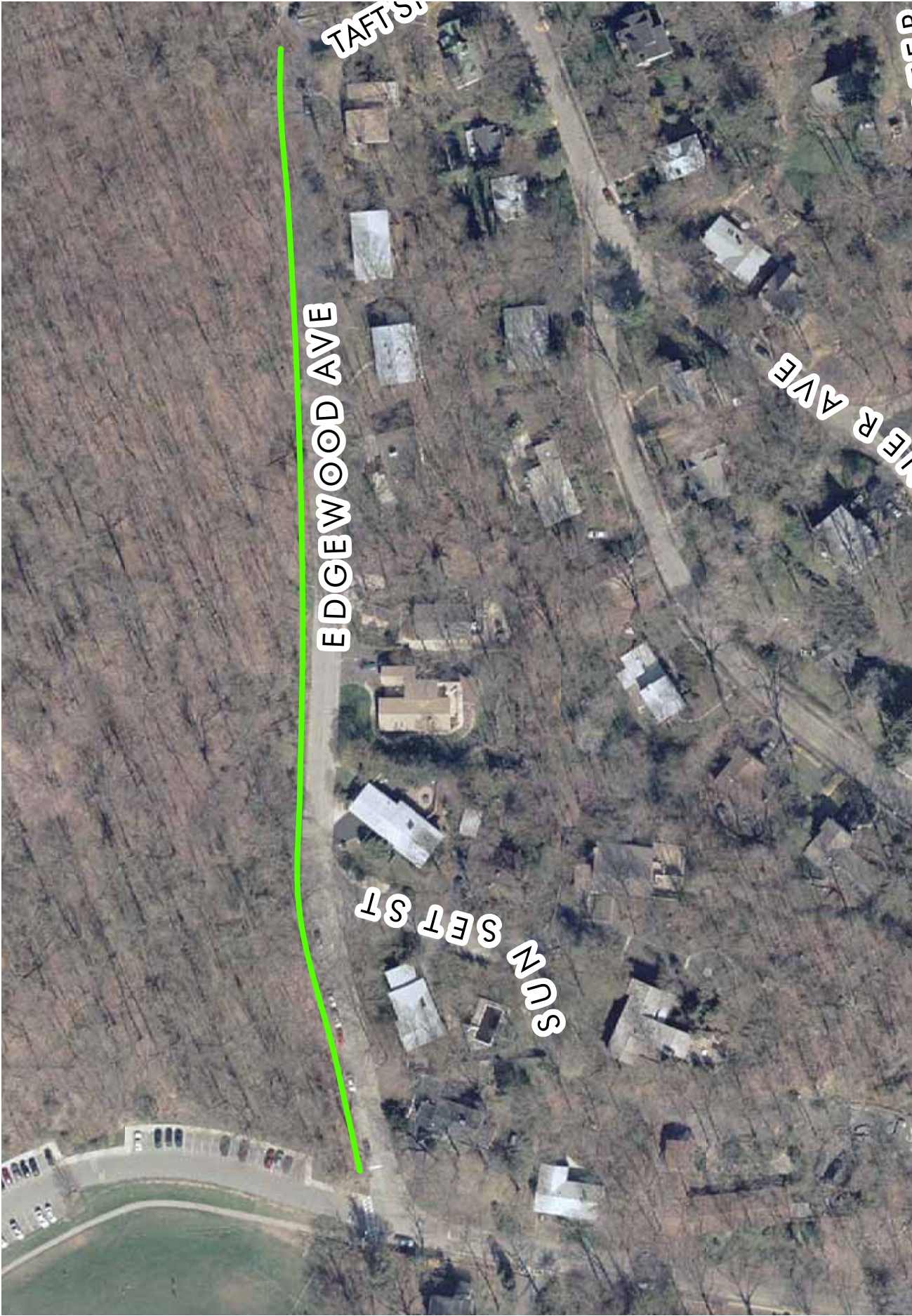
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VILLAGE OF HASTINGS-ON-HUDSON, NY

FIGURE 4.8: HILLSIDE AVENUE SIDEWALK IMPROVEMENT

SOURCE: WESTCHESTER COUNTY GIS

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VILLAGE OF HASTINGS-ON-HUDSON, NY

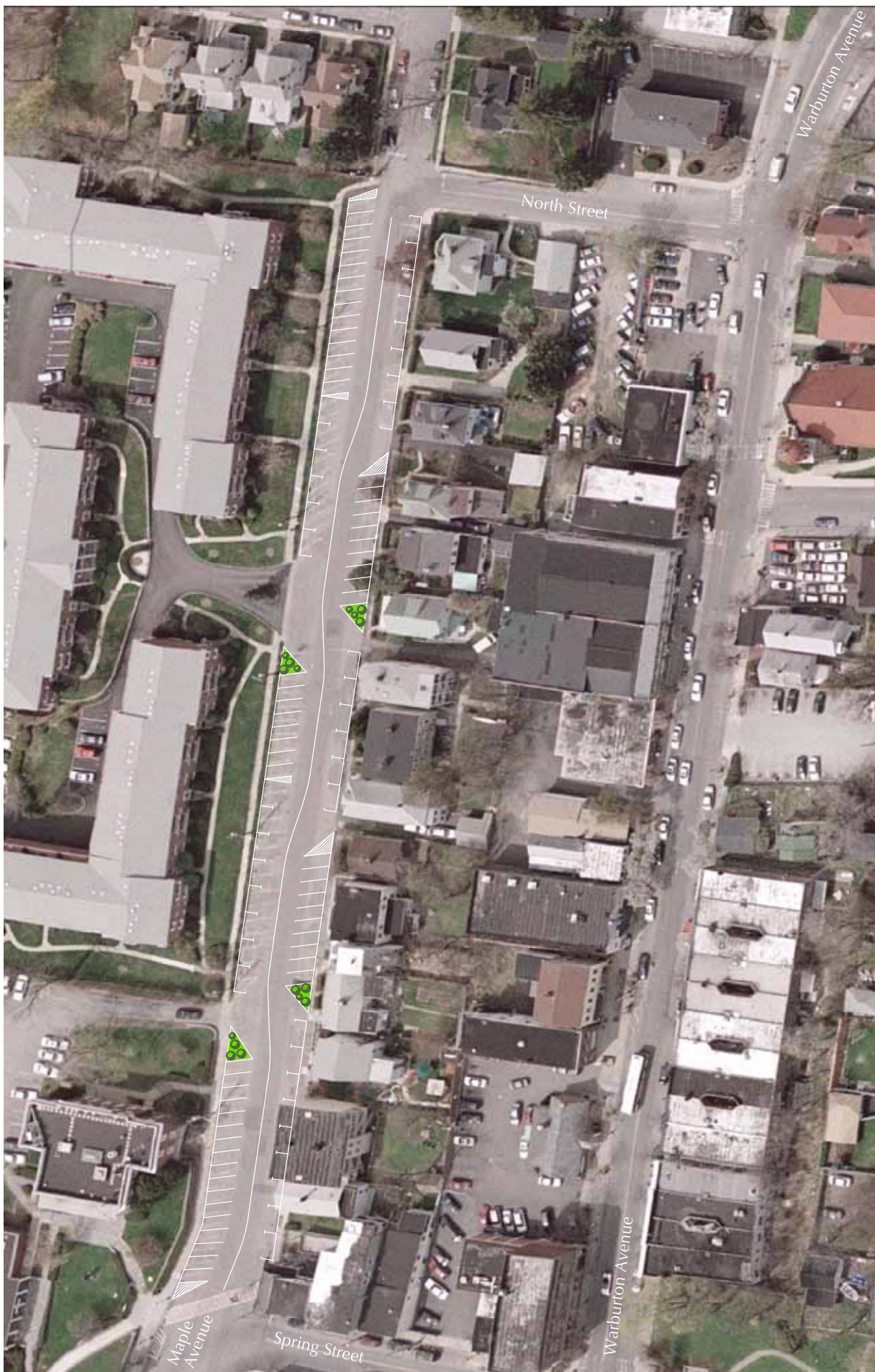
FIGURE 4.9: EDGEWOOD AVENUE SIDEWALK IMPROVEMENT

SOURCE: WESTCHESTER COUNTY GIS



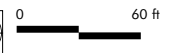
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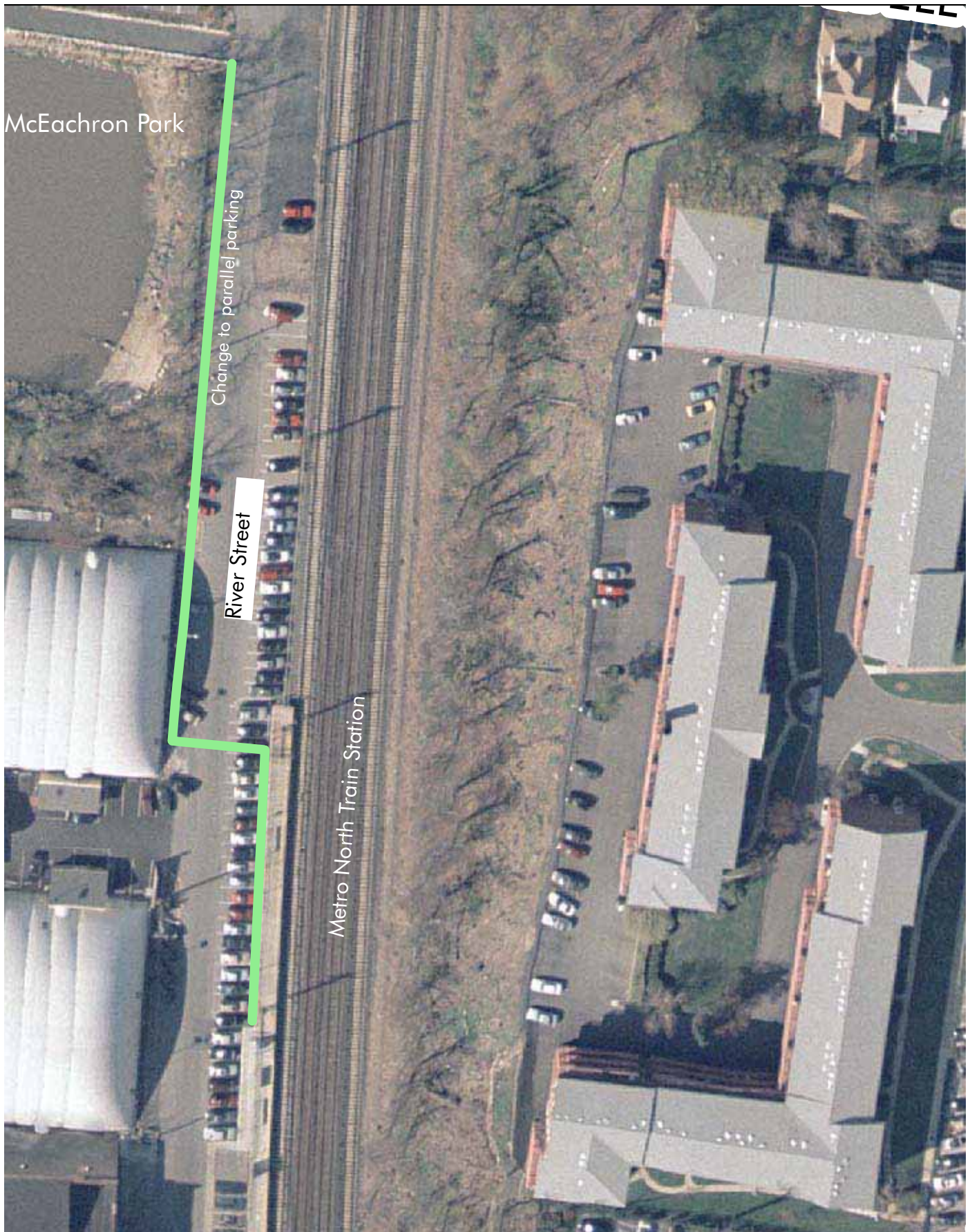
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FIGURE 4.10: MAPLE AVENUE TRAFFIC CALMING





McEachron Park

Change to parallel parking

River Street

Metro North Train Station

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FIGURE 4.11: RIVER STREET SIDEWALK IMPROVEMENT



Safety as well as by New York State DOT and federal agencies has found that modern roundabouts are the safest at-grade intersections and that they are well accepted by the American public. A NYSDOT study on roundabouts built over the last 10 years in the United States found that injury crashes decreased by 70% when standard intersections, including signalized intersections were replaced by a roundabout. Single-lane roundabouts have also excellent pedestrian safety even though they do not have a signalized crossing for pedestrians. Roundabouts also have lower maintenance costs compared to traffic signals.

Before and after opinion surveys have shown very favorable public opinions after the introduction of roundabouts, and a significant opinion turn-around from the feelings prior to roundabout installation. Roundabouts allow for easy and safe U-turns, which is generally desirable in a commercial area. Left-turns out of side streets upstream from the roundabout can be replaced by right turns and U-turns, thus improving traffic flow and safety. Roundabouts generally need more room at the intersection for the geometry (about 110 feet for the curb-to-curb diameter of a single-lane roundabout), however, unlike traffic signals, they do not require the widening of the approach roads to increase capacity. Figure 4.14 shows a conceptual layout of this roundabout. It is proposed that the new roundabout design be integrated with a mini-park built at the northeast corner of Broadway and Chauncey Lane. This mini-park would feature the historic aqueduct, and the trough that currently exists at this corner as a main landmark. The uphill grade that currently exists on the Main Street approach is not considered as an ideal condition for the approach to the roundabout, however, this condition is not ideal either for the signalized intersection. Sight distances for the various approaches seem to be acceptable, but need to be verified at the next design stage.

4.13 Summary of Improvements

This list of improvements provides the Village with a number of options for improving the transportation system and the safety of pedestrians in the Village. Table 4.1 shows the potential construction projects cost estimate.

Table 4.1: Potential Construction Projects Cost Estimate

Potential Construction Projects	Estimated Cost (\$) 2006 Dollars
Broadway Raised Median	55,000
Broadway Sidewalk Improvement	460,000
Farragut Parkway Raised Median	590,000
Mt. Hope @ Farragut Geometric Design Improvement	52,000
Fairlane Drive Sidewalk Improvement	325,000
Hillside Avenue Sidewalk Improvement	82,000
Edgewood Avenue Sidewalk Improvement	220,000
Maple Avenue Traffic Calming	49,000
River Street Sidewalk Improvement	95,000
Proposed Roundabout @ Broadway, Farragut, and Main Street	470,000
TOTAL	2,808,000



MINI PARK
WITH
RELOCATED
TROUGH AND
AQUEDUCT
INFORMATION
DISPLAY

5. Public Participation – Public Workshop 2

A second public workshop was held in March 2006. The purpose of this second workshop was to present the list of potential improvements to the Village residents, and to gain their feedback. The transportation improvements were outlined in the form of a PowerPoint presentation. Participants were then separated into groups for round table discussions. Each group was presented with a list of all the projects with their estimated construction costs. The groups were asked to discuss the improvements and to rank the priority of each project.

5.1 Ranking of Improvements

The item all groups generally agreed upon was that there should be improved sidewalks on Broadway. Several groups mentioned this should be on the entire length of Broadway, and not limited to the study's priority area. Sidewalk upgrades were perceived by most groups to be the greatest need within the Village, but different areas had various levels of support. The sidewalks on Fairlane Drive and Hillside Avenue were ranked high. On the other hand, the Edgewood Avenue sidewalk improvement obtained the lowest ranking.

The roundabout at Five Corners was ranked second by one group, but ranked last by another. The uncertainty of not having experience using roundabouts was a major concern. Table 5.1 shows the comparison of improvement rankings.

Table 5.1: Public Opinion on Improvements

Potential Construction Projects	Priority Ranking by Group				Overall Rank	Divergence of Opinion
	1	2	3	4		
Broadway Raised Median	8	3	4	6	5	average
Broadway Sidewalk Improvement	1	1	1	2	1	very low
Farragut Parkway Raised Median	9	4		5	7	average
Mt. Hope @ Farragut Geometric Design Improvement	4	5	5	1	4	low
Fairlane Drive Sidewalk Improvement	2	6	1	3	2	average
Hillside Avenue Sidewalk Improvement	2	7	1	4	3	average
Edgewood Avenue Sidewalk Improvement	10	10		7	10	low
Maple Avenue Traffic Calming	7	8		9	9	low
River Street Sidewalk Improvement	6	9		8	8	low
Roundabout @ Broadway, Farragut, and Main St.	5	2		10	6	high

5.2 Feedback from Workshop

Two important additions to the improvements are recommended as a result of feedback from the second public workshop. The first is the improvement of the intersection of Rosedale Avenue and Mt. Hope Boulevard. The second is the inclusion of modifications to Broadway between Tompkins Avenue and Devon Way.

Improvement of Mount Hope Boulevard and Rosedale Avenue

It was identified that there is a need for speed reduction measures at this intersection. One traffic accident was recorded here between 2000 and 2005. A neckdown is recommended here, along the western side of Rosedale Avenue, for pedestrians crossing Mount Hope Boulevard. This would narrow the intersection, causing traffic to slow down. A striped shoulder should also be created to narrow down the travel lanes, in conjunction with providing diagonal parking. This is shown in Figure 5.2.



Mount Hope Boulevard looking towards Rosedale Avenue

Broadway from Tompkins Avenue to Devon Way

This section of Broadway has a different cross-section to Broadway north of Devon Way. It is divided into two one-way roads with 22' 3" width and two lanes in each direction. Figure 5.2 shows the existing and proposed cross-section for this section of Broadway. The existing two lanes would be reduced to one lane with a striped shoulder either side. This shoulder would serve to reduce traffic speeds and provide a protected lane for bicycles along Broadway.

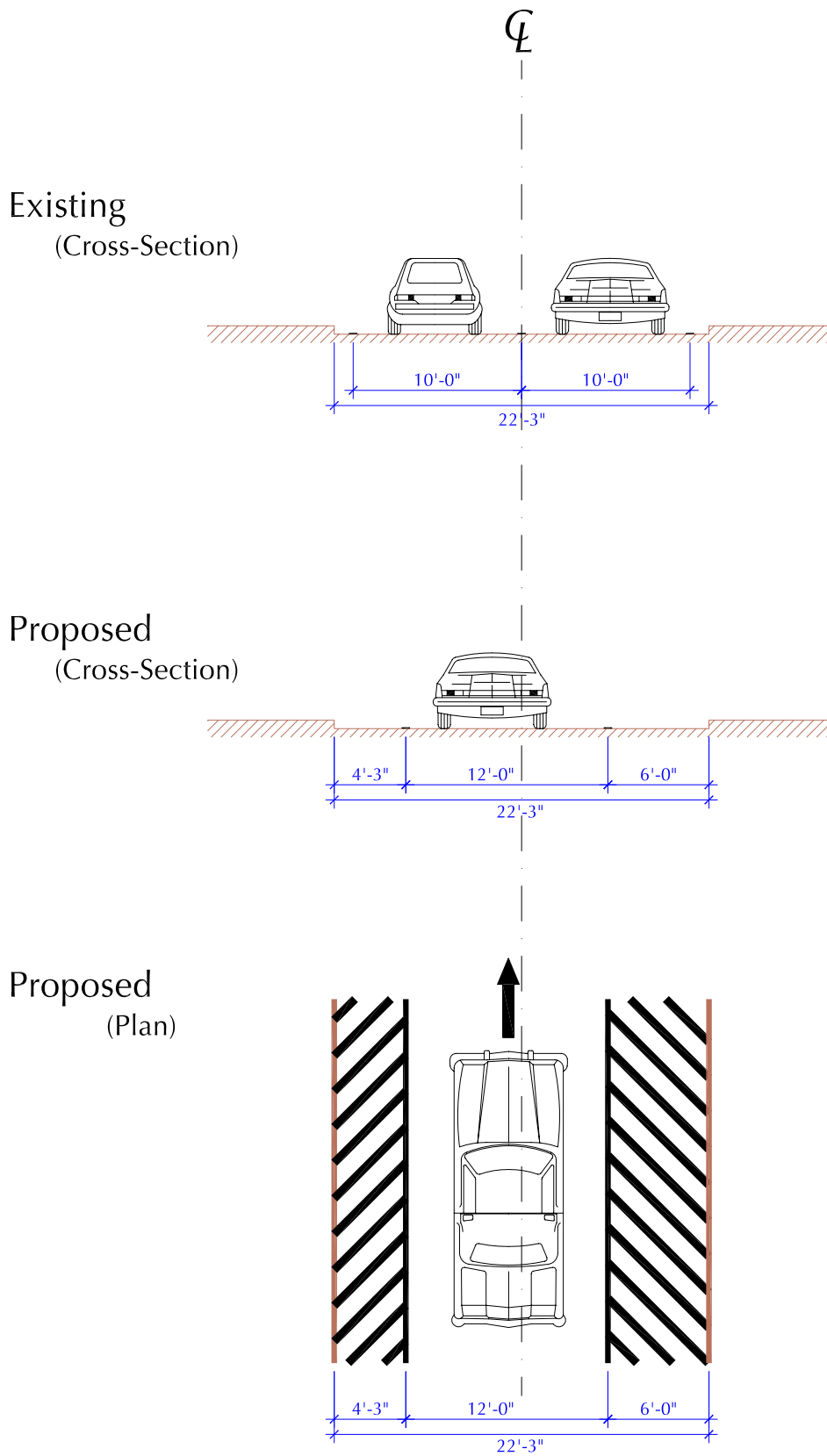


FIGURE 5.1: PROPOSED STRIPING ON BROADWAY BETWEEN TOMPKINS AVE. & DEVON WAY

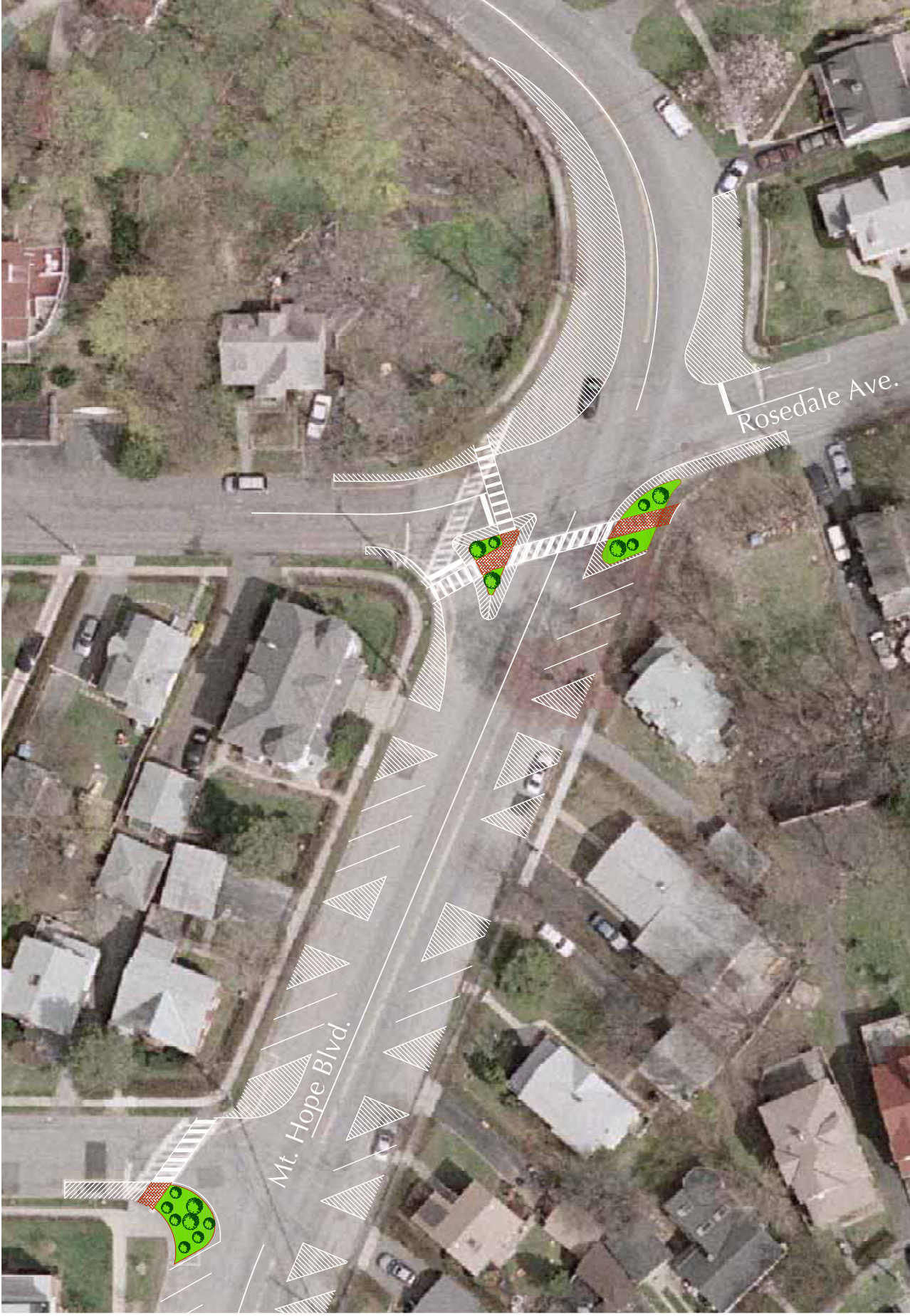


FIGURE 5.2: PROPOSED ROSEDALE AVE AND MOUNT HOPE BLVD IMPROVEMENT



SOURCE: WESTCHESTER GIS

BEJ Planning

6. Next Steps

The proposed improvements (minus the two additional improvements) were ranked by the groups as shown in Table 6.1. The proposal to improve the sidewalk along Broadway was ranked highest overall. Three sidewalk improvements received the highest rankings.

Table 6.1: Ranking of Improvements

Potential Construction Projects	Overall Rank
Broadway Sidewalk Improvement	1
Fairlane Drive Sidewalk Improvement	2
Hillside Avenue Sidewalk Improvement	3
Mt. Hope @ Farragut Geometric Design Improvement	4
Broadway Raised Median	5
Roundabout @ Broadway, Farragut, and Main St.	6
Farragut Parkway Raised Median	7
River Street Sidewalk Improvement	8
Maple Avenue Traffic Calming	9
Edgewood Avenue Sidewalk Improvement	10

This draft Transportation Plan was submitted to Westchester County and to NYSDOT for their input. The comments received by the two agencies were integrated into this report. It is intended that the improvements as proposed in this Plan will be integrated into the State Transportation Improvement Plan.

Appendix A: Summary of Public Workshop 11/16/2005

Transportation Plan & Pedestrian Improvements
Summary of Planning Workshop
Village of Hastings-on-Hudson

Wednesday November 16, 2005



Prepared by

BFJ Planning

December 21, 2005

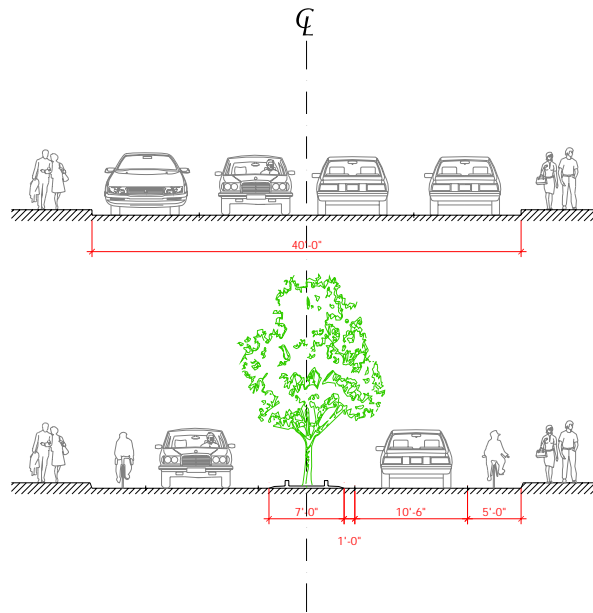
Introduction

A public workshop was held on Wednesday November 16th at the Hastings-on-Hudson Public Library. The purpose of the workshop was to get feedback and input from the public about the preliminary findings and proposed improvements within the study area. The workshop was interactive and designed to elicit public response. Approximately 30 people participated in the workshop; the majority of attendees were residents of Hastings-on-Hudson.

The workshop began with an introduction by Angela Witkowski, Village of Hastings-on-Hudson Director of Planning. Following Ms. Witkowski's greeting and introduction, Georges Jacquemart, a principal at BFJ Planning made a PowerPoint presentation. The presentation included goals and objectives of the project, an analysis of current conditions, which included the location of crashes during the past five years as well as the sidewalk conditions. One of the key points of the presentation was a proposed redesign of Five Corners, which would replace the traffic signal with a roundabout.



Also included in the presentation was a proposal to alter Broadway from its current four lane configuration. BFJ proposes to convert the roadway to two lanes, using the remaining road space to widen the travel lanes, build a landscaped median and add shoulders/bike lanes. Currently Broadway has four 10-foot lanes, which are substandard.



Before



After

Round Table Discussions

After a short break, participants separated into five smaller groups for round table discussions. Each group was presented with a list of questions to guide the conversations. Specifically, each group was asked to give feedback on the proposals, as well to highlight any other pedestrian or traffic issues in the town. Representatives from the consultant team assisted each of the tables to help facilitate the discussions.

Questions for Round Table Discussions

1. What are the major pedestrian issues?
2. What are the major traffic issues?
3. What do you think of our ideas?
4. Do you have any other ideas?
5. What should be the priorities?

Workshop Participation Comments

The following is a list of comments from each of the five tables. There was a significant overlap between the participants' responses. As can be seen the area around the schools was a priority for most people.

Group 1

- Like the idea of a roundabout, it is important that the design will slow vehicles.
- The split islands are an excellent design for pedestrian safety.
- There is some concern about children crossing at the roundabout, as there will not be a traffic light. Will a school crossing guards be available to assist children?
- Other Concerns - People drive too fast Maple Avenue - especially in the morning when they are racing for a train.
- Fairlane Road needs general improvement - the lanes need to be widened and sidewalks added.
- Olinda at Broadway - Needs to be turned into a one way road... uphill.
- We are in favor of the Broadway center median plan, with the 'soft lane' for bicycles and emergency vehicles, but maybe we should try it on a temporary basis with plastic barriers, before installing it permanently.
- How likely are we to receive funds for this type of project? We cannot seem to get enough money to pick up trash/repair potholes. Will it be a tradeoff with sidewalk who will pay for this?
- The main priority should be safe walkways to school.
- Is there an issue with snow removal on the roundabout?

Group 2

- The problems identified seem to relate to personal interest. Pedestrian interests for kids and car interests for commuters.
- The traffic counts seem to have been done at 4PM or 5PM, the most important time is when the kids get to school at 8AM to 9AM and when they leave at about 3PM or 3:30PM. There are lots of kids, cars and busses surrounding this area - especially in the drop off area.
- Concern about crossing Broadway, as there is a 'blind' turn from Main Street. Will this be safe without a traffic light?
- In general traffic and kids don't mix - At Rosedale / Mt. Hope many kids need to cross.
- Will the single/slow lane be safer? There is concern that with all the activity at the

school, Broadway will become backed up. There may be issues with rear end accidents.

- We have a ½ mile rule for bus service. Kids who are less than ½ mile from school are not eligible for bussing, in addition to kids on the other side of the Saw Mill Pkwy. Effort should be made to make safe paths for them.
- Looking at the Big Picture - The study area should be expanded to include Ravensdale and the waterfront area, where 54 new homes are expected.
- Would like to see simulation of pedestrian and traffic flow.
- Parking for Sunday church at Broadway and Farragut Ave needs to be addressed.
- Can traffic flow and safety be improved with updated traffic lights and sensors?
- Is it possible to install a temporary roundabout to test it before it is installed?
- Would like to see some pedestrian counts at peak times in the study area.
- Overall, we like the ideas, but are not sure about the solutions. For examples, will drivers respect the bicycle lane?

Group 3

Pedestrian Issues

- Major pedestrian issues is safety around the school and at major arteries, especially where sidewalks are not in good shape.
- South Broadway before and beyond Washington Avenue is important.
- Children need to be able to walk to school from Villard Hill to Hillside School.
- The sidewalk along Hillside Avenue should provide a connection with the pool.
- Walking to McEachron Park is an issue.
- Rosedale and Chauncey are important, as they are used by many children going to school.

Traffic Issues

- Olinda and Broadway is a dangerous intersection.
- There is sun glare in the morning when the children are going to school.
- Washington Avenue is not wide enough for 2 lanes of traffic and on one lane of parking.
- Speeding is an issue, people drive too fast.
- Congestion around the school, especially between 7:30AM and 8:00AM.

Our Ideas:

- We have a mixed reaction to the roundabout, as we are unfamiliar with them.
- The Five Corners is not a very long wait, compared with other intersections in the area.
- We like the split lanes, but, we need parking for the Lutheran and Reformed Churches and the nursery school. In addition, parking is needed when there are evening programs at the Middle and High Schools.
- We love the single lane traffic on Broadway.
- When the roadway narrows from two lanes to one, will it cause traffic/backups?

Other Ideas:

- Main from Five Corners to the Fire house is a good place for a median strip.
- Is there an issue with the aqueduct?

- Effort should be made to preserve the horse watering trough.
- Farragut Ave, not good for median strip - need parking
- Sidewalks on South Broadway are very important. May want to convert some of the road width to sidewalks.
- Old Broadway needs to be converted to one way northbound.
- Fairlane should be opened to traffic during school hours. Closing this road forces parents to drive past the High School complex. Having this road open will provide more options.
- Would it be possible to have a button on Five Corners which would permit a pedestrian only phase of the traffic signal (Barnes Dance)?

Priority

- Continuous sidewalks
- School safety

Group 4

- Sidewalks on all of Broadway (maintenance and ownership issues).
- Sidewalks where there are none, especially routes to school such as Fairlane and Chauncy).
- Calming car traffic to improve walkability. Should look into bumpouts, speed humps, speed tables and improved crosswalks (raised or paved).
- Many streets are too wide such as Maple and Mt. Hope, which encourage speeding.
- Pedestrians need education on safe crossing - kids don't know how to cross.
- Confusion at some intersections especially at Mt. Hope/Farragut.
- People need to stop before making right on red.
- At Spring/Warburton, cars need to stop when people are in the crosswalk.
- Chaos near schools in the morning - People double and triple park.
- Institute 'Safe Routes to School'.
- Need to improve bus stop locations for both the school buses and Bee-Line, need cross walks to access bus stops.
- Poor visibility at many intersections Olinda/Bway, Mt. Hope/Bway.
- Need multiple designated drop-off locations at schools
- Surround schools with speed humps
- Generally like Roundabout, 5 in favor, 2 opposed, visibility and slope issues
- Reconfiguration of Broadway 5 in favor, 1 questionable
- Suggest roundabout at Mt. Hope/Rose
- Suggest raised median on Mt. Hope
- Need a program to maintain sidewalks - sometimes they become people's lawn.
- More in favor of sidewalks than bike lanes, can they be combined?

Priorities

- Continuous safe routes to school.
- Safety of kids around the school.
- General walkability
- Educate pedestrians
- Need to slow traffic and make crossing safer.
- Crossing Broadway, it is now a barrier (including 5 Points).

Group 5

- Pedestrian safety at schools.
- Walking on South Broadway at Washington St. and beyond, people drive 50 MPH.
- Crossing guards at roundabout.
- Washington not wide enough for parking and movement.
- Love single lane traffic on Broadway- Other areas, such as Yonkers only have a single lane, we should too.
- Concerned about parking in front of the churches.
- The waterfront is being cleaned up - there may be 200+ houses. Future traffic demand should be considered.
- People accelerate to reach the 5 Corners intersection.
- Speeding is a general issue.
- Roundabout - mixed - what is the impact on the aqueduct?
- Would merges push congestion back from the intersection to roadway?
- Medians good on Broadway - add on Main from 5 Corners to Fire Station.
- Old Broadway - at 5 Corners, make one way northbound.
- Open Fairlane to traffic and add sidewalk.
- 5 Corners, Barnes Dance?

Priorities

- Sidewalks
- School Safety

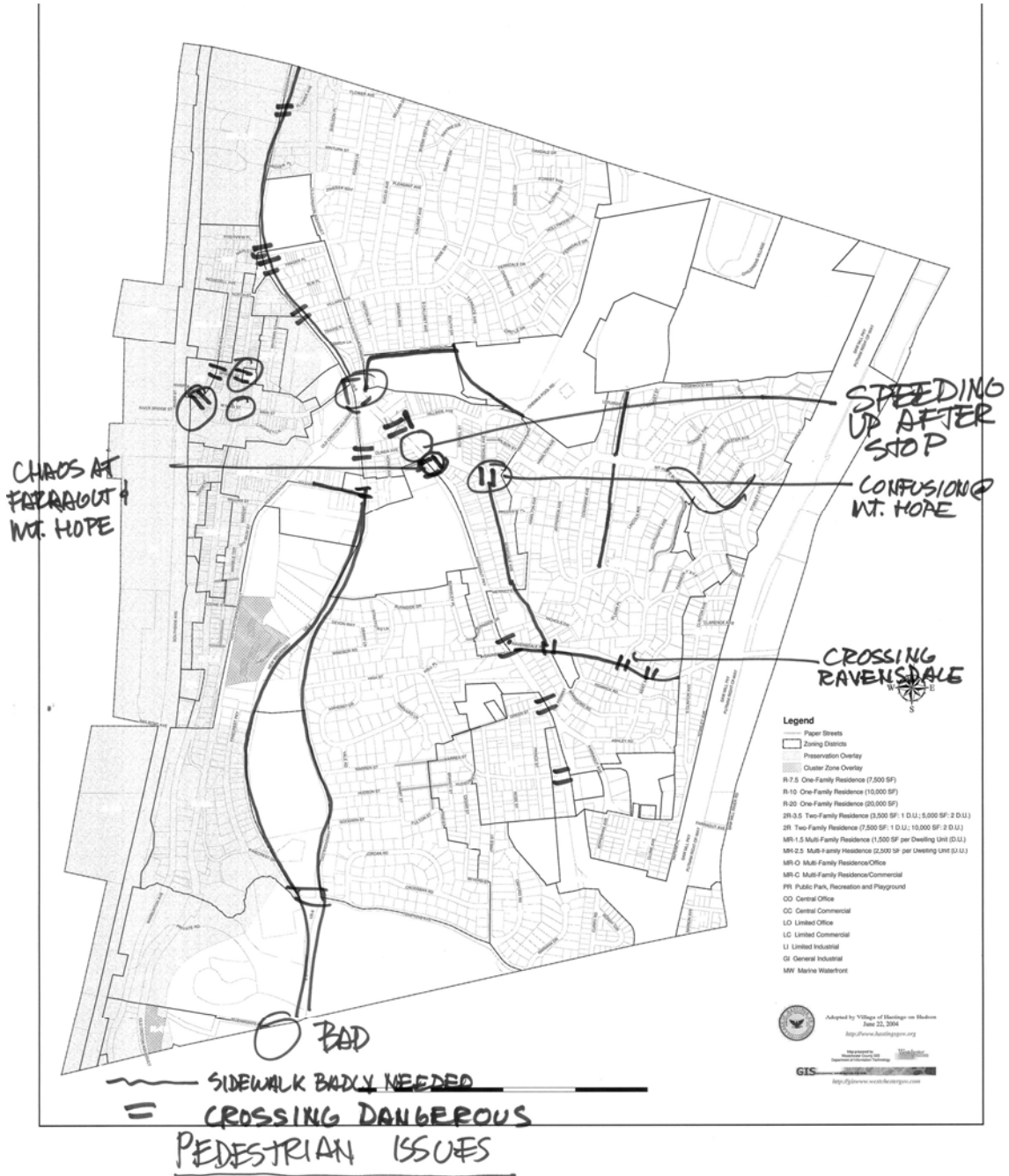
Conclusion

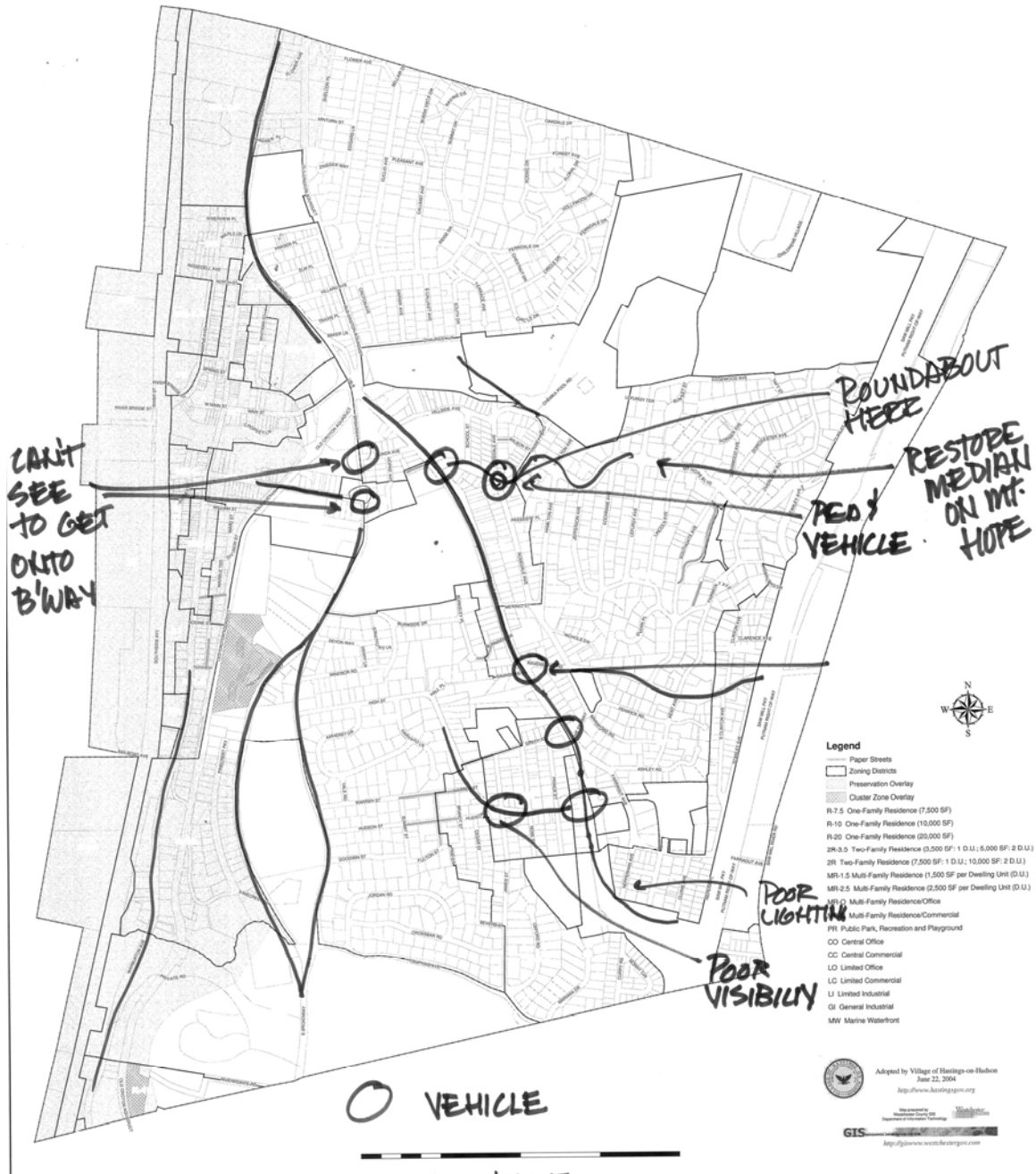
There was general consensus that the focus should be on safety of school children walking to school. The sidewalk network needs to be improved to safely accommodate all students who are required to, or want to walk to school. In addition, there is agreement that vehicles driving at excessive speeds is an issue. Overall, groups provided positive feedback for both the roundabout plan for 5 Corners and the installation of a raised median along Broadway. There is some uncertainty as to the overall effectiveness of the roundabout, as the participants had limited experience with them.

Aside from 5 Corners, areas which require further study include:

- Olinda and Broadway
- Fairlane Road
- Mt. Hope/Bway
- Rosedale / Mt. Hope
- South Broadway
- Maple Avenue

Maps marked up at workshop





Appendix B: Summary of Public Workshop 3/30/2006

Transportation Plan & Pedestrian Improvements
Summary of Planning Workshop Two

Village of Hastings-on-Hudson

Thursday March 30th, 2006



Prepared by

BFJ Planning

May 11, 2006

Introduction

A public workshop was held on Thursday March 30th at the Hastings-on-Hudson Public Library. The purpose of the workshop was to present potential improvements for pedestrian circulation to the residents. The attendants were then asked to set the priorities for these improvements and suggest changes or additional upgrades. These improvements included sidewalk extensions, roadway reconfigurations as well as a roundabout at Five Corners. The workshop was interactive and designed to elicit public response. Approximately 30 people participated in the workshop.

The workshop began with an introduction by Angela Witkowski, Village of Hastings-on-Hudson Director of Planning. Following Ms. Witkowski's greeting and introduction, Georges Jacquemart, a principal at BFJ Planning made a PowerPoint presentation. The presentation began with a summary of the results of the first workshop (see table below). Next Mr. Jacquemart presented the suggested improvements. Diagrams showing median islands (Broadway and Farragut Parkway) and sidewalk improvements (Broadway, Fairlane Drive, Hillside Avenue, Edgewood Avenue, River Street) were displayed. In addition, traffic calming measures were proposed (Maple Avenue and Mount Hope Boulevard/ Farragut Parkway intersection).

Summary of First Workshop		
Subject	Public Opinion	Concerns
Broadway Raised Median	Majority agreed	<ul style="list-style-type: none"> ▪ parking on Sundays ▪ project budget
Roundabout at Broadway/ Farragut/ Main St.	Majority agreed	<ul style="list-style-type: none"> ▪ Kids and pedestrian safety without signal ▪ Snow removal ▪ Impact on Old Croton Aqueduct
Pedestrian safety in school areas	Major priority	<ul style="list-style-type: none"> ▪ Congestion at Farragut & Olinda ▪ Pedestrian Safety along Broadway

The presentation displayed an updated roundabout design at Five Corners that is smaller than the original proposal, with no impact to the Old Croton Aqueduct. Finally, safety features of roundabouts were explained, pointing out that single-lane roundabouts reduce the number of crashes when compared with signalized intersections for vehicles, bicycles and pedestrians.

Why a Roundabout?

When compared with signalized intersections, roundabouts are a preferred choice for a number of reasons. First of all, they are more efficient, especially as the number of legs increases. Signalized intersections simply allocate time to each leg of the intersection, but with a roundabout vehicles are able to enter the intersection whenever space permits. Roundabouts are more attractive, as they require less paved surface. The center of a roundabout provides a location for a central green space, while the lanes are not required to be as wide for vehicle storage. Roundabouts calm traffic, as vehicles are forced to slow down when entering the intersection. One of the strongest arguments for the installation of a roundabout is safety, as shown in the table below.

Safety Impacts of Modern Roundabouts				
Type of Roundabout	Converted from	# of Conversions	Percent Reduction of all Crashes	Percent Reduction of Injury Crashes
Single Lane, Urban	Stop Controlled	12	69%	80%
Single Lane, Rural	Stop Controlled	9	65%	68%
Multi-lane, Urban	Stop Controlled	7	8%	73%
Urban	Signalized	5	37%	75%
All		33	47%	72%

Source: NYSDOT Study October 2003

Modern roundabouts differ from rotaries or older roundabouts in that they require entering vehicles to yield, and they include an entry deflection. Older roundabouts and rotaries permit vehicles to enter at full speed and perform in a similar fashion to a racetrack. Modern roundabouts contain a tight turning radius or deflection when entering, forcing the vehicles to slow down. In addition, modern roundabouts are smaller than older roundabouts or rotaries. Within a modern roundabout vehicles cannot travel faster than 25 MPH. This leads to the safety improvements, as vehicles moving at slower speeds can more easily avoid a collision. If a collision does occur, all vehicles are traveling in the same direction at slow speeds, reducing its severity.

Prior to the Roundtable discussion, Georges Jacquemart answered questions presented by participants of the public workshop:

Q: Are roundabouts safe for the elderly?

A: The data shows that they are safer for all drivers. They are very simple. Signalized intersections are very difficult for elderly, as there are many different points of conflict. Roundabouts simplify this, it is one conflict at a time, at slow speed. This is what makes them safer.

Q: What are your instructions for this study?

A: Develop a transportation plan with a pedestrian focus.

Q: Is it possible to build a roundabout at the intersection of Mt. Hope and Farragut Parkway?

A: It would be difficult, as there is not much room.

Q: At the current time, Fairlane Drive is closed to vehicular traffic during the morning rush hour. If it had a sidewalk, would it be possible to open the roadway to vehicles during the morning rush?

A: Yes

Q: Fairlane Drive is a very difficult street - people drive fast, they drag race. People race down the street for the train. People don't stop at the stop sign. What can be done?

A: The speeding issue could be resolved with speed humps.

Q: There are several issues what seem quite loaded in your presentation.

A: You should comment on them.

Round Table Discussions

After a short break, participants separated into five groups for round table discussions. Each group was presented with a list of questions to guide the conversations. Specifically, each group was given a list of all the projects with an estimated construction cost and was asked to rank the priority of each project. The groups were also asked to tell the consultants if anything was missed. Representatives from the consultant team assisted each of the tables to help facilitate the discussions.

Questions for Round Table Discussions

1. Please evaluate each of the suggested projects and provide us with your comments.
2. Did we miss anything?
3. Please rank the 10 projects according to your sense of priority on the attached table (Rank them from 1 to 10).

Workshop Participation Comments

The following is a list of comments from each of the five tables. As can be seen there is agreement that improved sidewalks are most important.

Group 1

This group could not come to one set of conclusions representing all participants, but instead had two presenters with differing opinions. They did not submit a project ranking sheet.

Group 1A

- Top priority is the median on Broadway. If this project is too expensive, we would support the reduction of Broadway from four lanes (two lanes in each direction) to two lanes (one lane in each direction). This new configuration should also include a center turn lane and wide sidewalks on both sides of the road.
- Pedestrian safety should be the focus on Broadway.
- Broadway improvements need to extend south of Devon, to create a more complete pedestrian network. There needs to be a walkable path/sidewalk along Broadway throughout the entire village.

Group 1B

- Not enough is being done in the area around the school. During the pick up and drop off periods, there are many issues that need to be addressed.
- Regarding the proposed median on Broadway - it is pretty, but I don't really understand it, and it is very expensive. I do see that it will make crossing easier, but don't see any other benefits.
- Along Farragut Parkway, I can see the benefits of a median, as it will help to slow drivers down.
- Regarding Fairlane Drive, I understand the problem of those who want to get to the other side of town, but opening up the roadway will be a disaster. It will be especially bad for those who want to get to Mt. Hope or the Parkway.
- Overall, I support the sidewalks
- Strong reservations about the roundabout

Group 2

- The Broadway median is a luxury we can do without. It is too expensive and unnecessary.
- Sidewalk improvements are very important and should be prioritized. The sidewalks should be extended.
- The upgrade at the school is a good cheap fix.

- The Fairlane Drive sidewalk improvement would be very helpful and may relieve much of the congestion in the area, especially near the Farragut Complex.
- Building a sidewalk on Hillside Avenue is essential if Fairlane Drive is opened to vehicles during the mornings. These two projects should be combined.
- We did not feel the Edgewood Avenue improvement is very important, as there is not much traffic.
- We support the River Street improvements.
- Regarding the roundabout, we are skeptical, but willing to try. Five Corners does not work very well, but the roundabout is hard for us to imagine.

Items that were left off

- Sidewalks after the split on Broadway (Pinecrest to Tomkins). Traffic travels too fast in this area.
- Sidewalks are needed on High Street and James Street.
- We need signage to remind people to yield to pedestrians.

Group 3

- We like the median on Broadway, but it is more important to have at least one sidewalk along the entire length of Broadway. We suggest northbound Broadway to add a bike lane on the east side. On the southbound lane, add both a bike lane and a sidewalk all the way to Tompkins Avenue. This will calm traffic south of High Street.
- We love the median on Farragut Parkway, with just two travel lanes.
- On Maple Avenue, we like the angled parking, but we hope the sidewalks could be widened.
- We support the roundabout, we are 100% in favor - it will change the feeling and identity of Hastings. People will stop avoiding Five Corners, and this will reduce traffic on Fairlane Drive. When the roundabout is constructed, we should close off Little Broadway.
- Sidewalks should extend on Broadway for its entire length. This will serve to calm traffic along South Broadway.
- The median on Broadway would be helpful, but the sidewalks are more important and should come first.
- The medians on Farragut Parkway are critical to slow traffic. There have been two fatalities along Farragut.
- Mt. Hope once had medians - they were removed. Can we look into a roundabout at Mt. Hope and Rosedale?
- Fairlane is not a high priority - we are not sure if it should be opened, but it should be calmed with chicanes and humps. The stop sign must be enforced. Driveways can be pooled. We question the cost effectiveness of a sidewalk.
- A sidewalk along Hillside would be good, but is not a high priority.
- On Olinda Avenue, can we limit the use during school hours?
- Washington Avenue needs sidewalks at the top.

Group 4

- We could not agree on the roundabout, so we did not rank it. We only listed what we all could agree upon.
- A roundabout does not address need for kids to cross the street. We don't think people will have the courtesy to slow down and use the roundabout properly.
- The most important thing is sidewalk improvements on Broadway, Fairlane and Hillside.
- Near the school, we should move the location of the teacher parking.
- We don't like the idea of angle parking near the school, as it would be hard to see when backing out.

Group 5

- Regarding the median on Broadway, we have concerns about emergency vehicles and access to driveways.
- Sidewalks must be installed on both sides of Broadway.
- Farragut Parkway raised median is a good idea. Will there be any issues with the county? Will there be problems with turning? Maybe we should reduce Farragut to two lanes (one in each direction) before the Fenway.
- Regarding the roundabout, we had a wide range of opinions, but as spokesperson for the group, I think it is a great idea. The naysayers wonder if the current conditions are really so dangerous. They wonder if anything else can be done, such as extend the corners.
- Along High Street and James Street people need to be slowed down.
- We need more citizen education about how to drive in the village. This raises the point of how will outsiders navigate through the village?
- The issues at the school regarding pick up and drop off need to be addressed more closely.
- The sidewalk on Edgewood - not a bad idea, why not?
- The group is hesitant on the Maple Avenue improvement. We are concerned about parking issues, snow removal and speed perception.
- The River Street project should be delayed until the waterfront is renovated.

Items that were left off

- Can the Rosedale and Mount Hope intersection be narrowed?
- The intersection of Farragut and Fenway need to be looked at.
- The intersections of High St with James Street and Farragut Parkway need to be upgraded. There are new homes being constructed in the area.
- Ravensdale Road needs to be improved for children walking to school. The intersections with Farragut and Rosedale are especially bad.
- Education needs to be improved regarding behavior at intersections.
- The pick up/drop off location at the schools (HHS & FMS) need to be improved.
- What are the implications for Mt. Hope/ Farragut intersection if a roundabout is installed at Five Corners?

Conclusion

The one thing all groups agreed upon was that there should be improved sidewalks on Broadway. Several groups mentioned this should be on the entire length of Broadway, and not limited to the study's priority area. Sidewalk upgrades were perceived by most groups to be the greatest need within the Village, but different areas had various levels of support. The sidewalks on Fairlane and Hillside were believed to be warranted. On the other hand, the Edgewood Avenue sidewalk improvement was felt to be unnecessary.

The roundabout at Five Corners was ranked second by one group, but ranked last by another. The uncertainty of not having experience using roundabouts was a major concern.

Appendix C: Traffic Data

Appendix A: Peak Hour Traffic Volumes

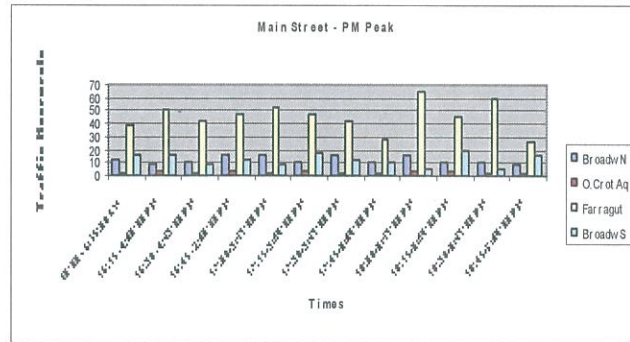
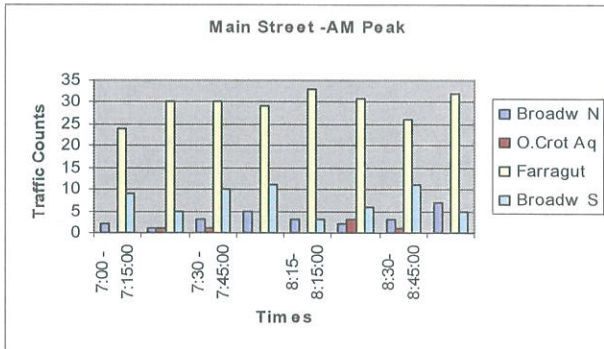
Main Street

AM Peak – Eastbound towards

- Eastbound from Main street toward Farragut Ave. has the most traffic turn movements peaking at 33 movements

PM Peak – Eastbound towards

- Eastbound from Main street toward Farragut Ave. has the most traffic turn movements peaking at 64 movements



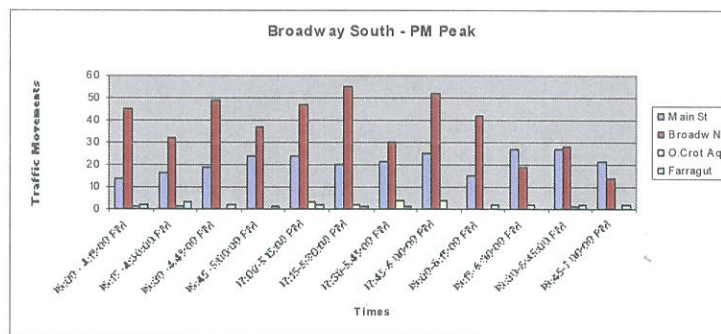
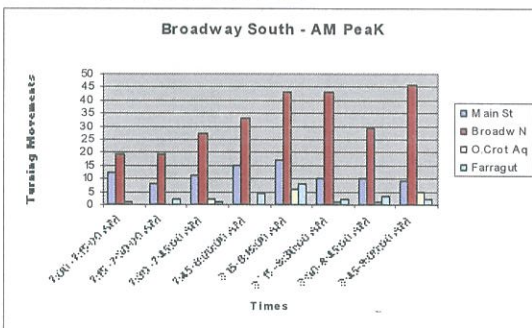
Broadway South

AM Peak – Northbound towards

- Northbound from Broadway South toward Broadway North has the most traffic turn movements peaking at 43 movements

PM Peak – Northbound towards

- Northbound from Broadway South toward Broadway North. has the most traffic turn movements peaking at 52 movements
- Northbound from Broadway South toward Main St. has significant traffic turn movements peaking at 27 movements



*At least 25 traffic turn movements are necessary to be considered significant.

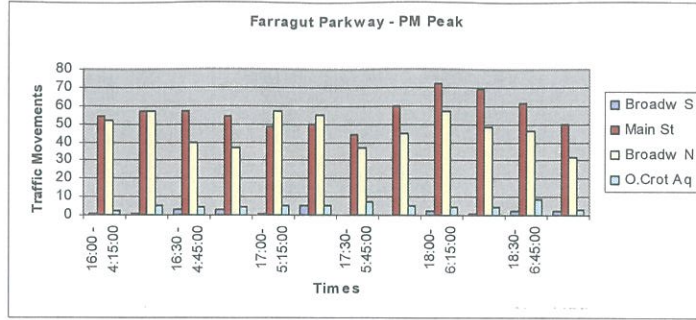
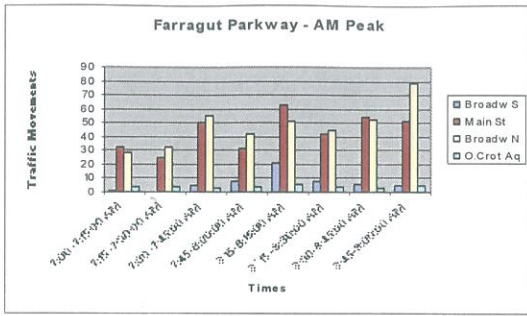
Farragut Parkway

AM Peak – Northwest bound towards

- Northwest bound from Farragut Parkway toward Broadway North has the most amount of traffic turn movements peaking at 79 movements
- Northwest bound from Farragut Parkway toward Main St. has significant amount of turn movements peaking at 63 movements

PM Peak – Northwest bound towards

- Northwest bound from Farragut Parkway toward Main St. has the most of traffic turn movements peaking at 72 movements
- Northwest bound from Farragut Parkway toward Broadway North has significant amount traffic turn movements peaking at 57 movements.



* At least 25 traffic turn movements are necessary to be considered significant.

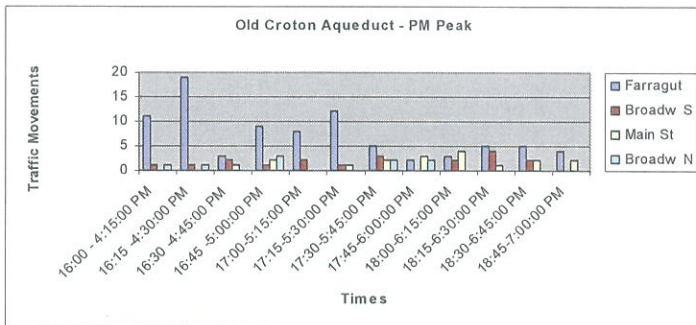
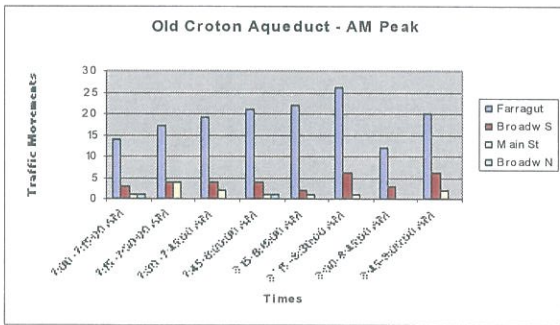
Old Croton Aqueduct

AM Peak – Westbound towards

- North bound from Old Croton Aqueduct toward Farragut Parkway has the most amount of traffic turn movements peaking at 26 movements

PM Peak – Westbound towards

- In the PM Peak West bound there were no significant traffic movements. The greatest amount was 19. At least 25 traffic turn movements are necessary to be considered significant.



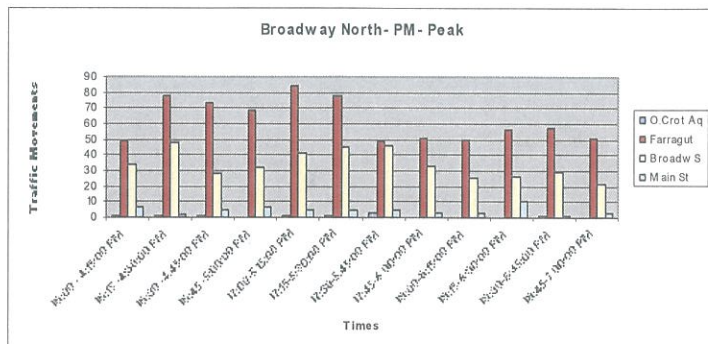
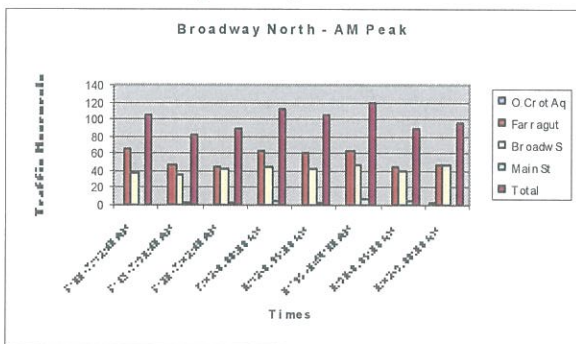
Broadway North

AM Peak – Southbound towards

- Southbound from Broadway North toward Farragut Parkway has the most amount of traffic turn movements peaking at 63 movements
- Southbound bound from Broadway North toward Broadway South has significant amount of turn movements peaking at 47 movements

PM Peak – Northwest bound towards

- Southbound from Broadway North toward Farragut Parkway has the most amount of traffic turn movements peaking at 84 movements
- Southbound bound from Broadway North toward Broadway South has significant amount of turn movements peaking at 46 movements



*At least 25 traffic turn movements are necessary to be considered significant.

PEAK HOUR TRAFFIC VOLUMES

Intersection: Five Points Intersection (Broadway/Farragut/Main/Old Croton Aqueduct)

Day/Date of Count: Wednesday September 14, 2005 Municipality/State: Hastings-on-Hudson, NY
 Project: Hstings Transportation Plan

Morning Traffic Counts		Five Points Intersection (Broadway/Farragut/Main/Old Croton Aqueduct)																									15 minute Totals	Hourly Totals
		Main Street Eastbound towards					Broadway South Northbound towards					Farragut Parkway Northwestbound towards					Old Croton Aqueduct Westbound towards					Broadway North Southbound towards						
		Broadw N	O.Crot Aq	Farragut	Broadw S	Total	Main St	Broadw N	O.Crot Aq	Farragut	Total	Broadw S	Main St	Broadw N	O.Crot Aq	Total	Farragut	Broadw S	Main St	Broadw N	Total	O.Crot Aq	Farragut	Broadw S	Main St	Total		
7:00	7:00 -7:15:00 AM	2	0	24	9	35	12	19	1	0	32	1	32	28	4	65	14	3	1	1	19	0	66	38	0	104	151	
7:15	7:15 -7:30:00 AM	1	1	30	5	37	8	19	0	2	29	0	25	32	4	61	17	4	4	0	25	0	46	34	2	82	152	
7:30	7:30 -7:45:00 AM	3	1	30	10	44	11	27	2	1	41	5	50	55	3	113	19	4	2	0	25	0	44	41	3	88	223	
7:45	7:45-8:00:00 AM	5	0	29	11	45	15	33	0	4	52	8	31	42	4	85	21	4	1	1	27	0	63	45	4	112	209	
8:00	8:15-8:15:00 AM	3	0	33	3	39	17	43	6	8	74	21	63	51	6	141	22	2	1	0	25	0	60	42	2	104	279	
8:15	8:15 -8:30:00 AM	2	3	31	6	42	10	43	1	2	56	8	42	45	4	99	26	6	1	0	33	1	63	46	8	118	230	
8:30	8:30-8:45:00 AM	3	1	26	11	41	10	29	1	3	43	6	54	52	3	115	12	3	0	0	15	0	44	40	5	89	214	
8:45	8:45-9:00:00 AM	7	0	32	5	44	9	46	5	2	62	5	51	79	5	140	20	6	2	0	28	2	46	47	0	95	274	
Total for Period		26	6	235	60	327	92	259	16	22	389	54	348	384	33	819	151	32	12	2	197	3	432	333	24	792	1732	
Peak Hour (-)		11	2	113	35	161	46	98	3	7	154	14	138	157	15	324	71	15	8	2	96	0	219	158	9	386	735	
Peak Hour Factor		0.55	0.50	0.94	0.80	0.89	0.77	0.74	0.38	0.44	0.74	0.44	0.69	0.71	0.94	0.72	0.85	0.94	0.50	0.50	0.89	#DIV/0!	0.83	0.88	0.56	0.86	0.82	

Afternoon Traffic Counts		Five Points Intersection (Broadway/Farragut/Main/Old Croton Aqueduct)																									15 minute Totals	Hourly Totals
		Main Street Eastbound towards					Broadway South Northbound towards					Farragut Parkway Northwestbound towards					Old Croton Aqueduct Westbound towards					Broadway North Southbound towards						
		Broadw N	O.Crot Aq	Farragut	Broadw S	Total	Main St	Broadw N	O.Crot Aq	Farragut	Total	Broadw S	Main St	Broadw N	O.Crot Aq	Total	Farragut	Broadw S	Main St	Broadw N	Total	O.Crot Aq	Farragut	Broadw S	Main St	Total		
16:00	16:00 - 4:15:00 P	12	1	39	15	67	14	45	1	2	62	1	54	52	2	109	11	1	0	1	13	1	49	34	7	91	251	
16:15	16:15 -4:30:00 P	9	3	50	16	78	16	32	1	3	52	1	57	57	5	120	19	1	0	1	21	1	78	48	2	129	271	
16:30	16:30 -4:45:00 P	10	1	42	8	61	19	49	0	2	70	3	57	40	4	104	3	2	1	0	6	1	73	28	5	107	241	
16:45	16:45 -5:00:00 P	16	3	48	12	79	24	37	0	1	62	3	54	37	4	98	9	1	2	3	15	0	68	32	7	107	254	
17:00	17:00-5:15:00 P	15	1	53	9	78	24	47	3	2	76	1	48	57	5	111	8	2	0	0	10	1	84	41	5	131	275	
17:15	17:15-5:30:00 P	10	3	48	17	78	20	55	2	1	78	5	50	55	5	115	12	1	1	0	14	1	78	45	5	129	285	
17:30	17:30-5:45:00 P	15	1	42	12	70	21	30	4	1	56	0	44	37	7	88	5	3	2	2	12	3	49	46	5	103	226	
17:45	17:45-6:00:00 P	10	2	28	10	50	25	52	4	0	81	0	60	45	5	110	2	0	3	2	7	0	51	33	3	87	248	
18:00	18:00-6:15:00 P	15	3	64	6	88	15	42	0	2	59	2	72	57	4	135	3	2	4	0	9	0	50	25	3	78	291	
18:15	18:15-6:30:00 P	10	4	46	20	80	27	19	2	0	48	1	69	48	4	122	5	4	1	0	10	0	56	26	10	92	260	
18:30	18:30-6:45:00 P	11	2	59	6	78	27	28	1	2	58	2	61	46	9	118	5	2	2	0	9	1	57	29	1	88	263	
18:45	18:45-7:00:00 P	8	1	26	16	51	21	14	0	2	37	2	50	32	3	87	4	0	2	0	6	0	51	22	3	76	181	
Total for Period		141	25	545	147	858	253	450	18	18	739	21	676	563	57	1317	86	19	18	9	132	9	744	409	56	1218	3046	
Peak Hour (-)		47	8	179	51	285	73	163	2	8	246	8	222	186	15	431	42	5	3	5	55	3	268	142	21	434	1017	
Peak Hour Factor		0.73	0.67	0.90	0.80	0.90	0.76	0.83	0.50	0.67	0.88	0.67	0.97	0.82	0.75	0.90	0.55	0.63	0.38	0.42	0.65	0.75	0.86	0.74	0.75	0.84	0.94	