
Parking Yield Analysis Report

Parking Lot #5



LIRR Train Station Farmingdale, New York

Prepared for **The Village of Farmingdale**

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Table of Contents

Table of Contents	i
Introduction	1
Project Description	1
Study Methodology	1
Existing Conditions	2
Existing Parking Demand	2
Future Parking Supply & Demand	4
Proposed 85-room Hotel.....	4
Potential Eastern Parkway Townhouses	7
Parking Garage Alternatives	10
Simple 1-Level-Up, 1-Level-Down Alternatives	10
3-Level Garage Alternatives.....	16
3-Level Garage and East Side Townhouses	23
Alternatives Summary	25
Conclusions	27



1

Introduction

VHB has reviewed contemplated improvements to Village Parking Lot #5, as detailed in the Draft Village of Farmingdale Downtown Master Plan, including the potential construction of a hotel and townhouses, together with a parking garage and open green space. Based on our investigations, the findings of which are detailed herein, it is our opinion that the construction of a 300-space parking garage is feasible and will be necessary to support the contemplated hotel. Since the townhouses are expected to generate only a nominal parking demand during the peak hour, the 300-space garage will also be able to accommodate townhouse parking. Options for the design of the garage are described in detail herein.

Project Description

Bounded by Secatogue Avenue, Eastern Parkway, Depot Avenue and the extension of Atlantic Avenue in front of Farmingdale's LIRR train station, and including the privately owned Bartone property, the Village of Farmingdale is contemplating the potential construction of an 85-room hotel (including approximately 8,000 square feet of ground-floor retail) and approximately 13 townhouses on or adjacent to Village Lot # 5. If the hotel is constructed over the west end of Lot # 5, it will be possible to create a green open space area along Secatogue Avenue between Front Street and Eastern Parkway. However, the loss of parking would likely result in the need to replace the existing parking lot with a parking structure to meet projected parking needs. A further consideration is buffering any new parking structure from nearby residences, particularly on Eastern Parkway, by constructing up to 13 townhouses on the south side of Lot #5 between the garage and Eastern Parkway. It may also be possible to similarly buffer Depot Avenue residences by constructing up to 4 townhouses on the east side of Lot #5. This study identifies the projected parking needs of the contemplated development and evaluates the feasibility constructing a suitably-sized garage to meet the project's needs.

Study Methodology

The following describes the methodology used in this traffic study:

- A parking inventory, noting the number and permitted use, of parking spaces was conducted at Lot #5 and on the adjoining portions of Eastern Parkway, Depot Avenue, Sperry Place and the extension of Atlantic Avenue/ S. Front Street in front of the LIRR train station, as well as the privately-owned Bartone;
- Parking surveys were conducted of these spaces between 7:45 a.m. and 6:15 p.m. on a typical weekday;
- A building footprint for the proposed hotel was placed on the west end of Lot # 5 to determine how many parking spaces would be eliminated.
- A building footprint for the contemplated townhouses was placed on the south side of Lot # 5 to determine how many parking spaces would be eliminated;
- Future parking demand associated with a new hotel and townhouses was calculated using the proposed modifications to the Village Code included in the Draft Downtown Master Plan;
- The additional parking demand associated with these uses was added to the surveyed existing parking demand to determine the future parking needs;
- Various parking structure layouts, including access and circulation requirements, were evaluated to determine their feasibility and the number of parking spaces which could be provided;
- The number of spaces which could be provided in various configurations of a new parking garage was compared to the projected future parking demand to confirm that adequate parking would be provided; and,
- An additional parking garage layout was evaluated wherein townhouses were also constructed at the east end of Lot #5 to buffer the residences on Depot Avenue from the new garage.



2

Existing Conditions

Located on the south side of the Farmingdale LIRR station, Parking Lot # 5 primarily provides permit and 12-hour metered parking spaces for LIRR commuters. As shown in Figure 1, Lot #5 currently provides 202 spaces (including 23 spaces on Sperry Place) plus 10 spaces on Depot Avenue, 27 spaces on Atlantic Avenue and 11 on Eastern Parkway, for a total of 250 spaces. Six (6) of these spaces, all on the extension of Atlantic Avenue in front of the LIRR train station, are reserved for the disabled. Additional, private parking is provided on the Bartone property between Lot #5 and Secatogue Avenue, which can accommodate approximately 35 vehicles.

Existing Parking Demand

A parking survey of these spaces, conducted between 7:45 a.m. and 6:15 p.m. on Tuesday, December 7, 2010, revealed a maximum parking demand of 251 vehicles at 12:30 p.m. This includes 15 vehicles parked in the adjacent Bartone lot. The results of the parking survey are presented in Table 1. Parking in the Bartone lot peaks at approximately 40 percent of capacity, while parking on Lot # 5 peaks at approximately 95 percent of capacity.

Table 1 – Existing Parking Demand

Time	7:45	8:15	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	5:45	6:15
Parked Vehicles	217	236	244	245	242	249	251	250	248	243	237	234	238	218	209

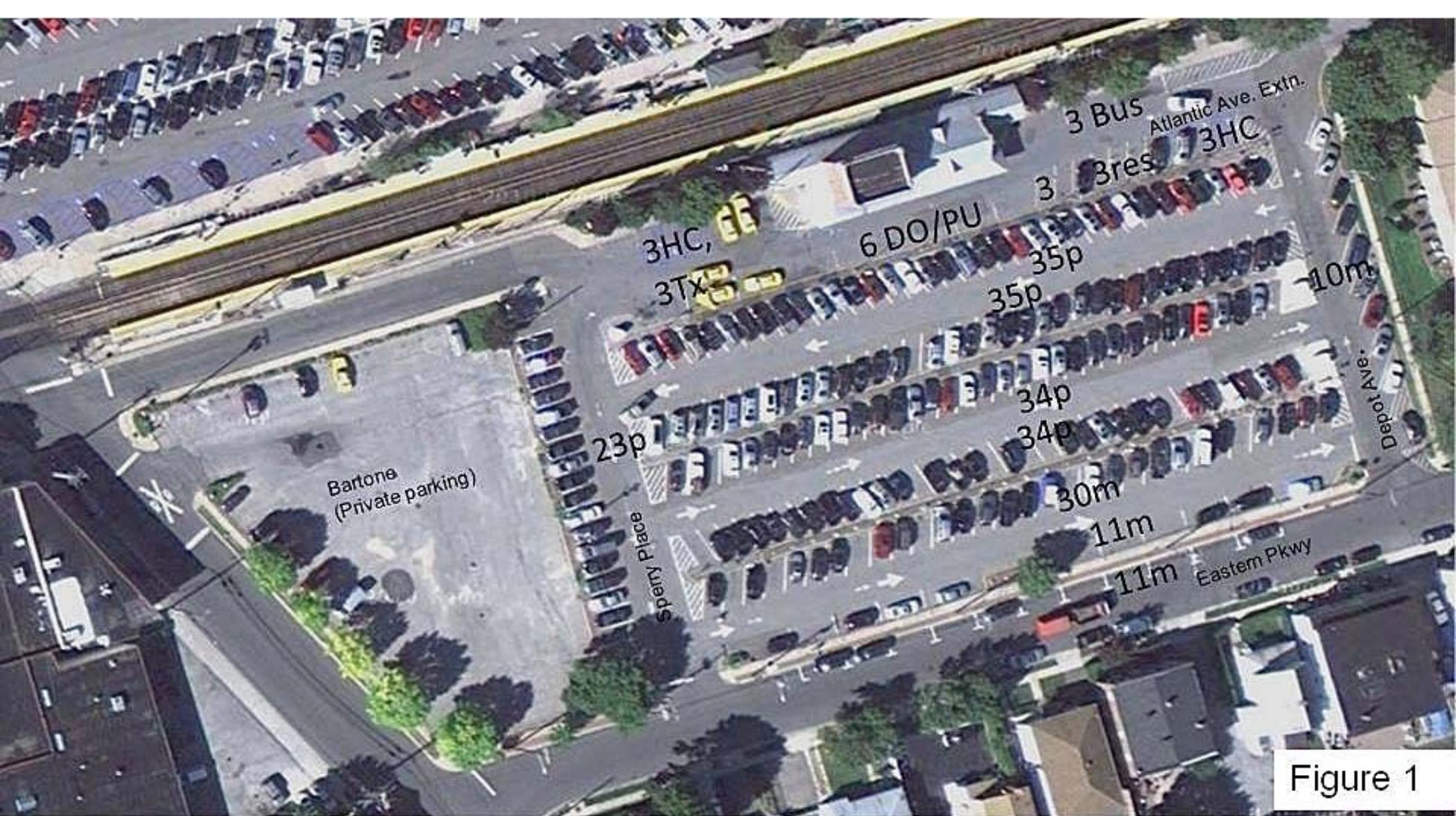


Figure 1

Existing: 202 Spaces (including Sperry Place) plus 10 spaces on Depot Avenue, 27 Spaces on Atlantic Avenue and 11 on Eastern Parkway, 250 Total.

LEGEND

- HC – Handicapped
- Tx – Taxi
- DO/PU – Drop-off/Pick-up
- Res – Reserved for LIRR employees
- Bus – reserved for shuttle buses



3

Future Parking Supply & Demand

Future parking demand for additional development on Lot #5 was determined using the parking requirements proposed for the Downtown Mixed-Use (D-MU) Zoning District contemplated in the Draft Downtown Master Plan. These values were then modified to reflect that parking at various uses peaks at different times of the day by using information contained in Urban Land Institute's (ULI) publication *Shared Parking*.

Proposed 85-room Hotel

The proposed construction of a 60'x180', 85-room hotel on the west end of Parking Lot #5 would eliminate between 62 and 69 spaces (depending on whether or not a connection is maintained between the trains station plaza and Eastern Parkway – see Figures 2 and 3). This would leave between 143 and 150 spaces in Lot # 5, with an additional 38 spaces available on Eastern parkway, Depot Avenue and the extension of Atlantic Avenue. The proposal to create a green open space on the Bartone property would completely eliminate surface parking at that location.

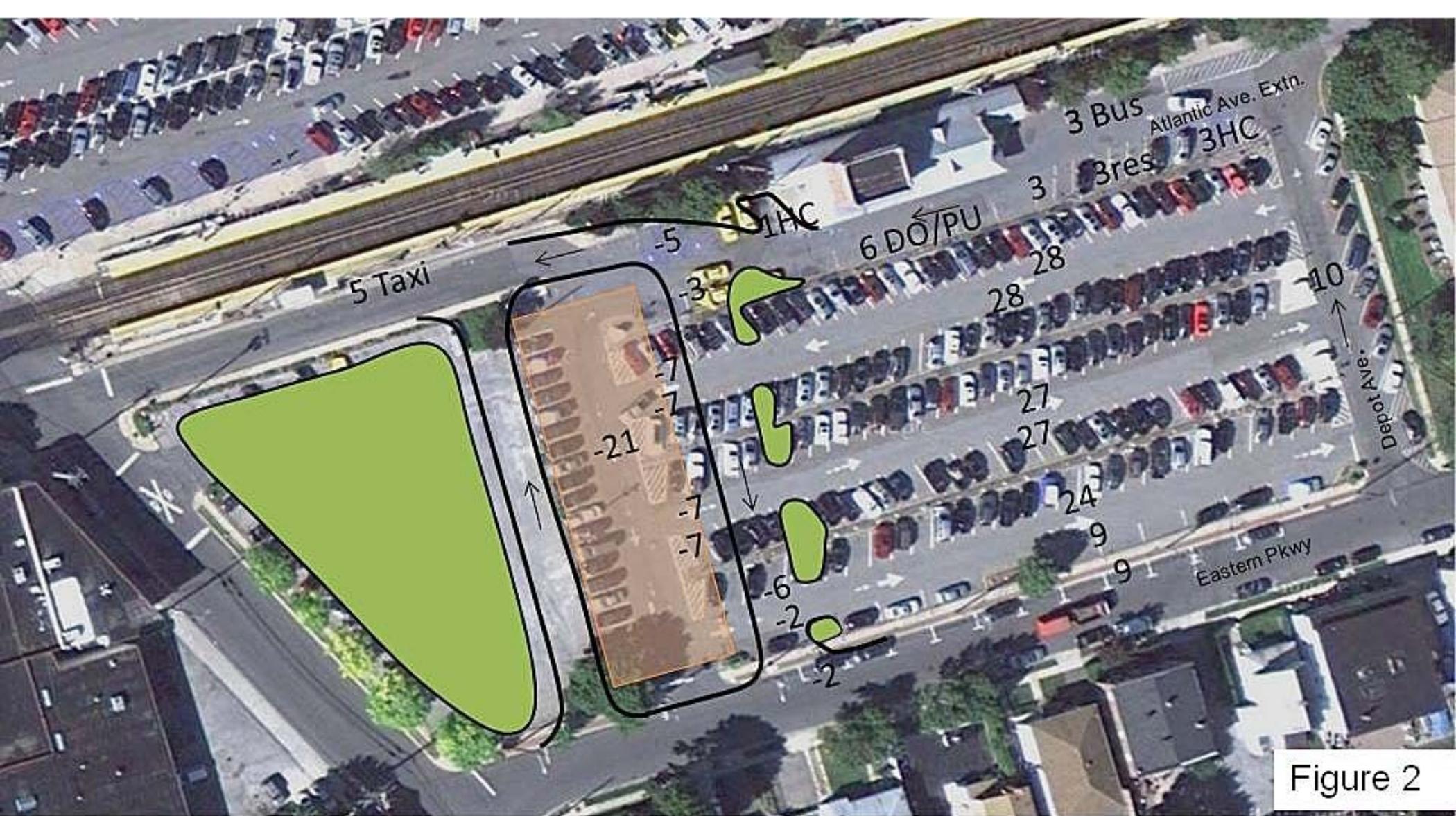


Figure 2

With Hotel (with connection from station plaza to Eastern Parkway): 143 Spaces plus 10 spaces on Depot Avenue, 19 Spaces on Atlantic Avenue and 9 on Eastern Parkway, 181 Total (loss of 69 spaces).

- LEGEND**
- HC – Handicapped
 - Tx – Taxi
 - DO/PU – Drop-off/Pick-up
 - Res – Reserved for LIRR employees
 - Bus – reserved for shuttle buses
 - Hotel
 - Green Space

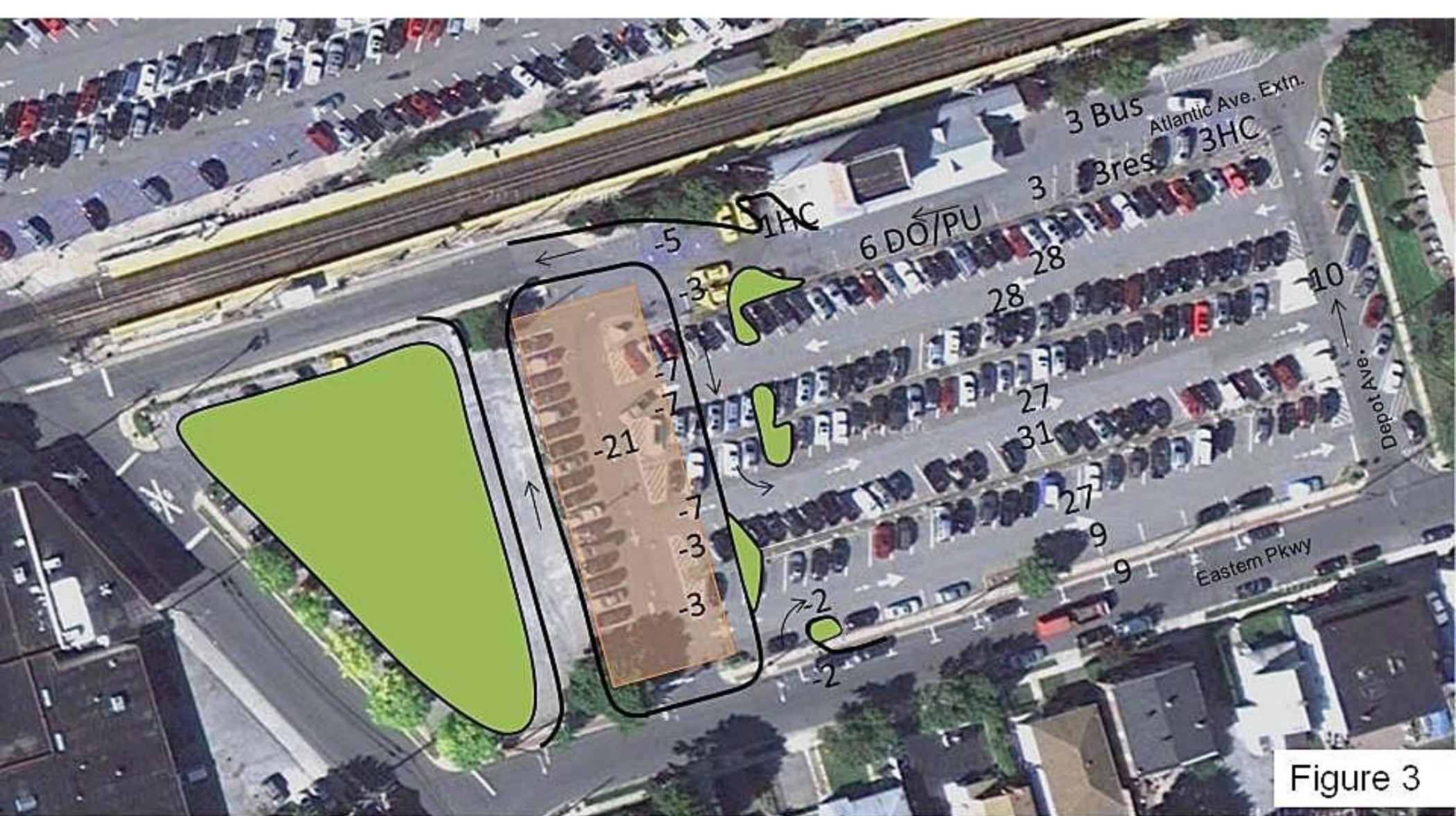


Figure 3

With Hotel (with no connection from station plaza to Eastern Parkway): 150 Spaces (including Sperry Place) plus 10 spaces on Depot Avenue, 19 Spaces on Atlantic Avenue and 9 on Eastern Parkway, 188 Total (loss of 62 spaces).

- LEGEND**
- HC – Handicapped
 - Tx – Taxi
 - DO/PU – Drop-off/Pick-up
 - Res – Reserved for LIRR employees
 - Bus – reserved for shuttle buses
 - Hotel
 - Green Space

Assuming 4 stories with 85 rooms on the upper floors and 25 percent of the ground floor dedicated to hotel reception and breakfast/ back-of-house facilities (per the Draft Downtown Master Plan), the remaining 8,000 square feet of the 10,800 square foot footprint of the ground floor would be dedicated to retail use. The Village Code requires 85 parking spaces for the hotel (1 per sleeping room). The proposed code currently provides no credit for the proximity of the LIRR station or the presence of the downtown. Based on our experience in this field, a credit of up to 20% could be expected, meaning that 68 spaces would be required for the hotel. Under the proposed code, the 8,000 square feet of retail would require 16 parking spaces. However, retail parking peaks in the middle of the day and hotel parking peaks overnight. Using the concept of “Shared Parking” and basing the adjustment for shared parking in the Urban Land Institute’s (ULI) publication of the same name, it is calculated that the hotel development would need to provide 37 spaces when parking peaks at Parking Lot # 5 (12:30 p.m.). Adding the 53 spaces needed at this time for the hotel and ground-floor retail to the existing parking demand of 251, it is clear that there will not be sufficient parking in Lot #5 if the hotel were to be constructed on the west end of the lot without the provision of approximately 120 additional spaces to the 188 total which would remain if the hotel was constructed (150 in Lot #5 and 38 combined on Eastern Parkway, Depot Avenue and the extension of Atlantic Avenue in front of the station).

Potential Eastern Parkway Townhouses

Based on a review of the layout of Lot #5 and per the Draft Downtown Master Plan, it is expected that up to 13 townhouses (measuring 22’ x 45’) could be constructed on the south side of Lot #5, adjacent to the proposed hotel. As shown in Figure 4, the construction of these townhouses, along with the contemplated hotel, would result in the elimination of 96 spaces in Lot #5, leaving a total of 114 spaces remaining in the parking lot.



Figure 4

With Hotel and Townhouses: 114 Spaces (including Sperry Place) plus 10 spaces on Depot Avenue, 19 Spaces on Atlantic Avenue and 11 on Eastern Parkway, 154 Total (loss of 96 spaces).

LEGEND

- HC – Handicapped
- Tx – Taxi
- DO/PU – Drop-off/Pick-up
- Res – Reserved for LIRR employees
- Bus – reserved for shuttle buses
- Hotel
- Townhouses



The proposed D-MU District will require one parking space for each studio or 1-bedroom unit with an additional ½ space for each additional bedroom. Assuming that all of the units have two bedrooms, a total of 20 parking spaces would be required for the 13 townhouses. However, residential parking peaks overnight and drops off considerably during the day. Using the concept of “Shared Parking” as detailed in the ULI’s publication of the same name, it is calculated that the 13 townhouses would need to provide 13 spaces when parking peaks at Parking Lot # 5. Adding this value to the existing parking and the projected hotel parking demand, it was determined that it will be necessary to add approximately 165 additional spaces to the 155 total which would remain if the townhouses were constructed (114 in Lot #5 and 40 combined on Eastern Parkway, Depot Avenue and the extension of Atlantic Avenue in front of the station).

Depending of the future development scenario (hotel and townhouses or just hotel), between 120 and 165 additional parking spaces will need to be provided to accommodate both existing parking demand at the train station and parking for new development.

4

Parking Garage Alternatives

Based on the contemplated future development and projected parking demand, which indicated that a parking supply of approximately 335 spaces would be required, various parking garage configurations were evaluated for Lot #5. Garage configurations included two and three level alternatives (each with one level-below grade) and considered how the garage would interface with the trains station as well as entrances, exits and circulation. Additional options included extending the below grade parking underneath the proposed hotel and contemplated townhouses, as well as adding an additional half or full level of parking above grade and an additional half level of parking below (half-levels allow for improved circulation by connecting adjacent parking aisles and eliminating dead ends).

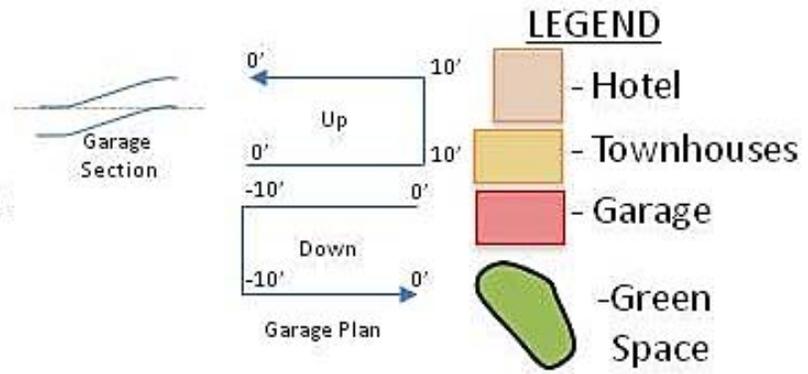
Simple 1-Level-Up, 1-Level-Down Alternatives

Under this alternative, which would retain the existing Depot Avenue and Atlantic Avenue entrances as well as the lot's current one-way circulation patterns, one level of parking would be provided below grade and would be accessed from Depot Avenue, while a second level of parking would be provided above grade and would be accessed from the lot's existing entrance on the extension of Atlantic Avenue. Therefore, this alternative would only include one level (story) of parking above grade, rising to a height of approximately 10 feet. This configuration, which is shown in Figure 5, would yield a total of approximately 268 spaces (228 spaces in the garage and a further 40 spaces on Atlantic Avenue, Depot Avenue and Eastern Parkway). A variant on this alternative, where the garage would be 9 feet wider (and 9 feet closer to the train station), would provide 8 additional spaces (276 spaces total). Both of these alternatives would fall well short of the 335 spaces necessary to support existing demand and contemplated development.



Figure 5

2-Level Garage: 228 Spaces (L-1, 115; L1, 113) plus 19 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 268 Total. (Ground level values in parentheses, values on lower level are not)



Another, more significant variant on this alternative envisions extending the lower level of the garage below the parcel to the west of the garage, as far as Secatogue Avenue. Such an extension would keep the garage at one-level above grade (10 feet) in height. As shown in Figure 6, a total of approximately 300 spaces would be provided in the garage under this alternative (312 if the wider, 121-foot garage footprint is used, or 284-296, if the central basement area under the hotel is also retained, as shown on the figure). The same 40 spaces would be provided on the three streets surrounding the garage. Therefore, between 324 and 352 spaces could be provided under this alternative, which would be sufficient to accommodate the projected parking demand.

Extending the lower level of the garage under the contemplated townhouses could increase the capacity of the facility to between 331 and 343 spaces, as shown on Figures 7 and 8 (or between 343 and 355 spaces if the wider garage configuration is employed) and between 315 and 335 spaces if the center basement is retained for the hotel. Again, the same 40 spaces would be provided on the three streets surrounding the garage. Therefore, between 371 and 395 spaces could be provided under this alternative, again at only one level above grade, which would leave some room for additional parking at the train station (between 35 and 60 additional parked vehicles).



Figure 6

2-Level Garage extending under hotel: 300 Spaces (L-1, 187; L1, 113) plus 19 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 340 Total (324 if basement for hotel is provided – see numbers in parentheses).

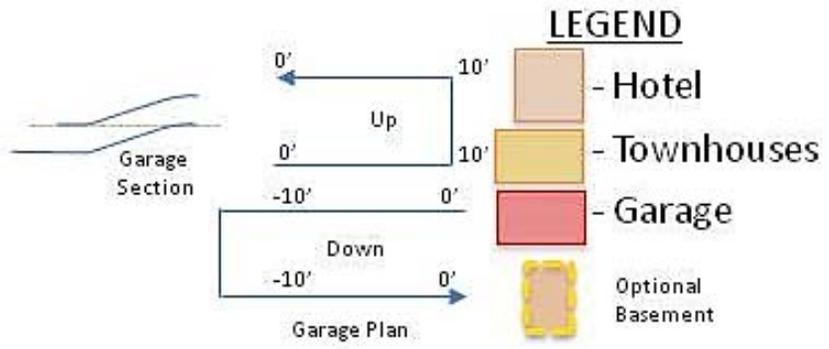
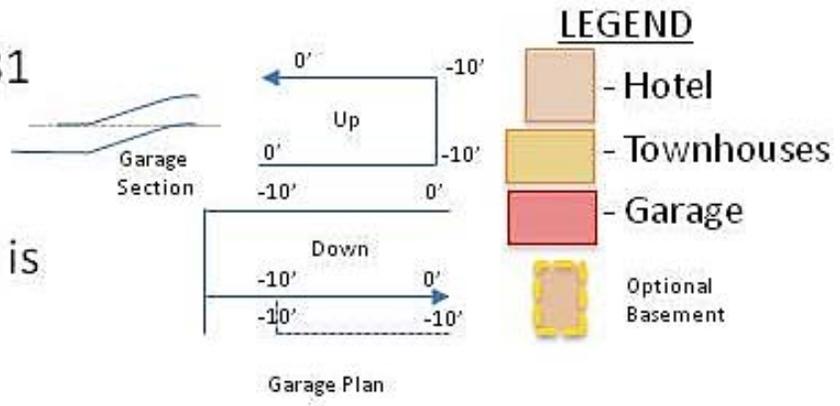




Figure 8

2-Level Garage extending under hotel & townhouses: 331 Spaces (L-1, 218; L1, 113) plus 19 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 371 Total (355 if additional basement for hotel is provided – see numbers in parentheses).



3-Level Garage Alternatives

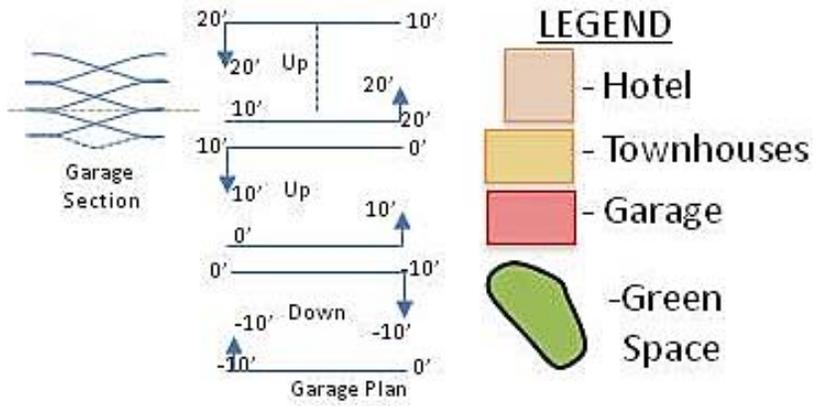
Under this alternative, the garage would need to be 121 feet wide to accommodate two-way circulation on all aisles, which is necessary to provide access higher than one level above grade. Garage access would still be from the Depot Avenue and Atlantic Avenue entrances, however, each location would now provide access to an upper and a lower level of parking. Also, unless a cross connection is provided mid-level, it will not be possible to go up or down and return without turning around. For the upper levels, it was assumed that one mid-level crossover would be provided a half-level before the top (this could be modified to the very top by providing an additional half level above grade). For the lower level, the crossover could be provided half-way down the ramps or by providing an additional half level below grade. Whether adding an additional half level above or below grade, the parking yield will be increased by approximately 55 spaces.

As shown in Figures 9 and 10, the basic 3-Level garage concept (which would extend approximately 20 feet above grade) will yield 345 Spaces (or 400 spaces with an additional ½ level above or below grade - 455 spaces with both). In addition, 31 spaces would be provided on the three streets surrounding the garage for a total of between 431 and 486 spaces, greater than 100 more spaces than required to meet projected demand. If a 3rd level of parking above grade were added, the number of spaces in the garage would be increased by 115 for a total of up to 546 spaces. In such an instance the garage would reach approximately 30 feet in height above grade.



Figure 9

3-Level Garage (ground floor): 345 Spaces plus 10 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 376 Total (431 with extra 1/2 level of basement). Add 115 spaces for 3rd level above grade for a total of 491 - 546.



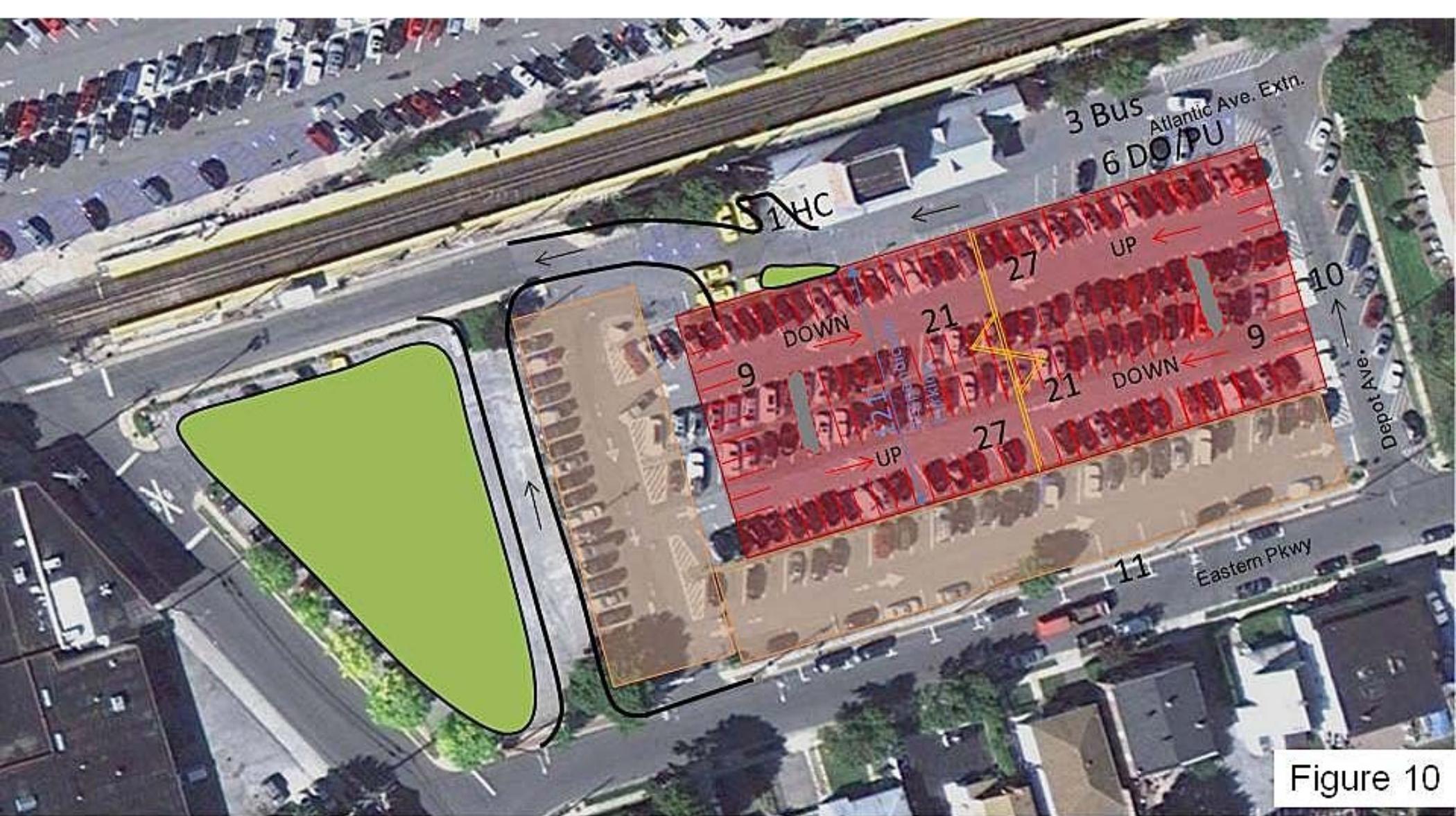
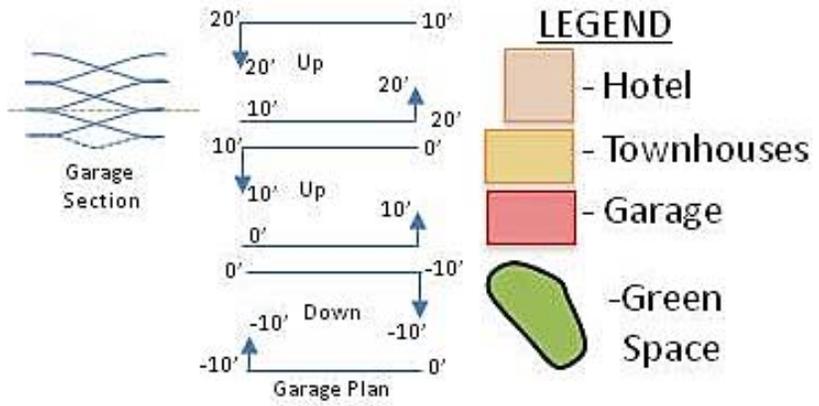


Figure 10

3-Level Garage (other floors): 345 Spaces plus 10 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 376 Total (431 with extra 1/2 level of basement). Add 115 spaces for 3rd level above grade for a total of 491 - 546.



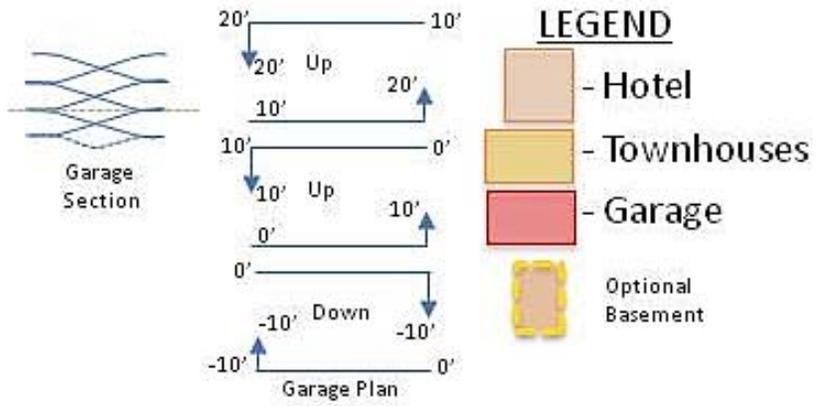
If the below-grade parking is extended beneath the property to the west of the lot, the number of spaces in the garage can be increased to between 386 and 400, depending on whether or not the central portion of the garage is retained for the hotel basement, as shown in Figure 11. Again, an additional 55 spaces can be provided if an additional ½ level is provided above or below grade and an additional 115 spaces if a complete 3rd level above grade is added. Under these design alternatives, a total of up to 601 spaces could be provided, in which case the garage would again reach approximately 30 feet in height.

If the below-grade parking is further extended beneath the proposed townhouses, the number of spaces in the garage can be increased to between 415 and 435, depending on how much of the basement is retained for hotel use, as shown in Figures 12 and 13. Again, an additional 55 spaces can be provided if an additional ½ level is provided above or below grade and an additional 115 spaces if a complete 3rd level above grade is added. Under these design alternatives, a total of up to 636 spaces could be provided and the garage would be approximately 30 feet above grade.



Figure 11

3-Level Garage (basement) extending under hotel: 400 Spaces (386 if hotel basement is provided) plus 10 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 431 Total (486 with extra 1/2 level of basement). Add 115 spaces for 3rd level above grade for a total of 532 - 601.





3-Level Garage (basement) extending under hotel: 435 Spaces plus 10 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 466 Total (521 with extra 1/2 level of basement). Add 115 spaces for 3rd level above grade for a total of 581 - 636.

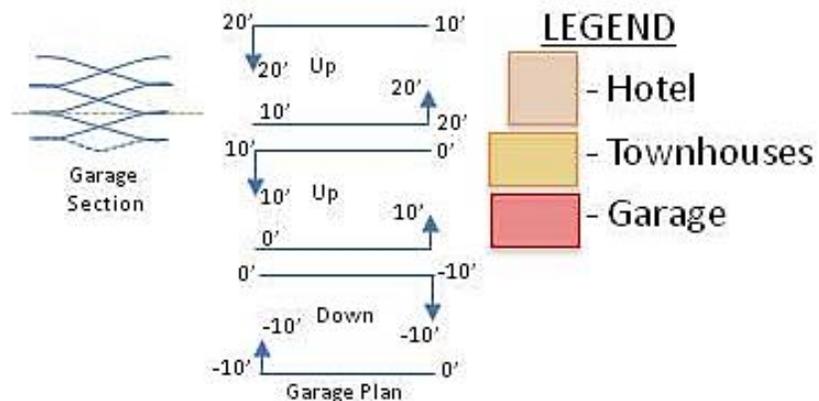
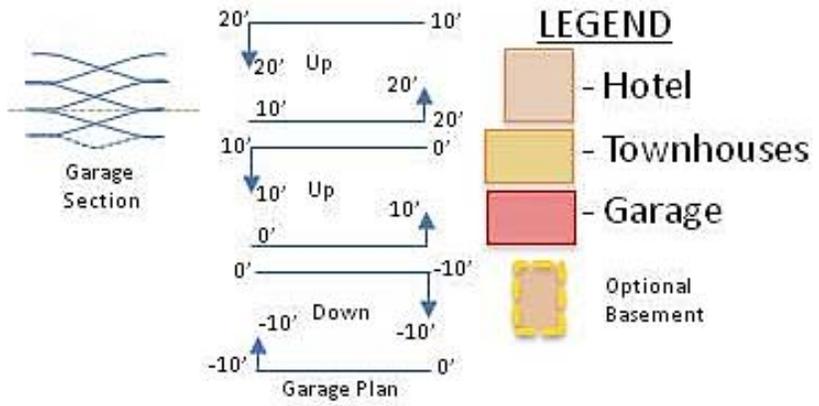




Figure 13

3-Level Garage (basement) extending under hotel: 415 Spaces plus 10 Spaces on Atlantic Avenue, 10 spaces on Depot Avenue and 11 on Eastern Parkway, 446 Total (501 with extra 1/2 level of basement). Add 115 spaces for 3rd level above grade for a total of 561 - 616.



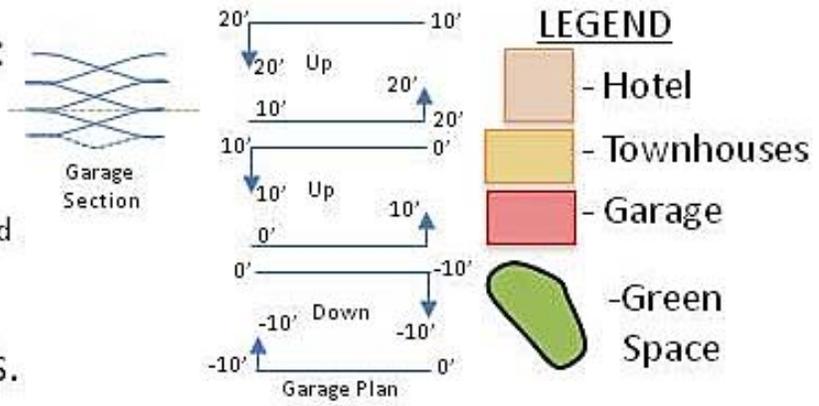
3-Level Garage and East Side Townhouses

Although not a preferred alternative (for reasons of circulation), an evaluation was performed providing townhouses on both the south and the east sides of the garage. Under this alternative, which is shown on Figure 14, access would still be from the Depot Avenue and Atlantic Avenue entrances, with an estimated 4 additional town houses provided above the Depot Avenue entrances. With a 3-level, 20-foot high garage, 280 spaces would be provided. This could be increased to 370 with a 3rd level of parking above grade (approximately 30 feet high) and 425 by extending the below-grade parking under the hotel (460 if this level is also extended under the town houses on the south side of Lot #5). Including the additional 31 parking spaced on Eastern parkway, Depot Avenue and the extension of Atlantic Avenue, and an additional ½ level of below grade parking, a total of up to 531 spaces could be provided under this scenario. However, it is noted that under this alternative, no provision could be provided enabling motorists to return to the exit without turning around after exiting (since the garage would be too short to provide crossovers). Thus, circulation will not exist between the alternate sides of the garage.



Figure 14

3-Level Garage (other floors) with Townhouses at east end:
 280 Spaces plus 10 Spaces on Atlantic Avenue, 10 spaces
 on Depot Avenue and 11 on Eastern Parkway, 311 Total
 (351 with extra 1/2 level of basement). Add 90 spaces for 3rd
 level above grade for a potential total of 401 – 441 and up
 to 531 spaces if the garage is extended under the buildings.



Alternatives Summary

Under all of these scenarios, which are summarized in Table 2, planning and engineering design would be required to provide the proper number of suitable spaces for the disabled, as well as to determine how best to accommodate taxi and drop-off/ pick-up activity. The 112-foot wide, 2-level garage options can be constructed without impinging on the existing train station plaza area (except at the garage entrance at the west end). The 121-foot wide garage options will extend approximately 2.5 feet into the plaza if the full 45-foot width set aside for the townhouses is required. It is also noted that some nominal separation may be required between the townhouses and the garage.

As can be seen from Table 2, there is a wide array of choices which yields a varying number of parking spaces. The garage totals which are shaded in dark grey indicate alternatives which provide just the right amount of parking for the proposed development program. Those which are shaded in lighter grey provide additional parking which may be used to support other activities in the vicinity of the LIRR station. Depending on construction costs, the desire to preserve the maximum separation between a new garage and the historic station, height issues, as well as the total number of spaces desired to be provided (whether the minimum required or some larger value to accommodate future potential growth in the area), the Village may choose from a number of options to meet its projected needs.

Table 2 – Existing and Projected Parking Supply with Various Garage Alternatives

Alternatives		Existing	Existing with Hotel ¹	Existing with Hotel & 13 Townhouses	2-Level Garage with Hotel & Townhouses ²	3-Level Garage with Hotel & 13 Townhouses	3-Level Garage with Hotel & 17 Townhouses
Basic Layout	-	202	143-150	114	228-236	345	280
With extra ½ level	Above	-	-	-	-	400	320
	Below	-	-	-	-	400	320
	Both	-	-	-	-	455	360
With 3 rd level above grade	Basic	-	-	-	-	460	370
	And extra ½ level below	-	-	-	-	515	410
With Parking Below Hotel	Basic	-	-	-	300-312	400	335
	W/ Central Portion Retained for Hotel Basement	-	-	-	284-294	386	321
With extra ½ level	Above	-	-	-	-	455	375
	Below	-	-	-	-	455	375
	Both	-	-	-	-	510	415
With 3 rd level above grade	Basic	-	-	-	-	515	425
	And extra ½ level below	-	-	-	-	570	465
With parking below Hotel and Townhouses	Basic	-	-	-	343-355	435	370
	W/ Central Portion Retained for Hotel Basement	-	-	-	315-343	415	350
With extra ½ level	Above	-	-	-	-	490	410
	Below	-	-	-	-	490	410
	Both	-	-	-	-	545	450
With 3 rd level above grade	Basic	-	-	-	-	550	460
	And extra ½ level below	-	-	-	-	605	500
On-street Spaces ³		48	38	40	40	31	31
Total		250	181-188	154	268-395	376-636	311-531
See		Fig. 1	Fig. 2-3	Fig. 4	Fig. 5-8	Fig. 9 -13	Fig. 14

Notes: 1. 7 Extra spaces by closing connection from the extension of Atlantic Avenue to Eastern Parkway.

2. 8 to 12 Extra spaces by widening garage from 112 to 121 feet.

3. On Eastern Parkway, Depot Avenue and the extension of Atlantic Avenue.



5

Conclusions

A total of 250 spaces are currently provided in and around Lot #5 (285 including the adjacent Bartone Lot, which is contemplated to be eliminated) at the present time and the maximum observed parking demand was 251 (which includes 15 vehicles parked in the Bartone Lot). The proposal to construct an 85-room hotel with approximately 8,000 square feet of ground floor retail at the west end of the parking lot and green open space on the Bartone property would increase the peak parking demand to 304 while reducing the available supply to 188 spaces. Adding townhouses on the south side of the parking lot would reduce the available parking supply further to 154 spaces and would increase the peak demand to 317. Therefore, additional parking will need to be provided to make enable the development to include the green open space feasible. The projected maximum parking demand (with a 5% allowance for daily variation) could be accommodated by:

1. Constructing a 2-level garage which extended under the development contemplated on Lot#5;
2. Constructing a 3-level garage (2 up and 1- down) on the remainder of Lot # 5;
3. Constructing a 3-1/ 2 level garage (2-1/ 2 up and 1 down) on the remainder of Lot # 5 after development of three of the four sides of Lot #5.

Constructing a garage to provide the needed amount of additional parking is feasible, however, whichever alternative is selected, additional planning and engineering design will be required to provide the proper number of suitable spaces for the disabled, as well as to determine how best to accommodate taxi and drop-off/ pick-up activity.