Chapter 9: Transportation

A. INTRODUCTION

Under the 2014 *City Environmental Quality Review (CEQR) Technical Manual* guidelines, a transportation analysis considers the travel demand characteristics associated with a proposed project and evaluates the potential effects it is expected to have on the surrounding transportation system. Specific areas of the transportation analysis include traffic, transit, pedestrians, vehicular and pedestrian safety, and parking.

As described in Chapter 1, "Project Description," this Environmental Impact Statement (EIS) assesses potential impacts associated with the American Museum of Natural History's (AMNH or the Museum) proposed approximately 203,000 gross-square-foot (gsf) addition known as the Richard Gilder Center for Science, Education, and Innovation (the Gilder Center), and other improvements, on the Columbus Avenue side of the Museum campus. The Museum is located within Theodore Roosevelt Park on the superblock bounded by West 81st Street, West 77th Street, Central Park West, and Columbus Avenue, in the Upper West Side neighborhood of Manhattan (Block 1130, Lot 1). The proposed project is expected to generate new trips to the Museum site due to a projected increase in daily attendance and utilization, as well as alter site access patterns by shifting more pedestrian trips and taxi pick-up and drop-off activity toward the Gilder Center entrance on the Columbus Avenue side of the Museum.

This chapter examines the potential effects of the proposed project on the study area transportation systems, and compares the With Action Condition to the No Action Condition in the 2021 analysis year to identify potential impacts. If warranted, feasible mitigation measures are identified to address those impacts in Chapter 17, "Mitigation." The travel demand projections, trip assignments, and capacity analyses presented in this chapter were conducted pursuant to the methodologies outlined in the *CEQR Technical Manual*.

TRANSPORTATION MANAGEMENT PLAN

This chapter takes into account the structure provided to transportation operations at the Museum as a result of the Museum's Transportation Management Plan (TMP). This TMP serves as a guide for Museum staff to effectively coordinate visitor travel to the Museum by all travel modes, including public transit, private vehicles, and school and coach buses. The primary elements of the TMP are:

- Promoting the use of non-vehicular modes, particularly public transportation, which has been successful in increasing the share of visitors arriving by public transit from 33 percent in 1999 to 53 percent in 2015 on weekdays, and from 17 percent in 1999 to 48 percent in 2015 on weekends in 2015;
- Bus operations, including demand management, use of the parking garage, and layover and dispatching activities;
- Managing the demand for auto parking at the on-site parking garage; and

- Dedicating staff to manage day-to-day bus pick-up, lay-over, and drop-off operations and parking garage operations.

First established in 1999, the TMP provides a framework for the Museum to effectively manage transportation services including procedures for how to manage school bus and private vehicle traffic arriving at the Museum on a daily basis. It is intended to be flexible in responding to varying daily conditions and has been periodically updated in response to the Museum's evolving needs and modifications to the local transportation network.

MUSEUM ATTENDANCE AND UTILIZATION

Table 9-1a provides a comparison of the forecasted total Museum attendance and utilization without and with the proposed project. These attendance and utilization projections represent forecasted attendance and utilization for the 2021 Build year at a stabilized level. This projection is used for analysis purposes to reflect stabilized Museum attendance and utilization following the more pronounced attendance increase associated with the opening.

Table 9-1a
Comparison of Forecasted Attendance and Utilization Without and With the Gilder Center Project

Components	2015 Attendance and Utilization (Actual)	Projected 2021 Attendance and Utilization Without the Proposed Actions (No Action)	Projected 2021 Attendance and Utilization With the Proposed Actions (With Action)	Project Increment
Annual Attendance and Utilization[1]	**5.0 million**	**5.3 million**	**6.0 million**	**745,000**
Ticketed Attendance	*4.1 million*	*4.4 million*	*5.0 million*	*630,000*
Non-Ticketed Attendance	*900,000*	*900,000*	*1.0 million*	*115,000*
Weekday Attendance and Utilization[2]	**17,843**	**19,109**	**21,816**	**2,707**
Ticketed Attendance	*14,672*	*15,938*	*18,234*	*2,296*
Non-Ticketed Attendance	*3,171*	*3,171*	*3,582*	*411*
Saturday Attendance and Utilization[2]	**23,018**	**23,166**	**26,405**	**3,239**
Ticketed Attendance	*18,928*	*19,076*	*21,823*	*2,747*
Non-Ticketed Attendance	*4,090*	*4,090*	*4,582*	*492*

Notes: Annual attendance and utilization numbers in this table are rounded.
[1] Based on AMNH attendance forecasts prepared in 2016.
[2] Based on estimates for a high-activity day (85th percentile) at the Museum: one weekday and one Saturday.

Total attendance and utilization at AMNH was approximately 5.0 million in 2015. That figure primarily consists of approximately 4.1 million ticketed visitors, tracked through AMNH's ticketing system. The balance of the attendance includes visiting scientists, graduate school students, teachers, vendors, people attending conferences, public programs, ~~and~~ events, visitors to free spaces, and other miscellaneous trips. Specifically, the ticketed visitation forecasts for the No Action condition account for a year over year annual background growth rate of less than 1 percent from 2015 to 2021, reaching approximately 4.4 million ticketed visitors by 2021. Accounting for non-ticketed attendance, attendance and utilization would be approximately 5.3 million by 2021, without the proposed project.

For conditions with the proposed project, based on an analysis of the Museum's historic attendance data and the impact of major capital projects at other museums and visitor attractions, annual ticketed attendance is estimated to increase by an additional 630,000 visitors. Added to

the ticketed attendance projection of 4.4 million absent the proposed project, this increase would result in just over 5.0 million ticketed visitors per year with the project. For purposes of conservatively estimating total building population based on historic trends, non-ticketed attendance is estimated to increase by an amount equivalent to 18 percent of incremental ticketed visitors; this forecast is based on recent attendance data and trends tracked by the Museum. When this non-ticketed attendance increment is added to the 630,000 ticketed attendance, this yields a total project attendance and utilization increment of approximately 745,000 annual visitors. Therefore, the total estimated attendance and utilization with the project is just over 6.0 million per year, as shown in **Table 9-1a.** The daily ticketed attendance estimates are based on the projected attendance during high-activity days, which have been defined as the 85th percentile of forecasted daily weekday and Saturday Museum ticketed attendance.

In addition, as typically occurs for a major capital expansion or similar enhancements at museums and other visitor attractions, in the first year of operation there would likely be a more pronounced attendance increase, which is estimated to bring the ticketed increment to roughly one million and result in an overall annual attendance of up to 6.4 million immediately following the opening. While the travel demand forecasts used for analysis purposes appropriately focus on the stabilized attendance increment, a qualitative assessment of opening year conditions will be conducted in consideration of the analysis findings. **Table 9-1b** compares the annual, weekday, and Saturday stabilized ticketed and non-ticketed increments used for analysis purposes against the corresponding initial year increments.

Table 9-1b
Comparison of Forecasted Incremental Attendance and Utilization

Components	Stabilized Attendance and Utilization			Temporary Initial Increased Attendance and Utilization		
	Ticketed Project Increment	Non-Ticketed Project Increment	Total Attendance and Utilization Project Increment	Ticketed Project Increment	Non-Ticketed Project Increment	Total Attendance and Utilization Project Increment
Annual Attendance[(1)]	630,000	115,000	745,000	1,000,000	115,000	1,115,000
Weekday Attendance[(2)]	2,296	411	2,707	3,631	411	4,042
Saturday Attendance[(2)]	2,747	492	3,239	4,344	492	4,836

Notes: Annual attendance and utilization numbers in this table are rounded.
(1) Based on AMNH attendance forecasts prepared in 2016.
(2) Based on estimates for a high-activity day (85th percentile) at the Museum: one weekday and one Saturday.

SCHOOL GROUP VISITATION

Accommodating school group visitation is a core element in the Museum's mission. Given the widespread participation from schools in New York City and the broader metropolitan area, this successful service is generally regarded as well-established and stabilized. School bus activity to AMNH has not increased during recent years, and it is not expected to increase as the Museum follows procedures to manage the daily school bus traffic, as outlined in its TMP.

With respect to means of travel, school groups arrive via school or coach bus (approximately 60 percent of total) at the on-site parking garage or by subway (approximately 40 percent of total) using the Central Park West station at 81st Street, both of which have direct entry into the Museum. This pattern of access is not expected to change and the Gilder Center is not intended as an entry or exit point for school groups. Consequently overall school bus traffic would not change as a result of the Gilder Center and does not require further study as part of this EIS.

The Museum already attracts a large number of school group visits from New York City and throughout the region and there are limited opportunities to expand the market for this service. There was an average of approximately 500,000 school group visitors annually in the past five fiscal years, which is comparable to the number of school group visitors in 1999. Since teachers and students already visit the Museum in large numbers, substantial increases in school bus activity are not anticipated in future years, although there may be some year to year fluctuation, and there may be some increase in school group visitors using public transit. Therefore, school bus trips are not expected to notably increase from 2015 to 2021. The Museum actively manages school bus visitation through its TMP. As part of this program, AMNH staff manages and limits the daily demand level of school bus trips, and directs the movement and layover of school buses in order to address the safety of schoolchildren and traffic conditions in the surrounding neighborhood. Going forward, AMNH staff would make adjustments to the TMP as needed in response to changes in demand level and other operating conditions.

PRINCIPAL CONCLUSIONS

Based on *CEQR Technical Manual* guidelines, most of the analyses presented below would not be warranted as the project's incremental visitation does not exceed certain specified thresholds for required analysis. However, in consideration of existing congested conditions experienced in the area and in response to public comments made during scoping of the Draft EIS (DEIS), key traffic and pedestrian locations surrounding the Museum were included in the analyses. Because existing traffic and pedestrian conditions are already congested at times and susceptible to worsening in service levels, even small increases in traffic and pedestrian levels could result in significant adverse impacts. Since the maximum incremental increase at any of the impacted lane groups was projected to generate only 1 additional vehicle every 6 minutes in any of the peak hours, the reported change in vehicle delays are likely to be overstated due to these small increases in incremental traffic. Within this framework, traffic impacts were identified at three locations and pedestrian impacts at one location, as summarized below.

TRAFFIC

Traffic conditions were evaluated at ~~nine~~eleven intersections for the weekday midday, weekday PM, and Saturday peak hours. In the 2021 With Action condition, significant adverse traffic impacts were identified at ~~four~~ three intersections during the analysis peak periods. **Table 9-2** provides a summary of the impacted locations by lane group and analysis time period. Potential measures to mitigate some of the projected traffic impacts are described in Chapter 17, "Mitigation."

Table 9-2
Summary of Significant Adverse Traffic Impacts

Intersection		Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
EB/WB Street	**NB/SB Street**			
West 77th Street	Columbus Avenue			SB-L
West 81st Street	Central Park West		WB-L	WB-L
West 77th Street	Central Park West			NB-LT
Total Impacted Intersections/Lane Groups		**0/0**	**1/1**	**3/3**

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

In accordance with the methodology of the *CEQR Technical Manual*, Saturday was selected for analysis as the peak weekend day based on traffic volumes. GrowNYC, a New York City-

sponsored green market organization, hosts a Sunday year-round Greenmarket Farmers' Market (9:00 AM to 5:00 PM) on the east sidewalk of Columbus Avenue immediately adjacent to Theodore Roosevelt Park from 77th Street to 81st Street. While the Greenmarket is expected to be relocated during construction of the proposed project, upon completion it could relocate back to its current location in front of the project site. An assessment of traffic conditions for the Sunday peak hour during the weekly Greenmarket operations determined that further detailed traffic analysis would not be warranted, as traffic volumes are lower in the traffic study area on Sunday relative to Saturday, and Museum attendance is also generally lower on Sundays relative to Saturdays. Therefore, traffic conditions and potential impacts would be similar to or less severe than those presented for the Saturday peak hour, and could be mitigated using the same recommended mitigation measures for the Saturday peak hour. (See below regarding analysis of Sunday pedestrian operations.)

TRANSIT

A detailed analysis of station elements at the 81st Street/Museum of Natural History subway station was prepared. The results show that the proposed project would not result in any significant adverse impacts on circulation and control area elements at the 81st Street/Museum of Natural History station.

PEDESTRIANS

Pedestrian conditions were evaluated at ten sidewalks, four corners, and four crosswalks for the weekday midday, PM, and Saturday peak hours. In the 2021 With Action condition, a significant adverse impact was identified at one crosswalk during the Saturday peak hour. **Table 9-3** provides a summary of the impacted location. The potential measure to mitigate the projected pedestrian impact is described in Chapter 17, "Mitigation."

Table 9-3
Summary of Significant Adverse Pedestrian Impacts

Intersection	Pedestrian Element	2021 With Action Condition		
		Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Columbus Avenue and West 81st Street	East Crosswalk			X
Total Impacted Pedestrian Elements		**0**	**0**	**1**

Note: X = Impacted.

In accordance with the methodology of the *CEQR Technical Manual*, Saturday was selected for analysis as the peak weekend day based on pedestrian volumes. However, an analysis of pedestrian conditions at four sidewalks, two corners, and two crosswalks along Columbus Avenue for the Sunday peak hour was also conducted to assess the effects of pedestrian diversions and changes in pedestrian circulation patterns due to the Greenmarket operations. The results show that the proposed project would not result in any significant adverse pedestrian impacts at these locations during the Sunday peak hour.

VEHICULAR AND PEDESTRIAN SAFETY

Crash data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between May 1, 2012 and April 30, 2015. During this period, a total of ~~84~~94 reportable and non-reportable accidents, zero fatalities, ~~63~~69 injuries, and ~~26~~30 pedestrian/bicyclist-related accidents occurred at the study area intersections. A rolling total of accident data identified no high accident locations in the 2012 to 2015 period.

As defined in the *CEQR Technical Manual*, a high accident location is one where there were 48 or more total crashes (reportable and non-reportable) or five or more pedestrian/bicycle injury crashes in any consecutive 12 months of the most recent 3-year period for which data is available. Therefore, the proposed project is not expected to result in a significant adverse vehicular and pedestrian safety impact.

PARKING

Accounting for the incremental parking demand generated by the proposed project, off-street public parking utilization is expected to increase to 73, 81, and 66 percent of total off-street parking capacity during the weekday midday, weekday PM, and Saturday peak periods respectively. Since these parking utilization levels are within the area's parking capacity, the proposed project is not expected to result in the potential for a parking shortfall or a significant adverse parking impact.

B. PRELIMINARY ANALYSIS METHODOLOGY AND SCREENING ASSESSMENT

The *CEQR Technical Manual* recommends a two-tier screening procedure for the preparation of a "preliminary analysis" to determine if quantified analyses of transportation conditions are warranted. As discussed below, the preliminary analysis begins with a trip generation analysis (Level 1) to estimate the volume of person and vehicle trips attributable to the proposed project. If the proposed project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (Level 2) are performed to estimate the incremental trips at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed project would result in 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a pedestrian element, then further quantified analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrians, parking, and vehicular and pedestrian safety.

LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of person and vehicle trips by mode expected to be generated during the weekday midday, weekday PM, and Saturday peak hours. Since the Museum does not open for visitors until 10:00 AM on weekdays, and since the weekday AM traffic and pedestrian peak hours typically occur during 8:00 AM to 9:00 AM, the assessment was not conducted for the weekday AM peak hour. These estimates were then compared to the *CEQR Technical Manual* thresholds to determine if a Level 2 screening and/or quantified operational analyses would be warranted.

TRANSPORTATION PLANNING ASSUMPTIONS

Trip generation factors for the proposed project are summarized in **Table 9-4** and were developed based on information compiled from travel surveys and attendance forecasts prepared by AMNH.

Museum Attendance

Each visitor to the Museum was assumed to make two trips, one trip in and one trip out. The temporal distribution data and the directional distributions were developed from Museum data and analyses conducted in 2015. The modal split and vehicle occupancy for weekdays and

Saturdays are based on visitor intercept surveys conducted by the Museum in June 2015. The daily delivery trip rate and temporal and directional distributions were obtained from the Museum's loading dock trip logs from May 2015. The delivery trip rate reflects projected growth in Museum delivery trips accounting for routine operations, as well as public programs and events held outside of regular Museum hours.

TRAVEL DEMAND PROJECTION SUMMARY

As summarized in **Table 9-5**, in the future without the proposed project (the No Action condition), AMNH is estimated to generate a total of 6,880, 4,205, and 7,875 person trips by all modes of transportation during the midday, PM, and Saturday peak hours, respectively. Approximately 353 (midday), 228 (PM), and 650 (Saturday) vehicle trips are forecast during the same peak hours.

Table 9-4
Travel Demand Assumptions

Use	Museum Attendance and Utilization		
Daily Incremental Attendance (1)	Weekday [2,707 persons]		Saturday [3,239 persons]
Person Trip Generation Rate	2.0 Trips/Guest		2.0
Link Credit	N/A		
Final Trip Rate	2.0		2.0
Person Trip Temporal Distribution	(1) Midday (12-1 PM)	(1) PM (4-5 PM)	(1) Saturday (1-2 PM)
	18%	11%	17%
Directional Distribution	(2)	(2)	(2)
In	43%	31%	54%
Out	57%	69%	46%
Total	100%	100%	100%
Modal Split	(3)	(3)	(3)
Auto	4%	4%	13%
Taxi	7%	7%	9%
Subway	62%	62%	49%
City Bus	2%	2%	5%
Tour Bus	5%	5%	4%
Walk*	20%	20%	20%
Total	100%	100%	100%
Vehicle Occupancy			
Auto (3)	4.0	4.0	3.8
Taxi (3)	3.2	3.2	3.3
Tour Bus (4)	45.0	45.0	45.0
Daily Deliveries	(5) 15 Deliveries per day		(5) 5 Deliveries per day
Delivery Trip Temporal Distribution	(6) Midday	(6) PM	(6) Saturday
	10%	8%	8%
Directional Distribution	(6)	(6)	(6)
In	50%	50%	50%
Out	50%	50%	50%
Total	100%	100%	100%

Note:
*Based on the June 2015 visitor surveys, bike trips are forecast to be approximately 0.5% of all person trips on weekdays and 0.4% of all person trips on Saturdays. Since these do not represent a significant share of the total person trips, bike trips were combined with walk only trips for purposes of developing the travel demand projection profiles.

Sources:
(1) AMNH 2021 attendance and utilization projections
(2) AMNH 2015 hourly attendance and utilization surveys and analysis
(3) AMNH June 2015 Visitor Surveys, with adjustments per DOT recommendations.
(4) Tour buses were assumed to accommodate 45 passengers each
(5) AMNH projections conservatively reflect estimated increase in delivery trips
(6) AMNH May 2015 Loading Dock Trip Logs

Table 9-5
Trip Generation Summary: No Action Condition

Peak Hour	In/Out	Person Trip							Vehicle Trip				
		Auto	Taxi	Subway	Bus	Tour Bus	Walk	Total	Auto	Taxi	Tour Bus	Delivery	Total
Midday	In	118	207	1,834	60	148	592	2,959	30	134	4	4	172
	Out	157	274	2,431	79	196	784	3,921	39	134	4	4	181
	Total	275	481	4,265	139	344	1,376	6,880	69	268	8	8	353
PM	In	53	91	808	26	65	261	1,304	13	86	3	4	106
	Out	116	203	1,798	58	145	581	2,901	29	86	3	4	122
	Total	169	294	2,606	84	210	842	4,205	42	172	6	8	228
Saturday	In	553	382	2,084	213	170	850	4,252	146	186	3	1	336
	Out	471	326	1,775	181	145	725	3,623	124	186	3	1	314
	Total	1,024	708	3,859	394	315	1,575	7,875	270	372	6	2	650

As summarized in **Table 9-6,** in the future with the proposed project (the With Action condition), AMNH with the proposed Gilder Center is projected to generate a total of 7,854, 4,799, and 8,977 person trips by all modes of transportation during the weekday midday, PM, and Saturday peak hours, respectively. Approximately 407, 262, and 743 vehicle trips would be generated during the same peak hours. The estimated net incremental trips generated in the future with the proposed project are shown in **Table 9-6**.

Table 9-6
Trip Generation Summary: Proposed Project

Peak Hour	In/Out	Person Trip							Vehicle Trip				
		Auto	Taxi	Subway	Bus	Tour Bus	Walk	Total	Auto	Taxi	Tour Bus	Delivery	Total
Midday	In	135	236	2,094	68	169	675	3,377	34	153	5	6	198
	Out	179	313	2,776	90	224	895	4,477	45	153	5	6	209
	Total	314	549	4,870	158	393	1,570	7,854	79	306	10	12	407
PM	In	60	104	922	30	74	298	1,488	15	98	4	5	122
	Out	132	232	2,053	66	166	662	3,311	33	98	4	5	140
	Total	192	336	2,975	96	240	960	4,799	48	106	8	10	262
Saturday	In	630	436	2,375	242	194	970	4,847	166	212	4	2	384
	Out	537	372	2,024	206	165	826	4,130	141	212	4	2	359
	Total	1,167	808	4,399	448	359	1,796	8,977	307	424	8	4	743

Traffic

As shown in **Table 9-7**, the estimated net incremental trips generated by the proposed project would be 54, 34, and 93 vehicle trips during the weekday midday, PM, and Saturday peak hours, respectively. A Level 2 screening assessment (presented in the section below) was conducted to determine the recommended level of quantified analyses for the EIS assessment of potential traffic impacts.

Transit

As shown in **Table 9-7**, the estimated incremental transit trips generated by the proposed project would be 604, 369, and 539 person trips by subway and 19, 12, and 55 trips by City bus during the weekday midday, PM, and Saturday peak hours, respectively. A Level 2 screening assessment (presented in the section below) was conducted to determine the level of quantified transit analyses to be recommended for the EIS assessment of potential impacts for subway elements at nearby stations.

The incremental bus trips~~ under both development scenarios~~ would be below the *CEQR Technical Manual* analysis threshold of 50 peak hour bus trips on a particular route in one direction. Therefore, based on *CEQR Technical Manual* guidelines a detailed analysis of buses is

not warranted and the proposed project is not expected to result in any significant adverse bus line-haul impacts.

Pedestrians

As shown in **Table 9-7**, the estimated net incremental pedestrian trips would be 974, 595, and 1,101 in the weekday midday, PM, and Saturday peak hours, respectively. All person trips generated by the proposed project would traverse pedestrian elements bordering the Museum, with the exception of the direct entry provided to some subway riders using the 81st Street subway station, persons dropped off or picked up by taxi or tour bus at the West 81st Street driveway, and persons parked inside the Museum garage. A Level 2 screening assessment (presented in the section below) was conducted to determine the level of quantified pedestrian analyses recommended for the EIS assessment of potential pedestrian impacts.

Table 9-7
Trip Generation Summary: Proposed Project Net Incremental Trips

Peak Hour	In/Out	Person Trip							Vehicle Trip				
		Auto	Taxi	Subway	Bus	Tour Bus	Walk	Total	Auto	Taxi	Tour Bus	Delivery	Total
Midday	In	17	29	260	8	21	84	419	4	19	1	2	26
	Out	22	39	344	11	28	111	555	6	19	1	2	28
	Total	39	68	604	19	49	195	974	10	38	2	4	54
PM	In	7	13	114	4	9	37	184	2	12	1	1	16
	Out	16	29	255	8	21	82	411	4	12	1	1	18
	Total	23	42	369	12	30	119	595	6	24	2	2	34
Saturday	In	77	54	291	30	24	119	595	20	26	1	1	48
	Out	66	46	248	25	20	101	506	17	26	1	1	45
	Total	143	100	539	55	44	220	1,101	37	52	2	2	93

Bicyclists

Of the estimated pedestrian trips shown in **Table 9-7**, a small proportion (less than one percent) would be made to the Museum by bicycle. This estimate is based on the Museum visitor survey data used to generate the modal split factors summarized in **Table 9-4**. The estimated incremental bicycle trips would be 5, 3, and 4 in the weekday midday, PM, and Saturday peak hours, respectively, and are represented as part of the walk trips shown in **Table 9-7**. There are approximately 91 bike parking spaces located on AMNH property, consisting of 35 spaces in the parking garage and 56 spaces near other AMNH entrances. In addition, there are approximately 16 sidewalk bicycle parking spaces, plus the informal use of perimeter fences for bicycle parking. The estimated bicycle trips resulting from the proposed project would not be a notable increase in utilization of these bicycle racks.

LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the distribution and assignment of projected trips to the transportation network and the determination of whether specific locations are expected to experience incremental trips exceeding *CEQR Technical Manual* thresholds. Typically, if the results of this analysis show that the proposed project would result in 50 or more peak hour vehicle trips through an intersection, 50 or more peak hour bus riders on a bus route in a single direction, 200 or more peak hour subway passengers per station, or 200 or more peak hour pedestrian trips per pedestrian element, further quantified analyses may be warranted to evaluate the potential for significant adverse traffic, transit, pedestrian, and parking impacts.

In consideration of congested conditions experienced in the area, locations that are expected to incur fewer trips than these thresholds were also nonetheless included in the analyses in order to

account for the potential for significant adverse impacts with fewer than 50 peak hour incremental vehicle trips at an intersection and fewer than 200 incremental pedestrian trips at a pedestrian element, particularly if the existing conditions indicate that those intersections and elements are already operating at poor levels of service.

SITE ACCESS AND EGRESS

Currently, there are eight different access points for entering or exiting the Museum complex, as follows (listed in descending order of number of entries).

- Theodore Roosevelt Rotunda (main entrance on Central Park West) – second floor entrance facing the west side of Central Park West between West 81st Street and West 77th Street, with 45 percent of visitor entries;
- Subway Station – lower level entrance leading directly from the 81st Street/Museum of Natural History subway station, with 21 percent of visitor entries;
- West 81st Street (Rose Center) Entrance – first floor entrance facing the Museum driveway on the south side of West 81st Street between Columbus Avenue and Central Park West, with 21 percent of visitor entries;
- Columbus Avenue (Weston Pavilion) Entrance – first floor entrance facing Columbus Avenue and Theodore Roosevelt Park, with 11 percent of visitor entries;
- Parking Garage – first floor entrances from the parking garage (visitors who park in the lower levels of the garage take elevators or stairs up to the first floor; school groups who arrive at the Museum by bus enter through doors leading from the top floor of the garage), with 2 percent of visitor entries;
- Theodore Roosevelt Memorial Hall – first floor entrance located under the stairs leading to the main entrance on Central Park West, with less than 1 percent of visitor entries;
- West 77th Street Entrance – first floor entrance on the south side of the building is open to the public with a kiosk for purchase of tickets, but is used primarily for employee access or during public programs and events; and
- Arthur Ross Terrace Entrance – second-level entrance from terrace located above the Museum parking garage.

CHANGES TO TRAFFIC AND PEDESTRIAN CIRCULATION

The proposed Gilder Center would face Columbus Avenue, an approximately 60-foot wide, one-way southbound roadway with three moving lanes, a parking lane on the west blockface, and a floating parking lane with a southbound protected bike lane on the east blockface. The existing Weston Pavilion Entrance at Columbus Avenue would be replaced by the larger, more prominent Gilder Center entrance that is expected to attract a greater share of Museum visitors. Based on Museum survey data collected in 2015, 11 percent of Museum visitors currently enter at the Weston Pavilion; with the Gilder Center project, an estimated 20 percent of Museum visitors would utilize the proposed Gilder Center entrance. With the new entrance facing Columbus Avenue, it is anticipated that some of the Museum access patterns would change, affecting pedestrian circulation and taxi pickup and drop-off locations. However, school bus circulation patterns would not be affected by these changes, as the Museum has established designated pick-up and drop-off locations for school and coach buses; these locations and the use of the 81st Street garage as the school bus hub are not being altered by the project. Based on the projections developed by AMNH, as a greater percentage of general Museum visitors would

likely utilize the Columbus Avenue entrance, there would correspondingly be a reduced percentage utilizing the Rose Center and Central Park West entrances.

TRAFFIC

As shown in **Table 9-7**, incremental vehicle trips resulting from the proposed Museum addition would exceed the *CEQR* Level-1 screening threshold only during the Saturday peak hour. However, in light of the sensitive existing traffic conditions in the surrounding neighborhood, a Level 2 screening assessment was conducted for the weekday midday and PM peak hours as well as the Saturday peak hour. In this assessment, vehicle trips were assigned to area intersections based on the most likely travel routes to and from the Museum. Auto trips were assigned to the Museum garage and available off-site parking spaces, based on a visitor intercept survey, which indicated that approximately half of Museum visitors arriving by car would park at the on-site garage on West 81st Street. Field observations indicated that approximately 30 percent of auto trips access the Museum from the west, 30 percent from the east, 18 percent from the south, and 22 percent from the north. These patterns were applied to estimate the distribution of auto trips throughout the network.

Taxi trips were assigned to the Central Park West and Columbus Avenue block faces, and the West 81st Street Museum driveway, and were distributed to the nearby streets based on survey data and Museum projections of trip distribution to each of the Museum entrance locations. Delivery trips were assigned to nearby truck routes and to the Museum service driveway on the east side of Columbus Avenue south of West 78th Street. Tour buses to the Museum were assigned to designated tour bus pickup and drop-off locations on Central Park West and the West 81st Street Museum driveway.

Summary

As shown in **Figures 9-1 through 9-3** and presented in **Table 9-8**, the project is estimated to generate up to 20 vehicle trips through an intersection during weekday peak hours and up to 34 vehicle trips during the Saturday peak hour.

Table 9-8
Traffic Level 2 Screening Analysis Results—Selected Analysis Locations

Intersection	Incremental Vehicle Trips (Weekday)		Selected Analysis Location (Weekday)	Incremental Vehicle Trips (Saturday)	Selected Analysis Location (Saturday)
	Midday	PM			
Columbus Avenue and West 83rd Street*	4	3	✓	10	✓
Columbus Avenue and West 82nd Street	3	2	✓	6	✓
Columbus Avenue and West 81st Street	6	6	✓	10	✓
Columbus Avenue and West 80th Street	7	6	✓	9	✓
Columbus Avenue and West 79th Street	13	9	✓	17	✓
Columbus Avenue and West 78th Street	12	9	✓	18	✓
Columbus Avenue and West 77th Street	12	9	✓	18	✓
Central Park West and West 83rd Street*	11	5	✓	19	✓
Central Park West and West 82nd Street	11	4	✓	19	✓
Central Park West and West 81st Street	20	9	✓	34	✓
Central Park West and Museum Entrance	11	8		18	
Central Park West and West 77th Street	12	9	✓	20	✓
West 81st Street and Museum Driveway Entrance	3	2		9	
West 81st Street and Museum Driveway Exit	9	3		16	
Amsterdam Avenue and West 79th Street	10	6		15	

Notes: ✓ denotes intersection selected for detailed traffic analysis. Incremental vehicle trips for certain movements at some intersections may be negative due to the relocation of some taxi trips to Columbus Avenue with the new Gilder Center entrance.
*Intersections were added to the traffic study area for FEIS in response to comments made during public review of the DEIS

Although no single intersection is expected to incur incremental trips exceeding the *CEQR* Level 2 screening threshold of 50 incremental vehicle trips, ~~nine~~eleven intersections surrounding the Museum were conservatively selected for detailed analysis in the weekday midday, weekday

4/5/2017

W 86 ST
W 85 ST
W 84 ST
W 83 ST
W 82 ST
W 81 ST
W 80 ST
W 79 ST
W 78 ST
W 77 ST
W 76 ST
W 75 ST
W 74 ST

AMSTERDAM AVE
COLUMBUS AVE
CENTRAL PARK WEST
86 ST TRANSVERSE
79 ST TRANSVERSE
W DR

Central Park
Theodore Roosevelt Park
Tecumseh Playground
Bro Ce Plots
BROAD

Theodore Roosevelt Park

Building Site

0 200 FEET

Proposed Project Incremental Vehicle Trips
Weekday Midday Peak Hour

Figure 9-1

4/5/2017

Theodore Roosevelt Park

Building Site

0 200 FEET

Proposed Project Incremental Vehicle Trips
Weekday PM Peak Hour
Figure 9-2

4/5/2017

Theodore Roosevelt Park

Building Site

0 200 FEET

Proposed Project Incremental Vehicle Trips
Saturday Peak Hour
Figure 9-3

PM, and Saturday peak hours, in consideration of congested existing traffic conditions and in response to comments made by community stakeholders. A map of the selected traffic analysis locations is presented in **Figure 9-4**.

TRANSIT

As described above, the project is estimated to generate fewer than 50 peak hour bus riders in a single direction. Therefore, based on *CEQR Technical Manual* guidelines, a detailed analysis of bus line-haul conditions is not warranted and the proposed project is not expected to result in any significant adverse bus line-haul impacts.

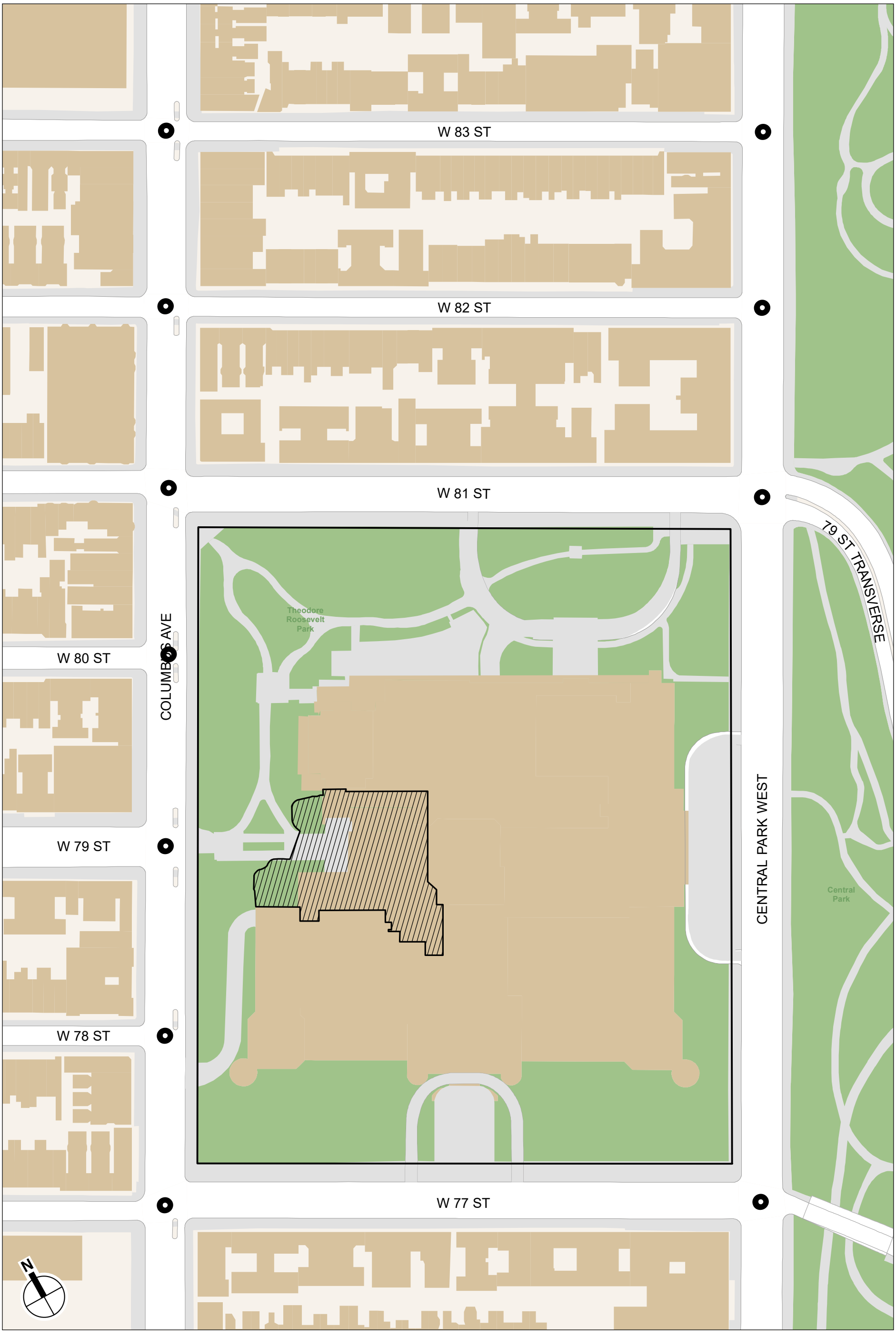
An assignment of the projected subway trips was undertaken to determine the need for a detailed analysis of subway station elements and line-haul conditions. The Museum is located near two New York City Transit (NYCT) subway stations: (1) 81st Street/Museum of Natural History (B and C lines); and (2) 79th Street (No. 1 line). As summarized in **Table 9-7**, the proposed project is expected to generate 604, 369, and 539 peak-hour incremental subway trips during the weekday midday, PM, and Saturday peak hours, respectively. Based on visitor intercept survey data, 84 percent of Museum visitors arriving by subway currently use the 81st Street station and 16 percent use the 79th Street station. It is anticipated that the share of visitors using the 79th Street station would increase with the new Gilder Center entrance on Columbus Avenue, due to the closer proximity from the Gilder Center entrance to that subway station; therefore, after accounting for the distance to each station from the Museum and subway ridership levels at each station, a shift in subway trips from the 81st Street station at Central Park West to the 79th Street station at Broadway was assumed. This shift is projected to increase the share of AMNH trips using the 79th Street station from 16 percent to 18 percent. The modified distribution would be expected to result in 82 percent of Museum subway trips to the 81st Street station, which connects directly into the Museum complex, and 18 percent to the 79th Street station two blocks west of the Museum. Applying these distribution patterns to the total No Action and total Proposed Project peak hour subway trips would result in up to approximately 430 and 170 incremental peak hour subway trips at the 81st Street and 79th Street stations, respectively. Therefore, a quantified analysis of station elements is warranted only for the 81st Street station, because more than 200 incremental peak hour trips would be generated at that station. **Table 9-9** provides a summary of the trips assigned to various station elements and control areas at this station, based on the preferred choice of Museum entrances, as indicated in the intercept survey data.

Table 9-9
81st Street Subway Station – Selected Analysis Elements

Subway Station Element	Peak Hour Incremental Subway Trips					
	Weekday Midday		Weekday PM		Saturday	
Stairway Elements	**Up**	**Down**	**Up**	**Down**	**Up**	**Down**
P1A/P1B/S2A/S2B (Street-level stair at West 81st Street)	31	40	13	30	34	29
S1A/S1B (Street-level stair at Central Park West)	60	79	27	59	67	57
PL5/PL6 (Platform-level stair near West 81st Street)	5	14	2	10	5	10
PL7/PL8 (Platform-level stair near West 81st Street)	5	14	2	10	5	10
PL3/PL4 (Platform-level stair near Museum entrance)	23	71	10	53	26	51
Fare Control Areas	**Entry**	**Exit**	**Entry**	**Exit**	**Entry**	**Exit**
Control Area Near West 81st Street (5 turnstiles)	40	31	30	13	29	34
Control Area Near Museum Entrance (3 turnstiles, 3 high entry-exit turnstiles)	205	154	151	67	147	173

Since most hotels and other tourist attractions are situated south of the Museum, it is projected that most subway trips generated by the project would originate from the south. This distribution pattern would result in incremental subway trips during the critical weekday PM transit peak hour that would be below the *CEQR Technical Manual* analysis threshold of 200 or more peak

4/5/2017



Building Site

Theodore Roosevelt Park

Traffic Analysis Intersection - Weekday and Saturday

0 200 FEET

Traffic Study Area

Figure 9-4

hour subway trips per line. Therefore, a detailed analysis of subway line-haul conditions is not warranted and the proposed project is not expected to result in any significant adverse subway line-haul impacts.

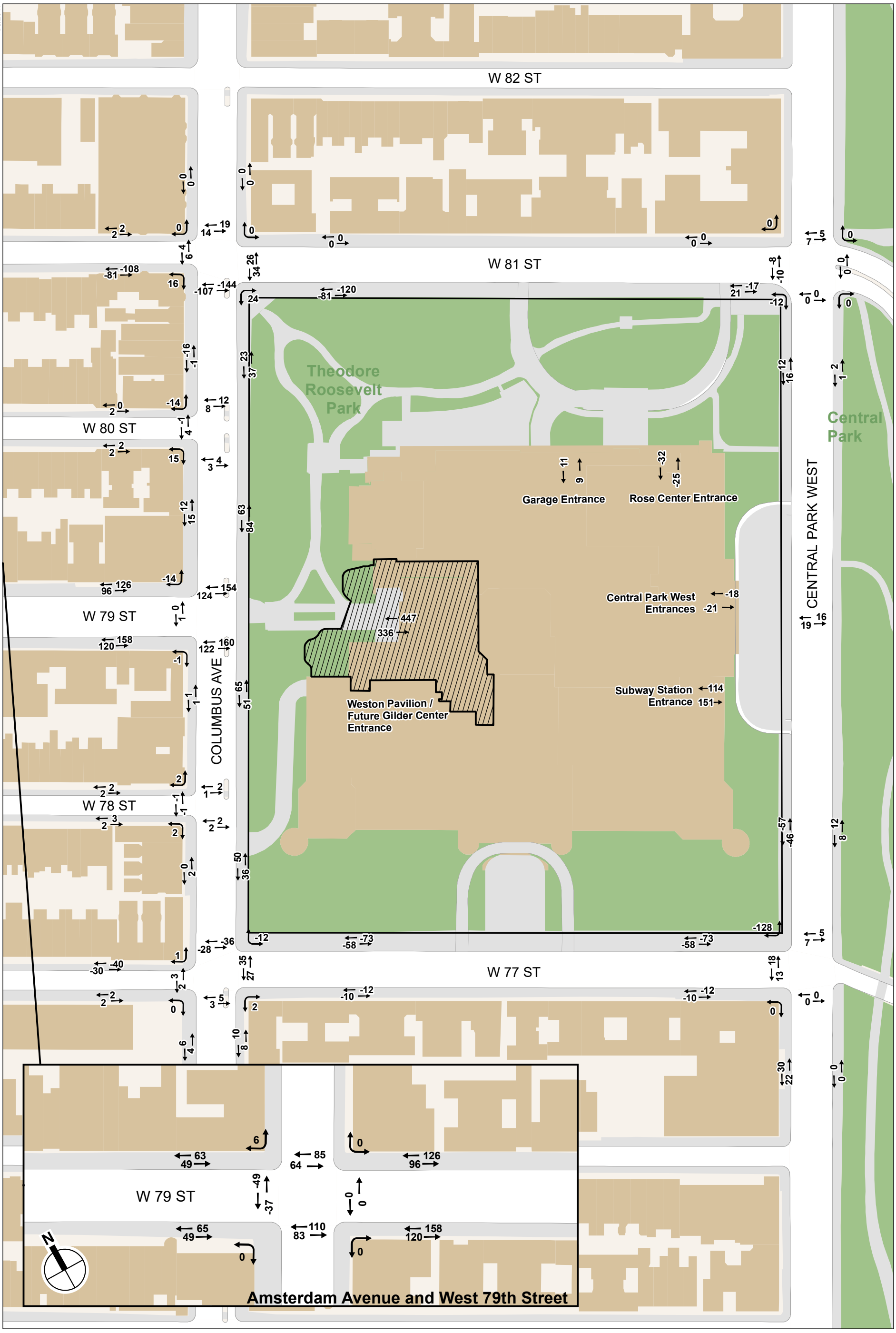
PEDESTRIANS

As shown in **Table 9-6**, the projected peak hour pedestrian trips are expected to exceed 200 pedestrians during all peak hours. An assignment of the projected pedestrian trips was undertaken to determine the need to prepare a detailed analysis of area sidewalks, corner reservoirs, and crosswalks. Level 2 pedestrian trip assignments, as described below, were developed for the proposed project and are shown in **Figures 9-5 through 9-7**.

- Auto Trips – Motorists would either park inside the Museum garage on West 81st Street and enter the building directly from the garage, or would park off-site and walk to the Museum.
- Taxi Trips – Taxi patrons would generally be dropped off and picked up along Central Park West, Columbus Avenue, and West 81st Street.
- City Bus Trips – City bus riders would use bus routes on Central Park West, West 81st Street, Columbus Avenue, and Amsterdam Avenue, and would get on/off buses at stops nearest to the Museum.
- Tour Bus Trips – Tour bus passengers would board/alight at designated tour bus pick-up and drop-off locations, on the West 81st Street Museum driveway and the west side of Central Park West.
- Subway Trips – Subway riders would arrive using the 81st Street/Museum of Natural History (B/C) and 79th Street (No. 1) subway stations. As described above, approximately 82 percent of riders were assigned to the 81st Street station that connects directly into the Museum complex and 18 percent were assigned to the 79th Street station two blocks west with the new Gilder Center entrance.
- Walk-Only Trips – Pedestrian walk-only trips were developed by distributing project-generated trips to bordering pedestrian facilities (i.e., sidewalks, corner reservoirs, and crosswalks) based on survey data, as well as the land use characteristics of the surrounding neighborhood.

The pedestrian trip assignments also account for a shift in trip-making from the existing Museum entrances on Central Park West and West 81st Street to the new Gilder Center entrance. Even with the project's net gain in trip-making, this shift in pedestrian travel patterns is expected to yield a reduction in Museum-related pedestrian volumes on the south side of West 81st Street and along Central Park West, where some existing trips would be shortened and diverted from existing Museum entrances to the new Gilder Center entrance. Based on the pedestrian assignments, ten sidewalks, four corners, and four crosswalks were selected for detailed analysis for the weekday and Saturday peak hours, as shown in **Table 9-10** and depicted in **Figure 9-8.** While some of the pedestrian elements selected for detailed analysis would not incur incremental trips exceeding the *CEQR* Level 2 threshold of 200 trips in any of the peak hours, these pedestrian elements were conservatively selected for analysis in consideration of sensitive conditions bordering the Museum.

4/5/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

Proposed Project Incremental Pedestrian Trips
Weekday Midday Peak Hour
Figure 9-5

4/5/2017

W 82 ST

W 81 ST

W 80 ST

W 79 ST

W 78 ST

W 77 ST

COLUMBUS AVE

CENTRAL PARK WEST

Theodore Roosevelt Park

Central Park

Garage Entrance

Rose Center Entrance

Central Park West Entrances

Subway Station Entrance

Weston Pavilion / Future Gilder Center Entrance

Amsterdam Avenue and West 79th Street

N

Theodore Roosevelt Park

Building Site

0 200 FEET

Proposed Project Incremental Pedestrian Trips
Weekday PM Peak Hour

Figure 9-6

4/5/2017

W 82 ST

W 81 ST

W 80 ST

W 79 ST

W 78 ST

W 77 ST

COLUMBUS AVE

CENTRAL PARK WEST

Theodore Roosevelt Park

Central Park

Garage Entrance

Rose Center Entrance

Central Park West Entrances

Subway Station Entrance

Weston Pavilion / Future Gilder Center Entrance

Amsterdam Avenue and West 79th Street

N

Theodore Roosevelt Park

Building Site

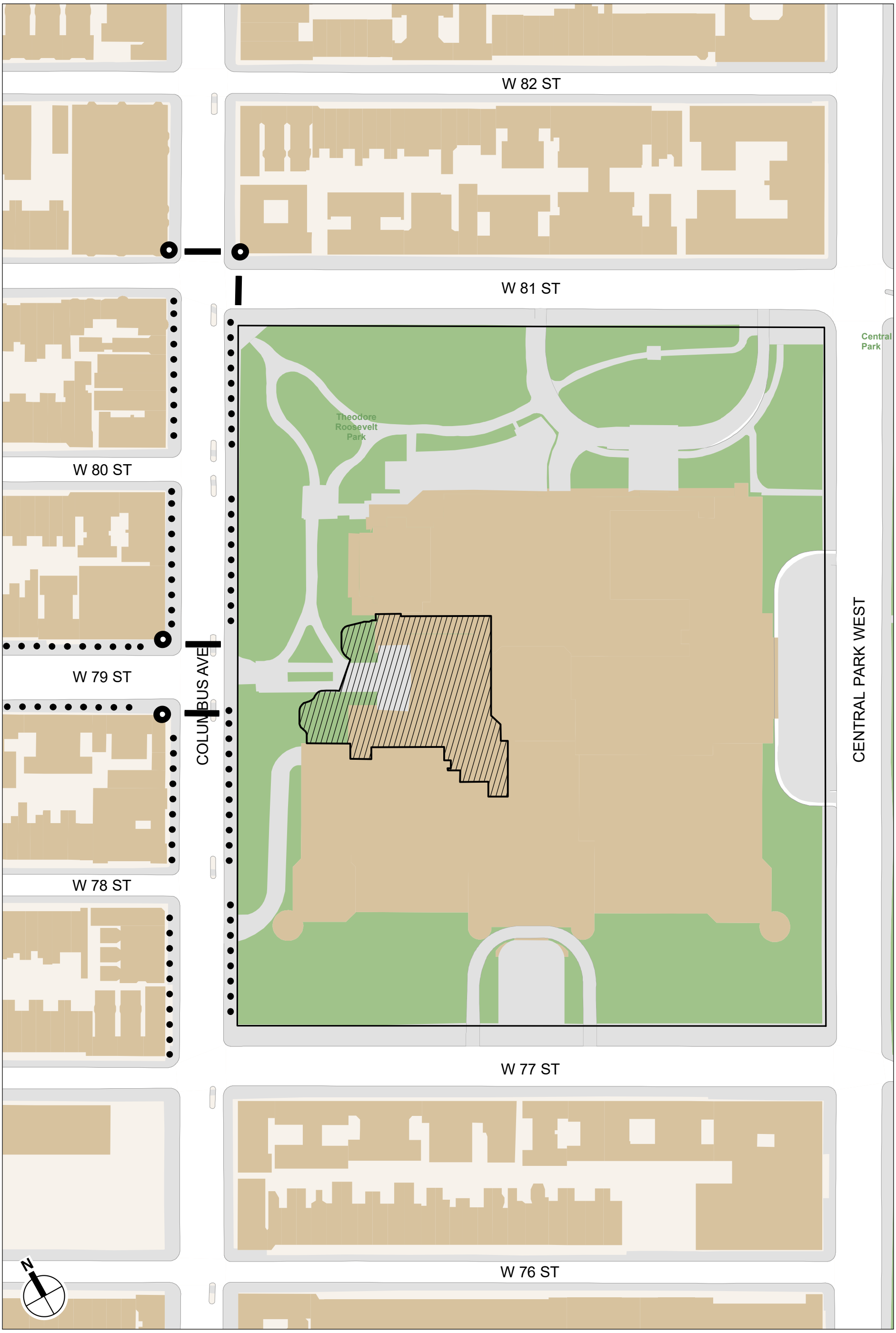
0 200 FEET

Proposed Project Incremental Pedestrian Trips
Saturday Peak Hour

Figure 9-7

AMNH Gilder Center for Science, Education, and Innovation

11/4/2016



Pedestrian Study Area

Figure 9-8

Table 9-10
Pedestrian Level 2 Screening Analysis Results—Selected Analysis Locations

Pedestrian Elements	Weekday Incremental Pedestrian Trips		Selected Analysis Location (Weekday)	Saturday Incremental Pedestrian Trips	Selected Analysis Location (Saturday)
	MD	PM			
Amsterdam Avenue and West 79th Street					
Northwest Sidewalk between Amsterdam Avenue and Broadway (on West 79th Street)	112	68		114	
Southwest Sidewalk between Amsterdam Avenue and Broadway (on West 79th Street)	114	70		121	
North Crosswalk	149	90		146	
South Crosswalk	193	118		191	
Northeast Corner	149	90		146	
Southeast Corner	193	118		191	
Southwest Corner	107	66		113	
Northwest Corner	69	42		73	
Columbus Avenue and West 81st Street					
Southeast Sidewalk between West 81st Street and West 80th Street (on Columbus Avenue)	60	38	✓	97	✓
Southwest Sidewalk between West 81st Street and West 80th Street (on Columbus Avenue)	-17	-10	✓	-5	✓
Southeast Sidewalk between Columbus Avenue and Museum Driveway (on West 81st Street)	-201	-122		-176	
Northwest Corner	43	26	✓	58	✓
Northeast Corner	93	56	✓	116	✓
Southeast Corner	-167	-101		-132	
Southwest Corner	-225	-137		-215	
North Crosswalk	33	20	✓	38	✓
East Crosswalk	60	36	✓	78	✓
South Crosswalk	-251	-153		-253	
West Crosswalk	10	6		20	
Columbus Avenue and West 79th Street					
Northwest Sidewalk between Amsterdam Avenue and Columbus Avenue (on West 79th Street)	**222**	135	✓	**212**	✓
Southwest Sidewalk between Amsterdam Avenue and Columbus Avenue (on West 79th Street)	**278**	170	✓	**269**	✓
Northwest Sidewalk between West 80th Street and West 79th Street (on Columbus Avenue)	27	16	✓	53	✓
Southwest Sidewalk between West 79th Street and West 78th Street (on Columbus Avenue)	2	0	✓	0	✓
Northeast Sidewalk between West 80th Street and West 79th Street (on Columbus Avenue)	147	91	✓	**225**	✓
Southeast Sidewalk between West 79th Street and West 78th Street (on Columbus Avenue)	116	72	✓	132	✓
Northwest Corner	**265**	160	✓	**287**	✓
Southwest Corner	**282**	172	✓	**277**	✓
North Crosswalk	**278**	168	✓	**302**	✓
West Crosswalk	1	0		1	
South Crosswalk	**282**	173	✓	**280**	✓
Columbus Avenue and West 77th Street					
Northeast Sidewalk between West 78th Street and West 77th Street (on Columbus Avenue)	86	53	✓	97	✓
Northwest Sidewalk between West 78th Street and West 77th Street (on Columbus Avenue)	2	1	✓	2	✓
Northeast Sidewalk between Columbus Avenue and Central Park West (on West 77th Street)	-131	-81		-139	
East Crosswalk	62	39		72	
North Crosswalk	-64	-40		-54	
West Crosswalk	5	4		6	
South Crosswalk	8	5		9	
Southwest Corner	13	9		15	
Northwest Corner	-58	-35		-44	
Southeast Corner	72	46		83	
Northeast Corner	-14	-8		4	
Central Park West and West 81st Street					
Southwest Sidewalk between Museum Driveway and Central Park West (on West 81st Street)	4	4		10	
Southwest Sidewalk between West 81st Street and Museum Entrance (on Central Park West)	28	18		15	
West Crosswalk	-18	-11		-14	
North Crosswalk	12	7		13	
Southwest Corner	-30	-19		-50	
Northwest Corner	-6	-4		-1	
Central Park West and Museum Entrance					
Mid-block crosswalk on Central Park West between West 81st Street and West 77th Street	35	21		53	
Central Park West and West 77th Street					
Northwest Sidewalk between West 77th Street and Museum Entrance (on Central Park West)	-103	-62		-95	
Southwest Sidewalk between West 77th Street and West 76th Street (on Central Park West)	52	31		68	
West Crosswalk	31	18		43	
North Crosswalk	12	7		13	
Southwest Corner	31	18		43	
Northwest Corner	-85	-53		-72	

Notes:
✓ denotes pedestrian elements selected for the detailed pedestrian analysis.
Some sidewalk, corner, and crosswalk pedestrian elements bordering the Museum, such as those on Central Park West and the south side of West 81st Street, are projected to have negative incremental pedestrian trips. Most of these elements were not selected for detailed analysis. These negative incremental pedestrian trips are attributed to the diversion of pedestrian trips from other Museum entrances to the new Gilder Center entrance.

In accordance with the methodology of the *CEQR Technical Manual*, Saturday was selected for analysis as the peak weekend day based on pedestrian volumes. However, pedestrian elements along Columbus Avenue were also selected for analyses during the Sunday peak hour. While Museum attendance is generally lower on Sundays relative to Saturdays, the purpose of these supplemental Sunday peak hour analyses is to assess the effects of pedestrian volumes caused by the presence of the Greenmarket on the east sidewalk of Columbus Avenue between West 81st Street and West 77th Street, and differences in site access patterns for pedestrian trips made to the Museum on Sunday. These pedestrian analyses during the Greenmarket operations are presented following the summary of the weekday and Saturday pedestrian analyses.

C. TRANSPORTATION ANALYSIS METHODOLOGIES

TRAFFIC OPERATIONS

The operation of signalized intersections in the study area was assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Highway Capacity Software (HCS+ 5.5)*. The *HCM* procedure evaluates the levels of service (LOS) for signalized intersections using average stop control delay, in seconds per vehicle, as described below.

SIGNALIZED INTERSECTIONS

The average control delay per vehicle is the basis for LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection. The levels of service are defined in **Table 9-11**.

Table 9-11
Level of Service Criteria for Signalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	>10.0 and ≤ 20.0 seconds
C	>20.0 and ≤ 35.0 seconds
D	>35.0 and ≤ 55.0 seconds
E	>55.0 and ≤ 80.0 seconds
F	>80.0 seconds

Source: Transportation Research Board. *Highway Capacity Manual*, 2000.

Although the HCM methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the *HCM*. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum capacity with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more than one green phase to clear the intersection) can occur. Conditions at LOS E and F reflect poor service levels, and cycle breakdowns are frequent. The *HCM* methodology also provides for a summary of the total intersection operating conditions. The analysis chooses the two critical movements (the worst case from each roadway) and calculates a

summary critical v/c ratio. The overall intersection delay, which determines the intersection's LOS, is based on a weighted average of control delays of the individual lane groups. Within New York City, the midpoint of LOS D (45 seconds of delay) is generally considered as the threshold between acceptable and unacceptable operations.

Significant Impact Criteria

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered significant and require examination of mitigation if they result in an increase in the With Action condition of 5 or more seconds of delay in a lane group over No Action levels beyond mid-LOS D. For No Action LOS E, a 4-second increase in delay is considered significant. For No Action LOS F, a 3-second increase in delay is considered significant. In addition, impacts are considered significant if levels of service deteriorate from acceptable A, B, or C in the No Action condition to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the With Action condition.

TRANSIT OPERATIONS

SUBWAY STATION ELEMENTS

The methodology for assessing station circulation (stairs, and passageways) and fare control (regular turnstiles, high entry/exit turnstiles, and high exit turnstiles) elements compares the user volume with the analyzed element's design capacity, resulting in a v/c ratio. For stairs, the design capacity considers the effective width of a tread, which accounts for railings or other obstructions, the friction or counter-flow between upward and downward pedestrians (up to 10 percent capacity reduction is applied to account for counter-flow friction), surging of entering and exiting pedestrians (up to 25 percent capacity reduction is applied to account for surged flows off of platforms and onto platforms), and the average area required for circulation. For passageways, similar considerations are made. For turnstiles, capacities are measured by the number of elements and the NYCT optimum capacity per element, which also account for the potential for surging of entering and exiting pedestrians. In the analysis for each of these elements, volumes and capacities are presented for 15-minute intervals. The estimated v/c ratio is compared with NYCT criteria to determine a LOS for the operation of an element, as summarized in **Table 9-12**.

Table 9-12
Level of Service Criteria for Subway Station Elements

LOS	V/C Ratio
A	0.00 to 0.45
B	0.45 to 0.70
C	0.70 to 1.00
D	1.00 to 1.33
E	1.33 to 1.67
F	Above 1.67

Source: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

At LOS A ("free flow") and B ("fluid flow"), there is sufficient area to allow pedestrians to freely select their walking speed and bypass slower pedestrians. When cross and reverse flow movement exists, only minor conflicts may occur. At LOS C ("fluid, somewhat restricted"), movement is fluid although somewhat restricted. While there is sufficient room for standing without personal contact, circulation through queuing areas may require adjustments to walking

speed. At LOS D ("crowded, walking speed restricted"), walking speed is restricted and reduced. Reverse and cross flow movement is severely restricted because of congestion and the difficult passage of slower moving pedestrians. At LOS E ("congested, some shuffling and queuing") and F ("severely congested, queued"), walking speed is restricted. There is also insufficient area to bypass others, and opposing movement is difficult. Often, forward progress is achievable only through shuffling, with queues forming.

Significant Impact Criteria

The determination of significant impacts for station elements varies based on their type and use. For stairs and passageways, significant impacts are defined in term of width increment threshold (WIT) based on the minimum amount of additional capacity that would be required either to mitigate the location to its service conditions (LOS) under the No Action levels, or to bring it to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Significant impacts are typically considered to occur once the WITs in **Table 9-13** are reached or exceeded.

Table 9-13
Significant Impact Guidance for Stairs and Passageways

With Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00 to 1.09	8.0	13.0
1.10 to 1.19	7.0	11.5
1.20 to 1.29	6.0	10.0
1.30 to 1.39	5.0	8.5
1.40 to 1.49	4.0	6.0
1.50 to 1.59	3.0	4.5
1.60 and up	2.0	3.0

Note: WIT = Width Increment Threshold.
Source: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

For control area elements, impacts are significant if the proposed project causes a v/c ratio to increase from below 1.00 to 1.00 or greater. Where a facility is already at or above its capacity (a v/c of 1.00 or greater) in the No Action condition, a 0.01 increase in v/c ratio is also significant.

PEDESTRIAN OPERATIONS

The adequacy of the study area's sidewalks, crosswalks, and corner reservoir capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 2010 *HCM* and procedures detailed in the *CEQR Technical Manual*.

The primary performance measure for sidewalks and walkways is pedestrian space, expressed as square feet per pedestrian (SFP), which is an indicator of the quality of pedestrian movement and comfort. The calculation of the sidewalk SFP is based on the pedestrian volumes by direction, the effective sidewalk or walkway width, and average walking speed. The SFP forms the basis for a sidewalk LOS analysis. The determination of sidewalk LOS is also dependent on whether the pedestrian flow being analyzed is best described as "non-platoon" or "platoon." Non-platoon flow occurs when pedestrian volume within the peak 15-minute period is relatively uniform, whereas, platoon flow occurs when pedestrian volumes vary significantly with the peak 15-minute period. Such variation typically occurs near bus stops, subway stations, and/or where adjacent crosswalks account for much of the walkway's pedestrian volume.

Crosswalks and street corners are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner). The *HCM* methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians.

The total "time-space" available for these activities, expressed in square feet-second, is calculated by multiplying the net area of the corner (in square feet) by the signal's cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner per signal cycle (expressed as pedestrians per second). The ratio of net time-space divided by the total pedestrian circulation volume per signal cycle provides the LOS measurement of SFP.

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet-second. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. Walking speed varies depending on the location of the crosswalk and its primary users: crosswalks located in Senior Pedestrian Focus Areas or school crosswalks are assumed to operate with a walking speed of 3 feet per second, compared to 3.5 feet per second for the typical crosswalk. The ratio of time-space available in the crosswalk to the total crosswalk pedestrian occupancy time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk. The LOS standards for sidewalks, corner reservoirs, and crosswalks are summarized in **Table 9-14**. The *CEQR Technical Manual* specifies acceptable LOS in Central Business District (CBD) areas is mid-LOS D or better.

Table 9-14
Level of Service Criteria for Pedestrian Elements

LOS	Sidewalks		Corner Reservoirs and Crosswalks
	Non-Platoon Flow	Platoon Flow	
A	> 60 SFP	> 530 SFP	> 60 SFP
B	> 40 and ≤ 60 SFP	> 90 and ≤ 530 SFP	> 40 and ≤ 60 SFP
C	> 24 and ≤ 40 SFP	> 40 and ≤ 90 SFP	> 24 and ≤ 40 SFP
D	> 15 and ≤ 24 SFP	> 23 and ≤ 40 SFP	> 15 and ≤ 24 SFP
E	> 8 and ≤ 15 SFP	> 11 and ≤ 23 SFP	> 8 and ≤ 15 SFP
F	≤ 8 SFP	≤ 11 SFP	≤ 8 SFP

Notes: SFP = square feet per pedestrian.
Source: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

SIGNIFICANT IMPACT CRITERIA

The determination of significant pedestrian impacts considers the level of predicted decrease in pedestrian space between the No Action and With Action conditions. For different pedestrian elements, flow conditions, and area types, the CEQR procedure for impact determination corresponds with various sliding-scale formulas, as further detailed below.

Sidewalks

There are two sliding-scale formulas for determining significant sidewalk impacts. For non-platoon flow, the determination of significant sidewalk impacts is based on the sliding scale using the following formula: $Y \geq X/9.0 - 0.31$, where Y is the decrease in pedestrian space in

SFP and X is the No Action pedestrian space in SFP. For platoon flow, the sliding-scale formula is $Y \geq X/(9.5 - 0.321)$. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, these formulas would apply only if the With Action pedestrian space falls short of LOS C in non-CBD areas or mid-LOS D in CBD areas. **Table 9-15** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts.

Table 9-15
Significant Impact Guidance for Sidewalks

Non-Platoon Flow				Platoon Flow			
Sliding Scale Formula: *$Y \geq X/9.0 - 0.31$*				**Sliding Scale Formula:** *$Y \geq X/(9.5 - 0.321)$*			
Non-CBD Areas		**CBD Areas**		**Non-CBD Areas**		**CBD Areas**	
No Action Ped. Space (X, SFP)	**With Action Ped. Space Reduc. (Y, SFP)**	**No Action Ped. Space (X, SFP)**	**With Action Ped. Space Reduc. (Y, SFP)**	**No Action Ped. Space (X, SFP)**	**With Action Ped. Space Reduc. (Y, SFP)**	**No Action Ped. Space (X, SFP)**	**With Action Ped. Space Reduc. (Y, SFP)**
–	–	–	–	43.5 to 44.3	≥ 4.3	–	–
–	–	–	–	42.5 to 43.4	≥ 4.2	–	–
–	–	–	–	41.6 to 42.4	≥ 4.1	–	–
–	–	–	–	40.6 to 41.5	≥ 4.0	–	–
–	–	–	–	39.7 to 40.5	≥ 3.9	–	–
–	–	–	–	38.7 to 39.6	≥ 3.8	38.7 to 39.2	≥ 3.8
–	–	–	–	37.8 to 38.6	≥ 3.7	37.8 to 38.6	≥ 3.7
–	–	–	–	36.8 to 37.7	≥ 3.6	36.8 to 37.7	≥ 3.6
–	–	–	–	35.9 to 36.7	≥ 3.5	35.9 to 36.7	≥ 3.5
–	–	–	–	34.9 to 35.8	≥ 3.4	34.9 to 35.8	≥ 3.4
–	–	–	–	34.0 to 34.8	≥ 3.3	34.0 to 34.8	≥ 3.3
–	–	–	–	33.0 to 33.9	≥ 3.2	33.0 to 33.9	≥ 3.2
–	–	–	–	32.1 to 32.9	≥ 3.1	32.1 to 32.9	≥ 3.1
–	–	–	–	31.1 to 32.0	≥ 3.0	31.1 to 32.0	≥ 3.0
–	–	–	–	30.2 to 31.0	≥ 2.9	30.2 to 31.0	≥ 2.9
–	–	–	–	29.2 to 30.1	≥ 2.8	29.2 to 30.1	≥ 2.8
25.8 to 26.6	≥ 2.6	–	–	28.3 to 29.1	≥ 2.7	28.3 to 29.1	≥ 2.7
24.9 to 25.7	≥ 2.5	–	–	27.3 to 28.2	≥ 2.6	27.3 to 28.2	≥ 2.6
24.0 to 24.8	≥ 2.4	–	–	26.4 to 27.2	≥ 2.5	26.4 to 27.2	≥ 2.5
23.1 to 23.9	≥ 2.3	–	–	25.4 to 26.3	≥ 2.4	25.4 to 26.3	≥ 2.4
22.2 to 23.0	≥ 2.2	–	–	24.5 to 25.3	≥ 2.3	24.5 to 25.3	≥ 2.3
21.3 to 22.1	≥ 2.1	21.3 to 21.5	≥ 2.1	23.5 to 24.4	≥ 2.2	23.5 to 24.4	≥ 2.2
20.4 to 21.2	≥ 2.0	20.4 to 21.2	≥ 2.0	22.6 to 23.4	≥ 2.1	22.6 to 23.4	≥ 2.1
19.5 to 20.3	≥ 1.9	19.5 to 20.3	≥ 1.9	21.6 to 22.5	≥ 2.0	21.6 to 22.5	≥ 2.0
18.6 to 19.4	≥ 1.8	18.6 to 19.4	≥ 1.8	20.7 to 21.5	≥ 1.9	20.7 to 21.5	≥ 1.9
17.7 to 18.5	≥ 1.7	17.7 to 18.5	≥ 1.7	19.7 to 20.6	≥ 1.8	19.7 to 20.6	≥ 1.8
16.8 to 17.6	≥ 1.6	16.8 to 17.6	≥ 1.6	18.8 to 19.6	≥ 1.7	18.8 to 19.6	≥ 1.7
15.9 to 16.7	≥ 1.5	15.9 to 16.7	≥ 1.5	17.8 to 18.7	≥ 1.6	17.8 to 18.7	≥ 1.6
15.0 to 15.8	≥ 1.4	15.0 to 15.8	≥ 1.4	16.9 to 17.7	≥ 1.5	16.9 to 17.7	≥ 1.5
14.1 to 14.9	≥ 1.3	14.1 to 14.9	≥ 1.3	15.9 to 16.8	≥ 1.4	15.9 to 16.8	≥ 1.4
13.2 to 14.0	≥ 1.2	13.2 to 14.0	≥ 1.2	15.0 to 15.8	≥ 1.3	15.0 to 15.8	≥ 1.3
12.3 to 13.1	≥ 1.1	12.3 to 13.1	≥ 1.1	14.0 to 14.9	≥ 1.2	14.0 to 14.9	≥ 1.2
11.4 to 12.2	≥ 1.0	11.4 to 12.2	≥ 1.0	13.1 to 13.9	≥ 1.1	13.1 to 13.9	≥ 1.1
10.5 to 11.3	≥ 0.9	10.5 to 11.3	≥ 0.9	12.1 to 13.0	≥ 1.0	12.1 to 13.0	≥ 1.0
9.6 to 10.4	≥ 0.8	9.6 to 10.4	≥ 0.8	11.2 to 12.0	≥ 0.9	11.2 to 12.0	≥ 0.9
8.7 to 9.5	≥ 0.7	8.7 to 9.5	≥ 0.7	10.2 to 11.1	≥ 0.8	10.2 to 11.1	≥ 0.8
7.8 to 8.6	≥ 0.6	7.8 to 8.6	≥ 0.6	9.3 to 10.1	≥ 0.7	9.3 to 10.1	≥ 0.7
6.9 to 7.7	≥ 0.5	6.9 to 7.7	≥ 0.5	8.3 to 9.2	≥ 0.6	8.3 to 9.2	≥ 0.6
6.0 to 6.8	≥ 0.4	6.0 to 6.8	≥ 0.4	7.4 to 8.2	≥ 0.5	7.4 to 8.2	≥ 0.5
5.1 to 5.9	≥ 0.3	5.1 to 5.9	≥ 0.3	6.4 to 7.3	≥ 0.4	6.4 to 7.3	≥ 0.4
< 5.1	≥ 0.2	< 5.1	≥ 0.2	< 6.4	≥ 0.3	< 6.4	≥ 0.3

Notes: SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action pedestrian space in SFP.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

Corner Reservoirs and Crosswalks

The determination of significant corner and crosswalk impacts is also based on a sliding scale using the following formula: $Y \geq X/9.0 - 0.31$, where Y is the decrease in pedestrian space in SFP and X is the No Action pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, this formula would apply only if the With Action pedestrian space falls short of LOS C in non-CBD areas or mid-LOS D in CBD areas. **Table 9-16** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant corner reservoir and crosswalk impacts.

Table 9-16
Significant Impact Guidance for Corners and Crosswalks

Sliding Scale Formula:	***Y ≥ X/9.0 – 0.31***		
Non-CBD Areas		**CBD Areas**	
No Action Pedestrian Space (X, SFP)	**With Action Pedestrian Space Reduction (Y, SFP)**	**No Action Pedestrian Space (X, SFP)**	**With Action Pedestrian Space Reduction (Y, SFP)**
25.8 to 26.6	≥ 2.6	–	–
24.9 to 25.7	≥ 2.5	–	–
24.0 to 24.8	≥ 2.4	–	–
23.1 to 23.9	≥ 2.3	–	–
22.2 to 23.0	≥ 2.2	–	–
21.3 to 22.1	≥ 2.1	21.3 to 21.5	≥ 2.1
20.4 to 21.2	≥ 2.0	20.4 to 21.2	≥ 2.0
19.5 to 20.3	≥ 1.9	19.5 to 20.3	≥ 1.9
18.6 to 19.4	≥ 1.8	18.6 to 19.4	≥ 1.8
17.7 to 18.5	≥ 1.7	17.7 to 18.5	≥ 1.7
16.8 to 17.6	≥ 1.6	16.8 to 17.6	≥ 1.6
15.9 to 16.7	≥ 1.5	15.9 to 16.7	≥ 1.5
15.0 to 15.8	≥ 1.4	15.0 to 15.8	≥ 1.4
14.1 to 14.9	≥ 1.3	14.1 to 14.9	≥ 1.3
13.2 to 14.0	≥ 1.2	13.2 to 14.0	≥ 1.2
12.3 to 13.1	≥ 1.1	12.3 to 13.1	≥ 1.1
11.4 to 12.2	≥ 1.0	11.4 to 12.2	≥ 1.0
10.5 to 11.3	≥ 0.9	10.5 to 11.3	≥ 0.9
9.6 to 10.4	≥ 0.8	9.6 to 10.4	≥ 0.8
8.7 to 9.5	≥ 0.7	8.7 to 9.5	≥ 0.7
7.8 to 8.6	≥ 0.6	7.8 to 8.6	≥ 0.6
6.9 to 7.7	≥ 0.5	6.9 to 7.7	≥ 0.5
6.0 to 6.8	≥ 0.4	6.0 to 6.8	≥ 0.4
5.1 to 5.9	≥ 0.3	5.1 to 5.9	≥ 0.3
< 5.1	≥ 0.2	< 5.1	≥ 0.2

Notes: SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Action pedestrian space in SFP.
Sources: New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent 3-year period for which data are available. In the event there are such locations in the study area, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with the New York City Department of Transportation (DOT) for their approval.

PARKING CONDITIONS ASSESSMENT

The parking analysis identifies the extent to which off-street parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from parking displacement attributable to or additional demand generated by a proposed project. Typically, this analysis encompasses a study area within a ¼-mile of the project site. If the analysis concludes a shortfall in parking within the ¼-mile study area, the study area could be extended to a ½-mile to identify additional parking supply.

For proposed projects located in Manhattan or other CBD areas, the inability of the proposed project or the surrounding area to accommodate the project's future parking demand is considered a parking shortfall, but is generally not considered significant due to the magnitude of available alternative modes of transportation. For other areas in New York City, a parking shortfall that exceeds more than half the available on-street and off-street parking spaces within a ¼-mile of the project site may be considered significant. Additional factors, such as the availability and extent of transit in the area, proximity of the project to such transit, and patterns of automobile usage by area residents, could be considered to determine the significance of the identified parking shortfall. In some cases, if there is adequate parking supply within a ½-mile of the project site, the projected parking shortfall may also not necessarily be considered significant.

D. TRAFFIC ANALYSIS

As described above in Section B, "Preliminary Analysis Methodology and Screening Assessment," nine intersections bordering the American Museum of Natural History were selected for analysis in the weekday midday, weekday PM, and Saturday peak periods. All of the analysis intersections are signalized.

2015 EXISTING CONDITIONS

ROADWAY NETWORK AND TRAFFIC STUDY AREA

Columbus Avenue, located on the western edge of the Museum site, is a major one-way southbound arterial on the west side of Manhattan. It operates with three to four moving lanes (including turning lanes) in the southbound direction. Parking regulations along Columbus Avenue consist of bus stops and 2-hour metered parking on the west blockface and 2-hour metered parking on the east blockface. The parking lane on the west blockface operates as a "floating" parking lane, serving as a buffer between the moving lanes and a 5-foot southbound protected bicycle lane along the east blockface. Concrete pedestrian refuge islands exist between the moving lanes and the bicycle lane at several intersections. Columbus Avenue operates with exclusive turn lanes at major intersections, such as at West 81st Street and West 77th Street. The street serves as a local truck route in the study area.

Central Park West on the eastern edge of the Museum is a major two-way north-south arterial on the west side of Manhattan. It operates with two moving lanes, a 5-foot bicycle lane, and a parking lane in the northbound direction, and two moving lanes and a parking lane in the southbound direction. Parking regulations along Central Park West near the Museum site generally consist of curbside parking on the east blockface (with school bus layover in the weekday midday peak hour in the 2021 No Action and With Action conditions), and bus stops and taxi layover near the Museum's main entrance on the west blockface, with curbside parking

closer to the West 77th Street intersection. Curb usage on the west blockface of Central Park West near the Museum's main entrance varies from school bus layover during the weekday midday peak hour to taxi and livery pickup and drop-off activities during the Saturday peak hour.

West 81st Street between Central Park West and Columbus Avenue is an approximately 60 foot wide two-way east/west roadway that connects to the Transverse in Central Park, providing access to Manhattan's East Side at 79th Street. West 81st Street narrows and changes directions to the west of the Museum; west of Columbus Avenue, it is one-way eastbound and west of Amsterdam Avenue, it is one-way westbound. The portion of West 81st Street directly north of the Museum generally has two moving lanes in each direction, with curbside parking on both blockfaces. This segment of the roadway is very important both for local and through traffic to and from Central Park West, as well as for bus transit services. The Museum has a driveway on the south side of West 81st Street, with access near Columbus Avenue and egress near Central Park West. The driveway is used for private vehicles and school buses to access the Museum's on-site parking garage, and for tour buses and taxis to pick up or drop off passengers near the Museum's Rose Center entrance. During school days, West 81st Street and the AMNH driveway are often heavily affected by school bus activity from approximately 10 AM to 2 PM. Also, based on field observations, double parking caused by delivery trucks serving nearby non-Museum uses have been observed on West 81st Street between Central Park West and Columbus Avenue. The street also serves a local truck route in the study area.

West 77th Street is a two-way, east-west roadway located on the southern boundary of the Museum site. West of Columbus Avenue, it serves as a one-way westbound roadway; east of Central Park West, the street is closed to vehicular traffic. The street generally has one moving lane, one 5-foot bicycle lane, and one parking lane in each direction near the Museum site. The street has curbside parking on both blockfaces, and part of the north blockface, facing the Museum entry, is designated for school bus layover on weekdays from 9 AM to 3 PM.

West 79th Street is a two-way east-west roadway west of the Museum site. The street runs from the Henry Hudson Parkway to Columbus Avenue where it terminates at the Museum. It is approximately 60 feet wide with two moving lanes in each direction and curbside parking on both sides. The street serves as local truck route between Broadway and Columbus Avenue.

Other principal streets in the study area include West 80th Street and West 78th Street, both of which are one-way eastbound roadways terminating at Columbus Avenue, on the western boundary of the Museum site. West 82nd Street is a one-way eastbound roadway north of the Museum site that terminates at Central Park West, and West 83rd Street is a one-way westbound roadway north of the Museum site that begins at Central Park West.

SCHOOL GROUP VISITATION

Accommodating school group visitation is a core element in the Museum's mission. Given the widespread participation from schools in New York City and the broader metropolitan area, this successful service is generally regarded as well-established and stabilized. As shown in **Table 9-17**, school bus activity to AMNH has not increased during recent years, and it is not expected to increase as the Museum follows procedures to manage the daily school bus traffic, as outlined in its TMP. As discussed above, the Museum actively manages school bus visitation through its TMP, and will continue to do so in the future. Going forward, while there may be some fluctuation, in light of the limited opportunities to expand the market for this service, substantial increases in school bus activity are not anticipated. With respect to means of travel, school groups arrive via bus

at the on-site parking garage or by subway using the Central Park West station at 81st Street, both of which have direct entry into the Museum. This pattern of access is not expected to change and the Gilder Center is not intended as an entry or exit point for school groups. Consequently overall school bus traffic would not change as a result of the Gilder Center and does not require further study as part of this EIS.

Table 9-17
Annual Bus Volumes at the Museum, Fiscal Years 2007 to 2016

Fiscal Year	School Bus	Coach Bus	Total
2007	8,861	1,011	9,872
2008	8,569	1,210	9,779
2009	7,661	1,362	9,023
2010	7,093	1,493	8,586
2011	6,623	1,386	8,009
2012	6,835	1,136	7,971
2013	5,467	1,345	6,812
2014	6,194	1,216	7,410
2015	6,604	1,222	7,826
2016	6,134	1,071	7,205
Source:	American Museum of Natural History, 2016		
Note:	A school bus strike caused lower bus volumes in Fiscal Year 2013		

TRANSPORTATION MANAGEMENT PLAN

As discussed above, the Museum actively manages transportation under its Transportation Management Plan (TMP), which serves as a guide for Museum staff to effectively coordinate visitor travel to the Museum by all travel modes, including public transit, private vehicles, and school and coach buses. The primary elements of the TMP are:

- Promoting the use of non-vehicular modes, particularly public transportation, which has been successful in increasing the share of visitors arriving by public transit from 33 percent in 1999 to 53 percent in 2015 on weekdays, and from 17 percent in 1999 to 48 percent in 2015 on weekends in 2015.
- Bus operations, including demand management, use of the parking garage, and layover and dispatching activities; and
- Managing the demand for auto parking at the on-site parking garage.
- Dedicating staff to manage day-to-day bus pick-up, lay-over, and drop-off operations and parking garage operations

Established in 1999, the TMP provides a framework for the Museum to effectively manage transportation services including procedures for how to manage school bus and private vehicle traffic arriving at the Museum on a daily basis. It is intended to be flexible in responding to varying daily conditions and has been periodically updated in response to the Museum's evolving needs and modifications to the local transportation network.

TRAFFIC CONDITIONS

Traffic data were collected in October 2015 for the weekday midday, PM, and Saturday peak periods via a combination of manual intersection counts and 24-hour Automatic Traffic Recorder (ATR) counts. Supplemental traffic counts were collected in May 2016 at the two

West 82nd Street intersections included in the analysis, and in June 2017 at the two West 83rd Street intersections included in the analysis. Existing peak period traffic volumes were developed based on these counts. Concurrently, bicycle counts were conducted at intersections with marked bicycle lanes and were included in the traffic analysis, to account for the effect that bicycle traffic in dedicated lanes has on delays experienced by turning vehicles. Similarly, pedestrian counts that were concurrently conducted at crosswalk locations within the traffic study area were also included as inputs in the traffic analysis. For the weekday conditions, the traffic analysis peak hours were determined to be 1:00 PM to 2:00 PM and 5:00 PM to 6:00 PM. For the Saturday condition, the 3:15 PM to 4:15 PM hour was determined to be the analysis peak hour based on the collected data.

Inventories of roadway geometry, traffic controls, bus stops, and parking regulations/activities were recorded to provide inputs for the operational analyses. Official signal timings were also obtained from DOT for use in the analysis of the study area signalized intersections. **Figures 9-9 to 9-11** show the existing traffic volumes for the midday, PM, and Saturday peak hours respectively.

LEVELS OF SERVICE

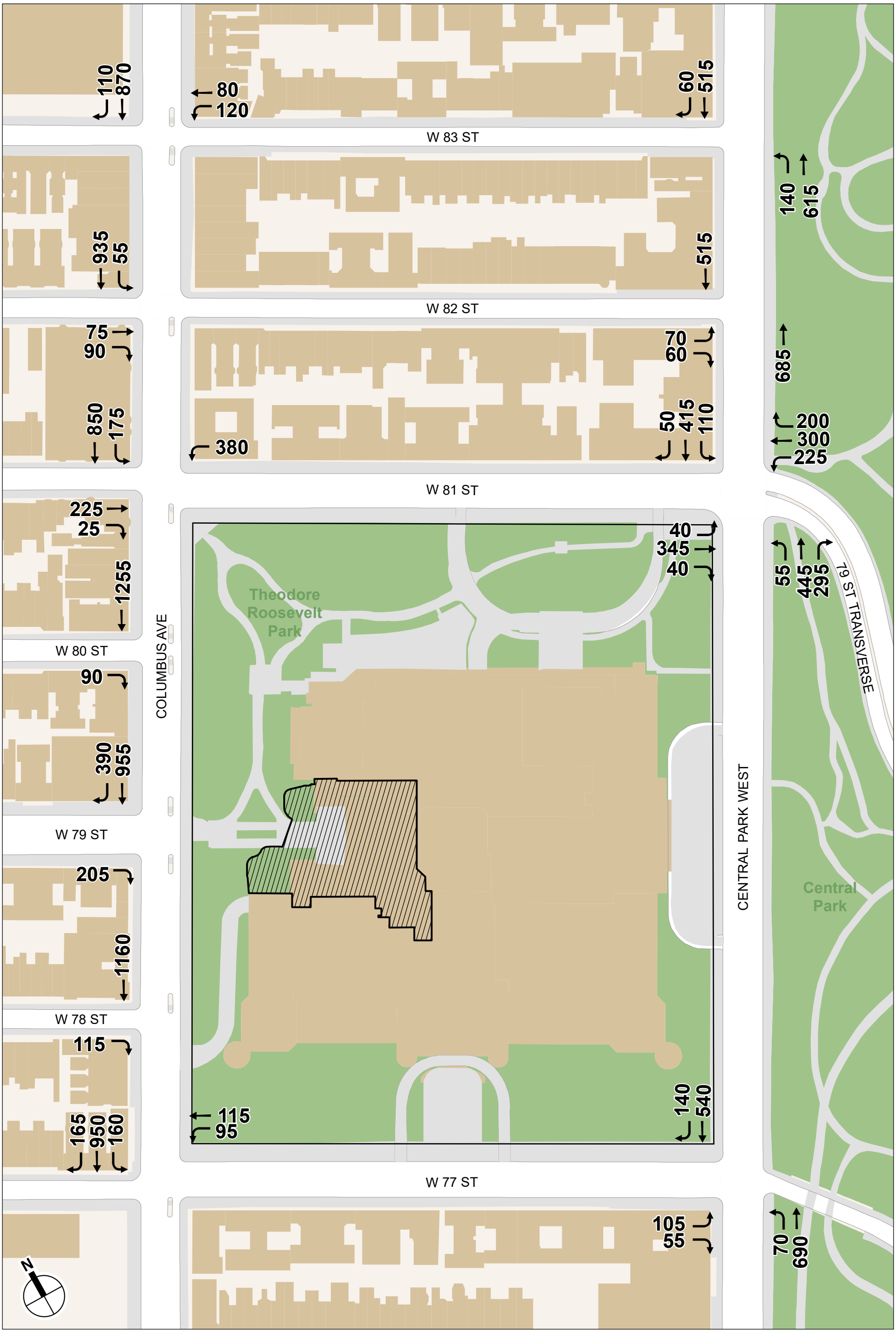
The existing conditions traffic analysis results are presented in **Table 9-18**. Details on level-of-service, v/c ratios, and average delays are presented in **Table 9-19**. The majority of the study area's other intersection approaches/lane groups operate acceptably—at mid-LOS D or better (delays of 45 seconds or less per vehicle) for the Saturday analysis peak hour.

Table 9-18
Summary of 2015 Existing Traffic Analysis Results

Level of Service	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Signalized Intersections			
Lane Groups at LOS A/B/C	~~21~~25	~~19~~23	~~19~~23
Lane Groups at LOS D	5	~~5~~4	6
Lane Groups at LOS E	5	~~5~~6	3
Lane Groups at LOS F	1	3	4
Total	~~32~~36	~~32~~36	~~32~~36
Lane Groups with v/c ≥ 0.90	5	7	~~9~~10
Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.			

Overall, the West 81st Street corridor presents the most difficult traffic conditions within the study area, particularly at the Central Park West intersection. Movements on all four approaches of Central Park West and West 81st Street are congested during all three peak hours. Using the traffic analysis procedures described in **Section C,** intersection movements already experiencing congested conditions are highly sensitive methodologically to future increases in traffic volumes, even if the incremental traffic volumes are minimal. Approaches/lane groups operating beyond mid-LOS D and those with v/c ratios of 0.90 or greater are listed below.

4/21/2017



2015 Existing Traffic Volumes
Weekday Midday Peak Hour

Figure 9-9

AMNH Gilder Center for Science, Education, and Innovation

4/21/2017

W 83 ST

W 82 ST

W 81 ST

W 80 ST

W 79 ST

W 78 ST

W 77 ST

COLUMBUS AVE

CENTRAL PARK WEST

79 ST TRANSVERSE

Theodore Roosevelt Park

Central Park

130
1140

145
65

75
550

1150
55

550

90
80

1060
170

70
75

440

60
455
110

135
850

915

200
365
280

235
25

1525

55
435
30

35
660
315

55

405
1175

200

1375

105

150
1170
160

100
110

135
630

115
45

75
895

N

Theodore Roosevelt Park

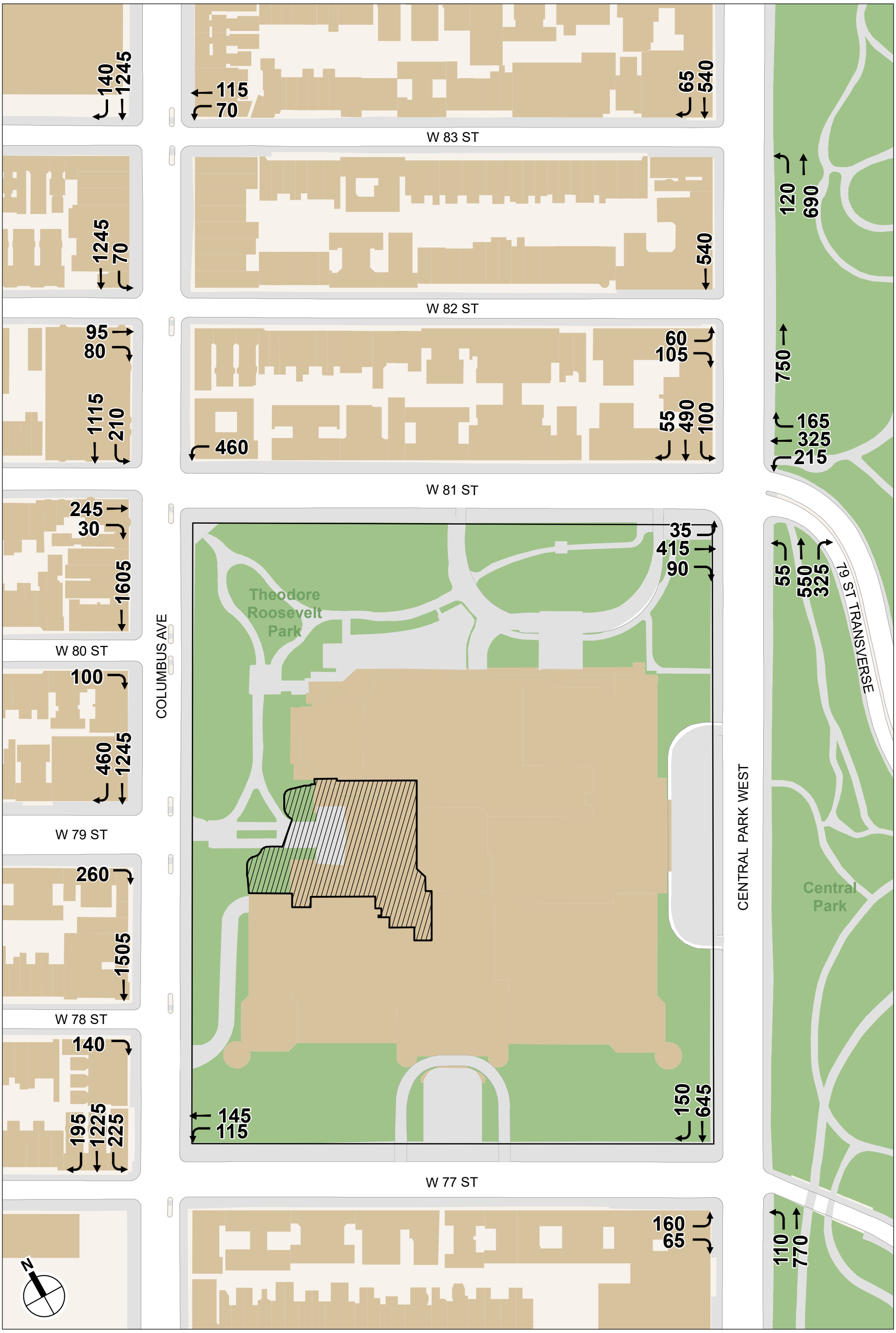
Building Site

0 200 FEET

2015 Existing Traffic Volumes
Weekday PM Peak Hour
Figure 9-10

AMNH Gilder Center for Science, Education, and Innovation

4/21/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2015 Existing Traffic Volumes
Saturday Peak Hour

Figure 9-11

Table 9-19
2015 Existing Conditions Level of Service Analysis
Signalized Intersections

Intersection	Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Peak Hour			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Columbus Avenue and West 83rd Street												
Westbound	LT	0.41	19.1	B	LT	0.39	18.5	B	LT	0.33	17.7	B
Southbound	TR	0.66	18.6	B	TR	0.80	22.5	C	TR	0.92	29.9	C
	Intersection		18.7	B	Intersection		21.9	C	Intersection		28.4	C
Columbus Avenue and West 82nd Street												
Eastbound	TR	0.34	17.9	B	TR	0.34	17.9	B	TR	0.37	18.4	B
Southbound	L	0.20	14.1	B	L	0.19	13.9	B	L	0.26	15.2	B
	T	0.61	17.7	B	T	0.75	20.7	C	T	0.76	21.0	C
	Intersection		17.5	B	Intersection		20.0	C	Intersection		20.3	C
Columbus Avenue and West 81st Street												
Eastbound	T	0.96	76.4	E	T	0.87	61.0	E	T	0.93	71.1	E
	R	0.19	30.3	C	R	0.18	30.0	C	R	0.25	32.2	C
Westbound	L	0.87	55.8	E	L	1.02	84.1	F	L	1.05	91.8	F
Southbound	L	0.97	93.3	F	L	0.95	89.7	F	L	1.05	113.6	F
	T	0.54	18.2	B	T	0.73	21.6	C	T	0.74	22.0	C
	Intersection		43.9	D	Intersection		46.2	D	Intersection		53.0	D
Columbus Avenue and West 80th Street												
Eastbound	R	0.29	24.0	C	R	0.17	22.1	C	R	0.29	23.8	C
Southbound	T	0.63	10.6	B	T	0.77	13.1	B	T	0.76	12.8	B
	Intersection		11.6	B	Intersection		13.5	B	Intersection		13.6	B
Columbus Avenue and West 79th Street												
Eastbound	R	0.48	31.7	C	R	0.47	31.6	C	R	0.62	35.8	D
Southbound	TR	0.69	16.8	B	TR	0.87	22.8	C	TR	0.94	29.6	C
	R	0.42	15.0	B	R	0.55	18.7	B	R	0.85	40.9	D
	Intersection		18.8	B	Intersection		23.4	C	Intersection		31.8	C
Columbus Avenue and West 78th Street												
Eastbound	R	0.39	26.6	C	R	0.37	25.8	C	R	0.44	27.4	C
Southbound	T	0.59	10.1	B	T	0.72	12.0	B	T	0.74	12.4	B
	Intersection		11.7	B	Intersection		13.1	B	Intersection		13.7	B
Columbus Avenue and West 77th Street												
Westbound	LT	0.72	42.3	D	LT	0.63	37.4	D	LT	0.82	49.4	D
Southbound	L	0.82	66.1	E	L	0.82	64.9	E	L	1.05	111.6	F
	TR	0.64	11.0	B	TR	0.74	12.6	B	TR	0.79	14.1	B
	Intersection		21.7	C	Intersection		20.6	C	Intersection		30.7	C
Central Park West and West 83rd Street												
Northbound	LT	0.83	24.8	C	LT	1.05	62.7	E	LT	0.79	22.4	C
Southbound	TR	0.41	12.9	B	TR	0.49	13.9	B	TR	0.44	13.2	B
	Intersection		19.8	B	Intersection		43.0	D	Intersection		18.4	B
Central Park West and West 82nd Street												
Eastbound	LR	0.33	23.8	C	LR	0.37	24.4	C	LR	0.45	26.0	C
Northbound	T	0.52	14.3	B	T	0.62	16.0	B	T	0.51	14.1	B
Southbound	T	0.37	12.4	B	T	0.40	12.7	B	T	0.38	12.5	B
	Intersection		14.6	B	Intersection		15.7	B	Intersection		15.1	B
Central Park West and West 81st Street												
Eastbound	L	0.23	20.0-	B	L	0.40	25.8	C	L	0.19	19.1	B
	T	0.76	39.1	D	T	0.89	49.6	D	T	0.81	41.5	D
	R	0.19	25.8	C	R	0.14	24.7	C	R	0.43	31.3	C
Westbound	L	0.89	60.4	E	L	1.03	100.8	F	L	0.96	80.0+	F
	T	0.76	40.9	D	LT	1.03	77.6	E	T	0.67	34.0	C
	R	0.96	78.3	E	R	0.76	46.6	D	R	0.67	40.1	D
Northbound	LTR	0.91	39.6	D	LTR	1.05	68.8	E	LTR	1.05	71.4	E
Southbound	LTR	0.93	48.1	D	LTR	1.04	72.9	E	LTR	0.90	40.7	D
	Intersection		46.2	D	Intersection		67.4	E	Intersection		52.3	D
Central Park West and West 77th Street												
Eastbound	LR	0.41	25.3	C	LR	0.42	25.3	C	LR	0.61	30.5	C
Northbound	LT	0.76	20.9	C	LT	0.94	35.4	D	LT	1.02	55.6	E
Southbound	TR	0.57	15.4	B	TR	0.62	16.2	B	TR	0.66	17.3	B
	Intersection		19.0	B	Intersection		26.7	C	Intersection		36.8	D

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound
Some information in this table has been re-formatted since the DEIS.

West 81st Street

- Eastbound through movement at the Columbus Avenue and West 81st Street intersection (LOS E with a v/c ratio of 0.96, 0.87, and 0.93 and a delay of 76.4, 61.0, and 71.1 seconds

per vehicle [spv] in the weekday midday, weekday PM, and Saturday peak hours respectively);

- Westbound left-turn at Columbus Avenue and West 81st Street intersection (LOS E with a v/c ratio of 0.87 and a delay of 55.8 spv in the weekday midday peak hour, LOS F with a v/c ratio of 1.02 and a delay of 84.1 spv in the weekday PM peak hour, and LOS F with a v/c ratio of 1.05 and a delay of 91.8 spv in the Saturday peak hour);
- Eastbound through movement at the Central Park West and West 81st Street intersection (LOS D with a v/c ratio of 0.89 and a delay of 49.6 spv in the weekday PM peak hour);
- Westbound left-turn at the Central Park West and West 81st Street intersection (LOS E with a v/c ratio of 0.89 and a delay of 60.4 spv in the weekday midday peak hour, LOS F with a v/c ratio of 1.03 and a delay of 100.8 spv in the weekday PM peak hour, and LOS F with a v/c ratio of 0.96 and a delay of 80.0 spv in the Saturday peak hour);
- Westbound left-through movement at the Central Park West and West 81st Street intersection (LOS E with a v/c ratio of 1.03 and a delay of 77.6 spv in the weekday PM peak hour); and
- Westbound right-turn at the Central Park West and West 81st Street intersection (LOS E with a v/c ratio of 0.96 and a delay of 78.3 spv in the weekday midday peak hour, and LOS D with a v/c ratio of 0.76 and a delay of 46.6 spv in the weekday PM peak hour).

Columbus Avenue

- Southbound left-turn movement at the Columbus Avenue and West 81st Street intersection (LOS F with a v/c ratio of 0.97, 0.95, and 1.05 and a delay of 93.3, 89.7, and 113.6 spv in the weekday midday, weekday PM, and Saturday peak hours respectively);
- Southbound through-right movement at the Columbus Avenue and West 79th Street intersection (LOS C with a v/c ratio of 0.94 and a delay of 29.6 spv in the Saturday peak hour); and
- Southbound left-turn movement at the Columbus Avenue and West 77th Street intersection (LOS E with a v/c ratio of 0.82 and a delay of 66.1 spv in the weekday midday peak hour, LOS E with a v/c ratio of 0.82 and a delay of 64.9 in the weekday PM peak hour, and LOS F with a v/c ratio of 1.05 and a delay of 111.6 spv in the Saturday peak hour).

Central Park West

- Northbound approach at the Central Park West and West ~~82nd~~83rd Street intersection (LOS ~~D~~E with a v/c ratio of ~~0.98~~1.05 and a delay of ~~54.2~~62.7 spv in the weekday PM peak hour~~);~~).
- Northbound approach at the Central Park West and West 81st Street intersection (LOS D with a v/c ratio of 0.91 and a delay of 39.6 spv in the weekday midday peak hour, LOS E with a v/c ratio of 1.05 and a delay of 68.8 spv in the weekday PM peak hour, and LOS E with a v/c ratio 1.05 and a delay of 71.4 spv in the Saturday peak hour);
- Southbound approach at the Central Park West and West 81st Street intersection (LOS D with a v/c ratio of 0.93 and a delay of 48.1 spv in the weekday midday peak hour, LOS E with a v/c ratio of 1.04 and a delay of 72.9 spv in the weekday PM peak hour, and LOS D with a v/c ratio of 0.90 and a delay of 40.7 spv in the Saturday peak hour); and
- Northbound approach at the Central Park West and West 77th Street intersection (LOS C with a v/c ratio of 1.02 and a delay of 55.6 spv in the Saturday peak hour).

2021 NO ACTION CONDITION

The No Action condition was developed by increasing existing traffic levels by the forecasted growth in overall travel through and within the study area. As per *CEQR Technical Manual* guidelines, an annual background growth rate of 0.25 percent was assumed for the first five years (2015 to 2020) and then 0.125 percent for the remaining year (2020 to 2021). In addition, a total of ten development projects expected to occur in the No Action condition (No Build projects) were identified for the ½-mile study area (see **Figure 9-12**). However, some of these projects are modest in size and would not generate notable levels of new traffic.

Table 9-20 and **Figure 9-12** summarize the projects that were accounted for in this future 2021 baseline, including those that were considered as part of the study area background growth.

Table 9-20
No Build Projects Expected to be Complete by 2021

Map Ref. No.[1]	Project Name/ Address	Development Program	Transportation Assumptions	Status/ Build Year[2]
Development Projects Within ½-Mile				
1	269 West 87th Street	39 residential units	Included in background growth	2021
2	132 West 83rd Street	6 residential units	Included in background growth	2021
3	221 West 77th Street	Mixed commercial/residential: 1,624 gsf retail, 26 units	Transportation assumptions from *CEQR Technical Manual, 770 Eleventh Avenue Mixed-Use Development Rezoning* (2009), and U.S. Census Bureau American Community Survey 2010-2014 Journey to Work estimates	2021
4	2230 Broadway	Mixed commercial/residential: 7,316 gsf retail, 72 units	See project site 3, above	2021
5	207 West 79th Street	Mixed commercial/residential: 5,194 gsf retail, 24 units	See project site 3, above	2021
6	206 West 77th Street	Mixed commercial/residential: 2,317 gsf retail, 28 units	See project site 3, above	2021
7	468 Columbus Avenue	Mixed commercial/residential: 4,646 gsf retail, 7 units	Included in background growth	2021
8	36 West 66th Street	Mixed commercial / residential /synagogue: 6,047 gsf retail, 160 units, 18,910 gsf synagogue	Transportation assumptions from *CEQR Technical Manual, ITE Trip Generation Manual 9th Edition, 770 Eleventh Avenue Mixed-Use Development Rezoning* (2009), U.S. Census Bureau American Community Survey 2010-2014 Journey to Work estimates, and *Proposed No. 7 Subway Extension-Far West Midtown Manhattan Rezoning FEIS* (2003)	2021
9	260 West 78th Street	66 residential units	See project site 3, above	2021
10	600 Columbus Avenue	Community facility: -540 gsf commercial, 1,846 gsf community facility	Included in background growth	2021

Notes:
1. See **Figure 9-12.**
2. Projects for which an expected date of completion date is not available are assumed to be complete by the proposed project's Build year of 2021.

Sources: DCP; NYC Dept. of Buildings.

An increase in traffic, pedestrian, and transit volumes due to the projected increase in Museum attendance and utilization between 2015 and 2021 without the proposed project has been factored into the No Action condition as well. An increase of approximately 273,000 annual visitors between 2015 and 2021 was estimated. This would represent an estimated increase of 1,266 additional visitors for the 85th percentile weekday attendance and utilization and 148 additional visitors for the 85th percentile Saturday attendance and utilization, as shown in **Table 9-1a**. The Museum's No Action project generated incremental vehicle trips were estimated using the travel demand factors described in **Table 9-5** and the projected attendance and utilization growth. These vehicle trips are summarized in **Table 9-21 and Figures 9-13 to 9-15**.

AMNH Gilder Center for Science, Education, and Innovation

No Build Projects
Figure 9-12

4/21/2017

W 83 ST

W 82 ST

W 81 ST

W 80 ST

W 79 ST

W 78 ST

W 77 ST

COLUMBUS AVE

CENTRAL PARK WEST

79 ST TRANSVERSE

Theodore Roosevelt Park

Central Park

N

Theodore Roosevelt Park

Building Site

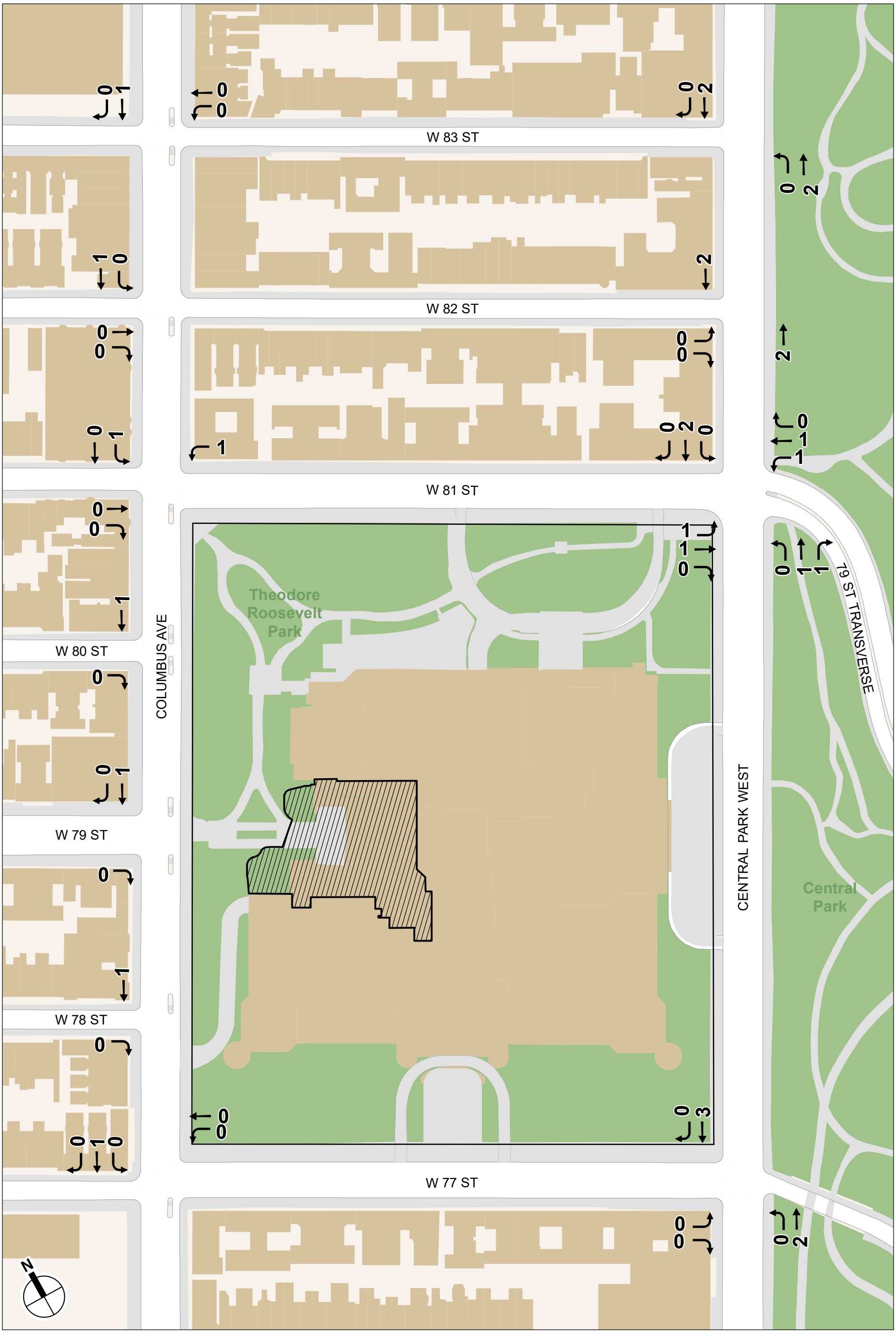
0 200 FEET

No Action Museum Generated Incremental Vehicle Trips
Weekday Midday Peak Hour

Figure 9-13

AMNH Gilder Center for Science, Education, and Innovation

4/21/2017



Theodore Roosevelt Park

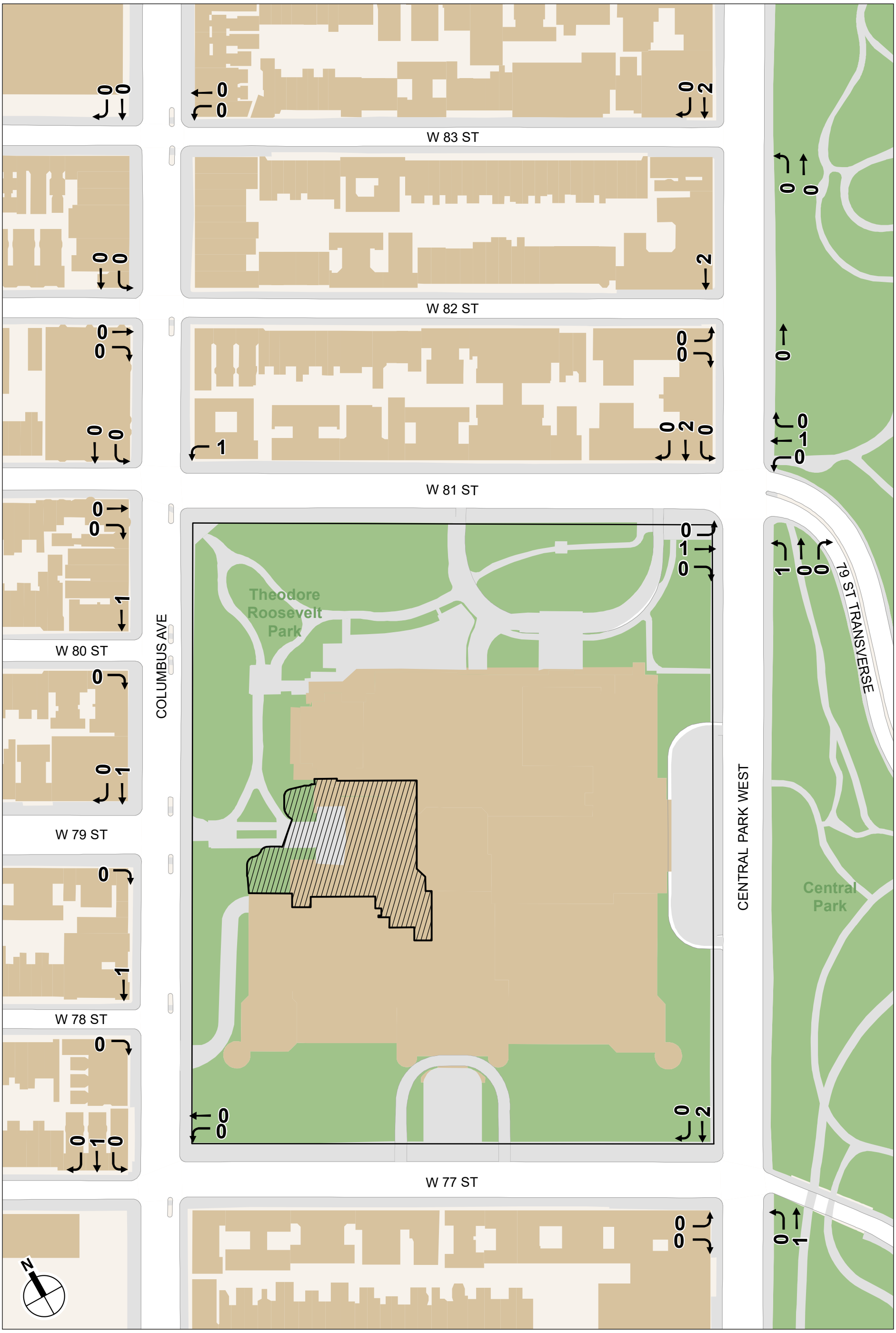
Building Site

0 200 FEET

No Action Museum Generated Incremental Vehicle Trips
Weekday PM Peak Hour

Figure 9-14

4/21/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

No Action Museum Generated Incremental Vehicle Trips
Saturday Peak Hour
Figure 9-15

Table 9-21
Trip Generation Summary: No Action Museum Trip Increments

Peak Hour	In/Out	Person Trip							Vehicle Trip				
		Auto	Taxi	Subway	Bus	Tour Bus	Walk	Total	Auto	Taxi	Tour Bus	Delivery	Total
Midday	In	8	14	122	4	10	39	197	2	9	1	0	12
	Out	10	18	161	5	13	52	259	3	9	1	0	13
	Total	18	32	283	9	23	91	456	5	18	2	0	25
PM	In	3	6	54	2	4	17	86	1	5	1	0	7
	Out	8	13	119	4	10	38	192	2	5	1	0	8
	Total	11	19	145	6	14	84	279	3	10	2	0	15
Saturday	In	4	2	13	1	1	5	26	1	2	1	0	4
	Out	3	2	11	1	1	5	23	1	2	1	0	4
	Total	7	4	24	2	2	10	49	2	4	2	0	8

CHANGES TO THE STUDY AREA STREET NETWORK

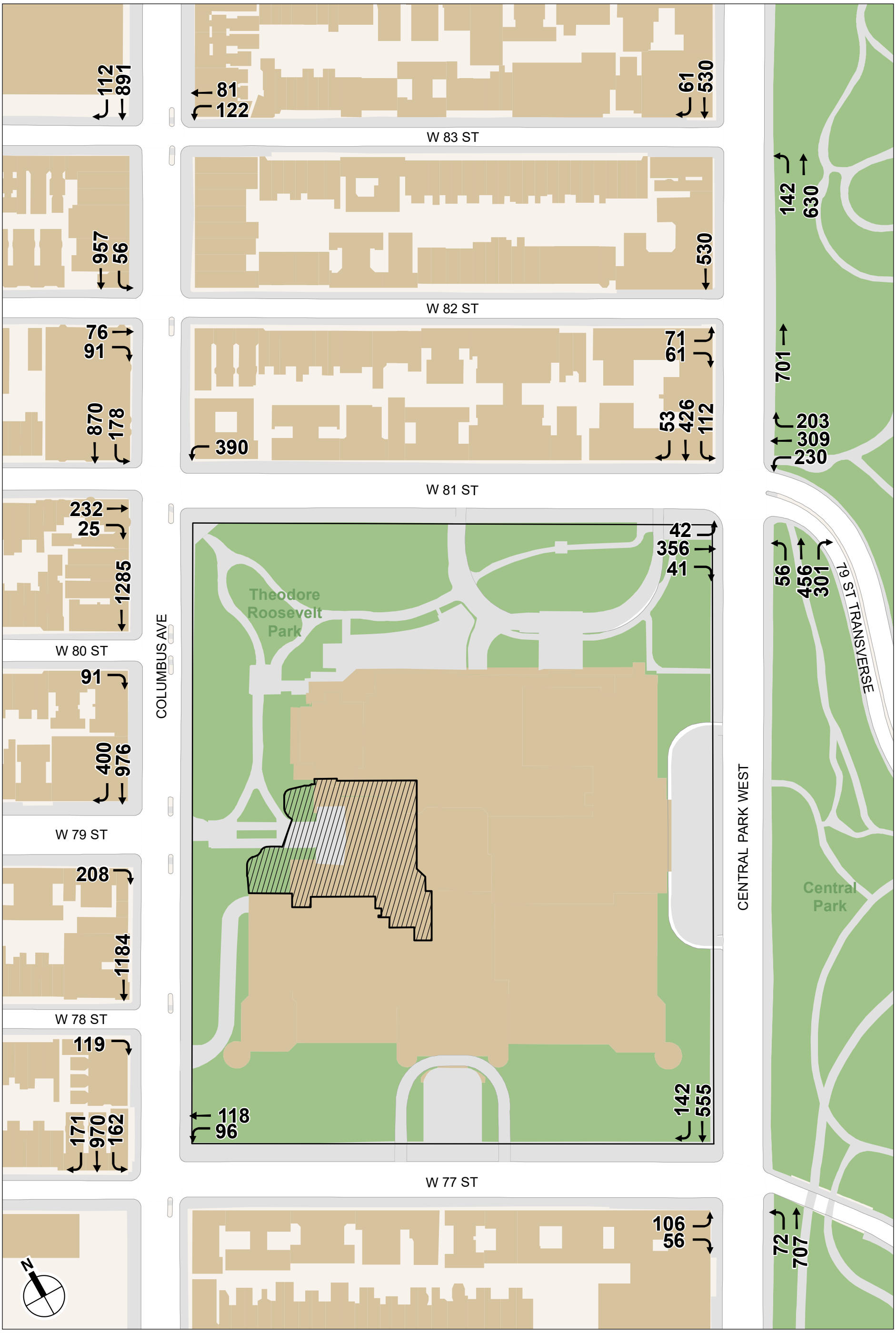
DOT, in collaboration with NYCT, ~~is currently studying~~studied and ~~designing~~designed for the operation of the M79 bus route as a Select Bus Service (SBS), with service launched in ~~launch to take place in~~ spring 2017. The roadway changes along the M79 bus route resulting from the implementation of the SBS are accounted for in the traffic analyses in the No Action Condition. Geometric and signal timing changes are anticipated at these three intersections:

- Columbus Avenue and West 81st Street: The eastbound approach will be reconfigured with an 8-foot parking lane on the north curb, a 12-foot through lane, and a 14-foot dedicated bus lane / right-turn lane. The dedicated bus lane will operate from 7 AM to 7 PM Monday through Friday. The westbound approach will be reconfigured with a 9-foot parking lane and two 11-foot left turn lanes. A curb extension will be installed on the northeast corner reservoir.
- Columbus Avenue and West 79th Street: The southbound approach will be reconfigured with a 13-foot dedicated right turn lane, a 7-foot buffer, and two 10-foot through lanes. The signal phasing will be reconfigured with a 27-second all-pedestrian phase, a 46-second dedicated southbound through-right phase, and a 17-second dedicated southbound right / eastbound phase. A curb extension will be installed on the southwest corner on the West 79th Street side.
- Central Park West and West 81st Street: The eastbound approach will be reconfigured by shifting the centerline north and restriping the approach as one 11-foot curbside bus lane / bus stop, one 11-foot through lane, and one 10-foot left turn lane. The median on the westbound approach will be widened into the eastbound receiving lanes. Curb regulations will also be changed on the east blockface of Central Park West from West 77th Street to approximately where West 80th Street would connect through museum property, to provide a school bus layover zone from 9 AM to 2 PM Monday through Friday.

TRAFFIC OPERATIONS

The No Action condition weekday midday, weekday PM, and Saturday peak hour traffic volumes are shown in **Figures 9-16 to 9-18**. These traffic volumes were projected by adjusting the existing traffic volumes to account for the following: background growth, trips generated by discrete No Build projects in the area, and incremental trips generated by the Museum's attendance and utilization growth independent of the proposed Gilder Center project. A summary of the 2021 No Action condition traffic analysis results is presented in **Table 9-22**. Details on level-of-service, v/c ratios, and average delays are presented in **Table 9-23.**

4/21/2017



Theodore Roosevelt Park

Building Site

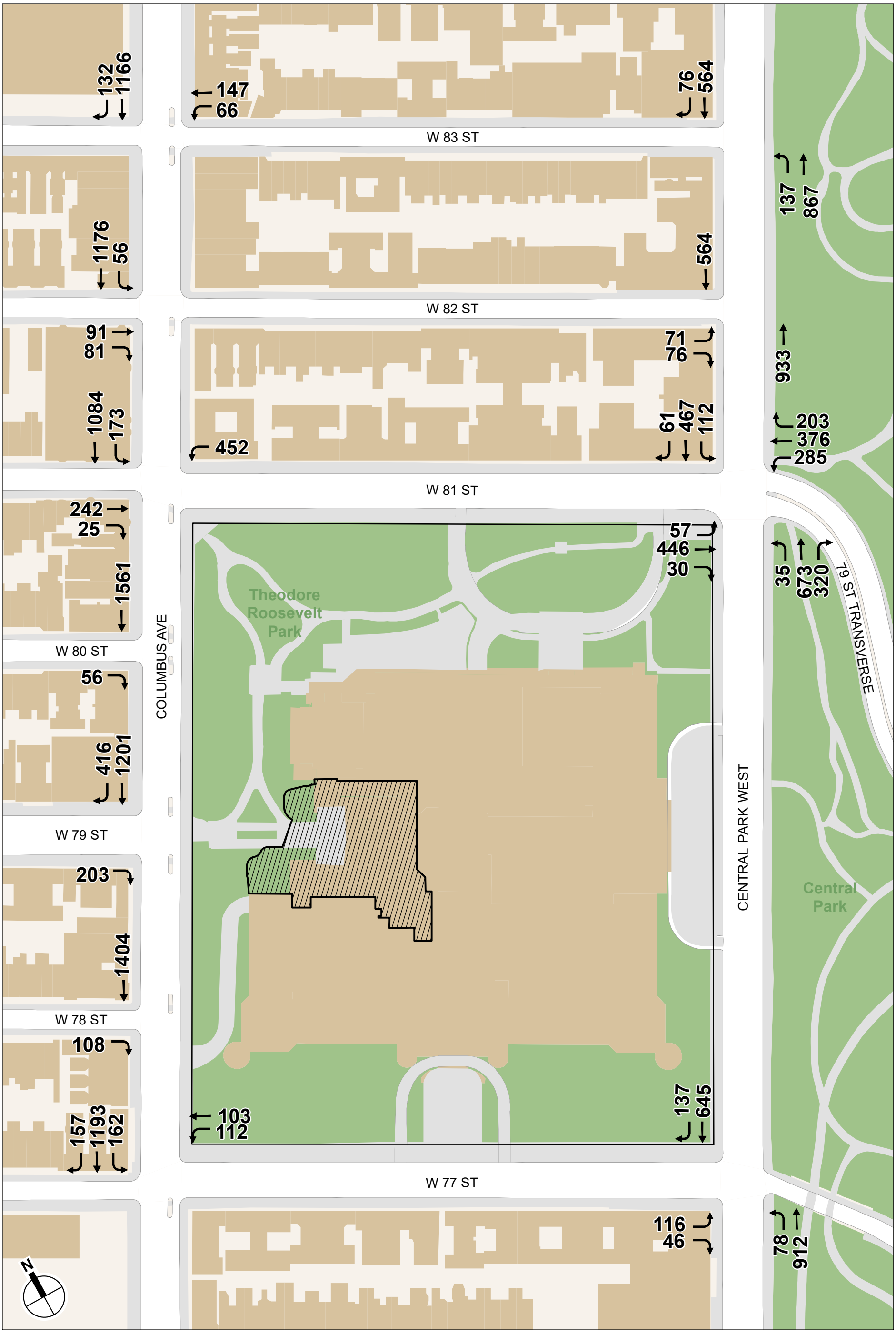
0 200 FEET

2021 No Action Traffic Volumes
Weekday Midday Peak Hour

Figure 9-16

AMNH Gilder Center for Science, Education, and Innovation

4/21/2017



Theodore Roosevelt Park

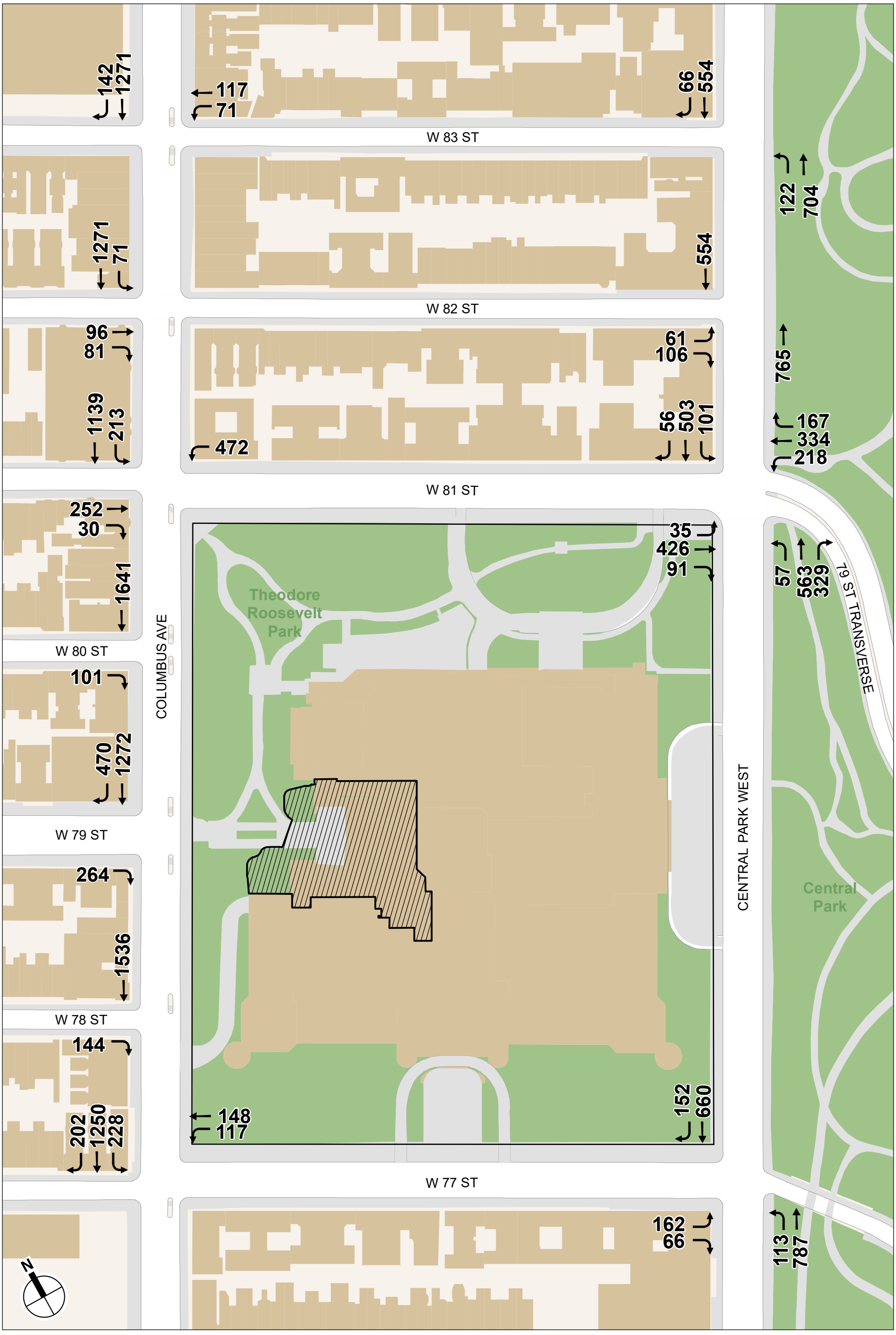
Building Site

0 200 FEET

2021 No Action Traffic Volumes
Weekday PM Peak Hour
Figure 9-17

AMNH Gilder Center for Science, Education, and Innovation

4/21/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2021 No Action Traffic Volumes
Saturday Peak Hour
Figure 9-18

AMNH Gilder Center for Science, Education, and Innovation

Table 9-22
Summary of 2021 No Action Traffic Analysis Results

Level of Service	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Signalized Intersections			
Lane Groups at LOS A/B/C	~~19~~24	~~17~~21	~~19~~23
Lane Groups at LOS D	~~6~~5	5	4
Lane Groups at LOS E	5	5	4
Lane Groups at LOS F	2	5	5
Total	~~32~~36	~~32~~36	~~32~~36
Lane Groups with v/c ≥ 0.90	5	9	~~8~~9
Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.			

Table 9-23
2015 Existing and 2021 No Action Conditions Level of Service Analysis
Signalized Intersections

	Weekday Midday								Weekday PM								Saturday							
	2015 Existing				2021 No Action				2015 Existing				2021 No Action				2015 Existing				2021 No Action			
Intersection	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Columbus Avenue and West 83rd Street																								
Westbound	LT	0.41	19.1	B	LT	0.42	19.3	B	LT	0.39	18.5	B	LT	0.39	18.6	B	LT	0.33	17.7	B	LT	0.34	17.8	B
Southbound	TR	0.66	18.6	B	TR	0.67	19.0	B	TR	0.80	22.5	C	TR	0.82	23.2	C	TR	0.92	29.9	C	TR	0.94	32.0	C
-	Int.		18.7	B	Int.		19.0	B	Int.		21.9	C	Int.		22.5	C	Int.		28.4	C	Int.		30.3	C
Columbus Avenue and West 82nd Street																								
Eastbound	TR	0.34	17.9	B	TR	0.34	17.9	B	TR	0.34	17.9	B	TR	0.34	18.0	B	TR	0.37	18.4	B	TR	0.37	18.5	B
Southbound	L	0.20	14.1	B	L	0.20	14.2	B	L	0.19	13.9	B	L	0.19	13.9	B	L	0.26	15.2	B	L	0.27	15.4	B
	T	0.61	17.7	B	T	0.62	18.0	B	T	0.75	20.7	C	T	0.77	21.2	C	T	0.76	21.0	C	T	0.78	21.5	C
	Int.		17.7	B	Int.		17.8	B	Int.		20.0	C	Int.		20.4	C	Int.		20.3	C	Int.		20.8	C
Columbus Avenue and West 81st Street																								
Eastbound	T	0.96	76.4	E	T	0.89	61.7	E	T	0.87	61.0	E	T	0.81	51.3	D	T	0.93	71.1	E	T	0.86	57.4	E
	R	0.19	30.3	C	R	0.14	28.6	C	R	0.18	30.0	C	R	0.13	28.4	C	R	0.25	32.2	C	R	0.21	30.4	C
Westbound	L	0.87	55.8	E	L	0.82	49.4	D	L	1.02	84.1	F	L	1.03	84.7	F	L	1.05	91.8	F	L	1.05	91.6	F
Southbound	L	0.97	93.3	F	L	0.99	98.1	F	L	0.95	89.7	F	L	0.97	94.2	F	L	1.05	113.6	F	L	1.07	119.1	F
	T	0.54	18.2	B	T	0.55	18.4	B	T	0.73	21.6	C	T	0.74	22.1	C	T	0.74	22.0	C	T	0.75	22.4	C
	Int.		43.9	D	Int.		40.8	D	Int.		46.2	D	Int.		45.8	D	Int.		53.0	D	Int.		52.0	D
Columbus Avenue and West 80th Street																								
Eastbound	R	0.29	24.0	C	R	0.29	24.1	C	R	0.17	22.1	C	R	0.17	22.1	C	R	0.29	23.8	C	R	0.29	23.9	C
Southbound	T	0.63	10.6	B	T	0.64	10.8	B	T	0.77	13.1	B	T	0.79	13.6	B	T	0.76	12.8	B	T	0.78	13.3	B
	Int.		11.6	B	Int.		11.8	B	Int.		13.5	B	Int.		14.0	B	Int.		13.6	B	Int.		14.0	B
Columbus Avenue and West 79th Street																								
Eastbound	R	0.48	31.7	C	R	0.85	63.0	E	R	0.47	31.6	C	R	0.78	55.7	E	R	0.62	35.8	D	R	0.82	56.1	E
Southbound	TR	0.69	16.8	B	T	0.84	25.1	C	TR	0.87	22.8	C	T	1.08	71.8	E	TR	0.94	29.6	C	T	1.11	82.2	F
	R	0.42	15.0	B	R	0.45	5.2	A	R	0.55	18.7	B	R	0.47	5.4	A	R	0.85	40.9	D	R	0.56	6.5	A
	Int.		18.8	B	Int.		25.9	C	Int.		23.4	C	Int.		55.4	E	Int.		31.8	C	Int.		60.6	E
Columbus Avenue and West 78th Street																								
Eastbound	R	0.39	26.6	C	R	0.41	26.9	C	R	0.37	25.8	C	R	0.38	26.0	C	R	0.44	27.4	C	R	0.45	27.7	C
Southbound	T	0.59	10.1	B	T	0.60	10.3	B	T	0.72	12.0	B	T	0.73	12.3	B	T	0.74	12.4	B	T	0.76	12.7	B
	Int.		11.7	B	Int.		11.9	B	Int.		13.1	B	Int.		13.4	B	Int.		13.7	B	Int.		14.1	B
Columbus Avenue and West 77th Street																								
Westbound	LT	0.72	42.3	D	LT	0.74	43.3	D	LT	0.63	37.4	D	LT	0.64	37.9	D	LT	0.82	49.4	D	LT	0.84	50.7	D
Southbound	L	0.82	66.1	E	L	0.83	67.4	E	L	0.82	64.9	E	L	0.83	66.1	E	L	1.05	111.6	F	L	1.07	115.5	F
	TR	0.64	11.0	B	TR	0.66	11.2	B	TR	0.74	12.6	B	TR	0.76	13.0	B	TR	0.79	14.1	B	TR	0.81	14.7	B
	Int.		21.7	C	Int.		22.2	C	Int.		20.6	C	Int.		21.1	C	Int.		30.7	C	Int.		31.6	C
Central Park West and West 83rd Street																								
Northbound	LT	0.83	24.8	C	LT	0.86	26.5	C	LT	1.05	62.7	E	LT	1.08	72.9	E	LT	0.79	22.4	C	LT	0.82	23.8	C
Southbound	TR	0.41	12.9	B	TR	0.42	13.0	B	TR	0.49	13.9	B	TR	0.50	14.1	B	TR	0.44	13.2	B	TR	0.45	13.3	B
-	Int.		19.8	B	Int.		20.9	C	Int.		43.0	D	Int.		49.1	D	Int.		18.4	B	Int.		19.2	B
Central Park West and West 82nd Street																								
Eastbound	LR	0.33	23.8	C	LR	0.35	24.1	C	LR	0.37	24.4	C	LR	0.39	24.9	C	LR	0.45	26.0	C	LR	0.45	26.1	C
Northbound	T	0.52	14.3	B	T	0.53	14.5	B	T	0.62	16.0	B	T	0.63	16.3	B	T	0.51	14.1	B	T	0.52	14.3	B
Southbound	T	0.37	12.4	B	T	0.38	12.5	B	T	0.40	12.7	B	T	0.41	12.9	B	T	0.38	12.5	B	T	0.39	12.6	B
-	Int.		14.6	B	Int.		14.7	B	Int.		15.7	B	Int.		15.9	B	Int.		15.1	B	Int.		15.2	B
Notes: L = Left Turn, T = Through, R = Right Turn,LOS = Level of Service, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, Int. = Intersection																								

Table 9-23 (cont'd)
2015 Existing and 2021 No Action Conditions Level of Service Analysis
Signalized Intersections

Intersection	Weekday Midday								Weekday PM								Saturday							
	2015 Existing				2021 No Action				2015 Existing				2021 No Action				2015 Existing				2021 No Action			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Central Park West and West 81st Street																								
Eastbound	L	0.23	20.0-	B	L	0.25	20.6	C	L	0.40	25.8	C	L	0.42	26.9	C	L	0.19	19.1	B	L	0.20	19.4	B
	T	0.76	39.1	D	T	0.75	38.4	D	T	0.89	49.6	D	T	0.86	45.3	D	T	0.81	41.5	D	T	0.81	40.8	D
	R	0.19	25.8	C	R	0.20	25.9	C	R	0.14	24.7	C	R	0.14	24.8	C	R	0.43	31.3	C	R	0.44	31.5	C
Westbound	L	0.89	60.4	E	L	0.93	68.2	E	L	1.03	100.8	F	L	1.07	113.4	F	L	0.96	80.0	F	L	1.00	91.3	F
	T	0.76	40.9	D	T	0.79	42.4	D	LT	1.03	77.6	E	LT	1.07	87.4	F	T	0.67	34.0	C	T	0.69	34.7	C
	R	0.96	78.3	E	R	0.98	83.2	F	R	0.76	46.6	D	R	0.78	48.0	D	R	0.67	40.1	D	R	0.68	40.8	D
Northbound	LTR	0.91	39.6	D	LTR	0.94	43.0	D	LTR	1.05	68.8	E	LTR	1.07	75.9	E	LTR	1.05	71.4	E	LTR	1.08	78.5	E
Southbound	LTR	0.93	48.1	D	LTR	0.97	56.1	E	LTR	1.05	72.9	E	LTR	1.08	85.6	F	LTR	0.90	40.7	D	LTR	0.93	45.0	D
	Int.		46.2	D	Int.		50.2	D	Int.		67.4	E	Int.		74.2	E	Int.		52.3	D	Int.		56.4	E
Central Park West and West 77th Street																								
Eastbound	LR	0.41	25.3	C	LR	0.42	25.3	C	LR	0.42	25.3	C	LR	0.42	25.4	C	LR	0.61	30.5	C	LR	0.62	30.7	C
Northbound	LT	0.76	20.9	C	LT	0.80	22.5	C	LT	0.94	35.4	D	LT	0.98	42.5	D	LT	1.02	55.6	E	LT	1.07	69.2	E
Southbound	TR	0.57	15.4	B	TR	0.59	15.7	B	TR	0.62	16.2	B	TR	0.63	16.5	B	TR	0.66	17.3	B	TR	0.68	17.6	B
	Int.		19.0	B	Int.		19.9	B	Int.		26.7	C	Int.		30.4	C	Int.		36.8	D	Int.		43.3	D

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, Int. = Intersection
Some information in this table has been re-formatted since the DEIS.

Based on the analysis results presented in **Table 9-23**, the majority of the approaches/lane-groups will operate at the same LOS as in existing conditions. The following approaches/lane-groups are expected to operate at deteriorated LOS when compared to existing conditions:

West 79th Street

- Eastbound approach at the Columbus Avenue and West 79th Street intersection will deteriorate to LOS E with a v/c ratio of 0.85 and a delay of 63.0 spv in the weekday midday peak hour, to LOS E with a v/c ratio of 0.78 and a delay of 55.7 spv in the weekday PM peak hour, and to LOS F with a v/c ratio of 0.82 and a delay of 56.1 spv in the Saturday peak hour.

West 81st Street

- Westbound left-through movement at the Central Park West and West 81st Street intersection will deteriorate to LOS F with a v/c ratio of 1.07 and a delay of 87.4 spv in the weekday PM peak hour;

Columbus Avenue

- Southbound through movement at the Columbus Avenue and West 79th Street intersection will deteriorate to LOS E with a v/c ratio of 1.08 and a delay of 71.8 spv in the weekday midday peak hour, and to LOS F with a v/c ratio of 1.11 and a delay of 82.2 spv in the Saturday peak hour;

Central Park West

- ~~Northbound approach at the Central Park West and West 82nd Street intersection will deteriorate to LOS E with a v/c ratio of 1.00 and a delay of 58.9 spv in the weekday PM peak hour; and~~
- Southbound approach at the Central Park West and West 81st Street intersection will deteriorate to LOS E with a v/c ratio of 0.97 and a delay of 56.1 spv in the weekday midday peak hour, and to LOS F with a v/c ratio of 1.08 and a delay of 85.6 spv in the weekday PM peak hour.

2021 WITH ACTION CONDITION

PROPOSED PROJECT

In the future with the proposed project, the Museum site would be redeveloped with an approximately 203,000-gsf addition on the Columbus Avenue side of the Museum campus. As presented in **Table 9-1a**, the proposed project is expected to generate approximately 745,000 additional annual visitors to the Museum. Changes in taxi pickup and drop-off activity due to anticipated changes in Museum access patterns generated by the larger, more prominent entrance facing Columbus Avenue were also accounted for in estimating project generated incremental vehicle trips. While the majority of taxi pick-up and drop-offs are assumed to still occur on Central Park West, an increased proportion was assigned to Columbus Avenue with the proposed project, where a new dedicated layby area (taking up approximately four on-street parking spaces) is being proposed for purposes of accommodating taxi and private auto pick-up/drop-off activity at the new Gilder Center entrance. The dedicated taxi layby area is designed to reduce the potential for double parking along Columbus Avenue caused by both existing and any projected increase in taxi and private auto pick-up and drop-off activities, and to provide safer conditions for taxi and private auto pick-ups and drop-offs, as well as vehicles and pedestrians utilizing Columbus Avenue. At West 79th Street and Columbus Avenue, pedestrians must yield to bicyclists when crossing the bike lane, except when the pedestrian WALK signal gives pedestrians the right-of-way. A schematic of the proposed taxi layby area is shown in **Figure 9-19.**

The incremental auto trips were assigned to the Museum's on-site parking garage and nearby off-street parking facilities based on visitor surveys on parking location choices. All delivery trips were assigned to the site via DOT designated truck routes and the Museum's service driveway facing Columbus Avenue at West 78th Street.

Traffic Operations

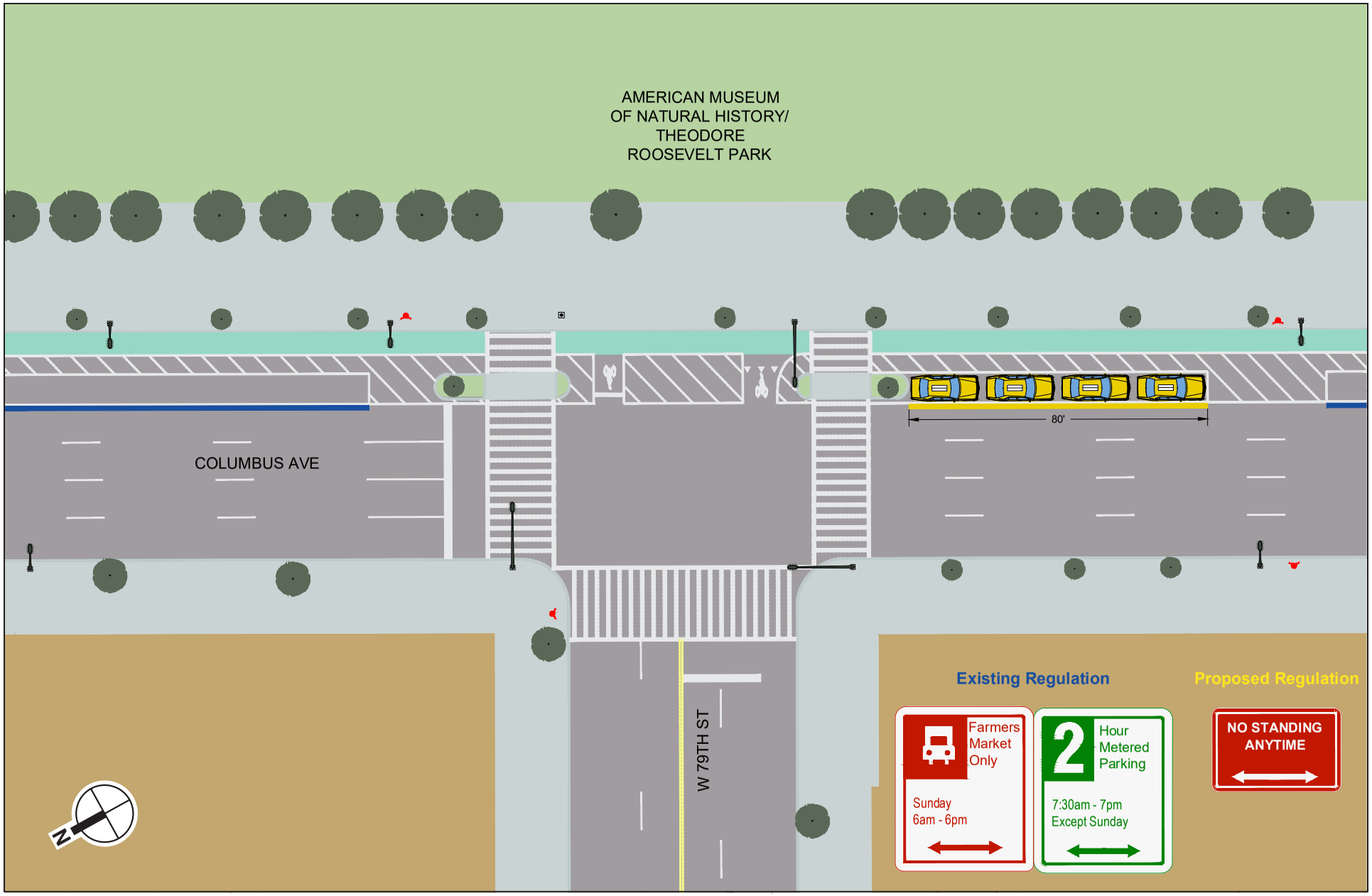
The estimated 2021 traffic volumes with the project are shown in **Figures 9-20 to 9-22** for the weekday midday, PM, and Saturday analysis peak hours. These traffic volumes were estimated by adding to the No Action condition traffic volumes the incremental vehicle trips shown in **Figure 9-3**. A summary of the 2021 With Action condition traffic analysis results is presented in **Table 9-24**.

Table 9-24
Summary of 2021 With Action Traffic Analysis Results

Level of Service	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Signalized Intersections			
Lane Groups at LOS A/B/C	~~19~~24	~~17~~21	~~18~~22
Lane Groups at LOS D	~~6~~5	5	5
Lane Groups at LOS E	5	5	3
Lane Groups at LOS F	2	5	6
Total	~~32~~36	~~32~~36	~~32~~36
Lane Groups with v/c ≥ 0.90	6	9	~~8~~9
Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.			

Significant Adverse Impacts

Based on the project's travel demand forecast shown on **Table 9-6**, details on level-of-service, volume-to-capacity (v/c) ratios, and average delays are presented in **Table 9-25**. As discussed below, significant adverse traffic impacts were identified at three approaches/lane groups at

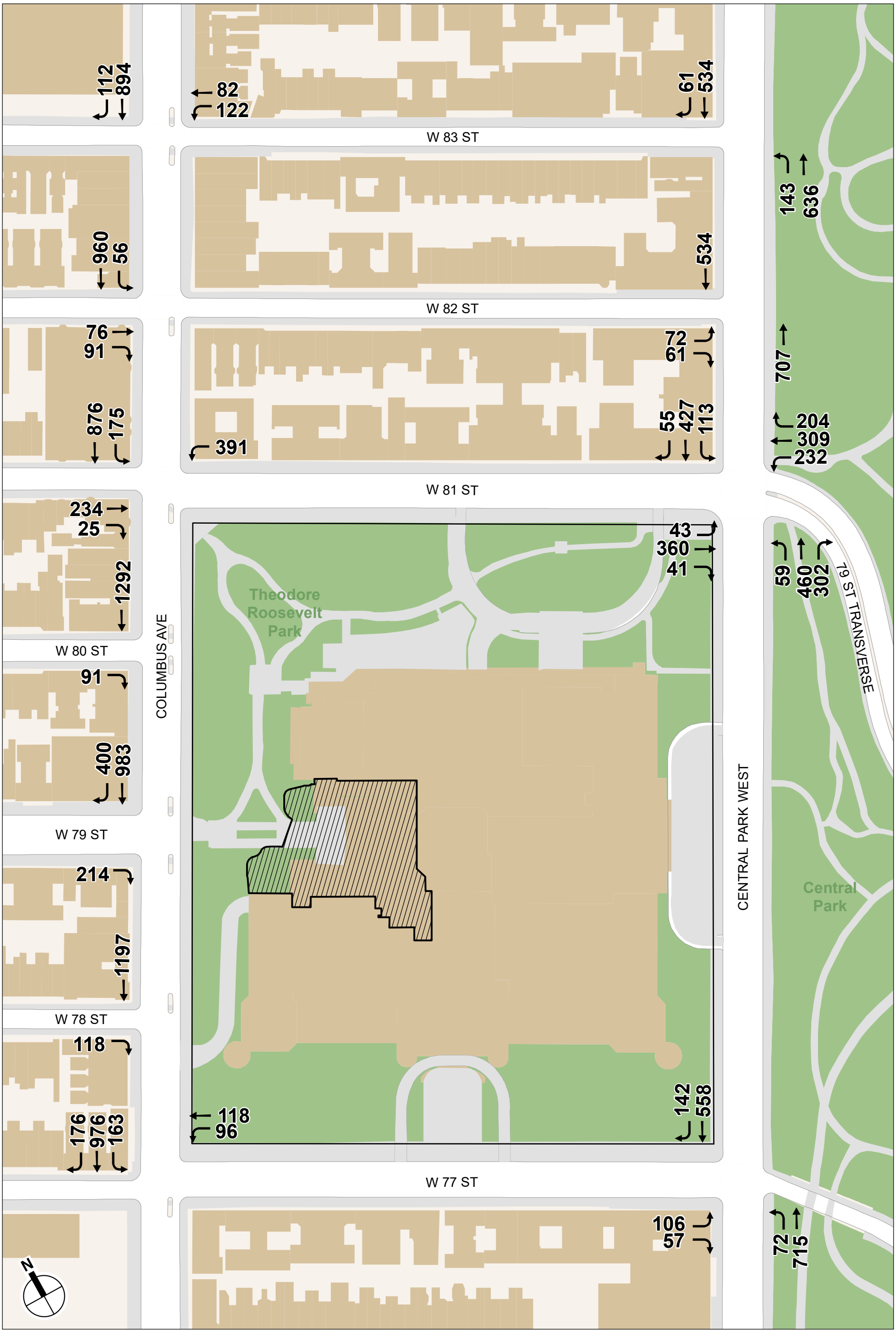


2021 With Action Condition Taxi Layby Area

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-19

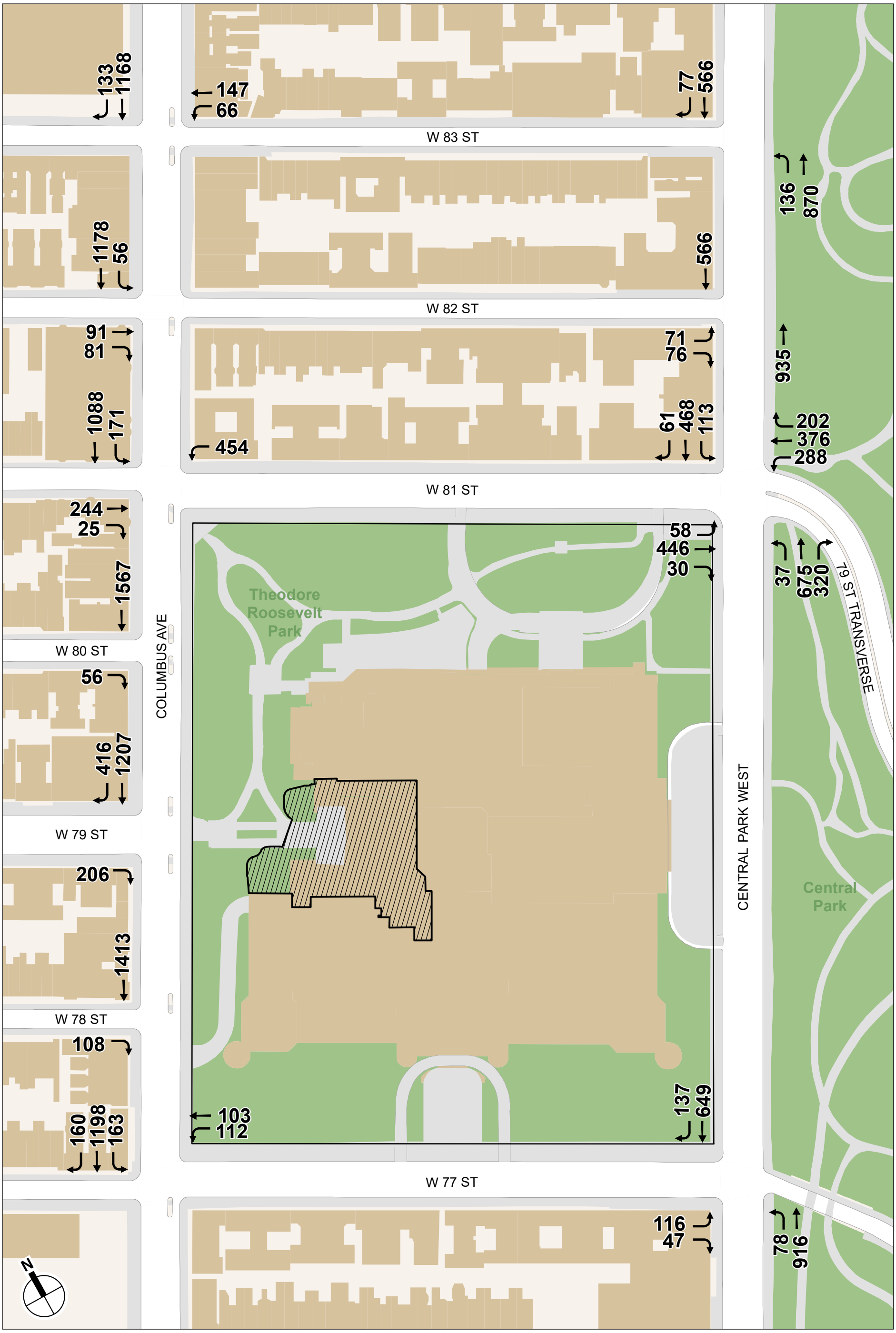
4/21/2017



2021 With Action Traffic Volumes
Weekday Midday Peak Hour

Figure 9-20

4/21/2017



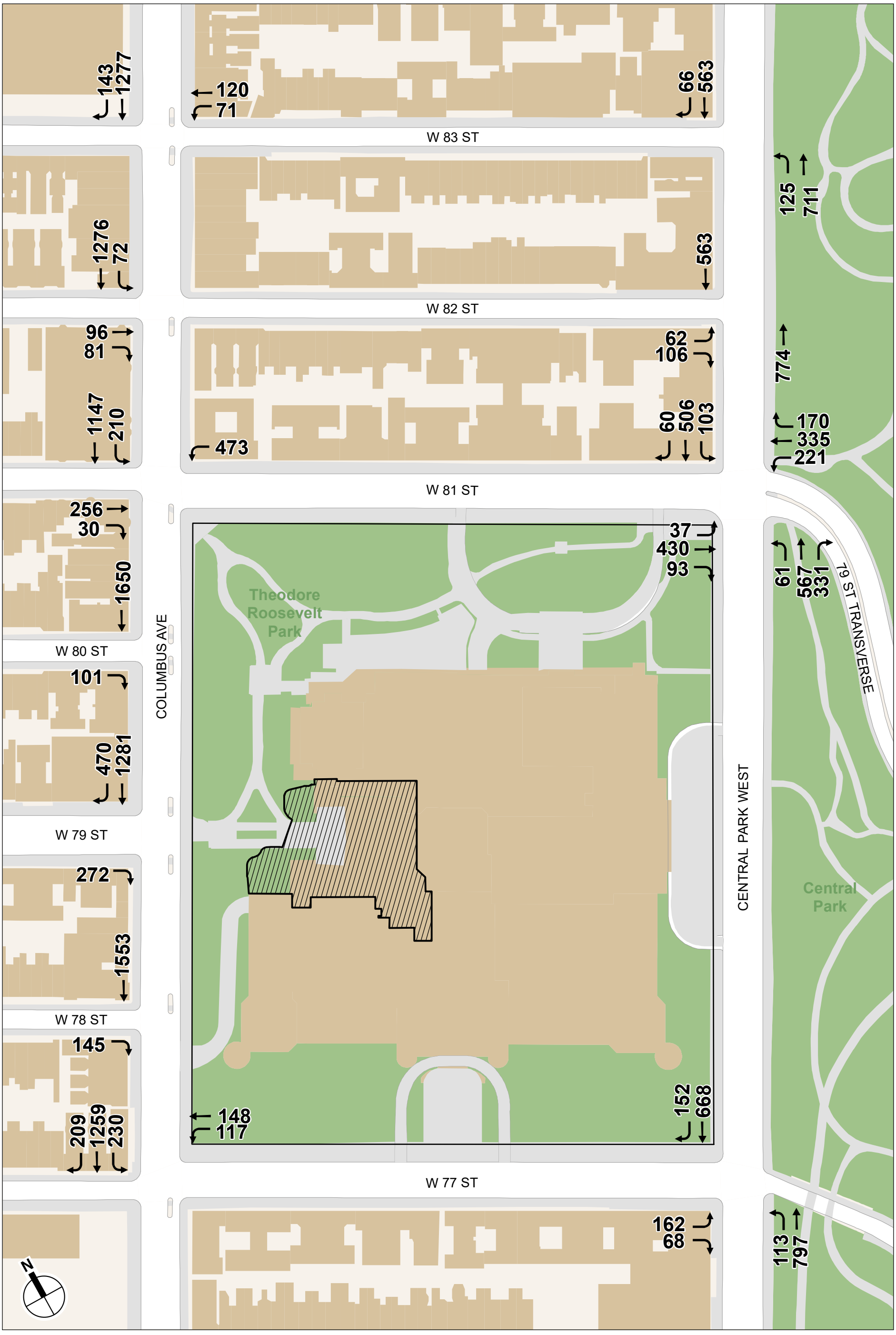
Theodore Roosevelt Park

Building Site

0 200 FEET

2021 With Action Traffic Volumes
Weekday PM Peak Hour
Figure 9-21

4/21/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2021 With Action Traffic Volumes
Saturday Peak Hour

Figure 9-22

three intersections. Potential measures that can be implemented to mitigate these significant adverse traffic impacts are discussed in Chapter 17, "Mitigation." As previously discussed, using the traffic analysis procedures described in **Section C,** intersection movements that were experiencing congestion in the existing condition are highly sensitive methodologically to future increases in traffic volumes, even if the incremental traffic volumes are minimal.

Table 9-25
2021 No Action and 2021 With Action Conditions Level of Service Analysis
Signalized Intersections

	Weekday Midday									Weekday PM									Saturday								
	2021 No Action				2021 With Action					2021 No Action				2021 With Action					2021 No Action				2021 With Action				
Intersection	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
Columbus Avenue and West 83rd Street																											
Westbound	LT	0.42	19.3	B	LT	0.42	19.3	B		LT	0.39	18.6	B	LT	0.39	18.6	B		LT	0.34	17.8	B	LT	0.34	17.9	B	
Southbound	TR	0.67	19.0	B	TR	0.67	19.0	B		TR	0.82	23.2	C	TR	0.82	23.3	C		TR	0.94	32.0	C	TR	0.94	32.7	C	
	Int.		19.0	B	Int.		19.0	B		Int.		22.5	C	Int.		22.6	C		Int.		30.3	C	Int.		30.8	C	
Columbus Avenue and West 82nd Street																											
Eastbound	TR	0.34	17.9	B	TR	0.34	17.9	B		TR	0.34	18.0	B	TR	0.34	18.0	B		TR	0.37	18.5	B	TR	0.37	18.5	B	
Southbound	L	0.20	14.2	B	L	0.20	14.2	B		L	0.19	13.9	B	L	0.19	13.9	B		L	0.27	15.4	B	L	0.27	15.4	B	
	T	0.62	18.0	B	T	0.62	18.0	B		T	0.77	21.2	C	T	0.77	21.2	C		T	0.78	21.5	C	T	0.78	21.6	C	
	Int.		17.8	B	Int.		17.8	B		Int.		20.4	C	Int.		20.5	C		Int.		20.8	C	Int.		20.8	C	
Columbus Avenue and West 81st Street																											
Eastbound	T	0.89	61.7	E	T	0.90	62.7	E		T	0.81	51.3	D	T	0.81	51.9	D		T	0.86	57.4	E	T	0.88	59.0	E	
	R	0.14	28.6	C	R	0.14	28.6	C		R	0.13	28.4	C	R	0.13	28.4	C		R	0.18	30.4	C	R	0.21	30.4	C	
Westbound	L	0.82	49.4	D	L	0.82	49.6	D		L	1.03	84.7	F	L	1.03	85.8	F		L	1.05	91.6	F	L	1.08	92.8	F	
Southbound	L	0.99	98.1	F	L	0.97	93.3	F		L	0.97	94.2	F	L	0.96	90.8	F		L	1.07	119.1	F	L	1.05	113.6	F	
	T	0.55	18.4	B	T	0.56	18.4	B		T	0.74	22.1	C	T	0.75	22.1	C		T	0.75	22.4	C	T	0.76	22.5	C	
	Int.		40.8	D	Int.		40.3	D		Int.		45.8	D	Int.		45.8	D		Int.		52.0	D	Int.		51.9	D	
Columbus Avenue and West 80th Street																											
Eastbound	R	0.29	24.1	C	R	0.29	24.1	C		R	0.17	22.1	C	R	0.17	22.1	C		R	0.29	23.9	C	R	0.29	23.9	C	
Southbound	T	0.64	10.8	B	T	0.65	10.9	B		T	0.79	13.6	B	T	0.79	13.7	B		T	0.78	13.3	B	T	0.78	13.4	B	
	Int.		11.8	B	Int.		11.8	B		Int.		14.0	B	Int.		14.0	B		Int.		14.0	B	Int.		14.1	B	
Columbus Avenue and West 79th Street																											
Eastbound	R	0.85	63.0	E	R	0.87	66.1	E		R	0.78	55.7	E	R	0.79	56.9	E		R	0.82	56.1	E	R	0.85	58.8	E	
Southbound	T	0.84	25.1	C	T	0.85	25.5	C		T	1.08	71.8	E	T	1.09	73.9	E		T	1.11	82.2	F	T	1.12	85.1	F	
	R	0.45	5.2	A	R	0.45	5.2	A		R	0.47	5.4	A	R	0.47	5.4	A		R	0.56	6.5	A	R	0.56	6.5	A	
	Int.		25.9	C	Int.		26.7	C		Int.		55.4	E	Int.		57.0	E		Int.		60.6	E	Int.		62.8	E	
Columbus Avenue and West 78th Street																											
Eastbound	R	0.41	26.9	C	R	0.41	26.9	C		R	0.38	26.0	C	R	0.38	26.0	C		R	0.45	27.7	C	R	0.46	27.8	C	
Southbound	T	0.60	10.3	B	T	0.61	10.4	B		T	0.73	12.3	B	T	0.74	12.4	B		T	0.76	12.7	B	T	0.76	12.9	B	
	Int.		11.9	B	Int.		12.0	B		Int.		13.4	B	Int.		13.5	B		Int.		14.1	B	Int.		14.2	B	
Columbus Avenue and West 77th Street																											
Westbound	LT	0.74	43.3	D	LT	0.74	43.3	D		LT	0.64	37.9	D	LT	0.64	37.9	D		LT	0.84	50.7	D	LT	0.84	50.7	D	
Southbound	L	0.83	67.4	E	L	0.84	68.0	E		L	0.83	66.1	E	L	0.83	66.7	E		**L**	**1.07**	**115.5**	**F**	**L**	**1.08**	**119.4**	**F**	**+**
	TR	0.66	11.2	B	TR	0.67	11.4	B		TR	0.76	13.0	B	TR	0.76	13.1	B		TR	0.81	14.7	B	TR	0.82	15.1	B	
	Int.		22.2	C	Int.		22.3	C		Int.		21.1	C	Int.		21.2	C		Int.		31.6	C	Int.		32.4	C	
Central Park West and West 83rd Street																											
Northbound	LT	0.86	26.5	C	LT	0.86	27.3	C		LT	1.08	72.9	E	LT	1.08	74.0	E		LT	0.82	23.8	C	LT	0.84	25.0	C	
Southbound	TR	0.42	13.0	B	TR	0.42	13.0	B		TR	0.50	14.1	B	TR	0.50	14.1	B		TR	0.45	13.3	B	TR	0.46	13.4	B	
	Int.		20.9	C	Int.		21.4	C		Int.		49.1	D	Int.		49.7	D		Int.		19.2	B	Int.		20.0	B	
Central Park West and West 82nd Street																											
Eastbound	LR	0.35	24.1	C	LR	0.35	24.2	C		LR	0.39	24.9	C	LR	0.39	24.9	C		LR	0.45	26.1	C	LR	0.46	26.2	C	
Northbound	T	0.53	14.5	B	T	0.53	14.5	B		T	0.63	16.3	B	T	0.64	16.3	B		T	0.52	14.3	B	T	0.53	14.4	B	
Southbound	T	0.38	12.5	B	T	0.38	12.5	B		T	0.41	12.9	B	T	0.41	12.9	B		T	0.39	12.6	B	T	0.40	12.7	B	
	Int.		14.7	B	Int.		14.8	B		Int.		15.9	B	Int.		16.0	B		Int.		15.2	B	Int.		15.3	B	
Central Park West and West 81st Street																											
Eastbound	L	0.25	20.6	C	L	0.26	20.8	C		L	0.42	26.9	C	L	0.43	27.1	C		L	0.20	19.4	B	L	0.21	19.5	B	
	T	0.75	38.4	D	T	0.76	38.9	D		T	1.02	76.7	E	T	1.02	76.7	E		T	0.81	40.8	D	T	0.81	41.3	D	
	R	0.20	25.9	C	R	0.20	25.9	C		R	0.13	24.6	C	R	0.13	24.6	C		R	0.44	31.5	C	R	0.45	31.7	C	
Westbound	L	0.93	68.2	E	L	0.94	71.7	E		**L**	**1.07**	**113.4**	**F**	**L**	**1.09**	**118.1**	**F**	**+**	**L**	**1.00**	**91.3**	**F**	**L**	**1.03**	**98.9**	**F**	**+**
	T	0.79	42.4	D	T	0.79	42.4	D		LT	1.07	87.4	F	LT	1.07	87.4	F		T	0.69	34.7	C	T	0.69	34.8	C	
	R	0.98	83.2	F	R	0.98	84.2	F		R	0.78	48.0	D	R	0.77	47.6	D		R	0.68	40.8	D	R	0.69	41.6	D	
Northbound	LTR	0.94	43.0	D	LTR	0.96	46.7	D		LTR	1.07	75.9	E	LTR	1.08	78.5	E		LTR	1.08	78.5	E	LTR	1.09	82.3	F	
Southbound	LTR	0.97	56.1	E	LTR	0.99	59.6	E		LTR	1.08	85.6	F	LTR	1.08	88.0	F		LTR	0.93	45.0	D	LTR	0.96	49.5	D	
	Int.		50.2	D	Int.		52.5	D		Int.		74.2	E	Int.		75.9	E		Int.		56.4	E	Int.		59.4	E	

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, Int. = Intersection
"+" Denotes significant adverse impact
Some information in this table has been re-formatted since the DEIS.

Table 9-25 (cont'd)
2021 No Action and 2021 With Action Conditions Level of Service Analysis
Signalized Intersections

	Weekday Midday									Weekday PM										Saturday									
	2021 No Action				2021 With Action					2021 No Action				2021 With Action						2021 No Action				2021 With Action					
Intersection	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS			Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		
Central Park West and West 77th Street																													
Eastbound	LR	0.42	25.3	C	LR	0.42	25.4	C		LR	0.42	25.4	C	LR	0.43	25.5	C			LR	0.62	30.7	C	LR	0.63	31.0	C		
Northbound	LT	0.80	22.5	C	LT	0.81	22.9	C		LT	0.98	42.5	D	LT	0.98	43.6	D			**LT**	**1.07**	**69.2**	**E**	**LT**	**1.08**	**73.5**	**E**	**+**	
Southbound	TR	0.59	15.7	B	TR	0.59	15.7	B		TR	0.63	16.5	B	TR	0.63	16.5	B			TR	0.68	17.6	B	TR	0.68	17.8	B		
	Int.		19.9	B	Int.		20.1	C		Int.		30.4	C	Int.		31.0	C			Int.		43.3	D	Int.		45.4	D		

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, Int. = Intersection
"+" Denotes significant adverse impact
Some information in this table has been re-formatted since the DEIS.

West 81st Street

- Westbound left-turn at the Central Park West and West 81st Street intersection would deteriorate within LOS F (from a v/c ratio of 1.07 and 113.4 spv of delay to a v/c ratio of 1.09 and 118.1 spv of delay) in the weekday PM peak hour, and within LOS F (from a v/c ratio of 1.00 and 91.3 spv of delay to a v/c ratio of 1.03 and 98.9 spv of delay) in the Saturday peak hour, increases in delay of more than three seconds. As shown in **Figures 9-1 to 9-3**, the project generated incremental vehicle trips forecasted for the westbound left-turn movement totaled only 3 in the weekday PM peak hour and 3 in the Saturday peak hour. These modest increases in project generated peak hour traffic are forecast to result in increases in delay that constitute significant adverse impacts. However, given the very small incremental increase from the proposed project, an additional vehicle on the westbound left-turn movement every 20 minutes, the reported change in delay is likely overstated by the traffic analysis methodology specified in the 2014 *CEQR Technical Manual*.

Columbus Avenue

- Southbound left-turn at the Columbus Avenue and West 77th Street intersection would deteriorate within LOS F (from a v/c ratio of 1.07 and 115.5 spv of delay to a v/c ratio of 1.08 and 119.4 spv of delay) in the Saturday peak hour, an increase in delay of more than three seconds. As shown in **Figure 9-3**, the project generated incremental vehicle trips for the southbound left-turn movement totaled only 2 in the Saturday peak hour. These modest increases in project generated peak hour traffic are forecast to result in increases in delay that constitute significant adverse impacts. However, given the very small incremental increase from the proposed project, an additional vehicle on the southbound left turn every 30 minutes, the reported change in delay is likely overstated by the traffic analysis methodology specified in the 2014 *CEQR Technical Manual*.

Central Park West

- Northbound approach at the Central Park West and West 77th Street intersection would deteriorate within LOS E (from a v/c ratio of 1.07 and 69.2 spv of delay to a v/c ratio of 1.08 and 73.5 spv of delay) in the Saturday peak hour, an increase in delay of more than four seconds. As shown in **Figure 9-3**, the project generated incremental vehicle trips forecasted for the northbound approach totaled only 10 in the Saturday peak hour. These modest increases in project generated peak hour traffic are forecast to result in increases in delay that constitute significant adverse impacts. However, given the small incremental increase from the proposed project, an additional vehicle on the northbound approach every 6 minutes, the reported change in delay is likely overstated by the traffic analysis methodology specified in the 2014 *CEQR Technical Manual*.

SCHOOL BUS OPERATIONS

As described above in Section A, "Introduction," and under "Existing Conditions," school bus trips are not expected to increase from 2015 to 2021, both with and without the proposed project. While approximately 40 percent of school group visitors arrive to the Museum by subway, 60 percent arrive by school and coach bus and visit the Museum during 10 AM to 2 PM on weekdays. School bus activities vary seasonally and are heaviest in April and May, and to a lesser extent in November and December, and are lowest in August and September.

As shown in **Table 9-17**, school bus volumes have not increased in recent years, and are not anticipated to increase, as the Museum follows procedures to manage daily school bus traffic, outlined in its TMP. The TMP establishes procedures for bus drop-offs, lay-over, and pick-ups, and is implemented by Museum Transportation staff. School buses would continue to pick up and drop off passengers within the Museum's on-site parking garage, where they would enter directly into the Museum complex, as well as pick up some departing schoolchildren on the north curbside of West 77th Street and west curbside of Central Park West. As school bus traffic is not projected to increase as a result of the project, further analyses are not required in the EIS.

E. TRANSIT ANALYSIS

The Museum is located at the 81st Street/Museum of Natural History subway station, serving the B and C lines, and two blocks east of the 79th Street subway station, serving the No. 1 line. Most projected subway trips are expected to be served by the 81st Street station, which has an entrance directly into the Museum complex. The NYCT M7, M10, M11, and M79 local bus routes also have stops adjacent to or near the Museum. A detailed analysis of transit operations during the weekday midday, PM, and Saturday peak periods is presented below.

TRANSIT STUDY AREAS

SUBWAY SERVICE

The subway lines that serve the 81st Street/Museum of Natural History station include:

- The B subway line (Central Park West Local/Sixth Avenue Express) operates between Bedford Park Boulevard, Bronx and Brighton Beach, Brooklyn.
- The C subway line (Eighth Avenue Local) operates between Washington Heights-168th Street, Manhattan and Euclid Avenue, Brooklyn.

As discussed above in Section B, "Preliminary Analysis Methodology and Screening Assessment," an analysis of subway station elements at the 81st Street/Museum of Natural History station is warranted for the weekday midday, weekday PM, and Saturday peak hours as it was projected to have exceeded 200 peak hour incremental subway trips in each of those peak hours. An analysis of subway station elements at the 79th Street station is not warranted as it was not projected to have exceeded 200 peak hour incremental subway trips in any of the peak hours.

BUS SERVICE

Based on the travel demand estimates and the availability and service frequencies of the bus routes in the study area, it was determined that none would incur 50 or more peak hour riders in a single direction—the CEQR recommended threshold for undertaking a quantified bus analysis. Therefore, a quantified bus line-haul analysis is not warranted and the proposed project is not expected to result in any significant adverse bus line-haul impacts. The local bus routes operate standard buses with a guideline capacity of 54 passengers per bus, with the exception of the M79

route, which has a guideline capacity of 93 passengers per bus. **Table 9-26** provides a summary of these bus routes and their peak period schedules.

Table 9-26
NYCT Local Bus Routes Serving The Study Area

Bus Route	Start Point	End Point	Routing in Study Area	Freq. of Bus Service (Headway in Minutes)		
				Weekday (12:30 PM – 1:30 PM)	Weekday (4 PM – 5 PM)	Saturday (1 PM – 2 PM)
M7 (NB/SB)	Harlem – W. 146th Street	Chelsea – 14th Street / Sixth Avenue	Columbus Avenue and Amsterdam Avenue	(12/9)	(8/8)	(11/9)
M10 (NB/SB)	Harlem – W. 159th Street	Columbus Circle	Central Park West	(15/12)	(10/10)	(10/10)
M11 (NB/SB)	Riverbank State Park	Greenwich Village – Hudson Street	Columbus Avenue and Amsterdam Avenue	(12/11)	(11/11)	(15/12)
M79 (EB/WB)	Upper West Side – Riverside Drive	Upper East Side – East End Avenue	West 79th Street, Columbus Avenue, and West 81st Street	(9/9)	(5/6)	(9/9)

Source: NYCT Timetables (2016).

SUBWAY STATION ANALYSIS

2015 EXISTING CONDITIONS

As presented above in Section B under "Level 1 Screening Assessment," the proposed project is expected to generate 507, 310, and 485 subway trips during the weekday midday, weekday PM, and Saturday peak hours, respectively. These trips were assigned to the three area subway lines, and critical station elements, including station control areas and stairways.

81st Street/Museum of Natural History Station

The 81st Street/Museum of Natural History subway station is served by the B and C trains located on Central Park West between West 77th Street and West 81st Street. Based on the assignment pattern for trips to the project area, the following station elements are identified for analysis:

- Two control areas: N44 at Central Park West and West 81st Street with five two-way turnstiles, and N45 at Central Park West and West 79th Street with three two-way turnstiles and three high entry-exit turnstiles;
- Two street-level stairways: one on the west sidewalk of Central Park West north of West 77th Street (S1A/S1B), and one on the south sidewalk of West 81st Street west of Central Park West (P1A/P1B/S2A/S2B);
- Three platform-level stairways: two near the Central Park West and West 81st Street fare zone (PL7/PL8 and PL5/PL6) and one near the Central Park West and West 79th Street fare zone (PL3/PL4). All three platform-level stairways connect the downtown platform to the uptown platform and fare control areas on the upper level.

Field surveys conducted in October 2015 provided the baseline volumes for the analysis of the subway station elements. As shown in **Tables 9-27 through 9-29**, all analyzed stairways and control areas currently operate at acceptable levels during the weekday midday and PM peak hours and the Saturday peak hour.

Table 9-27
2015 Existing Conditions Platform Stair Analysis
81st Street/Museum of Natural History Station

Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	30	197	9	62	0.90	1.00	0.75	0.09	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	87	462	27	144	0.90	1.00	0.75	0.21	A
PL3/PL4	Near N45 fare zone	7.3	6.3	128	203	40	63	0.90	1.00	0.75	0.14	A
Weekday PM Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	14	490	4	153	1.00	1.00	0.75	0.17	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	100	373	31	117	0.90	1.00	0.75	0.19	A
PL3/PL4	Near N45 fare zone	7.3	6.3	97	674	30	211	0.90	1.00	0.75	0.30	A
Saturday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	38	393	12	123	0.90	1.00	0.75	0.16	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	145	312	45	98	0.90	1.00	0.75	0.19	A
PL3/PL4	Near N45 fare zone	7.3	6.3	24	257	8	80	0.90	1.00	0.75	0.11	A

Table 9-28
2015 Existing Conditions Free-Zone Stair Analysis
81st Street/Museum of Natural History Station

Free-Zone Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	298	425	93	133	0.90	1.00	0.80	0.19	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	395	201	123	63	0.90	1.00	0.80	0.21	A
Weekday PM Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.2	321	458	100	143	0.90	1.00	0.80	0.20	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	311	522	97	163	0.90	1.00	0.80	0.27	A
Saturday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	331	600	103	188	0.90	1.00	0.80	0.24	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	423	573	132	179	0.90	1.00	0.80	0.33	A

Table 9-29
2015 Existing Conditions Fare Array Analysis
81st Street/Museum of Natural History Station

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes (per element)		Peak Hour Pedestrian Volumes		Peak 15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit	Entry	Exit				
Weekday Midday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	897	452	280	141	0.75	0.90	0.21	A
Two-way Turnstiles N45 fare zone	3	420	645	193	133	60	42	0.75	0.90	0.09	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	26	363	8	113	0.75	0.90	0.11	A
Weekday PM Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,112	705	348	220	0.75	0.90	0.29	A
Two-way Turnstiles N45 fare zone	3	420	645	592	101	185	32	0.75	0.90	0.19	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	161	181	50	57	0.75	0.90	0.12	A
Saturday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,031	612	322	191	0.75	0.90	0.26	A
Two-way Turnstiles N45 fare zone	3	420	645	721	228	225	71	0.75	0.90	0.25	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	127	425	40	133	0.75	0.90	0.18	A

2021 NO ACTION CONDITION

Estimates of peak hour transit volumes in the 2021 No Action Condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates. An annual background growth rate of 0.25 percent was assumed for the years of 2015 to 2020, and an annual background growth rate of 0.125 percent was assumed for the remaining year of 2020 to 2021. Subway trips associated with the projected attendance and utilization growth in the No Action Condition, as well as trips associated with discrete No Build projects, were also incorporated into the future No Action transit volumes. The No Action peak period volume projections were allocated to the transit analysis elements described above.

Tables 9-30 through 9-32 summarize the 2021 No Action midday, PM, and Saturday peak hour service levels at all analyzed stairs and fare arrays at the 81st Street/Museum of Natural History subway station. The analysis results show that all analyzed station elements are forecast to operate at LOS A in all three peak hours.

Table 9-30
2021 No Action Condition Platform Stair Analysis
81st Street/Museum of Natural History Station

Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	34	210	11	66	0.90	1.00	0.75	0.10	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	92	478	29	149	0.90	1.00	0.75	0.22	A
PL3/PL4	Near N45 fare zone	7.3	6.3	144	249	45	78	0.90	1.00	0.75	0.16	A
Weekday PM Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	16	505	5	158	1.00	1.00	0.75	0.18	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	103	386	32	121	0.90	1.00	0.75	0.19	A
PL3/PL4	Near N45 fare zone	7.3	6.3	107	715	33	223	0.90	1.00	0.75	0.32	A
Saturday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	40	401	13	125	0.90	1.00	0.75	0.17	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	148	319	46	100	0.90	1.00	0.75	0.19	A
PL3/PL4	Near N45 fare zone	7.3	6.3	27	268	8	84	0.90	1.00	0.75	0.11	A

Table 9-31
2021 No Action Condition Free-Zone Stair Analysis
81st Street/Museum of Natural History Station

Free-Zone Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	324	458	101	143	0.90	1.00	0.80	0.21	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	437	252	137	79	0.90	1.00	0.80	0.24	A
Weekday PM Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	341	485	107	152	0.90	1.00	0.80	0.22	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	340	566	106	177	0.90	1.00	0.80	0.29	A
Saturday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	344	616	108	193	0.90	1.00	0.80	0.25	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	439	590	137	184	0.90	1.00	0.80	0.34	A

Table 9-32
2021 No Action Condition Fare Array Analysis
81st Street/Museum of Natural History Station

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes (per element)		Peak Hour Pedestrian Volumes		Peak 15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit	Entry	Exit				
Weekday Midday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	936	480	293	150	0.75	0.90	0.22	A
Two-way Turnstiles N45 fare zone	3	420	645	289	162	90	51	0.75	0.90	0.12	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	50	431	16	135	0.75	0.90	0.15	A
Weekday PM Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,148	731	359	228	0.75	0.90	0.29	A
Two-way Turnstiles N45 fare zone	3	420	645	670	116	209	36	0.75	0.90	0.21	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	181	218	57	68	0.75	0.90	0.14	A
Saturday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,053	628	329	196	0.75	0.90	0.26	A
Two-way Turnstiles N45 fare zone	3	420	645	742	236	232	74	0.75	0.90	0.26	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	132	441	41	138	0.75	0.90	0.19	A

2021 WITH ACTION CONDITION

As shown in **Table 9-7**, the proposed project is forecast to generate 604, 369, and 539 peak hour incremental subway trips during the weekday midday, weekday PM, and Saturday peak hours, respectively. Most of these trips were assigned to the 81st Street/Museum of Natural History station, which is directly accessible from the lower level of the Museum and served by the B and C subway lines, and a lesser percentage to the 79th Street station at Broadway served by the No. 1 subway line. The 81st Street/Museum of Natural History station is estimated to experience a total of 430, 261, and 383 incremental subway trips in the midday, PM, and Saturday peak hours, respectively.

As shown in **Tables 9-33 through 9-35**, all station analysis elements would continue to operate at favorable LOS A in both the weekday midday and PM peak hours, as well as in the Saturday peak hour. Therefore, the proposed project would not result in any significant adverse impact at the 81st Street/Museum of Natural History subway station.

Table 9-33
2021 With Action Condition Platform Stair Analysis
81st Street/Museum of Natural History Station

Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	39	224	12	70	0.90	1.00	0.75	0.10	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	97	492	30	154	0.90	1.00	0.75	0.23	A
PL3/PL4	Near N45 fare zone	7.3	6.3	167	320	52	100	0.90	1.00	0.75	0.20	A
Weekday PM Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	18	515	6	161	1.00	1.00	0.75	0.18	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	105	396	33	124	0.90	1.00	0.75	0.20	A
PL3/PL4	Near N45 fare zone	7.3	6.3	117	768	37	240	0.90	1.00	0.75	0.34	A
Saturday Peak Hour												
PL7/PL8	Near N44 fare zone (north stair)	7.3	6.3	45	411	14	128	0.90	1.00	0.75	0.17	A
PL5/PL6	Near N44 fare zone (south stair)	7.3	6.3	153	329	48	103	0.90	1.00	0.75	0.20	A
PL3/PL4	Near N45 fare zone	7.3	6.3	53	319	17	100	0.90	1.00	0.75	0.15	A

Table 9-34
2021 With Action Condition Free-Zone Stair Analysis
81st Street/Museum of Natural History Station

Free-Zone Stair	Location	Width (ft)	Effective Width (ft)	Peak Hour Volumes		Peak 15-Minute Volumes		Friction Factor	Surge Factor		V/C Ratio	LOS
				Up	Down	Up	Down		Up	Down		
Weekday Midday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	355	498	111	156	0.90	1.00	0.80	0.23	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	497	331	155	103	0.90	1.00	0.80	0.28	A
Weekday PM Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	354	515	111	161	0.90	1.00	0.80	0.23	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	367	625	115	195	0.90	1.00	0.80	0.32	A
Saturday Peak Hour												
P1A/P1B/S2A/S2B	SW corner of W. 81st St and Central Park West	11.2	9.7	378	645	118	202	0.90	1.00	0.80	0.27	A
S1A/S1B	West sidewalk of Central Park West north of West 77th Street	9.3	7.8	506	647	158	202	0.90	1.00	0.80	0.38	A

Table 9-35
2021 With Action Condition Fare Array Analysis
81st Street/Museum of Natural History Station

Station Fare Array Elements	Quantity	Fare Array Capacity for 15 Minutes (per element)		Peak Hour Pedestrian Volumes		Peak 15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C Ratio	LOS
		Entry	Exit	Entry	Exit	Entry	Exit				
Weekday Midday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	976	511	305	160	0.75	0.90	0.23	A
Two-way Turnstiles N45 fare zone	3	420	645	453	208	142	65	0.75	0.90	0.17	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	91	539	28	168	0.75	0.90	0.19	A
Weekday PM Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,178	744	368	233	0.75	0.90	0.30	A
Two-way Turnstiles N45 fare zone	3	420	645	791	136	247	43	0.75	0.90	0.25	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	211	265	66	83	0.75	0.90	0.17	A
Saturday Peak Hour											
Two-way Turnstiles N44 fare zone	5	420	645	1,082	662	338	207	0.75	0.90	0.27	A
Two-way Turnstiles N45 fare zone	3	420	645	860	288	269	90	0.75	0.90	0.31	A
High Entry/Exit Turnstile (HEET) N45 fare zone	3	255	540	161	562	50	176	0.75	0.90	0.23	A

F. PEDESTRIAN ANALYSIS

As described above in Section B, "Preliminary Analysis Methodology and Screening Assessment," Level 1 and Level 2 screening analyses were prepared to identify the pedestrian elements warranting a detailed analysis. Based on the assignment of pedestrian trips, ten sidewalks, four corners, and four crosswalks were selected for analysis in the weekday midday, weekday PM, and Saturday peak hours.

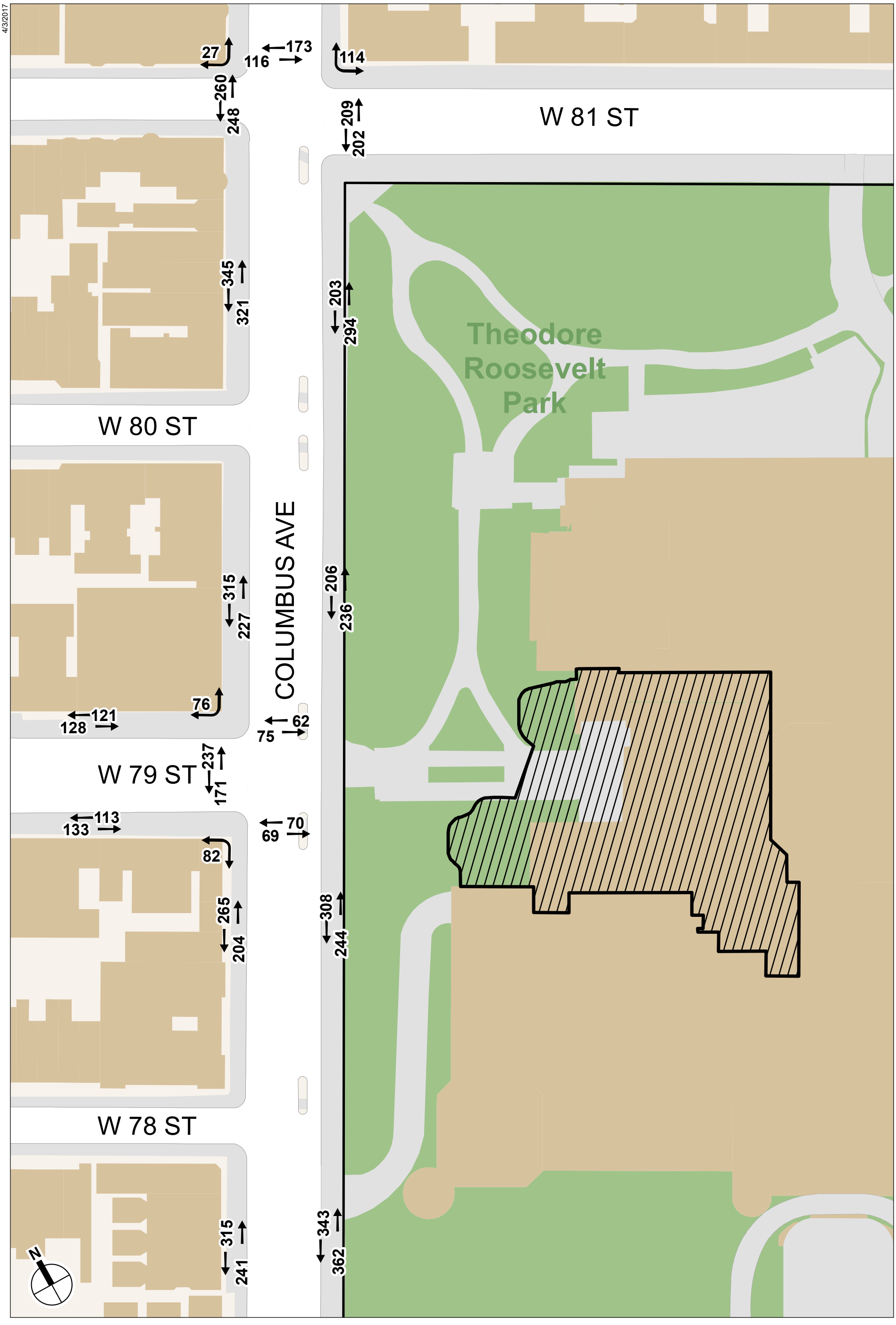
EXISTING CONDITIONS

Pedestrian data were collected in October 2015 in accordance with procedures outlined in the *CEQR Technical Manual* during the weekday hours of 11:00 AM to 2:00 PM and 3:00 PM to 6:00 PM on a weekday and from 12:00 PM to 5:00 PM on Saturday. Supplemental pedestrian data were collected at four additional sidewalk locations in the same timeframes in May 2016 based on recommendations made by community stakeholders during DEIS scoping.

STREET-LEVEL PEDESTRIAN OPERATIONS

Peak hours were determined by comparing rolling hourly averages and peak hour factors were calculated based on the highest 15-minute volumes within the selected analysis peak hours. The existing peak hour pedestrian volumes are shown in **Figures 9-23 through 9-25**. A summary of the existing conditions pedestrian analysis results is presented in **Table 9-36**.

4/3/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2015 Existing Pedestrian Volumes
Weekday Midday Peak Hour

Figure 9-23

4/3/2017

W 81 ST

W 80 ST

COLUMBUS AVE

W 79 ST

W 78 ST

Theodore Roosevelt Park

66
155
187
103
406
376
177
175
517
450
174
392
450
363
140
199
198
90
71
345
289
149
157
90
116
96
353
266
222
321
247
348
382
345
395
312

N

Theodore Roosevelt Park

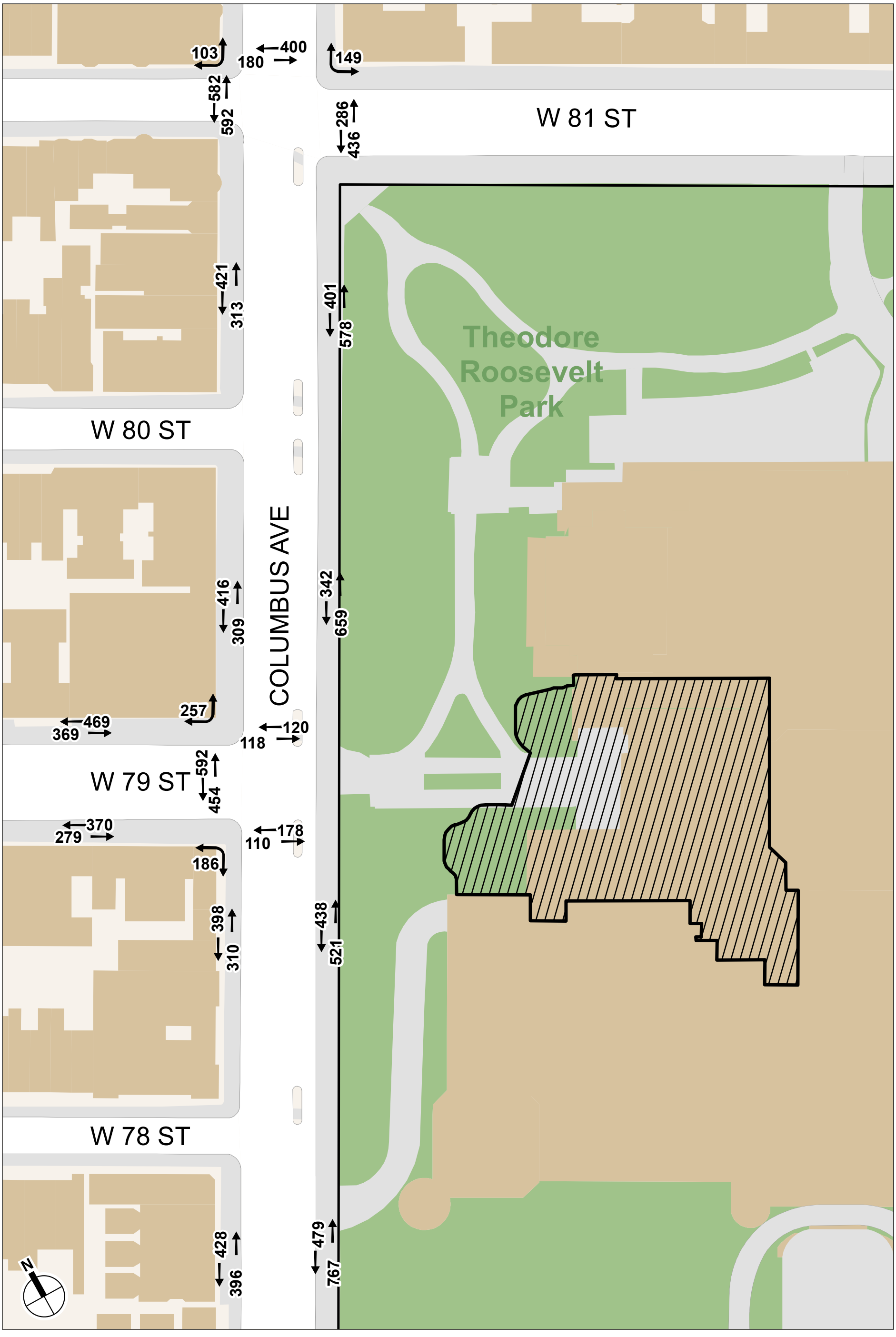
Building Site

0 200 FEET

2015 Existing Pedestrian Volumes
Weekday PM Peak Hour

Figure 9-24

4/3/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2015 Existing Pedestrian Volumes
Saturday Peak Hour

Figure 9-25

Table 9-36
Summary of 2015 Existing Pedestrian Analysis Results

Level of Service	Analysis Peak Hours		
	Weekday Midday	Weekday PM	Saturday
Sidewalks			
Sidewalks at LOS A/B/C	10	10	10
Sidewalks at LOS D	0	0	0
Sidewalks at LOS E	0	0	0
Sidewalks at LOS F	0	0	0
Total	10	10	10
Corners			
Crosswalks at LOS A/B/C	4	4	4
Crosswalks at LOS D	0	0	0
Crosswalks at LOS E	0	0	0
Crosswalks at LOS F	0	0	0
Total	4	4	4
Crosswalks			
Crosswalks at LOS A/B/C	4	4	3
Crosswalks at LOS D	0	0	1
Crosswalks at LOS E	0	0	0
Crosswalks at LOS F	0	0	0
Total	4	4	4

Note: LOS = Level-of-Service.

As shown in **Tables 9-37 through 9-39**, all sidewalk, corner, and crosswalk analysis locations currently operate at favorable LOS A, B, and C, except:

- East crosswalk of Columbus Avenue and West 81st Street, which operates at LOS D with 17.1 square feet per pedestrian (SFP) in the Saturday peak hour.

2021 NO ACTION CONDITION

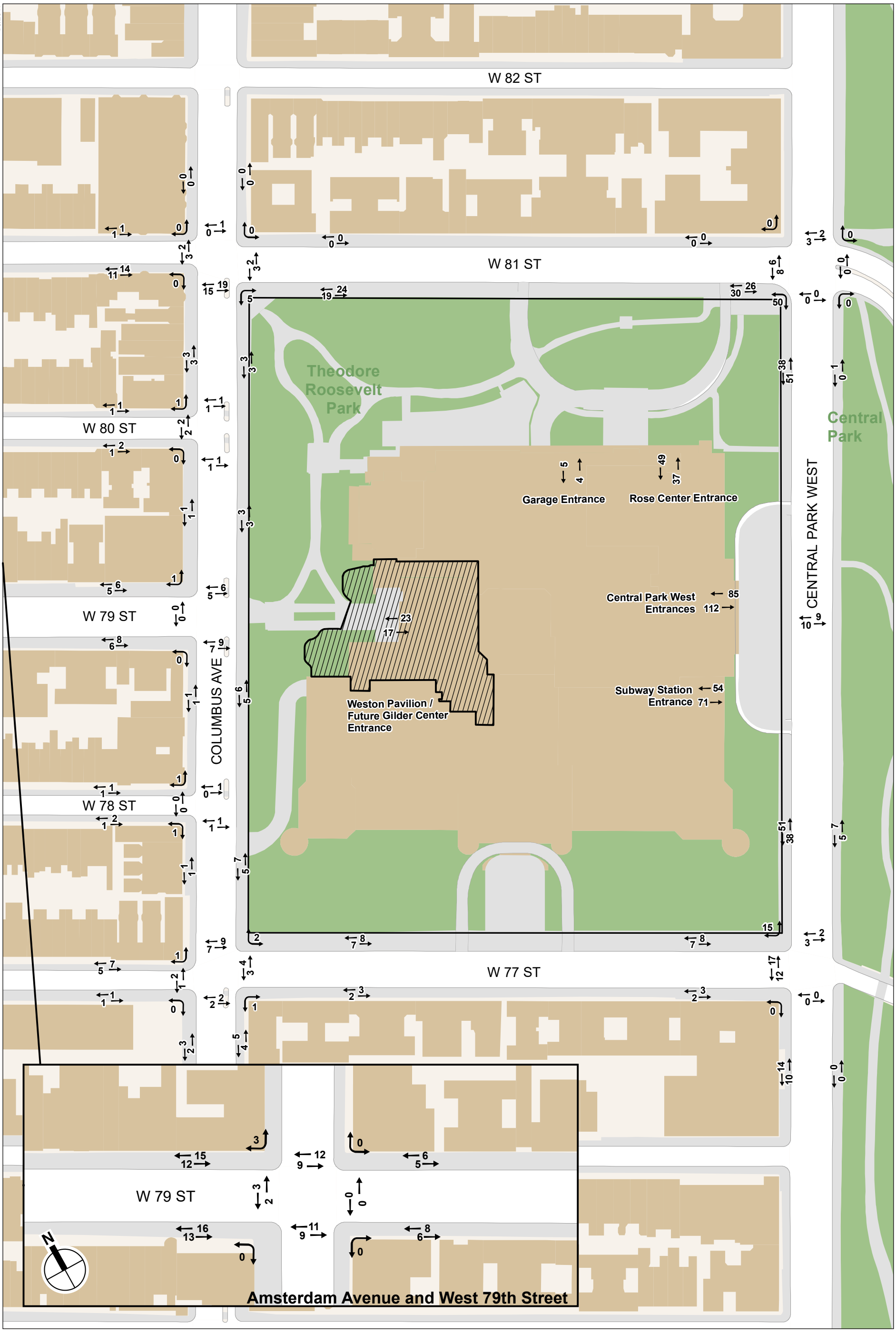
No Action pedestrian volumes in the future 2021 analysis year were estimated by increasing existing pedestrian levels to reflect potential growth in overall travel through and within the study area. As per *CEQR* guidelines, an annual background growth rate of 0.25 percent was assumed for the years of 2015 to 2020, and an annual background growth rate of 0.125 percent was assumed for the remaining year of 2020 to 2021. Pedestrian volumes from projects that are anticipated to be completed in the study area (including the incremental pedestrian trips generated by the Museum attendance and utilization growth in the No Action condition, shown in **Figures 9-26 through 9-28**) were added to determine the No Action condition pedestrian volumes. The 2021 No Action total pedestrian volumes for the weekday midday, weekday PM, and Saturday peak hours are presented in **Figures 9-29 through 9-31**.

STREET-LEVEL PEDESTRIAN OPERATIONS

A summary of the 2021 No Action condition pedestrian analysis results is presented in **Table 9-40**. As shown in **Tables 9-41 through 9-43**, all analysis elements will continue to operate at favorable LOS A, B, or C, except:

- East crosswalk of Columbus Avenue and West 81st Street, which is forecast to deteriorate to LOS E with 15.0 SFP in the Saturday peak hour.

4/5/2017



Theodore Roosevelt Park

Building Site

No Action Museum Generated Incremental Pedestrian Trips
Weekday Midday Peak Hour

Figure 9-26

4/5/2017

W 82 ST

W 81 ST

W 80 ST

W 79 ST

W 78 ST

W 77 ST

COLUMBUS AVE

CENTRAL PARK WEST

Theodore Roosevelt Park

Central Park

Garage Entrance

Rose Center Entrance

Central Park West Entrances

Subway Station Entrance

Weston Pavilion / Future Gilder Center Entrance

Amsterdam Avenue and West 79th Street

N

Theodore Roosevelt Park

Building Site

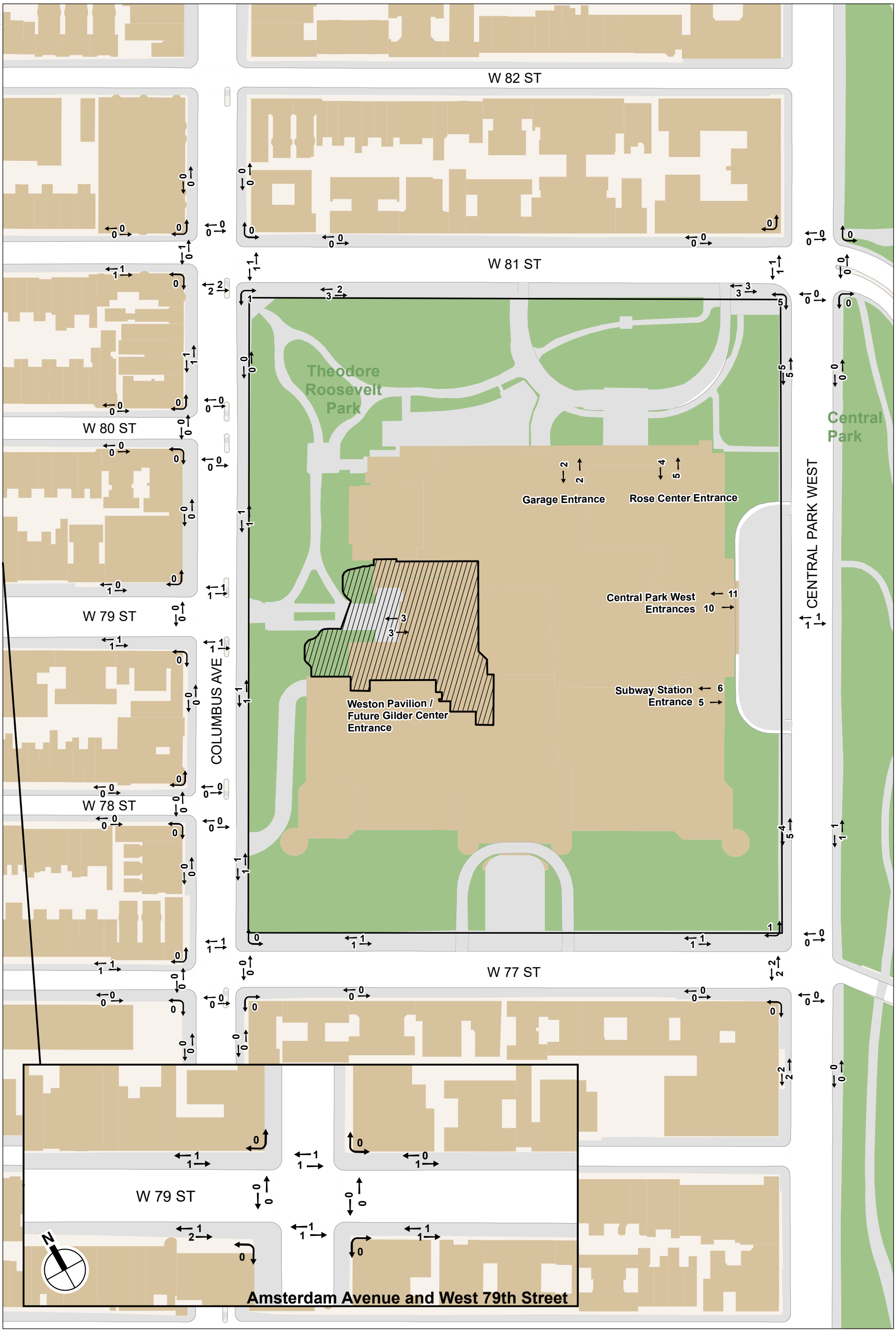
0 200 FEET

No Action Museum Generated Incremental Pedestrian Trips
Weekday PM Peak Hour

Figure 9-27

AMNH Gilder Center for Science, Education, and Innovation

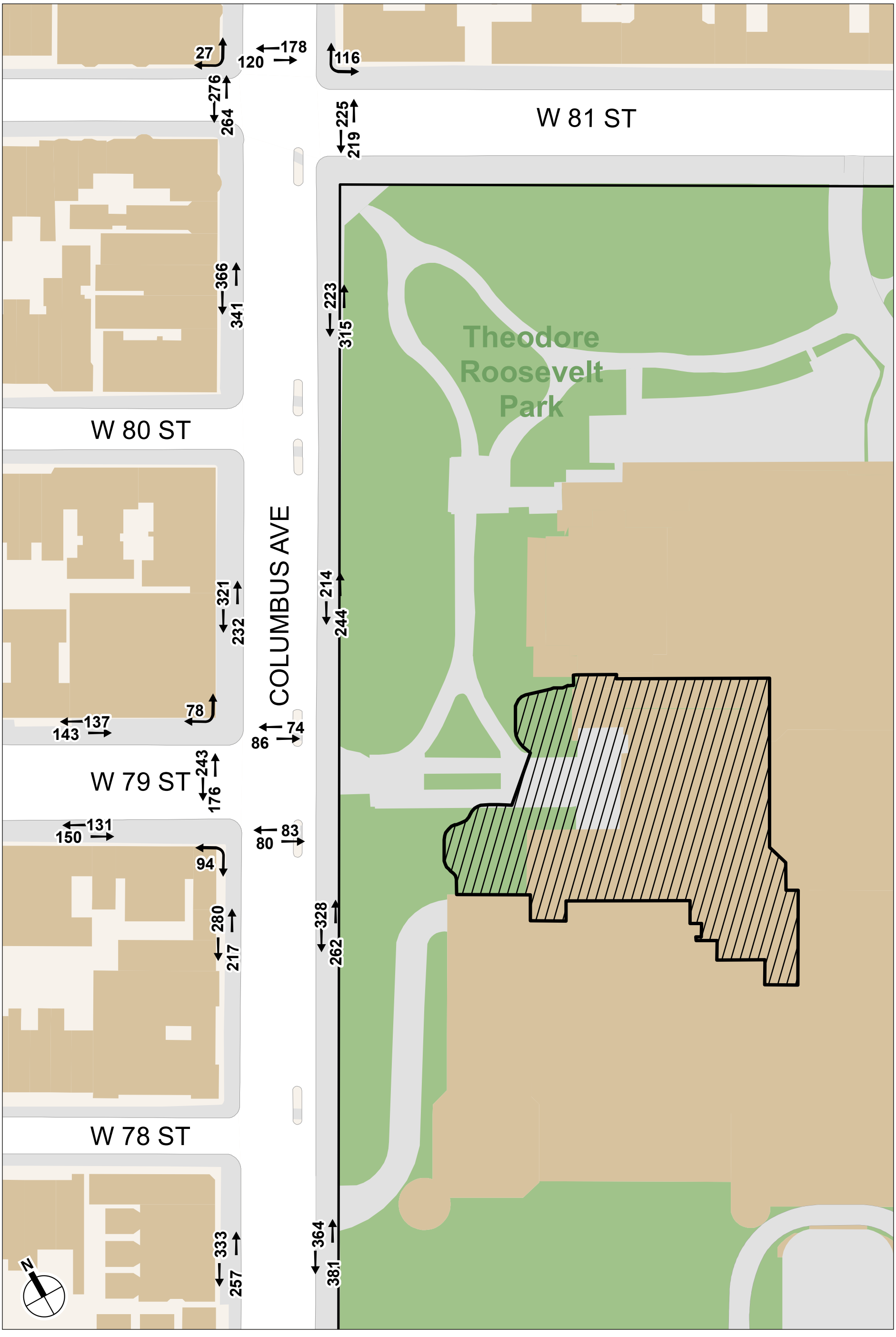
4/5/2017



No Action Museum Generated Incremental Pedestrian Trips
Saturday Peak Hour

Figure 9-28

4/5/2017



Theodore Roosevelt Park

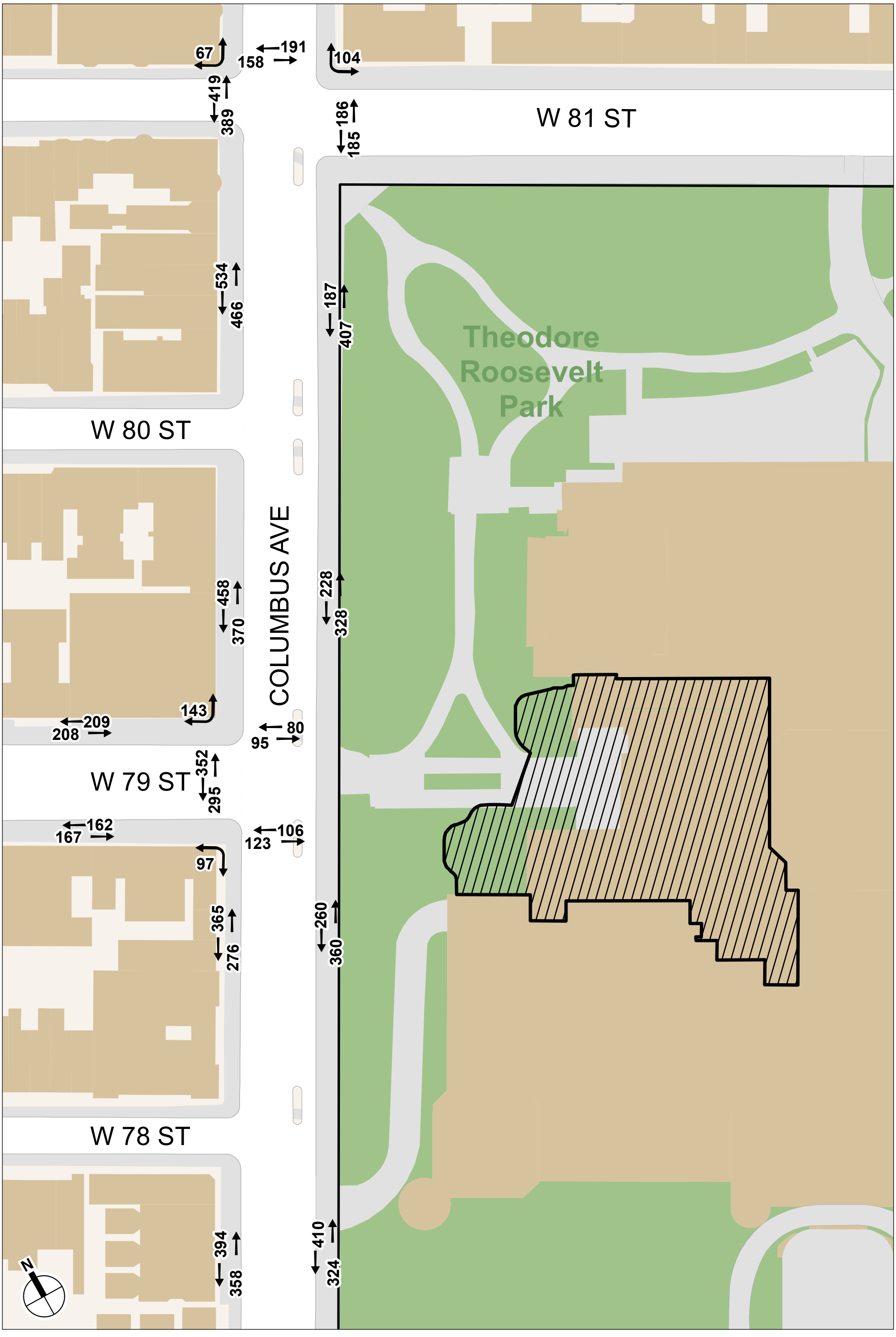
Building Site

0 200 FEET

2021 No Action Pedestrian Volumes
Weekday Midday Peak Hour

Figure 9-29

4/5/2017

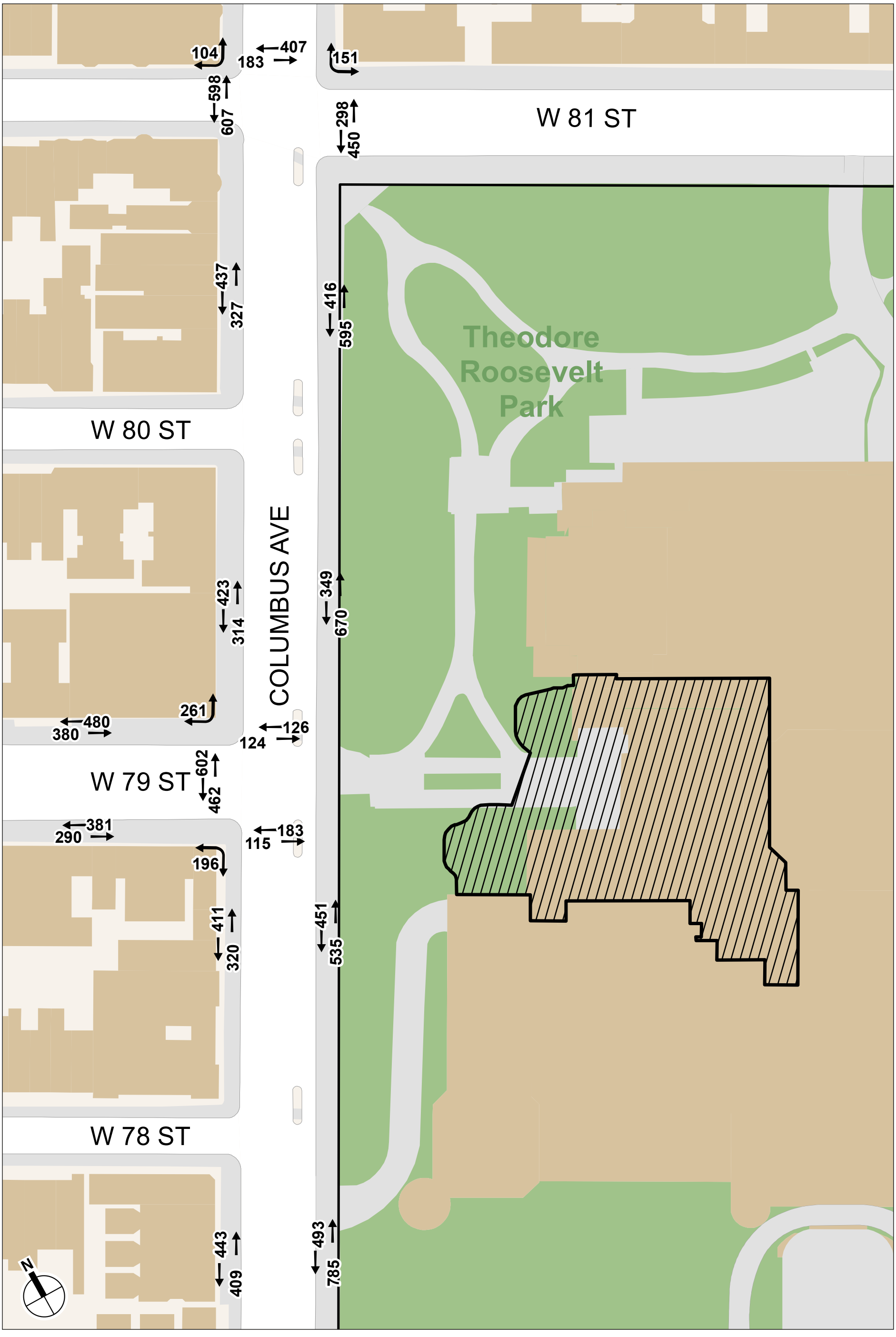


2021 No Action Pedestrian Volumes
Weekday PM Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-30

4/5/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2021 No Action Pedestrian Volumes
Saturday Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-31

Table 9-37
2015 Existing Conditions: Sidewalk Analysis

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Weekday Midday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	497	0.98	390.3	B
	West	9.5	666	0.99	223.4	B
Columbus Avenue between West 80th Street and West 79th Street	West	8.5	542	0.95	235.8	B
	East	13.0	440	0.94	437.8	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	552	0.91	339.3	B
	West	4.5	469	0.91	137.9	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	6.5	249	0.83	343.0	B
	South	9.5	246	0.87	532.1	A
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	556	0.80	170.6	B
	East	13.0	705	0.88	256.8	B
Weekday PM Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	566	0.91	319.2	B
	West	9.5	967	0.88	136.9	B
Columbus Avenue between West 80th Street and West 79th Street	West	8.5	813	0.88	146.0	B
	East	13.0	543	0.86	325.7	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	595	0.85	295.7	B
	West	4.5	619	0.80	91.5	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	6.5	397	0.80	207.2	B
	South	9.5	306	0.80	393.2	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	727	0.89	145.2	B
	East	13.0	707	0.88	257.2	B
Saturday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	979	0.90	181.7	B
	West	9.5	734	0.92	188.8	B
Columbus Avenue between West 80th Street and West 79th Street	West	8.5	725	0.92	171.4	B
	East	13.0	1,001	0.92	188.3	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	959	0.90	198.5	B
	West	4.5	708	0.94	93.7	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	6.5	838	0.81	98.8	B
	South	9.5	649	0.80	185.2	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	824	0.92	132.2	B
	East	13.0	1,246	0.80	131.9	B

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-38
2015 Existing Conditions: Corner Analysis

Location	Corner	Weekday Midday Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
		SFP	LOS	SFP	LOS	SFP	LOS
Columbus Avenue and West 81st Street	Northwest	207.4	A	142.1	A	88.0	A
	Northeast	309.6	A	322.0	A	170.2	A
Columbus Avenue and West 79th Street	Northwest	448.8	A	273.7	A	171.8	A
	Southwest	497.0	A	307.3	A	201.4	A

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-39
2015 Existing Conditions: Crosswalk Analysis

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Weekday Midday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	289	151.1	A
	East	57	20	411	31.6	C
Columbus Avenue and West 79th Street	North	60	19	137	230.6	A
	South	60	16	139	148.2	A
Weekday PM Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	342	117.3	A
	East	57	20	352	39.9	C
Columbus Avenue and West 79th Street	North	60	19	161	185.1	A
	South	60	16	212	87.0	A
Saturday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	580	70.9	A
	East	57	20	722	17.1	D
Columbus Avenue and West 79th Street	North	60	19	238	113.7	A
	South	60	16	288	59.2	B

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-40
Summary of 2021 No Action Condition Pedestrian Analysis Results

Level of Service	Analysis Peak Hours		
	Weekday Midday	Weekday PM	Saturday
Sidewalks			
Sidewalks at LOS A/B/C	10	10	10
Sidewalks at LOS D	0	0	0
Sidewalks at LOS E	0	0	0
Sidewalks at LOS F	0	0	0
Total	10	10	10
Corners			
Crosswalks at LOS A/B/C	4	4	4
Crosswalks at LOS D	0	0	0
Crosswalks at LOS E	0	0	0
Crosswalks at LOS F	0	0	0
Total	4	4	4
Crosswalks			
Crosswalks at LOS A/B/C	4	4	3
Crosswalks at LOS D	0	0	0
Crosswalks at LOS E	0	0	1
Crosswalks at LOS F	0	0	0
Total	4	4	4

Note: LOS = Level-of-Service.

Table 9-41
2021 No Action Condition: Sidewalk Analysis

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Weekday Midday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	538	0.98	360.5	B
	West	9.5	707	0.99	210.5	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	553	0.95	340.0	B
	East	13.0	458	0.94	422.5	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	590	0.91	317.4	B
	West	6.0	497	0.91	173.7	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	280	0.83	563.4	A
	South	9.5	281	0.87	465.8	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	590	0.80	160.8	B
	East	13.0	745	0.88	243.0	B
Weekday PM Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	594	0.91	304.1	B
	West	9.5	1,000	0.88	132.4	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	828	0.88	211.1	B
	East	13.0	556	0.86	318.0	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	620	0.85	283.7	B
	West	6.0	641	0.80	118.2	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	417	0.80	364.5	B
	South	9.5	329	0.80	365.8	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	752	0.89	140.4	B
	East	13.0	734	0.88	247.7	B
Saturday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	1,011	0.90	175.9	B
	West	9.5	764	0.92	181.3	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	737	0.92	248.2	B
	East	13.0	1,019	0.92	185.0	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	986	0.93	193.0	B
	West	6.0	731	0.94	121.3	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	860	0.81	178.5	B
	South	9.5	671	0.80	179.1	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	852	0.92	127.8	B
	East	13.0	1,278	0.80	128.6	B

Note: SFP = square feet per pedestrian

Table 9-42
2021 No Action Condition: Corner Analysis

Location	Corner	Weekday Midday Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
		SFP	LOS	SFP	LOS	SFP	LOS
Columbus Avenue and West 81st Street	Northwest	197.0	A	137.9	A	85.9	A
	Northeast	400.9	A	425.4	A	228.7	A
Columbus Avenue and West 79th Street	Northwest	414.6	A	256.1	A	158.9	A
	Southwest	597.6	A	379.8	A	250.9	A

Table 9-43
2021 No Action Condition: Crosswalk Analysis

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Weekday Midday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	299	146.5	A
	East	57	20	446	27.1	C
Columbus Avenue and West 79th Street	North	60	19	161	120.4	A
	South	60	16	165	95.0	A
Weekday PM Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	349	114.9	A
	East	57	20	371	35.1	C
Columbus Avenue and West 79th Street	North	60	19	175	103.8	A
	South	60	16	229	60.2	A
Saturday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	590	69.7	A
	East	57	20	748	15.0	E
Columbus Avenue and West 79th Street	North	60	19	250	65.9	A
	South	60	16	298	45.9	B

2021 WITH ACTION CONDITION

PROPOSED PROJECT

Project-generated pedestrian volumes were assigned to the pedestrian network considering site entrance usage projections developed by the Museum, subway station visitor survey data, parking locations, population, and nearby hotels and tourist attractions, and surrounding pedestrian infrastructure. The hourly incremental pedestrian volumes presented above in "Level 2 Screening Assessment" were added to the projected 2021 No Action volumes to generate the 2021 With Action pedestrian volumes for analysis (see **Figures 9-32 through 9-34**).

STREET-LEVEL PEDESTRIAN OPERATIONS

A summary of the 2021 With Action (the proposed project) condition pedestrian analysis results is presented in **Table 9-44**.

Table 9-44
Summary of 2021 With Action Condition Pedestrian Analysis Results

Level of Service	Analysis Peak Hours		
	Weekday Midday	Weekday PM	Saturday
Sidewalks			
Sidewalks at LOS A/B/C	10	10	10
Sidewalks at LOS D	0	0	0
Sidewalks at LOS E	0	0	0
Sidewalks at LOS F	0	0	0
Total	10	10	10
Corners			
Crosswalks at LOS A/B/C	4	4	4
Crosswalks at LOS D	0	0	0
Crosswalks at LOS E	0	0	0
Crosswalks at LOS F	0	0	0
Total	4	4	4
Crosswalks			
Crosswalks at LOS A/B/C	3	4	2
Crosswalks at LOS D	1	0	1
Crosswalks at LOS E	0	0	1
Crosswalks at LOS F	0	0	0
Total	4	4	4

Note: LOS = Level-of-Service.

4/5/2017

W 81 ST

W 80 ST

COLUMBUS AVE

W 79 ST

W 78 ST

Theodore Roosevelt Park

27
134
197
116
280
270
251
253
350
340
246
352
333
247
64
257
239
228
210
243
177
289
270
243
202
93
277
328
281
218
393
313
414
417
333
259

N

Theodore Roosevelt Park

Building Site

0 200 FEET

2021 With Action Pedestrian Volumes
Weekday Midday Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-32

4/5/2017

W 81 ST

W 80 ST

COLUMBUS AVE

W 79 ST

W 78 ST

Theodore Roosevelt Park

67
164
205
104
421
393
197
210
518
472
199
433
461
383
135
250
298
149
194
352
295
279
220
177
225
96
365
276
259
388
309
383
394
359
449
338

N

Theodore Roosevelt Park

Building Site

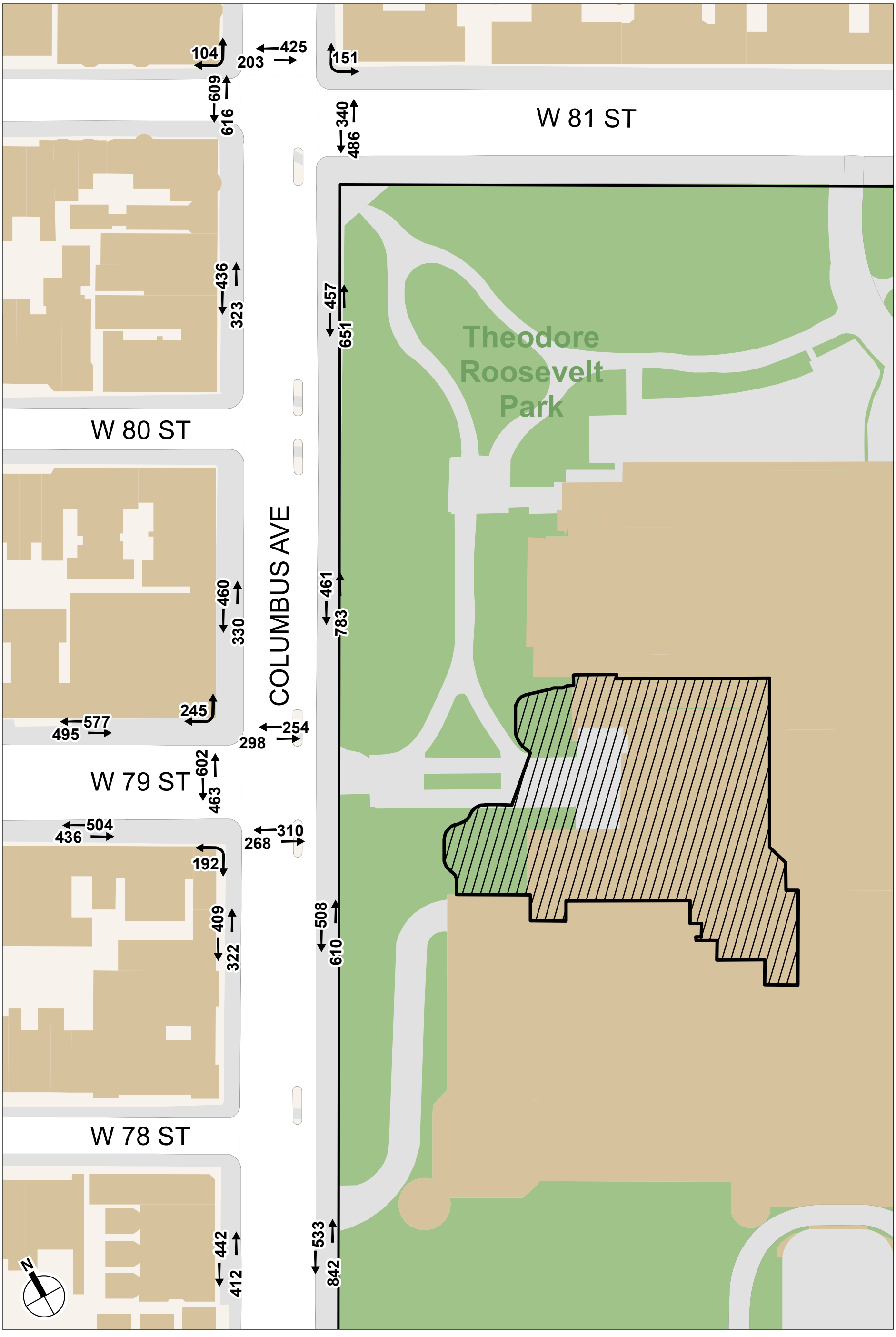
0 200 FEET

2021 With Action Pedestrian Volumes
Weekday PM Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-33

4/5/2017



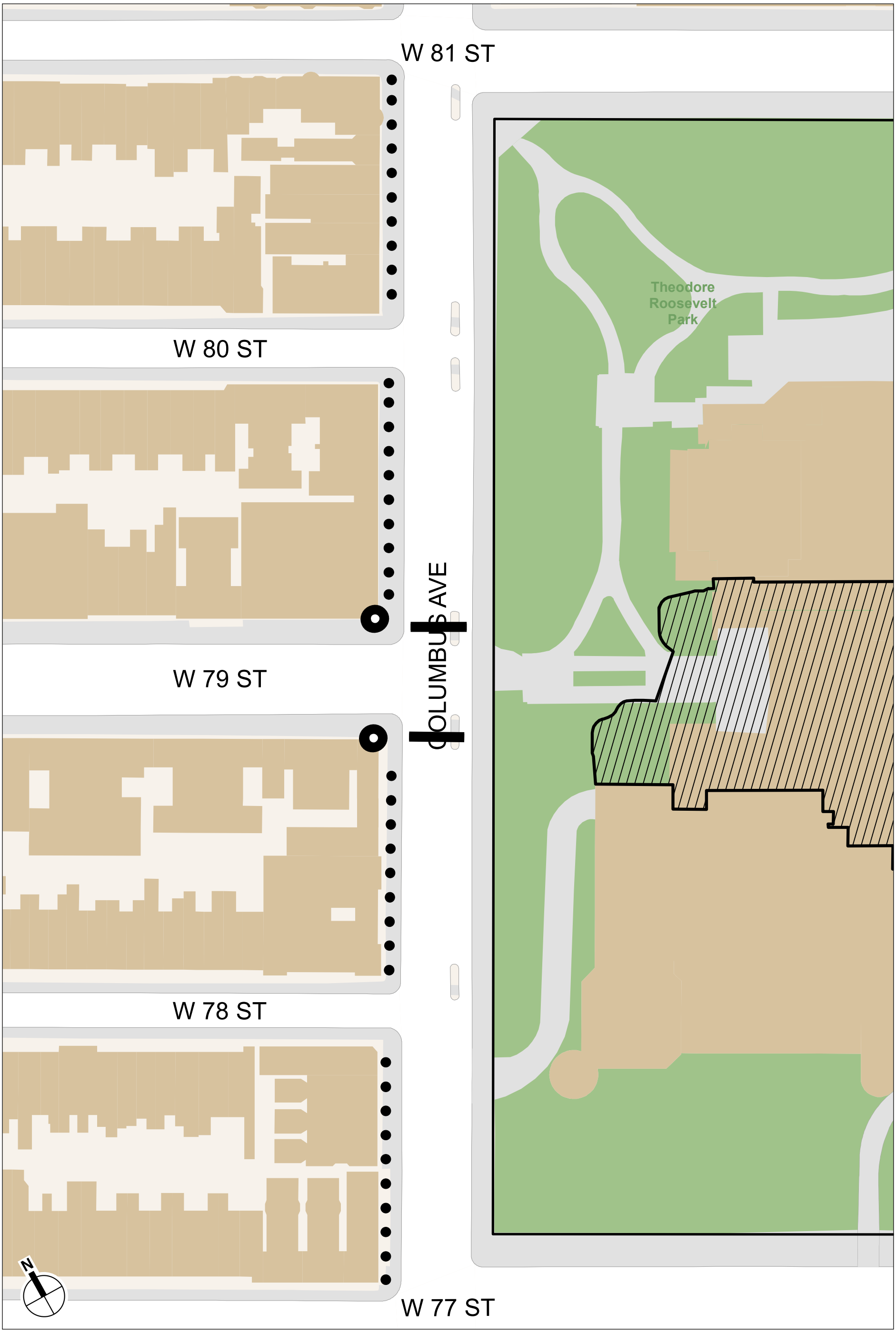
Theodore Roosevelt Park

Building Site

2021 With Action Pedestrian Volumes
Saturday Peak Hour

Figure 9-34

7/13/2017



Building Site
Theodore Roosevelt Park
Corner
Sidewalk
Crosswalk

0 200 FEET

Pedestrian Study Area
79th Street Greenmarket Assessment - Sunday Peak Hour
Figure 9-35

AMNH Gilder Center for Science, Education, and Innovation

Details on SFP and level-of-service are presented in **Tables 9-45 through 9-47**. All sidewalks, corner reservoirs, and crosswalks would continue to operate at favorable LOS A, B, or C in the weekday midday and PM peak hours, as well as in the Saturday peak hour, except:

- East crosswalk of Columbus Avenue and West 81st Street, which would deteriorate to LOS D with 23.9 SFP in the weekday midday peak hour and within LOS E from 15.0 SFP to 13.6 SFP in the Saturday peak hour, and
- South crosswalk of Columbus Avenue and West 79th Street, which would deteriorate to LOS D with 23.0 SFP in the Saturday peak hour.

The service level for the east crosswalk of Columbus Avenue and West 81st Street in the weekday midday peak hour and the south crosswalk of Columbus Avenue and West 79th Street in the Saturday peak hour is more favorable than the impact threshold of 19.5 SFP. Therefore, in accordance with the *CEQR Technical Manual*, the proposed project would not result in the potential for significant adverse pedestrian impacts at those locations during the respective peak hours.

The service level for the east crosswalk of Columbus Avenue and West 81st Street in the With Action condition reflects a reduction of greater than or equal to 1.4 SFP when compared to that of the No Action condition in the Saturday peak hour. This degradation in pedestrian operations is primarily due to the poor existing levels of service caused by insufficient crossing time and high levels of utilization in the Saturday peak hour. Although the proposed project is forecast to have a relatively modest increase in pedestrian trips at this crosswalk at only 78 trips in the Saturday peak hour, this degradation in pedestrian operations constitutes a significant adverse impact. The potential measure to mitigate the projected pedestrian impact is described in Chapter 17, “Mitigation.”

Table 9-45
2021 With Action Condition: Sidewalk Analysis

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Weekday Midday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	598	0.98	324.3	B
	West	9.5	690	0.99	215.6	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	580	0.95	324.1	B
	East	13.0	605	0.94	319.8	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	706	0.91	265.2	B
	West	6.0	499	0.91	173.0	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	496	0.83	317.9	B
	South	9.5	559	0.87	234.0	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	592	0.80	160.2	B
	East	13.0	831	0.88	217.8	B
Weekday PM Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	632	0.91	285.8	B
	West	9.5	990	0.88	133.7	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	844	0.88	207.1	B
	East	13.0	647	0.86	273.3	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	692	0.85	254.2	B
	West	6.0	641	0.80	118.2	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	548	0.80	277.3	B
	South	9.5	499	0.80	241.0	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	753	0.89	140.2	B
	East	13.0	787	0.88	231.0	B
Saturday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	East	12.5	1,108	0.90	160.5	B
	West	9.5	759	0.92	182.5	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	790	0.92	231.5	B
	East	13.0	1,244	0.92	151.4	B
Columbus Avenue between West 79th Street and West 78th Street	East	13.0	1,118	0.93	170.2	B
	West	6.0	731	0.94	121.3	B
West 79th Street between Amsterdam Avenue and Columbus Avenue	North	12.0	1,072	0.81	143.1	B
	South	9.5	940	0.80	127.6	B
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	854	0.92	127.5	B
	East	13.0	1,375	0.80	119.5	B

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-46
2021 With Action Condition: Corner Analysis

Location	Corner	Weekday Midday Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
		SFP	LOS	SFP	LOS	SFP	LOS
Columbus Avenue and West 81st Street	Northwest	187.4	A	134.8	A	82.9	A
	Northeast	360.0	A	397.3	A	210.9	A
Columbus Avenue and West 79th Street	Northwest	293.1	A	219.7	A	128.3	A
	Southwest	419.3	A	320.0	A	206.4	A

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-47
2021 With Action Condition: Crosswalk Analysis

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Weekday Midday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	331	131.6	A
	East	57	20	504	23.9	D
Columbus Avenue and West 79th Street	North	60	19	438	43.1	B
	South	60	16	445	33.9	C
Weekday PM Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	369	108.5	A
	East	57	20	407	32.1	C
Columbus Avenue and West 79th Street	North	60	19	343	52.3	B
	South	60	16	402	33.7	C
Saturday Peak Hour						
Columbus Avenue and West 81st Street	North	60	16	628	65.3	A
	East	**57**	**20**	**826**	**13.6**	**E+**
Columbus Avenue and West 79th Street	North	60	19	552	29.1	C
	South	60	16	578	23.0	D

Note: SFP = square feet per pedestrian. LOS = level of service.
"+" Denotes a significant adverse pedestrian impact.

SUNDAY GREENMARKET ASSESSMENT

An assessment of traffic and pedestrian conditions was also conducted for the Sunday peak hour. The purpose of this assessment was to analyze transportation conditions with the proposed project during the period that coincides with the operations of the Greenmarket, a farmer's market that occupies curb and sidewalk space on the east side of Columbus Avenue from West 77th Street and West 81st Street on Sundays year-round, overlapping with Museum opening hours from 10:00 AM to 5:00 PM. While the location of the Greenmarket's operations in the future with the Gilder Center project has yet to be determined, this assessment conservatively assumes that the Greenmarket would return to its original area of operations.

An assessment of traffic conditions was conducted for the Sunday peak hour. Automatic Traffic Recorder (ATR) data was collected in October 2015, May 2016, and June 2017. Sunday traffic volumes, including during Greenmarket operations, were found to be lower than Saturday at the majority of roadway segments in the traffic study area, as shown in **Table 9-48**. Since Museum attendance also is generally lower on Sundays relative to Saturdays, it is expected that the traffic conditions in the study area would be similar to or better than those evaluated for the Saturday peak hour. Consequently, any mitigation measures recommended for the Saturday peak hour would be adequate in addressing any traffic impacts in the Sunday peak hour. Therefore, an additional detailed traffic analysis is not warranted for the Sunday peak hour.

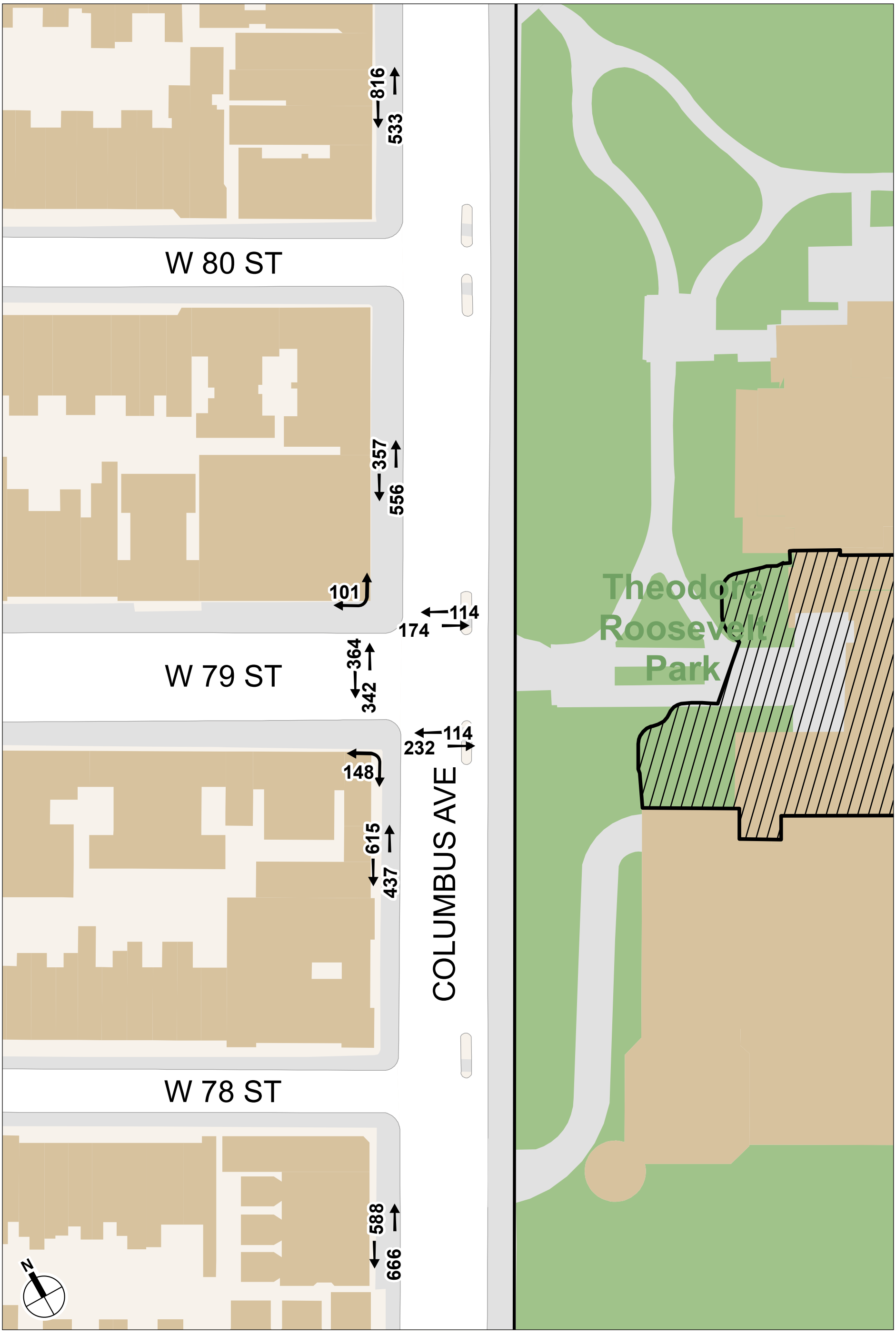
Table 9-48
Saturday and Sunday Traffic Volume Comparison

ATR Location	Saturday 24-Hour ATR Volume	Sunday 24-Hour ATR Volume
West 83rd Street Westbound, between Columbus Avenue and Central Park West	2,691	2,540
West 82nd Street Eastbound, between Columbus Avenue and Central Park West	2,272	2,546
West 81st Street Eastbound, west of Central Park West	7,372	4,234
West 81st Street Westbound, east of Columbus Avenue	6,485	6,012
Central Park West Northbound, south of West 81st Street	13,692	12,868
Central Park West Southbound, north of West 81st Street	8,985	8,481
West 79th Street Eastbound, west of Columbus Avenue	3,952	3,756
Columbus Avenue Southbound, north of west 77th Street	25,635	22,721
West 77th Street Eastbound, west of Central Park West	2,589	2,556
West 77th Street Westbound, east of Columbus Avenue	3,479	2,956
TOTAL	77,152	68,670
Source: ATR data collected October 2015, May 2016, and June 2017		

With respect to pedestrians, data collected during the operations of the Greenmarket in June 2017 showed higher pedestrian volumes on the west Columbus Avenue sidewalk compared to Saturday conditions, possibly due to some pedestrians changing their travel patterns to avoid the Greenmarket. In addition, there are differences in how visitors access the Museum on Sundays compared to Saturdays. For example, based on Museum intercept survey data collected in June 2015, Sunday Museum entries at the existing Weston Pavilion entrance were approximately 25 percent lower when compared to Saturday entries. These differences in circulation patterns were also accounted for in the assignment of the project-generated pedestrian trips, by adjusting the entrance distributions applied to the weekday and Saturday pedestrian analyses. Despite the lower Sunday attendance described above, to ensure a conservative analysis, Museum attendance during the Greenmarket operations on Sundays was assumed to be identical to the Saturday attendance summarized in **Table 9-1a.** A greater volume of Museum-generated pedestrian trips arriving at Columbus Avenue was also assigned to the west side of Columbus Avenue, consistent with the pedestrian circulation patterns observed from the collected pedestrian data during the Sunday peak hour with the Greenmarket operating.

In the future, the east sidewalk of Columbus Avenue is expected to continue to serve as a Sunday open-air shopping arcade, with congregating, slow walking, and queuing conditions characteristic of a public market, combined with some sidewalk pass-by circulation. It is expected that Museum-generated pedestrians would continue to intersect with Greenmarket operations in a similar manner to existing conditions. In both the No Action and With Action conditions, there would be an increase in Museum-generated pedestrian activity along both sidewalks of Columbus Avenue. To account for the effect of the open-air shopping arcade on pedestrian distribution patterns during the Sunday peak hour, it was conservatively assumed that the distribution of Museum-generated pedestrian trips under both existing and future conditions would divert slightly to the west sidewalk, as set forth in **Figures 9-36 through 9-38,** increasing pedestrian activity on the west sidewalk and crossing east at West 79th Street, in order to avoid the Greenmarket crowds and achieve a more unimpeded route to access the Museum. To assess the effects of the Greenmarket on pedestrian operations along Columbus Avenue, four sidewalks, two corners, and two crosswalks were selected for detailed analyses, and are shown in **Figure 9-35.** Sidewalk elements on the east side of Columbus Avenue were not selected for detailed analyses, as they represent a street fair condition in which frequent stopping and queueing is appropriate and thus are not representative of a sidewalk condition that can be assessed following *CEQR Technical Manual* methodology guidelines.

4/5/2017



Theodore Roosevelt Park

Building Site

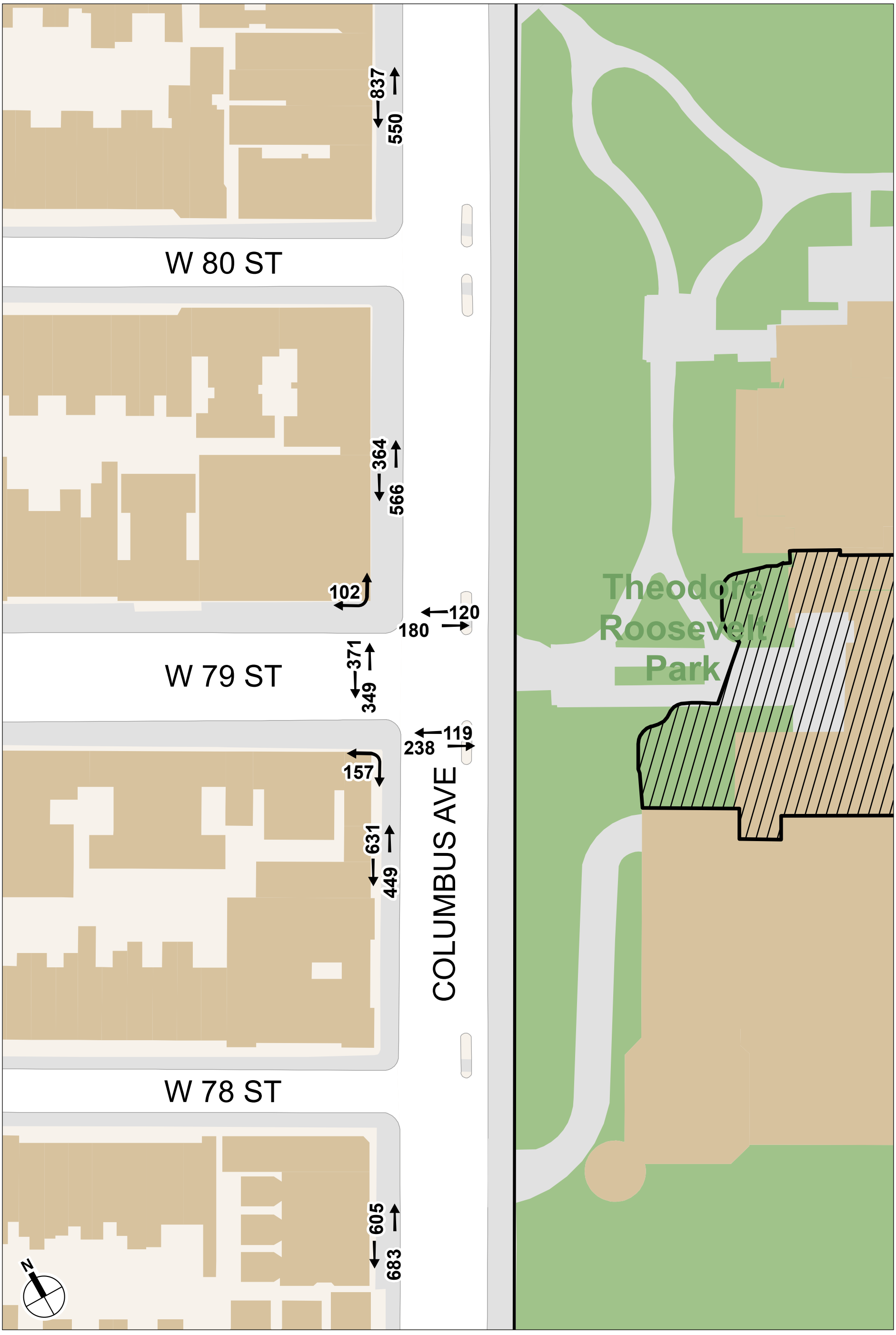
0 200 FEET

2015 Existing Pedestrian Volumes
79th Street Greenmarket Assessment - Sunday Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-36

4/5/2017



Theodore Roosevelt Park

Building Site

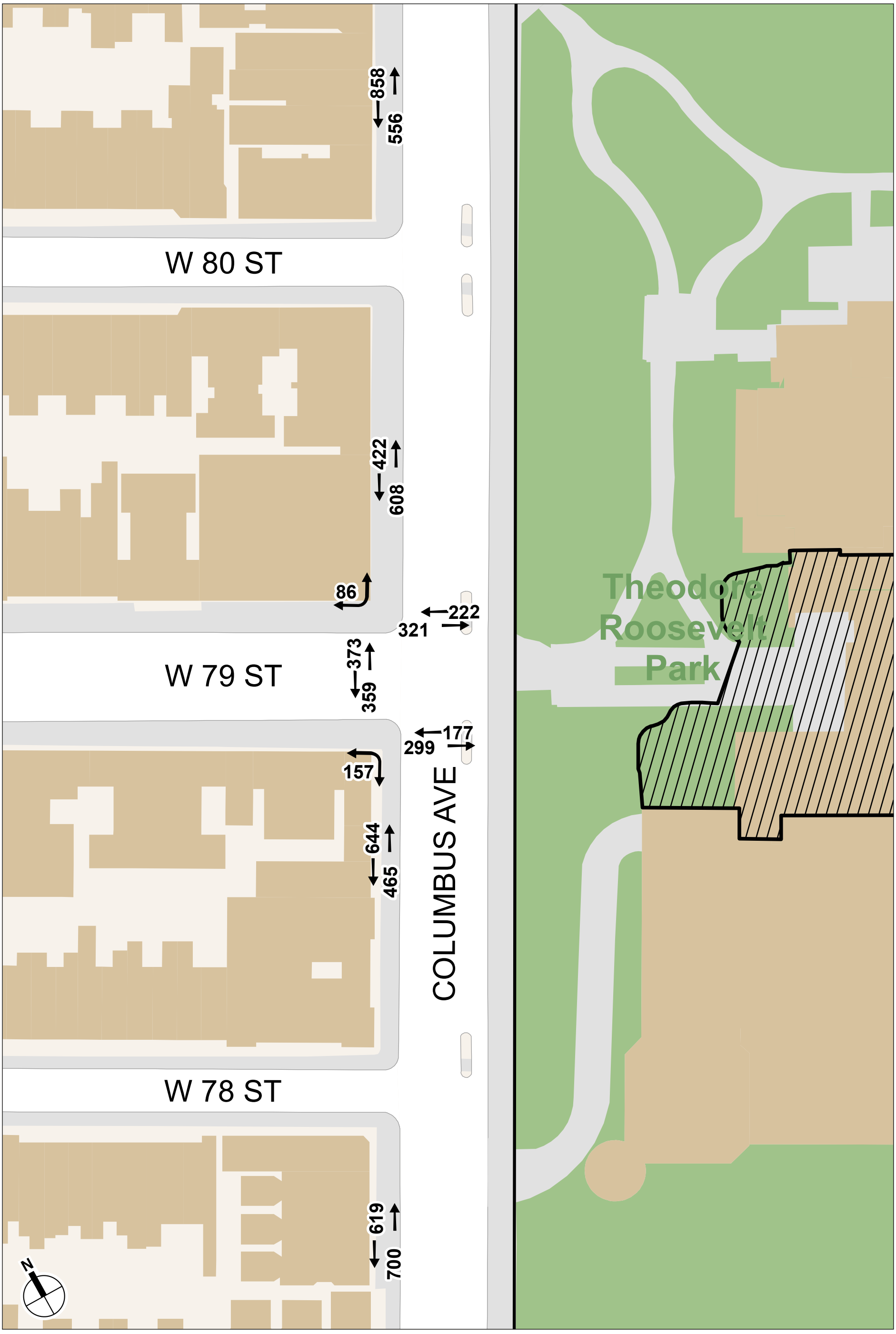
0 200 FEET

2021 No Action Condition Pedestrian Volumes
79th Street Greenmarket Assessment - Sunday Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-37

4/5/2017



Theodore Roosevelt Park

Building Site

0 200 FEET

2021 With Action Condition Pedestrian Volumes
79th Street Greenmarket Assessment - Sunday Peak Hour

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-38

EXISTING CONDITIONS

Pedestrian data along Columbus Avenue were collected in June 2017 during the hours when Museum operations overlap with operations of the Greenmarket (10:00 AM to 5:00 PM). Peak hours were determined by comparing rolling hourly averages and peak hour factors were calculated based on the highest 15-minute volumes within the Sunday peak hour. The existing peak hour pedestrian volumes are shown in **Figure 9-36**. As shown in **Tables 9-49 through 9-51**, all sidewalk, corner, and crosswalk analysis locations currently operate at favorable LOS A, B, and C in the Sunday peak hour during the Greenmarket operations.

Table 9-49
2015 Existing Conditions
Sidewalk Analysis With Greenmarket

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Sunday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	West	9.5	1,349	0.86	95.4	B
Columbus Avenue between West 80th Street and West 79th Street	West	8.5	913	0.80	117.5	B
Columbus Avenue between West 79th Street and West 78th Street	West	4.5	1,052	0.90	60.1	C
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	1,254	0.80	75.1	C

Note: SFP = square feet per pedestrian, LOS = level of service.

Table 9-50
2015 Existing Conditions
Corner Analysis With Greenmarket

Location	Corner	Sunday Peak Hour	
		SFP	LOS
Columbus Avenue and West 79th Street	Northwest	225.8	A
	Southwest	233.9	A

Note: SFP = square feet per pedestrian, LOS = level of service.

Table 9-51
2015 Existing Conditions
Crosswalk Analysis With Greenmarket

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Sunday Peak Hour						
Columbus Avenue and West 79th Street	North	60	19	288	93.5	A
	South	60	16	346	55.3	B

Note: SFP = square feet per pedestrian, LOS = level of service.

2021 NO ACTION CONDITION

No Action pedestrian volumes in the future 2021 analysis year were estimated using the same methodology described for the weekday and Saturday pedestrian analyses. For the purposes of establishing an appropriately conservative analysis framework, Saturday Museum attendance and No Build project generated pedestrian trips and the same annual growth rates were also applied to the Sunday pedestrian analyses with the Greenmarket. The No Action Condition Sunday peak hour pedestrian volumes are shown in **Figure 9-37.** As shown in **Tables 9-52 through 9-54**, all analysis elements will continue to operate at favorable LOS A, B, or C.

Table 9-52
2021 No Action Condition
Sidewalk Analysis With Greenmarket

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Sunday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	West	9.5	1,387	0.86	92.7	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	930	0.80	170.0	B
Columbus Avenue between West 79th Street and West 78th Street	West	6.0	1,080	0.90	78.5	C
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	1,288	0.80	73.1	C

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-53
2021 No Action Condition
Corner Analysis With Greenmarket

Location	Corner	Sunday Peak Hour	
		SFP	LOS
Columbus Avenue and West 79th Street	Northwest	230.1	A
	Southwest	331.4	A

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-54
2021 No Action Condition
Crosswalk Analysis With Greenmarket

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Sunday Peak Hour						
Columbus Avenue and West 79th Street	North	60	19	300	54.7	B
	South	60	16	357	38.0	C

Note: SFP = square feet per pedestrian. LOS = level of service.

2021 WITH ACTION CONDITION

Project-generated pedestrian volumes were assigned to the Museum site based on the access patterns assumed for the weekday and Saturday pedestrian analyses, but after approaching the Museum's superblock, pedestrians were then distributed to the various Museum entrances based on a comparison of site entrance usage on Sundays relative to Saturdays. The hourly incremental pedestrian volumes were added to the projected 2021 No Action volumes to generate the 2021 With Action pedestrian volumes for analysis (see **Figure 9-38**). Details on SFP and level-of-service are presented in **Tables 9-55 through 9-57**.

All sidewalks, corner reservoirs, and crosswalks would continue to operate at favorable LOS A, B, or C in the Sunday peak hour. Therefore, in accordance with the *CEQR Technical Manual*, the proposed project would not result in the potential for significant adverse pedestrian impacts at those locations during the Sunday peak hour under the Greenmarket Condition.

Table 9-55
2021 With Action Condition
Sidewalk Analysis With Greenmarket

Location	Sidewalk	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Sunday Peak Hour						
Columbus Avenue between West 81st Street and West 80th Street	West	9.5	1,414	0.86	90.3	B
Columbus Avenue between West 80th Street and West 79th Street	West	12.5	1,030	0.80	153.4	B
Columbus Avenue between West 79th Street and West 78th Street	West	6.0	1,109	0.90	76.4	C
Columbus Avenue between West 78th Street and West 77th Street	West	7.5	1,319	0.80	71.3	C

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-56
2021 With Action Condition
Corner Analysis With Greenmarket

Location	Corner	Sunday Peak Hour	
		SFP	LOS
Columbus Avenue and West 79th Street	Northwest	169.1	A
	Southwest	261.4	A

Note: SFP = square feet per pedestrian. LOS = level of service.

Table 9-57
2021 With Action Condition
Crosswalk Analysis With Greenmarket

Location	Crosswalk	Crosswalk Length (ft)	Crosswalk Width (ft)	2-way Peak Hour Volume	SFP	LOS
Sunday Peak Hour						
Columbus Avenue and West 79th Street	North	60	19	543	29.6	C
	South	60	16	476	28.2	C

Note: SFP = square feet per pedestrian. LOS = level of service.

THEODORE ROOSEVELT PARK PEDESTRIAN CIRCULATION

The proposed project is also expected to generate an increase in pedestrian volumes in 2021 at several park paths within Theodore Roosevelt Park. The anticipated increase in pedestrian volumes is attributed to the recirculation of Museum generated pedestrian trips from other entrances to the more prominent Gilder Center entrance on the Columbus Avenue side of the Museum, and the projected increase in Museum attendance and utilization. To assess current pedestrian circulation patterns on park paths that could potentially be affected by the proposed project, pedestrian counts were conducted in October 2015 during the weekday midday, weekday PM, and Saturday peak periods at the locations shown in **Figure 9-~~35~~396**.

Two paths within Theodore Roosevelt Park, identified as Paths 9 and 10 in **Figure 9-~~35~~396**, would be most affected by projected increases in pedestrian traffic resulting from visitation growth and the proposed Gilder Center project. Currently, Path 10 is a 41.5-foot wide path serving approximately 300 to 600 pedestrians during the weekday midday, weekday PM, and Saturday peak hour. Path 9 is an 11-foot wide path with approximately 150 to 300 pedestrians during the same peak hours. Both paths currently operate with favorable levels of service.

In the future with the proposed project, the pedestrian paths within Theodore Roosevelt Park would be re-configured. It is anticipated that changes in the park path configuration would primarily include:

4/5/2017

W 81 ST

COLUMBUS AVE

PATH 1

PATH 3

PATH 2

PATH 4

Theodore Roosevelt Park

PATH 5

Dog Run

Nobel Monument

PATH 6

PATH 7

PATH 8

PATH 10

PATH 9

N

0 200 FEET

Building Site

Theodore Roosevelt Park

Existing Park Path Map Key

Figure 9-39

- Adjustments to Path 2, Path 5, and Path 6 near the Nobel Monument to improve circulation, provide more seating, and to create more gathering space off of the path network, and
- Adjustments to Path 9 and Path 10 between Columbus Avenue and the Gilder Center entrance to accommodate the anticipated increase in pedestrian traffic.

Figure 9-~~36~~40 provides a conceptual diagram showing the re-configuration of the pedestrian paths within Theodore Roosevelt Park. Pedestrian volumes along Path 10 near the entrance of the proposed Gilder Center are projected to increase to approximately 1,200, 1,100, and 1,500 pedestrians per hour in the weekday midday, weekday PM, and Saturday peak hours respectively. Similarly, Path 9 near the entrance of the Gilder Center is projected to increase to approximately 1,000, 800, and 1,200 pedestrians per hour during the weekday midday, weekday PM, and Saturday peak hours respectively.

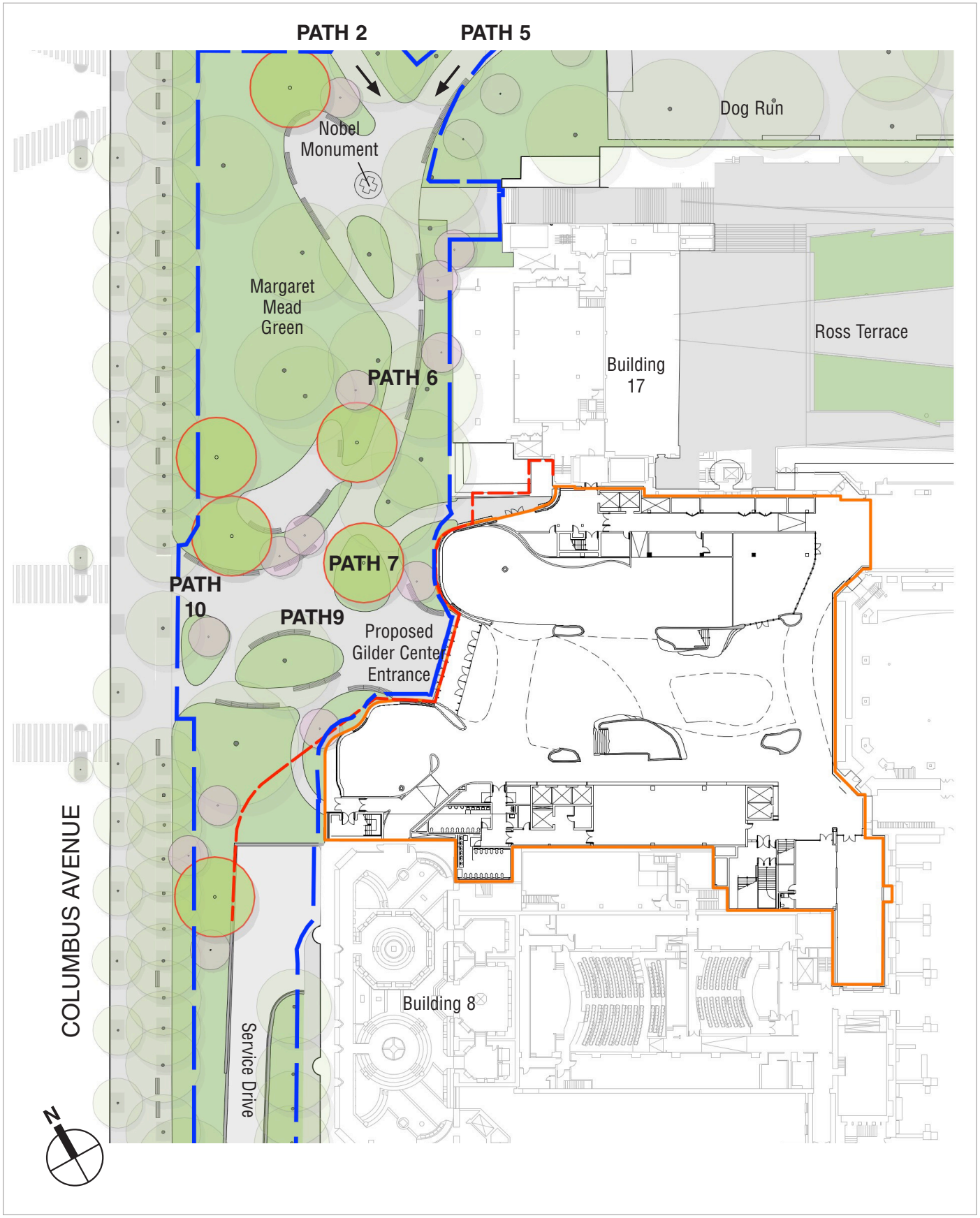
With the re-configurations of these pedestrian paths, the dimensions of several park paths would change. Paths 6 and 7, which are currently 11 feet and 10 feet wide, respectively, would be approximately 15 feet and 7 feet wide, with an effective width of 10 and 4.5 feet at the narrowest point, respectively. Both paths are expected to continue to operate within favorable levels of service, as shown in **Table 9-~~48~~58**. Path 9 (currently 12 feet wide at its narrowest point) would be an approximately 20-foot wide path with an effective width of 15 feet at its narrowest point, and Path 10 (currently 8 feet wide at its narrowest point near the park entrance) would be an approximately 25.5-foot wide path with an effective width of 17.5 feet at its narrowest point. ~~**48.**~~

Table 9-~~48~~58
2021 With Action Condition: Park Path Sidewalk Analysis

Location	Park Path*	Effective Width (ft)	Two-way Peak Hour Volume	PHF	SFP	Platoon LOS
Weekday Midday Peak Hour						
Theodore Roosevelt Park	Path 6	10	224	0.80	565.6	A
	Path 7	4.5	80	0.80	712.7	A
	Path 9	15.0	989	0.80	191.9	B
	Path 10	17.5	1,173	0.80	188.8	B
Weekday PM Peak Hour						
Theodore Roosevelt Park	Path 6	10.0	399	0.80	317.4	B
	Path 7	4.5	99	0.80	575.9	A
	Path 9	15.0	741	0.90	288.4	B
	Path 10	17.5	1,092	0.90	228.2	B
Saturday Peak Hour						
Theodore Roosevelt Park	Path 6	10.0	284	0.80	446.1	B
	Path 7	4.5	81	0.80	703.9	A
	Path 9	15.0	1,209	0.80	156.9	B
	Path 10	17.5	1,459	0.82	155.5	B

Note: SFP = square feet per pedestrian. LOS = level of service.
*Pleaser to **Figure 9-35** for park path key.

With these changes in the dimensions and configuration and the projected increase in pedestrian volumes generated by the proposed project, path capacity would generally be increased. Path 10, which is projected to have the highest future pedestrian volumes, would be tripled in width from its existing pinch point. Park Paths 9 and 10 are also expected to continue to operate within favorable levels of service, as shown in **Table 9-58.**



Building Site

Below-Grade Footprint

Park Improvement Boundary

2021 With Action Condition Re-Configuration of Theodore Roosevelt Park Pedestrian Paths

AMNH Gilder Center for Science, Education, and Innovation

Figure 9-40

G. VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

METHODOLOGY

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent 3-year period for which data are available. For these locations, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with DOT.

ACCIDENT DATA

Crash data for the study area intersections were obtained from NYSDOT for the time period between May 1, 2012 and April 30, 2015. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location.

During the May 1, 2012 through April 30, 2015 three-year period, a total of ~~84~~94 reportable and non-reportable accidents, 0 fatalities, ~~63~~69 injuries, and ~~26~~30 pedestrian/bicyclist-related accidents occurred at the study area intersections. Accidents are classified as reportable if a person was killed or injured in the crash or if the accident caused damage to the property of any person in excess of $1,000: of the ~~84~~94 total accidents, ~~83~~92 were reportable and ~~1 was~~2 were non-reportable. A rolling total of accident data identifies no high accident locations in the 2012 to 2015 period. **Table 9-~~49~~59** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

Table 9-~~49~~59
Accident Summary

Intersection		Study Period						Accidents by Year							
North-South Roadway	East-West Roadway	All Accidents by Year				Total Fatalities	Total Injuries	Pedestrian				Bicycle			
		2012	2013	2014	2015			2012	2013	2014	2015	2012	2013	2014	2015
Columbus Ave	W. ~~77th~~83rd Street	~~6~~2	~~1~~3	~~5~~2	~~2~~1	0	~~10~~4	~~2~~1	~~0~~1	~~0~~1	~~1~~0	~~2~~0	~~0~~1	0	0
Columbus Ave	W. ~~78th~~82nd Street	~~1~~0	~~1~~5	1	0	0	~~1~~3	0	~~0~~1	0	0	0	0	0	0
Columbus Ave	W. ~~79th~~81st Street	~~1~~3	~~4~~2	~~4~~2	~~1~~2	0	~~6~~5	0	2	1	~~0~~1	0	0	0	0
Columbus Ave	W. 80th Street	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Columbus Ave	W. ~~81st~~79th Street	~~3~~1	~~2~~4	~~2~~4	~~2~~1	0	~~5~~6	0	2	1	~~1~~0	0	0	0	0
Columbus Ave	W. ~~82nd~~78th Street	~~0~~1	~~5~~1	1	0	0	~~3~~1	0	~~1~~0	0	0	0	0	0	0
~~Central Park West~~Columbus Ave	W. 77th Street	~~0~~6	~~2~~1	~~7~~5	2	0	~~17~~10	~~0~~2	~~1~~0	~~3~~0	~~0~~1	~~0~~2	0	~~1~~0	0
Central Park West	W. ~~81st~~83rd Street	~~6~~0	~~7~~1	~~7~~1	~~4~~0	0	~~18~~2	~~1~~0	~~1~~0	~~1~~0	~~1~~0	0	~~2~~0	~~1~~0	0
Central Park West	W. 82nd Street	1	3	1	0	0	3	0	0	1	0	0	0	0	0
Central Park West	W. 81st Street	6	7	7	4	0	18	1	1	1	1	0	2	1	0
Central Park West	W. 77th Street	0	2	7	2	0	17	0	1	3	0	0	0	1	0

Note: Bold intersections are high accident locations.
Source: NYSDOT May 1, 2012 through April 30, 2015 accident data.

H. PARKING ASSESSMENT

EXISTING CONDITIONS

An inventory of off-street parking within a ¼-mile of Theodore Roosevelt Park (see **Figure 9-~~37~~41**) was conducted in September 2015. An inventory of on-street parking within a ¼ mile of the site is not required because nearby on-street parking is already fully utilized, and therefore any new vehicles would likely utilize off-street parking options instead.

The off-street parking survey provided an inventory of the area's public parking facilities and their legal capacities and daytime utilization. Each facility's operating license and legal capacity were noted. Based on responses given by parking attendants and visual inspections, where possible, estimates were made on the parking occupancy or utilization at each facility for the weekday midday, weekday PM, and Saturday time periods. A summary of the recorded information and the area's overall off-street public parking supply and utilization is presented in **Table 9-~~50~~60**.

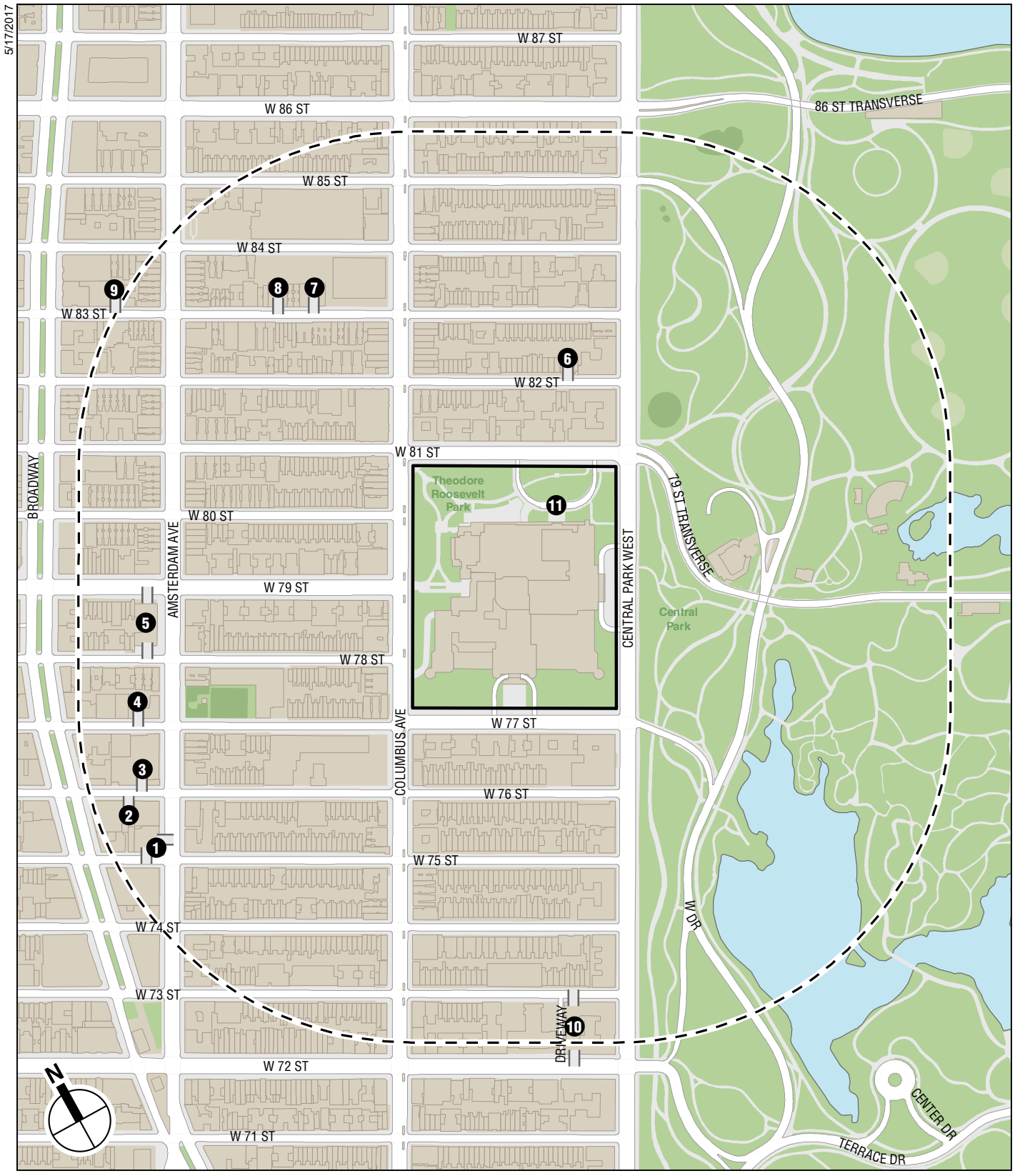
Table 9-~~50~~60
Existing Off-Street Parking Utilization
¼-mile Study Area

Map #	Name/Operator and Address/Location	License Number	Licensed Capacity	Est. Utilization Rate			Utilized Spaces			Available Spaces		
				MD	PM	SAT	MD	PM	SAT	MD	PM	SAT
1	Carousel Parking Corporation – 20 W. 75th Street	920608	278	70%	85%	70%	195	236	195	83	42	83
2	Laureate Garage LLC – 2148 Broadway	2001881	155	80%	90%	50%	124	140	78	31	15	77
3	Champion Parking LLC – 205 W. 76th Street	1351985	58	80%	90%	90%	46	52	52	12	6	6
4	Barmax Garage Corporation – 203 W. 77th Street	1249271	75	65%	90%	50%	49	68	38	26	7	37
5	Quik Park LLC – 200 W. 79th Street	1217579	95	80%	80%	50%	76	76	48	19	19	47
6	Click Parking Corporation – 225 Central Park West	766695	58	85%	90%	70%	49	52	41	9	6	17
7	Kinney W. 83rd Street Inc. – 147 W. 83rd Street	2022177	182	70%	70%	70%	127	127	127	55	55	55
8	Kinney W. 83rd Street Inc. – 157 W. 83rd Street	2022173	182	70%	70%	70%	127	127	127	55	55	55
9	Rapid Parking LLC – 225 W. 83rd Street	819247	107	80%	90%	50%	86	96	54	21	11	53
10	Rapid Parking LLC – 15 W. 72nd Street	7690524	164	60%	80%	80%	98	131	131	66	33	33
11	Standard Parking – 200 Central Park West	1029322	388	64%	64%	48%	248	248	187	140	140	201
Total			**1,742**	**70%**	**78%**	**62%**	**1,225**	**1,353**	**1,078**	**517**	**389**	**664**

Notes: MD = Midday; Garage 11 is the on-site facility at the Museum. Weekday data for Garage 11 is based on maximum weekday and Saturday utilization
Sources: Survey conducted by AKRF Inc. in September 2015; Data for Garage 11 provided by the American Museum of Natural History and is based on two high attendance days in July in 2015.

The Museum has a 388 space garage (Garage 11) on site with entry/exit driveways on West 81st Street. Besides parking for visitors, the top floor of the garage is used for loading and unloading of school bus groups on most weekdays. The Museum also provides indoor bicycle parking at the top level of the on-site parking garage, and additional bicycle parking is available in Theodore Roosevelt Park at West 77th Street.

Within the ¼-mile parking study area, 11 public parking facilities were inventoried. The combined capacity of these facilities totals 1,742 parking spaces. Overall, they were 70-percent, 78-percent, and 62-percent utilized, with 517, 389, and 664 parking spaces available during the weekday midday, weekday PM, and Saturday time periods, respectively.



Theodore Roosevelt Park

Study area (Quarter mile boundary)

1 *Off-Street Parking Facility*

0 400 FEET

AMNH Gilder Center for Science, Education, and Innovation

Off-Street Parking Facilities
Figure 9-41

2021 NO ACTION CONDITION

Since a detailed traffic analysis was prepared for the weekday midday and weekday PM peak hours and the Saturday peak hour during which the highest level of incremental trip-making is anticipated from the proposed project, the future conditions parking analyses also focus on conditions during those periods. Overall off-street public parking utilization is expected to experience the same growth as projected for traffic. In the No Action condition, other new projects are expected to provide a total of up to 27 off-street parking spaces. The Museum is also expected to generate a modest increase in parking demand.

As presented in **Table 9-~~51~~61**, accounting for the addition of the off-street parking spaces, and the parking demand generated from background growth and discrete projects that would advance absent the proposed project, as well as the projected increase in Museum visitation without the proposed Gilder Center, the No Action condition public parking utilization is expected to increase to 73-percent, 81-percent, and 64-percent during the weekday midday, weekday PM, and Saturday afternoon peak periods, respectively.

Table 9-~~51~~61
2015 Existing and 2021 No Action Parking Supply and Utilization

	Weekday Midday	Weekday PM	Saturday
2015 Existing Public Parking Supply	1,742	1,742	1,742
2015 Existing Public Parking Demand	1,225	1,353	1,078
2015 Existing Public Parking Utilization	70%	78%	62%
2021 No Action Background Incremental Parking Demand	17	19	16
Discrete No Build Projects Parking Supply	27	27	27
Discrete No Build Projects Parking Demand	41	55	40
No Action Project Generated Incremental Parking Demand	5	0	2
2021 No Action Parking Supply Total	1,769	1,769	1,769
2021 No Action Parking Demand Total	1,288	1,427	1,136
2021 No Action Parking Utilization	73%	81%	64%
2021 No Action Available Spaces (Shortfall)	481	342	633

Sample Calculation:
2021 No Action Parking Demand Total = 2015 Existing Public Parking Demand + 2021 No Action Background Growth Parking Demand + Discrete No Build Projects Parking Demand + No Action Museum Visitation Increase Parking Demand
Example: 2021 No Action Saturday Public Parking Demand Total = 1,078 + 16 + 40 + 2 = 1,136.

Under the 2021 No Action Condition, the M79 SBS route will result in curb lane and parking changes along West 81st Street in the study area. The No Action condition accounts for ~~T~~the implementation of the SBS, reflecting ~~could will result in~~ the loss of approximately 16 to 18 on-street parking spaces on the south curbside of West 81st Street between Central Park West~~Amsterdam Avenue~~ and Columbus Avenue. In addition, in conjunction with the SBS implementation there is~~would be~~ increased weekday parking for school buses along northbound Central Park West, ~~that would~~ resulting in the loss of approximately 24 spaces from 9 AM to 2 PM. Parking demand displaced by these reductions in on-street parking capacity ~~could~~ would be absorbed by available parking capacity elsewhere in the surrounding neighborhood.

2021 WITH ACTION CONDITION

As summarized in **Table 9-1a**, in the future with the Gilder Center project, the Museum is expected to generate an additional 2,707 visitors on a high-visitation weekday, and an additional 3,239 visitors on a high-visitation Saturday. This increase in Museum visitation is expected to generate a corresponding increase in parking demand of up to 8 off-street parking spaces on a weekday and up to 36 off-street parking spaces on a Saturday.

As presented in **Table 9-~~52~~62**, accounting for the No Action parking supply and utilization, and the incremental demand generated by the proposed project, public parking utilization is expected to increase to 73-percent, 81-percent, and 66-percent during the weekday midday, weekday PM,

and Saturday peak periods, respectively. Since there would continue to be available parking within ¼-mile of the project site, the proposed project is not expected to result in the potential for a parking shortfall or a significant adverse parking impact.

Table 9-~~52~~62
2021 No Action and With Action Parking Supply and Utilization

	Weekday Midday	Weekday PM	Saturday
2021 No Action Parking Supply Total	1,769	1,769	1,769
2021 No Action Parking Demand Total	1,288	1,427	1,136
2021 No Action Parking Utilization	73%	81%	64%
Proposed Project Incremental Parking Demand	8	0	36
2021 With Action Parking Supply Total	1,769	1,769	1,769
2021 With Action Parking Demand Total	1,296	1,427	1,172
2021 With Action Parking Utilization	73%	81%	66%
2021 With Action Available Spaces (Shortfall)	473	342	597

Sample Calculation:
2021 With Action Parking Demand Total = 2015 Existing Public Parking Demand + 2021 No Action Background Growth Parking Demand + Discrete No Build Projects Parking Demand + No Action Museum Visitation Increase Parking Demand + Proposed Project Incremental Parking Demand
2021 With Action Saturday Public Parking Demand Total = 1,078 + 16 + 40 + 2 + 36= 1,172.

As previously described for the 2021 No Action Condition, the M79 SBS route will result in the loss of approximately 16 to 18 on-street parking spaces on the south curbside of West 81st Street between Amsterdam Avenue and Columbus Avenue and approximately 24 on-street parking spaces on the east curbside of Central Park West between West 77th Street and the AMNH Entrance. Since the incremental parking demand generated by the proposed project was not assumed to utilize any of these on-street parking spaces, the loss of this parking would not affect the project's impact assessment. Even with the displacement of these on-street parking spaces, the proposed project under the 2021 With Action Condition would not result in the potential for a parking shortfall or a significant adverse parking impact.

I. PUBLIC PROGRAMS AND EVENTS

As described in Chapter 1, "Project Description," the Museum hosts conferences, public programs, and events in appropriate spaces throughout the Museum campus, which, with the proposed project, would include spaces within the proposed Gilder Center. With the new space provided by the Gilder Center, AMNH would be able to schedule more public programs and events but their size and character are expected to remain similar to those taking place currently. Guests traveling to some of these public programs and events already access the Museum through its west entrance along Columbus Avenue, where the associated pick-up/drop-off activities also take place. Therefore, there would not be any perceptible changes or measureable trip increments resulting from the activities attributable to a public program or event occurring in or using the entrance of the Gilder Center. As a result, transportation-related impacts from the proposed project beyond those described for the analysis peak periods presented above are not expected.

J. OPENING YEAR CONDITIONS

Following the opening of the Gilder Center, there is expected to be a more pronounced increase in ticketed attendance in the short term that is estimated to be roughly 1.1 million, compared to the forecast stabilized increment of 745,000, as shown in **Table 9-1b**. As detailed above, the stabilized increment attributed to the Gilder Center is expected to result in significant adverse traffic impacts at one study area intersection in the weekday PM peak hour and three study area intersections in the Saturday peak hour, and a significant adverse pedestrian impact at one crosswalk in the Saturday peak hour. The temporary opening condition would likely be more congested than described above and it is possible that other traffic study area locations and some

pedestrian elements may experience a worsening in service levels. Locations that would be most sensitive to increased visitation are intersections already experiencing congested conditions, which are the major intersections surrounding the Museum site on West 81st Street, West 79th Street, and West 77th Street, particularly during the Saturday peak hour. However, since these conditions are short-term with attendance at the Museum expected to return to a lower and sustained level, the temporary conditions following the opening of the Gilder Center would not be considered to result in additional significant impacts. The Museum will work closely with the City, including DOT and the police department (NYPD), to manage and monitor conditions to ensure implementation of appropriate temporary measures to minimize adverse effects to the transportation networks. ✷