A. INTRODUCTION

As presented in detail in Chapter 1, "Project Description," the applicant is proposing to develop two blocks in the South Williamsburg section of Brooklyn Community District 1 (the proposed action/Reasonable Worst-Case Development Scenario (RWCDS)). The development would be facilitated by a rezoning from a manufacturing zoning district (M3-1) to residential zoning districts (R7A, R7D, and R8A) with a commercial overlay (C2-4) over most of the project area. The project area includes Block 2249, Lots 23, 37, 41, and 122, and Block 2265, Lot 14; for the purposes of this EIS these are referred to as the "Northern Block" and "Southern Block", respectively. The proposed action/RWCDS would consist of approximately 1,147 residential dwelling units (DUs) of which approximately 344 DUs (30 percent of the total) would be affordable housing units, with approximately 64,807 gsf of local retail space, 427 accessory parking spaces, 26,000-sf of publicly-accessible open space.

The proposed action/RWCDS would consist of eight buildings. The Northern Block would contain Buildings A, B, and C. Building A would contain 204 DUs and 13,618 gsf of local retail space, Building B would contain 142 DUs and 6,240 gsf of local retail space, and Building C would contain 95 DUs and 6,240 gsf of local retail space. In total, Block 2249 would contain 441 DUs and 26,098 gsf of local retail space. It would also contain 165 accessory parking spaces. A 13,000-sf open space would bisect the block with Building A on the west and Building B on the east. Building A would front Union Avenue on the west and Wallabout Street on the south. Building B would be located along the open space, and Building C would be immediately adjacent to Building B on the east side of the block and would front Harrison Avenue.

The Southern Block would contain Buildings D, E, F, G, and H. Buildings D would contain 95 DUs and 6,240 gsf of local retail space, Building E would contain 142 DUs and 6,240 gsf of local retail space, Buildings F and G would each contain 102 DUs and 4,855 gsf of local retail space, and Building H would contain 265 DUs and 16,519 gsf of local retail space. In total, Block 2265 would contain 706 DUs, 38,709 gsf of local retail space, and 262 accessory parking spaces. A 13,000-sf open space would bisect the block with Buildings F and G on the west and Building E on the east. Building D would front Harrison Avenue, Building E would be located along the open space, Building F would front Wallabout Street on the north, and Building G would be immediately adjacent to Building F and front Gerry Street on the south. Building H would front Union Street on the west, Wallabout Street on the north, and Gerry Street on the south and would be immediately adjacent to Buildings F and G.

The Northern Block is bounded by Walton Street on the north, Harrison Avenue on the east, Wallabout Street on the south, and Union Avenue on the west, while the Southern Block is bounded by Wallabout Street on the north, Harrison Avenue on the east, Gerry Street on the south, and Union Avenue on the west.

B. PRINCIPAL CONCLUSIONS

Based on Level 1 and Level 2 screening analyses specified in the 2014 *City Environmental Quality Review* (CEQR) *Technical Manual*, detailed traffic, subway station, and pedestrian analyses are required for typical traffic peak hours, which include one hour during the weekday AM, weekday midday, weekday PM, and Saturday midday peak periods. The results of these analyses are summarized as follows:

Traffic

Traffic operations were analyzed at ten intersections (seven signalized and three unsignalized, two of which would become signalized in the No-Action condition) in the vicinity of the project area where action-generated demand would exceed 50 vehicle trips per hour in any peak hour. The traffic analysis indicates that four, ~~four~~three, eight, and one lane groups at four, ~~three~~two, six, and one intersection(s) would experience significant adverse impacts during the weekday AM, weekday midday, weekday PM, and Saturday midday peak hours, respectively.

Parking

The off-street accessory parking capacity required for the project area under the proposed action/RWCDS would be sufficient to accommodate all action-generated parking demand, and therefore significant demand for on-street and public off-street parking is not anticipated. Consequently, no significant adverse impacts to on-street or public off-street parking would be expected to result from the proposed action/RWCDS as per *CEQR Technical Manual* criteria and detailed on-street and public off-street parking analysis is not warranted.

Transit

The proposed action/RWCDS is expected to generate travel demand at two subway stations; the Lorimer Street subway station on the BMT Jamaica Line served by the J and M trains and the Flushing Avenue subway station on the IND Crosstown Line served by the G train. The Flushing Avenue station would process less than 200 action-generated trips in all peak hours and therefore the proposed action/RWCDS would not have the potential result in any significant adverse subway impacts at that station. The proposed action/RWCDS would add approximately 308 and 355 subway trips per hour (in and out combined) to the Lorimer Street subway station during the weekday AM and PM peak hours, respectively. Approximately 207 and 143 passengers would use the Manhattan-bound platform during the weekday AM and PM peak hours, respectively, and 101 and 212 passengers would use the Queens-bound platform during the weekday AM and PM peak hours, respectively. These trips would all use stairways located at the corner of Wallabout Street and Broadway at the east end of the station. No significant adverse impacts would be expected to result from the proposed action/RWCDS as per *CEQR Technical Manual* criteria.

A total of five bus routes operate in the vicinity of the project area (the B43, B44, B46, B48, and B57). Total peak hour project generated bus demand is not expected to exceed the 50 bus trips per hour per direction threshold on any route as per *CEQR Technical Manual criteria.* Therefore,

significant adverse impacts to bus routes would not be expected to result from the proposed action/RWCDS and a detailed bus route analysis is not warranted.

Pedestrians

Detailed pedestrian analyses were conducted at a total of eight sidewalks, five crosswalks, and 14 corner areas where action-generated pedestrian demand, including both walk-only and transit trips, is expected to exceed the 200 pedestrian trips per hour threshold during the weekday AM, weekday midday, weekday PM, and Saturday midday peak hours. All analyzed pedestrian elements would operate at an uncongested LOS B or better in all peak hours, with the exception of the south crosswalk at Wallabout Street and Harrison Avenue, which would operate at an acceptable LOS C in the With-Action condition, and therefore no significant adverse pedestrian impacts would result from the proposed action/RWCDS.

C. LEVEL 1 AND LEVEL 2 SCREENING ANALYSIS

The *CEQR Technical Manual* identifies minimum development densities that potentially require a transportation analysis. Development at less than the development densities shown in Table 16-1 of the *CEQR Technical Manual* generally result in fewer than 50 peak-hour vehicle trips, 200 peak-hour subway/rail or bus transit riders, and 200 peak-hour pedestrian trips, where significant adverse impacts are considered unlikely. In Zone 2 (which includes the project area) the development thresholds for residential is 200 DUs, which the proposed action/RWCDS Increment exceeds.

According to the *CEQR Technical Manual*, if an action would result in development greater than one of the minimum development density thresholds in Table 16-1, further screening is necessary.

The *CEQR Technical Manual* describes a two level screening procedure for the preparation of a preliminary analysis of traffic, parking, transit, and pedestrians to determine if detailed analysis is warranted. As discussed below the preliminary analysis begins with a trip generation (Level 1) analysis to estimate the number of person and vehicle trips to and from the project site. According to the *CEQR Technical Manual*, detailed traffic analysis is typically not warranted if the proposed project generates less than 50 vehicle trips and detailed transit and/or pedestrian analysis is typically not warranted if the proposed project generates less than 200 transit and/or pedestrian trips. When these thresholds are exceeded, detailed trip assignments (Level 2) are to be performed to estimate the incremental trips at nearby intersections (for traffic), subway station elements and bus lines (for transit), and sidewalks, corners, and/or crosswalks (for pedestrians) to identify locations for detailed analysis.

If the trip assignments show that the project would generate an increase of 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 200 or more peak hour subway trips in one direction along a single subway line, 50 or more peak hour bus trips in one direction along a single bus line, and/or 200 or more pedestrian trips traversing a sidewalk, corner area, or crosswalk, then detailed analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, and pedestrians. Detailed on-street and public off-

street parking analysis is typically warranted only if there is not a sufficient amount of accessory parking created to accommodate parking demand.

Level 1 Screening Analysis

A trip generation (Level 1 screening analysis) was conducted to estimate the person and vehicle trips expected to be generated by the proposed action/RWCDS during the weekday AM, midday, PM, and Saturday midday peak hours. The estimates were then compared to the thresholds provided in the *CEQR Technical Manual* to determine if a Level 2 screening analysis would be warranted.

Transportation Planning Factors

Table 12-1 shows the transportation planning factors used to forecast travel demand in the weekday AM, weekday midday, weekday PM, and Saturday midday peak hours. These include trip generation rates, temporal distributions, mode share percentages, directional (in and out) splits, and vehicle occupancy rates for the projected 1,147 DUs and 64,807 sf of local retail. In the RWCDS No-Action condition there would be no development in the project area.

As shown in Table 12-1, daily trip generation rates of 8.075 weekday residential person trips and 9.6 Saturday residential person trips per DU and residential temporal distributions of 10.0 percent, 5.0 percent, 11.0 percent, and 8.0 percent were sourced from the *CEQR Technical Manual*. The residential mode share percentages of 19.2 percent, 0.0 percent, 50.4 percent, 0.4 percent, 6.8 percent, and 23.2 percent for auto, taxi, subway, commuter rail, bus, and walk-only modes, respectively and the residential vehicle occupancy rate of 1.24 person trips per vehicle were sourced from the *2010-2014 American Community Survey (ACS)* Journey-to-Work Data for Brooklyn Census Tracts 255, 257, 285.01, 491, 507, 509, and 531. Directional splits were assumed based on the *Broadway Triangle FEIS*, October 2009.

As shown in Table 12-1, daily trip generation rates of 205 weekday local retail person trips and 240 Saturday local retail person trips per 1,000 sf and local retail temporal distributions of 3.0 percent, 19.0 percent, 10.0 percent, and 10.0 percent were sourced from the *CEQR Technical Manual*. The local retail mode share percentages of 5.0 percent, 1.0 percent, 3.0 percent, 0.0 percent, 6.0 percent, and 85.0 percent for auto, taxi, subway, commuter rail, bus, and walk-only modes, respectively, the local retail vehicle occupancy rate of 2.00 person trips per vehicle, and directional splits were assumed based on the *Broadway Triangle FEIS*, October 2009. It was also assumed that 25 percent of local retail trips would be linked and not new to the project area.

Trip Generation

Tables 12-2a and 12-2b show the resulting person-trip and vehicle-trip travel demand forecasts for the proposed action/RWCDS. As shown in Table 12-2b, the proposed action/RWCDS would generate approximately 167, 158, 206, and 199 vehicle trips in the weekday AM, midday, PM, and Saturday midday peak hours, respectively. As shown in Table 12-2a, the proposed action/RWCDS would generate approximately 473, 298, 540, and 482 rail (subway and commuter rail) trips in the weekday AM, midday, PM, and Saturday midday peak hours, respectively; the proposed

Table 12-1: Transportation Planning Factors

Land Use:		**Residential**		**Local Retail**	
		1,147 DU's		64,807 gsf	
		(1)		(1)	
Trip Generation:	**Weekday**	8.075		205	
	Saturday	9.600		240	
(Person-trips)		(trips/dwelling unit)		(trips/1,000 gsf)	
		(1)		(1)	
Temporal Distribution:	**AM**	10.0%		3.0%	
	MD	5.0%		19.0%	
	PM	11.0%		10.0%	
	Sat MD	8.0%		10.0%	
		(2)		(3)	
Modal Split:		**All Periods**		**All Periods**	
	Auto	19.2%		5.0%	
	Taxi	0.0%		1.0%	
	Subway	50.4%		3.0%	
	Commuter Rail	0.4%		0.0%	
	Bus	6.8%		6.0%	
	Walk	23.2%		85.0%	
		100.0%		100.0%	
		(2)		(3)	
		All Periods		**All Periods**	
Vehicle Occupancy:	**Auto**	1.24		2.00	
	Taxi	1.24		2.00	
		(3)		(3)	
Directional		**In**	**Out**	**In**	**Out**
Distribution:	**AM**	15%	85%	50%	50%
	MD	50%	50%	50%	50%
	PM	70%	30%	50%	50%
	Sat MD	50%	50%	55%	45%
		(1)		(1)	
Daily Truck Trip		0.06		0.35	
Generation:		0.02		0.04	
		(trips/dwelling unit)		(trips/1,000 gsf)	
		(1)		(1)	
Truck Trip	**AM**	12.0%		8.0%	
Temporal Distribution:	**MD**	9.0%		11.0%	
	PM	2.0%		2.0%	
	Sat MD	9.0%		11.0%	

Notes:

(1) Source: *2014 City Environmental Quality Review (CEQR) Technical Manual* for census tracts in the vicinity of the Project Area (tracts 255, 257, 285.01, 491, 507, 509 and 531).

(3) Source: Broadway Triangle FEIS, October 14, 2009.

Table 12-2a: Travel Demand Forecast (Person Trips)

Land Use:	Residential			Local Retail					
	1,147 D.U.			64,807 gsf			**Total Trips**		
Peak Hour Trips:	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM	139	786	925	147	147	294	286	933	1,219
MD	232	232	464	946	946	1,892	1,178	1,178	2,356
PM	712	305	1,017	498	498	996	1,210	803	2,013
Sat MD	440	440	880	643	526	1,169	1,083	966	2,049
AM Trips by Mode:	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Auto	25	154	179	10	10	20	35	164	199
Taxi	0	0	0	0	0	0	0	0	0
Subway	70	397	467	2	2	4	72	399	471
Commuter Rail	0	2	2	0	0	0	0	2	2
Bus	10	51	61	10	10	20	20	61	81
Walk	34	182	216	125	125	250	159	307	466
Total	139	786	925	147	147	294	286	933	1,219
Midday Trips by Mode:	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Auto	44	44	88	50	50	100	94	94	188
Taxi	0	0	0	10	10	20	10	10	20
Subway	120	120	240	29	29	58	149	149	298
Commuter Rail	0	0	0	0	0	0	0	0	0
Bus	15	15	30	55	55	110	70	70	140
Walk	53	53	106	802	802	1,604	855	855	1,710
Total	232	232	464	946	946	1,892	1,178	1,178	2,356
PM Trips by Mode:	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Auto	136	58	194	23	23	46	159	81	240
Taxi	0	0	0	6	6	12	6	6	12
Subway	359	153	512	13	13	26	372	166	538
Commuter Rail	2	0	2	0	0	0	2	0	2
Bus	48	23	71	31	31	62	79	54	133
Walk	167	71	238	425	425	850	592	496	1,088
Total	712	305	1,017	498	498	996	1,210	803	2,013
Sat. Midday Trips by Mode:	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Auto	83	83	166	31	28	59	114	111	225
Taxi	0	0	0	9	4	13	9	4	13
Subway	223	223	446	19	17	36	242	240	482
Commuter Rail	0	0	0	0	0	0	0	0	0
Bus	32	32	64	40	31	71	72	63	135
Walk	102	102	204	544	446	990	646	548	1,194
Total	440	440	880	643	526	1,169	1,083	966	2,049

Notes:

(1) Local retail travel demand assumes that 25% of trips are linked trips and are not new to the study area.

Table 12-2b: Travel Demand Forecast (Vehicle Trips)

Land Use:		Residential			Local Retail					
		1,147 D.U.			64,807 gsf			Total Trips		
Peak Hour Vehicle Trips		In	Out	Total	In	Out	Total	In	Out	Total
AM	Auto	21	122	143	8	8	16	29	130	159
	Taxi	0	0	0	0	0	0	0	0	0
	Balanced Taxi	0	0	0	0	0	0	0	0	0
	Truck	4	4	8	0	0	0	4	4	8
	Total	25	126	151	8	8	16	**33**	**134**	**167**
MD	Auto	34	34	68	27	27	54	61	61	122
	Taxi	0	0	0	8	8	16	8	8	16
	Balanced Taxi	0	0	0	16	16	32	16	16	32
	Truck	2	2	4	0	0	0	2	2	4
	Total	36	36	72	43	43	86	**79**	**79**	**158**
PM	Auto	111	47	158	12	12	24	123	59	182
	Taxi	0	0	0	6	6	12	6	6	12
	Balanced Taxi	0	0	0	12	12	24	12	12	24
	Truck	0	0	0	0	0	0	0	0	0
	Total	111	47	158	24	24	48	**135**	**71**	**206**
Sat MD	Auto	68	68	136	18	17	35	86	85	171
	Taxi	0	0	0	8	4	12	8	4	12
	Balanced Taxi	0	0	0	12	12	24	12	12	24
	Truck	2	2	4	0	0	0	2	2	4
	Total	70	70	140	30	29	59	**100**	**99**	**199**

Note:

(1) Local retail travel demand assumes that 25% of trips are linked trips and are not new to the study area.

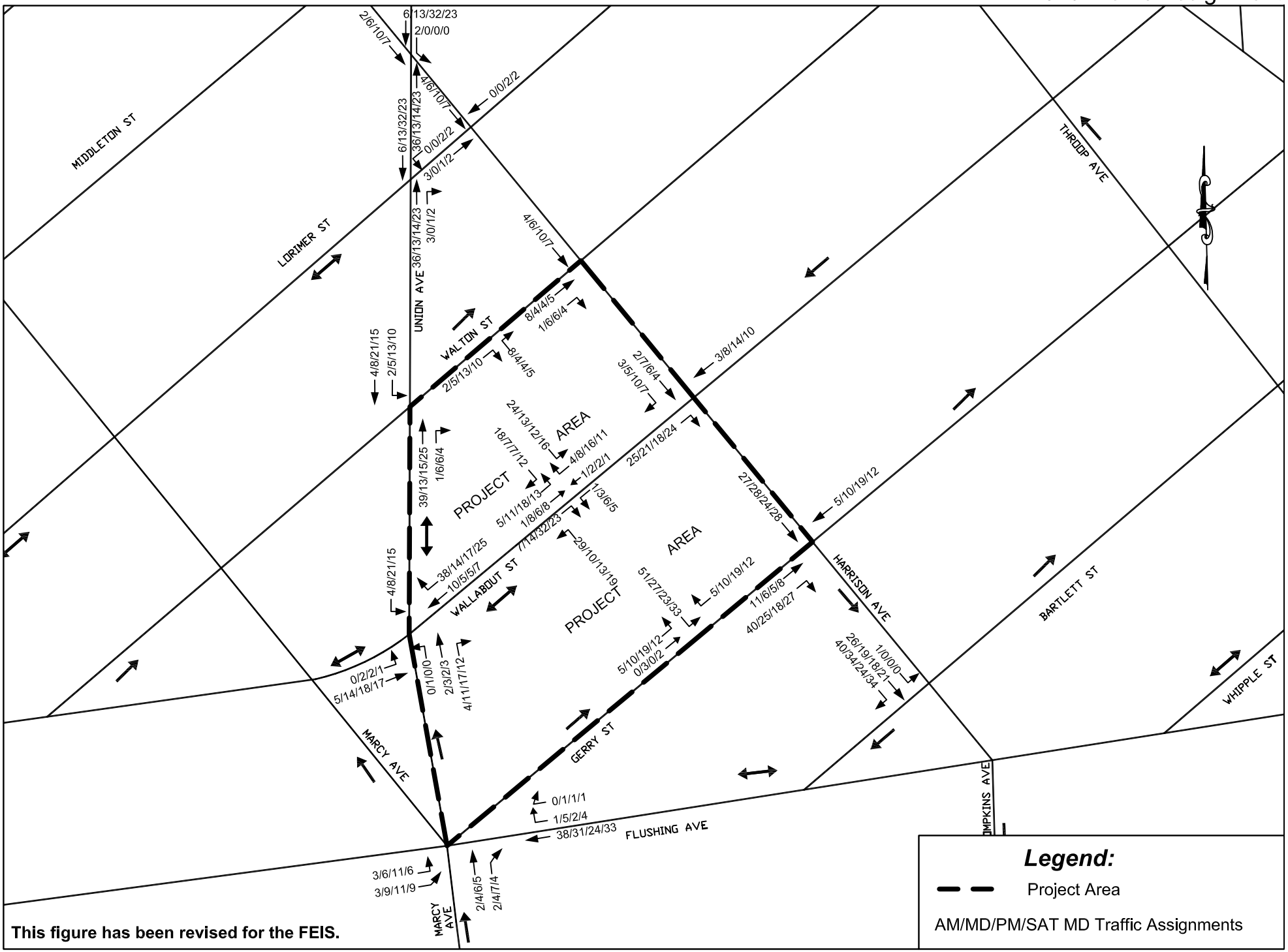
action/RWCDS would generate 81, 140, 133, and 135 local bus trips in the weekday AM, midday, PM and Saturday midday peak hours, respectively; and the proposed action/RWCDS would generate 1,020, 2,148, 1,761, and 1,811 pedestrian trips, including walk-only trips and trips to and from bus stops and subway stations, in the weekday AM, midday, PM and Saturday midday peak hours, respectively. These traffic, transit, and pedestrian numbers exceed the trip thresholds for their respective mode in at least one peak hour for Level 2 screening analysis, and therefore Level 2 screening analysis is warranted and provided below. Detailed parking demand and capacity calculations for the proposed action/RWCDS are also provided below.

Traffic

As shown in Table 12-2b, the proposed action/RWCDS would generate approximately 167, 158, 206, and 199 vehicle trips in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Figure 12-1 shows the assignment of incremental traffic during these peak hours. It is assumed that each block would have one driveway on its north and south face, for a total of two driveways per block. Vehicle portals for residential trips were based on Journey-to-Work data and vehicle portals for local retail trips were based on Reverse Journey-to-Work data for the 2000 census. Autos and trucks assigned to the Northern Block were assigned to Walton Street or

Figure 12-1

2019 Traffic Assignment



This figure has been revised for the FEIS.

Wallabout Street between Union and Harrison Avenues, and autos and trucks assigned to the Southern Block were assigned to Wallabout Street or Gerry Street between Union and Harrison Avenues. Taxis were assigned to any of the building faces. Walton Street between Union and Harrison Avenues was demapped in 1999, although it continues to function as a public way open to traffic. In addition, the New York City Department of Transportation (NYCDOT) is proposing to convert Gerry Street from two-way to one-way eastbound and this conversion was taken into account when assigning traffic.

As per *CEQR Technical Manual* criteria, those intersections with fewer than 50 project generated vehicle trips in all peak hours would be unlikely to experience significant adverse traffic impacts and would not warrant further analysis. As shown in Figure 12-2, it is expected that the 50-vehicle trip per hour threshold would be exceeded at eight locations near the project area:

- Harrison Avenue at Union Avenue (signalized)
- Lorimer Street at Union Avenue (signalized)
- Walton Street at Union Avenue (signalized)
- Wallabout Street at Union Avenue (unsignalized)
- Flushing Avenue/Gerry Street at Union/Marcy Avenues (signalized)
- Wallabout Street at Harrison Avenue (unsignalized in existing; signalized in No-Action)
- Gerry Street at Harrison Avenue (signalized)
- Bartlett Street at Harrison Avenue (signalized)

In addition, traffic analysis was performed at the following additional locations near the project area due to high pedestrian demand:

- Lorimer Street at Harrison Avenue (signalized)
- Walton Street at Harrison Avenue (unsignalized)

Parking

Pursuant to zoning requirements (outlined in Chapters 1 and 2) for the projected land uses in the proposed R7A, R7D, and R8A districts, with C2-4 overlay, a minimum of 427 accessory parking spaces are required on-site. Based on the 2010-2014 *ACS* Vehicles Available Data for Brooklyn Census Tracts 255, 257, 285.01, 491, 507, 509, and 531), there is an average of 0.38 vehicles per household (all households) in the vicinity of the project area. Using this rate for market rate units and a rate of 0.22 vehicles per MIH unit (rate used in the *East New York FEIS*), the 1,147 DUs in the With-Action/RWCDS condition would generate a peak overnight parking demand of approximately 382 vehicles, as shown in Tables 12-3 and 12-4. Assuming that the residential peak would be overnight and that there would be few, if any, retail visits overnight, this would result in an overall peak utilization of approximately 89 percent of accessory parking spaces. During the day, as residents depart, the demand would decrease, even as retail demand would increase. For example, as shown in Table 12-3 and 12-4, the total demand from 12:00 to 1:00 PM would be 100 and 158 vehicles, or approximately 23 and 37 percent utilization, on a typical weekday and Saturday, respectively. Therefore, the proposed action/RWCDS would provide sufficient accessory parking to accommodate all of its projected demand, with a surplus of 45 spaces during the overnight peak period for residential demand, and is therefore not expected to generate

Figure 12-2

Traffic Analysis Intersections

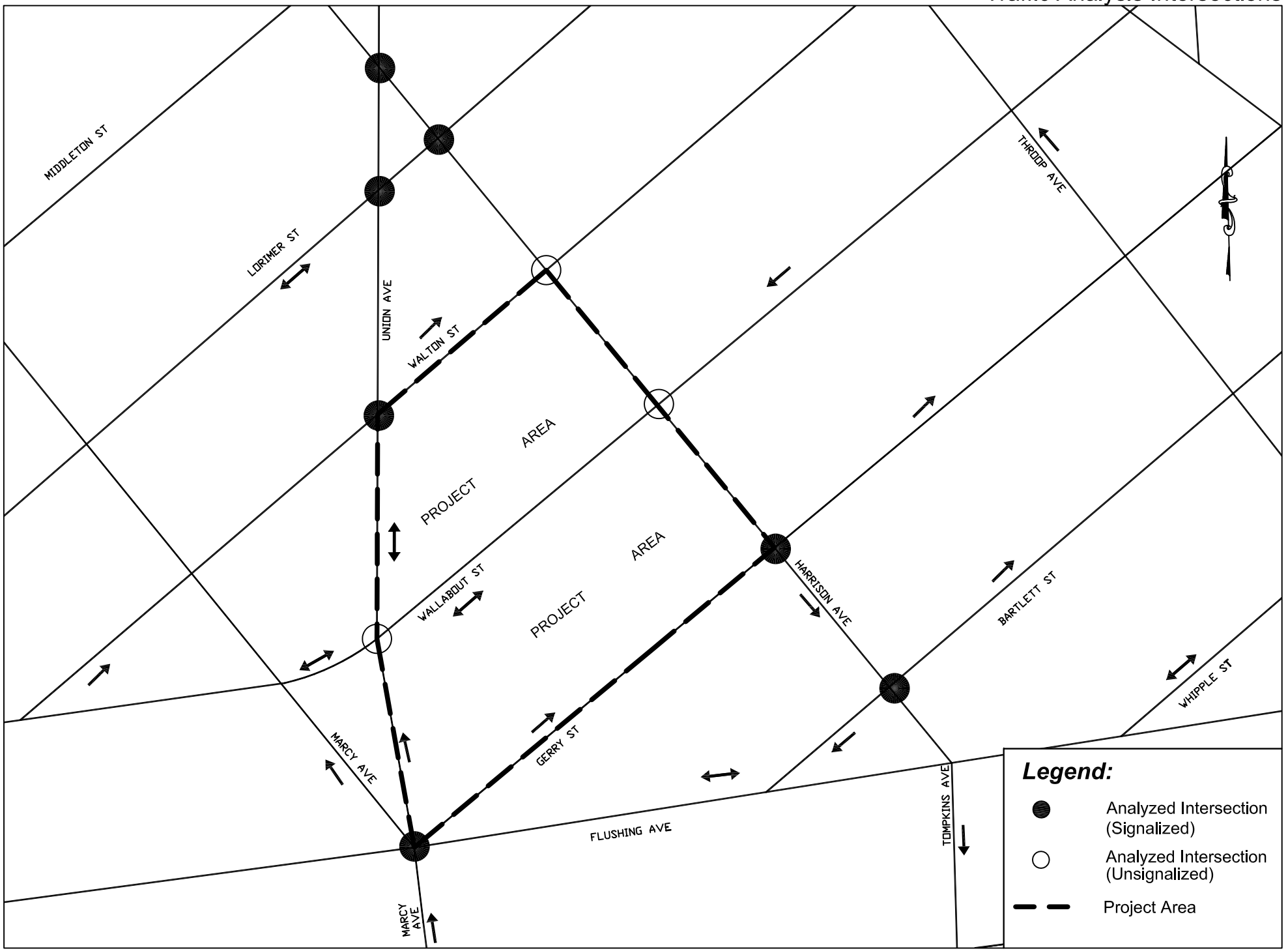


Table 12-3: Projected Weekday Hourly Parking Demand

	Residential 1,147 DU		Local Retail 64,807 sf		Total		
	In	Out	In	Out	In	Out	Accumulation
12-1 AM	3	3	0	0	3	3	382
1-2	3	3	0	0	3	3	382
2-3	3	3	0	0	3	3	382
3-4	3	3	0	0	3	3	382
4-5	3	3	0	0	3	3	382
5-6	5	15	0	0	5	15	372
6-7	12	42	0	0	12	42	342
7-8	15	75	3	1	18	76	284
8-9	21	122	8	8	29	130	183
9-10	22	58	10	5	32	63	152
10-11	21	53	11	6	32	59	125
11-12	19	46	11	9	30	55	100
12-1 PM	34	34	27	27	61	61	100
1-2	36	36	18	18	54	54	100
2-3	37	29	14	14	51	43	108
3-4	59	23	14	16	73	39	142
4-5	73	37	13	16	86	53	175
5-6	111	47	12	12	123	59	239
6-7	74	32	12	14	86	46	279
7-8	73	17	7	10	80	27	332
8-9	51	15	5	7	56	22	366
9-10	22	7	2	4	24	11	379
10-11	10	7	0	0	10	7	382
11-12	7	7	0	0	7	7	382
Total	717	717	167	167	884	884	

Table 12-4: Projected Saturday Hourly Parking Demand

	Residential 1,147 DU		Local Retail 64,807 sf		Total		
	In	Out	In	Out	In	Out	Accumulation
12-1 AM	0	0	0	0	0	0	382
1-2	0	0	0	0	0	0	382
2-3	0	0	0	0	0	0	382
3-4	9	0	0	0	9	0	391
4-5	9	0	0	0	9	0	400
5-6	9	19	0	0	9	19	390
6-7	9	56	0	0	9	56	343
7-8	9	76	0	0	9	76	276
8-9	28	116	4	2	32	118	190
9-10	19	56	8	6	27	62	155
10-11	38	47	14	10	52	57	150
11-12	38	38	15	10	53	48	155
12-1 PM	38	38	15	12	53	50	158
1-2	68	68	18	17	86	85	159
2-3	47	28	20	20	67	48	178
3-4	66	19	18	19	84	38	224
4-5	77	38	18	18	95	56	263
5-6	114	47	18	18	132	65	330
6-7	84	38	18	18	102	56	376
7-8	56	38	15	16	71	54	393
8-9	56	38	10	13	66	51	408
9-10	28	28	2	10	30	38	400
10-11	28	38	2	4	30	42	388
11-12	23	27	0	2	23	29	382
Total	853	853	195	195	1,048	1,048	

significant demand for on-street or public off-street parking. Consequently, there would be no potential for significant adverse parking impacts and detailed analysis of parking conditions is not warranted.

Transit

It should be noted that transit analyses typically focus on the weekday AM and PM commuter peak hours only, as it is during these periods that overall demand on the subway and bus systems is usually highest.

Rail

As shown above in Table 12-2a, the proposed action/RWCDS would generate 473 and 540 combined subway and commuter rail trips in the weekday AM and PM peak hours, respectively. It was assumed that commuter rail trips would use subways to access commuter rail stations. There are two subway stations within proximity to the project area: the Flushing Avenue station on the IND Crosstown Line, which is served by the G train at all times, and the Lorimer Street station on the BMT Jamaica Line which is served by the J train at all times except rush hours in the peak direction and the M train at all times except nights. The Flushing Avenue station has a stairwell for northbound passengers on the northeast corner of Flushing Avenue and Gerry Street and a stairwell for southbound passengers on the southwest corner of Flushing Avenue and Marcy Avenue. The Lorimer Street station has a stairwell for westbound passengers on the northeast corner of Wallabout Street and Broadway and a stairwell for eastbound passengers on the northwest corner of Wallabout Street and Broadway. Figure 12-3 shows the locations of each subway stair that would potentially be used by action-generated subway trips.

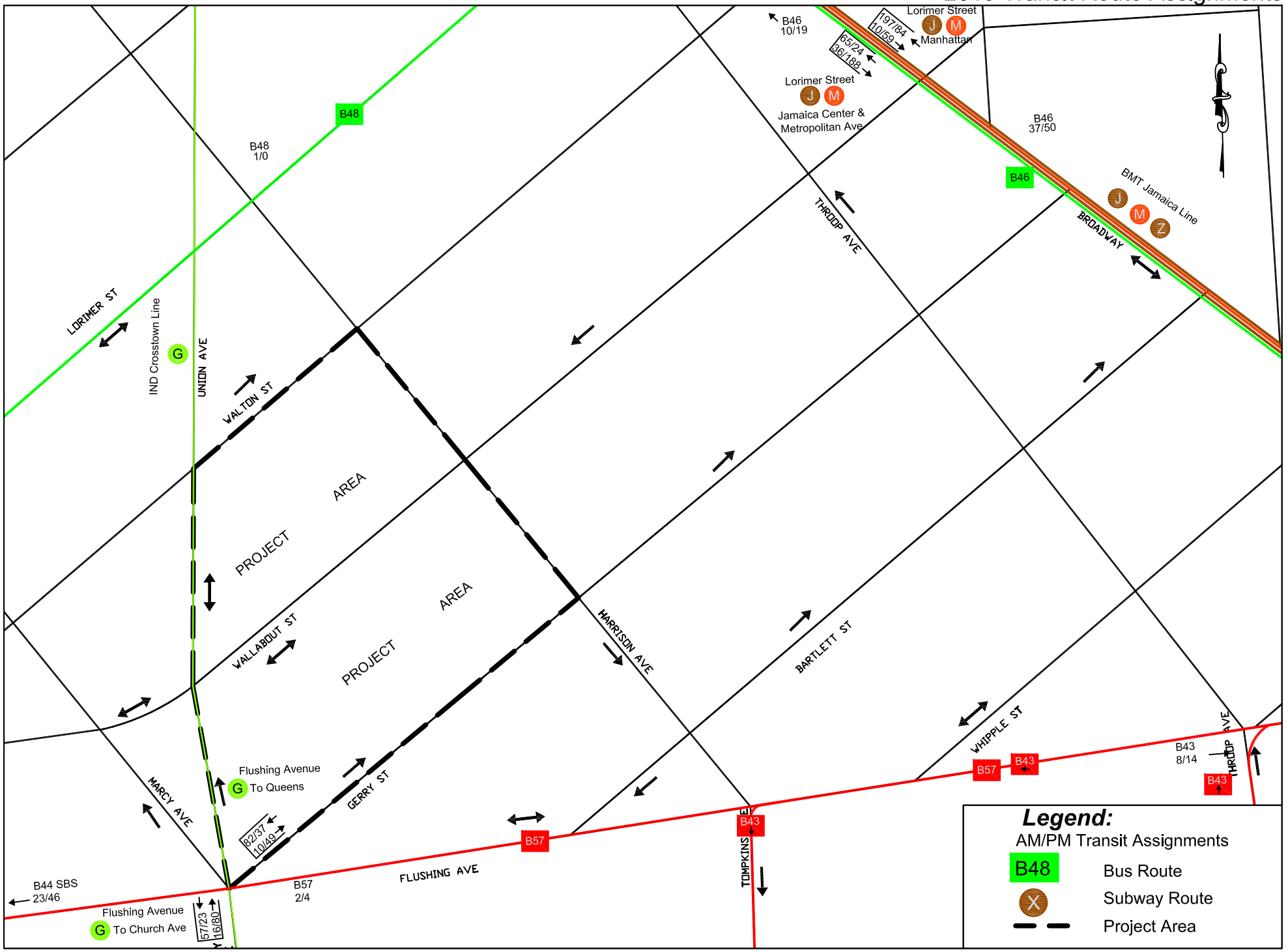
For purposes of this analysis, it was assumed, based on 2014 subway ridership data provided by NYC Transit, that approximately 35.0 percent of subway trips would board/alight at the Flushing Avenue station and the remaining 65.0 percent of subway trips would board/alight at the Lorimer Street station. As shown in Figure 12-3, this would result in 165 and 185 trips to/from the Flushing Avenue station in the weekday AM and PM peak hours respectively, and 308 and 355 trips to/from the Lorimer Street station in the weekday AM and PM peak hours respectively. As the Lorimer Street subway station would experience more than 200 peak hour project generated trips in both analysis periods, detailed analysis at this station during peak commuter periods would be warranted. As the proposed action/RWCDS would not generate 200 or more trips at the Flushing Avenue station in any peak hour, significant adverse subway impacts at that station would not be expected and detailed analysis is not warranted.

Line Haul Demand

Line haul demand is the volume of transit riders passing a defined point on a given transit route. As specified in the *CEQR Technical Manual*, a detailed analysis of subway line haul conditions is generally not warranted if a proposed action is expected to result in fewer than 200 peak hour trips assigned to a single line in one direction. As discussed above, of the 473 and 540 action-generated subway and commuter rail trips in the weekday AM and PM peak hours respectively, the Lorimer Street subway station is expected to experience an increase of 308 and 355 in the weekday AM,

Figure 12-3

2019 Transit Route Assignments



and PM peak hours, respectively. Of these trips, approximately 207 and 143 passengers would use the Manhattan-bound platform during the weekday AM and PM peak hours, respectively, and 101 and 212 passengers would use the Queens-bound platform during the weekday AM and PM peak hours, respectively. Of the 207 trips using the Manhattan-bound platform in the weekday AM peak hour, 197 would board trains and 10 would alight trains. Of the 212 trips using the Queens-bound platform in the weekday PM peak hour, 24 would board and 188 would alight. As there would be fewer than 200 passengers per hour per direction, detailed line haul demand analysis would not be warranted as no significant adverse impacts are expected.

Bus

As shown in Figure 12-3, there are five bus routes which operate in the vicinity of the project area:

- The B43 provides service between Greenpoint and Prospect-Lefferts Gardens. In South Williamsburg it operates along Flushing Avenue between Tompkins/Throop Avenues and Graham Avenue, southeast of the project area. It operates 5 buses in each direction in both the weekday AM and PM peak hours. Action-generated trips using this bus would board/alight at Flushing and Throop Avenues.
- The B44 Select Bus Service provides service between Sheepshead Bay and the Williamsburg Bridge Plaza. In South Williamsburg it operates along Bedford (northbound) and Lee (southbound) Avenues, west of the project area. It operates 12 and 10 buses in each direction in the weekday and PM peak hours respectively. Action-generated trips using this bus would board/alight at Flushing Avenue and Bedford Avenue (northbound) or at Flushing Avenue and Lee/Nostrand Avenues (southbound)
- The B46 provides service between Marine Park and the Williamsburg Bridge Plaza. In South Williamsburg it operates along Broadway, northeast of the project area. . It operates 8 buses in each direction in both the weekday AM and PM peak hours. Action-generated trips using this bus would board/alight at Lorimer Street and Broadway.
- The B48 provides service between Prospect-Lefferts Gardens and East Williamsburg. In South Williamsburg it operates along Lorimer Street north of the project area. It operates 5 and 4 buses in each direction in the weekday and PM peak hours, respectively. Action-generated trips using this bus would board/alight at Lorimer Street and Harrison Avenue.
- The B57 bus provides service between Red Hook and Maspeth, Queens. In South Williamsburg it operates along Flushing Avenue south of the project area. It operates 4 buses in each direction in both the weekday AM and PM peak hours. Action-generated trips using this bus would board/alight at Flushing Avenue and Union/Marcy Avenues.

In summary, approximately 68 and 62 buses operate in the vicinity of the project area during the weekday AM and PM peak hours, respectively.

As shown in Table 12-2a, the proposed action/RWCDS would generate 81 and 133 bus trips in the weekday AM and PM peak hours, respectively. The bus trips were assigned to each of the five routes as shown in Table 12-5 as per 2014 MTA ridership data. Figure 12-3 shows the bus stop locations. The bus trip assignment determined that the B46 bus would carry 69 project-generated per direction (in and out) trips in the weekday PM hour. However, not all of the trips would board or alight in the same direction, as it is estimated that half of the trips would travel northbound and

Table 12-5: 2019 Bus Route Assignments

	In		Out		Total	
	AM	PM	AM	PM	AM	PM
B43	0	10	8	4	8	14
B44	4	26	19	20	23	46
B46	16	40	31	29	47	69
B48	0	0	1	0	1	0
B57	0	3	2	1	2	4
Total	20	79	61	54	81	133

half would travel southbound. Therefore, there are expected to be fewer than 50 project-generated trips per direction (northbound in, northbound out, southbound in, southbound out) on this route and therefore detailed line-haul bus analysis would not be warranted as no significant adverse impacts to the local bus network are expected.

Pedestrians

As shown in Table 12-2a, the proposed action/RWCDS would generate 1,020, 2,148, 1,761, and 1,811 pedestrian trips, including walk-only trips and trips to and from subway stations or bus stops, in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Therefore, according to the *CEQR Technical Manual*, the proposed action/RWCDS exceeds the Level 1 threshold of 200 action-generated pedestrian trips. These trips would be concentrated along pedestrian elements (sidewalks, crosswalks, and corner areas) in the immediate proximity of the project area and along Wallabout Street between the project area and the Lorimer Street subway station. Figures 12-4 and 12-5 show the assignment of action-generated pedestrian trips to study area pedestrian elements, and Figure 12-6, shows the elements that would exceed the Level 2 200 pedestrian trips per hour threshold and therefore require detailed analysis. These include the following eight sidewalks, five crosswalks, and 14 corner areas:

Sidewalks

- North sidewalk on Gerry Street between Union and Harrison Avenues
- South sidewalk on Wallabout Street between Union and Harrison Avenues
- South sidewalk on Wallabout Street between Harrison and Throop Avenues
- North sidewalk on Wallabout Street between Union and Harrison Avenues
- North sidewalk on Wallabout Street between Harrison and Throop Avenues
- North sidewalk on Wallabout Street between Throop Avenue and Broadway
- South sidewalk on Walton Street between Union and Harrison Avenues
- East sidewalk on Union Avenue between Gerry and Wallabout Streets

Crosswalks

- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – North Crosswalk

Figure 12-4

2019 Weekday AM/Midday Pedestrian Assignments

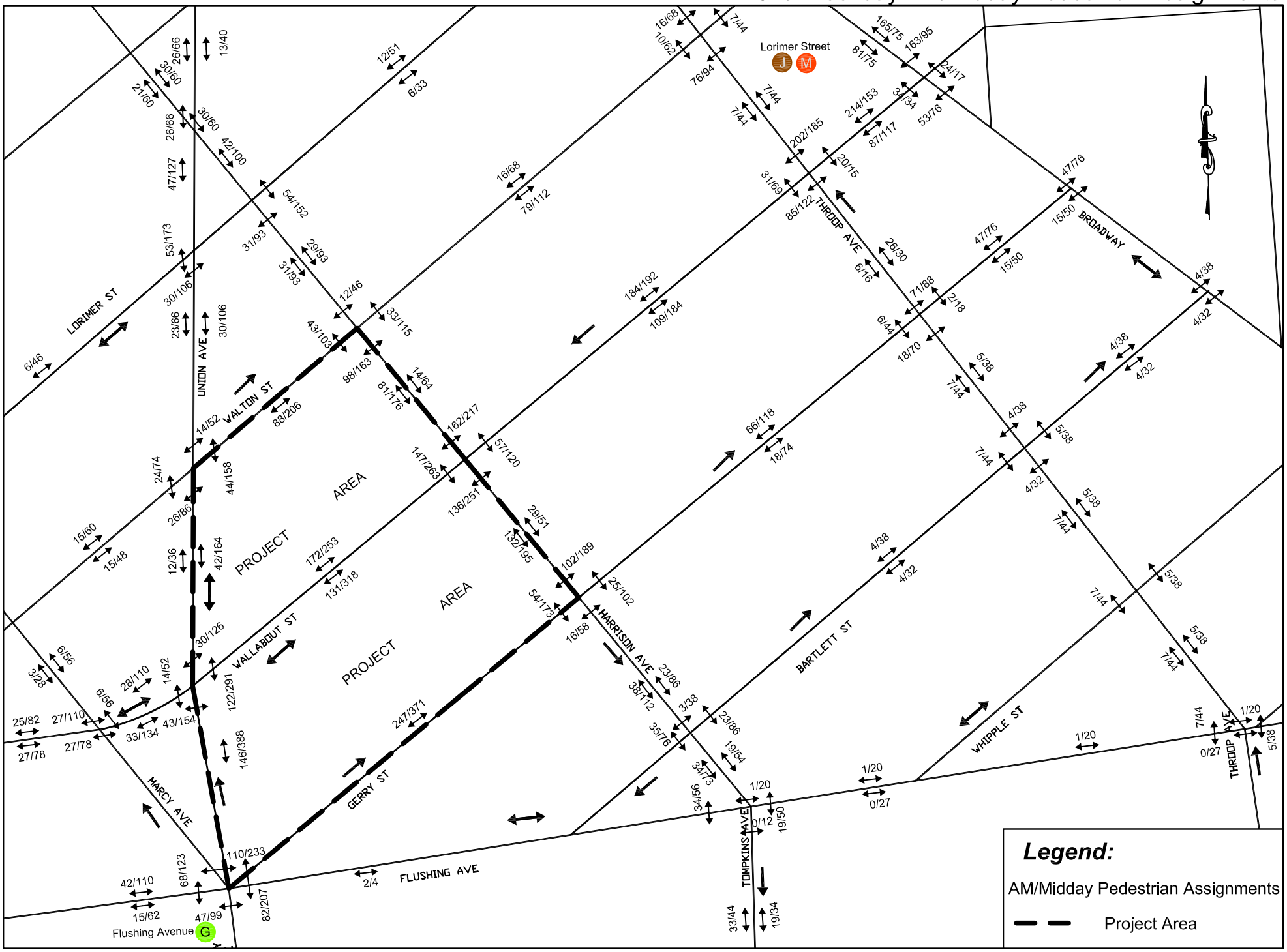


Figure 12-5

2019 Weekday PM/Saturday Midday Pedestrian Assignments

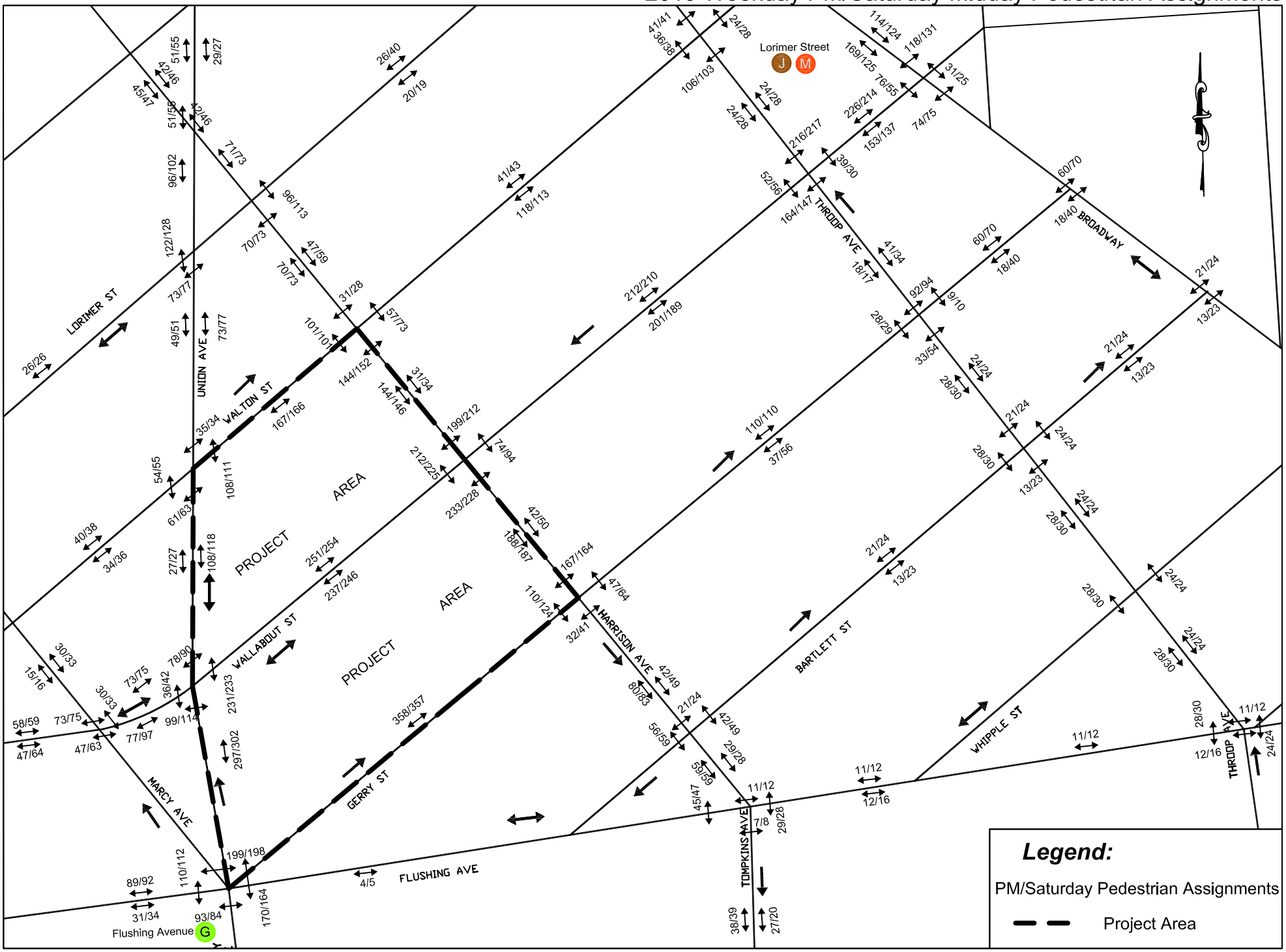
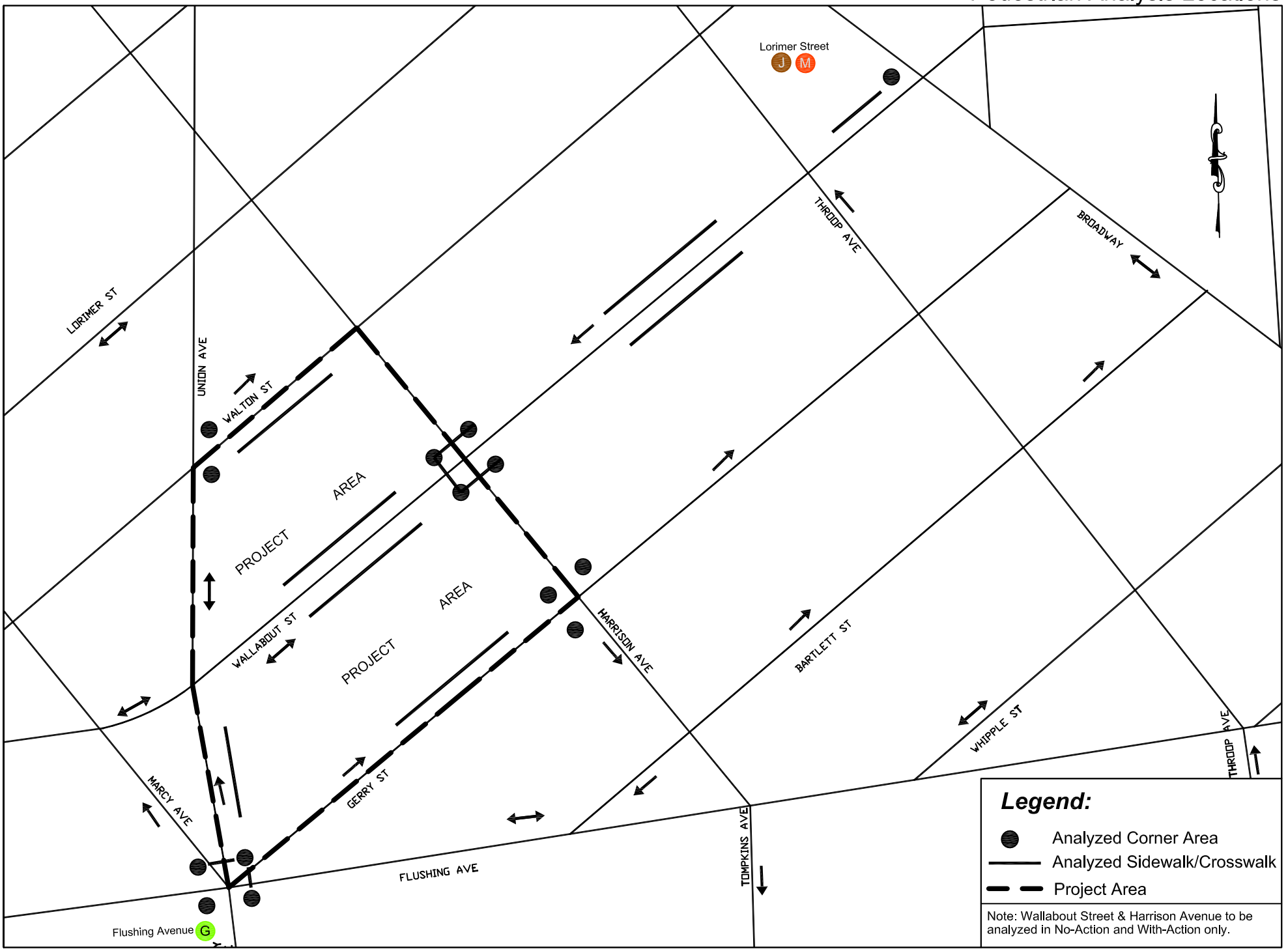


Figure 12-6

Pedestrian Analysis Locations



- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – East Crosswalk
- Wallabout Street at Harrison Avenue – North Crosswalk[1,2]
- Wallabout Street at Harrison Avenue – South Crosswalk[1,2]
- Wallabout Street at Harrison Avenue – West Crosswalk[1]

Corner Areas

- Walton Street at Union Avenue – Northeast Corner
- Walton Street at Union Avenue – Southeast Corner
- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – Northeast Corner
- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – Southeast Corner
- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – Southwest Corner
- Flushing Avenue/Gerry Street at Marcy Avenue/Union Avenue – Northwest Corner
- Wallabout Street at Harrison Avenue – Northeast Corner[1]
- Wallabout Street at Harrison Avenue – Southeast Corner[1]
- Wallabout Street at Harrison Avenue – Southwest Corner[1]
- Wallabout Street at Harrison Avenue – Northwest Corner[1]
- Gerry Street at Harrison Avenue – Northeast Corner
- Gerry Street at Harrison Avenue – Southwest Corner
- Gerry Street at Harrison Avenue – Northwest Corner
- Wallabout Street at Broadway – Northwest Corner

It should be noted that the following crosswalks and corner areas at unsignalized intersections would also experience an increase of 200 or more pedestrian trips in any one peak hour. However, because there is currently no adequate methodology to analyze crosswalks and corner areas at unsignalized intersections, detailed pedestrian analysis at these elements would not be warranted unless the intersection experiences a significant adverse impact and would require the installation of a traffic signal for mitigation.

Crosswalks

- Wallabout Street and Union Avenue – East Crosswalk
- Wallabout Street and Throop Avenue – North Crosswalk

Corner Areas

- Wallabout Street and Union Avenue – Northeast Corner
- Wallabout Street and Union Avenue – Southeast Corner
- Wallabout Street and Union Avenue – Southwest Corner
- Wallabout Street and Union Avenue – Northwest Corner
- Walton Street and Harrison Avenue – Southeast Corner
- Walton Street and Harrison Avenue – Southwest Corner

[1] Unsignalized in Existing Conditions
[2] Crosswalk to be striped in With-Action Conditions

- Wallabout Street and Throop Avenue – Northeast Corner
- Wallabout Street and Throop Avenue – Southwest Corner
- Wallabout Street and Throop Avenue – Northwest Corner

D. VEHICULAR TRAFFIC

As shown above in Figure 12-2, the traffic study area for detailed analysis consists of a total of ten intersections: five along Union Avenue (at Harrison Avenue, Lorimer Street, Walton Street, Wallabout Street, and Flushing Avenue/Gerry Street/Marcy Avenue) and five along Harrison Avenue (at Lorimer Street, Walton Street, Wallabout Street, Gerry Street, and Bartlett Street). These ten intersections selected for analysis are expected to receive the highest concentration of new vehicular traffic as a result of the proposed action/RWCDS. Data on existing traffic conditions at these intersections were developed based on manual turning movement counts (TMC) conducted in June 2013 and November 2015 along with automated traffic recorder (ATR) counts along various street segments near the project area. The 2013 counts were adjusted so that they would balance with the 2015 volumes. Based on the traffic counts, peak hours were selected to be 8:00 to 9:00 AM (weekday AM), 12:30 to 1:30 PM (weekday midday), 5:00 PM to 6:00 PM (weekday PM), and 3:30 to 4:30 PM (Saturday midday). In addition to traffic counts, data collection included vehicle classification counts and an inventory of intersection geometries, lane striping, parking regulations, and other physical and operating characteristics. Intersection signal timings were provided by NYCDOT. Figure 12-7 shows the 2015 existing traffic volumes at each analyzed intersection in the weekday AM, midday, PM, and Saturday midday peak hours.

Street Network

The traffic study area in South Williamsburg consists primarily of a regular street grid of north-south main roadways and east-west local streets. Union Avenue is the main north-south roadway and, although it follows an irregular alignment relative to the street grid, it typically carries the heaviest traffic in the area, while one-way southbound Harrison Avenue also functions as a key artery, connecting with Tompkins Avenue to the south, and operating as a one-way pair with Throop Avenue to the east. The east-west local streets, typically narrower and more closely spaced than the north-south streets in this area, provide access to the adjacent land uses.

Within the study area, Wallabout Street is a 34-foot wide east-west roadway with one travel lane in each direction that passes between the two blocks that make up the project area. East of the project area it is one way westbound with a Class II bicycle lane and west of the project area it is one way eastbound. Parking is permitted on both sides of the street. In the vicinity of the project area, existing two-way traffic volumes total from 55 vehicles per hour (vph) in the Saturday midday peak hour to 175 vph in the weekday PM peak hour. No bus routes run on Wallabout Street in the vicinity of the project area.

Within the study area, Harrison Avenue is a 40-foot wide southbound roadway with one travel lane and one Class II bicycle lane and traverses the eastern boundary of the project area. Parking is permitted on both sides of the street. In the vicinity of the project area, existing southbound traffic volumes total from 260 vph in the Saturday midday peak hour to 640 vph in the weekday

Figure 12-7a

2015 Existing AM/Midday Traffic Volumes

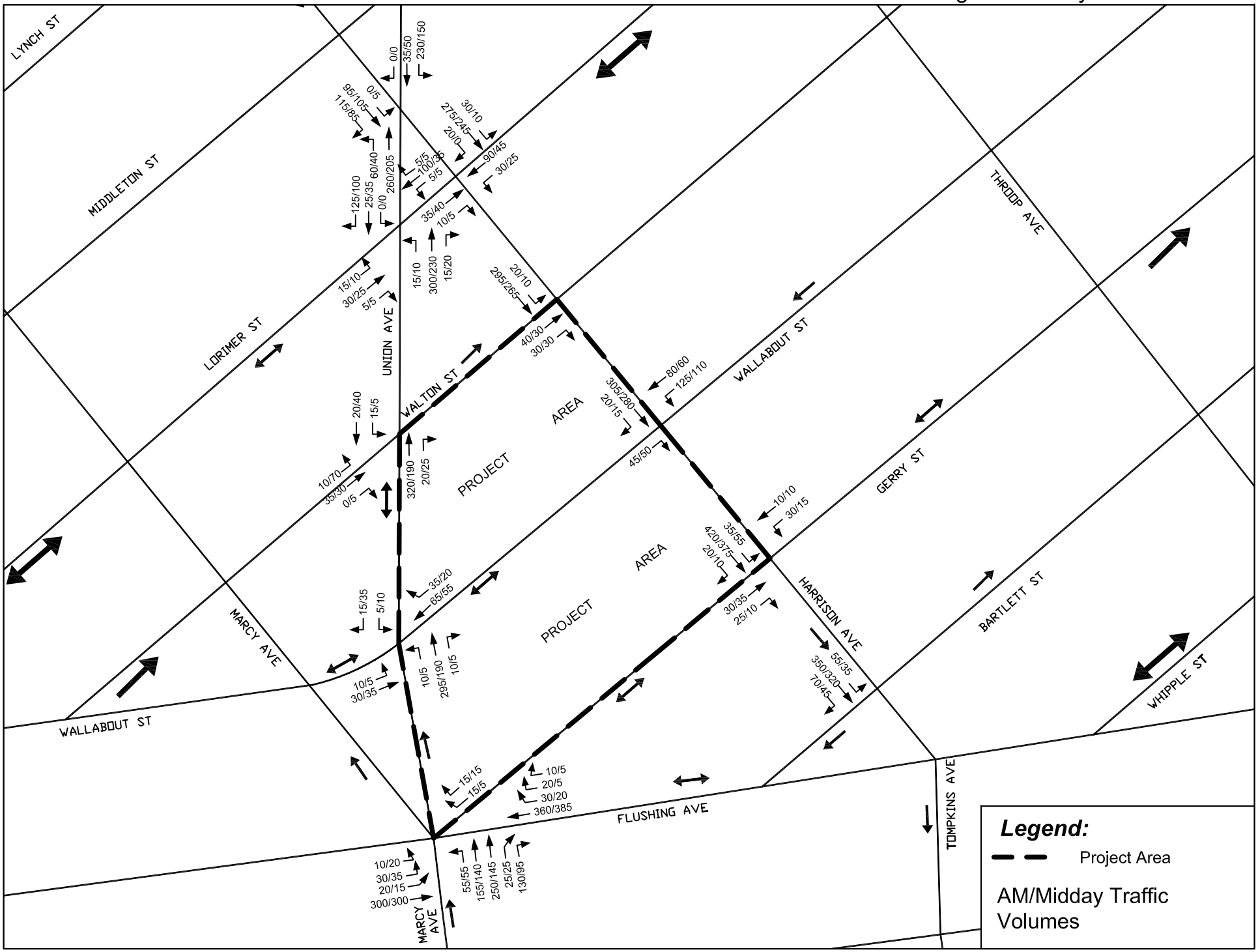
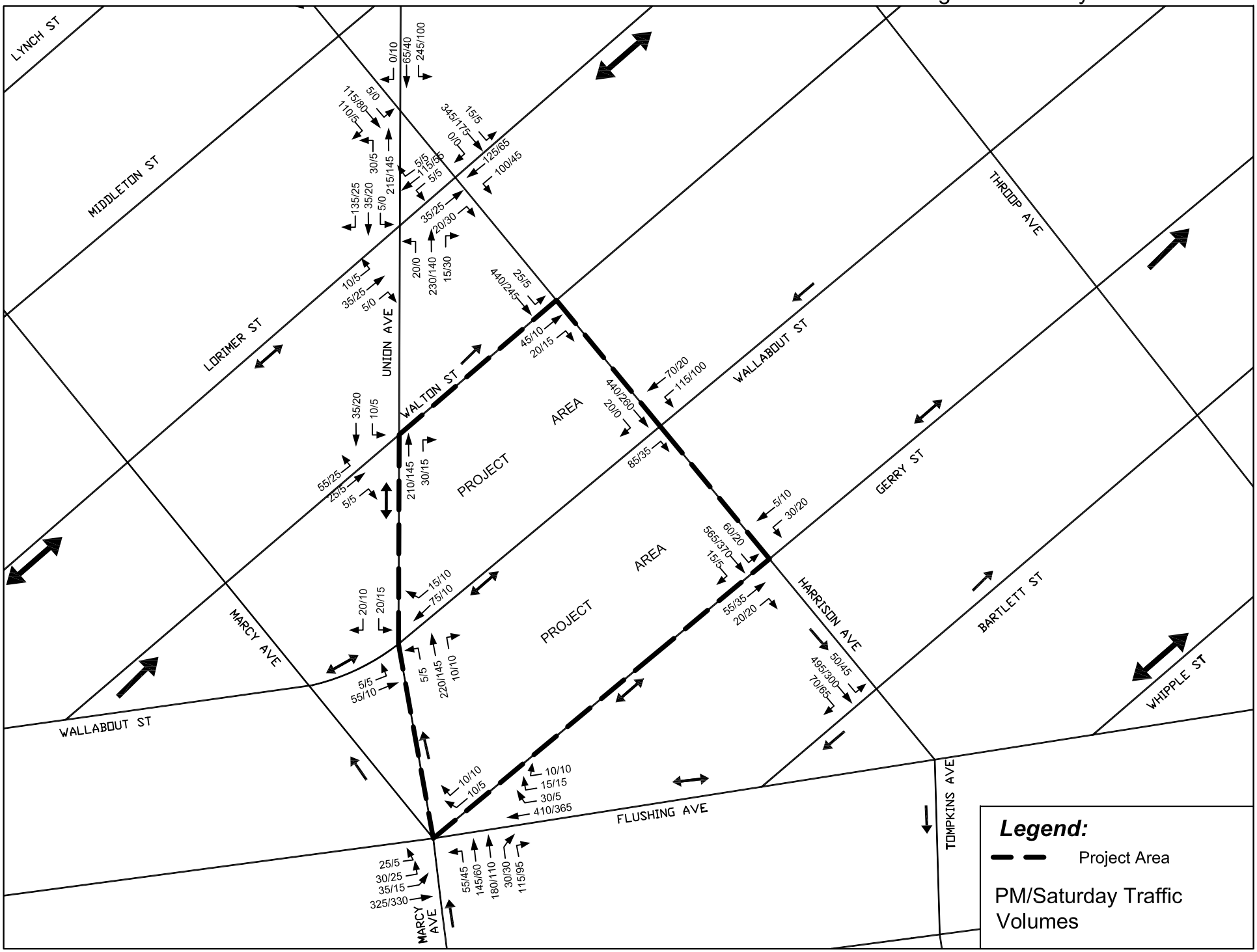


Figure 12-7b

2015 Existing PM/Saturday Traffic Volumes



PM peak hour. No bus routes run on Harrison Avenue in the vicinity of the project area. Harrison Avenue is a designated NYC Local Truck Route in the vicinity of the project area.

Within the study area, Gerry Street is a 34-foot wide east-west roadway with one travel lane in each direction that marks the southern boundary of the project area. Gerry Street ends at an intersection with Flushing, Union, and Marcy Avenues. Parking is permitted on both sides of the street. In the vicinity of the project area, existing two-way volumes total from 65 vph in the weekday midday peak hour to 95 vph in the weekday PM peak hour. No bus routes run on Gerry Street in the vicinity of the project area. It should be noted that it is assumed that as part of the No-Action condition Gerry Street will become one-way eastbound per a NYC DOT proposal.

Within the study area, Union Avenue is a 46- to 55-foot wide north-south roadway that marks the western boundary of the project area. South of Wallabout Street, it is one-way northbound with one travel lane, and north of Wallabout Street it is two-way with one travel lane in each direction. Parking is permitted on both sides of Union Avenue north of Wallabout Street and on the east side of Union Avenue south of Wallabout Street. The IND Crosstown Line of the New York City Subway runs underneath Union Avenue. In the vicinity of the project area, two-way traffic volumes total from 185 vph in the Saturday midday peak hour to 360 vph in the weekday AM peak hour. No bus routes run on Union Avenue in the vicinity of the project area.

Within the study area, Walton Street is a 34-foot wide one-way eastbound roadway with one travel lane that marks the northern boundary of the project area. Parking is permitted on both sides of the street. In the vicinity of the project area, eastbound traffic volumes total from 25 vph in the Saturday midday peak hour to 70 vph in the weekday AM peak hour. No bus routes run on Walton Street in the vicinity of the project area.

Flushing Avenue is a 40-foot wide, east-west roadway with one travel lane in each direction that runs past the southwest corner of the project area. Parking is permitted on both sides of the street west of the project area, but parking is prohibited on the block east of the project area. Flushing Avenue is a principal traffic corridor in this area, is a designated NYC Local Truck Route, and accommodates the B57 bus. In the vicinity of the project area, two-way volumes on Flushing Avenue total from 770 vph in the Saturday midday peak hour to 880 vph in the weekday PM peak hour.

Lorimer Street is a 40-foot wide, east-west street with one travel lane in each direction north of the project area. Parking is permitted on both sides of the street. The B48 bus runs along Lorimer Street. Between Union and Harrison Avenues, two-way volumes on Lorimer Street total from 90 vph in the weekday midday peak hour to 180 vph in the weekday PM peak hour.

Analysis Methodology

The capacity analyses at study area intersections are based on the methodology presented in the *Highway Capacity Manual (HCM) Software 2000 Release 5.5* for signalized and unsignalized intersections. Traffic data required for these analyses include vehicular volumes on each intersection approach and various other physical and operational characteristics. The *HCM* methodology provides a volume-to-capacity (v/c) ratio for each signalized intersection lane group.

The v/c ratio represents the traffic flow on each lane group to its carrying capacity. At a v/c ratio between 0.90 and 1.00, near-capacity conditions are reached and delays can become substantial. Ratios greater than 1.05 indicate saturated conditions with queuing. The *HCM* methodology also expresses quality of flow in terms of Level of Service (LOS), which is based on the amount of delay that a driver typically experiences at an intersection. Levels of Service range from LOS A, which represents minimal delay and/or freeflow conditions a majority of the time (10.0 seconds or fewer per vehicle) to LOS F, which represents a long delay (greater than 80.0 seconds per vehicle).

For unsignalized intersections, the *HCM* methodology assumes that major street traffic (traffic on an uncontrolled approach) operates in freeflow (does not experience delay), however it does assume that left turns from major streets are affected by the opposing, or oncoming, major street flow. Minor street traffic (traffic on a controlled approach) is affected by all conflicting movements. Similar to signalized intersections, the *HCM* methodology expresses the quality of flow at unsignalized intersections in terms of levels of service based on the amount of delay that a driver experiences. The criteria used for unsignalized intersections differs somewhat from that used for signalized intersections, primarily because drivers expect somewhat different levels of performance from unsignalized intersections as opposed to signalized intersections. For unsignalized intersections, Levels of Service range from LOS A, which represents minimal delay and/or freeflow conditions a majority of the time (10.0 seconds or fewer per vehicle) to LOS F, which represents a long delay (greater than 50.0 seconds per vehicle). Table 12-6 shows the relationship between delay and LOS for both signalized and unsignalized intersections according to the *HCM* methodology. Levels of Service A, B, and C generally represent extremely favorable to fair levels of traffic flow. At LOS D, the influence of congestion becomes noticeable as delay increases. LOS E is considered to be the limit of acceptable delay, and LOS F is considered to be unacceptable to most drivers. In this study, a lane group which operates at LOS E or F or operates with a v/c ratio of 0.90 or higher is considered to be a congested lane group.

Table 12-6: Intersection LOS Criteria

Level of Service	Average Delay per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	0.0 to 10.0	0.0 to 10.0
B	10.01 to 20.0	10.01 to 15.0
C	20.01 to 35.0	15.01 to 25.0
D	35.01 to 55.0	25.01 to 55.0
E	55.01 to 80.0	35.01 to 50.0
F	Greater than 80.0	Greater than 50.0

Source: 2000 *HCM*

Existing Condition

As noted above, traffic data collection occurred in June 2013 and November 2015 along with automated traffic recorder (ATR) counts along various street segments near the project area. Data collected in 2013 was balanced in order to match data collected in 2015. Based on the traffic counts, peak hours were selected to be 8:00 to 9:00 AM (weekday AM), 12:30 to 1:30 PM (weekday midday), 5:00 PM to 6:00 PM (weekday PM), and 3:30 to 4:30 PM (Saturday midday).

In addition to traffic counts, data collection included vehicle classification counts and an inventory of intersection geometries, lane striping, parking regulations, and other physical and operating characteristics. Intersection signal timings were provided by NYCDOT. Figure 12-7 shows the 2015 existing traffic volumes at each analyzed intersection in the weekday AM, midday, PM, and Saturday midday peak hours.

Table 12-7 shows the results of the 2015 Existing condition LOS analysis at the ten intersections selected for traffic analysis. As shown in Table 12-7, the following seven lane groups are congested in one or more peak hours:

- The eastbound left-through-right lane group at the signalized intersection of Union Avenue at Harrison Avenue operates at LOS E with v/c ratios of 0.89 and 0.79 and delays of 74.9 and 59.9 seconds in the weekday AM and PM peak hours respectively.
- The southbound left lane group at the signalized intersection of Union Avenue at Harrison Avenue operates at LOS F with a v/c ratio of 1.05 and a delay of 111.7 seconds in the weekday AM peak hour
- The southbound left-through right operates at LOS E and F with v/c ratios of 0.91 and 1.05 and delays of 72.6 and 102.2 seconds in the weekday midday and PM peak hours respectively.
- The northbound left-through-right lane group at the signalized intersection of Flushing Avenue/Gerry Street at Union/Marcy Avenues operates at LOS E with a v/c ratio of 1.00 and delay of 73.6 seconds in the weekday AM peak hour.
- The westbound left-through lane group at the signalized intersection of Lorimer Street and Harrison Avenue operates at LOS E with a v/c ratio of 0.82 and delay of 63.0 seconds in the weekday PM peak hour.
- The southbound left-through-right lane group at the signalized intersection of Gerry Street at Harrison Avenue operates at LOS D with a v/c ratio of 0.90 and delay of 38.1 seconds in the weekday PM peak hour.
- The southbound left-through-right lane group at the signalized intersection of Bartlett Street at Harrison Avenue operates at LOS D with a v/c ratio of 0.98 and delay of 54.9 seconds in the weekday PM peak hour.

In total, three, one, five, and zero lane groups are congested in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Out of 29-30 lane groups, 19, 22, 19, and 23 operate at LOS A, B, or C in the weekday AM, midday, PM, and Saturday midday peak hours respectively, eight, six, seven, and six lane groups operate at LOS D in the weekday AM, midday, PM, and Saturday midday peak hours respectively, two, one, two, and zero lane groups operate at LOS E in the weekday AM, midday, PM, and Saturday midday peak hours respectively, and one, zero, one, and zero lane groups operate at LOS F in the weekday AM, midday, PM, and Saturday midday peak hours respectively.

Table 12-7: 2015 Existing Traffic Levels of Service

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			SATURDAY MD PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Harrison Avenue (E-W) @ Union Avenue (N-S)	EB - LTR	0.89	74.9	E *	0.71	52.6	D	0.79	59.9	E *	0.26	37.8	D
	NB - LTR	0.60	35.4	D	0.50	34.0	C	0.44	31.0	C	0.28	29.2	C
	SB - L	1.05	111.7	F *	-	-	-	-	-	-	-	-	-
	SB - TR	0.11	26.9	C	-	-	-	-	-	-	-	-	-
	SB - LTR	-	-	-	0.91	72.6	E *	1.05	102.2	F *	0.49	35.4	D
2. Lorimer Street (E-W) @ Union Avenue (N-S)	EB - LTR	0.23	37.9	D	0.17	36.4	D	0.21	37.3	D	0.14	36.0	D
	WB - LTR	0.31	38.5	D	0.14	35.6	D	0.34	39.0	D	0.17	36.1	D
	NB - LTR	0.78	46.7	D	0.66	39.6	D	0.66	39.6	D	0.39	31.4	C
	SB - LTR	0.21	9.1	A	0.18	8.8	A	0.26	9.6	A	0.07	7.8	A
3. Walton Street (EB) @ Union Avenue (N-S)	EB - LTR	0.10	26.1	C	0.25	28.2	C	0.21	27.6	C	0.08	25.8	C
	NB - TR	0.47	17.8	B	0.29	14.9	B	0.34	15.5	B	0.21	13.8	B
	SB - LT	0.07	12.4	B	0.07	12.4	B	0.07	12.3	B	0.04	12.0	B
4. Wallabout Street (E-W) @ Union Avenue (N-S) (Unsignalized)	EB - LT	0.10	13.6	B	0.08	11.0	B	0.13	12.5	B	0.03	10.4	B
	WB - TR	0.21	13.2	B	0.12	10.9	B	0.18	12.5	B	0.03	9.9	A
	NB - LTR	0.01	7.4	A	0.00	7.4	A	0.00	7.3	A	0.00	7.3	A
	SB - LR	0.01	8.7	A	0.01	8.0	A	0.02	8.1	A	0.01	7.8	A
5. Flushing Avenue - Gerry Street (E-W) @ Marcy Avenue - Union Avenue (NB) (Gerry Street Unsignalized)	EB - LT	0.58	18.0	B	0.64	16.5	B	0.77	27.1	C	0.48	12.6	B
	WB - TR (Flushing)	0.52	16.1	B	0.49	12.5	B	0.52	15.8	B	0.41	11.3	B
	WB - R (Gerry)	0.07	12.8	B	0.03	9.6	A	0.04	10.8	B	0.02	9.8	A
	NB - LTR	1.00	73.6	E *	0.73	34.3	C	0.71	41.7	D	0.56	29.6	C
6. Lorimer Street (E-W) @ Harrison Avenue (SB)	EB - TR	0.20	37.0	D	0.18	36.7	D	0.25	38.1	D	0.33	40.9	D
	WB - LT	0.47	43.1	D	0.26	38.1	D	0.82	63.0	E *	0.40	41.1	D
	SB - LTR	0.40	11.1	B	0.26	9.4	A	0.33	10.1	B	0.16	8.5	A
7. Walton Street (EB) @ Harrison Avenue (SB) (Unsignalized)	EB - TR	0.18	14.2	B	0.11	11.3	B	0.18	15.2	C	0.05	11.6	B
	SB - LT	0.02	8.3	A	0.01	7.6	A	0.02	7.8	A	0.00	7.3	A
8. Wallabout Street (E-W) @ Harrison Avenue (SB) (Unsignalized)	EB - R	0.09	11.0	B	0.07	9.6	A	0.15	11.0	B	0.05	9.7	A
	WB - LT	0.61	25.8	D	0.35	14.1	B	0.51	21.3	C	0.23	12.4	B
9. Gerry Street (E-W) @ Harrison Avenue (SB)	EB - TR	0.17	27.2	C	0.12	26.4	C	0.20	27.6	C	0.14	26.7	C
	WB - LT	0.13	26.7	C	0.07	25.7	C	0.13	26.6	C	0.09	26.0	C
	SB - LTR	0.67	23.1	C	0.64	21.9	C	0.90	38.1	D *	0.51	18.4	B
10. Bartlett Street (E-W) @ Harrison Avenue (SB)	SB - LTR	0.84	35.2	D	0.69	20.5	C	0.98	54.9	D *	0.73	22.5	C

Notes:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

This table has been revised for the FEIS.

Future Without the Proposed Action (No-Action Condition)

In the 2019 No-Action Condition, the proposed action would not occur. It is projected that there would be no as-of-right development in the project area. However, it is expected that major developments near to the study area will generate trips that pass through the study area, and that population growth, as well as minor projects near to the study area, will contribute to growth of traffic within the study area. According to the *CEQR Technical Manual*, a background growth rates of 0.50 percent was used to increase traffic volumes between 2015 and the 2019 build year. It should be noted that No-Action developments which are smaller than the thresholds for Zone 2

shown in Table 16-1 of the *CEQR Technical Manual* were considered to be part of the background growth. The list of No-Action developments is shown in Table 12-8 and the resulting No-Action traffic volumes are shown in Figure 12-8 for the weekday AM, midday, PM and Saturday midday peak hours.

Table 12-8: 2019 No-Action Sites

Site	Address/Location	Dwelling Units	Local Retail SF	Community Facility SF	Assignment
1	Bed-Stuy North Rezoning Projected Site G	359	23,635	10,350	Vehicle and Walk Only Trips
2	310 Rutledge St	18			Background Growth
3	221 Middleton St	13			Background Growth
4	87-99 Union Ave	0		32,530	Vehicle and Pedestrian Trips
5	59-63 & 51-55 Walton St	62			Background Growth
6	59 Walton St Rezoning projected developments	257	27,625	2,494	Vehicle and Pedestrian Trips
7	73-85 Gerry St & 376-382 Wallabout St	30			Background Growth
8	640 Broadway	7		922	Background Growth
9	16-20 Bartlett St	10			Background Growth
10	14 Cook St	2	1,475		Background Growth
11	163 Middleton St	3		2,294	Background Growth
12	543 Marcy Ave	6			Background Growth
13	685-7 Flushing Ave	120		16,176	Background Growth
14	120 Union Av	96	1,750		Background Growth
15	100 Union Ave	34	466		Background Growth
16	311-13 Wallabout St	3			Background Growth
17	196 Middleton St	10			Background Growth
18	151-153 Lorimer St	7			Background Growth
19	299-301 Wallabout St	14			Background Growth
20	54-56 Throop Ave	31			Background Growth
21	Bwy Triangle Projected City-owned (Sites 5,6,10,11,12,13)	488	3,200	16,000	Vehicle and Pedestrian Trips
	TOTAL	1,570	58,151	80,766	

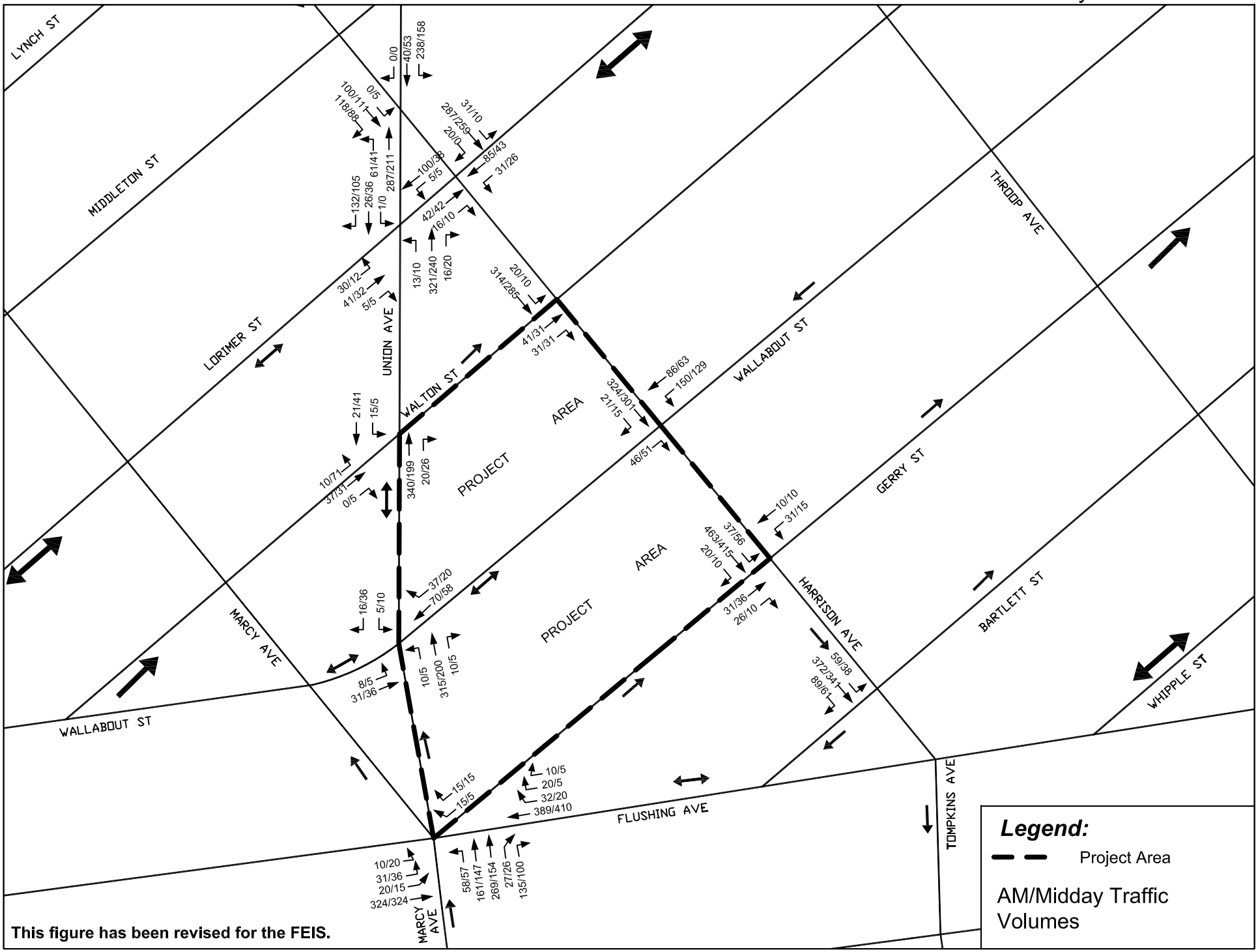
No-Action Improvement Measures

As the developments associated with the *Broadway Triangle Rezoning FEIS* are included in the No-Action condition, it is expected that NYCDOT will make the signal timing adjustments shown in Table 12-9 as a result of the *Broadway Triangle FEIS* mitigation measures. In addition, it was determined that additional improvements were or would be implemented by NYCDOT. These include the following recommendations from the *South Williamsburg Rezoning Transportation Study*:

- Geometric changes to the intersections of Union Avenue and Harrison Avenue, Lorimer Street and Union Avenue, and Lorimer Street and Harrison Avenue. These include the repainting of the triangular-shaped island in the middle of these three intersections, the addition of crosswalks on the west side of Harrison Avenue and the north side of Lorimer

Figure 12-8a

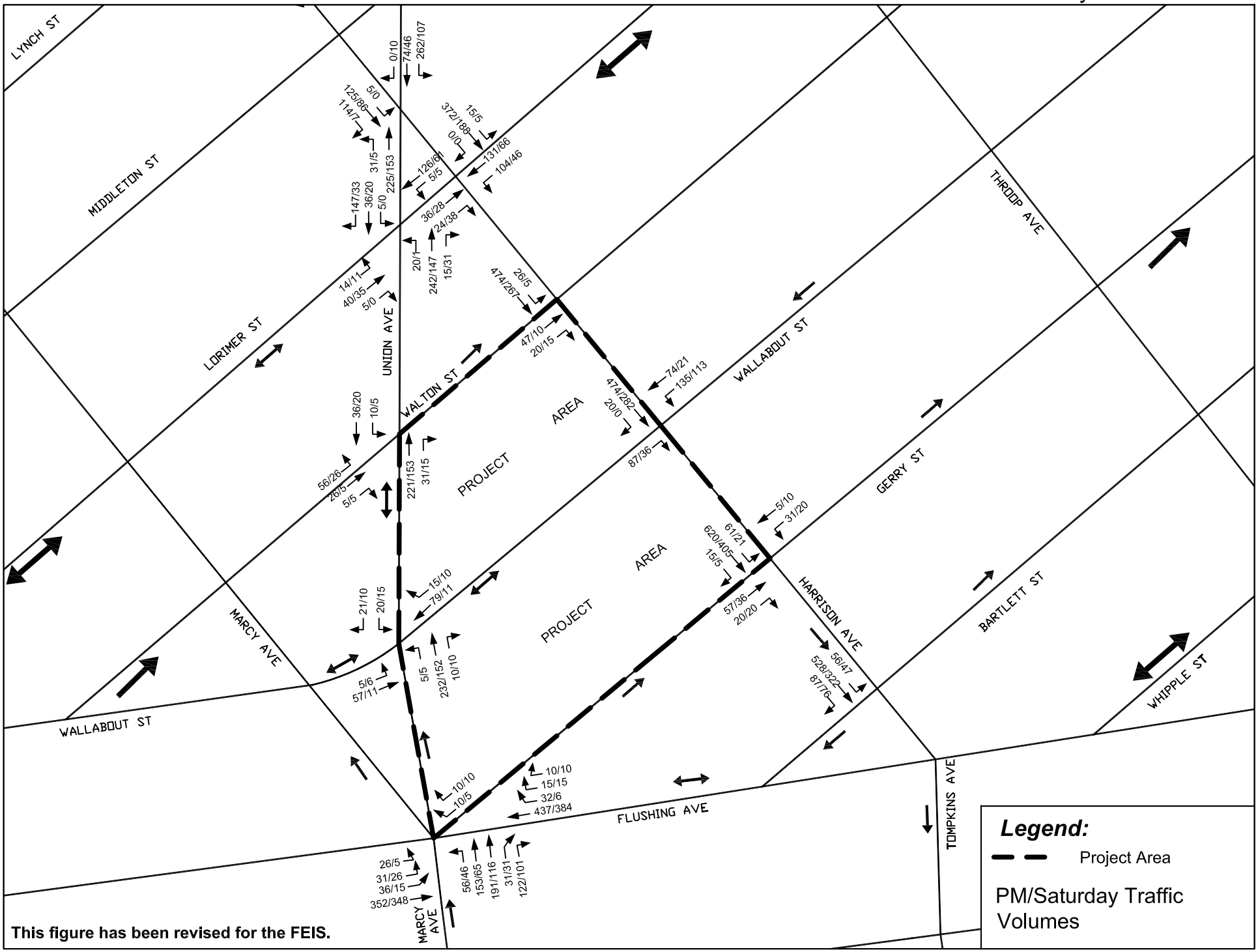
2019 No-Action AM/Midday Traffic Volumes



This figure has been revised for the FEIS.

Figure 12-8b

2019 No-Action PM/Saturday Traffic Volumes



This figure has been revised for the FEIS.

Street, the striping of a parking lane on the west side of Union Avenue, and the following curb extensions:
  - The northwest corner of Harrison Avenue at Union Avenue
  - The northwest corner of Lorimer Street at Union Avenue, and
  - The east side of Harrison Avenue between Union Avenue at Lorimer Street
- The prohibition of right turns on the westbound approach of the intersection of Lorimer Street at Union Avenue and at the northbound approach of the intersection of Lorimer Street at Harrison Avenue
- ~~The conversion of Gerry Street from two-way to one-way eastbound~~
- ~~Geometric changes to the intersection of Flushing Avenue/Gerry Street at Union/Marcy Avenues, including the striping of new high-visibility crosswalks and a large curb extension on the northeast corner between Union Avenue and Gerry Street.~~

Table 12-9: No-Action Intersection Improvements from the *Broadway Triangle FEIS* Mitigation

Intersection	Phase	Existing signal timing (AM/Midday/PM/Sat. Midday)	No-Action signal timing (AM/Midday/PM/Sat. Midday)	Improvement Description
Flushing Avenue/Gerry Street at Union/Marcy Avenues	EB/WB	77/58/77/58	80/58/80/58	Transfer 3 seconds of green time from NB phase to NB EB/WB phase in the weekday AM and PM peak hours.
	NB	43/32/43/32	40/32/40/32	
Gerry Street at Harrison Avenue	EB/WB	48/48/48/48	44/~~48~~36/44/~~48~~36	Transfer 4 seconds of green time from EB/WB phase to SB phase in the weekday AM and PM peak hours.
	SB	72/72/72/72	76/~~72~~54/76/~~72~~54	
Bartlett Street at Harrison Avenue	SB	72/54/72/54	72/54/72/54	Install "No Standing 7-10 AM, 4-7PM, Monday – Friday" on west curb of southbound approach.
	Peds	48/36/48/36	48/36/48/36	

In addition, after the November 2015 counts, a two-phase signal was installed at the intersection of Wallabout Street and Harrison Avenue as well as Wallabout Street and Union Avenue. In addition, the signal at Gerry Street and Harrison Avenue was modified in November 2015 in the weekday and Saturday midday peak hours with a 90 second cycle. The phasing is shown above in Table 12-9.

LOS Analysis

Table 12-10 shows the results of the 2019 No-Action LOS analysis, and compares them with the results of the 2015 Existing LOS analysis. As shown in Table 12-10, the following five lane groups would be congested in one or more peak hours:

Table 12-10: 2019 No-Action Traffic Levels of Service

	LANE GROUP	WEEKDAY AM PEAK HOUR						WEEKDAY MD PEAK HOUR						WEEKDAY PM PEAK HOUR						SATURDAY MD PEAK HOUR					
		Existing			No-Action			Existing			No-Action			Existing			No-Action			Existing			No-Action		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Harrison Avenue (E-W) @	EB - LTR	0.89	74.9	E	0.92	80.6	F *	0.71	52.6	D	0.93	73.8	E *	0.79	59.9	E	0.84	64.9	E *	0.26	37.8	D	0.36	34.4	C
Union Avenue (N-S)	NB - LT	-	-	-	0.67	38.2	D	-	-	-	0.62	33.9	C	-	-	-	0.46	31.5	C	-	-	-	0.36	27.3	C
	NB - LTR	0.60	35.4	D	-	-	-	0.50	34.0	C	-	-	-	0.44	31.0	C	-	-	-	0.28	29.2	C	-	-	-
	SB - L	1.05	111.7	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SB - TR	0.11	26.9	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SB - LTR	-	-	-	1.48	280.7	F *	0.91	72.6	E	1.23	172.2	F *	1.05	102.2	F	1.20	154.3	F *	0.49	35.4	D	0.67	40.2	D
2. Lorimer Street (E-W) @	EB - LTR	0.23	37.9	D	0.39	42.2	D	0.17	36.4	D	0.17	23.6	C	0.21	37.3	D	0.27	38.5	D	0.14	36.0	D	0.17	23.7	C
Union Avenue (N-S)	WB - LT	-	-	-	0.29	38.2	D	-	-	-	0.10	22.5	C	-	-	-	0.35	39.1	D	-	-	-	0.14	22.9	C
	WB - LTR	0.31	38.5	D	-	-	-	0.14	35.6	D	-	-	-	0.34	39.0	D	-	-	-	0.17	36.1	D	-	-	-
	NB - LTR	0.78	46.7	D	0.81	49.1	D	0.66	39.6	D	0.82	45.9	D	0.66	39.6	D	0.68	40.5	D	0.39	31.4	C	0.49	30.3	C
	SB - LTR	0.21	9.1	A	0.25	9.5	A	0.18	8.8	A	0.23	11.0	B	0.26	9.6	A	0.29	10.0	A	0.07	7.8	A	0.09	9.6	A
3. Walton Street (EB) @	EB - LTR	0.10	26.1	C	0.10	23.5	C	0.25	28.2	C	0.25	19.8	B	0.21	27.6	C	0.20	25.0	C	0.08	25.8	C	0.08	17.7	B
Union Avenue (N-S)	NB - TR	0.47	17.8	B	0.53	21.4	C	0.29	14.9	B	0.34	14.8	B	0.34	15.5	B	0.38	18.2	B	0.21	13.8	B	0.25	13.6	B
	SB - LT	0.07	12.4	B	0.07	14.3	B	0.07	12.4	B	0.08	12.0	B	0.07	12.3	B	0.07	14.3	B	0.04	12.0	B	0.04	11.6	B
4. Wallabout Street (E-W) @	EB - LT	0.10	13.6	B	0.09	24.6	C	0.08	11.0	B	0.08	18.8	B	0.13	12.5	B	0.12	24.9	C	0.03	10.4	B	0.03	18.3	B
Union Avenue (N-S)	WB - TR	0.21	13.2	B	0.27	27.5	C	0.12	10.9	B	0.19	20.3	C	0.18	12.5	B	0.23	26.8	C	0.03	9.9	A	0.06	18.6	B
(Unsignalized in Existing)	NB - LTR	0.01	7.4	A	0.50	19.4	B	0.00	7.4	A	0.30	13.1	B	0.00	7.3	A	0.37	16.9	B	0.00	7.3	A	0.24	12.4	B
	SB - LR	0.01	8.7	A	0.05	13.2	B	0.01	8.0	A	0.11	11.3	B	0.02	8.1	A	0.10	13.7	B	0.01	7.8	A	0.06	10.8	B
5. Flushing Avenue - Gerry Street (E-W) @	EB - LT	0.58	18.0	B	0.59	16.9	B	0.64	16.5	B	0.69	18.1	B	0.77	27.1	C	0.80	26.9	C	0.48	12.6	B	0.51	13.0	B
Marcy Avenue - Union Avenue (NB)	WB - TR (Flushing)	0.52	16.1	B	0.54	14.9	B	0.49	12.5	B	0.52	13.1	B	0.52	15.8	B	0.53	14.7	B	0.41	11.3	B	0.44	11.6	B
(Gerry Street Unsignalized)	WB - R (Gerry)	0.07	12.8	B	0.12	17.9	C	0.03	9.6	A	0.04	12.9	B	0.04	10.8	B	0.06	15.3	C	0.02	9.8	A	0.03	12.6	B
	NB - LTR	1.00	73.6	E	1.19	142.0	F *	0.73	34.3	C	0.82	39.7	D	0.71	41.7	D	0.87	54.4	D	0.56	29.6	C	0.64	31.9	C
6. Lorimer Street (E-W) @	EB - TR	0.20	37.0	D	0.21	36.9	D	0.18	36.7	D	0.13	22.8	C	0.25	38.1	D	0.22	37.1	D	0.33	40.9	D	0.26	25.2	C
Harrison Avenue (SB)	WB - LT	0.47	43.1	D	0.47	43.4	D	0.26	38.1	D	0.21	24.1	C	0.82	63.0	E	0.90	74.7	E *	0.40	41.1	D	0.33	26.0	C
	SB - LTR	0.40	11.1	B	0.42	11.3	B	0.26	9.4	A	0.32	11.7	B	0.33	10.1	B	0.36	10.4	B	0.16	8.5	A	0.20	10.4	B
7. Walton Street (EB) @	EB - TR	0.18	14.2	B	0.22	16.1	C	0.11	11.3	B	0.14	12.8	B	0.18	15.2	C	0.24	18.7	C	0.05	11.6	B	0.06	12.6	B
Harrison Avenue (SB)	SB - LT	0.02	8.3	A	0.02	8.5	A	0.01	7.6	A	0.01	7.8	A	0.02	7.8	A	0.03	8.0	A	0.00	7.3	A	0.00	7.4	A
(Unsignalized)																									
8. Wallabout Street (E-W) @	EB - R	0.09	11.0	B	0.20	28.1	C	0.07	9.6	A	0.16	21.4	C	0.15	11.0	B	0.29	29.4	C	0.05	9.7	A	0.12	20.8	C
Harrison Avenue (SB)	WB - LT	0.61	25.8	D	0.69	41.8	D	0.35	14.1	B	0.54	28.3	C	0.51	21.3	C	0.56	36.0	D	0.23	12.4	B	0.38	24.8	C
(Unsignalized in Existing)	SB - TR	-	-	-	0.56	20.2	C	-	-	-	0.50	15.3	B	-	-	-	0.76	27.6	C	-	-	-	0.44	14.1	B
9. Gerry Street (E-W) @	EB - TR	0.17	27.2	C	0.20	30.4	C	0.13	20.8	C	0.13	20.8	C	0.20	27.6	C	0.23	30.9	C	0.15	21.1	C	0.15	21.2	C
Harrison Avenue (SB)	WB - LT	0.13	26.7	C	0.16	30.0	C	0.08	20.2	C	0.08	20.3	C	0.13	26.6	C	0.16	29.9	C	0.09	20.4	C	0.10	20.5	C
	SB - LTR	0.67	23.1	C	0.70	21.6	C	0.66	18.6	B	0.72	20.7	C	0.90	38.1	D	0.93	39.1	D *	0.52	15.3	B	0.57	16.3	B
10. Bartlett Street (E-W) @	SB - LT	-	-	-	0.71	25.7	C	-	-	-	-	-	-	-	-	-	0.88	36.7	D	-	-	-	-	-	-
Harrison Avenue (SB)	SB - R	-	-	-	0.23	14.6	B	-	-	-	-	-	-	-	-	-	0.21	14.2	B	-	-	-	-	-	-
	SB - LTR	0.84	35.2	D	-	-	-	0.69	20.5	C	0.77	24.0	C	0.98	54.9	D	-	-	-	0.73	22.5	C	0.80	26.5	C

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)
This table has been revised for the FEIS.

- The eastbound left-through-right lane group at the signalized intersection of Union Avenue at Harrison Avenue would deteriorate to LOS F with a v/c ratio of 0.92 and delay of 80.6 seconds in the weekday AM peak hour. In the weekday midday peak hour, this lane group would deteriorate to a LOS E with a v/c ratio of 0.93 and delay of 73.8 seconds. Lastly, this lane group would continue to operate at LOS E with a v/c ratio of 0.79 and delay of 64.9 seconds in the weekday PM peak hour.
- The southbound left-through right lane group at the signalized intersection of Union Avenue at Harrison Avenue would operate at LOS F with v/c ratios of 1.48, 1.23, and 1.20 and delays of 280.7, 172.2, and 154.3 seconds in the weekday AM, midday, and PM peak hours, respectively. This lane group would deteriorate from LOS E in the weekday midday.
- The northbound left-through-right lane group at the signalized intersection of Flushing Avenue/Gerry Street at Union/Marcy Avenues would deteriorate to LOS F with a v/c ratio of ~~1.17~~1.19 and delay of ~~134.4~~142.0 seconds in the weekday AM peak hour.
- The westbound left-through lane group at the signalized intersection of Lorimer Street and Harrison Avenue would continue to operate at LOS E with a v/c ratio of 0.90 and delay of 74.7 seconds in the weekday PM peak hour.
- The southbound left-through lane group at the signalized intersection of Gerry Street at Harrison Avenue would continue to operate at LOS D with a v/c ratio of ~~0.94~~0.93 and delay of ~~41.4~~39.1 seconds in the weekday PM peak hour.

It should be noted that geometric changes to the roadway network would introduce, eliminate or alter lane groups at one or more intersections.

In total, three, two, four, and zero lane groups are congested in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Out of ~~28-29~~29-31 lane groups, 18, 21, 18, and 27 lane groups operate at LOS A, B, or C in the weekday AM, midday, PM, and Saturday midday peak hours respectively, seven, two, eight, and one lane groups operate at LOS D in the weekday AM, midday, PM, and Saturday midday peak hours respectively, zero, one, two, and zero lane groups operate at LOS E in the weekday AM, midday, PM, and Saturday midday peak hours respectively, and three, one, one, and zero lane groups operate at LOS F in the weekday AM, midday, PM, and Saturday midday peak hours respectively.

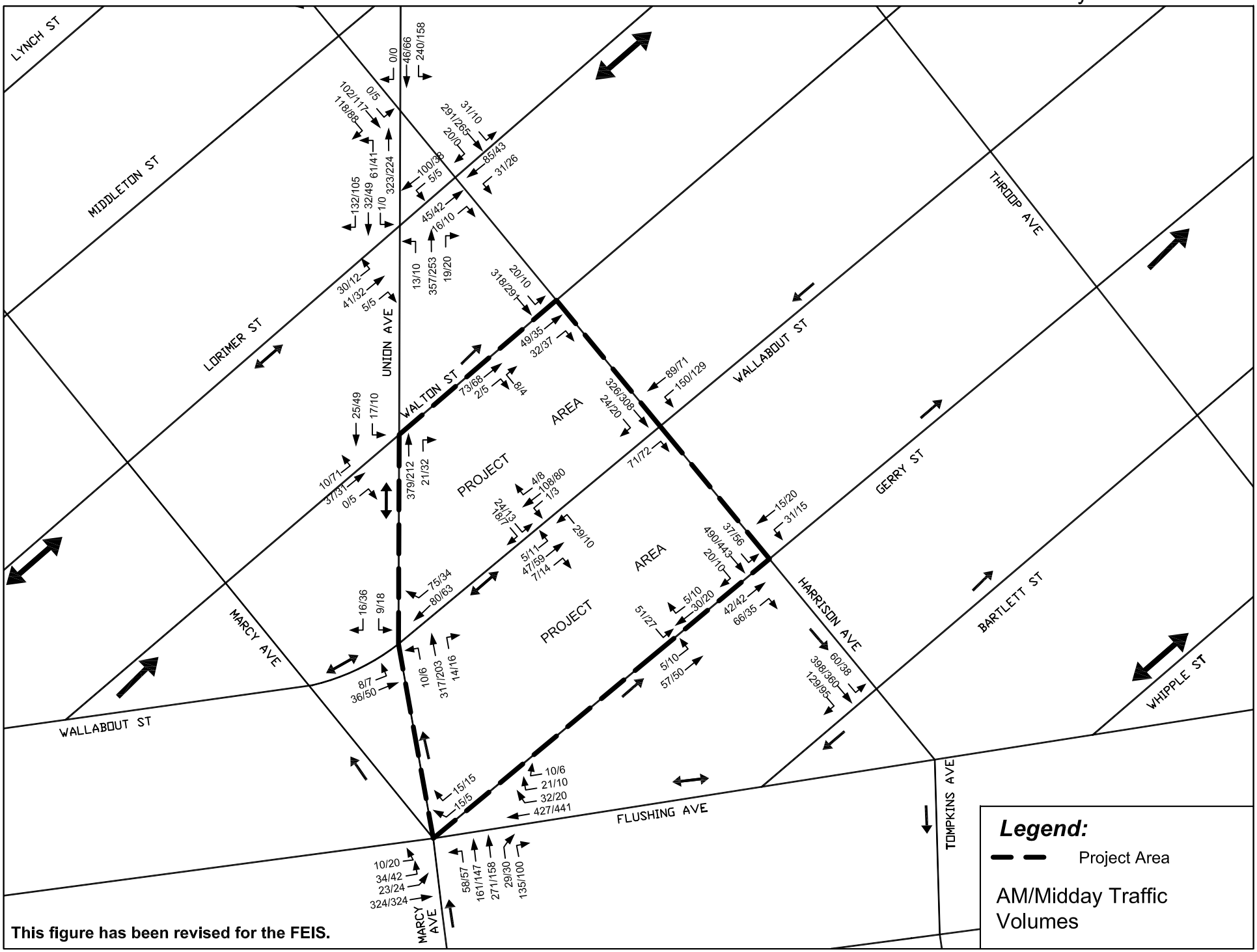
Future With the Proposed Action (With-Action Condition)

As described in Attachment A, "Project Description," under the proposed action/RWCDS, the project area is expected to consist of 1,147 DUs and 64,807 sf of local retail. Required accessory parking (a total of 427 spaces) would be provided in on-site garages.

As discussed previously, travel demand was calculated separately for each land use component that would be developed as part of the proposed action/RWCDS. Table 12-1, above, shows the transportation planning factors used to estimate the demand for both of the land uses associated with the proposed action/RWCDS, and Table 12-2b shows that the proposed action/RWCDS would generate approximately 167, 158, 206, and 199 vehicle trips (in and out combined) in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Figure 12-1 shows the assignment of traffic through the study area, and the With-Action traffic volumes are shown in Figure 12-9.

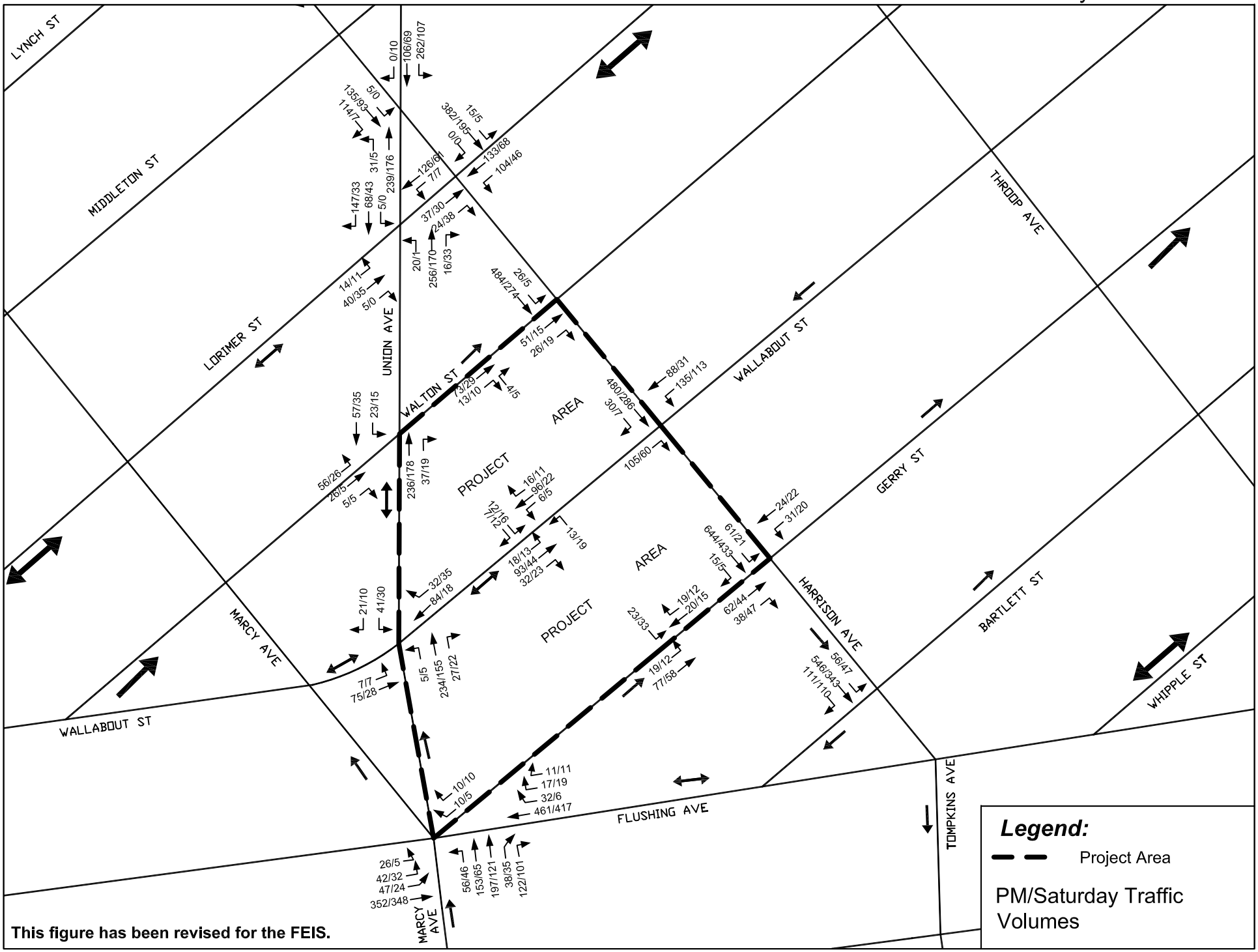
Figure 12-9a

2019 With-Action AM/Midday Traffic Volumes



This figure has been revised for the FEIS.

2019 With-Action PM/Saturday Traffic Volumes



This figure has been revised for the FEIS.

Impact Criteria

The identification of significant adverse traffic impacts at analyzed intersections is based on criteria proposed in the *CEQR Technical Manual*. According to the *CEQR Technical Manual*:

- If a lane group under the With-Action condition is operating at LOS A, B, C, or marginally acceptable LOS D (delay less than or equal to 45.0 seconds for signalized intersections or 30.0 seconds for unsignalized intersections), a significant adverse impact has not occurred.
- If a lane group operating at LOS A, B, C, or marginally acceptable LOS D in the No-Action condition deteriorates to worse than mid-LOS D (greater than 45.0 seconds for signalized intersections or 30.0 seconds for unsignalized intersections), E, or F under the With-Action condition, a significant adverse impact has occurred.
- If a lane group operates at worse than mid-LOS D in the No-Action, an increase in delay of 5.0 seconds or greater is considered a significant adverse impact.
- If a lane group operates at LOS E in the No-Action Condition, an increase in delay of 4.0 seconds or greater is considered a significant adverse impact.

If a lane group operates at LOS F in the No-Action condition, an increase in delay of 3.0 seconds or greater is considered a significant adverse impact. In addition, at unsignalized intersections, the *CEQR Technical Manual* states that there must be at least 90 passenger car equivalents (PCEs) on a minor street approach for a significant adverse impact to be triggered.

LOS Analysis

Table 12-11 shows the results of the 2019 With-Action LOS analysis, and compares them with the results of the 2019 No-Action LOS analysis. As shown in Table 12-11, out of ~~28-29~~29-31 lane groups, ~~19, 22, 15, and 24~~20, 23, 16, and 26 lane groups operate at LOS A, B, or C in the weekday AM, midday, PM, and Saturday midday peak hours respectively, ~~five, four, eight~~seven, three, nine, and four lane groups operate at LOS D in the weekday AM, midday, PM, and Saturday midday peak hours respectively, ~~two, one, four~~one, three, three, and zero lane groups operate at LOS E in the weekday AM, midday, PM, and Saturday midday peak hours respectively, and three, one, ~~two~~three, and zero lane groups operate at LOS F in the weekday AM, midday, PM, and Saturday midday peak hours respectively.

In addition, as shown in Table 12-11, the following intersection lane groups would experience significant adverse impacts based on the *CEQR Technical Manual* criteria detailed above:

Harrison Avenue at Union Avenue

- The eastbound left-through-right lane group would operate at LOS F with v/c ratios of 0.95, and 0.87 as well as 79.0, and 69.0 seconds of delay in the weekday midday and PM peak hours respectively, which correspond to increases of 5.2, and 4.1 seconds of delay in the weekday midday and PM peak hours respectively relative to the No-Action condition.

Table 12-11: 2019 With-Action Traffic Levels of Service

	LANE GROUP	WEEKDAY AM PEAK HOUR						WEEKDAY MD PEAK HOUR						WEEKDAY PM PEAK HOUR						SATURDAY MD PEAK HOUR					
		No-Action			With-Action			No-Action			With-Action			No-Action			With-Action			No-Action			With-Action		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Harrison Avenue (E-W) @	EB - LTR	0.92	80.6	F	0.93	82.0	F	0.93	73.8	E	0.95	79.0	E *	0.84	64.9	E	0.87	69.0	E *	0.36	34.4	C	0.38	34.9	C
Union Avenue (N-S)	NB - LT	0.67	38.2	D	0.74	41.1	D	0.62	33.9	C	0.65	35.1	D	0.46	31.5	C	0.49	32.0	C	0.36	27.3	C	0.42	28.2	C
	SB - LTR	1.48	280.7	F	1.62	342.1	F *	1.23	172.2	F	1.32	204.3	F *	1.20	154.3	F	1.30	194.4	F *	0.67	40.2	D	0.79	48.8	D *
2. Lorimer Street (E-W) @	EB - LTR	0.39	42.2	D	0.39	42.3	D	0.17	23.6	C	0.18	23.7	C	0.27	38.5	D	0.27	38.6	D	0.17	23.7	C	0.17	23.7	C
Union Avenue (N-S)	WB - LT	0.29	38.2	D	0.29	38.2	D	0.10	22.5	C	0.11	22.5	C	0.35	39.1	D	0.36	39.4	D	0.14	22.9	C	0.15	23.0	C
	NB - LTR	0.81	49.1	D	0.90	59.5	E *	0.82	45.9	D	0.86	50.8	D	0.68	40.5	D	0.72	42.7	D	0.49	30.3	C	0.56	32.0	C
	SB - LTR	0.25	9.5	A	0.26	9.7	A	0.23	11.0	B	0.28	11.7	B	0.29	10.0	A	0.35	10.8	B	0.09	9.6	A	0.13	9.9	A
3. Walton Street (EB) @	EB - LTR	0.10	23.5	C	0.10	23.5	C	0.25	19.8	B	0.27	20.0	C	0.20	25.0	C	0.21	25.1	C	0.08	17.7	B	0.09	17.7	B
Union Avenue (N-S)	NB - TR	0.53	21.4	C	0.59	22.9	C	0.34	14.8	B	0.38	15.4	B	0.38	18.2	B	0.42	18.9	B	0.25	13.6	B	0.30	14.2	B
	SB - LT	0.07	14.3	B	0.09	14.5	B	0.08	12.0	B	0.11	12.2	B	0.07	14.3	B	0.14	15.0	B	0.04	11.6	B	0.09	12.0	B
4. Wallabout Street (E-W) @	EB - LT	0.09	24.6	C	0.10	24.7	C	0.08	18.8	B	0.11	19.1	B	0.12	24.9	C	0.16	25.5	C	0.03	18.3	B	0.07	18.7	B
Union Avenue (N-S)	WB - TR	0.27	27.5	C	0.42	30.7	C	0.19	20.3	C	0.25	21.3	C	0.23	26.8	C	0.31	28.2	C	0.06	18.6	B	0.16	20.0	B
	NB - LTR	0.50	19.4	B	0.51	19.7	B	0.30	13.1	B	0.33	13.5	B	0.37	16.9	B	0.41	17.7	B	0.24	12.4	B	0.27	12.8	B
	SB - LR	0.05	13.2	B	0.07	13.4	B	0.11	11.3	B	0.14	11.7	B	0.10	13.7	B	0.17	14.8	B	0.06	10.8	B	0.11	11.3	B
5. Flushing Avenue - Gerry Street (E-W) @	EB - LT	0.59	16.9	B	0.62	17.8	B	0.69	18.1	B	0.80	24.4	C	0.80	26.9	C	0.96	49.3	D *	0.51	13.0	B	0.56	14.1	B
Marcy Avenue - Union Avenue (NB)	WB - TR (Flushing)	0.54	14.9	B	0.59	16.1	B	0.52	13.1	B	0.57	14.1	B	0.53	14.7	B	0.57	15.3	B	0.44	11.6	B	0.48	12.3	B
(Gerry Street Unsignalized)	WB - R (Gerry)	0.12	17.9	C	0.23	33.5	D	0.04	12.9	B	0.18	42.8	E	0.06	15.3	C	0.24	52.0	F	0.03	12.6	B	0.10	29.1	D
	NB - LTR	1.19	142.0	F	1.25	166.8	F *	0.82	39.7	D	0.95	57.4	E *	0.87	54.4	D	0.99	75.5	E *	0.64	31.9	C	0.75	36.9	D
6. Lorimer Street (E-W) @	EB - TR	0.21	36.9	D	0.22	37.1	D	0.13	22.8	C	0.13	22.9	C	0.22	37.1	D	0.23	37.4	D	0.26	25.2	C	0.27	25.5	C
Harrison Avenue (SB)	WB - LT	0.47	43.4	D	0.48	43.6	D	0.21	24.1	C	0.21	24.2	C	0.90	74.7	E	0.93	82.6	F *	0.33	26.0	C	0.35	26.4	C
	SB - LTR	0.42	11.3	B	0.42	11.4	B	0.32	11.7	B	0.33	11.8	B	0.36	10.4	B	0.37	10.5	B	0.20	10.4	B	0.21	10.5	B
7. Walton Street (EB) @	EB - TR	0.22	16.1	C	0.33	22.4	C	0.14	12.8	B	0.32	25.0	C	0.24	18.7	C	0.46	36.9	E *	0.06	12.6	B	0.16	21.2	C
Harrison Avenue (SB)	SB - LT	0.02	8.5	A	0.02	8.8	A	0.01	7.8	A	0.01	8.8	A	0.03	8.0	A	0.03	8.5	A	0.00	7.4	A	0.00	7.9	A
(Unsignalized)																									
8. Wallabout Street (E-W) @	EB - R	0.20	28.1	C	0.39	33.8	C	0.16	21.4	C	0.36	26.2	C	0.29	29.4	C	0.52	37.9	D	0.12	20.8	C	0.30	24.7	C
Harrison Avenue (SB)	WB - LT	0.69	41.8	D	0.80	51.4	D *	0.54	28.3	C	0.73	38.9	D	0.56	36.0	D	0.75	47.4	D *	0.38	24.8	C	0.56	31.1	C
	SB - TR	0.56	20.2	C	0.58	20.7	C	0.50	15.3	B	0.53	15.9	B	0.76	27.6	C	0.79	30.1	C	0.44	14.1	B	0.46	14.5	B
9. Gerry Street (E-W) @	EB - TR	0.20	30.4	C	0.40	34.9	C	0.13	20.8	C	0.24	22.5	C	0.23	30.9	C	0.32	32.7	C	0.15	21.2	C	0.27	22.9	C
Harrison Avenue (SB)	WB - LT	0.16	30.0	C	0.19	30.4	C	0.08	20.3	C	0.11	20.7	C	0.16	29.9	C	0.22	31.1	C	0.10	20.5	C	0.13	21.0	C
	SB - LTR	0.70	21.6	C	0.73	23.1	C	0.72	20.7	C	0.77	23.1	C	0.93	39.1	D	0.96	45.8	D *	0.57	16.3	B	0.61	17.2	B
10. Bartlett Street (E-W) @	SB - LT	0.71	25.7	C	0.76	28.0	C	-	-	-	-	-	-	0.88	36.7	D	0.91	40.4	D	-	-	-	-	-	-
Harrison Avenue (SB)	SB - R	0.23	14.6	B	0.34	16.5	B	-	-	-	-	-	-	0.21	14.2	B	0.28	15.4	B	-	-	-	-	-	-
	SB - LTR	-	-	-	-	-	-	0.77	24.0	C	0.89	34.6	C	-	-	-	-	-	-	0.80	26.5	C	0.93	40.0	D

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)
This table has been revised for the FEIS.

- The southbound left-through-right lane group would operate at LOS F with v/c ratios of 1.62, 1.32, and 1.30 as well as 342.1, 204.3, and 194.4 seconds of delay in the weekday AM, midday and PM peak hours respectively, which correspond to increases of 61.4, 32.1 and 40.1 seconds of delay in the weekday AM, midday and PM peak hours respectively relative to the No-Action condition. In addition, this lane group would continue to operate at LOS D with a v/c ratio of 0.79 and 48.8 seconds of delay in the Saturday midday peak hour, which corresponds to an increase of 8.6 seconds of delay relative to the No-Action condition.

Lorimer Street at Union Avenue

- The northbound left-through-right lane group would operate at LOS E with a v/c ratio of 0.90 and with 59.5 seconds of delay in the weekday AM peak hour, which corresponds to an increase of 10.4 seconds of delay relative to the No-Action condition.

Flushing Avenue/Gerry Street at Union/Marcy Avenues

- The eastbound left-through lane group would operate at LOS D with a v/c ratio of 0.96 and with 49.3 seconds of delay in the weekday PM peak hour, which corresponds to an increase of 22.4 seconds of delay relative to the No-Action condition.
- The northbound left-through-right lane group would operate at LOS F, D, and E with v/c ratios of ~~1.22, 0.94, and 0.97~~1,25, 0.95, and 0.99 and with ~~157.3, 54.3, and 71.2~~166.8, 57.4, and 75.5 seconds of delay in the weekday AM, midday, and PM peak hours respectively, which correspond to increases of ~~22.9, 15.7, and 18.3~~24.8, 17.1, and 21.1 seconds of delay in the weekday AM, midday, and PM peak hours respectively relative to the No-Action condition.

Lorimer Street at Harrison Avenue

- The westbound left-through lane group would operate at LOS F with a v/c ratio of 0.93 and with 82.6 seconds of delay in the weekday PM peak hour, which corresponds to an increase of 7.9 seconds of delay relative to the No-Action condition.

Walton Street at Harrison Avenue

- The eastbound through-right lane group would operate at LOS E with a v/c ratio of 0.46 and with 36.9 seconds of delay in the weekday PM peak hour, which corresponds to an increase of 18.2 seconds of delay relative to the No-Action condition.

Wallabout Street at Harrison Avenue

- The westbound left-through lane group would operate at LOS ~~E, D, and E~~ with v/c ratios of ~~0.96, 0.85, and 0.93~~0.80 and 0.87 and with ~~76.5, 49.1, and 70.3~~51.4 and 47.4 seconds of delay in the weekday AM~~, midday,~~ and PM peak hours respectively, which correspond to increases of ~~25.8, 18.6, and 30.4~~9.6 and 11.4 seconds of delay in the weekday AM, midday, and PM peak hours respectively relative to the No-Action condition.

Gerry Street at Harrison Avenue

- The southbound left-through-right lane group would operate at LOS D with a v/c ratio of ~~0.97~~0.96 and with ~~48.6~~45.8 seconds of delay in the weekday PM peak hour, which corresponds to an increase of ~~7.2~~6.7 seconds of delay relative to the No-Action condition.

It should be noted that the westbound right turn from Gerry Street at the intersection of Flushing Avenue/Gerry Street at Union/Marcy Avenues would operate at LOS D, E, and F with v/c ratios of 0.23, 0.18, and 0.24 and with 33.5, 42.8, and 52.0 seconds of delay in the weekday AM, midday and PM peak hours respectively, which correspond to increases of 15.6, 29.9, and 36.7 seconds of delay respectively relative to the No-Action condition. However, there would only be 39, 21, 22, and 17 PCEs operating in this lane group in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Because this movement would operate with less than 90 PCEs in all four peak hours, this would not be a significant adverse impact as per *CEQR Technical Manual* critera.

In total, four, ~~four,~~three, eight, and one lane groups at four, ~~three,~~two six, and one intersections would experience significant adverse impacts in the weekday AM, midday, PM, and Saturday midday peak hours respectively. Seven of the ten intersections would experience a significant adverse impact in at least one peak hour. Proposed measures to mitigate these significant adverse impacts will be discussed in Chapter 19, "Mitigation."

E. RAIL TRANSIT

As shown in Figure 12-3 and discussed above in Section C of this attachment, there are two subway stations within walking distance of the project area: the Flushing Avenue station on the IND Crosstown) Line (G train) at Flushing Avenue/Gerry Street and Union/Marcy Avenues and the Lorimer Street station on the BMT Jamaica Line (J and M trains).

As discussed previously, the proposed action/RWCDS would generate 473 and 540 subway and commuter rail trips in the weekday AM and PM peak hours respectively as shown in Table 12-2a. The majority of these trips – 308 and 355 trips in the AM and PM peak hours respectively – would use the Lorimer Street subway station. To the west, the J and M trains cross the Williamsburg Bridge, with J trains serving Lower Manhattan via Centre and Nassau Streets before terminating at Broad Street (Chambers Street on weekends), and M trains serving Midtown Manhattan and northern Queens via Sixth Avenue (M trains terminate at Essex Street on weekends, where F service is available). To the east, J trains serve neighborhoods such as Bushwick, Bedford-Stuyvesant, East New York, Cypress Hills, and Richmond Hill, Queens via Broadway and Jamaica Avenue before terminating at Jamaica Center, while M trains serve neighborhoods such as Bushwick in Brooklyn and Ridgewood and Maspeth in Queens via Myrtle Avenue before terminating at Metropolitan Avenue (M trains operate as a shuttle between the Myrtle Avenue J station and Metropolitan Avenue overnight).

The Lorimer Street subway station is composed of three tracks and two side platforms – one serving the Queens-bound (eastbound) track and one serving the Manhattan-bound (westbound

track – on an elevated structure over Broadway (the center track, which is used by J trains during rush hours in the peak direction as well as special rush hour Z trains, does not serve this station). The main entrance and fare control, which contains an in-system pedestrian link between the two platforms are at the west end of the station at Lorimer Street, and there are additional entrances and fare controls at the east end of the station at Wallabout Street, although there is no in-system pedestrian link at these entrances. As shown in Figure 12-3, based on proximity to the project area, it is anticipated that most, if not all, of the proposed action/RWCDS's demand would utilize stairways S1 and P1 on the northwest corner of Wallabout Street and Broadway to access/egress the Queens-bound platform and stairways S2 and P2 on the northeast corner of Wallabout Street and Broadway to access/egress the Manhattan-bound platform. Access to and from the Queens-bound platform is controlled by fare array J005-H2 and access to and from the Manhattan-bound platform is controlled by fare array J005-H1. Both fare arrays consist of a single high entry/exit turnstile (HEET) and an emergency exit door.

Analysis Methodology

The methodology for analyzing subway station pedestrian circulation elements such as stairs and fare control elements compares existing and projected pedestrian volumes with the element's design capacity to yield a v/c ratio. All analyses reflect pedestrian flow volumes over a 15-minute interval during each peak hour. Based on existing pedestrian volumes at the Lorimer Street subway station and the adjacent street network, the peak periods selected for analysis of subway station elements include 8:00 to 9:00 AM (weekday AM) and 5:00 to 6:00 PM (weekday PM). As the counts were performed in 2013 and 2014, a background growth rate of 0.50 percent per year was applied. In addition, a school located at 177 Harrison Avenue opened in this period and trips to and from this school were assigned in the weekday AM peak hour.

Under *CEQR Technical Manual* guidelines, the capacity of a stairway is based on four factors: the New York City Transit (NYCT) guideline capacity, the effective width of the stairway, a surging factor, and, if applicable, a friction or counter-flow factor. According to NYCT, the guideline capacity for a stairwell is 10 pedestrians per foot width per minute (pfm), and the effective width of a stair is the actual width adjusted to reflect pedestrian avoidance of end walls and banisters as well as center banisters. A surging factor is applied to pedestrian volumes to reflect conditions in which pedestrian flows tend to be concentrated (or "surged") during shorter periods within the 15 minute interval. This factor, which is based on the station's size and the proximity of the platform to the element being analyzed, can reduce capacity by up to 25 percent. Finally, a friction or counter-flow factor reducing capacity by 10 percent is applied in situations which involve pedestrian flows that are not predominantly in one direction.

Under *CEQR Technical Manual* guidelines the capacity of a turnstile is based on two factors: the NYCT guideline capacity and a surging factor of up to 25 percent. Table 12-12 shows the *CEQR Technical Manual* LOS criteria for all subway station elements. As shown in Table 12-12, there are six different categories of LOS ranging from LOS A, which is representative of freeflow, and LOS F, which is representative of congestion, queuing, and saturation.

Table 12-12: Subway Station Element LOS Criteria

LOS	Description	Range of v/c Ratios
A	Freeflow	0.00 to 0.45
B	Fluid flow	0.451 to 0.70
C	Fluid, but somewhat restricted flow	0.701 to 1.00
D	Crowded, walking speed restricted	1.001 to 1.33
E	Congested, some shuffling and queuing	1.331 to 1.67
F	Severely congested, queuing	Greater than 1.67

Source: *CEQR Technical Manual*

Existing Condition

Tables 12-13 and 12-14 show the results of LOS analysis at the analyzed fare arrays and stairways, respectively, at the east end of the Lorimer Street subway station. As shown in Tables 12-13 and 12-14, passenger volumes on stairs S1 and P1 and the adjacent fare array J005-H2 range from 59 passengers per 15 minutes (p15) during the weekday AM peak hour to 80 p15 during the weekday PM peak hour, and passenger volumes on stairs S2 and P2 and the adjacent fare array J005-H1 range from 40 p15 during the weekday PM peak hour to 151 p15 during the weekday AM peak hour. With these relatively low levels of demand, all stairways and fare arrays operate at LOS B or better in both peak hours.

Future Without the Proposed Action (No-Action Condition)

To determine demand at the Lorimer Street subway station under the 2019 No-Action Condition, an annual background growth rate of 0.50 percent per year from 2015 to 2019 was applied to existing volumes, as per *CEQR Technical Manual* criteria. This background growth accounts for the demand generated by smaller projects shown in Table 12-8. All the projects in Table 12-8 that required individual assignments were either assigned to the Lorimer Street entrances to the station or were assigned to stations at Hewes Street or Flushing Avenue as these would be closer to the sites.

Tables 12-15 and 12-16 show the results of the LOS analysis at the analyzed fare arrays and stairways respectively at the east end of the Lorimer Street subway station. As shown in Tables 12-15 and 12-16, based on this projected level of demand, all stairways and fare arrays would continue to operate at LOS B or better in both peak hours.

Future With the Proposed Action (With-Action Condition)

As discussed previously, the proposed action/RWCDS would generate approximately 473 and 540 subway and commuter rail trips in the weekday AM and PM peak hours respectively at the Lorimer Street subway station. This demand is assigned to stairs and fare arrays at the east end of the station (at Wallabout Street), converted to peak 15 minute volume, and added to the volume in the 2019 No-Action condition presented above.

Table 12-13: 2015 Existing Fare Array Levels of Service

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes Enter	Exit	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS
	Lorimer Street Fare Array								
J005-H1	1 High Entry-Exit Turnstile	AM	108	43	0.80	1.00	0.90	0.58	B
(Manhattan-Bound)		PM	27	13	0.80	1.00	0.90	0.15	A
J005-H2	1 High Entry-Exit Turnstile	AM	6	53	0.80	1.00	0.90	0.16	A
(Queens-Bound)		PM	8	72	0.80	1.00	0.90	0.22	A

Notes:
Based on 2014 *CEQR Technical Manual* methodology.
Volumes show n are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Table 12-14: 2015 Existing Stairway Levels of Service

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	Up	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS
S1	Entrance Stair @	AM	5.08	4.08	53	6	0.80	1.00	0.90	0.13	A
	Wallabout Street & Broadway	PM	5.08	4.08	72	8	0.80	1.00	0.90	0.18	A
	Queens-Bound only										
S2	Entrance Stair @	AM	5.08	4.08	43	108	0.80	1.00	0.90	0.29	A
	Wallabout Street & Broadway	PM	5.08	4.08	13	27	0.80	1.00	0.90	0.08	A
	Manhattan-Bound only										
P1	Queens-Bound Platform Stair	AM	5.08	4.08	53	6	0.75	1.00	0.90	0.14	A
		PM	5.08	4.08	72	8	0.75	1.00	0.90	0.19	A
P2	Manhattan-Bound Platform	AM	5.08	4.08	43	108	0.75	1.00	0.90	0.30	A
	Stair	PM	5.08	4.08	13	27	0.75	1.00	0.90	0.08	A

Notes:
Based on 2014 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 12-15: 2019 No-Action Fare Array Levels of Service

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS
	Lorimer Street Fare Array								
J005-H1	1 High Entry-Exit Turnstile	AM	110	43	0.80	1.00	0.90	0.59	B
(Manhattan-Bound)		PM	27	13	0.80	1.00	0.90	0.15	A
J005-H2	1 High Entry-Exit Turnstile	AM	6	54	0.80	1.00	0.90	0.17	A
(Queens-Bound)		PM	8	73	0.80	1.00	0.90	0.22	A

Notes:

Based on 2014 *CEQR Technical Manual* methodology.

Volumes shown are entering and exiting the station.

V/C - volume to capacity ratio.

LOS - level of service.

Table 12-16: 2019 No-Action Stairway Levels of Service

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS
S1	Entrance Stair @	AM	5.08	4.08	54	6	0.80	1.00	0.90	0.13	A
	Wallabout Street & Broadway	PM	5.08	4.08	73	8	0.80	1.00	0.90	0.18	A
	Queens-Bound only										
S2	Entrance Stair @	AM	5.08	4.08	43	110	0.80	1.00	0.90	0.30	A
	Wallabout Street & Broadway	PM	5.08	4.08	13	27	0.80	1.00	0.90	0.08	A
	Manhattan-Bound only										
P1	Queens-Bound Platform Stair	AM	5.08	4.08	54	6	0.75	1.00	0.90	0.14	A
		PM	5.08	4.08	73	8	0.75	1.00	0.90	0.19	A
P2	Manhattan-Bound Platform	AM	5.08	4.08	43	110	0.75	1.00	0.90	0.30	A
	Stair	PM	5.08	4.08	13	27	0.75	1.00	0.90	0.08	A

Notes:

Based on 2014 *CEQR Technical Manual* methodology.

V/C - volume to capacity ratio.

LOS - level of service.

Table 12-17: Subway Stairway Significant Impact Thresholds

With-Action v/c Ratio	WIT Threshold for a Significant Adverse Impact (Inches)
1.00 to 1.099	8
1.10 to 1.199	7
1.20 to 1.299	6
1.30 to 1.399	5
1.40 to 1.499	4
1.50 to 1.599	3
1.60 or greater	2

Source: *CEQR Technical Manual*

Impact Criteria

The *CEQR Technical Manual* identifies a significant impact for stairways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either the No-Action v/c ratio or a v/c ratio of 1.00 (LOS C or better), whichever is greater. Stairways whose LOS have deteriorated substantially or which experience the formation of extensive queues are classified as having a significant adverse impact. Once a stairway reaches the thresholds shown in Table 12-17, it is generally considered to have a significant adverse impact.

For fare arrays, the *CEQR Technical Manual* considers an increase in a v/c ratio of 1.00 (LOS C or better) or less in the No-Action Condition to a v/c ratio of 1.00 or greater (LOS D or worse) to be a significant adverse impact. It also considers an increase of a v/c ratio of greater than 1.00 in the No-Action Condition by 0.01 to be a significant adverse impact.

Tables 12-18 and 12-19 show results of the LOS analysis at the analyzed fare arrays and stairways, respectively, at the east end of the Lorimer Street subway station and compare them with the results of the No-Action condition. As shown in Tables 12-18 and 12-19, based on this projected level of demand, all stairways and fare arrays would operate at LOS C or better in both peak hours. Therefore, there would be no significant adverse impacts to subway station elements due to the proposed action/RWCDS.

F. PEDESTRIANS

As discussed previously, action-generated pedestrian trips include trips en route to or from subway stations and bus stops as well as "walk-only" trips. As shown in Table 12-2a, the proposed action/RWCDS would generate totals of 1,020, 2,148, 1,761, and 1,811 pedestrian trips, including walk-only trips and trips to and from subway stations or bus stops, in the weekday AM, midday, PM, and Saturday midday peak hours, respectively. These trips are expected to be concentrated on pedestrian elements (including sidewalks, crosswalks, and corner areas) immediately adjacent to the project area, as well as on pedestrian elements on Wallabout Street connecting the project area to the Lorimer Street subway station. As shown in Figure 12-6 and as listed previously, eight sidewalks, five crosswalks, and 14 corner areas have been selected for analysis.

Table 12-18: 2019 With-Action Fare Array Levels of Service

			No-Action							Project Increment		With-Action							
No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS	Δ V/C
	Lorimer Street Fare Array																		
J005-H1	1 High Entry-Exit Turnstile	AM	110	43	0.80	1.00	0.90	0.59	B	62	3	172	46	0.80	1.00	0.90	0.87	C	0.278
(Manhattan-Bound)		PM	27	13	0.80	1.00	0.90	0.15	A	26	18	53	31	0.80	1.00	0.90	0.31	A	0.160
J005-H2	1 High Entry-Exit Turnstile	AM	6	54	0.80	1.00	0.90	0.17	A	20	11	26	65	0.80	1.00	0.90	0.28	A	0.115
(Queens-Bound)		PM	8	73	0.80	1.00	0.90	0.22	A	8	59	16	132	0.80	1.00	0.90	0.41	A	0.187

Notes:
Based on 2014 *CEQR Technical Manual* methodology.
Volumes shown are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Table 12-19: 2019 With-Action Stairway Levels of Service

					No-Action							Project Increment		With-Action						
No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Exiting Surging Factor	Entering Surging Factor	Friction Factor	V/C	LOS
S1	Entrance Stair @ Wallabout Street & Broadway	AM	5.08	4.08	54	6	0.80	1.00	0.90	0.13	A	11	20	65	26	0.80	1.00	0.90	0.18	A
		PM	5.08	4.08	73	8	0.80	1.00	0.90	0.18	A	59	8	132	16	0.80	1.00	0.90	0.28	A
S2	Entrance Stair @ Wallabout Street & Broadway	AM	5.08	4.08	43	110	0.80	1.00	0.90	0.30	A	3	62	46	172	0.80	1.00	0.90	0.47	B
		PM	5.08	4.08	13	27	0.80	1.00	0.90	0.08	A	18	26	31	53	0.80	1.00	0.90	0.18	A
P1	Queens-Bound Platform Stair	AM	5.08	4.08	54	6	0.75	1.00	0.90	0.14	A	11	20	65	26	0.75	1.00	0.90	0.18	A
		PM	5.08	4.08	73	8	0.75	1.00	0.90	0.19	A	59	8	132	16	0.75	1.00	0.90	0.28	A
P2	Manhattan-Bound Platform	AM	5.08	4.08	43	110	0.75	1.00	0.90	0.30	A	3	62	46	172	0.75	1.00	0.90	0.50	B
		PM	5.08	4.08	13	27	0.75	1.00	0.90	0.08	A	18	26	31	53	0.75	1.00	0.90	0.18	A

Notes:
Based on 2014 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Analysis Methodology

At present, most sidewalks tend to be 12 to 20 feet wide with minimal obstruction, mostly from signposts, fire hydrants, and lamp posts. Some sidewalks have a much narrower width due to a ribbon of grass separating it from the street and/or the property.

Peak 15-minute pedestrian flow conditions on analyzed pedestrian elements are assessed using the *2010 Highway Capacity Manual (HCM)* methodology and procedures outlined in the *CEQR Technical Manual*. Using this methodology, the congestion level of pedestrian elements is determined using pedestrian volume, the width of a sidewalk or the area of a corner or crosswalk, and, for corner areas and crosswalks, conflicting turning vehicles and signal timing, due to time required to wait for a walk signal. From these inputs, a ratio of space available per pedestrian can be developed in terms of square feet per pedestrian (sf/p). The resulting ratio is then compared with LOS standards for pedestrian flow, which qualifies pedestrian conditions at a certain concentration level. It should be noted that there is currently no methodology available for analyzing corner areas and crosswalks at unsignalized intersections, and therefore analysis at these locations will only be performed in the 2019 With-Action condition if a signal is to be installed.

Pedestrian LOS standards are based on the average area available per pedestrian during the analysis period, which is typically expressed as a 15-minute peak period. Levels of Service range from LOS A to LOS F, with LOS A representing freeflow conditions without pedestrian conflicts and LOS F representing significant capacity limitations and inconvenience, with activity such as shuffling observed frequently. Table 12-20 defines the LOS criteria for pedestrian elements as based on the *HCM* methodology.

Table 12-20: LOS Criteria for Pedestrian Elements

LOS	Description	Corner, Crosswalk, and Non-Platoon Adjusted Sidewalk LOS Criteria (sf/p)	Platoon-Adjusted Sidewalk LOS Criteria (sf/p)
A	Unrestricted	Greater than 60	Greater than 530
B	Slightly Restricted	40.1 – 60	90.1 – 530
C	Restricted but Fluid	24.1 – 40	40.1 – 90
D	Restricted, Necessary to Continuously Alter Walking Stride and Direction	15.1 – 24	23.1 – 40
E	Severely Restricted	8.1 – 15	11.1 – 23
F	Forward Progress Only by Shuffling, no Reverse Movement Possible	8 or Less	11 or Less

Source: 2010 *HCM*

Existing Condition

Data on peak period pedestrian flow was collected along the pedestrian elements listed previously for the weekday AM, weekday midday, weekday PM, and Saturday midday periods in June 2013 with supplemental counts conducted in October 2014, and the pedestrian peak hours were determined to be 7:30 to 8:30 AM (weekday AM), 12:15 to 1:15 PM (weekday midday), 4:30 to

5:30 PM (weekday PM), and 1:45 to 2:45 PM (Saturday midday). In order to be consistent with the traffic and transit analyses, the volumes were grown at a rate of 0.50 percent per year from 2013 to 2015 to be conservative. In addition, a school located at 177 Harrison Avenue opened in this period and trips to and from this school were assigned in the weekday AM peak hour. Pedestrian volumes within the area tend to be very low, with fewer than 100 pedestrians on most elements. For example, the total volume across both crosswalks at Wallabout Street crossing Harrison Avenue ranges from 37 to 161 pedestrians per hour. Exceptions include locations in proximity to subway stations and, in the weekday AM peak hour, locations in proximity to schools. This is primarily due to the lack of commercial land uses and large numbers of vacant lots and warehouses in the area near the project area.

Tables 12-21 through 12-23 show the Existing peak hour volumes, available pedestrian space, and LOS for sidewalks, crosswalks, and corner areas respectively. As shown in Tables 12-21 through 12-23, all pedestrian elements operate at LOS A. As noted above, these levels of service reflect the generally low pedestrian volumes in the primarily residential and manufacturing area near the project area.

Future Without the Proposed Action (No-Action Condition)

As with other transportation analyses, estimates of peak hour pedestrian trips on the analyzed pedestrian elements in the No-Action condition were developed by applying a background growth rate of 0.50 percent per year from 2015 to 2019 as well as pedestrian demand for large developments near the project area that are expected to be completed by 2019.

No-Action Improvement Measures

For the pedestrian analysis, it is assumed that all improvements to the local traffic network shown in Table 12-9 and mentioned above would be implemented for pedestrian analysis, including the installation of ~~a signal~~signals at the intersections of Wallabout Street and Harrison Avenue and Wallabout Street and Union Avenue ~~and a curb extension at the northeast corner of Flushing Avenue/Gerry Street at Union/Marcy Avenue~~.

LOS Analysis

Tables 12-24 through 12-26 show the No-Action peak 15-minute volumes, available pedestrian space, and LOS for sidewalks, crosswalks, and corner areas, respectively. As shown in Tables 12-24 through 12-26, all pedestrian elements would ~~continue to~~ operate at LOS ~~A~~ B or better in all peak hours. This reflects the continued low pedestrian volumes in the area near the project area.

Future With the Proposed Action (With-Action Condition)

The proposed action/RWCDS would generate new pedestrian demand on all analyzed pedestrian elements in 2019. This new demand would consist of trips made only by walking as well as trips to and from subway stations and bus stops. In general, pedestrian trips to and from the project area are expected to primarily be concentrated in the immediate vicinity of the project area and along Wallabout Street to and from the Lorimer Street subway station. As shown in Table 12-2a, the

Table 12-21: 2015 Existing Sidewalk Levels of Service

No.	Location	Effective Width (feet)	Peak Hour Volumes				Ped Space (SF/Ped)				Platoon Adjusted LOS			
			AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
S1	Gerry St between Union and Harrison Aves - North	6.5	152	86	104	53	623.1	1029.5	791.9	1554.1	A	A	A	A
S2	Wallabout St between Union and Harrison Aves - South	5.5	75	30	31	37	998.9	2729.7	2248.2	1883.6	A	A	A	A
S3	Wallabout St between Union and Harrison Aves - North	5.0	87	13	47	41	755.5	4934.8	1348.0	1641.9	A	A	A	A
S4	Wallabout St between Harrison and Throop Aves - South	5.0	73	14	15	51	867.9	4525.7	4224.0	1242.3	A	A	A	A
S5	Wallabout St between Harrison and Throop Aves - North	8.0	102	56	66	72	993.8	1810.3	1593.6	1408.0	A	A	A	A
S6	Wallabout St between Throop Ave and Broadway - North	6.5	145	37	72	28	568.0	2226.1	1172.6	2941.7	A	A	A	A
S7	Walton St between Union and Harrison Aves - South	7.0	71	21	36	10	1264.9	4224.0	2464.0	8870.4	A	A	A	A
S8	Union Ave between Wallabout and Gerry Sts - East	10.5	36	39	125	66	3696.0	3454.3	1064.4	2016.0	A	A	A	A

Notes:

AM - weekday 7:30-8:30 AM peak hour

MD - weekday 12:15-1:15 PM peak hour (midday)

PM - weekday 4:30-5:30 PM peak hour

SAT - Saturday 1:45-2:45 PM peak hour

SF/Ped - average square feet per pedestrian.

LOS - level of service.

Table 12-22: 2015 Existing Crosswalk Levels of Service

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Avg. Conditions (w/Conflicting Vehicles)											
				AM			MD			PM			SAT		
				Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS
X1	Wallabout St @ Union Ave - east	42.0	14.0	UNSIGNALIZED											
X2	Gerry St-Flushing Av @ Union-Marcy Avs - north	48.0	13.0	223	210.4	A	89	491.2	A	161	277.0	A	60	782.5	A
X3	Gerry St-Flushing Av @ Union-Marcy Avs - east	62.0	14.0	63	338.8	A	14	1,167.4	A	18	1,155.0	A	86	187.2	A
X4	Wallabout St @ Harrison Ave - north	NOT DRAWN		UNSIGNALIZED											
X5	Wallabout St @ Harrison Ave - south	NOT DRAWN		UNSIGNALIZED											
X6	Wallabout St @ Harrison Ave - west	33.5	14.0	UNSIGNALIZED											

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

Table 12-23: 2015 Existing Corner Area Levels of Service

No.	Intersection	Corner	Average Conditions							
			AM		MD		PM		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Walton St @ Union Ave	northeast	359.5	A	507.5	A	495.3	A	291.7	A
C2	Walton St @ Union Ave	southeast	1278.8	A	3575.1	A	2733.9	A	2193.0	A
C3	Wallabout St @ Union Ave	northeast	UNSIGNALIZED							
C4	Wallabout St @ Union Ave	southeast	UNSIGNALIZED							
C5	Gerry St-Flushing Av @ Union-Marcy Avs	northeast	479.9	A	1,386.5	A	744.6	A	690.5	A
C6	Gerry St-Flushing Av @ Union-Marcy Avs	southeast	493.1	A	1,253.5	A	766.3	A	372.5	A
C7	Gerry St-Flushing Av @ Union-Marcy Avs	southwest	762.8	A	2,853.7	A	1,275.6	A	1,057.8	A
C8	Gerry St-Flushing Av @ Union-Marcy Avs	northwest	302.5	A	1,277.4	A	472.8	A	745.9	A
C9	Wallabout St @ Harrison Ave	northeast	UNSIGNALIZED							
C10	Wallabout St @ Harrison Ave	southeast	UNSIGNALIZED							
C11	Wallabout St @ Harrison Ave	southwest	UNSIGNALIZED							
C12	Wallabout St @ Harrison Ave	northwest	UNSIGNALIZED							
C13	Gerry St @ Harrison Ave	northeast	422.1	A	2,777.9	A	1,916.9	A	3,550.7	A
C14	Gerry St @ Harrison Ave	southwest	1,710.1	A	4,751.5	A	2,708.9	A	7,523.5	A
C15	Gerry St @ Harrison Ave	northwest	1,089.4	A	3,777.9	A	2,609.7	A	4,707.5	A
C16	Wallabout St @ Broadway	northwest	466.7	A	752.3	A	651.1	A	796.7	A

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

Table 12-24: 2019 No-Action Sidewalk Levels of Service

No.	Location	Effective Width (feet)	Peak Hour Volumes				Ped Space (SF/Ped)				Platoon Adjusted LOS			
			AM	MD	PM	SAT	AM	MD	PM	SAT	AM	MD	PM	SAT
S1	Gerry St between Union and Harrison Aves - North	6.5	260	197	235	162	364.2	449.3	350.3	508.3	B	B	B	B
S2	Wallabout St between Union and Harrison Aves - South	5.5	76	31	32	38	985.8	2641.7	2178.0	1834.1	A	A	A	A
S3	Wallabout St between Union and Harrison Aves - North	5.0	89	14	49	43	738.5	4852.3	1293.0	1565.5	A	A	A	A
S4	Wallabout St between Harrison and Throop Aves - South	5.0	76	20	20	58	833.6	3168.0	3168.0	1092.4	A	A	A	A
S5	Wallabout St between Harrison and Throop Aves - North	8.0	110	78	81	85	921.5	1299.7	1298.4	1192.6	A	A	A	A
S6	Wallabout St between Throop Ave and Broadway - North	6.5	155	59	90	42	531.3	1396.0	938.0	1961.1	A	A	A	A
S7	Walton St between Union and Harrison Aves - South	7.0	73	22	38	11	1230.3	4032.0	2334.3	8064.0	A	A	A	A
S8	Union Ave between Wallabout and Gerry Sts - East	10.5	44	40	128	68	3024.0	3368.0	1039.4	1956.7	A	A	A	A

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
This table has been revised for the FEIS.

Table 12-25: 2019 No-Action Crosswalk Levels of Service

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Avg. Conditions (w/Conflicting Vehicles)											
				AM			MD			PM			SAT		
				Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS
X1	Wallabout St @ Union Ave - east	44.0	13.0	90	499.7	A	34	1,160.3	A	59	723.7	A	36	1,112.0	A
X2	Gerry St-Flushing Av @ Union-Marcy Avs - north	48.0	13.0	329	148.4	A	220	195.3	A	298	155.1	A	180	257.9	A
X3	Gerry St-Flushing Av @ Union-Marcy Avs - east	62.0	14.0	109	167.3	A	93	173.1	A	86	207.8	A	148	107.3	A
X4	Wallabout St @ Harrison Ave - north	40.0	12.0	81	335.0	A	45	564.1	A	45	567.8	A	51	451.9	A
X5	Wallabout St @ Harrison Ave - south	40.0	9.0	87	177.8	A	15	949.6	A	31	495.3	A	51	287.7	A
X6	Wallabout St @ Harrison Ave - west	33.5	14.0	52	1,005.5	A	33	1,405.4	A	32	1,516.5	A	34	1,377.5	A

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
This table has been revised for the FEIS.

Table 12-26: 2019 No-Action Corner Area Levels of Service

No.	Intersection	Corner	Average Conditions							
			AM		MD		PM		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Walton St @ Union Ave	northeast	196.6	A	140.4	A	180.1	A	138.0	A
C2	Walton St @ Union Ave	southeast	1178.5	A	3431.3	A	2607.0	A	2112.9	A
C3	Wallabout St @ Union Ave	northeast	1179.2	A	2378.7	A	1321.0	A	1644.5	A
C4	Wallabout St @ Union Ave	southeast	721.7	A	3099.3	A	1468.7	A	1567.2	A
C5	Gerry St-Flushing Av @ Union-Marcy Avs	northeast	318.3	A	472.8	A	362.5	A	380.4	A
C6	Gerry St-Flushing Av @ Union-Marcy Avs	southeast	373.5	A	581.9	A	454.7	A	286.3	A
C7	Gerry St-Flushing Av @ Union-Marcy Avs	southwest	578.0	A	1,046.6	A	743.6	A	675.5	A
C8	Gerry St-Flushing Av @ Union-Marcy Avs	northwest	202.5	A	330.9	A	231.3	A	303.9	A
C9	Wallabout St @ Harrison Ave	northeast	904.2	A	1,547.5	A	1138.6	A	1,765.0	A
C10	Wallabout St @ Harrison Ave	southeast	548.5	A	2,021.3	A	1372.9	A	1,637.5	A
C11	Wallabout St @ Harrison Ave	southwest	993.5	A	2,142.1	A	2047.6	A	1,684.9	A
C12	Wallabout St @ Harrison Ave	northwest	426.3	A	741.1	A	713.2	A	624.2	A
C13	Gerry St @ Harrison Ave	northeast	336.4	A	1,201.9	A	861.4	A	1,411.6	A
C14	Gerry St @ Harrison Ave	southwest	955.0	A	1,757.2	A	1087.4	A	2,049.4	A
C15	Gerry St @ Harrison Ave	northwest	740.1	A	1,761.4	A	1164.3	A	1,894.8	A
C16	Wallabout St @ Broadway	northwest	435.7	A	646.0	A	578.0	A	707.5	A

Notes:

AM - weekday 7:30-8:30 AM peak hour

MD - weekday 12:15-1:15 PM peak hour (midday)

PM - weekday 4:30-5:30 PM peak hour

SAT - Saturday 1:45-2:45 PM peak hour

SF/Ped - average square feet per pedestrian.

LOS - level of service.

This table has been revised for the FEIS.

proposed action/RWCDS would generate totals of 1,020, 2,148, 1,761, and 1,811 pedestrian trips in the weekday AM, midday, PM and Saturday midday peak hours, respectively.

Proposed Improvements

The following improvements would be made to pedestrian elements adjacent to the project site:

- All sidewalks on the Northern and Southern Blocks would be rebuilt using their existing widths and 5-foot by 5-foot tree pits, and all ribbons and grass patches on Block 2249 would be removed and replaced with usable sidewalk.
- The northwest and southwest corners at the intersection of Wallabout Street and Harrison Avenue would be rebuilt to create more useable space.
- Crosswalks would be installed on the north and south legs of the intersection of Wallabout Street and Harrison Avenue. These would be 16-foot wide school crosswalks.

Impact Criteria

For areas of the city within a central business district (CBD), as defined by the *CEQR Technical Manual* as including all areas within 0.25 miles of a subway station), criteria define that a significant adverse impact to a sidewalk has occurred under platoon flow if the pedestrian space available under the No-Action condition is greater than 39.2 sf/p (LOS D) and the pedestrian space available under the With-Action condition is less than 31.5 sf/p. If the pedestrian space available in the With-Action condition is greater than 35.4 sf/p, the impact should not be considered significantly adverse. If the pedestrian space available under the No-Action condition is between 6.4 sf/p and 39.2 sf/p, a reduction in space under the With-Action condition should be considered a significant adverse impact based on Table 12-27, which shows a scale that identifies what reduction should be considered a significant adverse impact for a given amount of available pedestrian space. If the reduction of available pedestrian space is less than the value shown in Table 12-27, the impact should not be considered significantly adverse. If the available pedestrian space under the No-Action condition is less than 6.4 sf/p, a reduction of at least 0.3 sf/p of available pedestrian space should be considered significantly adverse.

For areas of the city within a CBD, criteria define that a significant adverse impact to a crosswalk or corner area has occurred if the pedestrian space available under the No-Action condition is greater than 21.3 sf/p (LOS D) and the pedestrian space available under the With-Action condition is less than 19.5 sf/p. If the pedestrian space available in the With-Action condition is greater than or equal to 19.5 sf/p, the impact should not be considered significantly adverse. If the pedestrian space available under the No-Action condition is between 5.1 sf/p and 21.3 sf/p, a reduction in space under the With-Action condition should be considered a significant adverse impact based on Table 12-28, which shows a scale that identifies what reduction should be considered a significant adverse impact for a given amount of available pedestrian space. If the reduction of available pedestrian space is less than the value shown in Table 12-28, the impact should not be considered significantly adverse. If the available pedestrian space under the No-Action condition is less than 5.1 sf/p, a reduction of at least 0.2 sf/p of available pedestrian space should be considered significantly adverse.

Table 12-27: Significant Impact Criteria for Sidewalks in a CBD Location

No-Action Condition Pedestrian Space (sf/ped)	With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 39.2	With Action Condition < 31.5
38.7 to 39.2	Reduction ≥ 3.8
37.8 to 38.6	Reduction ≥ 3.7
36.8 to 37.7	Reduction ≥ 3.6
35.9 to 36.7	Reduction ≥ 3.5
34.9 to 35.8	Reduction ≥ 3.4
34.0 to 34.8	Reduction ≥ 3.3
33.0 to 33.9	Reduction ≥ 3.2
32.1 to 32.9	Reduction ≥ 3.1
31.1 to 32.0	Reduction ≥ 3.0
30.2 to 31.0	Reduction ≥ 2.9
29.2 to 30.1	Reduction ≥ 2.8
28.3 to 29.1	Reduction ≥ 2.7
27.3 to 28.2	Reduction ≥ 2.6
26.4 to 27.2	Reduction ≥ 2.5
25.4 to 26.3	Reduction ≥ 2.4
24.5 to 25.3	Reduction ≥ 2.3
23.5 to 24.4	Reduction ≥ 2.2
22.6 to 23.4	Reduction ≥ 2.1
21.6 to 22.5	Reduction ≥ 2.0
20.7 to 21.5	Reduction ≥ 1.9
19.7 to 20.6	Reduction ≥ 1.8
18.8 to 19.6	Reduction ≥ 1.7
17.8 to 18.7	Reduction ≥ 1.6
16.9 to 17.7	Reduction ≥ 1.5
15.9 to 16.8	Reduction ≥ 1.4
15.0 to 15.8	Reduction ≥ 1.3
14.0 to 14.9	Reduction ≥ 1.2
13.1 to 13.9	Reduction ≥ 1.1
12.1 to 13.0	Reduction ≥ 1.0
11.2 to 12.0	Reduction ≥ 0.9
10.2 to 11.1	Reduction ≥ 0.8
9.3 to 10.1	Reduction ≥ 0.7
8.3 to 9.2	Reduction ≥ 0.6
7.4 to 8.2	Reduction ≥ 0.5
6.4 to 7.3	Reduction ≥ 0.4
< 6.4	Reduction ≥ 0.3

Source: *CEQR Technical Manual*

Table 12-28: Significant Impact Criteria for Corners and Crosswalks in a CBD Location

No-Action Condition Pedestrian Space (sf/ped)			With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 21.5			With Action Condition < 19.5
21.3	to	21.5	Reduction ≥ 2.1
20.4	to	21.2	Reduction ≥ 2.0
19.5	to	20.3	Reduction ≥ 1.9
18.6	to	19.4	Reduction ≥ 1.8
17.7	to	18.5	Reduction ≥ 1.7
16.8	to	17.6	Reduction ≥ 1.6
15.9	to	16.7	Reduction ≥ 1.5
15.0	to	15.8	Reduction ≥ 1.4
14.1	to	14.9	Reduction ≥ 1.3
13.2	to	14.0	Reduction ≥ 1.2
12.3	to	13.1	Reduction ≥ 1.1
11.4	to	12.2	Reduction ≥ 1.0
10.5	to	11.3	Reduction ≥ 0.9
9.6	to	10.4	Reduction ≥ 0.8
8.7	to	9.5	Reduction ≥ 0.7
7.8	to	8.6	Reduction ≥ 0.6
6.9	to	7.7	Reduction ≥ 0.5
6.0	to	6.8	Reduction ≥ 0.4
5.1	to	5.9	Reduction ≥ 0.3
< 5.1			Reduction ≥ 0.2
Source: *CEQR Technical Manual*			

LOS Analysis

Tables 12-29 through 12-31 show the With-Action peak 15 minute volumes, available pedestrian space, and LOS for sidewalks, crosswalks, and corner areas respectively. As shown in Tables 12-29 through 12-31, all pedestrian elements would operate at an uncongested LOS B or better in all peak hours, with the exception of south crosswalk at Wallabout Street and Harrison Ave which would operate at an acceptable LOS C. Based on these results, there would be no significant adverse impacts to pedestrian conditions as a result of the proposed action/RWCDS.

Table 12-29: 2019 With-Action Sidewalk Levels of Service

No.	Location	Effective Width (feet)	Peak Hour Volumes AM	MD	PM	SAT	Ped Space (SF/Ped) AM	MD	PM	SAT	Platoon Adjusted LOS AM	MD	PM	SAT
S1	Gerry St between Union and Harrison Aves - North	6.5	566	568	622	519	167.0	155.5	132.0	158.4	B	B	B	B
S2	Wallabout St between Union and Harrison Aves - South	11.0	212	349	269	284	706.7	469.2	518.1	490.7	A	B	B	B
S3	Wallabout St between Union and Harrison Aves - North	13.0	299	267	313	297	571.5	624.6	526.2	589.2	A	A	B	A
S4	Wallabout St between Harrison and Throop Aves - South	5.0	185	204	221	247	342.3	310.4	286.5	256.3	B	B	B	B
S5	Wallabout St between Harrison and Throop Aves - North	8.0	294	270	293	295	344.7	375.3	358.8	343.5	B	B	B	B
S6	Wallabout St between Throop Ave and Broadway - North	6.5	369	212	316	256	223.0	388.4	267.0	321.6	B	B	B	B
S7	Walton St between Union and Harrison Aves - South	11.0	161	228	205	177	876.5	611.3	679.9	787.5	A	A	A	A
S8	Union Ave between Wallabout and Gerry Sts - East	11.0	190	428	425	379	733.6	329.6	327.8	367.6	A	B	B	B

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
This table has been revised for the FEIS.

Table 12-30: 2019 With-Action Crosswalk Levels of Service

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Avg. Conditions (w/Conflicting Vehicles)											
				AM			MD			PM			SAT		
				Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS	Peak Vol	SF/Ped	LOS
X1	Wallabout St @ Union Ave - east	44.0	13.0	172	254.7	A	241	158.6	A	229	178.7	A	200	193.7	A
X2	Gerry St-Flushing Av @ Union-Marcy Avs - north	48.0	13.0	439	111.6	A	453	92.3	A	497	90.6	A	378	120.2	A
X3	Gerry St-Flushing Av @ Union-Marcy Avs - east	62.0	14.0	191	93.6	A	300	52.3	B	256	67.7	A	312	49.8	B
X4	Wallabout St @ Harrison Ave - north	40.0	12.0	243	104.3	A	262	95.1	A	244	100.8	A	263	84.9	A
X5	Wallabout St @ Harrison Ave - south	40.0	9.0	223	65.0	A	266	49.9	B	264	53.8	B	279	27.2	C
X6	Wallabout St @ Harrison Ave - w est	33.5	14.0	199	261.6	A	296	152.0	A	244	192.2	A	259	175.8	A

Notes:
AM - w eekday 7:30-8:30 AM peak hour
MD - w eekday 12:15-1:15 PM peak hour (midday)
PM - w eekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
This table has been revised for the FEIS.

Table 12-31: 2019 With-Action Corner Area Levels of Service

No.	Intersection	Corner	Average Conditions							
			AM		MD		PM		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Walton St @ Union Ave	northeast	113.0	A	42.3	B	61.9	A	55.0	B
C2	Walton St @ Union Ave	southeast	784.5	A	566.6	A	714.1	A	656.9	A
C3	Wallabout St @ Union Ave	northeast	560.7	A	300.2	A	343.5	A	362.3	A
C4	Wallabout St @ Union Ave	southeast	459.9	A	405.3	A	416.9	A	444.4	A
C5	Gerry St-Flushing Av @ Union-Marcy Avs	northeast	205.9	A	164.4	A	164.4	A	172.9	A
C6	Gerry St-Flushing Av @ Union-Marcy Avs	southeast	262.3	A	224.8	A	216.5	A	172.1	A
C7	Gerry St-Flushing Av @ Union-Marcy Avs	southwest	473.0	A	592.6	A	491.9	A	468.2	A
C8	Gerry St-Flushing Av @ Union-Marcy Avs	northwest	156.4	A	169.6	A	143.2	A	174.9	A
C9	Wallabout St @ Harrison Ave	northeast	479.5	A	482.2	A	468.5	A	512.4	A
C10	Wallabout St @ Harrison Ave	southeast	322.0	A	337.0	A	354.9	A	235.2	A
C11	Wallabout St @ Harrison Ave	southwest	381.2	A	264.8	A	302.5	A	215.4	A
C12	Wallabout St @ Harrison Ave	northwest	333.0	A	257.0	A	281.1	A	266.5	A
C13	Gerry St @ Harrison Ave	northeast	261.2	A	362.3	A	386.9	A	456.9	A
C14	Gerry St @ Harrison Ave	southwest	680.1	A	527.8	A	558.8	A	681.0	A
C15	Gerry St @ Harrison Ave	northwest	371.7	A	329.2	A	336.5	A	371.0	A
C16	Wallabout St @ Broadway	northwest	261.9	A	386.3	A	281.4	A	337.1	A

Notes:
AM - weekday 7:30-8:30 AM peak hour
MD - weekday 12:15-1:15 PM peak hour (midday)
PM - weekday 4:30-5:30 PM peak hour
SAT - Saturday 1:45-2:45 PM peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
This table has been revised for the FEIS.

G. VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

Under *CEQR Technical Manual guidelines*, an evaluation of vehicular and pedestrian safety is required for locations within the traffic and pedestrian study areas that have been identified as high accident locations. These are defined as locations where 48 or more total reportable and non-reportable crashes or 5 or more pedestrian or bicycle injury crashes have occurred in any consecutive 12 months of the most recent three year period for which data is available. Reportable crashes include crashes which involve injury, fatality, or property damage of at least $1,000.

Table 12-32 summarizes the accident data for the years 2012, 2013, and 2014 provided by NYCDOT. This is the most recent three year period for which data are available. Included in the table are the total number of crashes per year and the total number of crashes involving pedestrians and bicycles per year at each intersection within the traffic and pedestrian study areas. As shown in Table 12-32, no intersections were found to have experienced 48 or more crashes in any one year nor were found to have 5 or more pedestrian or bicycle injury crashes in any one year.

Table 12-32: Three-Year Accident Data

Intersection		Pedestrian Injury Crashes			Bicycle Injury Accidents			Total Pedestrian/Bicycle Injury Crashes			Total Crashes (Reportable + Non-Reportable)		
		2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014
Union Avenue	Harrison Avenue	0	0	0	1	0	0	1	0	0	2	1	0
	Lorimer Street	0	0	1	0	0	0	0	0	1	1	0	3
	Walton Street	0	0	0	0	0	0	0	0	0	1	1	0
	Wallabout Street	0	0	0	0	1	0	0	1	0	5	3	1
	Flushing Ave/Gerry St	1	1	3	0	2	1	1	3	4	3	8	7
Harrison Avenue	Lorimer Street	0	0	0	0	0	0	0	0	0	1	1	0
	Walton Street	0	0	0	0	0	1	0	0	1	0	1	2
	Wallabout Street	0	0	0	1	0	0	1	0	0	3	3	2
	Gerry Street	0	0	0	0	0	0	0	0	0	1	0	2
	Bartlett Street	0	0	0	0	2	0	0	2	0	1	2	1
Broadway	Wallabout/Moore Sts	2	1	1	0	0	0	2	1	1	3	1	4

Therefore, none of the intersections within the traffic and pedestrian study areas are designated as high accident locations.

H. SUMMARY

The applicant is proposing to redevelop the project area's Northern and Southern Blocks in South Williamsburg, Brooklyn as a mixed use development, which requires map and text amendments. The RWCDS for the proposed actions consists of 1,147 DUs, 64,807 square feet of local retail, and 427 accessory parking spaces. The proposed action/RWCDS would generate enough traffic, pedestrian, and subway trips to warrant detailed analyses for the traffic, pedestrian, and subway modes of transportation. There is expected to be adequate on-site accessory parking to meet the projected action-generated demand. Eight intersections are expected to be significantly adversely impacted in at least one peak hour for traffic. No significant adverse impacts would be expected for subway and pedestrians.