



Peak Hour Factors

The TRB *Highway Capacity Manual* (HCM) and the AASHTO *Policy on Geometric Design of Highways and Intersections* recommend evaluating traffic conditions during the worst 15 minutes of either a design hour or a typical weekday rush hour. Peak Hour Factor (PHF) is used to convert the hourly volume into the volume rate representing the busiest 15 minutes of the hour. The existing guidelines provide typical values of PHF and advise using the PHF calculated from vehicle counts at analyzed or similar locations. The HCM recommends a PHF of 0.88 for rural areas and 0.92 for urban areas and presumes that capacity constraints in congested areas reduce the short-term traffic fluctuation. The HCM postulates 0.95 as the typical PHF for congested roadways.

For the Existing Conditions analysis, PHF were calculated from the turning movement data that was collected in the field, using a minimum PHF of 0.85.

To account for the significant increase in peak hour traffic generated by local development on side streets, and regional growth along major corridors, a default PHF minimum of 0.92 was assumed in the Background Conditions and Total Future Conditions analyses.

Geometry and Operations Assumptions

The following section reviews the roadway geometry and operations assumptions made and the methodologies used in the roadway capacity analyses.

Existing Geometry and Operations Assumptions

The geometry and operations assumed in the existing conditions scenario are those present when the main data collection occurred. Gorove/Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT and confirmed during field reconnaissance.

The lane configurations and traffic controls for the Existing Conditions are shown on Figure 13.

2021 Background Geometry and Operations Assumptions

Following national and DDOT methodologies, a background improvement must meet the following criteria to be incorporated into the analysis:

- Be funded; and

- Have a construction completion date prior or close to the proposed development.

Based on these criteria, there are no background improvements within the vicinity of the site. The 2021 Background Geometry is that of the 2019 Existing Geometry.

2021 Total Future Geometry and Operations Assumptions

The configurations and traffic controls for the 2021 Future Conditions were based on those for the Existing and 2021 Background Conditions with the addition of the site driveway at the intersection of Eastern Avenue and Kenilworth Avenue, NE as an intersection leg. The addition of the site driveway requires the following modifications to the intersection:

- (1) The reconfiguration of the Eastern Avenue and Eastern Avenue (Southbound) intersection to include an eastbound approach. This approach will consist of one thru/right lane and one receiving lane.
- (2) The reconfiguration of the westbound approach to include one left/thru lane from one left-turn lane. The reconfiguration of the southbound approach to include one left/thru/right lane and one left-turn lane from one left/thru lane and one left-turn lane.

Under existing conditions, the intersection of Eastern Avenue and Kenilworth Avenue (Northbound) has an eastbound left-turn restriction. The analysis will include a comparison of the Total Future scenario with and without this restriction to investigate whether this restriction could be eliminated.

The lane configurations and traffic controls for the 2021 Total Future Conditions are shown on Figure 20.

VEHICULAR ANALYSIS RESULTS

Intersection Capacity Analysis

Intersection capacity analyses were performed for the three scenarios outlined previously at the intersections contained within the study area during the morning and afternoon peak hours. Synchro version 9.1 was used to analyze the study intersections based on the *Highway Capacity Manual* (HCM) 2000 methodology.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. An LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from "A" being the best to



“F” being the worst. LOS D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

The LOS capacity analyses were based on: (1) the peak hour traffic volumes; (2) the lane use and traffic controls; and (3) the Highway Capacity Manual (HCM) methodologies (using *Synchro* software). The average delay of each approach and LOS is shown for the signalized intersections in addition to the overall average delay and intersection LOS grade. The HCM does not give guidelines for calculating the average delay for a two-way stop-controlled intersection, as the approaches without stop signs would technically have no delay. Detailed LOS descriptions and the analysis worksheets are contained in the Technical Attachments.

Table 5 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the Existing, 2021 Background, and 2021 Total Future scenarios. Table 6 shows a comparison of the v/c ratios for each scenario. The capacity analysis results are shown on Figure 23 for the morning peak hour and Figure 24 for the afternoon peak hour.

Under existing conditions, one study intersection has at least one approach that operates under unacceptable conditions during at least one study scenario and during at least one of the peak hours. However, the addition of the site trips and geometry changes do not worsen the conditions. The capacity analysis results indicate that the following approaches operate at LOS F or LOS E during all three scenarios:

- Eastern Avenue & Kenilworth Avenue (Southbound)
 - Overall (AM, PM)
 - Southbound (AM, PM)

The addition of the site driveway as an eastbound leg of the Eastern Avenue and Kenilworth Avenue (Southbound) intersection has minimal impact on the overall intersection, as shown in Table 5. Phasing for this new leg was incorporated into the existing signal phasing and timings. The existing signal timings have a dedicated pedestrian phase during which the eastbound approach can be serviced.

With the elimination of the eastbound left-turn restriction, inclusion of a permissive left-turn phase, and timing adjustments at the intersection of Eastern Avenue and Kenilworth Avenue (Northbound), the capacity analysis results

show the intersection continues to operate within the acceptable delay range. However, considering the significant westbound volumes at this intersection, particularly right-turn volumes, it is recommended that left-turn vehicles be accommodated with a protected phase, rather than a permissive phase. The eastbound approach must maintain the two receiving thru lanes for the two left-turn lanes on southbound Kenilworth Avenue, so a left-turn bay and additional phasing changes will be required to accommodate this.

As shown in the capacity results, maintaining the eastbound left-turn restriction does not impact the Site. Site trips exiting toward northbound Kenilworth Avenue may continue on Eastern Avenue and access Kenilworth Avenue from R Street.

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at the study intersections. The queuing analysis was performed using SimTraffic microsimulation. SimTraffic cannot simulate “right-turn on red” movements for signals that are clustered and/or have non-NEMA phasing, both of which this project has. To remedy this and allow for a SimTraffic queuing analysis, the westbound right-turn lane at the intersection of Eastern Avenue and Kenilworth Avenue (Northbound) was simulated as a signal-controlled channelized right-turn lane. This modification did not alter Synchro capacity results. The average and 95th percentile queue lengths are shown for each lane group at the study area signalized intersections. The 95th percentile queue is the maximum back of queue that is exceeded 5% of the time. Queuing analysis worksheets are contained in the Technical Attachments.

Table 7 shows the queuing results for the study area intersections. Both of the study intersections exhibit one or more lane group that exceeds the given storage length during the existing conditions:

- Eastern Avenue & Kenilworth Avenue (Southbound)
 - Westbound Left-Turn (PM)
 - Westbound Left/Thru (PM)
- Eastern Avenue & Kenilworth Avenue (Northbound)
 - Westbound Thru (AM)
 - Westbound Right-Turn (AM)

With the inclusion of a new intersection, there is concern for increased queuing onto adjacent intersections. There are I-295



ramps located just north of the study intersections. The queuing analysis results show that queues do not exceed the storage lengths along Kenilworth Avenue, thus the new intersection leg will not impact the I-295 ramps.

MITIGATION MEASURES

Based on DDOT standards, the proposed development is considered to have an impact at an intersection within the study area if any of the following conditions are met:

- The capacity analyses show a LOS E or F at an intersection or along an approach in the future with conditions with the proposed development where one does not exist in the background conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than 5 percent when compared to the background conditions; or

- There is an increase in the 95th percentile queues by more than 150 feet at an intersection or along an approach in the future conditions with the proposed development where one does not exist in the background scenario.

Following these guidelines, there are no impacts as a result of the development; therefore, no mitigation measures needed to be made. Additionally, the queues exhibited on Eastern Avenue are typical for a commuter roadway with close proximity to I-295, with longer queues exhibited in the direction of peak travel. Although the queuing analysis indicates areas where queues extend beyond the storage capacity, the capacity analysis indicates that the approach falls within the acceptable delay range.

Table 3: Summary of Background Development Trip Generation

Background Development	Trip Generation Source	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Kenilworth Courts PUD	Approved Transportation Impact Study	19	47	66	40	30	70
Net Background Site Trips		10	25	35	29	38	67

Table 4: Applied Annual and Total Growth Rates

Road	Intersections	Proposed Annual Growth Rate		Proposed Total Growth Rate 2019-2021	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Eastern Avenue NE- WB	1,2	0.50%	0.10%	1.00%	0.20%
Eastern Avenue NE- EB	1,2	0.10%	0.10%	0.20%	0.20%

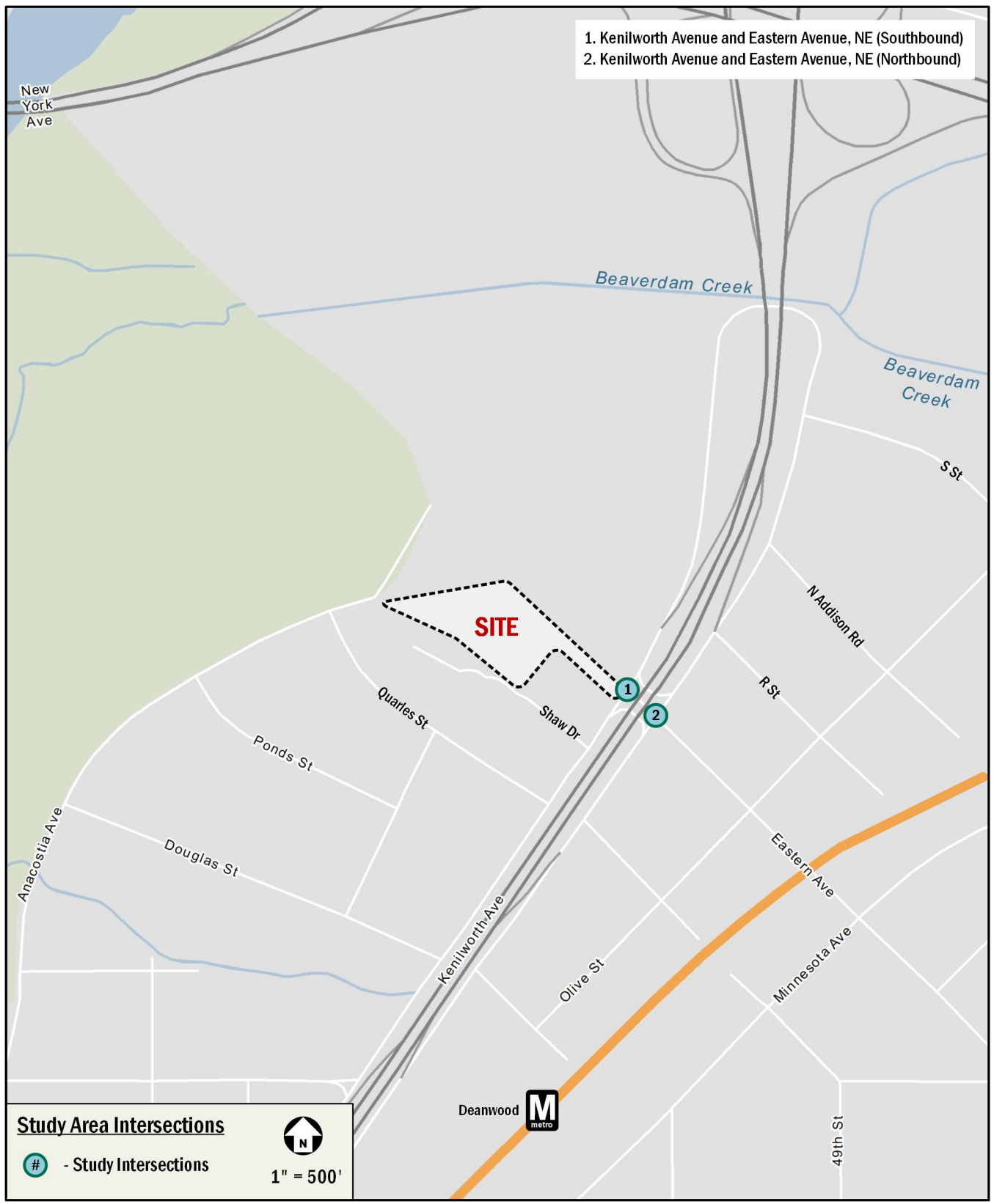


Figure 12: Study Area Intersections

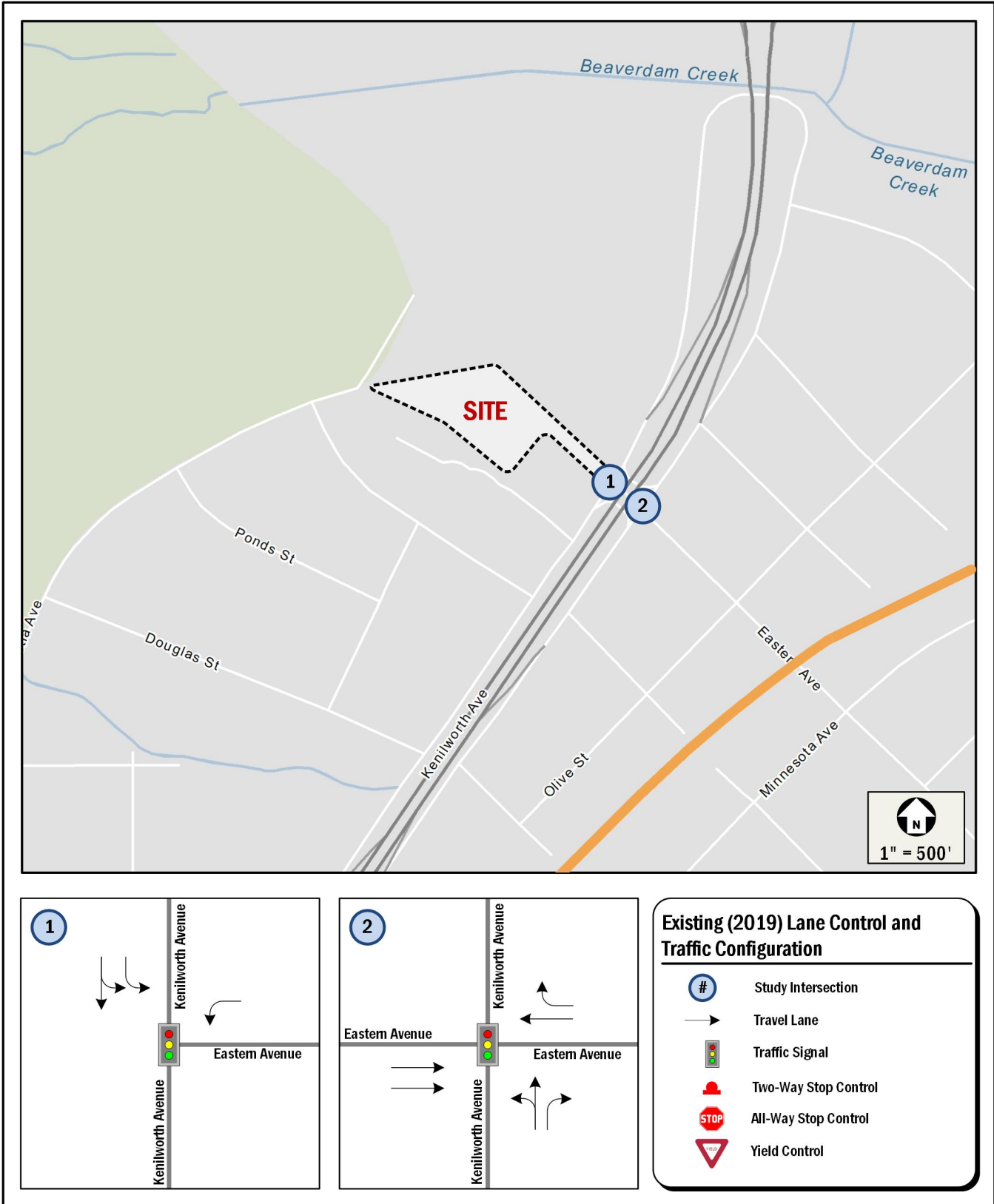
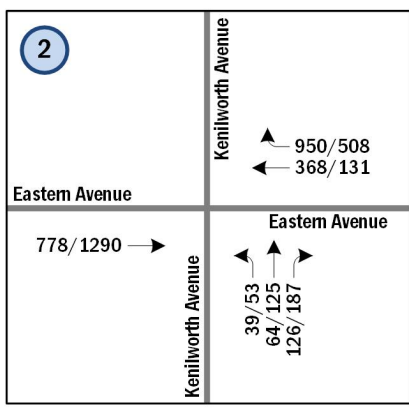
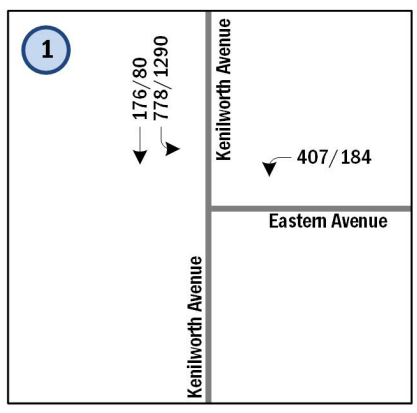


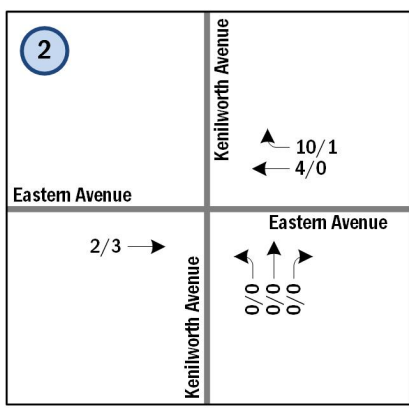
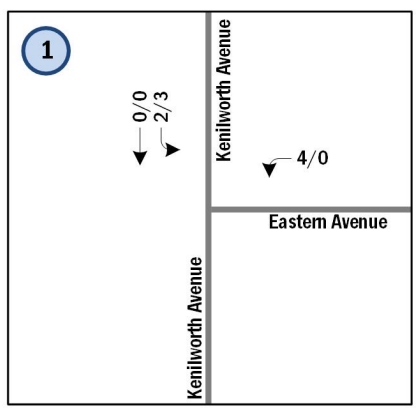
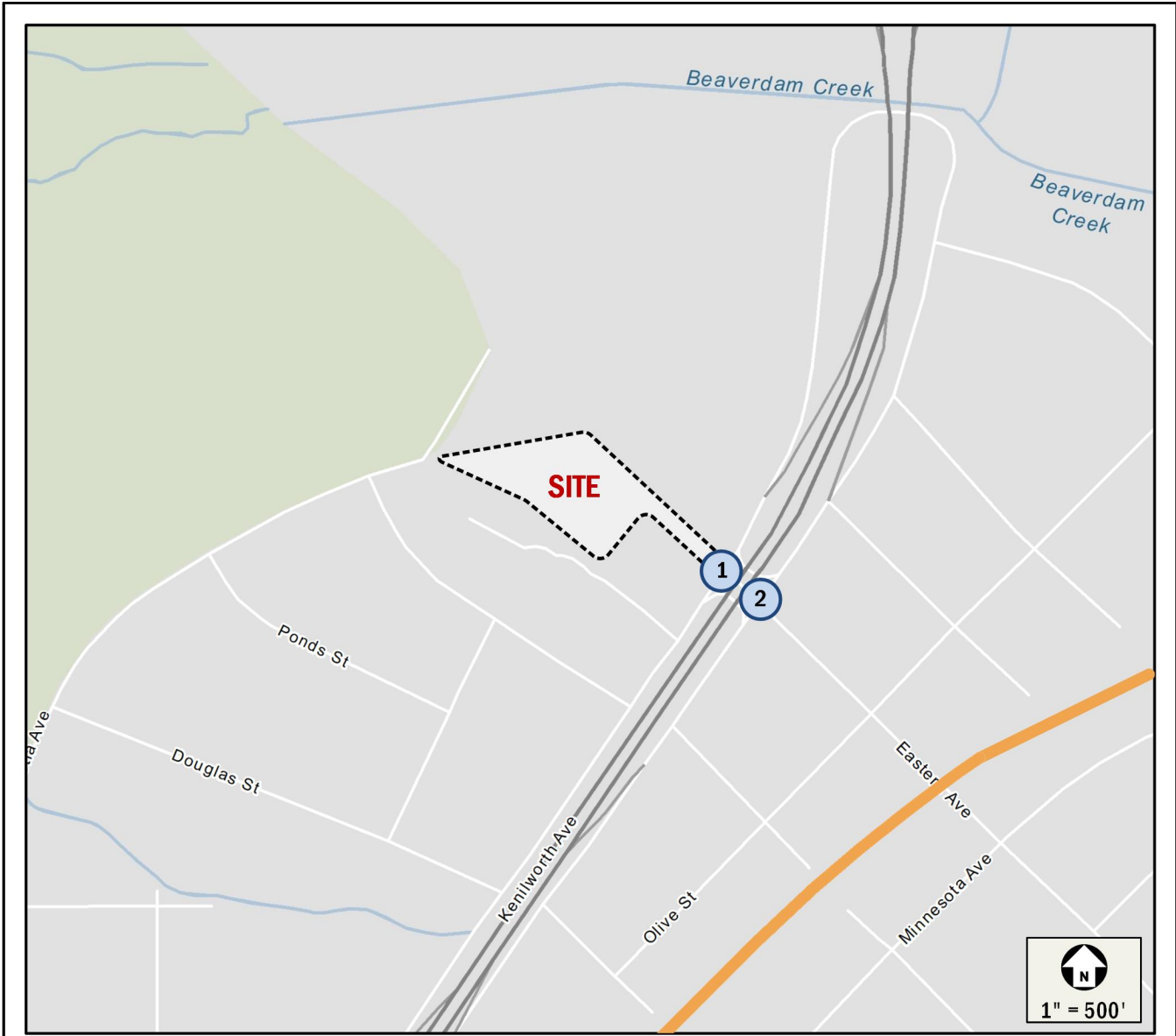
Figure 13: Existing Lane Configuration and Traffic Control Devices



Existing (2019) Peak Hour Traffic Volumes

Study Intersection
 → Turning Movement
 1234/5678 AM / PM Peak Hour Volume

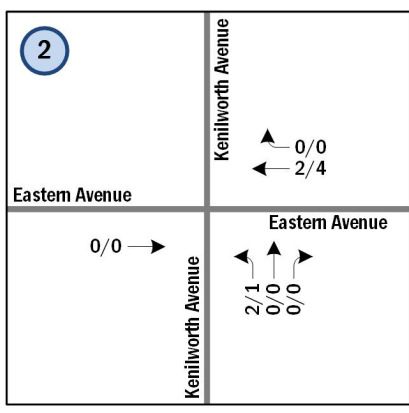
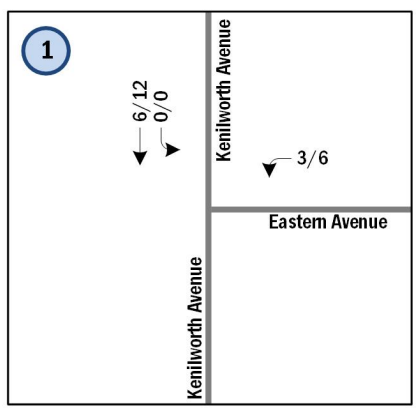
Figure 14: Existing Peak Hour Traffic Volumes



Background Growth Peak Hour Traffic Volumes

Study Intersection
 → Turning Movement
 1234/5678 AM / PM Peak Hour Volume

Figure 15: Background Growth Peak Hour Traffic Volumes (2021)



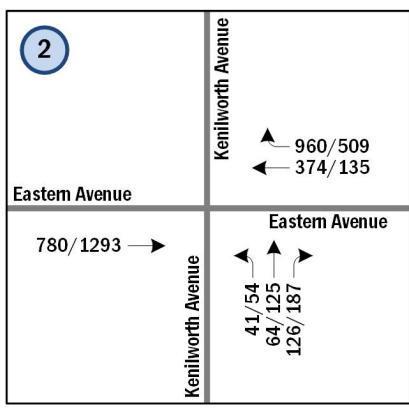
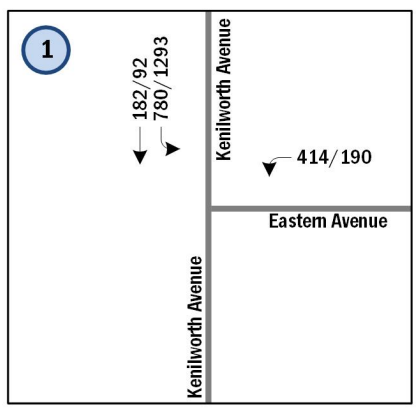
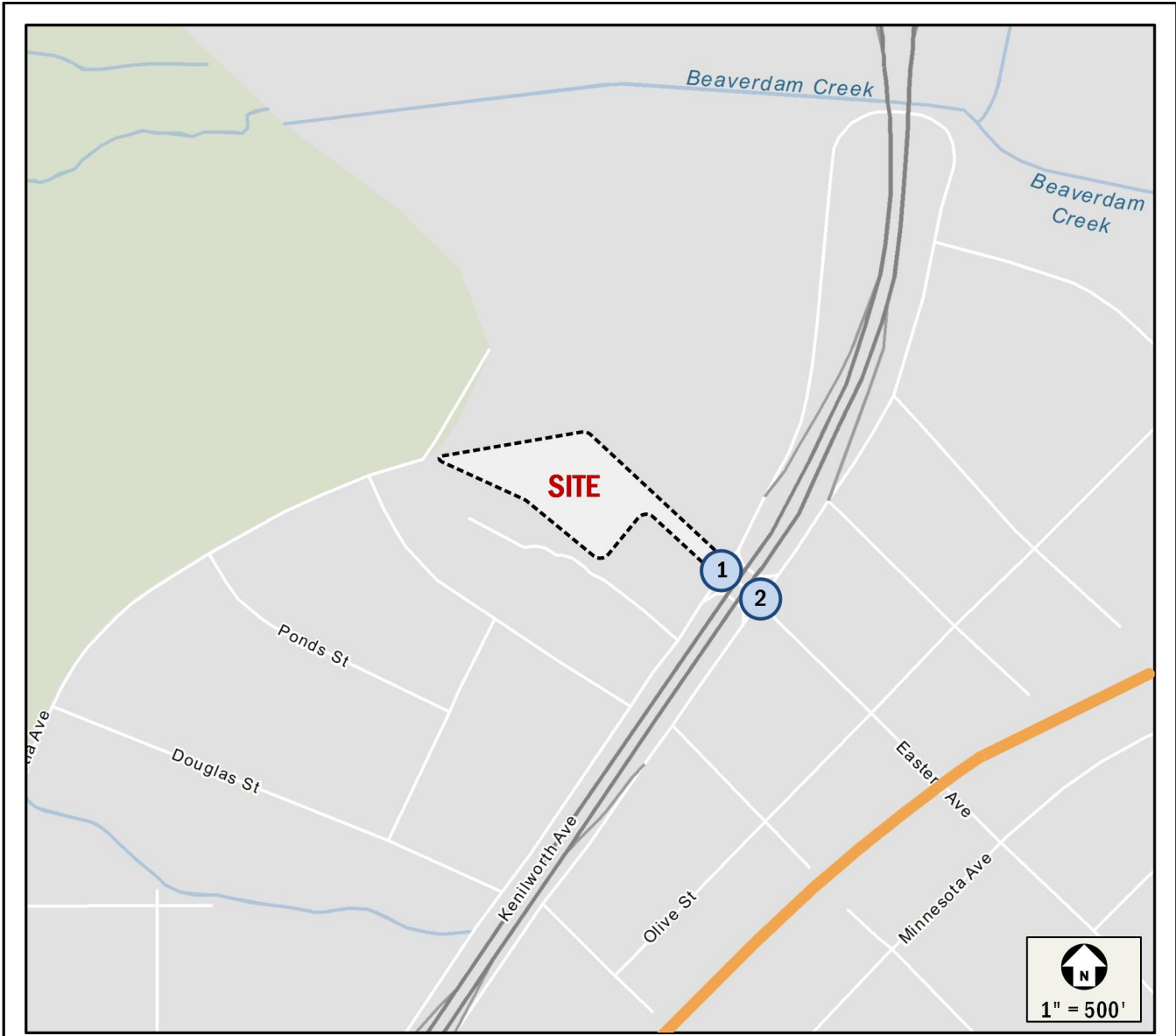
Background Project Peak Hour Traffic Volumes

Study Intersection

→ Turning Movement

1234/5678 AM / PM Peak Hour Volume

Figure 16: Background Project Peak Hour Traffic Volumes



**Future without Development (2021)
Peak Hour Traffic Volumes**

Study Intersection
→ Turning Movement
1234/5678 AM / PM Peak Hour Volume

Figure 17: Future without Development Peak Hour Traffic Volume (2021)

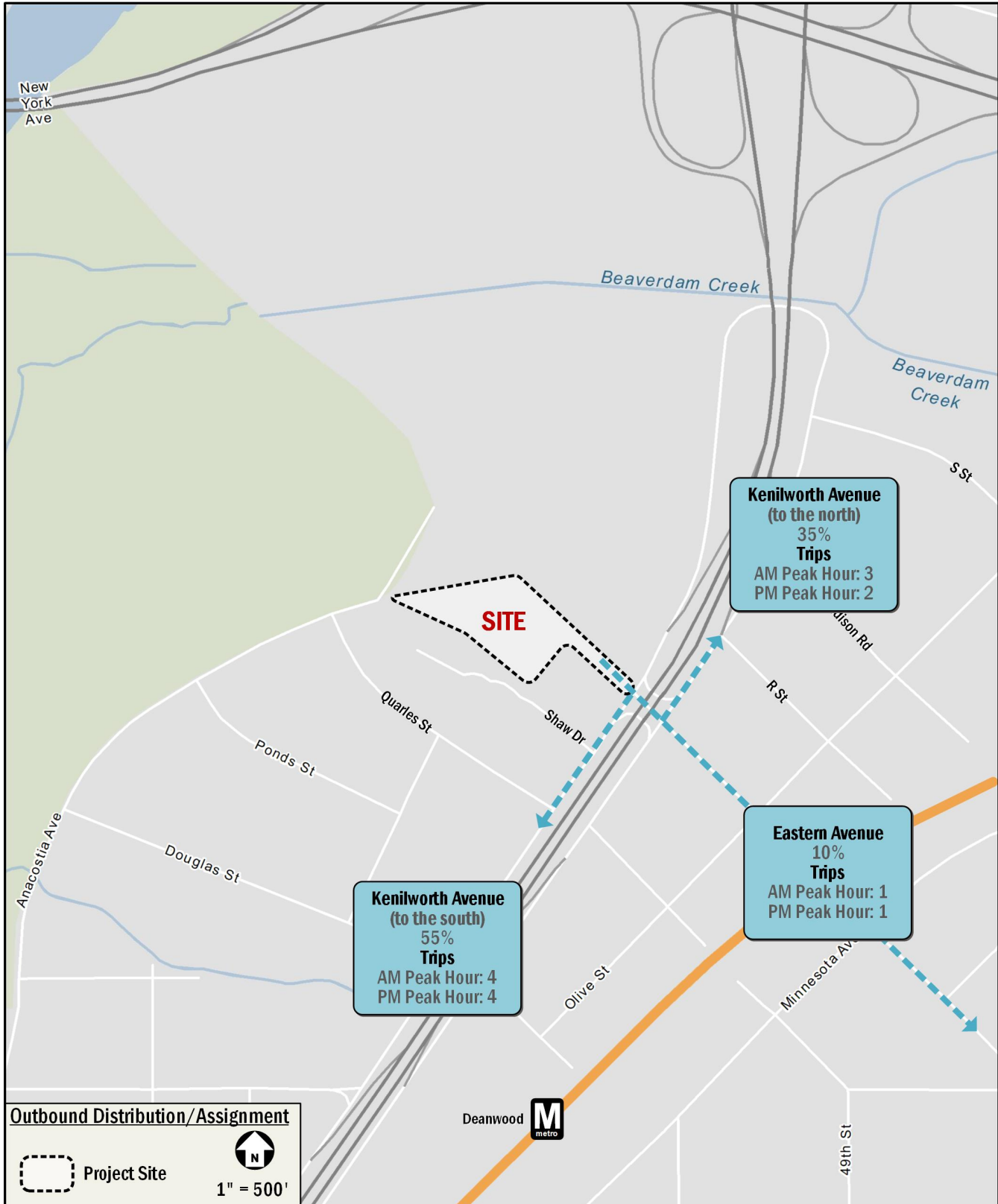
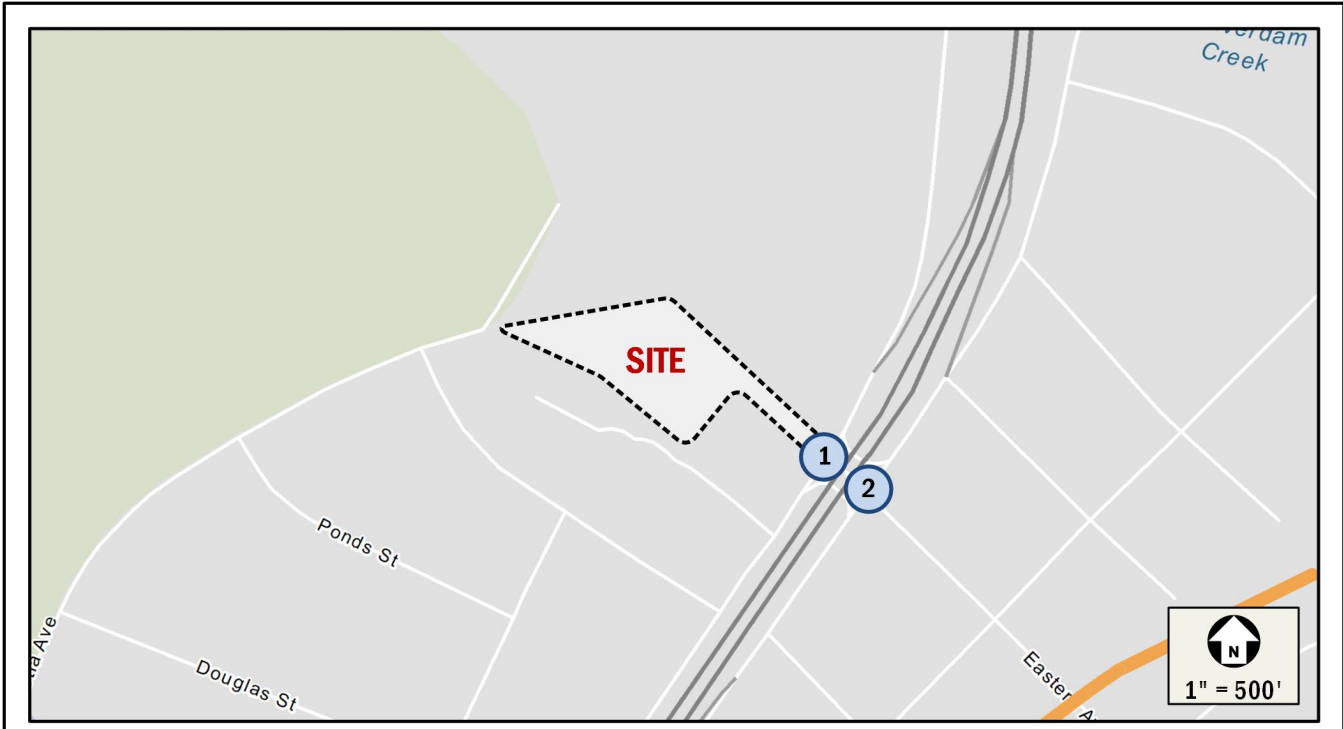


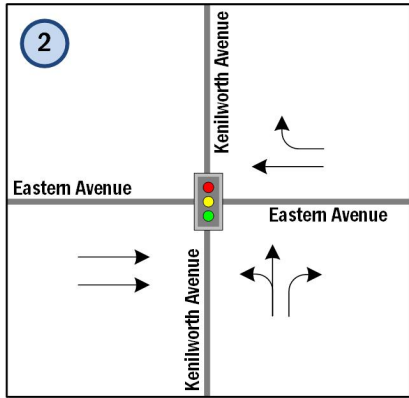
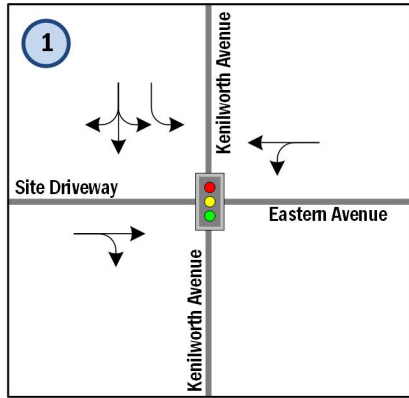
Figure 18: Outbound Trip Distribution



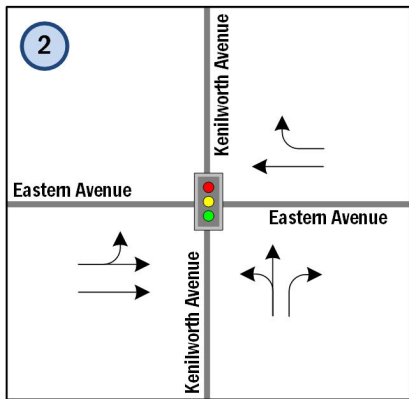
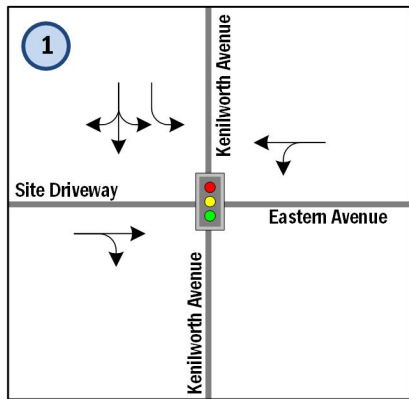
Figure 19: Inbound Trip Distribution



Restricted EB Left-turn:



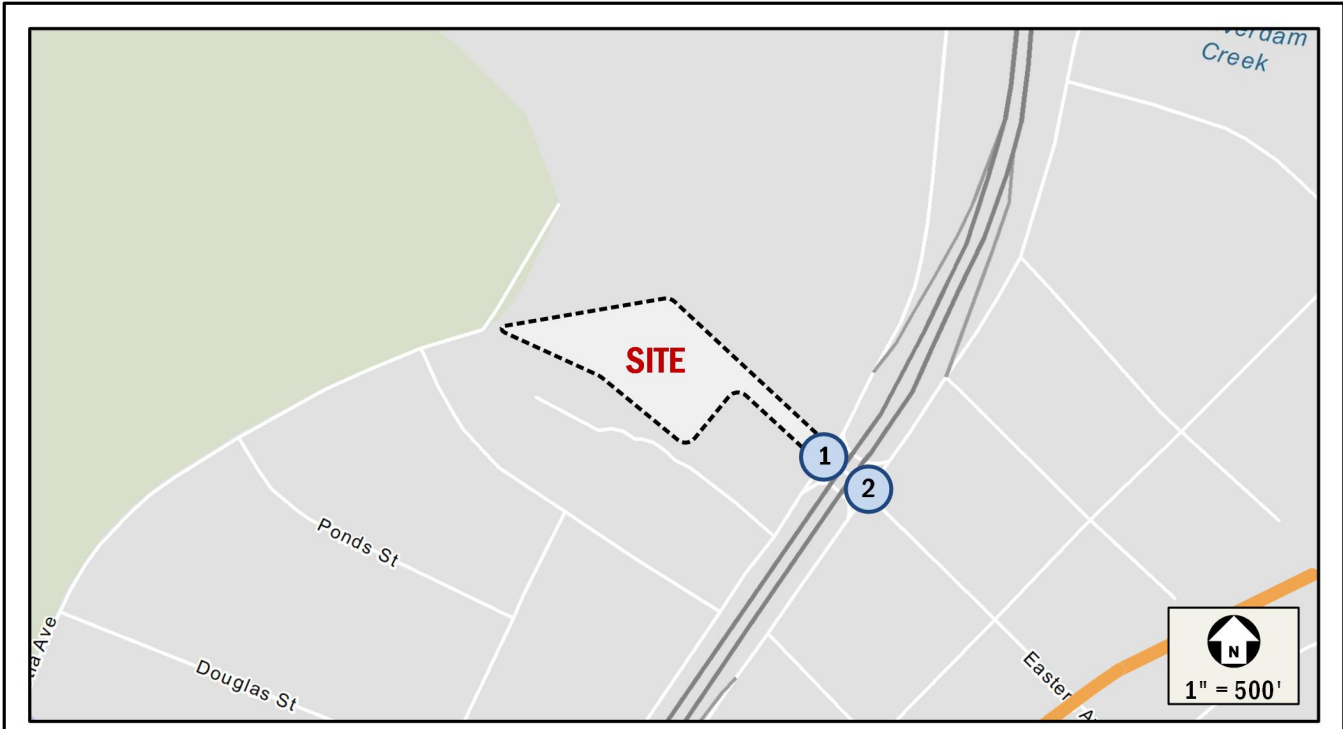
Permitted EB Left-turn:



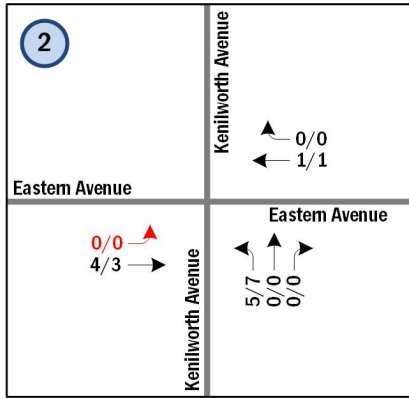
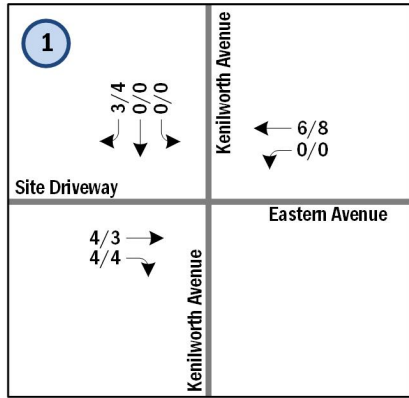
Total Future (2021) Lane Configuration and Traffic Control Devices

- Study Intersection
- Travel Lane
- Traffic Signal
- Two-Way Stop Control
- All-Way Stop Control
- Yield Control

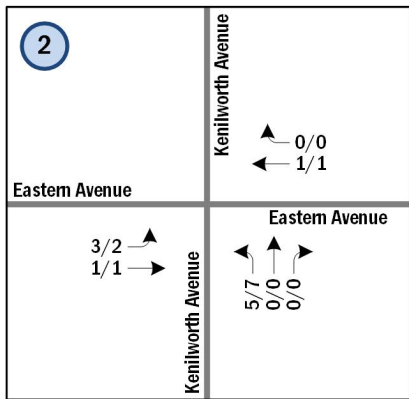
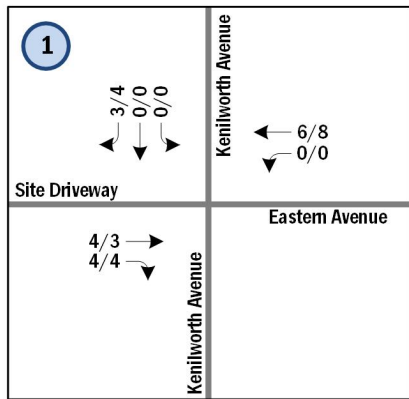
Figure 20: Total Future Lane Configuration and Traffic Control Devices (2021)



Restricted EB Left-turn:



Permitted EB Left-turn:

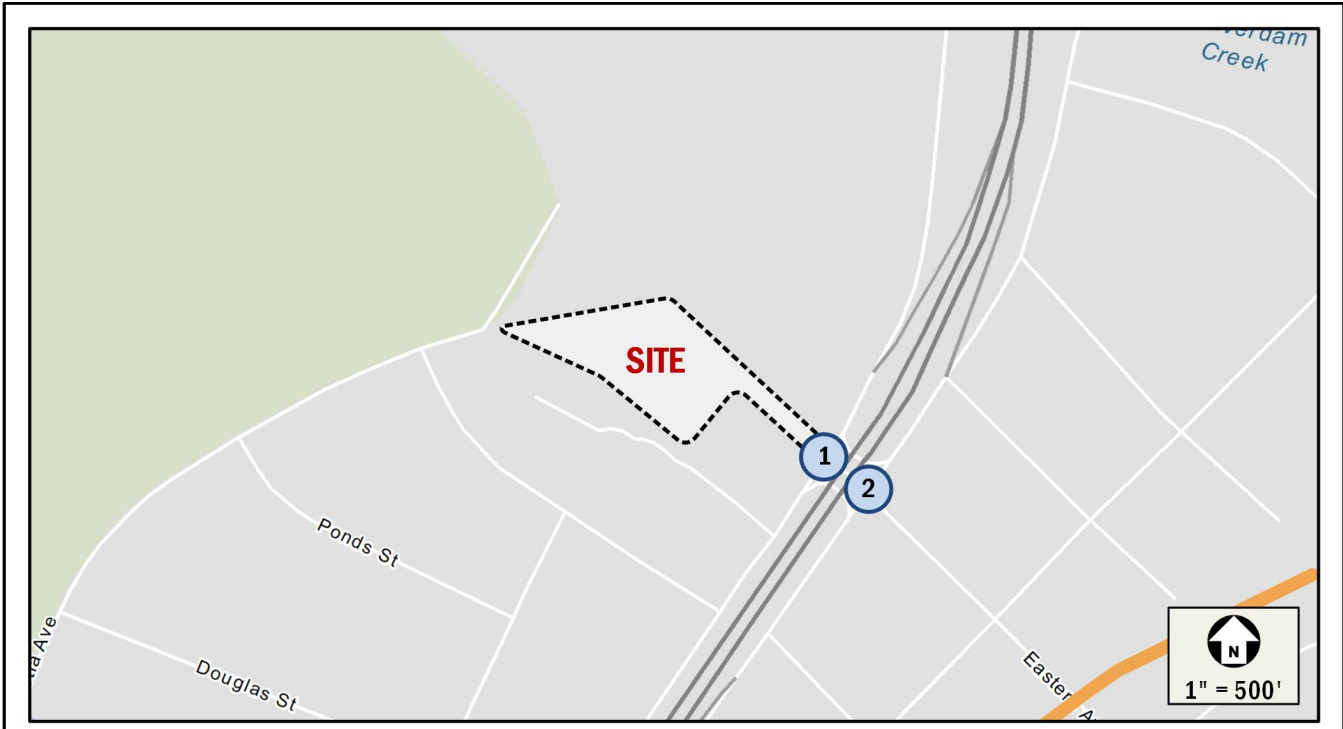


Site Generated Peak Hour Traffic Volumes

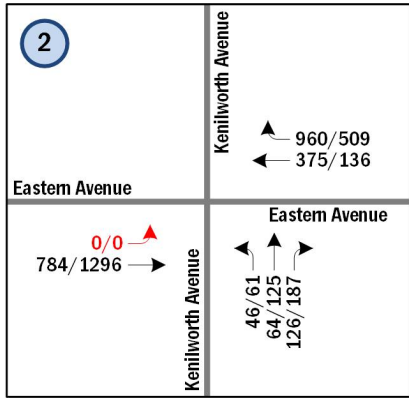
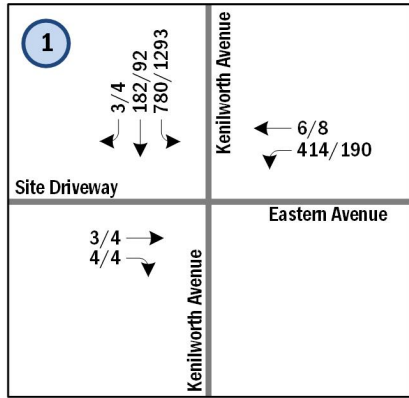
- # Study Intersection
- Turning Movement
- Restricted Movement

1234/5678 AM / PM Peak Hour Volume

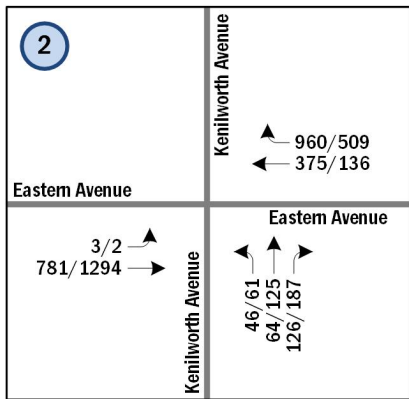
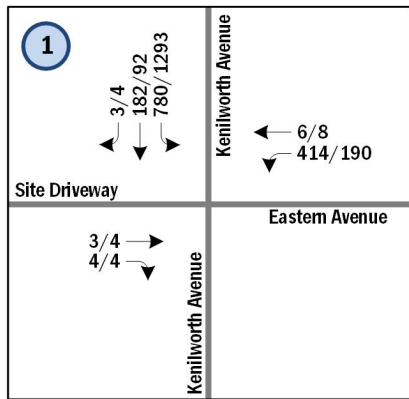
Figure 21: Site Generated Peak Hour Traffic Volumes



Restricted EB Left-turn:



Permitted EB Left-turn:



Future with Development (2021) Peak Hour Traffic Volumes

- # Study Intersection
- Turning Movement
- Restricted Movement

1234/5678 AM / PM Peak Hour Volume

Figure 22: Future with Development Peak Hour Traffic Volumes (2021)



Table 5: LOS Results

Intersection	Approach	Existing Conditions (2019)				Background Conditions (2021)				Total Future Conditions (2021)				Total Future Conditions (2021) with EB Left-Turn			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Eastern Avenue & Kenilworth Avenue (Southbound)	Overall	54.1	D	57.2	E	56.7	E	59.9	E	57.9	E	60.9	E	53.6	D	61.2	E
	Eastbound	--	--	--	--	--	--	--	--	31.4	C	37.0	D	32.2	C	37.0	D
	Westbound	42.0	D	42.2	D	46.0	D	43.5	D	48.8	D	48.0	D	48.7	D	51.0	D
	Southbound	59.3	E	59.3	E	61.3	E	62.1	E	62.0	E	62.8	E	55.9	E	62.8	E
2. Eastern Avenue & Kenilworth Avenue (Northbound)	Overall	25.6	C	15.0	B	26.6	C	15.1	B	26.7	C	15.3	B	34.7	C	23.2	C
	Eastbound	0.2	A	0.7	A	0.2	A	0.7	A	0.2	A	0.7	A	0.2	A	1.1	A
	Westbound	39.0	D	26.8	C	40.6	D	27.2	C	40.8	D	27.3	C	54.8	D	54.0	D
	Northbound	34.4	C	44.9	D	34.5	C	45.0	D	34.7	C	45.4	D	35.7	D	46.7	D

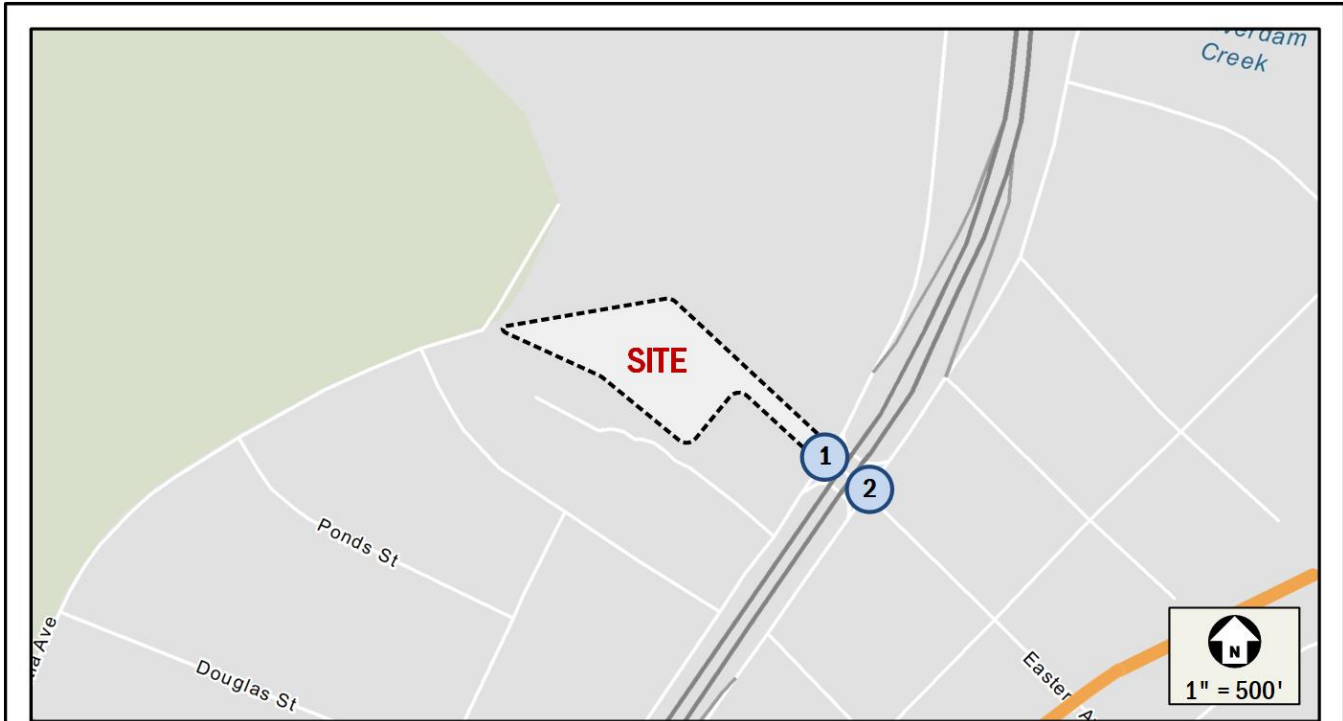
Table 6: v/c Comparison

Intersection	Movement	Existing Conditions (2019)		Background Conditions (2021)		Total Future Conditions (2021)		Total Future Conditions (2021), with Eastbound Left-Turn	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1. Eastern Avenue & Kenilworth Avenue (Southbound)	Overall	0.82	0.76	0.84	0.78	0.85	0.79	0.87	0.79
	Eastbound TR	--	--	--	--	0.02	0.01	0.02	0.01
	Westbound Left	1.02	0.76	1.03	0.78	--	--	--	--
	Westbound LT	--	--	--	--	1.04	0.81	1.04	0.81
	Southbound Left	0.95	0.99	0.95	0.99	0.95	1.01	0.93	1.01
	Southbound LT	0.96	0.99	0.97	1.01	--	--	--	--
	Southbound LTR	--	--	--	--	0.98	1.00	0.95	1.00
2. Eastern Avenue & Kenilworth Avenue (Northbound)	Overall	0.68	0.68	0.69	0.68	0.70	0.69	0.60	0.71
	Eastbound Thru	0.38	0.62	0.38	0.63	0.38	0.63	--	--
	Eastbound LT	--	--	--	--	--	--	0.40	0.66
	Westbound Thru	0.94	0.60	0.93	0.62	0.96	0.63	0.96	0.63
	Westbound Right	0.77	0.38	0.79	0.38	0.79	0.38	0.75	0.38
	Northbound LT	0.34	0.55	0.38	0.55	0.36	0.57	0.38	0.57
	Northbound Right	0.10	0.29	0.10	0.29	0.10	0.29	0.10	0.40

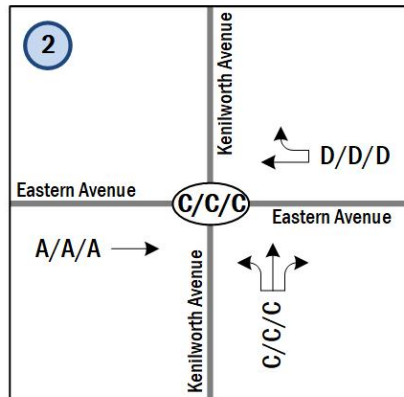
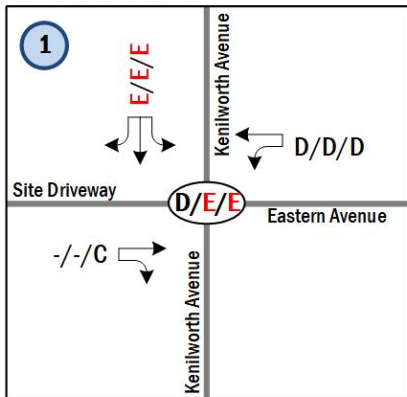


Table 7: Average and 95th Percentile SimTraffic Queuing Results (in feet)

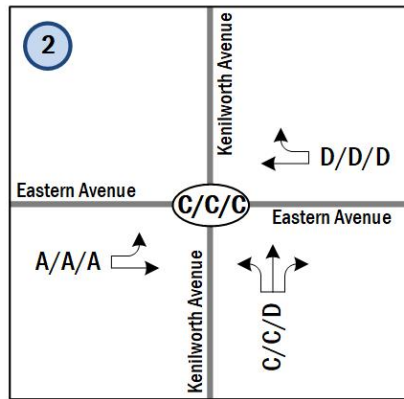
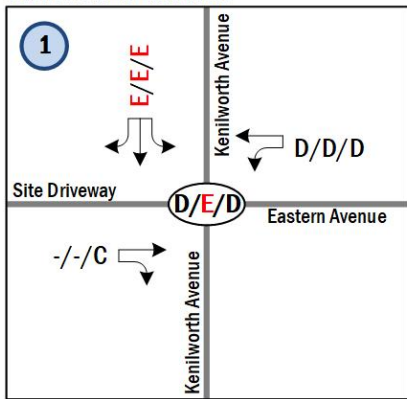
Intersection	Movement	Storage Length (Feet)	Existing Conditions (2019)				Background Conditions (2021)				Total Future Conditions (2021)				Total Future Conditions (2021) with EB Left-Turn			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Avg	95th	Avg	95th	Avg	95th	Avg	95th	Avg	95th	Avg	95th	Avg	95th	Avg	95th
1. Eastern Avenue & Kenilworth Avenue (Southbound)	Eastbound TR	200	--	--	--	--	--	--	--	--	6	26	5	24	7	28	5	23
	Westbound Left	85	74	123	65	115	72	117	68	115	--	--	--	--	--	--	--	--
	Westbound LT	85	--	--	--	--	--	--	--	--	78	127	81	129	77	122	80	126
	Southbound Left	700	262	393	372	533	285	453	409	666	269	405	422	653	259	391	387	576
	Southbound LT	850	286	417	394	559	308	481	424	643	--	--	--	--	--	--	--	--
	Southbound LTR	850	--	--	--	--	--	--	--	--	298	436	444	678	288	426	405	596
2. Eastern Avenue & Kenilworth Avenue (Northbound)	Eastbound LT	90	3	26	21	87	--	--	--	--	--	--	--	--	7	34	21	82
	Eastbound Thru	90	--	--	--	--	4	31	25	96	6	32	30	101	3	25	18	82
	Westbound Thru	400	605	1107	104	185	629	1028	106	189	618	1216	120	228	1454	2369	125	245
	Westbound Right	400	458	1010	65	123	526	1022	69	142	542	1527	68	133	1936	3242	92	180
	Northbound LT	405	79	181	125	216	75	142	124	212	78	151	148	264	88	201	135	236
	Northbound Right	405	51	92	89	163	50	88	85	150	50	95	89	161	52	95	85	151



Restricted EB Left-turn:



Permitted EB Left-turn:



AM Peak Hour Level of Service

- # Study Intersection
- X/X/X Overall Intersection Level of Service
- ↔ Intersection Approach

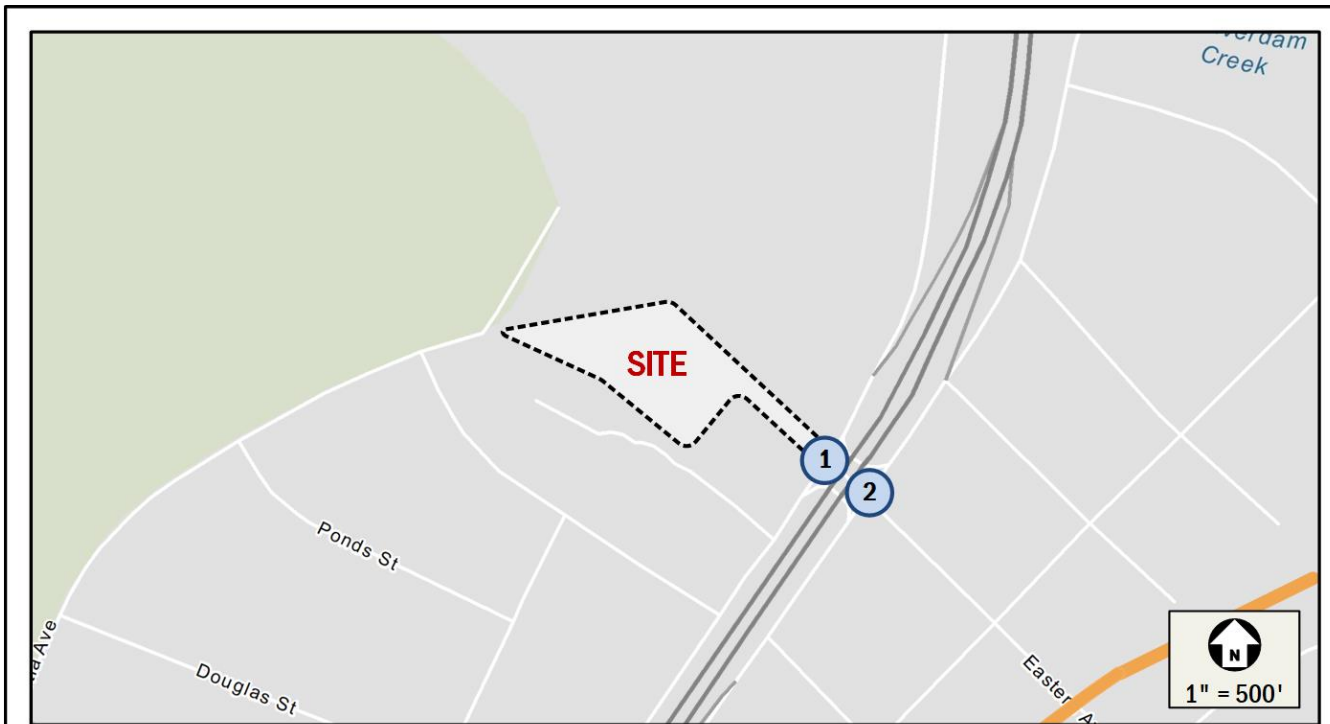
Level of Service Results

Existing (2019) X / X / X

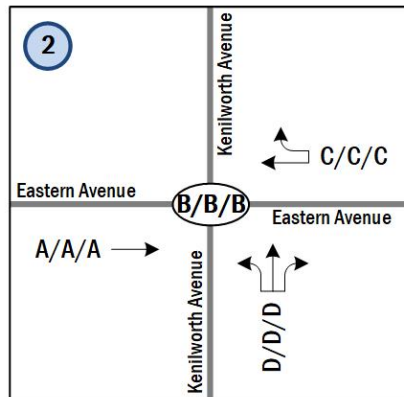
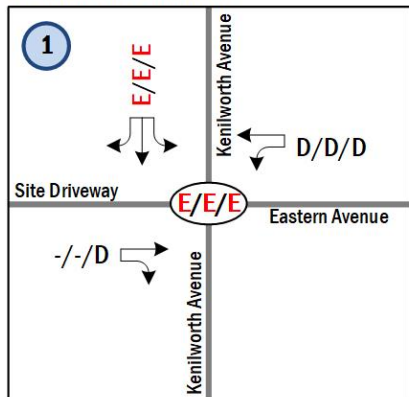
Future without Development (2021) X / X / X

Future with Development (2021) X / X / X

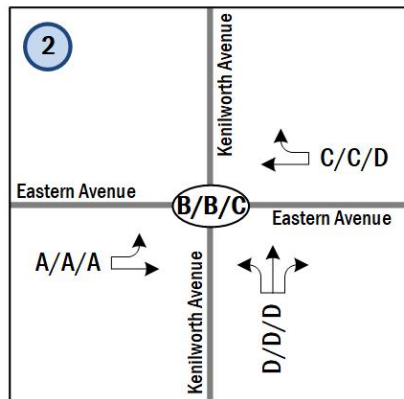
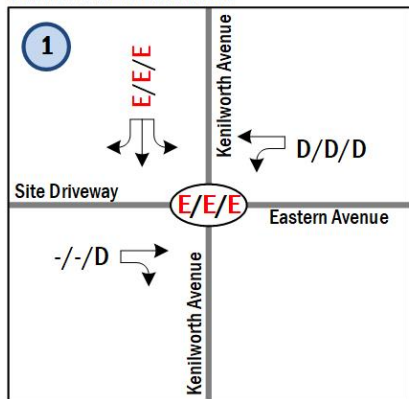
Figure 23: AM Peak Hour Level of Service Results



Restricted EB Left-turn:



Permitted EB Left-turn:



PM Peak Hour Level of Service

- # Study Intersection
- X/X/X Overall Intersection Level of Service
- Intersection Approach

Level of Service Results X / X / X

Existing (2019) →

Future without Development (2021) →

Future with Development (2021) →

Figure 24: PM Peak Hour Level of Service



TRANSIT

This chapter discusses the existing and proposed transit facilities in the vicinity of the Site, accessibility to transit, and evaluates the overall transit impacts of the Site.

The following conclusions are reached within this chapter:

- The development has adequate access to transit.
- The development is located 0.4 miles from the Deanwood Metrorail Station.
- The development Site is surrounded by four (4) Metrobus routes within a five-minute walk that travel along multiple primary corridors.
- The development is expected to generate a manageable number of transit trips and the existing service is capable of handling these new trips.

EXISTING TRANSIT SERVICE

The study area is well served by Metrobus and has access to Metrorail. Combined, these transit services provide local, city wide, and regional transit connections and link the Site with major cultural, residential, employment, and commercial destinations throughout the region identifies the major transit routes, stations, and stops in the study area.

The Site is located approximately 0.4 miles the Deanwood Metrorail Station (served by the Orange Line). The Orange Line connects Fairfax, VA with New Carrollton, MD. The Orange Line provides connections to the Red Line, which provides a direct connection to Union Station, a hub for commuter rail – such as Amtrak, MARC, and VRE – in addition to all additional Metrorail lines, allowing for access to much of the DC Metropolitan area. Orange Line trains run every 8 minutes during the weekday morning and afternoon peak hours between 5:00 AM to 9:30 AM and 3:00 PM to 7:00 PM and approximately every 12 minutes during the weekday midday hours from 9:30 AM to 3:00 PM and every 12 to 20 minutes during the weekday off-peak periods and on weekends.

The Deanwood station is accessible from the Site by foot via Kenilworth Avenue and Polk Street, or by Metrobus.

The Site is also serviced by local Metrobus routes, providing the Site with additional connectivity to the Deanwood Metrorail Station, in addition to the stations, where transfers can be made to other bus routes and the Metrorail lines, providing

connectivity to the downtown core and other areas of the District, Maryland, and Virginia. The U7 and R12 bus routes serves the Site directly south at the intersection of Eastern Avenue and Kenilworth Avenue, providing direct access to and from Southeast, DC and Maryland during peak commute hours. Table 8 shows a summary of the bus route information for the routes that serve the Site, including service hours, headway, and distance to the nearest bus stop.

Figure 25 shows a detailed inventory of the existing Metrobus stops within a quarter-mile walkshed of the Site. Each stop is evaluated based on the guidelines set forth by WMATA's *Guidelines for the Design and Placement of Transit Stops*, as shown in Table 9. A detailed breakdown of individual bus stop amenities and criteria for standards is included in the Technical Attachments.

PROPOSED TRANSIT SERVICE

MoveDC

The MoveDC report outlines recommendations by mode with the goal of having them complete by 2040. The plan hopes to achieve a transportation system for the District that includes:

- 70 miles of high-capacity transit (streetcar or bus)
- 200 miles of on-street bicycle facilities or trails
- Sidewalks on at least one side of every street
- New street connections
- Road management/pricing in key corridors and the Central Employment Area
- A new downtown Metrorail loop
- Expanded commuter rail
- Water taxis

No transit related improvements were outlined in the MoveDC plan that directly affect the proposed development.

WMATA and DDOT Transit Studies

WMATA studied capacity of Metrorail stations in its *Station Access & Capacity Study (2008)*. The study analyzed the capacity of Metrorail stations for their vertical transportation, for example the capacity of the station at elevators, stairs, and escalators to shuttle patrons between the street, mezzanine, and platforms. The study also analyzed stations capacity to process riders at fare card gates. For both analyses, vertical transportation and fare card gates, volume-to-capacity ratios were calculated for existing data (from 2005) and projections for the year 2030. According to the study, the Deanwood



station can currently accommodate future growth at all access points.

WMATA has also studied capacity along Metrobus routes. DC's *Transit Future System Plan* (2010) lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). A load factor is considered unacceptable if it is over 1.2 during peak periods or over 1.0 during off-peak or weekend periods. According to this study Metrobus routes that travel near the Site operate at a load factor that is at or below its capacity during peak periods of the day.

SITE IMPACTS

Transit Trip Generation

The Site is projected to generate 20 transit trips (9 inbound, 11 outbound) during the morning peak hour and 21 transit trips (11 inbound, 10 outbound) during the afternoon peak hour.

Even though it is expected that the majority of new trips will be made via Metrobus and Metrorail, site-generated transit trips will not cause detrimental impacts to Metrobus or Metrorail service.

Table 8: Metrobus Route Information

Route Number	Route Name	Service Hours	Headway	Walking Distance to Nearest Bus Stop
R12	Kenilworth Avenue Line	Weekdays: 5:05am – 9:20pm Weekends: 8:10am – 9:10pm	Weekdays: 30 minutes Weekends: 60 minutes	500 ft, 2 min
U7	Deanwood-Minnesota Ave Line	Weekdays: 4:30am – 12:30am Weekends: 5:00am – 12:30am	Weekdays: 20-30 minutes Weekends: 20-30 minutes	400 ft, 1 min
V14	District Heights-Seat Pleasant Line	Weekday: 5:15am – 10:06pm Weekends: 7:05am – 9:05pm	Weekdays: 20-60 minutes Weekends: 60 minutes	0.4 miles, 10 min
W4	Deanwood-Alabama Avenue Line	Weekday: 5:01am to 2:22am Weekends: 6:00am – 2:00am	Weekday: 4-36 minutes Weekends: 20-30 minutes	0.4 miles, 10 min

Table 9: Transit Stop Requirements

Feature	Basic Stop	Enhanced Service Bus Stop	Transit Center
Bus Stop Sign	Yes	Yes	Yes
ADA 5'x8' Landing Pad - at a minimum, a clear, unobstructed, paved boarding area that is 8 feet deep (perpendicular to the curb) by 5 feet wide (parallel to the curb) and compliant with the ADA Accessibility Guidelines (ADAAG)	Yes	Yes	Yes
Sidewalk - connected by a paved sidewalk that is at least 4 feet wide	Yes	Yes	Yes
Lighting - adequate lighting either from street lights, lights from an adjacent business, or shelter lighting (particularly stops that are served in the evenings)	Evening Service	Yes	Yes
Seating	Trip Generator Based	Yes	Yes
Information Case - detailed schedule information on services	Yes	Yes	Yes
Trash Receptacle - trash receptacle (particularly at locations that are close to fast food establishments and convenient stores)	Site Specific	Yes	Yes
Shelter(s) - shelter with interior seating if there are 50 or more boardings per day (including transfers)	1 (50+ boardings/day)	1	2+
System Map	Contingent on Shelter	Yes	Yes
Real-time Display (LED + Audio)	Optional	Yes	Yes
Interactive Phone System On-Site - real time bus arrival information through an interactive phone and push button audio system	No	No	Yes
Expanded Boarding & Alighting Area (Rear-door Access)	No	Site Specific	Yes
Bus Bay (Pull Off)	No	Site Specific	Yes

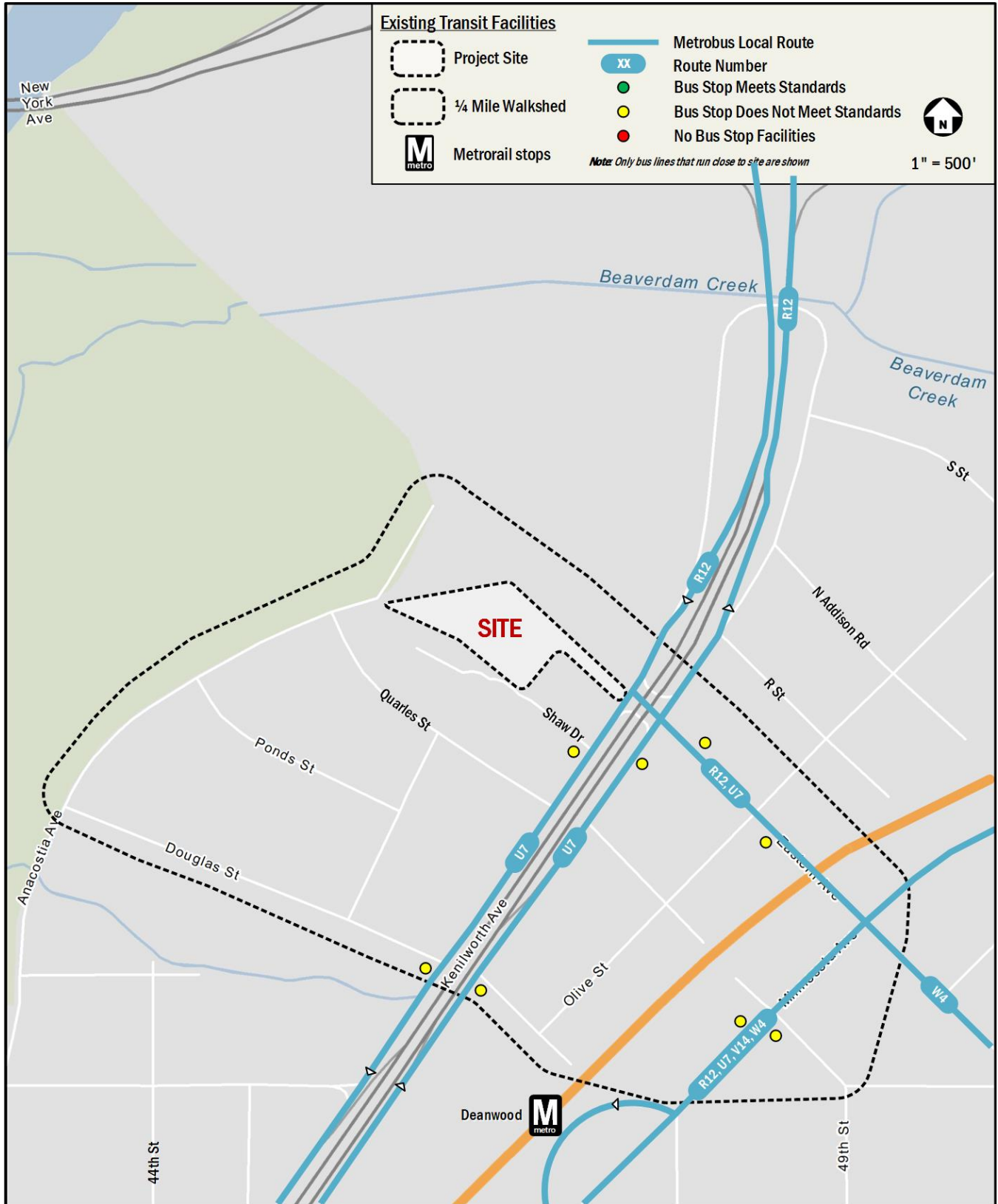


Figure 25: Existing Transit Facilities



PEDESTRIAN FACILITIES

This chapter summarizes the existing and future pedestrian access to the site and reviews walking routes to and from the Site.

The following conclusions are reached within this chapter:

- The existing pedestrian infrastructure surrounding the Site provides a quality walking environment. There are sidewalks along the majority of primary routes to pedestrian destinations with some gaps in the system.
- The development is expected to generate a minimal number of pedestrian trips; however, the pedestrian trips generated by walking to and from transit stops will be more substantial.

PEDESTRIAN STUDY AREA

Facilities within a quarter-mile of the Site were evaluated as well as routes to nearby transit facilities. The Site is accessible to transit options such as bus stops directly adjacent to the Site along Kenilworth Avenue and the Deanwood Metro station. There are a few areas of concern within the study area that negatively impact the quality of and attractiveness of the walking environment. This includes roadway conditions that reduce the quality of walking conditions, narrow or nonexistent sidewalk buffers, incomplete or insufficient crossings at intersections, and I-295, Route 50, and Metrorail tracks that limit connectivity to the north and east. Figure 26 shows suggested pedestrian pathways, walking time and distances, and barriers and areas of concern.

PEDESTRIAN INFRASTRUCTURE

This section outlines the existing and proposed pedestrian infrastructure within the pedestrian study area.

Existing Conditions

A review of pedestrian facilities surrounding the proposed development shows that most facilities meet DDOT standards, resulting in a quality walking environment. I-295 and Route 50 present a challenge for pedestrians by limiting connectivity to the north. Metrorail tracks limit connectivity to the east. Figure 27 shows a detailed inventory of the existing pedestrian infrastructure surrounding the Site. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT's *Design and Engineering Manual (2019)* in addition to

ADA standards. Sidewalk widths and requirements for the District are shown below in Table 10.

Within the area shown, the majority of roadways are considered residential. Sidewalks surrounding the Site generally comply with DDOT standards, with deficiencies due to narrow or missing buffer widths. All primary pedestrian destinations are accessible via routes with sidewalks, some of which met DDOT standards. The Deanwood Underpass provides direct access to the Deanwood Metro station. Just southwest from the Site along Kenilworth Avenue is a pedestrian bridge providing additional access to the Metro station over I-295. Some residential streets north of the Site lack sidewalks; however, these streets are generally low-volume and ultimately do not limit connectivity.

ADA standards require that curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired. As shown in Figure 27, under existing conditions crosswalks and curb ramps with detectable warnings are present throughout the study area.

Pedestrian Infrastructure Improvements

As part of the development, pedestrian facilities around the western perimeters of the Site will be improved to meet DDOT and ADA standards. New sidewalks will be installed along the west side of the Site along the new site driveway and Shaw Drive, that will meet or exceed the width requirements, as well as curb ramps with detectable warnings and crosswalks at the new site entrance.

The development will also include a pedestrian boardwalk that will meander westward across the Site, providing direct access to the green space at the rear of the Site, Anacostia Avenue, and the Kenilworth Park & Aquatic Gardens. Additionally, a walking path will be provided on-site for residents from the building front along the west side and connecting to the boardwalk.

SITE IMPACTS

Pedestrian Trip Generation

The Kenilworth Affordable Assisted Living Community development is expected to generate five (5) walking trips (2 inbound, 3 outbound) during the morning peak hour and 7 walking trips (4 inbound, 3 outbound) during the afternoon



peak hour. The origins and destinations of these trips are likely to be:

- Employment opportunities where residents can walk to work;
- Retail locations outside of the Site; and
- Neighborhood destinations such as schools, libraries, and parks in the vicinity of the Site.

In addition to these trips, the transit trips generated by the Site will also generate pedestrian demand between the Site and

nearby transit stops, including bus stops and Metrorail stations within a five-minute walk. The pedestrian network will have the capacity to absorb the newly generated trips from the Site.

Table 10: Sidewalk Requirements

Street Type	Minimum Sidewalk Width	Minimum Buffer Width
Residential (Low to Moderate Density)	6 ft	4 ft (6 ft preferred for tree space)
Residential (High Density)	8 ft	4 ft (6 ft preferred for tree space)
Commercial (Non-downtown)	10 ft	4 ft
Downtown	16 ft	6 ft

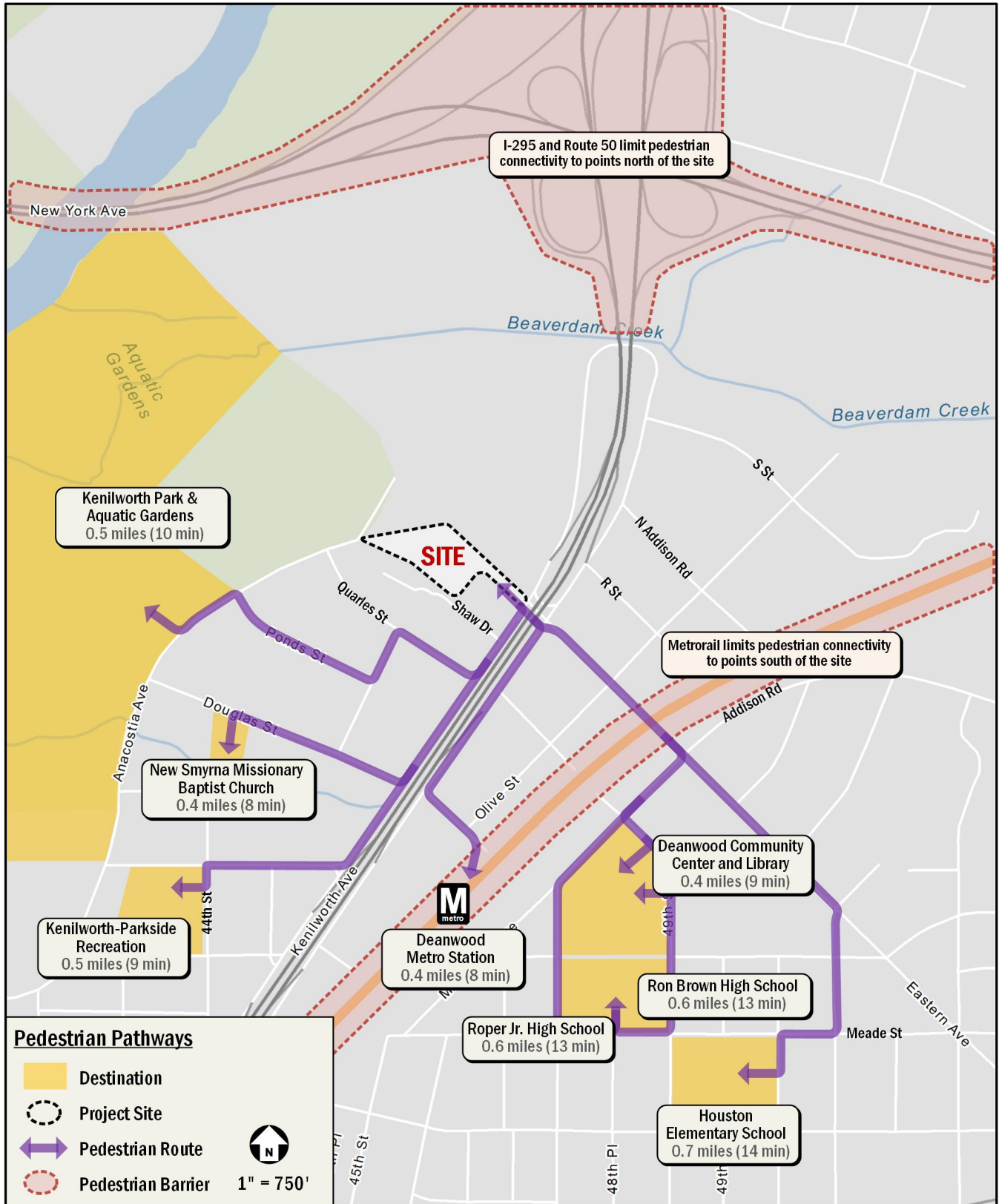


Figure 26: Pedestrian Pathways

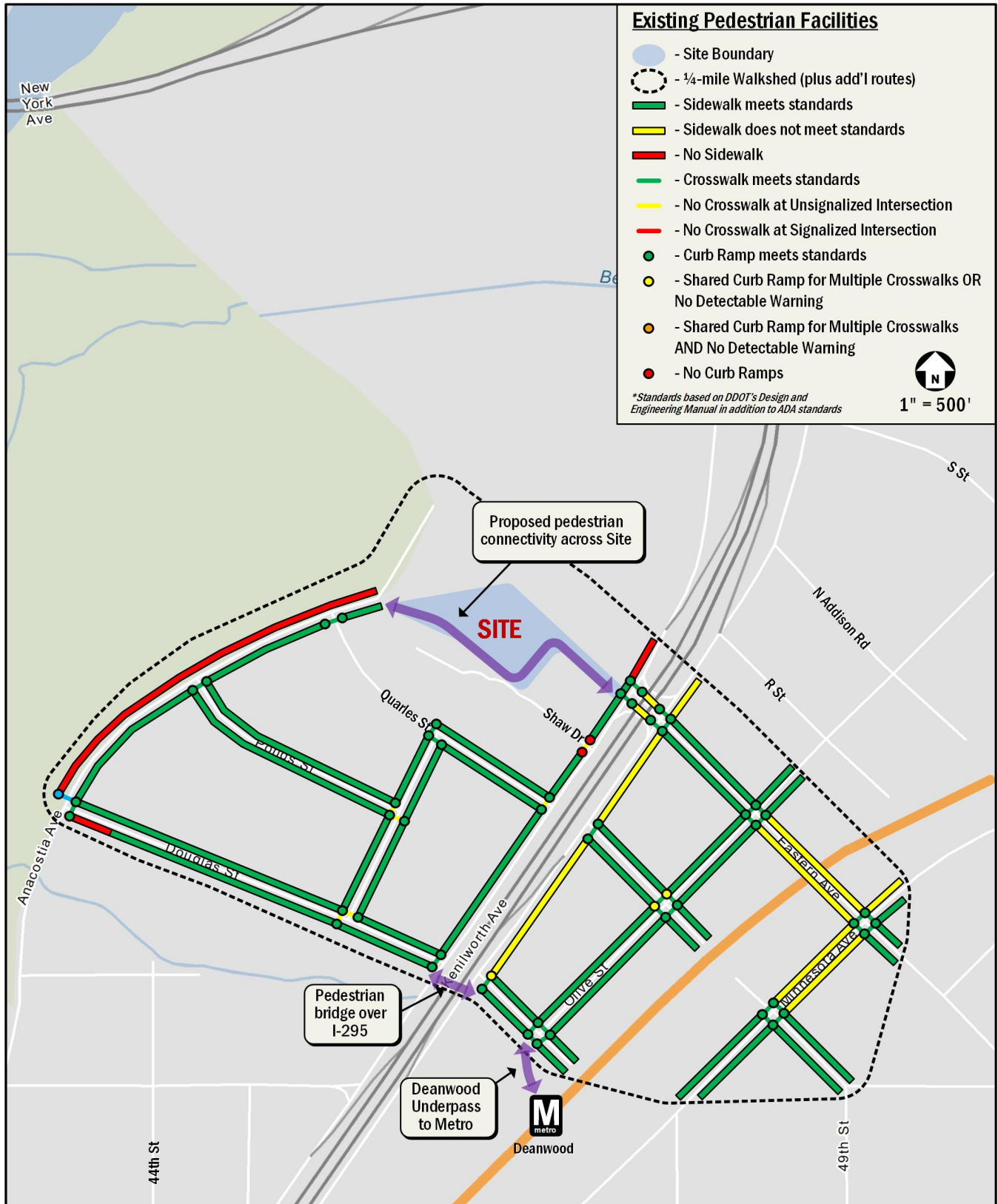


Figure 27: Existing Pedestrian Facilities



BICYCLE FACILITIES

This chapter summarizes existing and future bicycle access, reviews the quality of cycling routes to and from the Site, and presents recommendations.

The following conclusions are reached within this chapter:

- The Site has access to several on and off-street bicycle facilities including the Anacostia Riverwalk Trail.
- The development is not expected to generate a significant number of bicycle trips; therefore, all site-generated bike trips can be accommodated on existing infrastructure.
- The development will include secure bicycle parking on-site for residents of the development.
- The development will include short-term bicycle racks along the perimeter of the Site.

EXISTING BICYCLE FACILITIES

The Site has some connectivity to existing on and off-street bicycle facilities. Residential low volume streets surrounding the Site provide connectivity to existing bicycle facilities near the Site. Shared lanes are available two (2) blocks away from the Site along 49th Street, providing north-south connectivity and access to the Marvin Gaye Trail. Access to the Anacostia Riverwalk Trail is approximately 0.8 miles from the Site off Anacostia Avenue and connects Kenilworth Park & Aquatic Gardens north of the site to Anacostia Park south of the site.

Under existing conditions there is no short-term bicycle parking located around the perimeter of the site.

In addition to personal bicycles, the Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the planned development. The Bikeshare program has placed over 500 Bikeshare stations across Washington, DC, Arlington, and Alexandria, VA, Montgomery County, MD, and most recently Fairfax County, VA, with 4,300 bicycles provided. There is one (1) existing Capital Bikeshare stations within a half-mile of the Site. The station is located 0.4 miles away from the Site along Minnesota Avenue between Quarles Street and 48th Street (south of the Site with 12 available bicycle docks).

These bicycle facilities connect the Site to areas within the District and Maryland. Figure 28 illustrates the existing bicycle facilities in the study area.

PROPOSED BICYCLE FACILITIES

MoveDC

The MoveDC plan outlines several bicycle improvements in the vicinity of the Site. These improvements are broken up into four tiers that rank the priority for implementation. The four tiers are broken down as follows:

- Tier 1
Investments should be considered as part of DDOT's 6-year Transportation Improvement Program (TIP) and annual work program development, if they are not already included. Some projects may be able to move directly into construction, while others become high priorities for advancement through the Project Development Process.
There are no Tier 1 additions planned for near the Site.
- Tier 2
Investments within this tier are not high priorities in the early years of MoveDC implementation. These investments could begin moving through the Project Development Process if there are compelling reasons for their advancement.
There is one Tier 2 addition that will positively affect bicycle connectivity to and from the Site. A 1.4-mile bicycle lane along 49th Street between Minnesota Avenue and East Capitol Street is planned, replacing the current shared lane system in place for this portion and improving the north-south bicycle connectivity near the Site.
- Tier 3
Investments within this tier are not priorities for DDOT-led advancement in the early years of MoveDC's implementation. They could move forward earlier under circumstances, such as real estate development initiatives and non-DDOT partnerships providing the opportunity for non-District-led completion of specific funding.
- Tier 4
Generally, investments within this tier are not priorities for DDOT-led advancement and are lower priority for project development in the early years of implementation.

Due to the timeline of the proposed development, this report will focus on the Tier 1 and Tier 2 recommendations within the vicinity of the Site.

Although these projects are discussed in the MoveDC plan, they are not currently funded nor included in DDOT's



Transportation Improvement Plan thus they will not be assumed as complete for this report.

Capital Bikeshare

The Capital Bikeshare program provides additional cycling options for residents, employees, and patrons of the planned development. The Bikeshare program has placed over 500 Bikeshare stations across Washington, DC, Arlington, and Alexandria, VA, Montgomery County, MD, and most recently Fairfax County, VA, with 4,300 bicycles provided. Capital Bikeshare currently has one existing station with 12 available bicycle docks within a half-mile biking distance of the Site along south of Minnesota Avenue between Quarles Street and 48th Street. Figure 28 illustrates the existing Capital Bikeshare facilities in the area.

On-Site Bicycle Elements

The project will include approximately eight (8) short-term bicycle spaces along the perimeter of the Site. These short-term spaces will include inverted U-racks placed in a high-visibility area.

The project will also include secure long-term bicycle parking. The plans identify a total of approximately 51 long-term spaces, within the ground floor which meets current ZR16 regulations.

SITE IMPACTS

Bicycle Trip Generation

The Kenilworth Affordable Assisted Living Community development is expected to generate two (2) bicycle trips (1 inbound, 1 outbound) during the morning peak hour and two (2) bicycle trips (1 inbound, 1 outbound) during the afternoon peak hour. Despite the low number of anticipated bicycle site trips, bicycling will be an important mode getting to and from the Site. With adequate facilities located on site and existing routes to and from the Site, the impacts from bicycling will be minimal.



Figure 28: Existing Bicycle Facilities



SUMMARY AND CONCLUSIONS

The report is a Comprehensive Transportation Review (CTR) for the Kenilworth Affordable Assisted Living Community (AALC). This report reviews the transportation aspects of the project's application for Design Review by the Zoning Commission (Zoning Commission Case Number is 19-09).

The purpose of this study is to evaluate whether the project will generate a detrimental impact to the surrounding transportation network. This evaluation is based on a technical comparison of the existing conditions, background conditions, and total future conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming all planned site design elements are implemented.

Proposed Project

The property is located at 1630 Kenilworth Avenue NE, on the northwest side of Kenilworth Avenue, at the intersection of Eastern Avenue and Kenilworth Avenue, near the DC-Maryland line. The site for the proposed development is currently vacant.

The project will develop the site into an affordable assisted living community. The development consists of:

- One (1) affordable assisted living community building containing approximately 155 units.
- 25 vehicle parking spaces in covered ground-level parking.
- One (1) 30-foot loading berth per building and one (1) 20-foot service/delivery space.
- 51 secure long-term and 8 short-term bicycle parking spaces.

Although this CTR is primarily based on the April 25, 2019 submittal, the site plans are expected to change prior to the Zoning Commission Hearing, and this CTR accounts for those changes. The main transportation related impact of these changes will be a reduced parking space count. Site access, pedestrian facilities, and bicycle facilities will remain unchanged.

Primary access/egress to the covered parking area will be from the new curb cut and driveway at the intersection of Eastern Avenue and Kenilworth Avenue. Secondary access/egress will be from the planned Shaw Drive to the west, which is currently a public alley and is proposed to be converted to a private

street as part of the Kenilworth Courts PUD. Access to the loading facilities will also utilize the new driveway from Kenilworth Avenue and will occur on the north side of the Site. All truck turning maneuvers will occur on the Site, allowing for front-in, front-out access for trucks to the public street.

The development will meet the zoning requirements for bicycle parking by including 8 short-term bicycle parking spaces and 51 long-term bicycle parking spaces. The development will supply long-term bicycle parking within the ground-floor of the development and short-term bicycle parking along the perimeter of the Site that meet zoning requirements. The bicycle parking will meet the practical needs of the development.

Multi-Modal Impacts and Recommendations

Transit

The Site is served by regional and local transit services via Metrobus and Metrorail. The Site is 0.4 miles from the Deanwood Metrorail Station, with Metrobus stops located within walking distance of the Site along Kenilworth Avenue.

Although the development will be generating new transit trips, existing facilities have enough capacity to accommodate the new trips.

Pedestrian

The Site is surrounded by a pedestrian network with a quality pedestrian network. Most roadways within a quarter-mile radius provide sidewalks and acceptable crosswalks and curb ramps, particularly along the primary walking routes and to the Deanwood Metro station.

As a result of the development, pedestrian facilities around the western perimeters of the Site will be improved to meet DDOT and ADA standards. New sidewalks will be installed along the west side of the Site along the new site driveway and Shaw Drive, that will meet or exceed the width requirements, as well as curb ramps with detectable warnings and crosswalks at the new site entrance.

The development will also include a pedestrian boardwalk that will meander westward across the Site, providing direct access to the green space at the rear of the Site and the Kenilworth Park & Aquatic Gardens. Additionally, a walking path will be provided on-site for residents from the building front along the west side and connecting to the boardwalk.



The development will generate minimal pedestrian trips and the improved facilities will be able to handle the new trips.

Bicycle

The Site has some connectivity to existing on and off-street bicycle facilities. Residential low volume streets surrounding the Site provide connectivity to existing bicycle facilities near the Site. Shared lanes are available two (2) blocks away from the Site along 49th Street. Access to the Anacostia Riverwalk Trail is available from Anacostia Avenue, northwest of the Site. A capital bikeshare location is located 0.4 miles away from the Site along Minnesota Avenue between Quarles Street and 48th Street.

The development will provide short-term bicycle parking along the perimeter of the Site for staff and visitors. On-site secure long-term bicycle parking will be provided on the ground floor of the building for residents and staff of the development. The amount of bicycle parking provided meets zoning requirements.

The development will generate minimal bicycle trips and the existing facilities will be able to handle these new trips.

Vehicular

The Site is accessible from regional roadways, such as the Anacostia Freeway (DC Route 295) and New York Avenue (Route 50) and several principal and minor arterials such as Eastern Avenue NE and Minnesota Avenue NE. These roadways create connectivity to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs, as well as provides connectivity to the District core.

In order to determine impacts that the proposed development will have on the transportation network, this report projects future conditions with and without the proposed development and performs analyses of intersection delays and queues.

These are compared to the acceptable levels of delay set by DDOT standards as well as existing queues to determine if the Site will negatively impact the study area. The analysis concluded that no mitigations need to be made as a result of the proposed development.

The proposed development will include a site driveway as a new eastbound leg to the intersection of Eastern Avenue and Kenilworth Avenue (Southbound). The Applicant is prepared to fund this geometric change as well as the associated signal modifications and signal equipment. The analysis concluded

that the addition of the site driveway as an eastbound leg of the intersection has minimal impact on the overall intersection. Phasing for this new leg was incorporated into the existing signal phasing and timings during a currently dedicated pedestrian phase.

Summary and Recommendations

This report concludes that the proposed development will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements and proposed mitigation measures are implemented.

The development has several positive elements contained within its design that minimize potential transportation impacts, including:

- The Site's close proximity to transit.
- The inclusion of secure long-term bicycle parking.
- The installation of short-term bicycle parking spaces along the frontage of the Site that meet or exceed zoning requirements.
- The creation of new pedestrian sidewalks that meet or exceed DDOT and ADA requirements, providing pedestrian porosity across the Site between Kenilworth Avenue and Kenilworth Park & Aquatic Gardens.
- A Transportation Demand Management (TDM) plan that reduces the demand of single-occupancy, private vehicles during peak period travel times or shifts single-occupancy vehicular demand to off-peak periods.