

# West 108<sup>th</sup> Street Development Parking Study

March 2016



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# 1 BACKGROUND

Two development sites on West 108th Street between Amsterdam Avenue and Columbus Avenue in Manhattan are currently under consideration for the development of affordable housing. Development Site 1 includes two lots owned by the New York City Department of Housing Preservation and Development (HPD), and one lot owned by West Side Federation for Senior and Supportive Housing (WSFSSH) and operated as the Valley Lodge shelter, shown in Figure 1. Development Site 2 is owned by HPD. Currently, the three HPD lots are occupied by multistory parking structures operated on month-to-month leases.

The new development will include demolition of the three garages. Nelson\Nygaard was retained by West Side Federation for Senior and Supportive Housing under the auspices of HPD to research existing parking conditions and potential future parking considerations. This report specifically addresses: existing use and capacity of West 108th Street garages, local parking availability, and the feasibility of providing on-site replacement parking in the new affordable housing developments.

**Figure 1 West 108<sup>th</sup> Street Development Study Area**



## 2 EXISTING USE AND CAPACITY

### Methodology

Nelson\Nygaard undertook an inventory and occupancy count of parking spaces in the garages shown in Figure 1 on February 2-4, 2016. The occupancy counts were conducted during a.m. and p.m. peak periods, as well as evening, as shown in Figure 2. Surveys were conducted on weekdays, not including Monday or Friday, in order to minimize the impact of weekend vehicle use on occupancy rates. Due to a blizzard on January 22-24, the surveys originally scheduled for January 26-28, 2016 were postponed to allow time for snow clearance and drivers to resume typical use of vehicles.

**Figure 2 Occupancy Survey Schedule**

| Date                        | A.M. Peak         | P.M. Peak         | Evening           |
|-----------------------------|-------------------|-------------------|-------------------|
| Tuesday , February 2, 2016  | 7:30 AM - 8:30 AM | 5:30 PM - 6:30 PM | 8:30 PM - 9:30 PM |
| Wednesday, February 3, 2016 | 7:30 AM - 8:30 AM | 5:30 PM - 6:30 PM | 8:30 PM - 9:30 PM |
| Thursday, February 4, 2016  | 7:30 AM - 8:30 AM | 5:30 PM - 6:30 PM | 8:30 PM - 9:30 PM |

### Study Area Parking Supply

Currently, 675 off-street spaces are officially listed in the garages, as shown in Figure 3 below. Since the garages are operated with valet parking, the total capacity of each facility is dependent on how efficiently vehicles are parked; more vehicles can be parked on each floor if distance between cars is minimized. Observations of existing occupancy and potential capacity indicate that vehicles parked inside can exceed the official capacity if aisles and elevator access are used.

**Figure 3 Garage Parking Supply**

| Garage Lot     | Garage Name                        | Address                        | Parking Spaces Listed | Floors |
|----------------|------------------------------------|--------------------------------|-----------------------|--------|
| Lot 5          | HRF Operating Corp.                | 151-159 W 108 <sup>th</sup> St | 250                   | 5      |
| Lot 13         | E. & B. Operating Corp.            | 143 W 108 <sup>th</sup> St     | 300                   | 6      |
| Lot 26         | Ca-Li Automatic Transmission Corp. | 103 W 108 <sup>th</sup> St     | 125                   | 3      |
| <b>Overall</b> |                                    |                                | <b>675</b>            |        |

### Study Area Parking Fees

Figure 4 presents a summary of parking fees for each of the West 108<sup>th</sup> Street garages. The garages on lot 5 and lot 13 are operated by the same company and share the parking fee structure: a base rate of \$408 per month for small vehicles, \$17 for up to 24 hours, and \$9 for up to 2 hours. The garage at lot 26 charges similar rates for monthly and daily parking, but higher rates for 24-hour parking. All fees include New York City’s 18.375% parking tax, not the reduced long-term parking tax rate of 10.375% for Manhattan residents who register their cars in Manhattan.

Figure 4 Parking Fees at West 108<sup>th</sup> Street Garages

| Garage | Monthly | 24 hours | Day Rate | 2 hours |
|--------|---------|----------|----------|---------|
| Lot 5  | \$372   | \$17     | \$12     | \$9     |
| Lot 13 | \$372   | \$17     | \$12     | \$9     |
| Lot 26 | \$385   | \$30     | \$12     | \$10    |

### Study Area Parking Utilization

Utilization surveys were conducted during three time periods that commonly experience levels of overall demand, representing weekday peaks:

- 7:30 a.m. – 8:30 a.m. (a.m. peak)
- 5:30 p.m. – 6:30 p.m. (p.m. peak)
- 8:30 p.m. – 9:30 p.m. (evening)

Figure 5 and Figure 6 present a comparison of overall utilization levels observed during these various time periods at each garage and overall, while Figure 7 shows the parking utilization at each survey period. Overall, the parking garages are well-utilized during all periods. Target occupancy rates of 90% are effective industry standards for off-street parking, which help ensure that off-street facilities maintain adequate maneuverability and availability for daily parking demand. Based on these broad utilization measures, a few patterns are worth noting:

- Off-street parking at lot 5 consistently surpasses the garage supply, owing to valet parking operations which maximize use of all available spaces.
- Parking utilization is highest during the a.m. peak period, partially attributable to higher occupancy rates on Tuesday. This may be attributable to fewer people using their cars following the blizzard on January 22-24 and the suspension of alternate side parking through January 29.

Parking occupancy counts and utilization rates for each survey period are provided in Figure 8 and Figure 9.

Figure 5 Average Parking Utilization at West 108<sup>th</sup> Street Garages

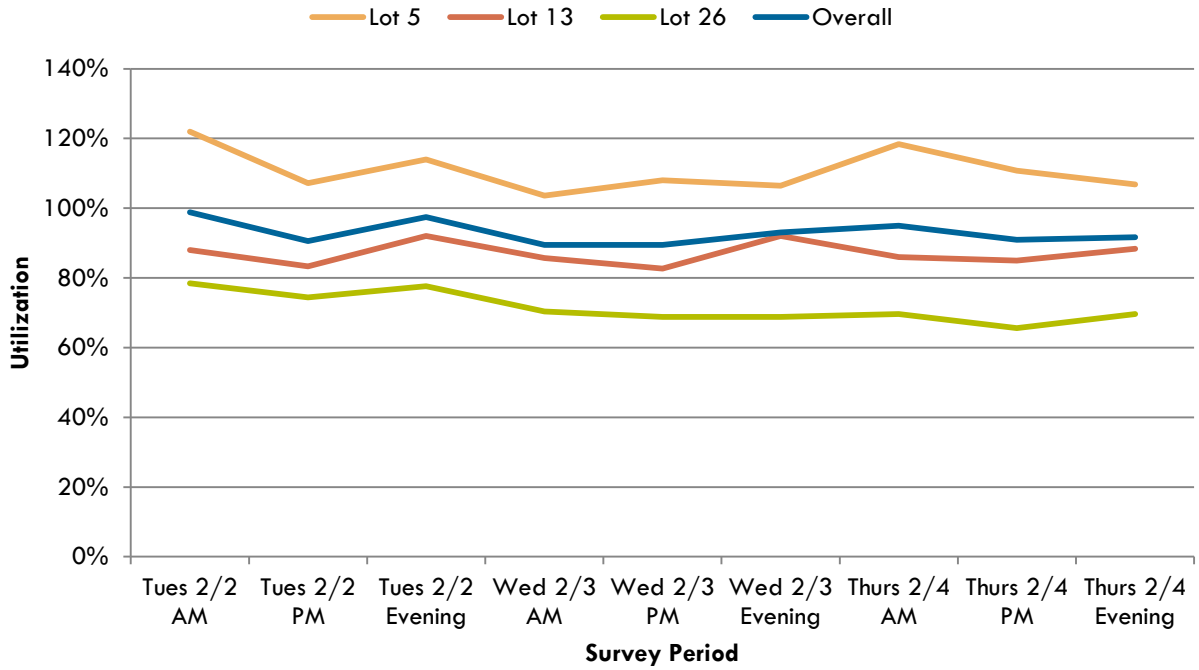
| Garage         | AM Peak<br>7:30 AM - 8:30 AM | PM Peak<br>5:30 PM - 6:30 PM | Evening<br>8:30 PM - 9:30 PM |
|----------------|------------------------------|------------------------------|------------------------------|
| Lot 5          | 115%                         | 109%                         | 109%                         |
| Lot 13         | 87%                          | 84%                          | 91%                          |
| Lot 26         | 73%                          | 70%                          | 72%                          |
| <b>Overall</b> | <b>94%</b>                   | <b>90%</b>                   | <b>94%</b>                   |
|                |                              |                              |                              |

**WEST 108TH STREET DEVELOPMENT PARKING STUDY**

**Figure 6 Average Occupied Parking Spaces at West 108<sup>th</sup> Street Garages**

| Garage         | AM Peak<br>7:30 AM - 8:30 AM | PM Peak<br>5:30 PM - 6:30 PM | Evening<br>8:30 PM - 9:30 PM |
|----------------|------------------------------|------------------------------|------------------------------|
| Lot 5          | 287                          | 272                          | 273                          |
| Lot 13         | 260                          | 251                          | 272                          |
| Lot 26         | 91                           | 87                           | 90                           |
| <b>Overall</b> | <b>637</b>                   | <b>610</b>                   | <b>635</b>                   |

**Figure 7 Parking Utilization at West 108<sup>th</sup> Street Garages by Survey Period**



**WEST 108TH STREET DEVELOPMENT PARKING STUDY**

**Figure 8 Occupied Parking Spaces at West 108<sup>th</sup> Street Garages**

| Day  | Tuesday 2/2/2016 |            |            | Wednesday 2/3/2016 |            |            | Thursday 2/4/2016 |            |            |
|--|------------------|------------|------------|--------------------|------------|------------|-------------------|------------|------------|
|  | AM               | PM         | Evening    | AM                 | PM         | Evening    | AM                | PM         | Evening    |
| <b>Lot 5 (151-159 W 108<sup>th</sup> St) – 250 spaces</b>    |                  |            |            |                    |            |            |                   |            |            |
| Basement   | 52               | 35         | 33         | 29                 | 28         | 27         | 32                | 40         | 35         |
| Floor 1  | 57               | 41         | 39         | 40                 | 38         | 32         | 58                | 44         | 38         |
| Floor 2  | 61               | 63         | 68         | 65                 | 69         | 69         | 67                | 64         | 65         |
| Floor 3  | 64               | 64         | 69         | 58                 | 69         | 71         | 66                | 63         | 63         |
| Floor 4  | 71               | 65         | 76         | 67                 | 66         | 67         | 73                | 66         | 66         |
| <b>Total</b>   | <b>305</b>       | <b>268</b> | <b>285</b> | <b>259</b>         | <b>270</b> | <b>266</b> | <b>296</b>        | <b>277</b> | <b>267</b> |
| <b>Lot 13 (143 W 108<sup>th</sup> St) – 300 spaces</b>       |                  |            |            |                    |            |            |                   |            |            |
| Basement   | 44               | 41         | 45         | 47                 | 47         | 55         | 48                | 47         | 44         |
| Floor 1  | 37               | 32         | 41         | 30                 | 26         | 37         | 36                | 34         | 38         |
| Floor 2  | 41               | 38         | 37         | 37                 | 36         | 40         | 40                | 35         | 40         |
| Floor 3  | 46               | 47         | 47         | 45                 | 47         | 46         | 43                | 46         | 48         |
| Floor 4  | 56               | 44         | 60         | 49                 | 46         | 52         | 48                | 51         | 49         |
| Floor 5  | 40               | 48         | 46         | 49                 | 46         | 46         | 43                | 42         | 46         |
| <b>Total</b>   | <b>264</b>       | <b>250</b> | <b>276</b> | <b>257</b>         | <b>248</b> | <b>276</b> | <b>258</b>        | <b>255</b> | <b>265</b> |
| <b>Lot 26 (103 W 108<sup>th</sup> St) – 125 spaces</b>       |                  |            |            |                    |            |            |                   |            |            |
| Floor 1  | 23               | 22         | 20         | 18                 | 19         | 19         | 17                | 18         | 24         |
| Floor 2  | 38               | 37         | 42         | 36                 | 33         | 33         | 36                | 34         | 33         |
| Floor 3  | 37               | 34         | 35         | 34                 | 34         | 34         | 34                | 30         | 30         |
| <b>Total</b>   | <b>98</b>        | <b>93</b>  | <b>97</b>  | <b>88</b>          | <b>86</b>  | <b>86</b>  | <b>87</b>         | <b>82</b>  | <b>87</b>  |
| <b>All West 108<sup>th</sup> Street Garages – 675 spaces</b> |                  |            |            |                    |            |            |                   |            |            |
| <b>Overall</b>   | <b>667</b>       | <b>611</b> | <b>658</b> | <b>604</b>         | <b>604</b> | <b>628</b> | <b>641</b>        | <b>614</b> | <b>619</b> |

**WEST 108TH STREET DEVELOPMENT PARKING STUDY**

**Figure 9      Parking Utilization at West 108<sup>th</sup> Street Garages**

| Day  | Tuesday 2/2/2016 |      |         | Wednesday 2/3/2016 |      |         | Thursday 2/4/2016 |      |         |
|--|------------------|------|---------|--------------------|------|---------|-------------------|------|---------|
|  | AM               | PM   | Evening | AM                 | PM   | Evening | AM                | PM   | Evening |
| <b>Lot 5 (151-159 W 108<sup>th</sup> St) – 250 spaces</b>    | 122%             | 107% | 114%    | 104%               | 108% | 106%    | 118%              | 111% | 107%    |
| <b>Lot 13 (143 W 108<sup>th</sup> St) – 300 spaces</b>       | 88%              | 83%  | 92%     | 86%                | 83%  | 92%     | 86%               | 85%  | 88%     |
| <b>Lot 26 (103 W 108<sup>th</sup> St) – 125 spaces</b>       | 78%              | 74%  | 78%     | 70%                | 69%  | 69%     | 70%               | 66%  | 70%     |
| <b>All West 108<sup>th</sup> Street Garages – 675 spaces</b> | 99%              | 91%  | 97%     | 89%                | 89%  | 93%     | 95%               | 91%  | 92%     |



## Origin of Monthly Parking Users

Limited information is available from garage owners on the origin locations of people parking at the West 108<sup>th</sup> Street garages. A list of residential zip codes of garage users was requested of each garage owner; data was received for lot 26, and data for lots 5 and 13 is pending. Available data is visualized in Figure 10 and summarized in Figure 11, indicating that monthly parking users predominantly reside in the 10025 zip code, which encompasses the West 108<sup>th</sup> Street garages, followed by the 10024 zip code. This suggests that monthly users are predominantly local, storing vehicles in the garage near their home. The available data does not include patrons who use the garages for periods less than one month, which may include visitors and occasional commuters.

Figure 10 Residential Zip Codes of Monthly Parking Users

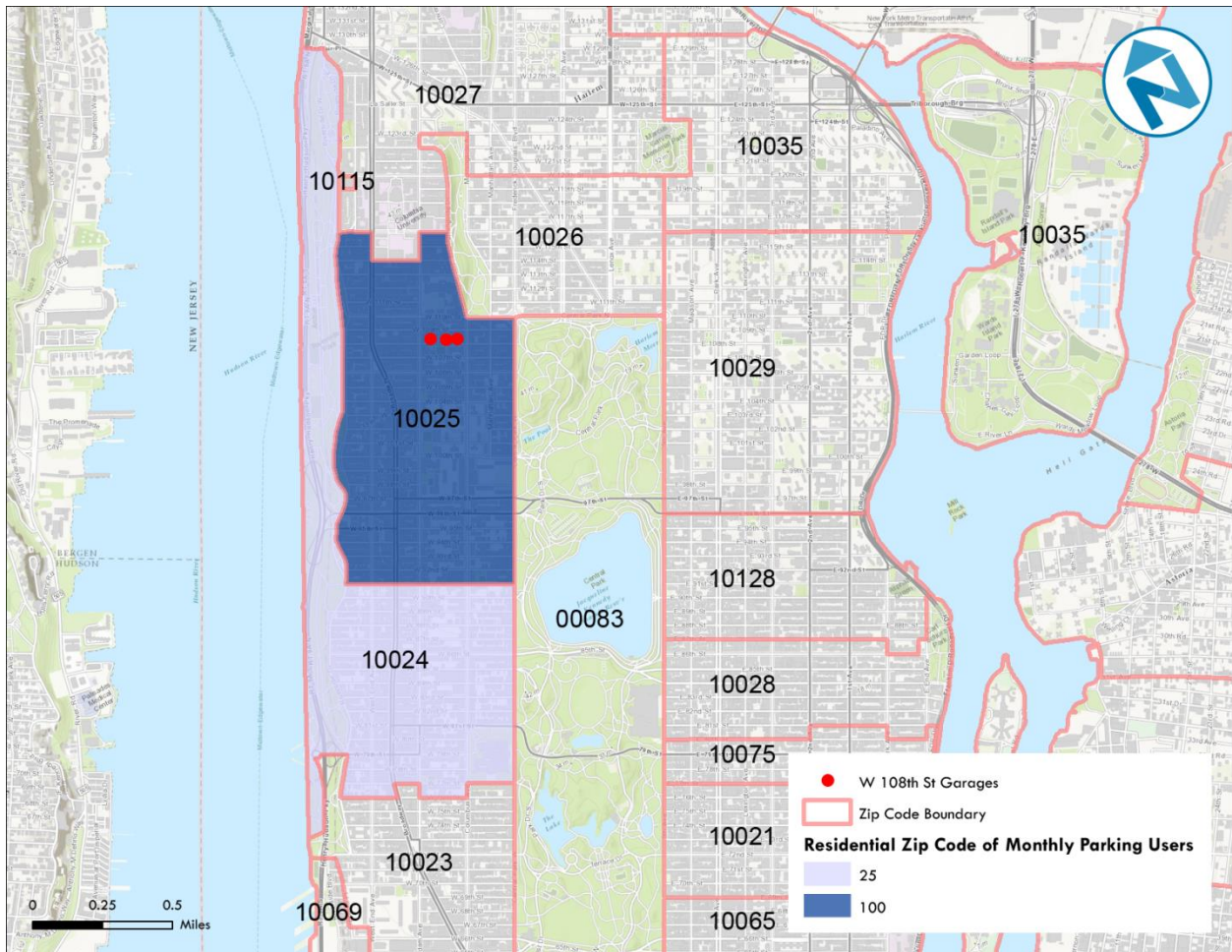


Figure 11 Residential Zip Codes of Monthly Parking Users

| Zip Code | Lot 26 |
|----------|--------|
| 10025    | 100    |
| 10024    | 25     |

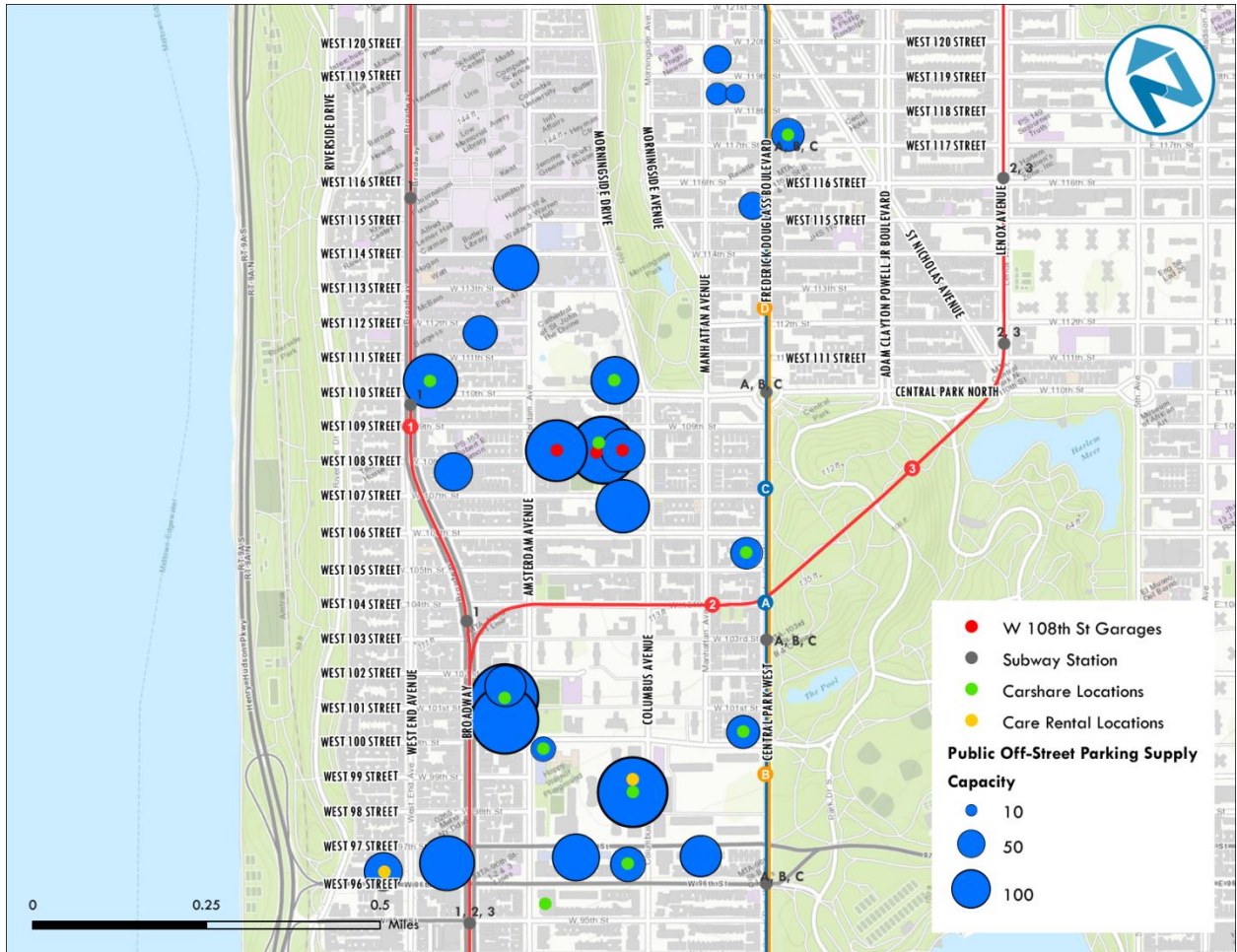
### 3 LOCAL PARKING SUPPLY

Figure 12 provides a visual summary of the off-street parking supply available within approximately 12 blocks of the West 108th Street garages, covering much of the 10025 zip code in which monthly parking users live. This data, provided by the New York City Department of Consumer Affairs (DCA), represents parking spaces that can be used by anyone. As shown in Figure 13, the West 108th Street garages represent 675 parking spaces, or 19% of the off-street public parking supply within a distance of approximately 12 blocks. As noted previously, the data represents DCA's listed parking capacity, which may differ from the number of spaces available based on each garage's operations. Self-park facilities tend to provide a fixed number of marked spaces, while valet operations may allow a garage to park more vehicles than its listed capacity.

In addition to public parking facilities, car share vehicles are available at garages throughout the area. Car sharing is a model of car rental that allows people to rent cars in hourly increments for trips as short or long as desired. The service, operated by ZipCar and Enterprise in the local area, is a practical and cost-effective alternative to owning and parking a personal vehicle that is driven less than roughly 6,000 miles per year. Car sharing also reduces the amount of parking spaces necessary to accommodate people who want access to a car occasionally, semi-frequently, and on short notice. In addition, traditional car rental is available at three garages between West 95th and West 99th Streets.

WEST 108TH STREET DEVELOPMENT PARKING STUDY

Figure 12 Off-Street Public Parking Supply



The West 108<sup>th</sup> Street garages are significantly less expensive in comparison to other parking facilities in the area. Figure 13 indicates the garages at lots 5 and 13 charge approximately 50% less than average 24-hour rates and nearly 30% less than average rates for monthly parking.

**WEST 108TH STREET DEVELOPMENT PARKING STUDY**

**Figure 13 Off-Street Public Parking Supply (12 block radius)**

| <b>Garage</b>                               | <b>Address</b>               | <b>Capacity</b> | <b>24-Hour Cost</b> | <b>Monthly Cost</b> |
|---|------------------------------|-----------------|---------------------|---------------------|
| <b>West 108<sup>th</sup> Street Garages</b> |                              |                 |                     |                     |
| Lot 5 – HRF Operating Corp.                 | 151 W 108 <sup>th</sup> St   | 250             | \$17                | \$343               |
| Lot 13 – E. & B. Operating Corp.            | 137 W 108 <sup>th</sup> St   | 300             | \$17                | \$385               |
| Lot 26 – Ca-Li Automatic Transmission Corp. | 103 W 108 <sup>th</sup> St   | 125             | \$30                | \$343               |
|   | <b>Subtotal</b>              | <b>675</b>      |                     |                     |
| <b>Catchment Area Parking Supply</b>        |                              |                 |                     |                     |
| West 108th Street Parking Garage Corp.      | 234 W 108th St               | 98              | \$24                | \$414               |
| SP Plus Corporation                         | 1090 Amsterdam Ave           | 135             | \$37                | \$520               |
| Quik Park                                   | 801 Amsterdam Ave            | 40              | \$31                | \$425               |
| QP Columbia Garage LLC                      | 2561-2579 Broadway           | 200             | \$38                | \$769               |
| Standard Parking Corporation                | 455 Central Park W           | 66              | \$35                | \$491               |
| Quik Park 808 Garage LLC                    | 808 Columbus Ave             | 324             | \$31                | \$404               |
| Discover 97 Parking LLC                     | 750 Columbus Ave             | 80              | \$40                | \$456               |
| Park 115th LLC                              | 2131 Frederick Douglass Blvd | 47              | \$28                | \$375               |
| 444 Manhattan Parking Corp.                 | 444 Manhattan Ave            | 33              | n/a                 | n/a                 |
| Manhattan Ave. Garage Corp.                 | 454 Manhattan Ave            | 50              | \$25                | n/a                 |
|   | 911 W 100th St               | 75              | \$35                | \$491               |
| KRW Operating Corp.                         | 204 W 101st St               | 300             | \$40                | \$562               |
| KRW Operating Corp.                         | 205 W 101st St               | 300             | \$40                | \$562               |
| Rapid West 102 Corp.                        | 206 W 102nd St               | 114             | \$40                | \$562               |
| Oliantha Garage Corp.                       | 102 W 107th St               | 188             | \$17                | \$343               |
| Manhattan Parking 110 LLC                   | 543 W 110th St               | 190             | \$35                | \$500               |
| Central Parking System of New York, Inc.    | 401 W 110th St               | 148             | \$32                | \$450               |
| 512-520 W. 112th St. Garage Corp.           | 516 W 112th St               | 77              | \$35                | \$474               |
| Park 117th, LLC                             | 279 W 117th St               | 71              | \$28                | \$350               |
| 444 Manhattan Parking Corp.                 | 309 W 118th St               | 24              | n/a                 | n/a                 |
| Empire Parking Corp.                        | 303 W 96th St                | 95              | \$39                | \$586               |
| MP West 97 LLC                              | 120 W 97th St                | 147             | n/a                 | \$400               |
| Kensington Enterprises LLC                  | 50 W 97th St                 | 114             | \$45                | \$500               |
|   | <b>Subtotal</b>              | <b>2,916</b>    |                     |                     |
|   | <b>Total</b>                 | <b>3,591</b>    |                     |                     |

## 4 FEASIBILITY OF ON-SITE PARKING REPLACEMENT

Nelson\Nygaard was asked to assess the parking supply that could be provided on-site, the estimated construction costs, and the projected revenue required to support a private parking operation. Variables included the type of parking (self-park, valet-park, automated), the depth of the space and the footprint of the parking lot. These factors impact the amount of available spaces and the cost to build them. Figure 14 provides a summary of potential parking options in the new construction. The findings show that the Development Sites would support substantially fewer parking spaces than the existing garages at a much higher rate than the existing lots and other local garages.

Development Site 1 is the larger of the two development sites and has been identified as the location to assess the potential for providing on-site parking. Lot 26 is considered too small to include both affordable housing and parking.

### Buildable Parking Area

The following assumptions were made for the calculation of parking spaces that could be accommodated within the development plans for Development Site 1:

- A 30,300 square foot lot area, including lot 5, 10, and 13, based on data provided by Dattner Architects.
- The building footprint is assumed to be 18,000 square feet with below-grade parking within the footprint. The building footprint is assumed to be approximately 300 feet long along West 108<sup>th</sup> Street and 60 feet deep.  
The full lot coverage is assumed to be 27,000 square feet with below-grade parking inside the building footprint and extending towards the rear of the lot. The full lot coverage is assumed to be 300 feet long along West 108<sup>th</sup> Street and 90 feet deep.
- An estimated 1,500 square feet of basement area devoted to building services, including electrical, plumbing, stairs, and elevators.
- An estimated 1,500 square feet of basement area devoted to providing a ramp from street level at the lowest point of entry on the east side of the building frontage.
- Foundation support walls will be approximately 3 feet thick. Based on the assumed dimensions of the building footprint (300 feet long, 60 feet deep), foundation walls require approximately 2,100 square feet.
- For the full lot coverage, additional structural support for the building above will be required, and 9000 square feet of additional parking area is assumed.
- One parking level below grade.

Based on the above assumptions, we estimate that approximately 12,900 square feet could be available for parking in a potential single-level below-grade garage facility within the new building footprint, or 21,900 square feet could be accommodated within the full lot scenario.

## Potential Parking Capacity

The potential parking capacity for a facility of this size is determined by the type of parking operations and the parking efficiency. A scenario for using mechanical stackers with full lot coverage is not included since the lot depth is not sufficient to allow for three rows of stackers with two access aisles; there is no added capacity.

### 1. Below-Grade Self-Park Operations

For the self-park parking capacity analysis, the following assumptions were made:

- 12,900 square feet available for below-grade parking.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- A single two-way circulation aisle will be used down the middle with vehicles parked along the edges.
- A total depth of one parking level below grade with 7.5 feet clearance for vehicles.

Based on the above assumptions, we estimate that 40 vehicles could be accommodated in a below grade self-park facility.

### 2. Below-Grade Valet-Parked Operations

For the valet-parking capacity analysis, the following assumptions were made:

- 12,900 square feet available for below-grade parking.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- An assumed parking efficiency of 280 square feet per parking space for valet operations with vehicles parked end to end to end.
- A total depth of one parking level below grade with 7.5 feet clearance for vehicles.

Based on the above assumptions, we estimate that 48 vehicles can be reasonably accommodated in a below grade valet parking facility.

### 3. Below-Grade Mechanical Stackers

For the mechanical stackers with valet-parking capacity analysis, the following assumptions were made:

- 12,900 square feet available for below-grade parking.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- A single two-way circulation aisle will be used down the middle with vehicles parked along the edges.
- A total depth of one parking level below grade with 10.5 feet clearance for stackers.

Based on the above assumptions, we estimate that 80 vehicles can be reasonably accommodated in a below grade valet parking facility.

### 4. Below-Grade Automated Parking Operations

For the automated parking capacity analysis, the following assumptions were made:

- 12,900 square feet available for below-grade parking.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- A single circulation aisle will be used to access vehicles.
- 400 square feet required for a transfer area where users park the vehicle and exit. The transfer area could also utilize space dedicated to a ramp depending on the design of the site.
- A total depth of one parking level below grade with 14.5 feet clearance for two levels of parking.

Based on the above assumptions, we estimate that 78 vehicles can be reasonably accommodated in a below grade automated parking facility.

## 5. Below-Grade Automated Parking Operations with Full Lot Coverage

For the automated parking capacity analysis, the following assumptions were made:

- 21,900 square feet available for below-grade parking. This requires additional redesign of the building, potential conflict with adjacent buildings and terrain, and additional costs.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- A single circulation aisle will be used to access vehicles.
- A third row of vehicles will be added with the additional lot coverage; 300 feet by 90 feet.
- 400 square feet required for a transfer area where users park the vehicle and exit. The transfer area could also utilize space dedicated to a ramp depending on the design of the site.
- A total depth of one parking level below grade with 14.5 feet clearance for two levels of parking.

Based on the above assumptions, we estimate that 118 vehicles can be reasonably accommodated in a below grade automated parking facility using the full lot coverage.

## 6. Below-Grade Valet-Parked Operations with Full Lot Coverage

For the valet-parking capacity analysis, the following assumptions were made:

- 21,900 square feet available for below-grade parking.
- The short-span structural system of the development requires column spacing approximately every 25 square feet to support slab and building above.
- A third row of vehicles will be added with the additional lot coverage; 300 feet by 90 feet.
- A single circulation aisle will be used to access vehicles.
- A total depth of one parking level below grade with 7 feet clearance.

Based on the above assumptions, we estimate that 76 vehicles can be reasonably accommodated in a below grade valet parking facility using the full lot coverage.

## Potential Construction Costs and Parking Fees

Preliminary planning-level costs estimates for each type of parking supply are included below. The chart summarizes the parking structure data for each type, and cost breakdowns per square foot and per vehicle stall. As the development site is relatively small and only accessible from one side, the costs per space are higher due to the inefficiency of parking vehicles around support columns and corners. Due to the unknowns of the building site and constraints, a 50% contingency is added to these estimates.

Additionally, the cost of extended construction time, insurance, and contractors may increase the capital costs further.

### **Comparable Costs**

Parking construction costs in Manhattan vary based on the size and constraints of the site, volume of parking, and site conditions, among other factors. Limited data is available for construction costs of below-grade parking on development sizes of this size in Manhattan. The following are examples of below grade parking construction costs for comparison.

- Construction of below grade parking in New York City typically costs \$30,000 to \$40,000 per space, or roughly \$150-\$200 per square foot, on larger, unconstrained sites.
- At an underground automated parking garage built at 123 Baxter Street in Chinatown, 68 parking spaces cost an average of \$40,000 each to construct in 2006. The corner site offers access from two sides.
- At 1 York Street in Tribeca, spaces in a 40-car automated parking cost \$130,000 to construct in 2006 due to complicated excavation. Tenants were expected to purchase spaces for \$175,000 to \$200,000.

### **Assumptions**

- The base construction cost is assumed to be \$225 per gross square foot, including leveling the site, changing the building structure to incorporate parking, excavation, support of excavation, and exhaust ventilation.
- The structural design of the building requires more complicated steel construction than anticipated to accommodate below-grade parking.
- A cost contingency of 50% is included because it is not known what the environmental and geotechnical report will reveal about the site. For example, if the soil is relatively clean and the dirt is reasonably capable of being excavated, the contingency could be lower. The cost contingency could increase if it is found that the dirt is significantly contaminated, there are significant rocks to excavate, or underground water is found.
- Costs for additional excavation are assumed to be \$15 per cubic foot to cover excavation, disposal, support of excavation, additional time, and the significant slope of the site.
- Operations and maintenance costs for valet parking include a 24-hour attendant, paid \$15 per hour.



**WEST 108TH STREET DEVELOPMENT PARKING STUDY**

Based on comparable construction costs and constraints of building parking on site, it is estimated that on-site parking would cost a minimum of \$113,875 per space using mechanical stackers. Construction of below grade parking in New York City typically costs \$30,000 to \$40,000 per space on larger, unconstrained sites.

**Figure 14 Estimated Construction Costs for Parking Supply and Operations**

|   | Facility Type   | Potential # of Spaces | Lot Depth Coverage                     | Minimum Floor Clearance Height (ft.) | Cost Contingency for Known Unknowns | Additional Excavation Cost per Square Foot | Equipment Cost per Space | Construction Cost per Square Foot | Estimated Construction Cost per Parking Space | Estimated Total Construction Cost |
|---|---|-----------------------|--|--------------------------------------|-------------------------------------|--|--------------------------|-----------------------------------|---|-----------------------------------|
| 1 | Below-Grade Self-Park   | 40                    | 60 ft. (Planned Development Footprint) | 7.5                                  | 50%                                 | \$113                                      | \$0                      | \$450                             | \$202,500                                     | \$8,100,000                       |
| 2 | Below-Grade Valet-Park  | 48                    | 60 ft. (Planned Development Footprint) | 7.5                                  | 50%                                 | \$113                                      | \$0                      | \$450                             | \$168,750                                     | \$8,100,000                       |
| 3 | Below-Grade Mechanical Stackers                                 | 80                    | 60 ft. (Planned Development Footprint) | 10.5                                 | 50%                                 | \$158                                      | \$2,500                  | \$506                             | \$113,880                                     | \$9,110,000                       |
| 4 | Below-Grade Automated Parking Operations                        | 78                    | 60 ft. (Planned Development Footprint) | 14.5                                 | 50%                                 | \$218                                      | \$20,000                 | \$642                             | \$148,080                                     | \$11,550,000                      |
| 5 | Below-Grade Automated Parking Operations with Full Lot Coverage | 118                   | 90 ft. (Existing Building Footprint)   | 14.5                                 | 50%                                 | \$218                                      | \$20,000                 | \$642                             | \$146,990                                     | \$17,345,000                      |
| 6 | Below-Grade Valet-Park with Full Lot Coverage                   | 76                    | 90 ft. (Existing Building Footprint)   | 7.5                                  | 50%                                 | \$113                                      | \$0                      | \$450                             | \$159,870                                     | \$12,150,000                      |

## Estimated Revenue Projections

Based on the estimated construction costs, the following table provides the estimated fees required to generate enough revenue over the facility’s 30-year lifespan to reach the desired 10% profit margin. This estimate for suitable private non-subsidized parking operation assumes the garage is 90% occupied an average of 25 days per month. Estimated monthly and daily parking fees for customers, including the full 18.375% parking tax, are also included. Estimated customer parking fees to cover facility costs in each scenario would be \$54 to \$81 per day or \$1,355 to \$2,035 per month. Estimated monthly parking fees include the full 18.375% parking tax, not the reduced long-term parking tax rate of 10.375% for Manhattan residents who register their cars in Manhattan. For comparison, the estimated daily fees are 57% to 135% higher than the existing average in the area, while estimated monthly fees are 180% to 320% higher than the existing average.

Figure 15 Estimated Pricing to Recover Parking Costs and Achieve Profit

|   | Facility Type   | Potential # of Spaces | Estimated Construction Cost per Parking Space | Estimated Total Construction Cost | Annualized Construction Costs per Space | Annual O & M Costs per Space | Monthly Revenue per Space for Expected Profit | Daily Revenue per Space for Expected Profit | Monthly Parking Fee for Customer w/ Parking Tax | Daily Parking Fee for Customers w/ Parking Tax |
|---|---|-----------------------|---|-----------------------------------|---|------------------------------|---|---|---|--|
| 1 | Below-Grade Self-Park   | 40                    | \$202,500                                     | \$8,100,000                       | \$14,710                                | \$500                        | \$1,549                                       | \$62  | \$1,835   | \$73   |
| 2 | Below-Grade Valet-Park  | 48                    | \$168,750                                     | \$8,100,000                       | \$12,260                                | \$4,600                      | \$1,718                                       | \$69  | \$2,035   | \$81   |
| 3 | Below-Grade Mechanical Stackers                                 | 80                    | \$113,880                                     | \$9,110,000                       | \$8,270                                 | \$2,960                      | \$1,144                                       | \$46  | \$1,355   | \$54   |
| 4 | Below-Grade Automated Parking Operations                        | 78                    | \$148,080                                     | \$11,550,000                      | \$10,760                                | \$750                        | \$1,172                                       | \$47  | \$1,385   | \$55   |
| 5 | Below-Grade Automated Parking Operations with Full Lot Coverage | 118                   | \$146,990                                     | \$17,345,000                      | \$10,680                                | \$750                        | \$1,164                                       | \$47  | \$1,380   | \$55   |
| 6 | Below-Grade Valet-Park with Full Lot Coverage                   | 76                    | \$159,870                                     | \$12,150,000                      | \$11,610                                | \$3,090                      | \$1,498                                       | \$60  | \$1,775   | \$71   |