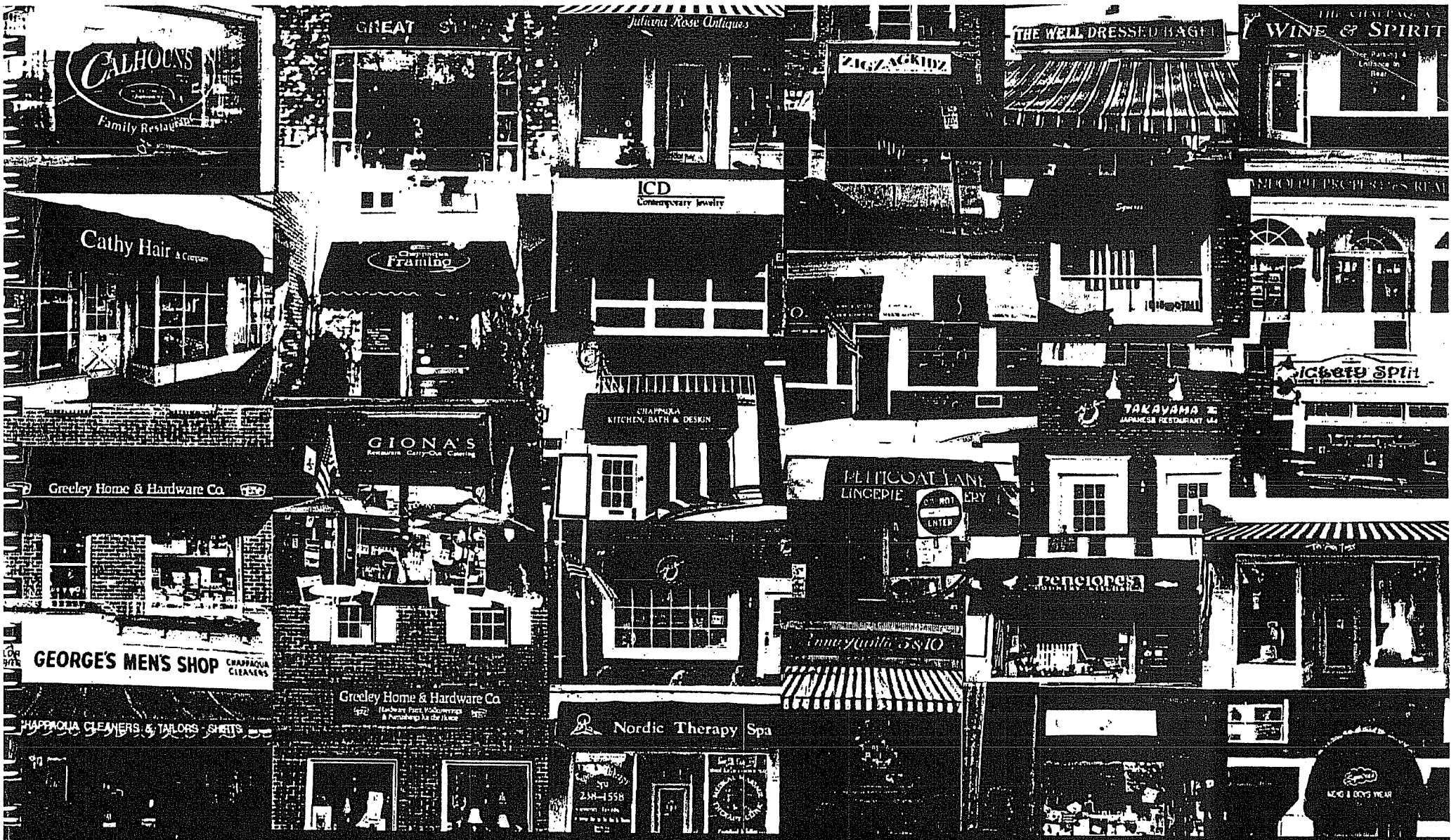

Hamlet Of Chappaqua Comprehensive Plan

FINAL

Prepared for

Town of New Castle
Westchester County

March 2003

Prepared by

VOLLMER ASSOCIATES LLP
ENGINEERS • LANDSCAPE ARCHITECTS • PLANNERS • SURVEYORS

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EXECUTIVE SUMMARY

The purpose of this study was to address and resolve commuter and retail shopping traffic congestion and parking issues while incorporating downtown streetscape, pedestrian amenities, retail frontage and new development proposals and design guidelines. The recommended plan represents input from many involved constituency groups via numerous meetings, presentations and work sessions. The following lists study goals and objectives:

- Improve vehicular circulation within and throughout downtown;
- Develop planning options to attract shoppers to the downtown;
- Create a more pedestrian friendly environment by encouraging people to stay and walk within the downtown area;
- Improve pedestrian safety, particularly at the school crossings;
- Create opportunities for increased residential, locally oriented commercial, retail and office development;
- Increase and improve parking for Commuters, Shoppers, etc.; and
- Improve the connectivity between the existing open spaces.

The agreed upon mission for this study was to prepare both vehicular and land use development recommendations, which integrate and balance these goals and objectives. In order to achieve a balance of often conflicting objectives, this Plan presents a set of recommendations each with its positive and negative impacts and the basis for its selection among alternative options. The selected recommendations, arrived at in the Focus Group, Town Board and Steering Committee work sessions, represent a broad range of potential improvements for Chappaqua. They are grouped below according to those that can be achieved independently of each other in a short time frame (1-2 years) and those that require longer design, approval and construction time schedules (3-4 years) and greater public funding commitments.

Short term stand-alone improvement projects include the following:

- Reconfiguration of traffic circulation patterns within the Metro-North Railroad Station Plaza.
- Restriping of Allen Place Parking Lot to gain five additional parking spaces.
- Modified parking permit system or fee structure to manage commuter parking demand.
- Removal of large boulder in the southeast quadrant of the intersection of Douglas Road/Route 120/Hunts Lane to allow for the widening of the westbound Hunts Lane approach.
- Reversal of the entrance to the parking area behind Citibank and close the entrance to South Greeley Avenue.
- Provide a new sidewalk from the former Post Office (Susan Lawrence/veterinarian's office) rear parking lot through the vest pocket park to the North Greeley Avenue sidewalk and the North Greeley Avenue/King Street crosswalks;

Major Design proposals include the following:

- Creating a "T" intersection gateway to Chappaqua at Quaker Road and South Greeley Avenue
- Extending curbs to create square corners at the intersection of King Street, North/South Greeley Avenue and Lower King Street with shorter perpendicular pedestrian crosswalks.
- Providing traffic calming measures such as bulb-outs at the intersection corners of North & South Greeley Avenue/King and Lower King Streets
- Widening Woodburn Avenue
- Installing three traffic signals along Greeley Avenue where it intersects with King Street, Quaker Road and Woodburn Avenue.
- Creating an exclusive left-turn lane from southbound Route 120 onto Hunts Lane
- Constructing a two-tier parking structure to replace the North Greeley Avenue parking lot
- Developing streetscape improvements for King and Lower King Street/North and South Greeley Avenue including:
  - Consistent and uniform sidewalk paving, crosswalk, tree pit, pedestrian light standards and intersection treatments.
  - Herringbone brick paving bulge-outs with granite curbs and ADA mountable curbs.
  - Connect the sidewalks on the Quaker Road Bridge directly to the Metro North Railroad station platform.
  - A new walkway from the bus and car drop off areas to the Robert E. Bell School;
  - Clearly marked crosswalks at King Street and Senter Street; South Greeley Avenue and Woodburn Avenue; South Greeley Avenue and Quaker Road (Route 120) and South Greeley Avenue and King Street. The final three will have traffic signals with time coordinated walk/don't walk signs;
  - A landscaped median on the Quaker Road entry, which provides a refuge for pedestrians moving along South Greeley Avenue's western sidewalk;
  - Landscaped passive parks initially on both sides of the Quaker Road Bridge entry, with the south side identified as a potential long-term development site;
  - Street trees, median trees and sidewalks to rehabilitated railroad station stairs;
  - Constructing an on-ramp on north side of the Quaker Road Bridge,
  - Constructing a single parking deck on the commuter south lot; and
  - Redeveloping the gas station and strip commercial frontage on South Greeley at the Woodburn Avenue intersection into mixed use residential and commercial land uses.

Additional Analyses Required

- Feasibility of constructing an on-ramp on north side of the Quaker Road Bridge,
- Feasibility of providing a through route from Senter Street to South Greeley Avenue via a connector road and a through route from King Street to behind the community center;
- Feasibility of raising the Robert E. Bell School Playing Field to provide parking underneath, and
- Traffic impacts of constructing Single Parking Deck in South Lot.

This report documents the process of arriving at these traffic and pedestrian circulation, parking, streetscape and developmental design recommendations.

I. INTRODUCTION

The Hamlet of Chappaqua Comprehensive Study, commissioned by the New Castle Town Board, represents the culmination of urban design and traffic planning studies that began in May 2001.

The Hamlet of Chappaqua, located within the Town of New Castle in Westchester County, New York, is approximately 35 miles north of midtown Manhattan. Like many of its neighbors in Westchester County, the Town of New Castle faces the challenge of maintaining its special place as a suburban community and preserving its valuable open spaces while balancing continuing development pressures. See Figure 1, Project Study Area.

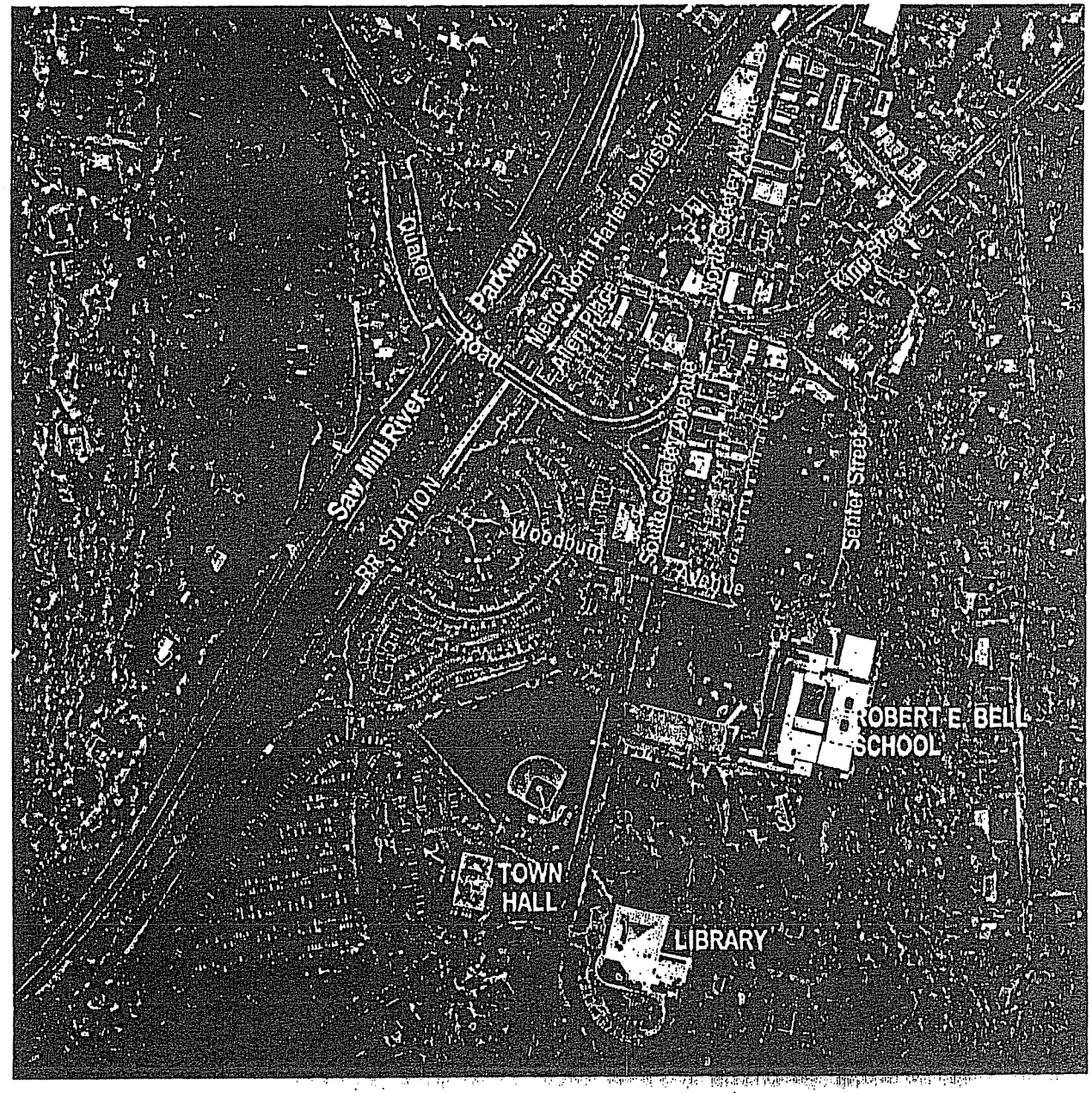
Over the past twenty years, Chappaqua has experienced significant growth in residential development. The Hamlet is increasingly attractive to commuters given its proximity to New York City and White Plains and its Metro-North Railroad express train service. Among the primary catalysts of this study is the Metro-North Railroad station and the increased parking demand associated with it. Within a five-minute walk of the rail station are the Town Hall, the Library, the Robert E. Bell Middle School, and the Hamlet's retail core. The proximity of these four major destinations to the railroad station highlights the importance of integrating the rail station into the Hamlet's downtown area.

Although the central position of these facilities in the downtown area has encouraged Chappaqua's growth, it has also increased the pressure on transportation infrastructure, open space and community facilities. To address this pressure, the Plan includes specific development proposals addressing the following issues:

- Increased retail and commuter parking demand,
- Traffic congestion during peak hours and on the weekends,
- Congestion at the approaches to the Quaker Road Bridge and South Greeley Avenue,
- Need for multi-use development,
- Lack of pedestrian amenities, and
- Pedestrian safety.

Project Study Area

Figure 1



II. PUBLIC PARTICIPATION AND PLANNING PROCESS

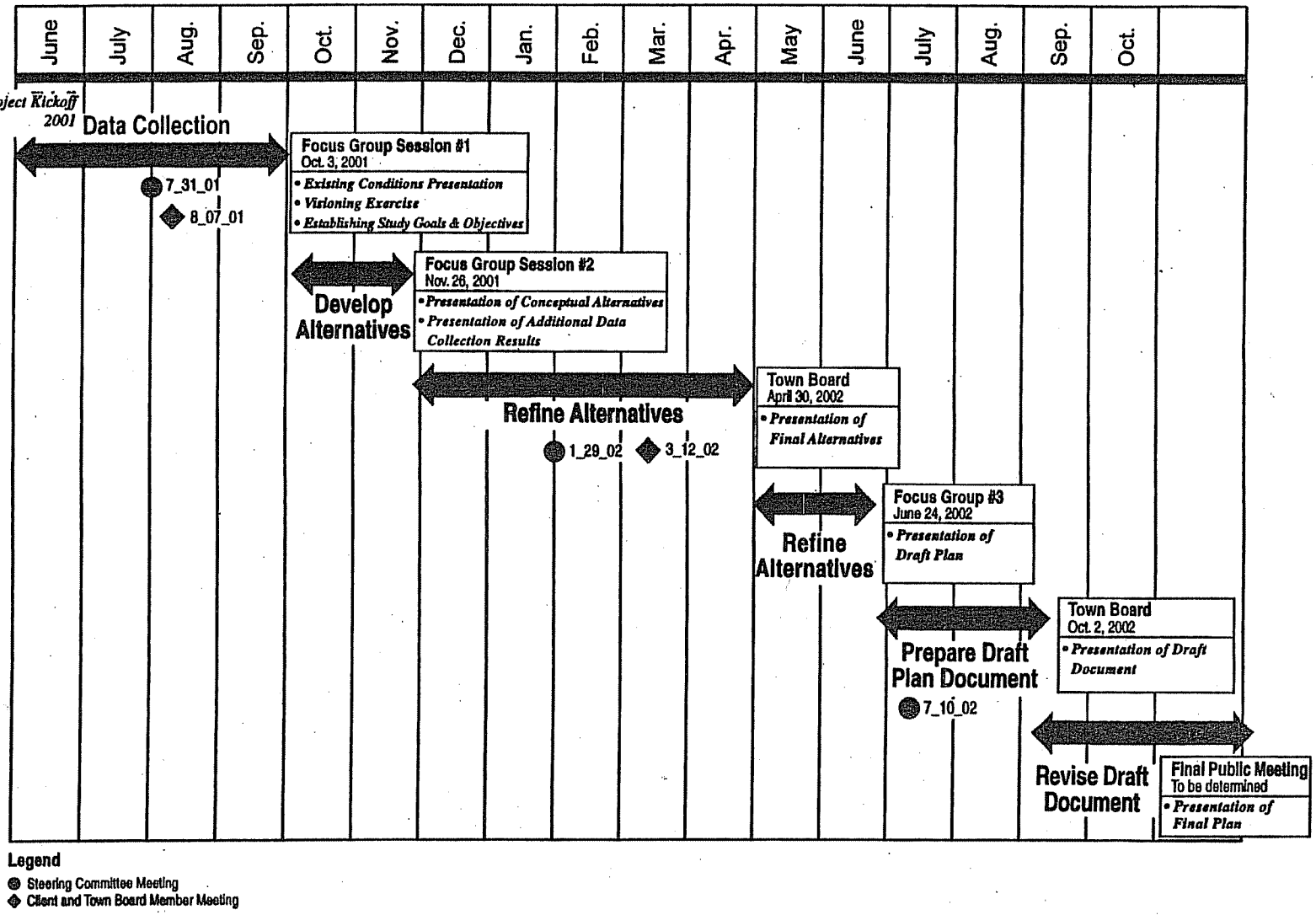
The public participation program was critical in developing the ideas of interested groups into a shared consensus. The study team's efforts with the community involved three different constituent groups, although there was considerable overlap in the membership of each of the groups:

- The Town Board (TB) represented the primary client group and the hands-on decision-makers for the plan elements.
- The Steering Committee (SC) was the working group for the plan elements, formed to obtain input on project issues from a larger group that the TB, which would also be able to provide guidance.
- Focus Groups (FG) provided broader-based input and served as a forum for different stakeholders to present their ideas for the proposed plan.

Figure 2 presents a time-line highlighting the critical project milestones.

Project Timeline

Figure 2



III. TRAFFIC AND TRANSPORTATION

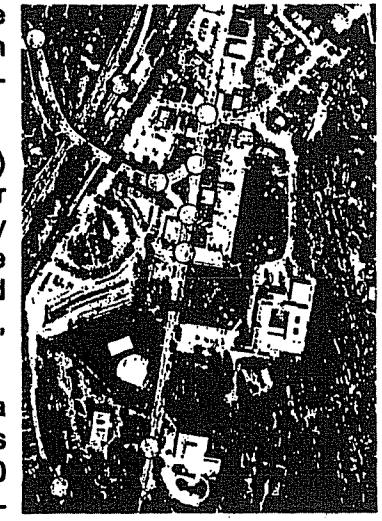
This section describes the findings of the existing condition inventory, the issue areas identified, and the alternative solutions to address those issues. Data on existing traffic, transit and pedestrian activity and parking conditions in downtown Chappaqua were gathered for this effort. The data collection results were presented at the first Focus Group session, after which issue areas were identified. Alternatives were developed for each of the issue areas and, finally, recommended alternatives, both for short or long-term implementation, were selected for the Plan.

The analysis also accounted for planned projects within Chappaqua including the New York State Department of Transportation Region 8 proposed Quaker Road Bridge Deck Rehabilitation Project and a proposed project to create a pedestrian path from Douglas Road along Route 120 to Marcourt Drive. Where appropriate, results of our analysis and possible alternatives were presented to NYSDOT Region 8 for its review.

A. VEHICULAR TRAFFIC

1. Existing Conditions

Traffic counts were conducted at several locations to gain a representative average sample of the daily vehicular traffic traveling through and within downtown Chappaqua. The following discussion summarizes existing traffic operations. Detailed traffic data are included in Appendix A.



Traffic Count Locations Map

Figure 3

The data collection program consisted of Automatic Traffic Recorders (ATRs) and manual turning movement counts at selected intersections within or near the downtown. In addition, pedestrian volumes were observed at key study locations; lane geometries (lane widths, turning bay lengths, lane channelization, etc.) were collected; and traffic signal timing data obtained from NYSDOT were verified in the field. Figure 3, Traffic Count Locations, presents the intersections that were chosen as study locations.

The data collection revealed defined morning and evening peak periods, a midday peak period, and an afternoon school peak period, which occurs only on weekdays. The weekday peak hours are 7:15 am to 8:15 am, 11:30 am to 12:30 pm, and 5:15 pm to 6:15 pm and in addition weekday afternoon school peak activity occurs from approximately 2:00 pm to 2:30 pm. The Saturday peak hour is from 11:00 am to 12:00 pm. The 2001 existing condition peak hour traffic volumes are included in Appendix A. Using the volume data, a simulation analysis was undertaken to determine the operational level of service for study area intersections under existing conditions and for 2015 future volumes. Table 1 presents the results of those analyses.

The capacity analysis confirmed what drivers in Chappaqua already know - the most problematic intersections are:

- The eastbound left and right movements at South Greeley Avenue and Quaker Road in both the AM and PM peak periods, and
- The northbound and eastbound left, through and right turning movements at South Greeley Avenue and Woodburn Avenue in the AM and particularly the PM peak periods.

TABLE 1
EXISTING CONDITIONS
LEVEL OF SERVICE ANALYSIS

		2001 Volumes			
Intersection	Lane Group	AM Peak Hour		PM Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS
Greeley Avenue (N-S)/ King Street (E-W)	WB-L	10.5	B	8.4	A
	WB-T	9.8	A	5.5	A
	WB-R	8.8	A	11.7	B
	NB-L	35.8	D	39.5	D
	NB-T	32.2	C	44.5	D
	NB-R	5.9	A	4.9	A
	SB-L	23.9	C	31.7	C
	SB-T	32.7	C	35.0	C
	SB-R	16.6	B	12.3	B
Greeley Avenue (N-S)/Quaker Road (E-W)	EB-L	693.4	F	146.2	F
	EB-R	710.9	F	153.6	F
	NB-L	23.4	C	54.1	F
	NB-T	5.0	A	18.4	C
	SB-T	13.0	B	24.9	C
	SB-R	4.5	A	4.9	A
Greeley Avenue (N-S)/Woodburn Avenue (E-W)	EB-L	247.8	F	676.4	F
	EB-T	265.7	F	682.1	F
	EB-R	231.8	F	770.7	F
	NB-L	316.4	F	441.8	F
	NB-T	300.6	F	440	F
	NB-R	294.6	F	411.2	F
	SB-L	43.5	D	43.0	D
	SB-T	42.8	D	50.6	D
	SB-R	19.9	B	19.3	B

2. Issue Areas

Problem areas, identified from both the quantitative data and visual observations, were presented at the first Focus Group Session. The attendees at this session confirmed that the following areas are considered critical problem areas from a traffic operations standpoint:

a. Congestion at the Three Intersections Formed by the Quaker Road/South Greeley Avenue Triangle

Currently, access to the downtown is via the two-lane (one in each direction) Quaker Road Bridge. The bridge, which accommodates commuter traffic destined for the Metro-North Railroad Station, school-bound traffic and other retail and commercial traffic throughout the day, becomes increasingly congested in the AM and PM peak periods. The resulting backup on the westbound approach to the bridge results in safety concerns and undesirable traffic conditions.

b. Congestion and Safety Concerns at North & South Greeley Avenue / King Street / Allen Place

In the current condition, sight distances for traffic traveling westbound on Route 120 (down the King Street hill to where it intersects with North/South Greeley Avenue) are shorter than NYSDOT standards require. In addition, westbound Route 120 traffic (from King Street onto South Greeley Avenue) passing through this intersection must turn left onto South Greeley to continue on Route 120 westbound. The high number of turning movements causes problems at this location. As the highest volume turning movement (the northbound right turn and westbound left turn) is unsignalized and uncontrolled (there is a traffic control officer posted at this location Monday through Saturday), traffic queues build at this location and for the following reasons:

- Route 120 westbound traffic must turn left from King Street onto South Greeley to continue on Route 120 westbound. This left-turn is a confusing movement and traffic tends to slow down or stop unnecessarily, because motorists intuitively expect a stop sign along this approach.
- Route 120 eastbound traffic must turn right from South Greeley onto King Street to continue on Route 120 eastbound. Due to the high volume of westbound left-turning traffic (vehicles from King Street traveling onto South Greeley Avenue), northbound vehicles at the stop sign, waiting to make a left turn from South Greeley to Allen Place or a through movement (from South Greeley to North Greeley), queue back along the South Greeley northbound approach as they wait for gaps in traffic. These queues extend back and block the South Greeley Avenue right turn onto King Street.

- The present configuration of this intersection allows for an exclusive right turn bay for Route 120 northbound traffic. This creates a very wide crosswalk without adequate refuge for safe pedestrian travel. Presently, this intersection is staffed with a traffic officer from Monday through Saturday.
- High pedestrian and parking activity causes vehicles to slow down or stop.

c. Traffic Queues at South Greeley Avenue / Woodburn Avenue

Most of the problems at this location stem from traffic queues that build at the triangle and extend through this intersection. The other problem is a concentrated entrance and exit flow of vehicles to/from the train station. As a result, the northbound left-turn (vehicles traveling northbound on South Greeley making the left turn onto Woodburn Avenue to access the train station) and eastbound (all vehicles exiting the train station via Woodburn Avenue) approaches experience heavy delays. In addition, both of these intersection approaches are single lane with capacity restrictions.

d. Congestion at the Robert E. Bell School During Pick-up and Drop-off

AM peak hour traffic congestion on South Greeley Avenue is exacerbated by parents dropping off students at the school, as only 15-20 percent of Chappaqua's public school students ride the bus. Because the afternoon pick-up of students does not coincide with the commuter peak, the congestion is less of an issue in the afternoon. School drop-off and pick-up occurs somewhat randomly along the South Greeley Avenue northbound and southbound curbs and within the shopping/bank parking lot and the school/church parking lot.

e. Traffic Queues at the Intersections of Quaker Road / Hunts Lane and Douglas Road / Route 120

Most of the problems at this location stem from traffic queues that build at the triangle and extend over the bridge and through the signalized intersection at Quaker Road and Hunts Lane. However, the left-turn movement from Hunts Lane onto Quaker Road (towards the Hamlet) also presents problems. Vehicles along this approach are faced with a sharp left turn from an unusual angle, which results in traffic queues along Hunts Lane that extend under the Saw Mill River Parkway. This also disrupts traffic operations at the intersection of Hunts Lane and the Saw Mill River Parkway northbound exit ramp intersection

The left-turn lane from southbound Route 120 onto Hunts Lane is also a problematic intersection movement from a traffic operations perspective in that there is no exclusive left turn bay.

3. Alternatives

A range of solutions was identified throughout the planning process as follows.

a. "T" Configuration at the Intersection of Quaker Road Bridge and South Greeley Avenue

Options that were analyzed for this intersection included a roundabout, a modified "Y" intersection with a traffic signal and a combined "Y" and "T" intersection. Table 2 presents a comparison of the options and their ability to meet the goals and objectives of the study.

Because it satisfied the most project goals, the T-intersection was selected as the preferred alternative and is recommended.

TABLE 2
COMPARISION OF ALTERNATIVES FOR
THE INTERSECTION OF SOUTH GREELEY AVENUE AND QUAKER ROAD

	Roundabout	Modified Y	Classic T
Improves Vehicular Circulation	YES	NO	YES
Creates a Pedestrian Friendly Environment	NO	NO	YES
Improves Pedestrian Safety at School Crossings	NO	NO	YES
Increases development opportunities	NO	NO	YES
Creates more Open Space	YES	NO	YES

Computer simulation of the T-intersection configuration indicated the level of service and queuing occurring during all peak hours and the degree of improvement over the existing condition. The T-Intersection may require a Design Exception from NYSDOT as the grade of the roadway from the Quaker Road Bridge for the proposed T-Intersection with South Greeley Avenue is expected to be approximately 12% (it is currently 8%) and the NYSDOT maximum is 8%. Since the T-Intersection provides better traffic circulation and pedestrian safety, the Design Exception is reasonable. In addition, NYSDOT states in their "Report PIN #8026.08.101 BIN: 1037350 New York Route 120 SH 1015 Over Railroad Street and Metro North Railroad, Town of New Castle, Westchester County, September 2000 that this intersection will be reconfigured into a T- intersection. As indicated in the recommended Bridge Rehabilitation Alternative, the tri-

angular median at the intersection of Route 120 and South Greeley Avenue will be removed and be realigned as a T-intersection with dedicated left and right turns for Route 120.

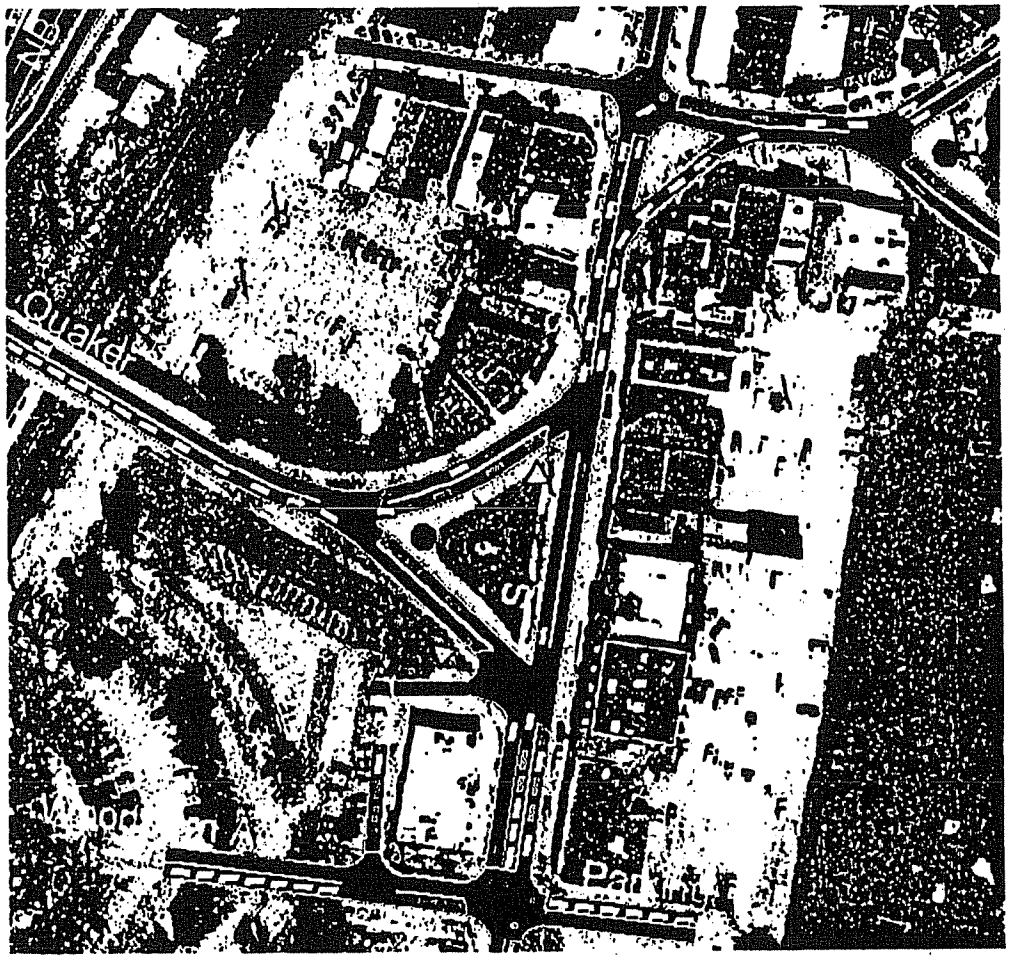
Two alternatives were analyzed for the configuration of this T-intersection. A level of service table for these options is included in the Appendix. Figure 4, Traffic Simulations, presents a snapshot of the traffic simulation prepared for this location. For the first alternative, the bridge approach to the intersection would have an exclusive left-turn lane and an exclusive right-turn lane. As can be seen in Figure 5, Plan A - T-Intersection with Separated Thru and Turn Lanes, northbound South Greeley Avenue would provide for an exclusive left-turn bay and an exclusive through lane, while southbound South Greeley Avenue would provide for an exclusive through lane and an exclusive right-turn bay. The second alternative, as shown on Figure 6, Plan B - T-Intersection with Combined Thru and Turn Lanes, would combine the through and turn lanes at the South Greeley Avenue approach to the bridge, creating a Classic T.

TABLE 3
COMPARISON OF
T INTERSECTION CONFIGURATIONS

	Existing Configuration	Plan A – Separated Thru & Turn Lanes	Plan B – Combined Thru & Turn Lanes
South Greeley Curbside Parking	32 Spaces	11 spaces, Net Loss = 21 spaces	39 spaces, Net Gain = 7 spaces
LOS Improvement	The current LOS is F for the yield "Y" intersection.	The exclusive northbound left-turn lane from S. Greeley Ave. going over the Bridge provides optimal LOS for this intersection.	The shared northbound through-left lane would have an improved LOS over the existing condition, however, it would not provide the same LOS improvement as Plan A.
Pedestrian Circulation	9 Crosswalks No traffic signals	11 longer crosswalks 3 new traffic signals 20 Walk/Don't Walk signals	11 shortened crosswalks 3 new traffic signals 20 Walk/Don't Walk signals
Pedestrian Amenities	Town Green Triangle 5 pedestrian friendly spaces	Landscaped Town Entry 10 pedestrian friendly spaces	Landscaped Town Entry 10 pedestrian friendly spaces
Development Sites	2-3 retail/office/ residential sites available	4 retail/office/ residential sites available	4 retail/office/ residential sites available

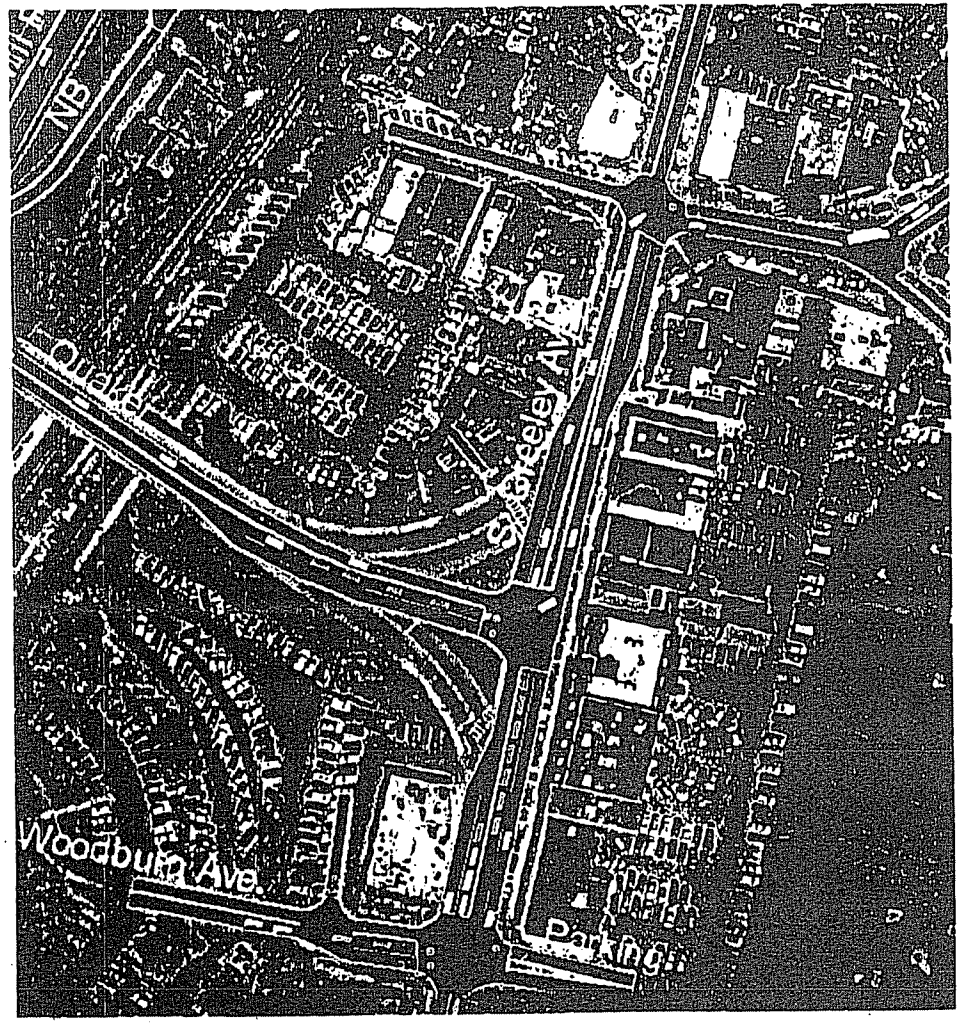
Plan B satisfied more of the project goals than Plan A. As shown in Table 3, the separated through and turn lanes in Plan A produced a marginal level of service benefit over the existing condition but would require removing 21 curbside parking spaces on the east side of South Greeley Avenue. In addition, this configuration would increase the length of pedestrian crosswalks. Plan B produced some level of service benefit at the intersection of South Greeley Avenue and Quaker Road. This option not only maintained the existing curbside parking spaces but also created a net gain of seven parking spaces. Also, the two new crosswalks provided at the base of the Quaker Road Bridge would actually be shorter than the existing condition, satisfying another crucial project goal of promoting a pedestrian-friendly environment. Plan B also created the most land available for pedestrian and streetscape enhancements as well as infill and new developments. Retail/office/residential buildings could be added to the west side of South Greeley Avenue to provide for a two-sided main street. This option also provides pedestrians traveling on the west side of South Greeley Avenue with a single, controlled roadway crossing. Therefore Plan B was selected as the preferred alternative.

Order of magnitude construction costs were prepared for reconfiguring the intersection of Quaker Road and South Greeley Avenue into a classic "T" intersection. The estimate is $450,000. The estimate does not include the relocation of any underground utilities and does not include burying of overhead utilities.

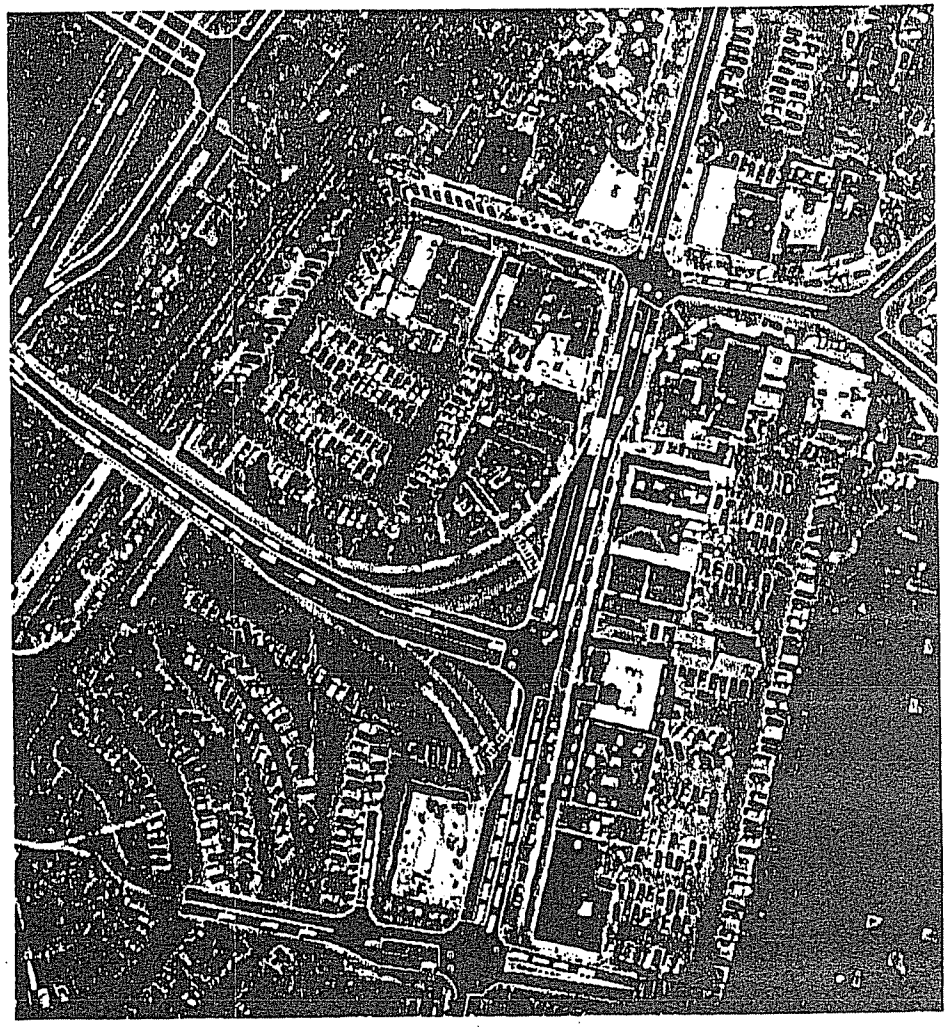


Traffic Simulation
Existing Condition

Figure 4



Plan A:
T-Intersection with Separated Thru & Turn Lanes
Figure 5



Plan B:
T-Intersection with Combined Thru & Turn Lanes
Figure 6

b. Intersection Improvements at North & South Greeley Avenue /King Street/Lower King Street

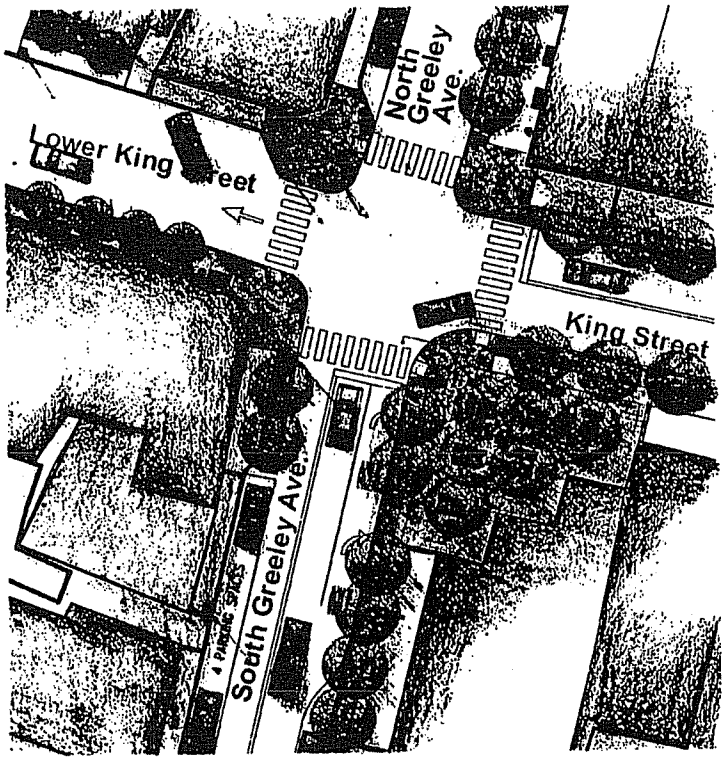
Consensus was achieved for the following improvements, which are presented in Figure 7- North Greeley/King Street/ Lower King Street Intersection Detail, at this intersection:

- Extend curbs to create square corners with shorter perpendicular pedestrian crosswalks,
- Install a traffic signal to control vehicular and pedestrian movements. This traffic signal would also have a pedestrian-phase button, which would allow pedestrians to control the traffic signal.
- Provide traffic calming measures at the intersection corners.

These improvements would provide increased safety, improved pedestrian connections, and reduced queuing along King Street. To compensate for the lack of sight distance and to help warn motorists traveling downhill on King Street toward South Greeley Avenue, of the signal ahead, a flashing "red /signal ahead" sign would be installed. The sign would be connected to the traffic signal. In addition, to slow traffic, we would provide scored pavement or other pavement treatment to slow vehicles coming down King Street toward South Greeley Avenue. The stop bars on northbound North Greeley Avenue and on westbound King Street would be pushed back to allow trucks enough room to turn right and left, respectively.

Another possible option to eliminate insufficient sight distances altogether, would be to install the signal or an additional signal at the intersection of King and Senter Street.

Vehicle queues would be minimized along the major movements such as the westbound left turn from King Street and northbound right turn from South Greeley. The traffic signal would be coordinated with the other two proposed signals along South Greeley Avenue. The curb realignments and bulb-outs will provide the opportunity for streetscape enhancements including street trees, lighting, retail directories, kiosks, seating, etc..



North Greeley/ King Street/ Lower King Street Intersection Detail

Figure 7

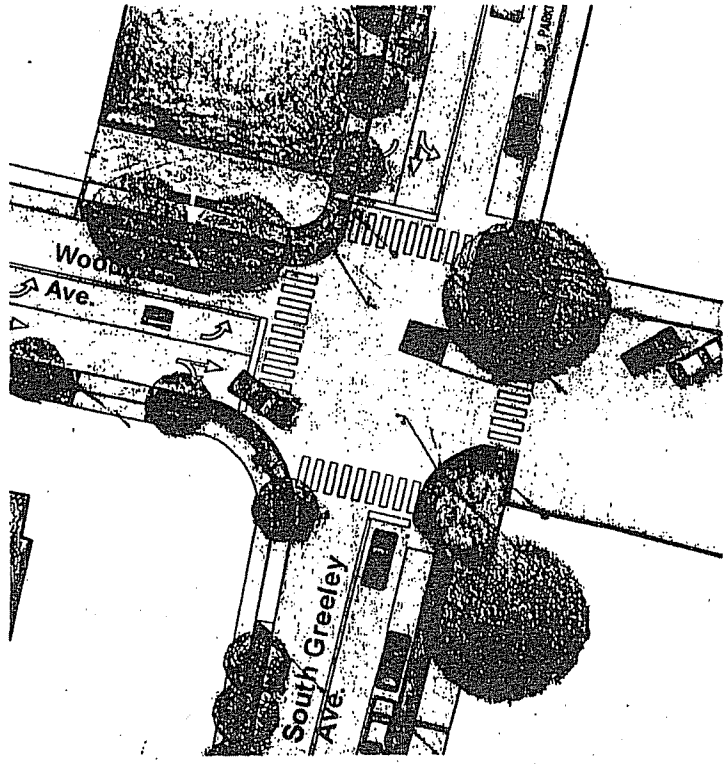
Order of magnitude construction costs were prepared for regularizing the street curb alignments and installing a traffic signal at North Greeley Avenue at King Street and Lower King Street. The estimate is $300,000. The estimate does not include the relocation of any underground utilities and does not include burying of overhead utilities.

c. Widen Portion of Woodburn Avenue

The proposed solution for this intersection includes widening the eastbound Woodburn Avenue approach (exiting the Metro-North Railroad station) to provide for an exclusive left-turn lane exiting the Metro-North Railroad parking area, as is shown in Figure 8, Intersection Improvements at South Greeley and Woodburn Avenue. The proposed shared eastbound/through/right turn lane will benefit those who wish to travel into the retail parking area or to make a right turn onto South Greeley Avenue. The through and right turn lane will be aligned so that vehicles exiting the Metro North Railroad parking area can travel straight into the retail parking area (adjacent to Fleet Bank).

Intersection Improvement at South Greeley/ Woodburn Avenue

Figure 8



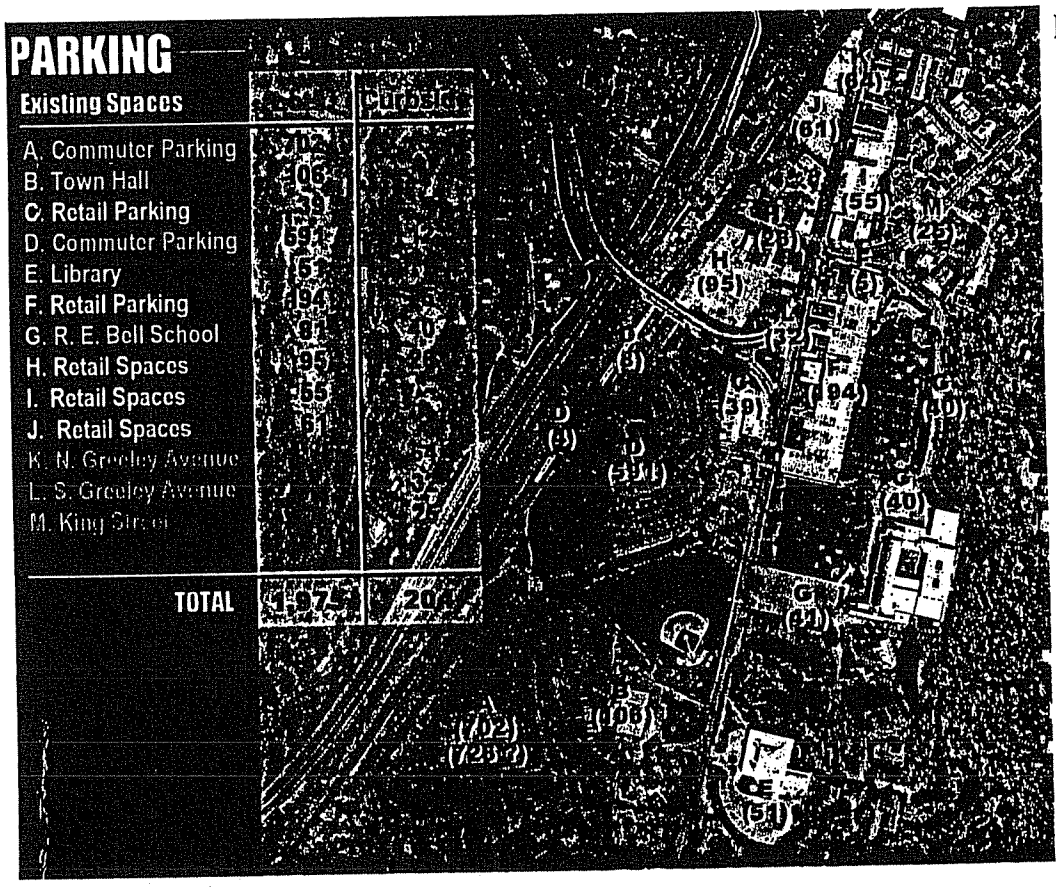
In addition, vehicles leaving the Metro-North Railroad parking area can share a traffic signal phase with the southbound right turn traffic entering the parking area. The approach will also be restriped to clearly show the exclusive left-turn lane and the shared through/right-turn lane.

Order of magnitude construction costs were prepared for installing a traffic signal and restriping the intersection of South Greeley Avenue and Woodburn Avenue. The estimate is $300,000. The estimate does not include the relocation of any underground utilities and does not include burying of overhead utilities.

In connection with this improvement, the current South Greeley Avenue entrance driveway to the parking behind Citibank/retail will be closed due to its proximity to the proposed T-Intersection. The driveway would be relocated to the existing driveway on Woodburn Avenue to improve the safety and pedestrian flow along South Greeley Avenue in the vicinity of this driveway to be closed.

d. Through Route to/from Robert E. Bell School

School bus drop-off and pick-up at the Robert E. Bell School presently occurs in Lot "G" shown in Figure 9, Parking, with students walking into the southern fire stair of the school building. The original port-cochere entry to the school is at the south end of Senter Street served by a cul-de-sac. Because the required turning radius for buses exceeds the available space at this port-cochere, this entry is not used for bus drop-off and pick-up. This entry has been limited to faculty vehicle access and parking.

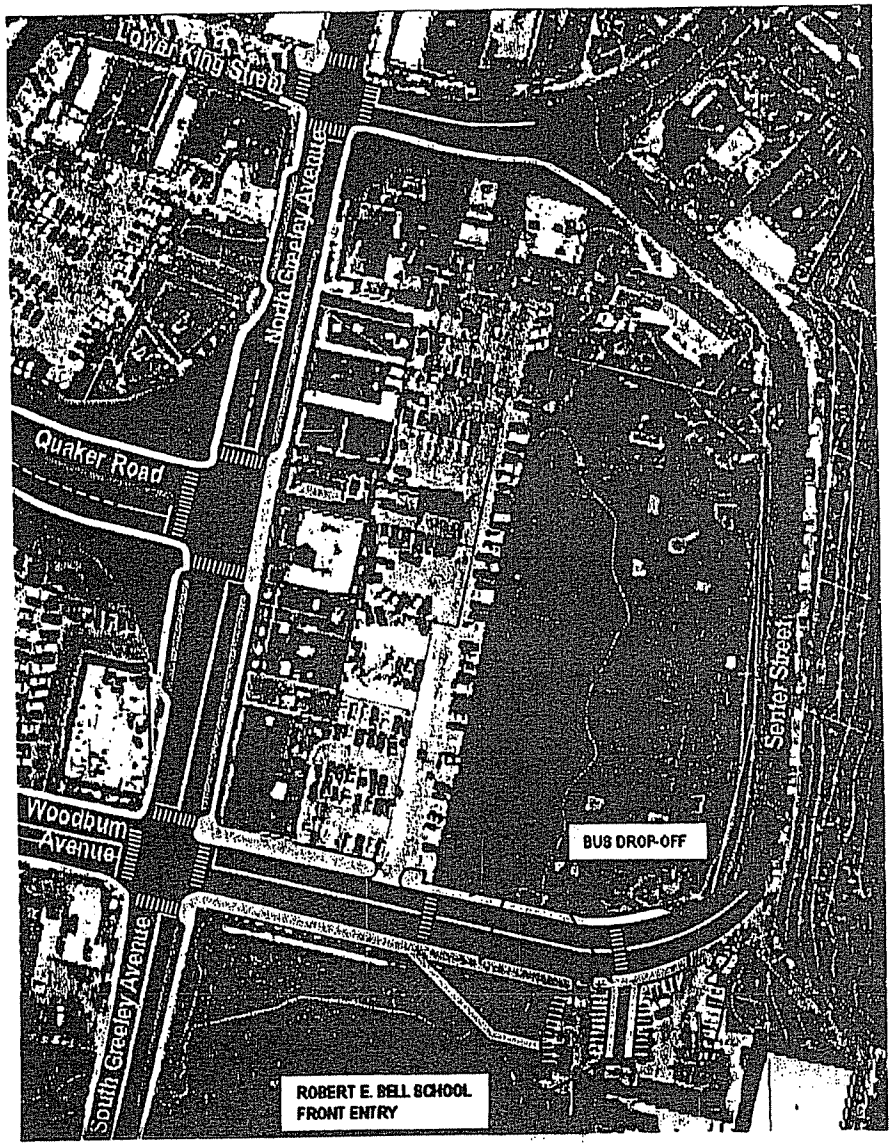


Parking

Figure 9

Senter Street/ South Greeley Avenue Link

Figure 10



A proposed vehicular circulation link from Senter Street to South Greeley Avenue was proposed at a Steering Committee discussion. This proposal recommends a through vehicular link between the Bell School front entry and the Woodburn Avenue/South Greeley Avenue intersection. With proper grading between the two elevations (South Greeley Avenue and Senter Street) appropriate curb space for student drop-off and pick-up can be provided. This alternative would also work well with a future proposal to raise the Bell School athletic field over a new parking lot, as described in detail in the Parking Recommendations section of this report. The through route from Senter Street to South Greeley Avenue provides a possible solution to the AM peak hour congestion caused by school drop-offs. A possible alignment of this route is presented in Figure 10, Senter Street - South Greeley Link. It is recommended that both the Town Board and the School Board enter into discussions and further develop this proposal in conjunction with elevating the Robert E. Bell school ballfields to provide additional parking.

e. Intersection Improvements at Quaker Road / Hunts Lane and Douglas Road / Route 120

In addition to the planned Town project to create a pedestrian path from Douglas Road along Route 120 to Marcourt Drive, the recommended solutions for these intersections include the following:

- Remove the large boulder in the southeast quadrant of the intersection to allow for the widening of the westbound Hunts Lane approach,
- Provide an exclusive left-turn lane along the westbound approach to accommodate vehicles exiting the Saw Mill River Parkway northbound destined for the Hamlet and/or Route 120 southbound,
- Create an exclusive left-turn lane from southbound Route 120 onto Hunts Lane.

The proposed intersection improvements are presented in Figure 11, Quaker Road/Hunts Lane/Douglas Road/Route 120 Intersection Detail.

Order of magnitude construction costs were prepared for removing the boulder and providing an exclusive left turn lane along the westbound approach. The estimate is between $500,000 - $700,000.

Quaker Road/Hunts Lane/ Douglas Road/Route 120 Intersection Detail

Figure 11

f. Coordination of Traffic Signals

The Plan proposes actuated traffic signals, called "smart signals," for South Greeley Avenue at King Street, Quaker Road, and Woodburn Avenue. The traffic signals would detect the presence of vehicles at the intersection and would respond and reallocate green time based on the current traffic demand. The signals would operate on the same background cycle length, allowing for coordination of these signals to minimize vehicle queuing between the intersections and maximize vehicular progression along South Greeley Avenue. The traffic signal offsets could be set so that a vehicle traveling the corridor at a pre-determined safe speed (such as the 25 mph speed limit) would have a green light at sequential intersections. Vehicles traveling at higher speeds would be ahead of the coordination and would be more likely to encounter a red light; thus, the coordination could act as a traffic calming measure.

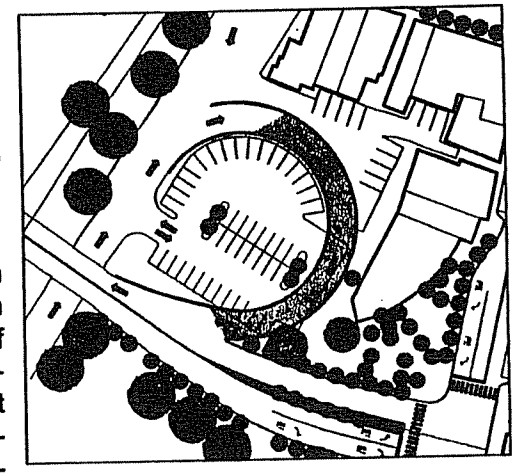
g. Ramp on the North Side of the Quaker Road Bridge

Reconfiguring the intersection of Quaker Road and South Greeley Avenue would improve pedestrian safety, but as noted above, would have a negative impact on the level of service at this intersection, particularly during the evening PM peak hour. As such, we investigated two possible options to improve this condition.

The first alternative proposed was reversing the direction of Lower King Street/Allen Place. All commuter traffic would enter the Metro-North Railroad parking area at Woodburn Avenue and exit via Allen Place/Lower King Street. This would minimize vehicular traffic conflicts caused by vehicles exiting the Metro-North Railroad parking area via Woodburn Avenue onto South Greeley Avenue during peak commuter periods. Reversing the street direction would also facilitate this vehicular movement by creating all right turns from Lower King Street to the Quaker Road Bridge. The angled parking presently located on the north side of Lower King Street would be relocated to the south side of Lower King Street.

While this alternative would help ease some traffic congestion on South Greeley Avenue, discussion ensued regarding the potential negative impacts of diverting existing commercial traffic, currently entering Lower King Street from South Greeley Avenue, to Woodburn Avenue via the Metro-North Railroad parking area. It was decided that the potential negative impacts to the businesses located on Lower King Street would far outweigh the potential benefits. This option was, therefore, eliminated from further discussion.

The second alternative studied the feasibility of a one-way ramp on the north side of the bridge, allowing ramp traffic to bypass the T-intersection and move directly from the parking area over the bridge, as shown in Figure 12, Ramp on North Side of Quaker Road Bridge. Pedestrians would be able to walk under the ramp to their destinations. Pedestrians would be able to walk under the ramp to their destinations.



Ramp on North Side of Quaker Road Bridge

Figure 12

Traffic operations at the proposed signalized T-intersection would be improved greatly. The ramp would be located between the bridge span over the railroad tracks and the intersection of Route 120 and South Greeley Avenue in order to divert Metro-North Railroad parking area commuters onto Route120 and not through these two intersections. Table 4 presents a comparison of the proposed ramp structure and NYSDOT requirements, and Table 5 shows that, in the future condition, the ramp would substantially improve the level of service at several of the most problematic approaches to the bridge.

TABLE 4
DESIGN OPTIONS FOR RAMP ON NORTH SIDE OF QUAKER ROAD BRIDGE

Description	NYSDOT Requirement	Radius=90'	Radius=80'	Radius=75 '
Min. Ramp Roadway Width	22 Feet	22 Feet	22 Feet	22 Feet
Maximum Grade	8 Percent	3.5 Percent	4 Percent	5 Percent
Min. Stopping Sight Distance	125 Feet	90 Feet	85 Feet	80 Feet
Min. Acceleration Lane Length	405 Feet	85 Feet	75 Feet	70 Feet
Min. Deceleration Lane Length	360 Feet	N/A	N/A	N/A

* Speed Change Lane Factors were used in computing these distances
Note: These design criteria are based on utilizing a design speed of 40 mph for State Route 120
This is based on a posted speed of 30 mph and translates into a ramp design speed of 20 mph.

TABLE 5
2015 FUTURE VOLUMES – LEVEL OF SERVICE IMPACT
WITH A RAMP ON THE NORTH SIDE OF THE BRIDGE

		AM PEAK HOUR				PM PEAK HOUR			
		Plan B		With Ramp		Plan B		With Ramp	
	Lane Group	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Greeley Avenue (N-S) / King Street (E-W)	WB-L	24.6	C	27.9	C	16.6	B	19.2	B
	WB-T	22.2	C	26.9	C	17.2	B	19.9	B
	WB-R	32.0	C	28.9	C	15.6	B	19.8	B
	NB-L	31.7	C	30.2	C	60.1	E	32.9	C
	NB-T	33.1	C	24.1	C	40.0	D	26.8	C
	NB-R	28.4	C	9.4	A	14.4	B	11.8	B
	SB-L	20.3	C	30.3	C	32.7	C	25.5	C
	SB-T	12.4	B	15.0	B	27.3	C	18.7	B
	SB-R	13.3	B	11.2	B	17.1	B	16.0	B
Greeley Avenue (N-S)/ Quaker Road (E-W)	EB-L	305.9	F	26.3	C	460.3	F	39.1	D
	EB-R	303.5	F	11.5	B	464.4	F	19.0	B
	NB-L	43.5	D	23.7	C	39.5	D	45.2	D
	NB-T	38.1	D	23.1	C	40.1	D	44.3	D
	SB-T	31.4	C	42.4	D	31.8	C	23.9	C
	SB-R	6.9	A	7.4	A	12.1	B	7.7	A
Greeley Avenue (N-S) / Woodburn Avenue (E-W)	EB-L	107.6	F	10.4	B	149.6	F	15.3	B
	EB-T	71.7	E	7.6	A	82.0	F	3.0	A
	EB-R	56.7	E	4.2	A	22.9	C	13.3	B
	NB-L	38.2	D	47.0	D	61.5	E	34.1	C
	NB-T	40.0	D	45.5	D	75.6	E	30.3	C
	NB-R	37.8	D	37.5	D	58.6	E	23.6	C
	SB-L	33.5	C	27.7	C	19.9	B	43.1	D
	SB-T	27.9	C	22.8	C	14.9	B	32.3	C
	SB-R	19.5	B	19.7	B	16.0	B	18.0	B

At a minimum, the ramp would have a yield condition at the top of the ramp. The roadway approach could be widened and tapered as it approaches the bridge to provide for a short acceleration lane.

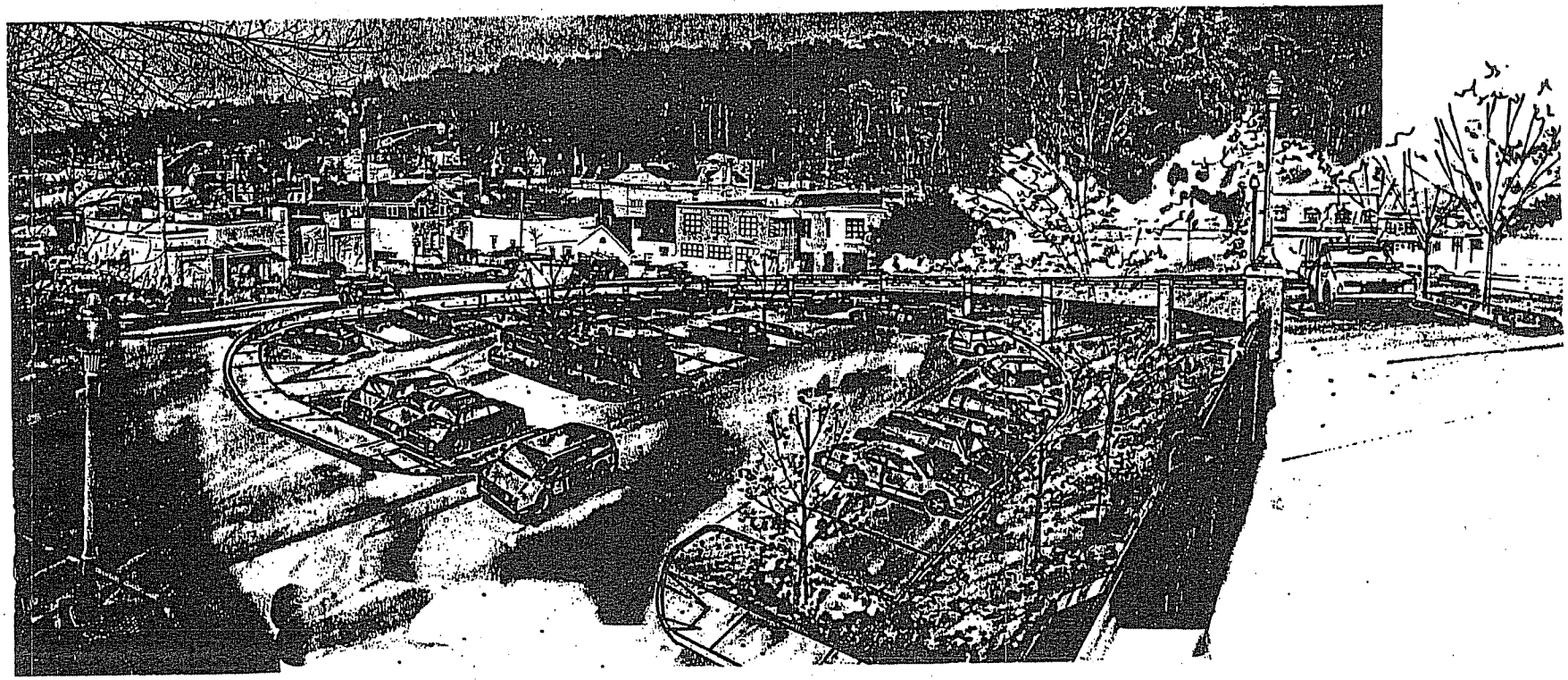
As stated in their "Report PIN #8026.08.101 BIN: 1037350 New York Route 120 SH 1015 Over Railroad Street and Metro North Railroad, Town of New Castle, Westchester County, September 2000 under Possible Alternatives to the Bridge Rehabilitation Alternative, NYSDOT proposed providing an exclusive ramp on the south side bridge to allow traffic to bypass the proposed T- intersection (Route 120 with South Greeley Avenue). NYSDOT also states that it would be feasible to provide an acceleration lane and/or widening of the Quaker Road Bridge in conjunction with rehabilitation of the bridge to provide an adequate acceleration lane. Any proposed bridge widening could be on the existing sidewalk portion or new segment if structurally required. As such, it appears that the NYSDOT would consider widening the Quaker Road Bridge for adequate acceleration lane width but not to provide additional travel lanes over the Saw Mill River Parkway. NYSDOT would not support widening of the Saw Mill River Parkway Bridge.

In the spirit of providing direct access to the Metro North Railroad station, the sidewalks on the Quaker Road Bridge could be connected via stairs directly to the Metro North Railroad platform.

Because the ramp is a substantial concrete structure, it will have visual impacts to the downtown. However, many of these impacts will be addressed during the ramp design phase. Figure 13 presents an isometric view of the ramp.

Construction of this ramp will require the removal of approximately 37 of the existing 95 parking spaces within the Allen Place lot. To address this issue, original designs for the ramp included additional supported parking levels in a round structure with access from the ramp. While this structure would have offset the loss of parking spaces and created an additional 52 spaces, it would have been problematic operationally with limited acceleration and deceleration lanes and a one way operation looking for available parking spaces. Likewise, it is more expensive to build than a conventional rectilinear parking structure. The round structure was, therefore, eliminated from consideration. To offset the loss of retail parking spaces from this lot, a new parking structure is proposed on a site on North Greeley Avenue. Because the ramp will have a significant positive impact on traffic operations, it is recommended for further design analysis to resolve the issues presented above.

Order of magnitude construction costs were prepared for providing a ramp on the north side of the Quaker Road Bridge. As noted above, there are still several outstanding issues with regard to the feasibility of this ramp. However, a rough cost has been estimated at $3,000,000. The estimate does not include the relocation of any underground utilities.



Isometric of Ramp on North Side of Quaker Road Bridge

Figure 13

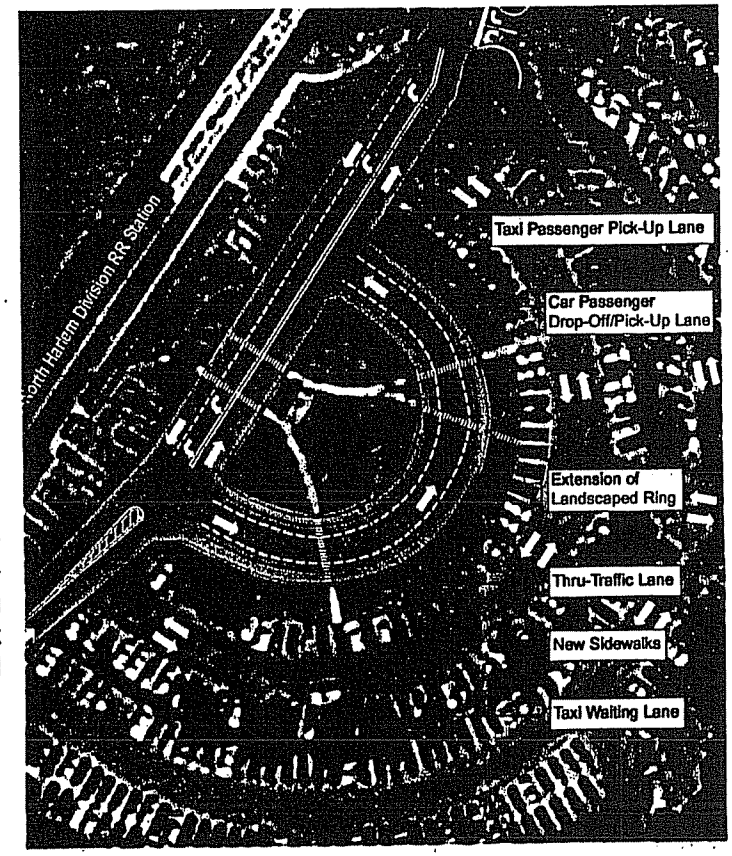
h. Reconfigure Metro-North Railroad Station Plaza

The two tree rings surrounding the railroad plaza with the Town's Honor Roll monument create an historic space dating back to the 1900s, long before the construction of the Saw Mill River Parkway and its two Quaker Road Bridge spans. The following alternative, which can be implemented right away, is proposed and depicted in Figure 14, Metro North Railroad Station Circulation Improvements.

The first tree ring would be extended across the Woodburn Avenue right-of-way directing traffic to the north and south lots. All private vehicle commuter and taxi drop-off and pick-up would be removed from the station area and relocated in signed zones on either side of the first semi-circular northbound roadway. New sidewalks and connecting pedestrian ways would be constructed on both sides of this first roadway carefully preserving all the magnificent oak and elm trees and providing direct access to the crosswalks to the station and stairs to the central raised train platform.

This alternative was developed as a complement to the proposed ramp on the north side of the Quaker Road Bridge to enhance the pedestrian qualities of this space as well as provide direct north-south two-way through traffic in front of the station.

Order of magnitude construction costs were prepared for reconfiguring circulation patterns within the Metro-North Railroad parking lot. The estimate is $500,000 and does not include the relocation of any underground utilities or burying of overhead utilities.



Metro North Railroad Station Circulation Improvements

Figure 14

I. Relocation of Recreational Activity on Weekends

Presently, vehicular and pedestrian circulation in downtown Chappaqua around the Robert E. Bell School and its ball fields becomes congested on weekends with league-bound traffic. With the advent of the Seven Bridges/Hog Hill Middle School and their athletic fields, traffic bound for Saturday league games will be distributed to several other athletic fields not located in the immediate downtown area. If the ball fields are utilized at the same frequency as at present, then traffic volumes will remain the same. However, it would be expected that the percent of Saturday midday traffic would decrease slightly if the activity at the ball fields decreases.

B. PARKING

Parking in Chappaqua consists of on- and off-street commercial and retail parking, off-street parking for Metro-North Railroad commuters, parking reserved for shoppers and visitors, and several off-street lots for the Town Hall, the Robert E. Bell School and the Library. Chappaqua zoning requires one parking space for every 150 square feet of gross floor area of ground floor retail or service business and one space for each 225 square feet of gross floor area on other floors.

1. Existing Supply

The parking inventory provided data on the existing parking supply. Currently, off-street lots throughout downtown Chappaqua provide approximately 2,000 parking spaces. Of these, approximately 65 percent, or 1,300 spaces, are within the Metro-North Railroad station. The other 700 off-street spaces are scattered throughout the study area and serve retailers, the Town Hall and Police Department, the Robert E. Bell School and the Library. There are approximately 200 on-street parking spaces, which are used primarily by customers of local merchants. Figure 9 on page 18, Parking, graphically presents the locations and parking types found in downtown Chappaqua.

The Town of New Castle provides parking permits to all New Castle residents who apply. These permits are issued at a relatively modest price when compared to other towns and villages in Westchester County. This policy has led to the need to construct additional surface lots, which are an average 3-5 minutes' walking distance from the Metro-North Railroad stairs to the central platform.

2. Issue Areas

The following issues regarding parking were identified:

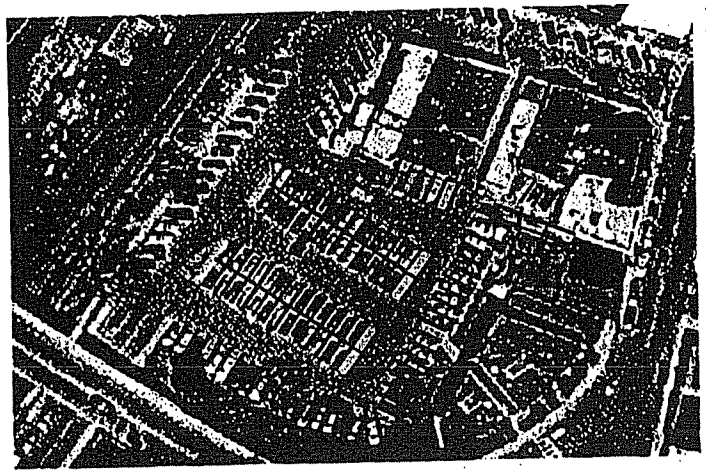
- Although existing commuter parking in the Metro-North Railroad station is not adequate for future growth, providing additional commuter parking spaces is a highly controversial issue. Real estate agents and some commuters feel that every new commuting resident should be able to have access to both a permit and a space. Other constituent groups believe that local policy should mandate no additional surface lots or parking structures.
- Existing on and off-street parking for retail shoppers and merchants is not adequate to accommodate existing demand. Although nearly all of the parking areas become available on evenings and weekends, as commuters leave the area, merchants have indicated a desire for an increased number of parking spaces convenient to their stores.
- Vehicular circulation within the Metro-North Railroad parking lot is congested and confusing due to the high demand and lack of waiting areas for the "kiss-and-ride," taxi and commuter pick-up. These activities typically occur directly at the foot of the pedestrian overpass adjacent to the taxi stand.

3. Alternatives

The challenge in developing alternatives was to address the need for additional parking while ensuring that those possible alternatives would not exacerbate the already strained relationship between vehicles and pedestrians. Based on the discussions with the client group, Hamlet residents, commuters and retailers, a growth management strategy for parking needs within the downtown has been developed. The proposed solutions not only address the existing parking shortfall but also, in the long term, create additional spaces to accommodate typical growth.

a. Reconfigure Allen Place Parking Lot to Provide additional spaces

The Allen Place parking lot would be restriped to gain five additional parking spaces, as shown in Figure 15 - Restriping the Allen Place Parking Lot. This would require first relocating and consolidating the dumpsters currently located in the lot. This alternative could be implemented immediately at little cost to the Town.



Restriping Allen Place Parking Lot

Figure 15

b. Modify Existing Permit System to Manage Commuter Parking Demand

Plan participants had several discussions regarding the Hamlet's commuter parking permit policy. At present, Chappaqua's commuter parking lots are able to provide availability to those who apply. In comparison to other Northern Westchester County communities, where there are extensive waiting lists, the annual commuter parking permit fee is relatively modest. The potential to modify the parking permit system or the fee structure associated with it should be reexamined in light of the inevitable increase in commuter parking demand in the future.

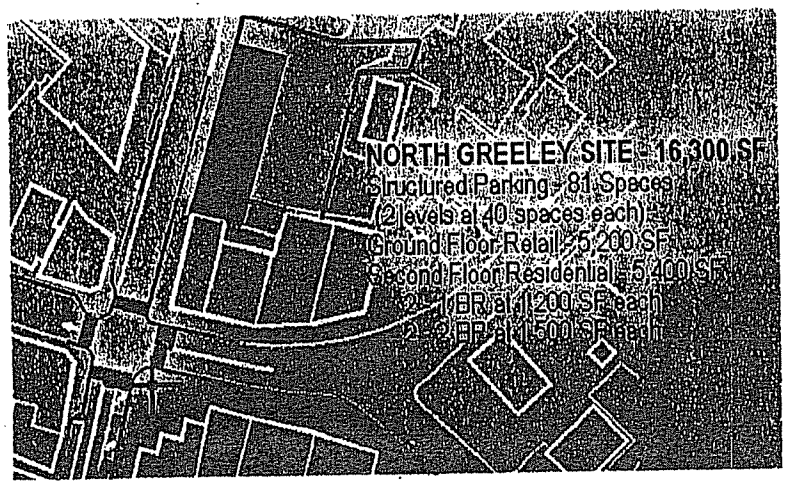
The permit policy for merchants and shopper parking was also debated. Policy changes proposed include designating additional parking spaces for downtown merchants to free up parking for shoppers.

c. Construct New Parking Structure on North Greeley Avenue

The North Greeley Avenue parking lot currently provides approximately 55 at-grade parking spaces but could be expanded to provide a five-bay, two-story retail structure of approximately 12,000 s.f. with a two-deck parking structure providing approximately 80 parking spaces located behind, as can be seen in Figure 16, North Greeley Avenue Parking Structure. The retail building can accommodate up to five shops, one within each 25 foot bay. The parking structure would have 40 at-grade parking spaces and 40 parking spaces on a second level. In addition, if an access easement is available, access to the second level could also be provided from King Street. For maximum parking flexibility, a ramp would connect the two levels of this structure. The parking structure would require approximately 10 feet per floor and emergency vehicles would be accommodated as required.

North Greeley Avenue Parking Structure

Figure 16



Order of magnitude construction costs are estimated at $3,000,000. The estimate does not include the relocation of any underground utilities.

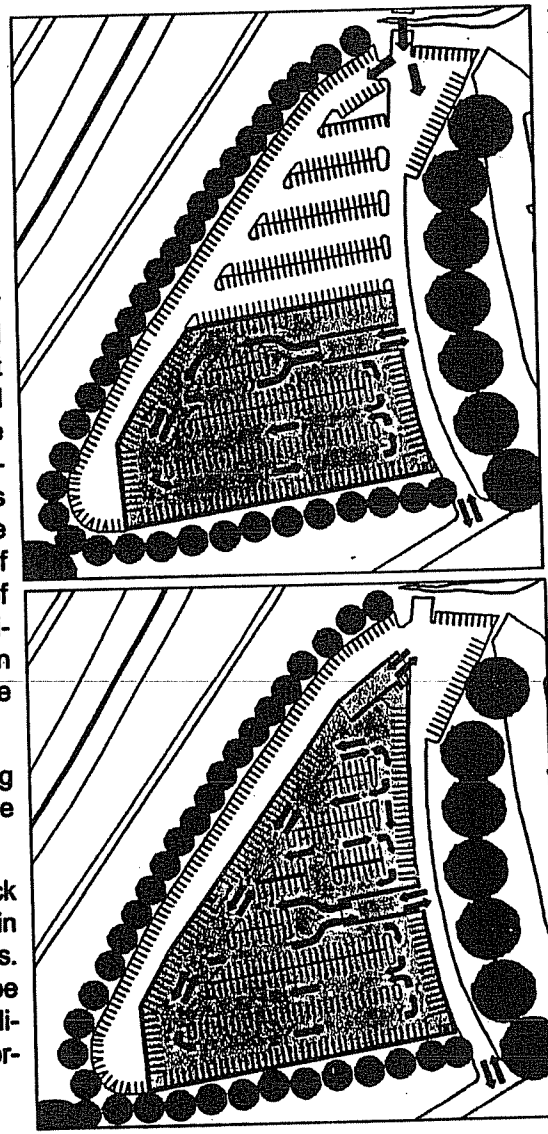
d. Construct Single Parking Deck In South Lot

The Plan proposes a parking deck at the southern end of the Metro-North Railroad parking area. Figure 17, Parking Deck in South Lot, presents the proposed configuration and circulation plan for the deck. The deck would provide additional commuter parking with a minor impact on the visual environment.

The footprint of the parking deck would be approximately 113,000 s.f. The approximate dimensions of the deck would be 400 feet wide by 420 feet long. The deck would be built in two parts; first, one half of the deck would be built and then the other. The two-part construction would minimize disruption to the existing parking lot to minimize displacement of cars. The south lot presently accommodates approximately 700 cars. Construction of the first part of the deck would add approximately 200 spaces. The second half of the deck would create another 100 spaces for a total of 300 hundred additional commuter parking spaces. This estimate is based on the size of the footprint and a convention of 325 s.f. per parking space (including parking space, the drive aisle and common circulation areas).

Access and egress to the deck would be via the existing Washington Avenue entrance driveway and from within the existing parking area.

A significant portion of the 300 vehicles parking on the deck addition would be new to the project area streets resulting in additional delay at the existing and proposed intersections. This delay along with intersection analyses would have to be studied. However, the proposed three traffic signal coordination plan along South Greeley could accommodate a portion of this new demand.



Parking Deck in South Lot Phase I

Figure 17

Phase II

Order of magnitude construction costs were estimated for each phase of construction. The first phase is estimated at $1.6 million, the second phase at $750,000. The estimate does not include the relocation of any underground utilities.

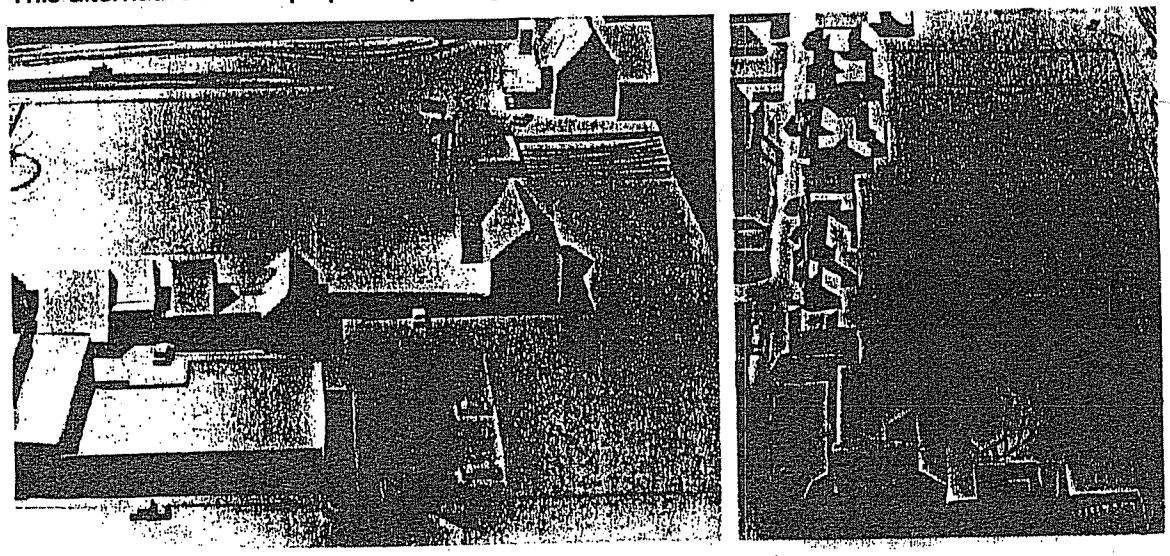
e. Robert E. Bell School Elevated Playing Field over a Parking Deck

The feasibility of elevating the existing Robert E. Bell School Middle School playing fields to provide a single deck of parking underneath has also been proposed. By elevating the ball field, additional parking spaces for approximately 400 vehicles would be provided in a covered parking structure. The parking structure would provide much needed school parking, commuter parking and parking for local merchants and would allow shoppers and retailers to park off-street and walk though the Hamlet to their destination. A design proposal by a local architect that has been under consideration for several years is shown in Figure 18, Proposed Bell School Plan. It recommends a pedestrian spine behind the present South Greeley stores serving both the existing "back doors" of these merchants as well as a new string of shops with offices and/or housing above at the spine's eastern side. This new string of buildings buffers the exposed edge of the lower parking level and has direct views from its upper levels to the Bell School playing fields.

This alternative and its proposed phasing are recommended for further feasibility analysis.

Proposed Bell School Plan

Figure 18



IV. LAND USE AND DESIGN OPPORTUNITIES

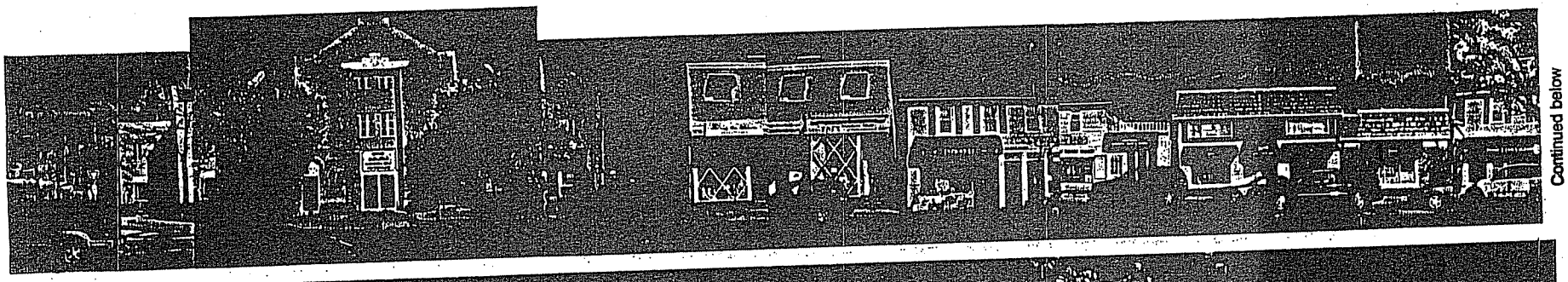
Chappaqua provides its residents and some adjacent communities with convenient retail shopping. One of the questions stakeholders examined during the planning process involved the extent to which the Hamlet should develop a retail niche and shopping image that would attract either the present local convenience shoppers or more regional destination shoppers. Stakeholders who participated in the focus group sessions generally felt that destination retail would only add to the already substantial weekend traffic congestion. The consensus opinion is that a more critical mass of local shopping opportunities including a greater diversity of convenience shops is needed for the competitive success of the Hamlet's merchant community and retail developers. Increased pedestrian amenities, improved pedestrian circulation and more efficient parking layouts will get people out of their cars and walking within the downtown. Infill development to provide for continuous street-front retail is proposed in several locations.

The need for downtown housing and its market feasibility was also identified. A review of the lower Westchester communities of Scarsdale, Bronxville and Fleetwood showed that their pedestrian scale multi-use and higher density development is within an easy walking distance of their Metro-North Railroad stations. This led our plan participants to look for ways of reinforcing pedestrian linkages from Chappaqua's Metro-North Railroad station to the retail hub.

A. PEDESTRIAN CIRCULATION AND STREETSCAPE

1. Existing Conditions

In addition to the diverse restaurant and retail presence along North and South Greeley Avenue, see Figure 19, Retail Facades, the presence of many community facilities within this three-block area plays an integral role in the 'pedestrianization' of downtown Chappaqua. Due to the absence of traffic signals, pedestrians must rely on motorists to stop for them in the crosswalks. This is not a safe condition, and many times pedestrians are trapped in the center of the roadway.



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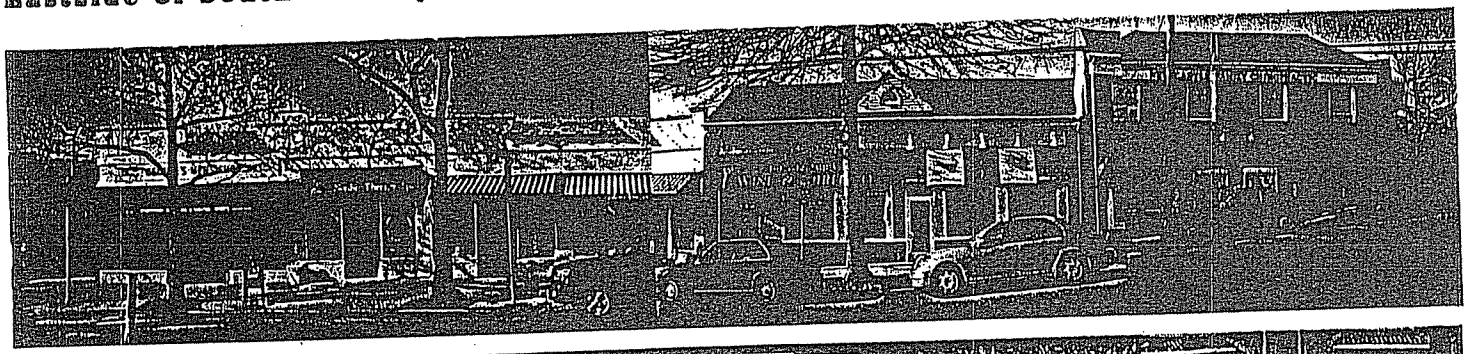
Eastside of South Greeley Avenue

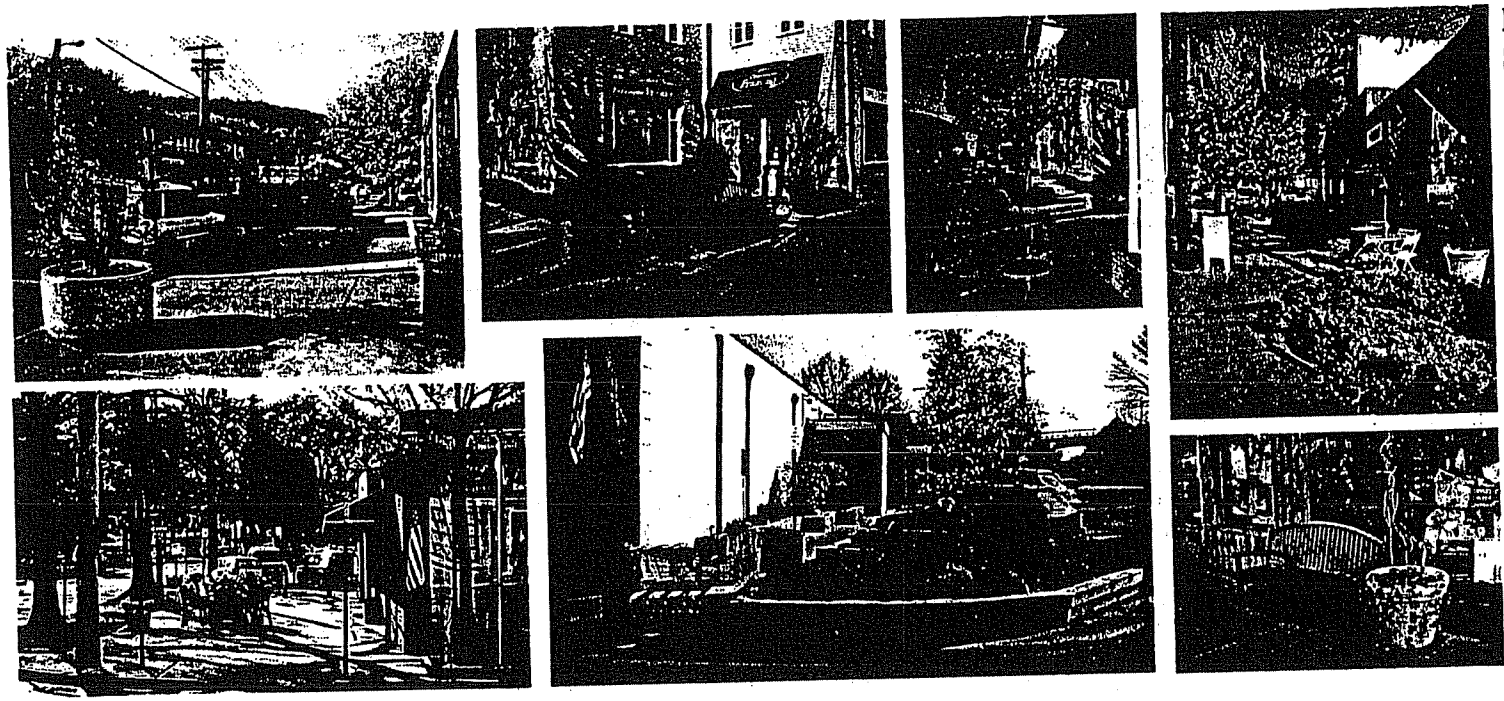


King Street

Lower King Street

Retail Facades

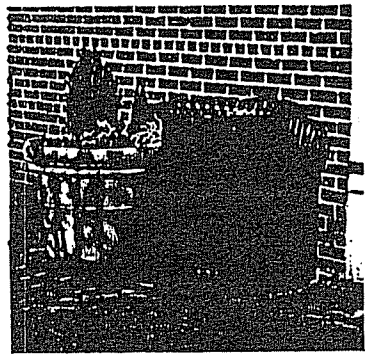
Figure 19



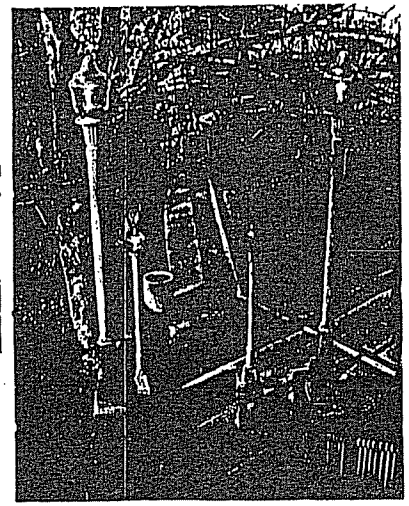
Existing Streetscape

Figure 20

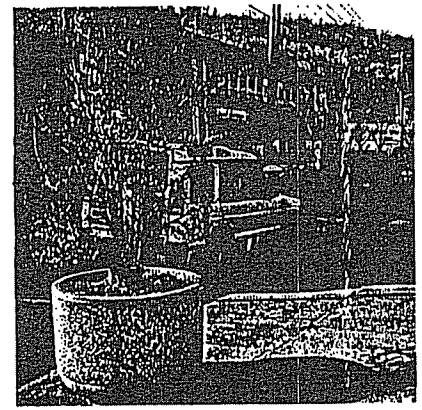
Figure 20, Existing Streetscape and Figure 21, Streetscape Amenities present a photographic inventory of existing streetscape and streetscape amenities. The Hamlet provides consistent and well-sited benches and planters. Retail signage and canvas awnings are occasionally lit by overhanging shepherd's crook shaded light fixtures. Shop and restaurant signage is attractive with well-chosen fonts and a variety of decorative details and images. Signage is located on uniform sign bands, on building fronts over windows and doorways, on the leading edge of canvas awnings, over display windows or as semi-transparent silk-screened images on the display windows. The present sidewalks are primarily concrete with four foot on center joints with some areas of brick paving and concrete curbs. Tree pits, where they exist, vary in size and edge detail.



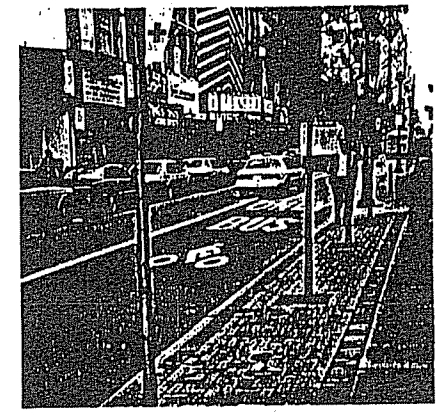
Existing and Proposed Planters & Trash Receptacles



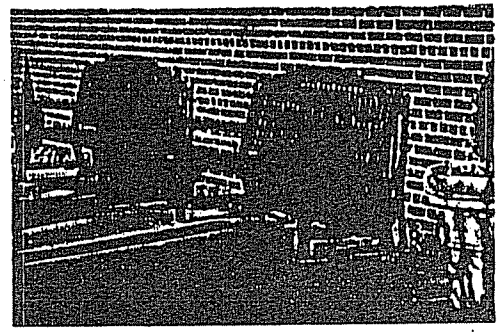
Existing Bridge Lightpoles/ Proposed Sidewalk Lightpoles



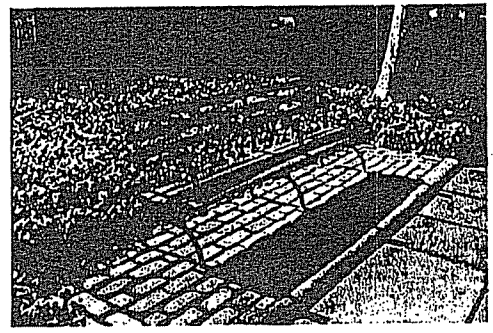
Existing Planters and Concrete Sidewalk



Proposed Sidewalk Paving Pattern & Tree Pits



Existing Benches



Proposed Benches

Streetscape Amenities

2. Issues Areas

At the start of the planning process, the following issues were identified:

- Narrow sidewalks within the downtown area and lack of clear, pleasant, and safe access to a variety of destinations;
- Disorganized (non-existent) crosswalks for school children;
- No pedestrian access to downtown from surrounding neighborhoods;
- Poor street, destination and retail signage;
- Poorly organized trash storage;
- Inadequate amenities for ADA accessibility;
- Inadequate and poorly designed pedestrian open spaces.

In addition to these issues, improved street furniture and lighting; ADA accessibility improvements; coordinated retail storefront signage and facade treatments and pedestrian friendly open spaces were elements incorporated into the streetscape and retail design proposals.

Figure 21

3. Alternatives

a. Enhanced Streetscape and Amenities and Improve the Safety of Pedestrian Crossings

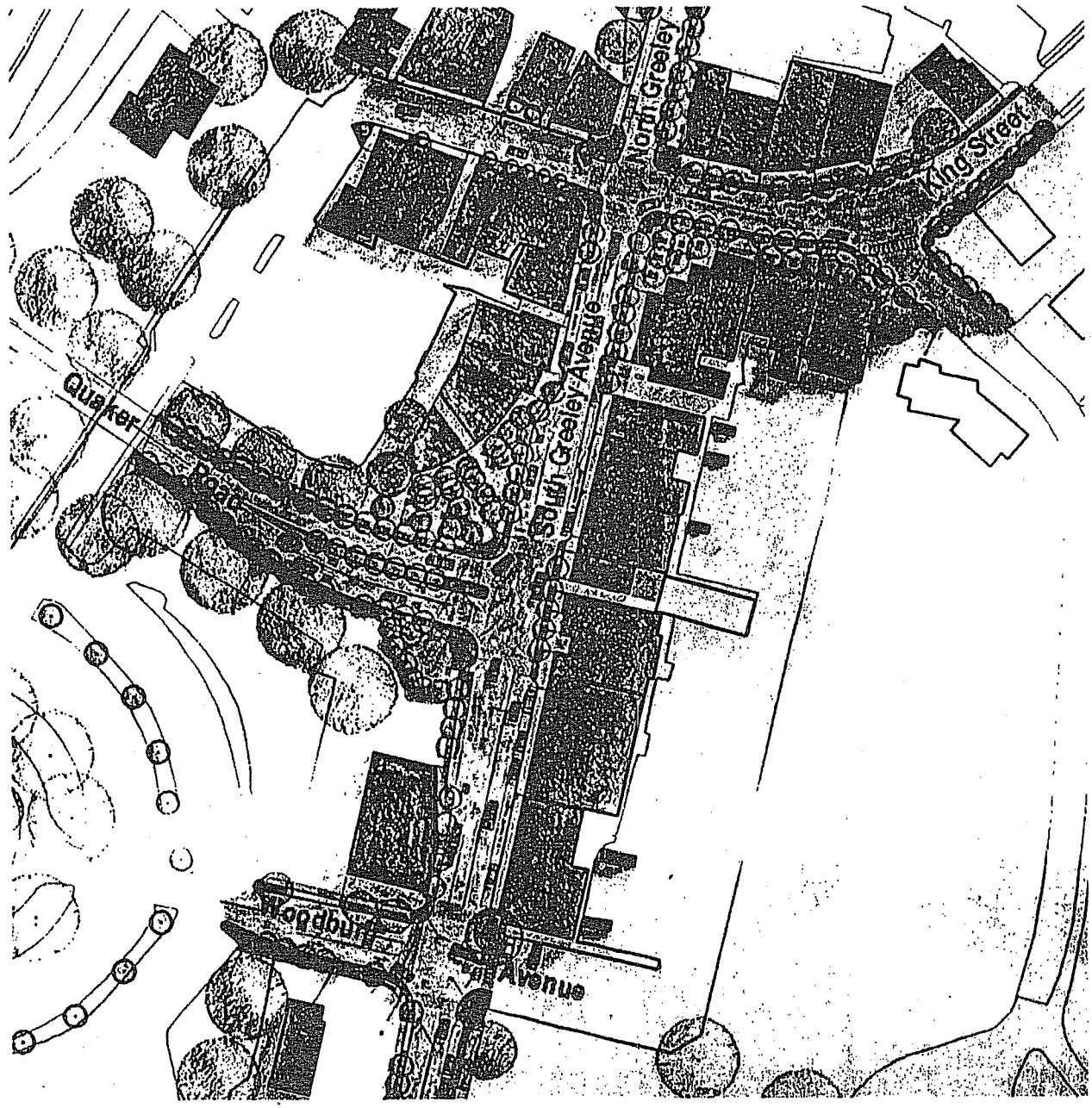
The streetscape plan, as presented in Figures 22, Streetscape Plan, proposes solutions to many of the issue areas described above. These enhancements provide the potential for a more pedestrian friendly and green environment. Trees will be planted along the streets, and additional benches and lights will be provided. Also variable paving patterns will create a warm and welcoming environment and heighten perceptions that Chappaqua is a town that invites people to walk. The landscaping will provide a recognizable beginning and end to downtown Chappaqua.

The streetscape plan recommends consistent and uniform sidewalk paving, crosswalk, tree pit, pedestrian light standards and intersection treatments. Each intersection will have vehicular and pedestrian crosswalk signals and herringbone brick paving bulge-outs with granite curbs and ADA mountable curbs. Concrete sidewalks that connect these intersections will have concrete curbs defining curb-side parking bays. The concrete sidewalk is subdivided by brick cross strips defining both the individual shop or restaurant street frontage as well as the location of the new pedestrian light standards. The Plan recommends utilizing the Quaker Road Bridge stair light standards, which have been re-manufactured to today's lighting and globe requirements. Where possible, the sidewalks will be widened with brick paving, granite curbing and a band of new street trees in individual uniform pits. This is recommended for the base of the King Street hill between North Greeley Avenue and Senter Street, along South Greeley Avenue at the base of the new Quaker Road T-intersection and on both sides of the new median at the base of the Quaker Road Bridge. The elements proposed for streetscape improvements will be further defined in the design stage of the project.

The proposed traffic signals at North Greeley Avenue and King Street, South Greeley Avenue and Quaker Road, and South Greeley Avenue at Woodburn Avenue will result in a significant benefit to pedestrian safety at these crossings. There will be time in the traffic signal phasing for pedestrians to cross the area roadways, and pedestrians will have "push-buttons" to activate the pedestrian crosswalk phase. As part of the North Greeley Avenue/King Street four-way intersection proposal and the South Greeley Avenue/Woodburn Avenue intersection upgrade, school access crosswalks will be clearly marked and coordinated with traffic signals.

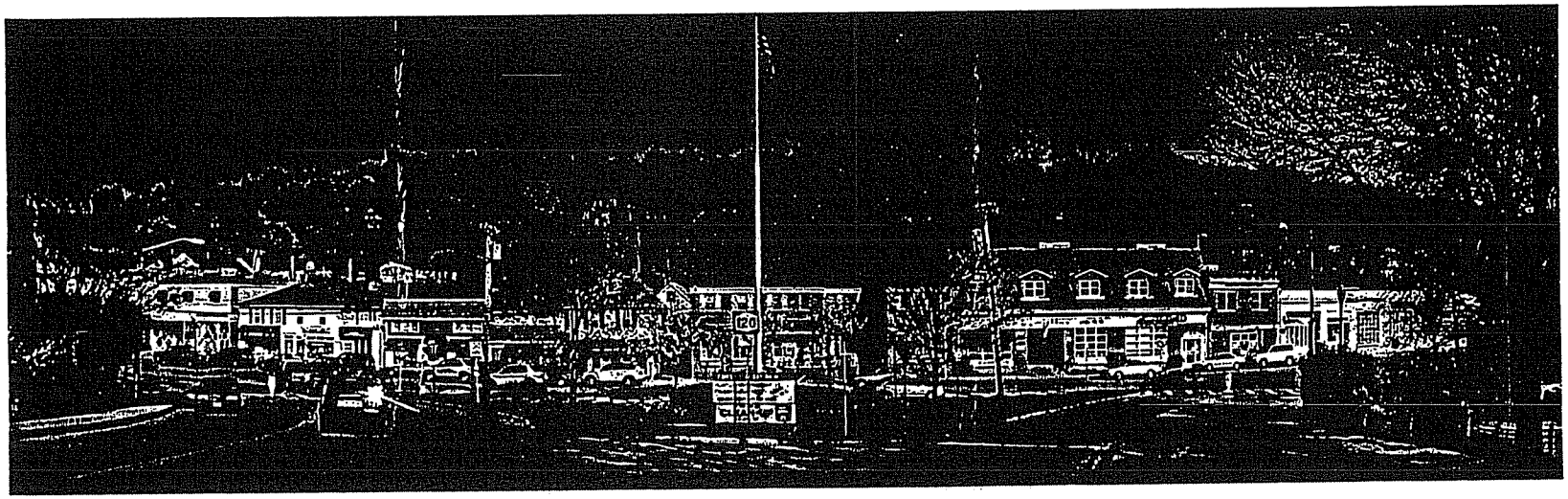
Streetscape Plan

Figure 22



Quaker Street Bridge Town Entry

Figure 23



Existing

Proposed

b. Provide Additional Sidewalks

Widening South Greeley Avenue's eastside sidewalk has been proposed as part of the T-Intersection. This not only provides an enhanced village green, as illustrated in Figure 23, Existing and Proposed Quaker Road Bridge Entry, but also creates a pedestrian refuge in what otherwise would have been a wide crossing. The success of the lighted sidewalk running from Saw Mill River Road to Quaker Road suggests the need to extend and upgrade the present sidewalk network. The following linkages are proposed:

- Connect the sidewalks on the Quaker Road Bridge directly to the Metro-North Railroad train platform;
- A new walkway from the bus and car drop off areas to the Robert E. Bell School;
- Clearly marked crosswalks at King Street and Senter Street; South Greeley Avenue and Woodburn Avenue; South Greeley Avenue and Quaker Road (Route 120) and South Greeley Avenue and King Street. The final three will have traffic signals with time coordinated walk/don't walk signs;
- A new sidewalk from the former Post Office (Susan Lawrence and Veterinarian's office) rear parking lot through the vest pocket park to the North Greeley Avenue sidewalk and the North Greeley Avenue/King Street crosswalks.

c. Create Additional Open Space

The following are proposed to address open space issues:

- A landscaped median on the Quaker Road Bridge entry road, which not only contains the Town flagpole but also provides a refuge for pedestrians moving along South Greeley Avenue's western sidewalk;
- Landscaped passive parks initially on both sides of the Quaker Road Bridge entry, with the south side identified as a potential long-term development site;
- Street trees, median trees and sidewalks to rehabilitated railroad station stairs all provide a significantly enhanced portal entry into Chappaqua.

Order of magnitude construction costs were prepared for providing streetscape improvements including street trees, benches, landscaping, trash receptacles, brick pavers, streetlights, etc. The estimate is $2.15 million and does not include the relocation of any underground utilities or burying of overhead utilities.

d. Enhance Building Facades

Chappaqua's Architectural Review Board has set high standards for signage, lighting, canopies and display windows. Attention may be given to selecting a single canopy design and standard height for a uniform sign board. The variation in canopy and signage color, lettering font and style should be encouraged within limits to continue the visual vitality of the downtown.

B. BUILDINGS AND DEVELOPMENT

1. Existing Conditions

The Hamlet of Chappaqua currently has a compact retail spine along North and South Greeley Avenue, characterized primarily by one- and two, with a few three-story buildings, with retail storefronts interspersed with restaurants and service oriented businesses. On North Greeley Avenue, north of King Street, lie several vacant lots that interrupt the continuous flow of storefronts on the street. The southern section of the study area, south of the Quaker Road Bridge, offers plenty of green space with ball fields located on both sides of South Greeley Avenue leading past Town Hall and the Library to the more residential areas of Chappaqua.

2. Issue Areas

Throughout the planning process, Hamlet residents expressed the need for more diverse land uses in the downtown area, particularly affordable housing within walking distance to the train station and downtown shopping, school, library, community center, park, and athletic fields. The opportunity exists to develop residential structures similar in scale to what already exists. These buildings could include either retail or office uses on the street level with residential spaces above. By introducing an appropriate mix of residential and commercial development in keeping with the character of Chappaqua and by creating better pedestrian linkages to the downtown area and the Metro-North Railroad station, the Hamlet can attract families and businesses that would complement the downtown area.

The first two focus groups emphasized the following issue areas:

- The lack of pedestrian links between Metro-North Railroad station and the South Greeley Avenue retail spine;
- The demand for diverse housing in downtown Chappaqua;
- The need for more dense development around the railroad station, with a mix of land uses and necessary parking.

3. Alternatives

The existing retail spine in the Hamlet should be maintained and enhanced through selected infill development, retail enhancements, and improved streetscape and site amenities. Where possible, continuous retail street frontages should be maintained including filling in the gaps.

Described below are sites proposed for retail, office and housing development. The design for these developments should complement existing street facades throughout the area so a cohesive image can be established.

a. Redevelop the Gas Station and Strip Commercial Frontage at South Greeley and Woodburn Avenue Intersection to Mixed-use Development

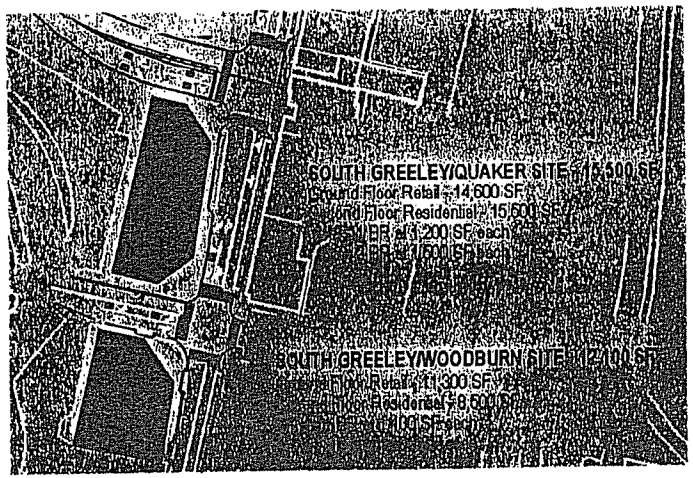
Two multi-use development projects are proposed for this area. The Woodburn Avenue site would allow approximately 11,000 s.f. of ground floor retail space as well as four 1,100 s.f. one-bedroom apartments and two 1,500 s.f. two-bedroom apartments. The existing gas station may be relocated.

A multi-use development is also proposed for the 15,500 s.f. footprint on South Greeley Avenue and Quaker Road. Approximately 14,600 s.f. of retail space would be provided at the ground level over which eight 1,200 s.f. one-bedroom apartments and three 1,500 s.f. two-bedroom apartments are proposed. This development could be scaled back and constructed as an extension of the existing building. Creative, shared, off-site parking solutions would be investigated with developers for these two development sites. Figure 24, Woodburn Avenue Proposed Development, graphically depicts this proposed development.

These development projects would attract much needed housing to the downtown as well as private investment funds. The developments would also create a link between the Metro North Railroad station parking area and the retail development on South Greeley Avenue. The proximity to the railroad, the school and local convenience shopping makes these sites very attractive to young professionals and families who need access to New York City for employment and leisure but would prefer a small scale, more economical Hamlet living environment. Such development would also be attractive to the elderly who need access to conventional services without having to use cars for transportation. Sensitive urban and landscape design standards could assure that these projects would merge smoothly with the existing environment.

Woodburn Avenue Proposed Development

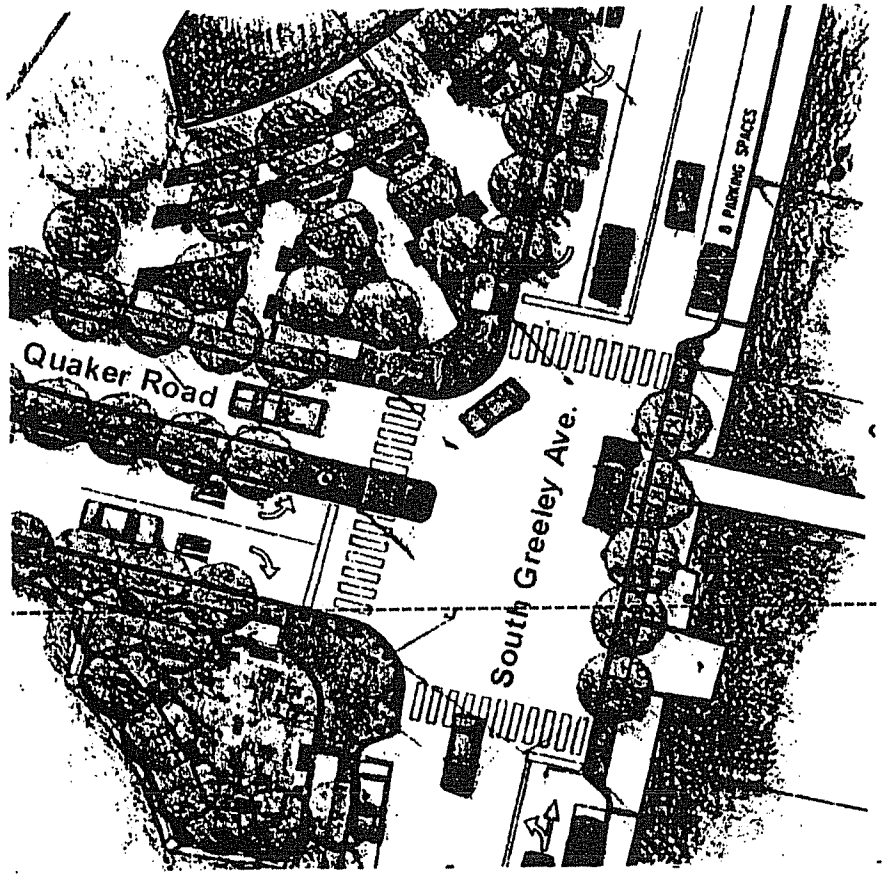
Figure 24



Order of magnitude construction costs were prepared for this development site. The estimate for the South Greeley / Quaker Road site is $5 million. The estimate for the South Greeley / Woodburn Avenue site is $3.5 million. Cost estimates do not include the relocation of any underground utilities or burying overhead utilities.

b. Provide Additional Retail frontage and Parking in the Rite Aid Parking Lot and the Former US Post Office Rear Parking Lot.

The Rite Aid parking lot provides a possible additional retail frontage site on North Greeley Avenue, while the former US Post Office rear parking lot could provide more public retail parking with a single decked structure and a pedestrian link through to the King Street/North Greeley Avenue intersection. This is presently a well landscaped side and rear lot on the south side of the former Post Office (Susan Lawrence and Veterinarian's office). While consensus was not achieved on potential development of these sites, they do provide continuous retail frontage on the Avenue, a goal of the downtown merchants, and hence should remain in the Plan as possible long-term development sites.



South Greeley Avenue / Quaker Road Intersection Detail

Figure 25

V. FUNDING MECHANISMS

Proposed funding mechanisms for the traffic and transportation improvements include TEA-21 and TEA-3 grants specifically through the Safe Routes to School program, an outgrowth of a discussion between Transportation, Education, and Health and Human Services departments. Common features of the Safe Routes program have included installation of "traffic calming" measures near neighborhood schools. Another potential funding source stems for a local law that requires developments, which cannot provide on-site parking, to pay into a town fund that is used to develop off-site parking facilities. The payments may be made either one-time or annually and could be used to offset the cost of a parking structure. This source should be further investigated as a measure to encourage some new development. For some improvements, approvals from other agencies would be required.

APPENDICES

APPENDIX A

Data Collection Program

Traffic counts were conducted at several locations to gain a representative average sample of the daily vehicular traffic traveling through and within downtown Chappaqua. The following intersections were chosen as study locations within or near the downtown area:

- Saw Mill Parkway Northbound Exit Ramp / Hunts Place - unsignalized
- Quaker Road (Rt. 120) / Hunts Place - signalized
- Saw Mill River Road / Douglas Road - unsignalized
- Quaker Road / South Greeley Avenue Triangle - 3 unsignalized
- South Greeley Avenue / Woodburn Avenue - unsignalized
- South Greeley Avenue / Washington Avenue / Library Driveway- unsignalized
- Washington Aveneue / Old Pinesbridge Road - unsignalized
- South Greeley Avenue / Bedford Road - unsignalized
- North/South Greeley Avenue / King Street / Lower King Street - unsignalized
- King Street (Rt. 120) / Senter Street - unsignalized
- King Street (Rt. 120) / Bedford Road (Rt. 117) / Memorial Drive - signalized
- King Street (Rt. 120) / Bedford Road (Rt. 117) - signalized

The Data Collection Program implemented for this study consisted of Automatic Traffic Recorders (ATR's) and manual turning movement counts.

Automatic Traffic Recorders (ATR's) were used to obtain traffic data for a 7-day, 24-hour period and to verify and balance the manual counts. The ATR's were left in place for one week beginning June 12, 2001.

The ATR's were installed at the following locations:

- Quaker Road Bridge
- South Greeley Avenue between Woodburn Avenue and Washington Avenue
- King Street between Highland Avenue and St. Johns Place

The ATR's were also used to collect temporal volume data (changes in volume over time) to determine peak period and peak hour activity for a typical weekday.

Quaker Road Bridge ATR

Typically, traffic volumes tend to peak at least twice over the course of a typical weekday, with a defined peak during the morning hours and a defined peak during the evening hours. Sometimes a noontime peak occurs in downtown areas. Other times a mid-afternoon peak is evident, usually along streets near schools and retail activity.

In this case, there are defined morning and evening peak periods, a midday peak period, and an afternoon school peak period.

The bridge ATR was left in place through the month of June 2001 and then reinstalled in the Fall of 2001 to gather additional data concerning the seasonality of traffic entering and exiting the Hamlet via the Quaker Road Bridge. The early June (Spring), late June (Summer), and late September (Fall) traffic volumes were compared to determine the effect that school operations and seasonality had on traffic volumes on the bridge. As shown in the ATR data graph below, traffic volumes were lower in the late June time frame when compared to early June when school was in session.

The following table summarizes the Quaker Road Bridge traffic volumes that were obtained from the ATR placed in early June 2001:

QUAKER ROAD BRIDGE (RT. 120) VOLUMES

Existing Traffic Volumes

The manual vehicle turning movement counts were conducted on Tuesday, June 12, 2001 and Saturday, June 16, 2001, during the following five count periods:

- Morning: 5:45 am to 9:15 am
- Midday: 11:30 am to 1:30 pm
- Afternoon: 2:15 pm to 3:00 pm
- Evening: 5:00 pm to 7:30 pm
- Saturday: 9:45 am to 12:45 pm

The turning movement counts, which were performed at each study location, were recorded at 15-minute intervals and included vehicle classification into passenger cars and heavy vehicles.

2001 Existing Capacity Analysis

Capacity analysis is a procedure used to estimate the traffic-carrying ability of roadway facilities over a range of defined operating conditions. For a signalized intersection, Level of Service (LOS) A indicates operations with delay less than 10 seconds per vehicle while LOS F describes operations with delays of excess of 80 seconds per vehicles. For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicles.

Capacity analyses were performed for the study intersections based on the methodology set forth in the 2000 Highway Capacity Manual. Using the 2000 Highway Capacity Software (HCS) 4.1, delay and Level of Service (LOS) were calculated for each intersection approach.

Computer Simulation

The Synchro/SimTraffic software package was used to simulate traffic operations for each of the scenarios presented in this study. Simulation of a roadway network provides additional information concerning queue lengths, signal coordination, and most importantly the effect intersections have on each other.

Existing traffic volumes, lane geometries, signal timing data and other traffic characteristics were entered into the simulation model, and the model was calibrated based on actual field observations.

TABLE AC - 1
INTERSECTION CAPACITY ANALYSIS RESULTS FROM SIM TRAFFIC
2001 EXISTING AND 2015 FUTURE VOLUMES

		2001 EXISTING VOLUMES										2015 FUTURE VOLUMES			
		AM PEAK HOUR						PM PEAK HOUR				AM PEAK HOUR		PM PEAK HOUR	
		Existing Geometry		Plan A		Plan B		Existing Geometry		Plan A		Plan B		Plan B		Plan B	
Intersection	Lane Group	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS	delay (sec.)	LOS
Greeley Avenue (N-S) / King Street (E-W)	WB-L	10.5	B	17.3	B	24.2	C	8.4	A	23.2	C	17.8	B	24.6	C	16.6	B
	WB-T	9.8	A	15.2	B	20.0	B	5.5	A	22.4	C	16.7	B	22.2	C	17.2	B
	WB-R	8.8	A	16.6	B	24.0	C	11.7	B	24.2	C	16.1	B	32.0	C	15.6	B
	NB-L	35.8	D	26.4	C	28.1	C	39.5	D	18.9	B	50.3	D	31.7	C	60.1	E
	NB-T	32.2	C	16.6	B	28.5	C	44.5	D	17.4	B	40.2	D	33.1	C	40.0	D
	NB-R	5.9	A	10.3	B	11.7	B	4.9	A	9.4	A	13.1	B	28.4	C	14.4	B
	SB-L	23.9	C	37.3	D	25.8	C	31.7	C	23.9	C	36.4	D	20.3	C	32.7	C
	SB-T	32.7	C	20.3	C	14.6	B	35.0	C	17.8	B	28.6	C	12.4	B	27.3	C
	SB-R	16.6	B	7.7	A	12.6	B	12.3	B	8.8	A	15.5	B	13.3	B	17.1	B
Greeley Avenue (N-S) / Quaker Road (E-W)	EB-L	693.4	[redacted]	27.0	C	262.7	[redacted]	146.2	[redacted]	24.8	C	100.3	[redacted]	305.9	[redacted]	460.3	[redacted]
	EB-R	710.9		9.8	A	249.0		153.6		5.8	A	76.8	E	303.5		464.4	
	NB-L	23.4	C	18.0	B	38.4	D	54.1		29	C	35.9	D	43.5	D	39.5	D
	NB-T	5.0	A	7.6	A	33.4	C	18.4	C	11.4	B	37.1	D	38.1	D	40.1	D
	SB-T	13.0	B	22.8	C	27.1	C	24.9	C	28.7	C	46.4	D	31.4	C	31.8	C
	SB-R	4.5	A	6.2	A	7.5	A	4.9	A	12.4	B	13.1	B	6.9	A	12.1	B
Greeley Avenue (N-S) / Woodburn Avenue (E-W)	EB-L	247.8	[redacted]	14.9	B	47.1	D	676.4	[redacted]	14.7	B	58.6	E	107.6	[redacted]	149.6	[redacted]
	EB-T	265.7		7.5	A	20.3	C	682.1		0.9	A	19.7	B	71.7	E	82.0	
	EB-R	231.8		15.8	B	23.1	C	770.7		20.9	C	22.6	C	56.7	E	22.9	C
	NB-L	316.4		35.1	D	44.3	D	441.8		20.2	C	57.6	E	38.2	D	61.5	E
	NB-T	300.6		25.3	C	31.8	C	440.3		11.0	B	66.5	E	40.0	D	75.6	E
	NB-R	294.6		34.7	C	30.3	C	411.2		14.8	B	57.3	E	37.8	D	58.6	E
	SB-L	43.5	D	21.4	C	26.6	C	43.0	D	20.5	C	18.6	B	33.5	C	19.9	B
	SB-T	42.6	D	13.2	B	26.2	C	50.6	D	14.9	B	13.5	B	27.9	C	14.9	B
	SB-R	19.9	B	10.6	B	19.6	B	19.3	B	9.1	A	9.7	A	19.5	B	16.0	B

[redacted]

APPENDIX B - Additional Traffic and Transportation Analyses

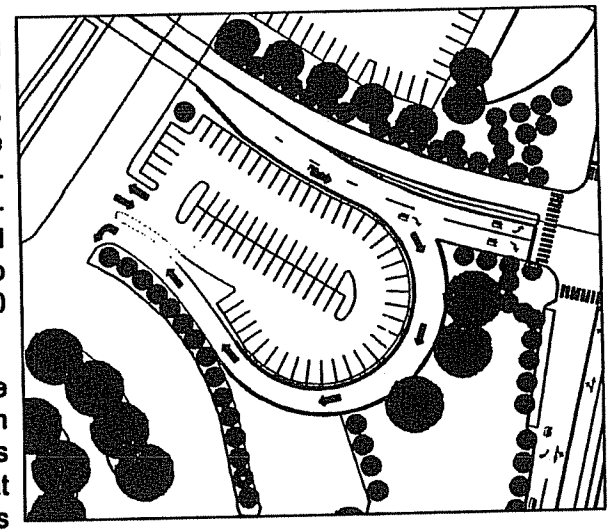
1. Route 120 Redesignation

The Town Board requested that the team investigate the possibility of redesignating Route 120 to Bedford Road (Rt. 117) as a State Route. This road is well traveled by through traffic, and redesignation would remove traffic from the Greeley Avenue/King Street intersection where a high volume of pedestrian traffic exists. To determine the volume of traffic that would be diverted to the potential redesignation of Route 120 along Bedford Road, an origin-destination (O-D) survey was conducted to determine the volume of regional traffic passing though the Hamlet along Route 120.

The existing and redesignated Route 120 paths through Chappaqua are described below:

Route 120 Southbound - Currently, vehicles traveling Route 120 Southbound come across the Route 120 / Quaker Road Bridge, turn left onto Greeley Avenue, turn right onto King Street, turn right onto Bedford Road, and turn left onto King Street to continue along Route 120 Southbound. As a result of the proposed redesignation of Route 120 to Bedford Road, vehicles traveling Route 120 Southbound would come across the Route 120 Bridge, turn right onto Greeley Avenue, turn left onto Bedford Road, and turn right onto King Street.

Route 120 Northbound - Currently, vehicles traveling Route 120 Northbound turn right onto Bedford Road, turn left onto King Street, turn left onto Greeley Avenue, turn right onto Quaker Road, and continue across the Route 120 Bridge. As a result of the proposed redesignation of Route 120 to Bedford Road, vehicles traveling Route 120 Northbound would turn left onto Bedford Road, turn right onto Greeley Avenue, turn left onto Quaker Road, and continue across the Route 120 Bridge.



Ramp on South Side of Quaker Road Bridge

Figure AC-1

The results of the O-D survey showed that the volume of regional traffic traveling Route 120 through Chappaqua was lower than expected. Since data was only collected during the peak periods, it is likely that the percentage of through traffic on Route 120 is

higher during off peak hours, when delivery trucks and vehicles making longer trips are more common. The redesignation is not recommended and was dropped from further study for two primary reasons. First, the relatively low through volumes that would be diverted (not more than 145 vehicles during any peak hour) do not warrant a redesignation. Second, Route 120 carries several trucks and heavy vehicles; these vehicles would be diverted to the south along South Greeley Avenue and would pass by the Bell School, the Public Library, the Municipal Building, and ballfields. The increase in heavy vehicles along this route presents a potentially hazardous condition.

2. Ramp on the South Side of the Quaker Road Bridge

This ramp would allow traffic to bypass the Quaker Road / Greeley Avenue T-intersection and bring traffic directly to and from the parking areas to the bridge. Figure AC-1 presents a proposed configuration of the ramp.

TABLE AC-2
QUAKER ROAD BRIDGE (RT. 120) VOLUMES

Time Period	*Eastbound (to Hamlet)*	*Westbound (from Hamlet)*	**TOTAL**
AM Peak Hour	1,100 vph	500 vph	1,600 vph
PM Peak Hour	650 vph	900 vph	1,550 vph
Saturday Peak Hour	750 vph	750 vph	1,500 vph
Total Weekday	9,700 vph	9,700 vph	19,400 vph
Total Saturday	8,200 vph	8,200 vph	16,400 vph

• Speed Change Lane Factors were used in computing these distances

Note: These design criteria are based on utilizing a design speed of 40 mph for State Route 120
This is based on a posted speed of 30 mph and translates into a ramp design speed of 20 mph.

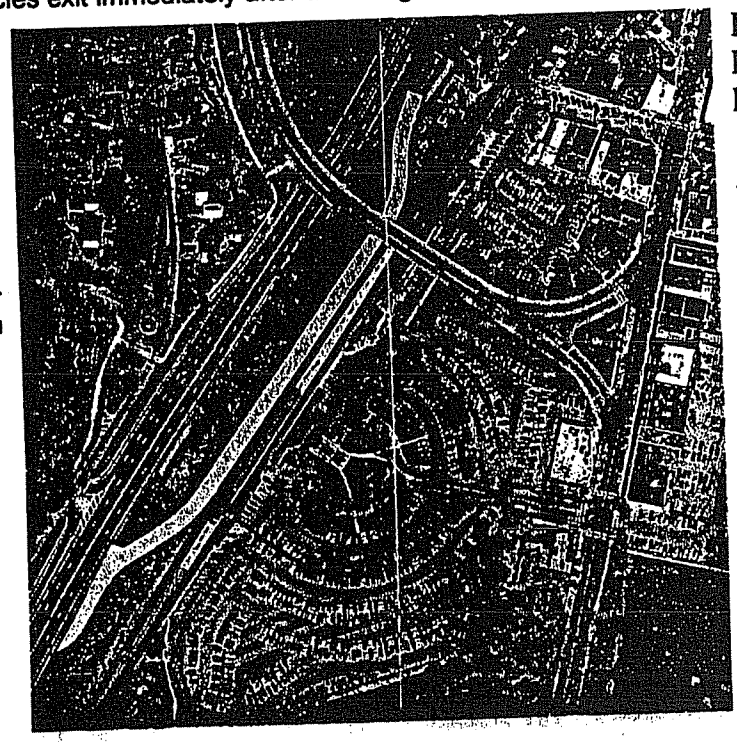
Table AC-2 presents a comparison of the proposed ramp structure and NYSDOT requirements.

The ramp would bring traffic traveling southbound on Route 120 directly into the railroad station parking areas. Traffic using the ramp would completely bypass the T-intersection thereby improving traffic operations at the signalized T-intersection. The ramp would be located between the bridge span over the rail tracks and the intersection of Route 120 and South Greeley Avenue in order to divert Metro-North railroad parking commuters on and off Route120 before passing through these two intersections.

Construction of the ramp would require the elimination of approximately 16 at-grade parking spaces. Initial design proposals included a ramp that was integrated within a parking structure. This would minimize the loss of at-grade parking spaces due to construction of the ramp. However, further engineering feasibility analysis indicated that integration of the ramp within a parking structure would just offset the loss of parking spaces, providing only a marginal increase. The structure would also be extremely expensive and have a significant aesthetic impact. This alternative is not being recommended, though may be revisited later should the need arise.

3. Reconfiguration of the Saw Mill River Deceleration Lane

The NYSDOT standard for length of a deceleration lane is approximately 1,200 feet. Presently, the deceleration from the northbound exit off Saw Mill River Parkway to the Chappaqua exit is almost non-existent posing a significant safety hazard when vehicles exit immediately after the Bridge abutment. Figure AC-2, Proposed Saw Mill River Parkway Exit Ramp, presents a proposed deceleration lane configuration. The ramp would occur between the abutments of the Saw Mill River Bridge and the Quaker Road Bridge on land currently owned by Metro-North Railroad. The configuration of the deceleration lane would require passing close to the rail and through wetlands, however it would significantly improve vehicular and pedestrian safety at this location.



Proposed Saw Mill River Parkway Exit Ramp

Figure AC-2