



VILLAGE OF CROTON-ON-HUDSON CROTON-HARMON STATION AREA STUDY

Prepared for
The Comprehensive Plan Committee
Village of Croton-on-Hudson

Prepared by
Buckhurst Fish & Jacquemart Inc.
Planners
Assisted by
Carlin Simpson + Associates
Consulting Engineers

May, 2005

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ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	EXISTING CONDITIONS.....	3
2.1	Project Site	3
2.2	Site Issues	8
3.0	MARKET REVIEW.....	9
3.1	Local Market.....	9
3.2	Regional Market: Examples of Other Station Area Developments.....	11
3.3	Consultation with Local Developers	12
4.0	ALTERNATIVES	13
4.1	Additional Landscaping Improvements	14
4.2	Restaurant and Commercial Space.....	17
4.3	Mixed Use Development	20
4.4	Conclusions.....	25

APPENDIX A:

- Comparable Station Area Proposals
- Discussion of Solar Panels

APPENDIX B:

- Station Parking Diagram
- Potential Water and Sewer Extensions

FIGURES

1. Aerial Photograph
2. Location
3. Existing Parking
4. Views of Main Lot
5. Views of South Lot
6. Views of North Lot
7. Site Issues
8. Scheme 1: Additional Landscape Improvements
9. Scheme 2: Restaurant and Commercial Development
10. Harvest on Hudson
11. Scheme 3: Mixed Use Development

1.0 Introduction

The Croton-Harmon railroad station is an important regional rail transportation hub, providing commuter service to New York City via Metro North, as well as services to major cities elsewhere via Amtrak. The importance of this hub is underlined by the fact that Croton-on-Hudson provides adjacent surface parking areas for almost 2000 vehicles at the station, involving approximately 16 acres of land. Due to the station's location adjacent to a major interchange with Route 9, the area represents a highly visible segment of the community. It is also located in close proximity to the Harmon/South Riverside entrance as defined in the Village's 2003 Comprehensive Plan. Given this strategic location, Croton-on-Hudson is interested in exploring how this land surrounding the Metro-North train station could be improved to serve future community needs, increase revenue for the village, and improve the overall appearance and image of the train station hub.

One possible strategy involves the establishment of mixed-use development within the station area in order to take advantage of the Croton-Harmon transit center. Transit oriented development (TOD) is an innovative technique that has been used throughout the country, particularly in New Jersey and California, to accomplish similar goals. TOD can take many different forms but is frequently characterized by residential or mixed-use development (such as residential and office, residential and commercial development) around and within walking distance of a major train station. The transit hub continues to provide transportation and related services such as parking, but also draws a mix of users to the other uses, thereby creating a more active and vibrant area.

The study described in this report explores the feasibility of establishing whether TOD is applicable for the Croton-Harmon station. The report examines the existing conditions and identifies the development constraints of the site, provides a brief assessment of market conditions to determine realistic uses for the property, and outlines general guidelines for any possible new development.



Figure 1: Aerial Photograph

The six month study involved regular meetings with the Village of Croton Comprehensive Plan Committee. Assistance was also provided by the Village Manager's Office and by the Village Engineer.

2.0 Existing Conditions

2.1 Project Site

The Croton Harmon Train Station is located in the Village of Croton-on-Hudson in Northern Westchester County, on the Hudson River (See Figure 2: Location Map). The station is located at the south end of the Village with direct access to Route 9 and the Village from Croton Point Avenue. The facility serves as a regional transportation hub providing express trains to New York City via Metro North. Amtrak also provides service to points north including Albany, Buffalo, Toronto, Montreal and Chicago. The station is the most heavily used station of all three Metro-North railroad lines with an estimated 2,860 commuters boarding trains during AM peak hours¹. Most of these commuters are from local municipalities (including Croton-on-Hudson, Ossining, Cortlandt Manor and Yorktown Heights) and many are also from neighboring Putnam, Dutchess and Orange Counties.

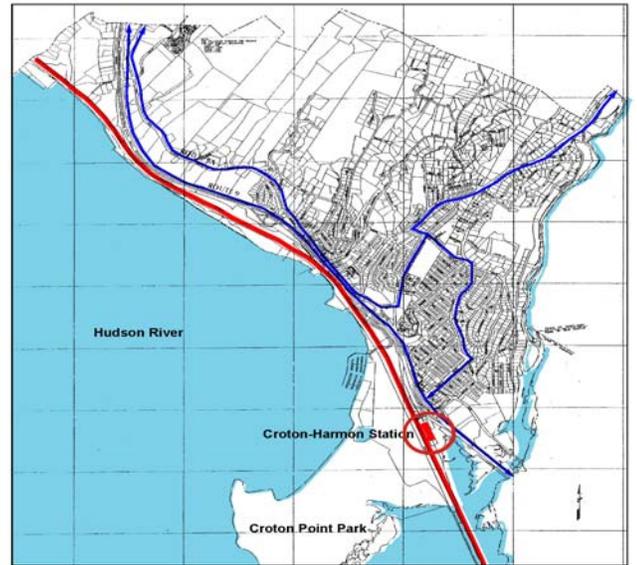


Figure 2: Location Map

The focus of this study is the station parking lot which is located immediately east of the railroad tracks. A small portion of the lot is located north of Croton Point Avenue. Access to the main lot is from Croton Point Avenue and Gateway Plaza. The topography generally slopes downwards from Croton Point Avenue and flattens in front of the station plaza and main parking lot, involving about a 35 foot change in elevation from Croton Point Avenue to the station.

Surrounding uses are mixed. To the immediate north, a small number of commercial buildings are located along Croton Point Avenue, leading to South Riverdale Avenue. Across Croton Point Avenue and to the west of the smaller parking lot, is Metro Enviro LLC, a construction and demolition debris transfer facility. To the south is a lagoon and marsh area at the mouth of the Croton River, a tributary of the Hudson River. To the east, the land rises sharply up an embankment towards an interchange on Route 9. Further south and east the land flattens and a small marshy inlet (connected to the Croton River) separates the parking lot from Route 9. To the west are the Croton Harmon train station and rail tracks. To the immediate northwest, across the rail tracks is the Metro North Croton Harmon maintenance facility

¹ Based on Metro North Railroad's estimated 2000 ridership figures.

and railyards and beyond that is Half Moon Bay and Discovery Cove, new residential developments located on the Hudson River waterfront.

The entire parking lot contains 1,973 parking spaces and covers approximately 16 acres; this includes parking areas north and south of Croton Point Avenue and behind the Village's Department of Public Works garage. The lot is very large compared to other municipal lots in Westchester County. For example, Hastings-on-Hudson, accommodates 402 parking spaces (approximately 20% the size of the Croton parking lot). Approximately 1,600 spaces are reserved for monthly permit holders, including more than 112 spaces designated for Village residents. The remaining 400 spaces are for daily usage (see Appendix for a break down and assignment of the spaces). The lot is heavily used, operating at 96% capacity.²

The overall appearance of the lot is overwhelmed by the rows of cars. There is minimal landscaping or greenery and very few pedestrian amenities. The Village recently commissioned an upgrade to the station plaza and drop-off area that will add landscaping, new paving, bicycle racks and a canopy. However, these improvements focus on only a relatively small area while the remainder of the parking lot consists of asphalt paving, black light poles and blue parking meter signage. The following pages provide viewpoints of the site, identified in figure 3.

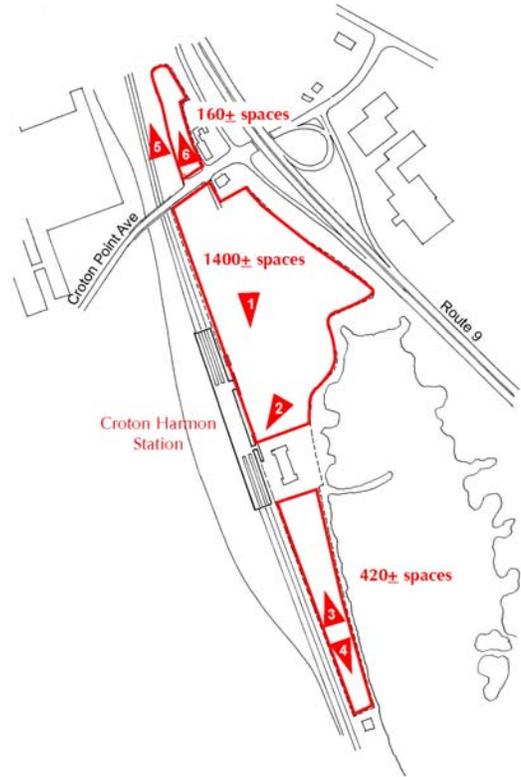


Figure 3: Existing Parking

² Based on 2003 figures.



Figure 4: Site Views



3



4

Figure 5: Site Views



5



6

Figure 6: Site Views

2.2 Site Issues

Environmental

As Figure 6 shows, the potential for development is constrained by a number of factors including potential impacts from traffic noise, flooding and views of the railyards. Most of the project site either abuts the railroad or Route 9 and is therefore subject to noise from either the trains or vehicular traffic. In addition, an approximately 2.5 acre area of parking abutting the marsh is subject to periodic flooding. The parking area north of Croton Point Avenue is adjacent to the entrance to Metro Enviro LLC, an industrial recycling facility, which generates a consistent flow of heavy truck traffic during business hours. The Department of Public Works also operates a municipal garage and salt storage shed at the southern end of the site. Road access to the parking area is also restricted to a single entry point from Croton Point Avenue, resulting in traffic congestion during peak am and pm periods.

Geotechnical

Carlin Simpson & Associates, Consulting Engineers have conducted geotechnical surveys of the train station parking lot to assess suitability for development. The following provides a summary of their findings:

- Groundwater depths are 4 to 9 feet which severely restricts the development of below grade use such as parking. The groundwater flows towards the Hudson River.
- Soil conditions consist of:
 - Fill to depths of 20 to 30 feet.
 - Organic silt to depths of 60 to 80 feet.
 - Sand to depths of 100 feet.

Based on the geotechnical data, any new construction would require piles to be driven to depths of 75 to 100 feet. Subsurface conditions may lead to subsidence over time which raises issues for pavements and underground utilities serving the site.

- Significant soil and groundwater contamination may be present in areas adjacent to the site. Contaminates could include:
 - Petroleum based materials
 - Metals
 - PCBs/Debris
- The contamination may have also affected the surface fill and groundwater beneath the site. This would need to be checked in any future Environmental Site Assessment carried out prior to any redevelopment proposal.

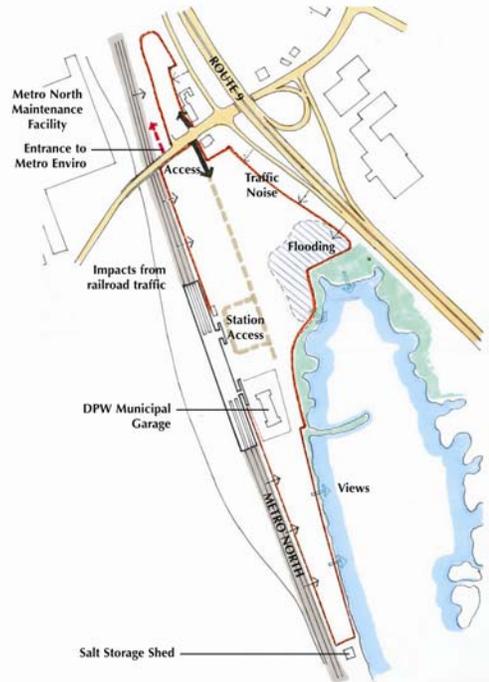


Figure 7: Site Issues

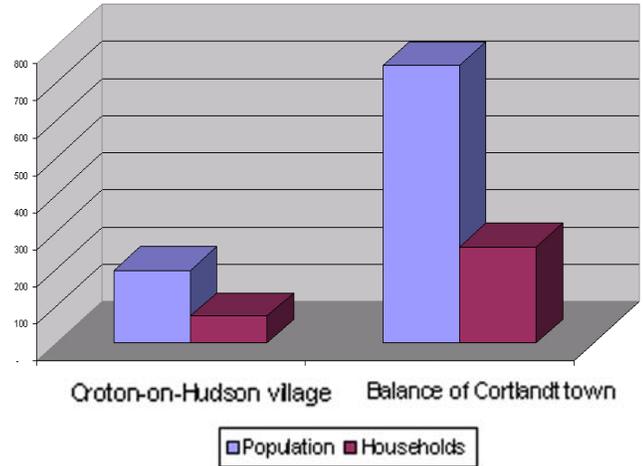
3.0 Market Review

The following section provides an overview of the local market focusing on recent population growth, residential construction, residential sales, ownership patterns and property values and comparable station developments in the New York Metro area. BFJ also conducted two interviews with well-known local developers, Ginsburg and Spectrum.

3.1 Local Market

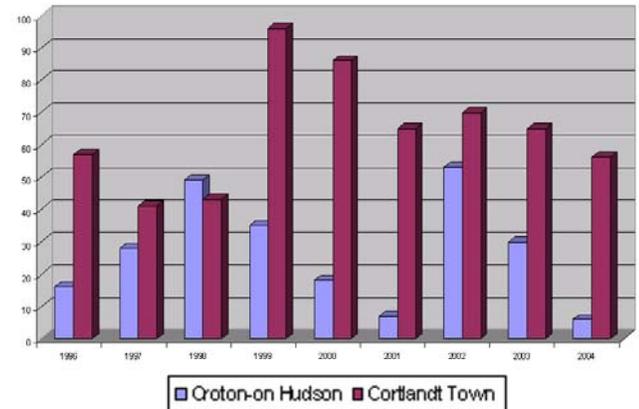
Recent Growth in Population and Households

- Since 2000, Croton-on Hudson has grown by fewer than 200 residents, adding some 70 new households.
- By 2003, Cortlandt Manor & surrounding Cortlandt Town have added 750 new residents in 250 new households.



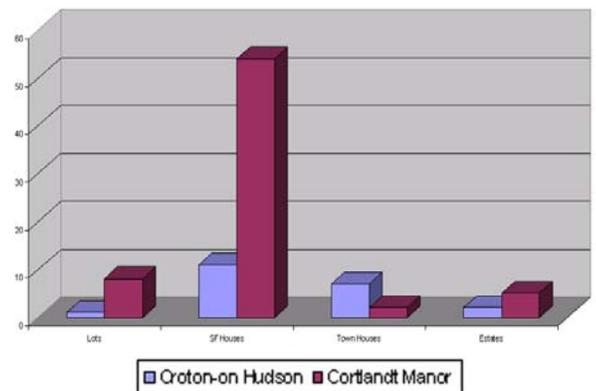
Housing Units Authorized for Construction

- Since the mid-1990s, Croton-on-Hudson has on average built 26 new units annually.
- Surrounding Cortlandt Town has averaged 64 units, all single family.
- In both areas, housing construction has declined since 2002.



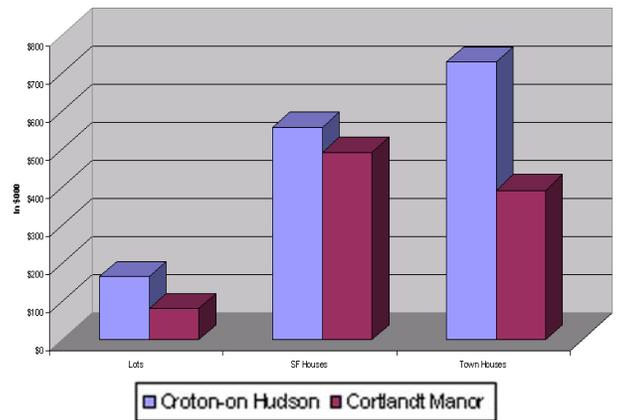
Residential Properties for Sale

- Approx. 21 properties are now listed for sale in Croton, equal to 1 year’s growth in households.
- 5 of these units are in Discovery Cove.
- In Cortlandt Manor, where fewer townhouses are sold, approximately 69 primarily single family homes are available, equal to 1 year’s housing production



Average Asking Price of Residential Properties

- Croton-on-Hudson properties fetch higher prices than lots & houses offered for sale in Cortlandt Manor.
- This is especially true for Croton's riverfront townhouses with asking prices that average \$700,000.



Characteristics of Existing Households

- In 2000, 76% of Croton-on-Hudson households owned their homes.
- The median value of owner occupied housing was \$267,000 then, or over \$400,000 in today's dollars.
- Relatively few existing households have incomes above \$200,000, needed to afford \$700,000 riverfront housing.

3.3 Consultation with Local Developers

Discussions were held with two local-area developers, Ginsburg and WCI Communities (Spectrum), to explore possible development options that should be considered for the station area. The following provides a summary of the comments made during the two meetings.

- Despite the site's drawbacks (track noise, adjacency to MTA Yards, geotechnical issues, etc.) the property would be of significant interest to the development community given the strong housing market in the general region.
- The Discovery Cove development (by Spectrum) includes units facing the MTA repair yards, away from the waterfront. Ground floor units (1,100 sq. ft.) originally sold for \$250,000. Prices are now around \$450,000. In comparison, townhouses on waterfront were originally priced at around \$700,000 and are now selling for approximately \$1.5 million.
- The site has the advantage in that the Village can sell land to private developers, thus providing funds to construct a parking structure.
- Future development works need to aim at 250-300 units total to allow for provision of amenities (clubhouse, green space, paved plazas, etc.). Amenities including greenspace, retail and a station plaza would be critical to create a sense of place. Additional suggestions included:
 - The market should aim for young families, first-home buyers, and singles.
 - Convenience to station and easy commute to NYC major plus.
 - Include small scale convenience retail/services as a cluster near or opposite station entry (i.e. create a center and sense of place).
 - Restaurant (5,000 sq. ft., upscale) might be possible facing the mouth of the Croton River.
 - Density is important. The scheme has to have a more urban character rather than suburban. Development of 4 stories over parking is likely to be a preferred model. Use of paved plazas, squares, courtyards is important.
 - Parking structure would best be located adjacent to the rail tracks which would also help to reduce potential noise impacts from the tracks. This would allow development layout which could include: 4-story housing, surface parking, landscape etc. in front of the station, with small retail core near entry to the station (such as a bank, coffee shop, dry cleaners etc.). Restaurant development is best located on the water edge.

Conclusion

The local and regional market review shows that there is a strong residential market despite the slight decline in housing construction since 2002 in Croton and neighboring Cortlandt Manor. Existing riverfront units in Croton are asking an average of \$700,000. Consultation with the local developers also suggested that the site would support a minimum of 250 units plus retail, restaurant and supporting amenities such as indoor recreational facilities. Any development on the site will involve the construction of large-scale parking structures in order to create an adequate development site. Housing would likely be marketed at the young, affluent and empty-nesters looking for a convenient location near to the train.

4.0 Alternatives

A number of design options were prepared in order to explore how the study area could be improved to serve future community needs, improve the appearance of the area, and, if possible, provide increased revenue for the village. The three options summarized below involve the following strategies:

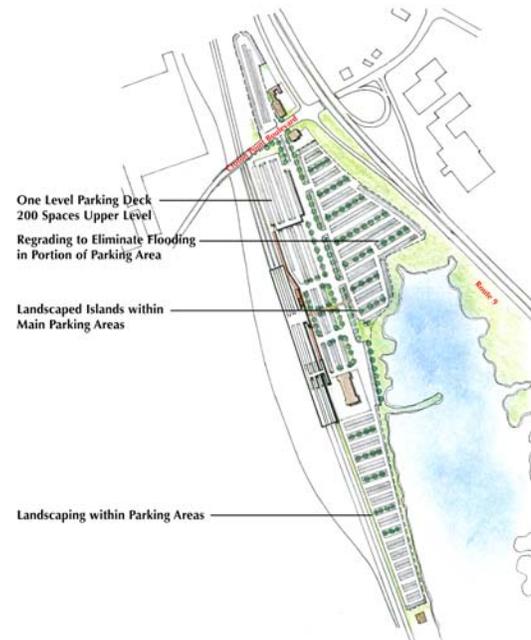
- Option 1: Improved landscape and parking accommodations
- Option 2: Restaurant and Retail Development
- Option 3: Mixed Use Development

Also included is a preliminary fiscal analysis followed by a summary table of the pros and cons of each option. For the sake of comparison we have included only the incremental costs necessary to implement each of the three options. This means, for example, that current maintenance costs for the parking lot are not included, only the additional costs for maintaining the new schemes. In addition, current revenues for the parking lot are approximately \$2.08 million, some of which is used to pay debt service for construction of the existing lot and some of which is used on other items in the municipal budget. In order to provide a conservative approach, this revenue has also not been included in the fiscal analysis for the three options.

4.1 Additional Landscaping Improvements

Under this option, the village-initiated landscape and parking improvements, scheduled to be carried out in 2005, would be expanded to the entire lot. This plan also addresses a key concern of the Village: addressing the chronic flooding that impacts a portion of the eastern area of the main parking lot. This option therefore includes new fill and regrading for an approximate 2.5 acre portion of the site. This would serve to upgrade the image of the station area and would justify a 5% increase in parking fees.¹ In order to accommodate the spaces lost as a result of the landscaping improvements, it would be necessary to construct a new one-level, 200-space parking deck. The parking deck would cost approximately \$4 million dollars to construct (at a cost of \$20,000² per space) and could be financed over 20 years at 5% interest with annual payments of \$300,000. The landscape improvements would include the planting of approximately 100 trees, the construction of parking bays and new landscaped medians. There is also an additional \$250,000 cost for filling and regrading an approximately 2.5 acre portion of the lot that is currently subject to frequent flooding³.

While the aesthetics of the lot would improve under this option, beyond the increase in parking revenues there are no fiscal benefits to the Village.



¹ Annual revenues from the train station parking lot are currently approximately \$2.08 million.

² The cost of \$20,000 per space is based on comparable structured parking garage costs in Westchester County and includes all hard costs such as ramps and access.

³ Fill and regrading costs based on estimates from Carlin Simpson Associates. Cost may vary depending on the degree of subsidence and corresponding quantity of fill material needed.

OPTION 1 COSTS:

Capital Costs

1. Planting of 100 trees (@ \$750 per tree), landscaping 2,200' parking bays:	\$200,000
2. Infill and regrading of approximately 2.5 acres @ \$100,000 per acre:	\$250,000
3. Construction costs of 200-space garage @ \$20,000 per space:	<u>\$4,000,000</u>
TOTAL CAPITAL COSTS	\$4,450,000

Annual Costs

Amortized costs of items 1-3 above: ⁴	\$357,000
Maintenance of Parking Lot:	<u>20,000</u>
Total	\$377,000

Annual Revenue

5% increase in annual parking revenue (2.08 million x 0.05):	\$104,000
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OPTION 1 NET:

Annual cost (including debt service on capital costs and maintenance):	\$377,000
Annual revenue:	<u>\$104,000</u>
Option 1 Net:	-\$273,000

⁴ Total cost to construct a 200-space garage is \$4 million, amortized over 20 years @ 5% is \$300,000 per annum.

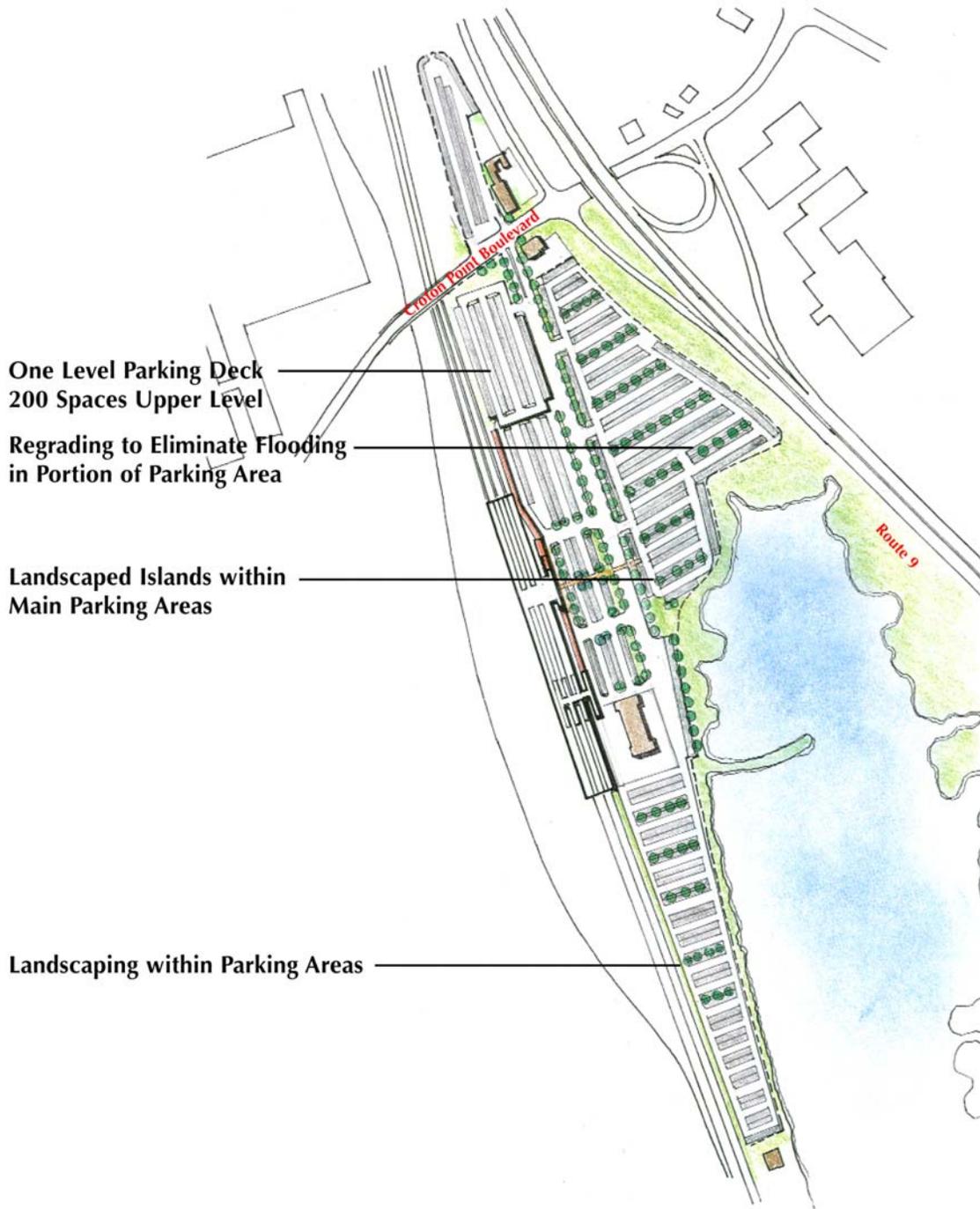


Figure 8. Scheme 1: Additional Landscape Improvements



0 400 800 ft

4.2 Restaurant and Commercial Space

This option builds on the improvements listed under option 1 but also includes the long-term lease and redevelopment of an area immediately opposite the station drop-off. The scheme assumes 15,000 square feet of retail and commercial space including a restaurant. A relevant example is the 6,500 square foot Harvest-on-Hudson restaurant located in Hastings located near the village station and the Metro North tracks. Given the location adjacent to the train station, the restaurant operator could make an agreement to share parking space with the Village to accommodate commuters using Metro North (particularly as peak restaurant hours generally do not coincide with peak demand for commuter parking). The remaining 8,500 square feet would be best suited to convenience retail such as dry-cleaning, newspaper stand and other retail convenient to commuters. The parking garage shown in option 1 would have to be increased in size to accommodate an additional 100 spaces removed to make way for the restaurant and commercial space. Expanding the parking deck would cost an additional \$2 million dollars. Overall parking revenues are assumed to increase by an additional 5% (over option 1).

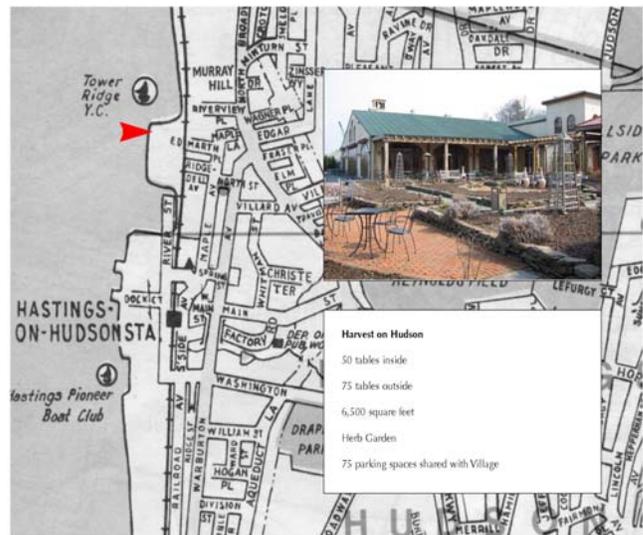
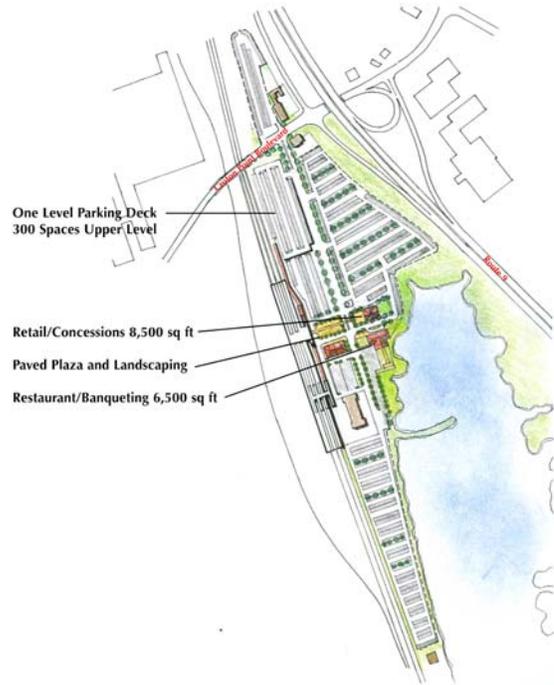
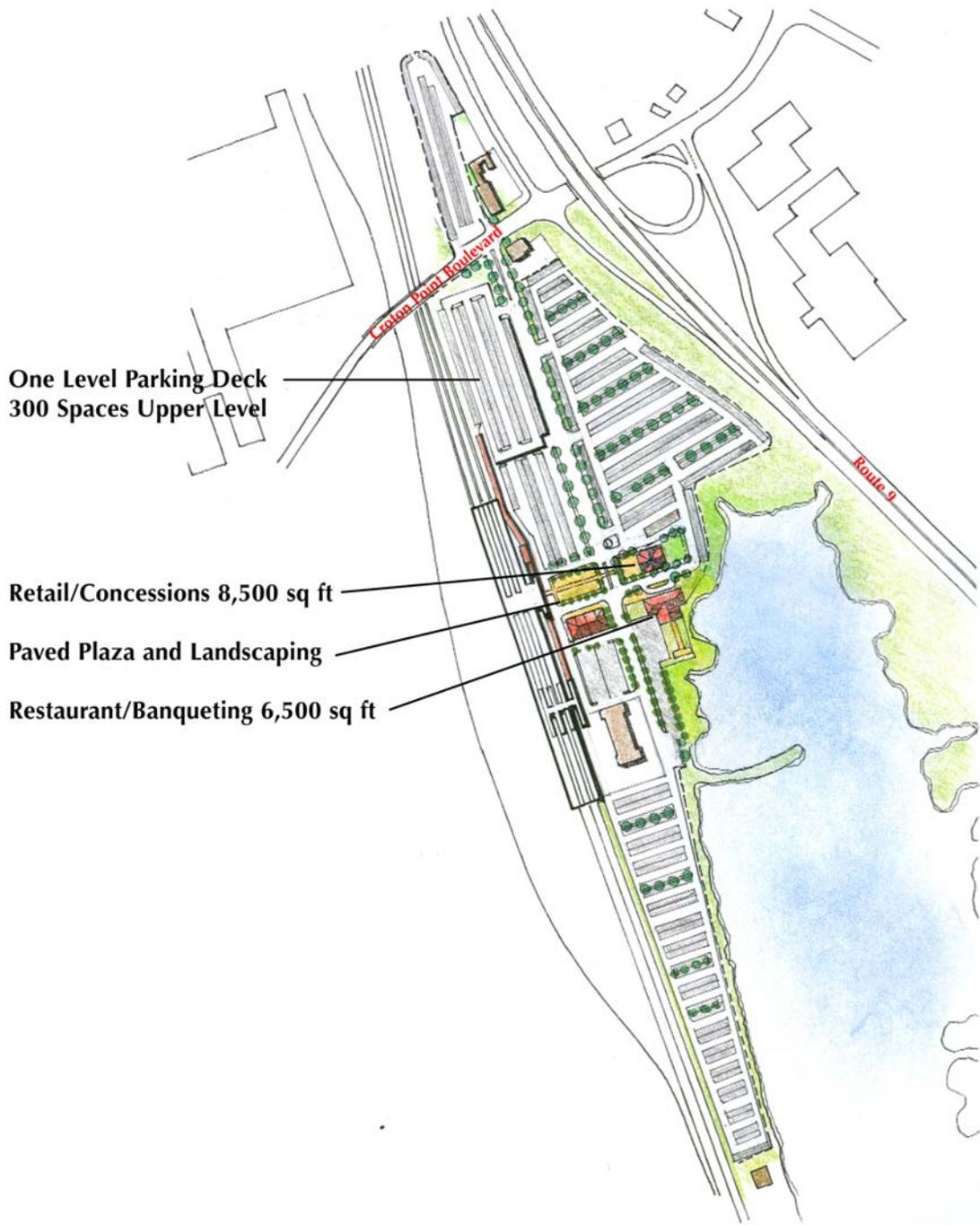
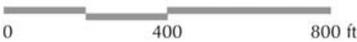


Figure 10: Harvest on Hudson



 **Figure 9 Scheme 2 - Restaurant and Commercial Development**



OPTION 2 COSTS:

Capital Costs

1. Planting of 100 trees (@ \$750 per tree), landscaping 2,200' parking bays:	\$200,000
2. Infill and regrading of approximately 2.5 acres @ \$100,000 per acre:	\$250,000
3. Total sewer costs (sewer lines plus pump station): ⁵	\$300,000
4. Construction costs of 300-space garage @ \$20,000 per space:	<u>\$6,000,000</u>
TOTAL CAPITAL COSTS	\$6,750,000

Annual Costs

Amortized costs of items 1-4 above: ⁶	\$541,000
Maintenance of parking lot	<u>\$20,000</u>
Total	\$561,000

Annual Revenue

Property Taxes (assuming 2% of land value): ⁷	\$45,000
10% increase in parking revenue (\$2.08 million x 0.10)	\$208,000
Long-term lease on commercial land ⁸	<u>\$135,000</u>
Total	\$388,000

OPTION 2 NET

Annual cost:	\$561,000
Annual revenue:	<u>\$388,000</u>
Option 2 Net:	-\$173,000

⁵ Total cost reflects new 1,975 foot sewer line at \$110 per foot (\$217,250), plus the estimated cost to put in a new pump station (based on figures from the Village Engineer Dan O' Connor.

⁶ Amortized over 20 years @ 5%.

⁷ Total land value is based on total construction costs as follows: 15,000 square feet of space at \$150 per square foot for construction costs = \$2,250,000. Taxes are approximately 2%. Therefore \$2,250,000 = \$45,000.

⁸ Annual revenue from long-term lease is represented by 6% of the total value (6% is based on current loan rates): \$2,250,000 x 0.06 = \$135,000 per annum.

4.3 Mixed Use Development

This option assumes redevelopment of a major portion of the parking area with 250 townhouse units together with retail and restaurant uses and a community recreational facility. Achieving this scale of development will require construction of large-scale parking structures to create space for approximately 1,300 cars to compensate for the displaced commuter parking.

- **250 Residential Units:** This option assumes a 50/50 mix of 1 and 2 bedrooms, thus generating fewer school children than traditional developments marketed for families with children.
- **Retail/Commercial/Office Uses (30,000 square feet):** With 250 residential units within walking distance, we have assumed that the retail and commercial space can be increased to 30,000 square feet under this option (compared to Option 2, which has no residential units and provides 15,000 square feet of retail and restaurant use). There may also be a small market for offices – similar to office space found in Irvington-on-Hudson, serving small local businesses. In order to improve aesthetics and use space efficiently, the office space could be incorporated into the structured parking facing away from the station towards the residential units. This would also create more of a street front along a ‘station boulevard’
- **Community Recreational Facility (10,000 square feet):** As a trade-off for land, the Village might also request that the developer designate a portion of the site for a community recreational facility. We have assumed a 10,000 square foot building with costs borne by the developer.
- **Structured Parking:** At \$26 million, the largest cost in this option is the construction of a 1,300-space parking garage (again this assumes \$20,000 per space in construction costs). Under this scenario we have assumed a 15% increase in parking fees would be justified.





 **Figure 11 Scheme 3 - Mixed Use Development**
0 400 800 ft

OPTION 3 COST ASSUMPTIONS

CAPITAL COSTS

1. Sewer. A new sewer line is needed which would connect to the line on Riverside Avenue a third of a mile away.	
Total cost for new sewer line (1,975 feet of sewer lines at \$110 ¹ per linear foot): ²	\$217,250
New on-site pump station and generator	<u>\$275,000</u>
Subtotal sewer costs	\$492,250
2. Water Supply. A new water line would connect to the main on Benedict Avenue a half mile away.	
Total costs for the new water line (2,550 feet of water lines at \$135 per linear foot ³):	\$344,250
3. Relocation of Municipal Garage	
Total cost to relocate Municipal Garage: ⁴	\$2,500,000
4. 1,300-space Parking Garage	
Construction of 1,300-space parking garage at \$20,000 per space:	<u>\$26,000,000</u>
TOTAL CAPITAL COSTS	\$29,336,500

Annual costs

Schools: based on generation rates from the Urban Land Institute (ULI), 125 1-bedroom units and 125 2-bedroom units generate up to 17 school children. ⁵	
Total cost to educate school children (17 children at \$10,000 per pupil): ⁶	\$170,000
Police/Fire/Public Works/Parking and Streets/Parks and Recreation/Library	
Total Costs for municipal services	\$100,000
Amortization of Capital Costs	
Amortized cost of items 1-4 above ⁷	<u>\$2,354,000</u>
Total Annual Costs	\$2,370,000

Revenues:

One-time	
Land sale for 250 units (250 x \$50,000 per unit): ⁸	\$12,500,000
Annual	
Commercial property taxes (assuming 2% of land value): ⁹	\$90,000
Residential property taxes at \$5,000 per unit (\$5,000 x 250 units) ¹⁰	\$1,250,000
Long-term lease for 30,000 square feet of commercial: ¹¹	\$270,000
Long-term lease for 250 residential units: ¹²	\$750,000
15% increase in annual parking revenue (\$2.08 million x 0.15):	<u>\$312,000</u>
Total	\$2,672,000

OPTION 3 NET

Annual cost:	\$2,370,000
Annual revenue:	<u>\$2,672,000</u>
Option 3 Net:	\$302,000

- ¹ Estimate based on information from Village Engineer, Daniel O'Connor
- ² This amount does not include the cost of a sewage pump station.
- ³ Estimate based on information from Village Engineer, Daniel O'Connor.
- ⁴ Based on information from the Village including land, new garage and demolition of existing bldg.
- ⁵ Urban Land Institute (ULI) figures assume a generation rate of 0 for the 1 bedroom units and 0.1393 per unit for the 2 bedroom units.
- ⁶ This figure excludes State aid. Including State aid costs are currently \$16,289 per pupil in the Croton-on-Hudson Schools District.
- ⁷ This assumes amortization of the \$29 million of capital costs at 5% over 20 years.
- ⁸ This figure is discounted to reflect costs of piles. As described in Chapter 2 of this report, based on geotechnical surveys from project engineer Carlin Simpson Associates, any new construction will require piles ranging in cost from \$40 to \$50 per square foot depending on the location. We have incorporated these costs into our calculations by discounting the land value (which is based on an average sale price of \$50,000 for the 250 residential units). This approach is conservative as based on market comparables, actual sales prices may be in the region of \$400,000 to \$600,000 per unit.
- ⁹ Total land value is based on total construction costs as follows: 30,000 square feet of space at \$150 per square foot for construction costs = \$4,500,000. Taxes are approximately 2%. Therefore $\$4,500,000 \times 0.06 = \$90,000$.
- ¹⁰ Residential taxes are based on comparable rates for new units such as those at Discovery Cove.
- ¹¹ Annual revenue from long-term lease is represented by 6% of the total value (6% is based on current loan rates): $\$4,500,000 \times 0.06 = \$270,000$ per annum.
- ¹² Again annual revenue from long-term lease is represented by 6% of the total value (6% is based on current loan rates): $\$12,500,000 \times 0.06 = \$750,000$ per annum.

OPTIONS 1-3 PROS AND CONS

OPTION		2003 Comprehensive Plan Goals		Financial		Scale/Visual	
		Pros	Cons	Pros	Cons	Pros	Cons
1	Additional Landscape Improvement	- Addresses goal 15 relating to improving visual quality of train station.	Goes a small way to meet goals 6 and 15 which seek to improve the visual quality of the Village and the train station.	Smaller capital costs than other two options.	Increases village debt with no offset (annual debt service on costs of constructing a 200-space parking deck far exceed increase in parking revenues).	Modest improvement to image of Village's "front yard."	Surface parking lot remains.
2	Restaurant and Commercial Development	- Creates small-scale commercial and office space in accordance with goal 10. - Addresses goal 15 relating to improving visual quality of train station.	N/A	Creates additional tax revenues for the Village with limited capital costs compared to option 3.	Requires construction of sewer line and pump station.	- Helps to improve image of Village's "front yard." - Restaurant and commercial space add vitality to station area.	Surface parking lot remains.
3	Mixed Use Development	Adds small-scale commercial and office space in accordance with goal 10.	The creation of a large-scale residential development with a new commercial center and parking decks raises potential conflicts with goals 4, 6, 8 and 15 relating to preserving the Village's small-scale historic character, improving the visual quality of the Village and train station and enhancing the function of the Upper Village.	May break even or perhaps generate net annual income to the Village.	- Requires significant capital costs for construction of 1,300-space garage, construction of new sewer and water main and relocation of DPW municipal garage. - Creates impacts to schools and municipal services. - Substantially increases Village's annual debt payments.	Eliminates station area surface parking lot.	- 1,300 space parking deck and multi-story apartment buildings in Village's front yard may affect overall small-scale character of Village.

4.4 Conclusions

The three plans described above result in very different options for the Croton-Hudson Station area. A controlling factor in each of the strategies revolves around the need to maintain the current level of commuter parking at the site. Any significant new development must incorporate some form of structured parking in order to create space for new site improvements or building construction. As noted in the financial analysis prepared for Option 3, the high cost of providing decked parking (estimated at about \$20,000 per space) requires the construction of a significant amount of new development in order to offset this premium.

Option 2, which provides major landscape improvements to upgrade the quality and appearance of the site while adding some modest new development, provides the best response in addressing both the need of the area and the current goals of the Village that were expressed in the 2003 Comprehensive Plan. In summary, Option 2 includes:

- A proposal to regrade a portion of the parking area that now suffers regular flooding. In the past 2-3 years this problem has increased in severity and will need to be addressed by the Village in the short-term future.
- Improvements to the appearance of the parking area by introducing shade trees and landscape treatment in order to break up the expanse of paved areas.
- Development of a cluster of commercial buildings to be located at the main station building entry point. Proposed uses include a restaurant (located to overlook like bay on the east side of the study area) and small-scale retail and concession uses. A landscaped plaza will act as a focal point for this proposed compact development area.
- The one-level parking deck takes advantage of the existing topography, allowing for easy access to the upper level without the need to construct special ramps.

Note on Appendix

The following pages illustrate a number of current development proposals being considered for station areas within the local region. Unlike the situation at the Croton-Harmon Station, these examples involve development proposals for infill sites and underutilized land parcels without the need to relocate commuter parking space.

Village of Bronxville: The proposed development calls for approximately 60 residential units on a 3 acre parcel adjacent to the Metro-North Tracks. Buildings involve a max of 2-4 story development with parking below.

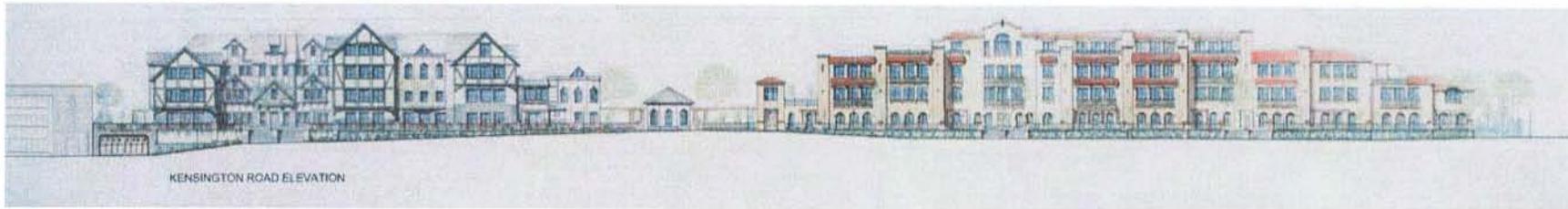
Town of Mamaroneck: Preliminary plans for an underutilized, mixed use redevelopment area alongside Metro-North tracks examined alternative studies for private residential development, town-sponsored recreation facilities or retail use. The current proposal [by Forest City Daly] proposes a 6-7 story residential development that incorporates retail used and structured parking.

Village of Scarsdale: Preliminary plans for four vacant or under-used sites near the state focus on 3-4 story residential development with ground level retail uses.

Village of Freeport: The 2.5 acre site is located alongside the LIRR tracks adjacent to the village commercial center. The proposal involves six floors of housing over retail uses. 2 levels of below grade parking are provided, to include spaces for displaced commuter parking.

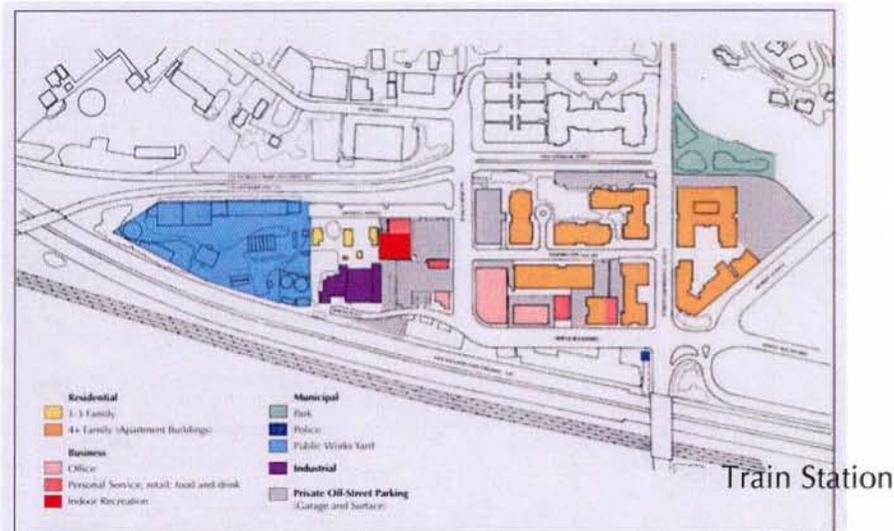
Appendix A: Other Station Area Development Proposals
Discussion of Solar Panels

Bronxville



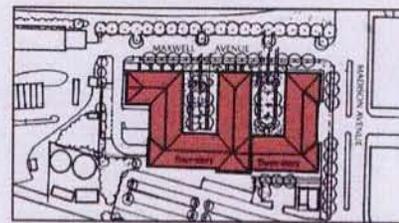
- 4 stories
 - Approx. 60 units
 - Below grade parking
 - 3 acre site
-

Town of Mamaroneck (1)



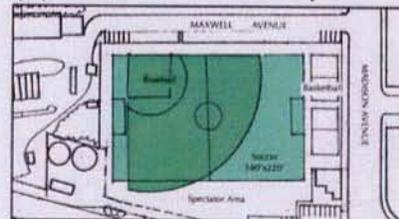
- Approximately 3 acre site

3 Concepts :



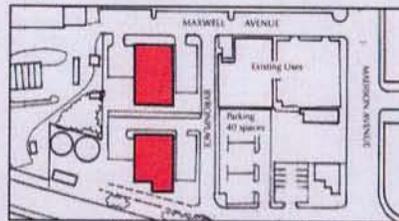
(a) Residential development

- 124 units
- four stories
- ground floor commercial



(b) Recreation

- baseball
- soccer
- basketball



(c) Retail/Commercial

- 2 commercial
- parking

Town of Mamaroneck

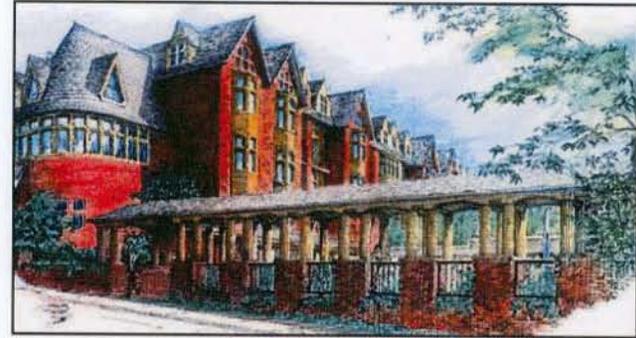
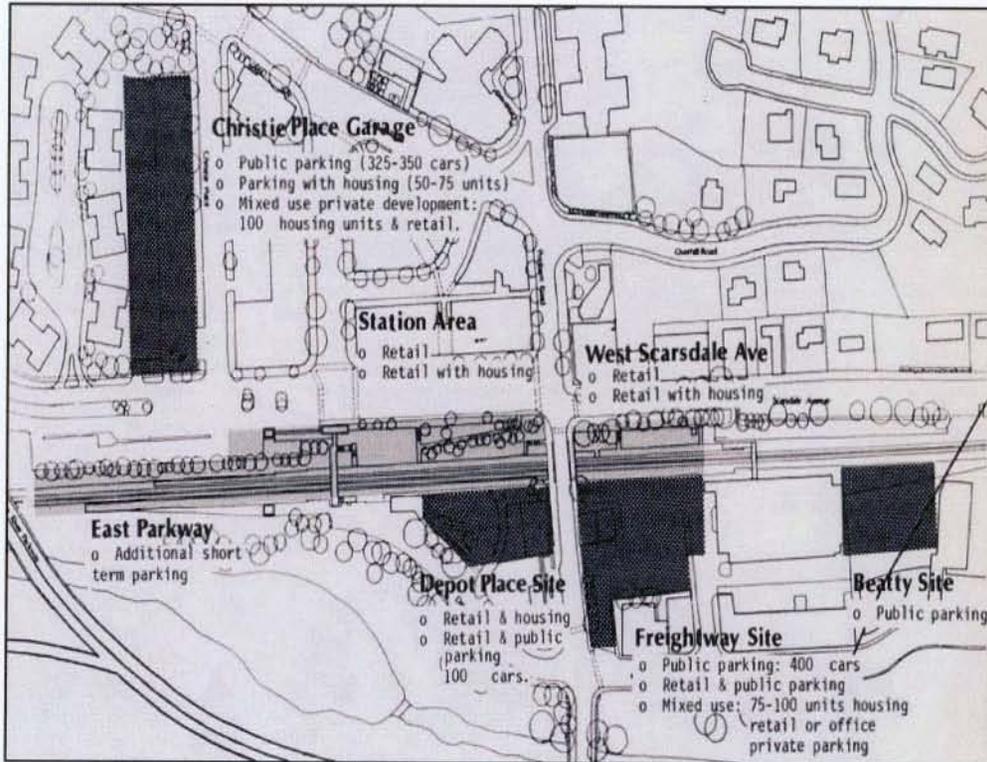


Robert A.M. Stern Architects

Current Proposal from Forest City Daly

- 166 units, 2-3 bedrooms
- Commercial tenants: NYSC, liquor store, dry cleaner
- 3-level garage, 288 spaces

Scarsdale



Perkins Eastman Architects

Freeport, Long Island



- Approximately 2.5 acre site
 - 235 one and two bedroom units
 - 23,000 sq. ft. of retail
 - new LIRR station plaza
 - underground parking
-

Solar Panel Discussion

During the course of the study, the Comprehensive Plan Committee discussed the potential for installing solar panels¹ at the parking lot. The inspiration for the idea came from the configuration of the parking lot itself: a wide open space with no obstructions. In addition, solar power provides a clean energy alternative with potential cost savings to the Village. A number of possibilities were discussed including a canopy of panels above the existing surface lot (illustrated here by an example from Sacramento, California) and the incorporation of rooftop solar panels in any potential new development in the station area.



Based on preliminary discussions with industry experts, in terms of power, solar panels generate between 7 and 11 watts per square foot. Therefore an acre of panels would generate between 300,000 and 500,000 watts (43,560 square feet x 7 watts = approximately 480,000 watts). An individual house requires approximately 10,000 watts. Therefore 1 acre of panels could provide power for 30 to 50 homes. The entire 16 acre site therefore represents the possibility of generating over 7 million watts (or 7 megawatts) or enough power for 700 homes. In theory, the additional power could also be used for municipal purposes such as street lighting and power for municipal buildings.

Costs and Potential Funding

The Committee further explored the possibility of solar panels and arranged an informational meeting with Lee Streisfeld-Leitner, an expert from the solar panel industry. A summary of the main points is provided below:

- **Incentives:** New York State provides two financial incentives: 1) 40%-70% subsidies for installation costs for up to 50kW systems (about \$200,000 and 2) Net Metering, whereby excess energy generated can be sold back to the State either on a month by month basis at retail, or at the end of the year at wholesale prices.
- **Possible Funding Sources:** The New York Power Authority (NYPA) supports municipal initiatives and makes loans at competitive rates (1.4% to 1.5% interest).
- **Savings** can be made in part because fossil fuel plants are required to purchase renewable energy (Croton could therefore sell electricity as a producer) and it is cheaper to generate your own electricity (after 7/8 years it is possible to break even after the initial capital costs for installing a solar system).
- **Requirements:** A 50 kW system requires approximately 5,000 square feet. The ideal position

¹ "Photovoltaic cells" is the industry terminology.

is facing south at a 15 to 30 degree angle (the northeast has approximately 200 sunny days per annum compared to 250 sunny days per annum in California).

- **Costs:** The main costs are installation, the panels and invertors for transforming the energy – approximately \$20,000 for materials and labor (for a 50 kW system). Solar systems last approximately 22/23 years.
- The New York Power Authority (NYPA) powers the Village through Con Ed's lines.
- For a large-scale system, the question is whether the Village would want to go into power production.
- Another issue is to establish utility rates for potential users. The Village's annual electricity costs are estimated at \$330,000.
- It was agreed a next step should be a letter from the Village to NYPA to request the Village's utility rates.

Conclusion

In the long-term, the Village may wish to pursue the potential for a large-scale system of solar panels in the station area that could provide power for the Village's municipal needs and might even be sold as surplus. However, at the current time, despite the potential benefits of a large-scale, village-owned power generation, funding mechanisms appear to be geared towards small, 50 kW systems which typically cover 5,000 square feet which is suitable as a rooftop installation.

This report recommends 15,000 square feet of commercial space (including a restaurant and retail space), landscaping and a new 300-space garage. Both the garage and commercial space might be suitable for trial rooftop solar panel systems that could later be expanded to cover a larger area of the station parking lot.

Appendix B:
Station Parking Diagram
Potential Sewer and Water Extensions

VILLAGE OF CROTON ON HUDSON (914 271-4781)
OFFICE HOURS MON-FRI 8:30AM - 4PM

CROTON HARMON RAILROAD STATION PARKING LOT MAP
AS A PERMIT HOLDER THIS MAP WILL HELP YOU KNOW
WHERE IN THE LOT YOU CAN PARK
NOTE: HEAD IN PARKING ONLY

