

Transportation Impact Study

The Gallery at City Center

City of Fairfax, Virginia

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Executive Summary

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed Gallery at City Center redevelopment in the City of Fairfax, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the City of Fairfax.

This study was prepared in accordance with the best professional practices and standards to assess the impact of the proposed development on the surrounding transportation systems and recommend improvements to lessen or negate those impacts. This study involves the evaluation of anticipated roadway conditions with and without the proposed development and recommends possible transportation improvements and strategies to offset both the impacts of the increase in future traffic demand and the changes in traffic operations and characteristics due to the development. This study serves to assist public officials and developers in balancing interrelations between efficient traffic movements with necessary access.

Site Location and Study Area

The proposed redevelopment will be located east of Chain Bridge Road, south of existing office developments, west of University Drive, and north of the 4131 Chain Bridge Road project, in the City of Fairfax, Virginia. The existing addresses for the site are 4085, 4101, 4103, and 4117 Chain Bridge Road.

For this study, the analysis presented herein includes six (6) existing intersections and three (3) future intersections.

The study intersections are as follows:

1. University Drive (Route 6627) at Breckinridge Lane
2. University Drive (Route 6627) at Armstrong Street
3. Chain Bridge Road (Route 123) at West Drive
4. Chain Bridge Road (Route 123) at Armstrong Street
5. Chain Bridge Road (Route 123) at Judicial Drive (City Route 1)
6. Chain Bridge Road (Route 123) at South Street/New Judicial Entrance
7. Chain Bridge Road (Route 123) at Access Service Drive (*Future*)
8. University Drive (Route 6627) at Access Service Drive (*Future*)
9. University Drive (Route 6627) at Lower Garage Entrance (*Future*)

Description of Proposed Development

The Applicant is proposing to rezone the parcels to CU (Commercial Urban) and apply for a Special Use Permit to demolish the four (4) existing office buildings and construct a mixed-use development consisting of 29,639 square feet of new office space, 7,747 square feet of retail use, and 395 residential apartments. The full redevelopment of the site is anticipated to be complete by 2029.

The site is situated on three parcels of land that can be identified on the City of Fairfax Real Estate Assessment Database with the following Tax Map #: 57-4-02-051, 57-4-02-053, 57-4-02-054, and 57-5-02-041. The parcels are 0.85, 0.30, 1.37, and 1.35 acres, respectively, totaling 3.87 acres. All four (4) parcels are currently zoned as Commercial – Office with a Future Land Use of Local Activity Center, per the Future Land Use Map of the 2035 Comprehensive Plan. Currently, four (4) buildings totaling 119,934 sq. ft exist on the parcels, all of which are designated for office use.

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with the City of Fairfax staff during a scoping meeting on January 23, 2026. A copy of the signed scoping document is included in Appendix A.

The analysis presented in this report supports the following major findings:

- The intersection capacity analysis results for the Future Conditions with Development are similar to Future Conditions without Development. Therefore, the development will have a minimal impact on the traffic operations and safety of the street network.

Additional assumptions, findings, and conclusions are as follows:

Traffic Impact Assessment Components

- As determined based on discussions with the City, 1.0% regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Drive as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street volumes.
- A mode split/TDM reduction of 15% was applied to the residential and office uses, as agreed upon with the City.
- The internal trip reduction is based on 10% between residential, office, and commercial uses, as agreed upon with the City.
- The proposed development is anticipated to generate approximately 194 trips during the AM peak hour, 219 trips during the PM peak hour, and 2,217 daily trips on a typical weekday
- The proposed development is anticipated to generate approximately 41 fewer net new trips during the AM peak hour, 21 fewer net new trips during the PM peak hour, and 609 additional net new daily trips on a typical weekday compared to the existing use.

Infrastructure

- Existing vehicular access is provided on Chain Bridge Road as well as on University Drive.
- Access to the redeveloped site will be provided via one **partial-movement right-in/right-out (RIRO)** entrance along Chain Bridge Road and two (2) **full-movement** entrances along University Drive. One of the entrances on University Drive and the entrance on Chain Bridge Road are connected via an internal new access drive on-site while the remaining entrance on University Drive connects to the lower level of the garage.
- The two levels of the garage are not connected. Retail, office, and approximately 35% of residential trips are assumed to route to the upper level of the garage while the rest of the residential uses the lower level of the garage.
- A traffic signal at the future intersection of Chain Bridge Road and the Fairfax County Judicial Complex (FCJC) Entrance is a planned improvement in the study area that will be completed by 2029.
- The City Centre West private redevelopment has been approved and is assumed to be completed by 2029.
- The 4131 Chain Bridge Road site has been approved and is assumed to be completed by 2029.
- Finally, the One University development has been completed, but traffic counts for this study were conducted before the development was completed. Therefore, the One University project was treated as a background development in the analysis. Usage of these counts has been approved in the Scope with City of Fairfax Staff.

Non-SOV Elements

- Seven (7) bus routes provide service in the vicinity of the site, providing regional access to the area.
- Immediately adjacent to the site, sidewalks are currently present along Chain Bridge Road as well as University Drive.

Analysis Results

- Three (3) intersections within the study area have approaches that operate below acceptable levels of service under all three (3) conditions studied in this analysis:
 - Intersection 3: Chain Bridge Road and West Drive
 - Intersection 4: Chain Bridge Road and Armstrong Street
 - Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway

Introduction

The following report presents the findings of a Transportation Impact Study (TIS) conducted for the proposed Gallery at City Center redevelopment located at the addresses of 4085, 4101, 4103, and 4117 Chain Bridge Road in the City of Fairfax, Virginia. This study was developed in accordance with guidelines and recommendations set forth by the City of Fairfax.

The proposed program is a mixed-use development consisting of 29,639 square feet of new office space, 7,747 square feet of retail use, and 395 residential apartments. The full redevelopment of the site is anticipated to be complete by 2029.

The following tasks were completed as part of this study effort:

- A scoping meeting was held with the City of Fairfax on January 23, 2026, which included discussions about the parameters of the study and relevant background information. A copy of the signed scoping document is included in Appendix A.
- Existing conditions were observed in the field to verify roadway geometry, pedestrian and bicycle infrastructure, and traffic flow characteristics.
- Turning movement counts were collected at the study area intersections on Wednesday, November 20, 2024, and on Thursday, December 5, 2024, during the morning and afternoon peak periods.
- Vehicular traffic analysis for the study intersections was performed using *Synchro 11* based on Highway Capacity Manual (HCM) 6th Edition methodology. HCM 2000 methodology was used if HCM 6th Edition was not applicable.
- Intersection capacity analyses were performed for the 2024 Existing Year, 2029 Future Conditions without Development, and 2029 Future Conditions with Development.
- Future traffic volumes were developed by accounting for regional growth in the area and background developments and roadway improvements. A growth rate of 1.0% per year of regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Drive as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street for the period between 2024 and 2029.
- Proposed site traffic volumes were generated based on the methodology outlined in ITE *Trip Generation*, 11th Edition.
- An assessment of the previous crashes has been conducted at existing study intersections.

Sources of data for this study include the Institute of Transportation Engineers (ITE), the City of Fairfax, the Virginia Department of Transportation (VDOT), and the office files and field reconnaissance efforts by Gorove Slade.

Background Information: Existing Development and Nearby

Description of the Existing Site

Site Location and Description of Parcel

The geographic scope of the study area was developed in accordance with the City of Fairfax guidance. Figure 1 shows the location of existing and future study intersections. The site is situated on four parcels of land that can be identified on the City of Fairfax Real Estate Assessment Database with the following Tax Map #: 57-4-02-051, 57-4-02-053, 57-4-02-054, and 57-5-02-041. The parcels are 0.85, 0.30, 1.37, and 1.35 acres, respectively, totaling 3.87 acres. All four (4) parcels are currently zoned as Commercial – Office with a Future Land Use of Local Activity Center. The parcel map is shown in Figure 2.

Site Location within Jurisdiction and Region

The site is located east of Chain Bridge Road, south of office developments, west of University Drive, and north of 4131 Chain Bridge Road, in the City of Fairfax, Virginia as shown in Figure 3.

Comprehensive Plan Recommendations

According to the City of Fairfax 2035 Comprehensive Plan, this site is planned for the Activity Center Place Type (ACPT). The ACPT applies to locations in the City where pedestrian-oriented, mixed-use development is strongly encouraged. The Old Town Fairfax Activity Center encompasses a cultural hub for the City, with a concentration of historic buildings, public services, active open space, and commercial buildings. Old Town Fairfax can also capitalize on its proximity to George Mason University to attract university supported businesses and arts and entertainment venues.

Zoning for the Site and Nearby Uses

The existing zoning for the site is CO (Commercial - Office) as shown in Figure 4.

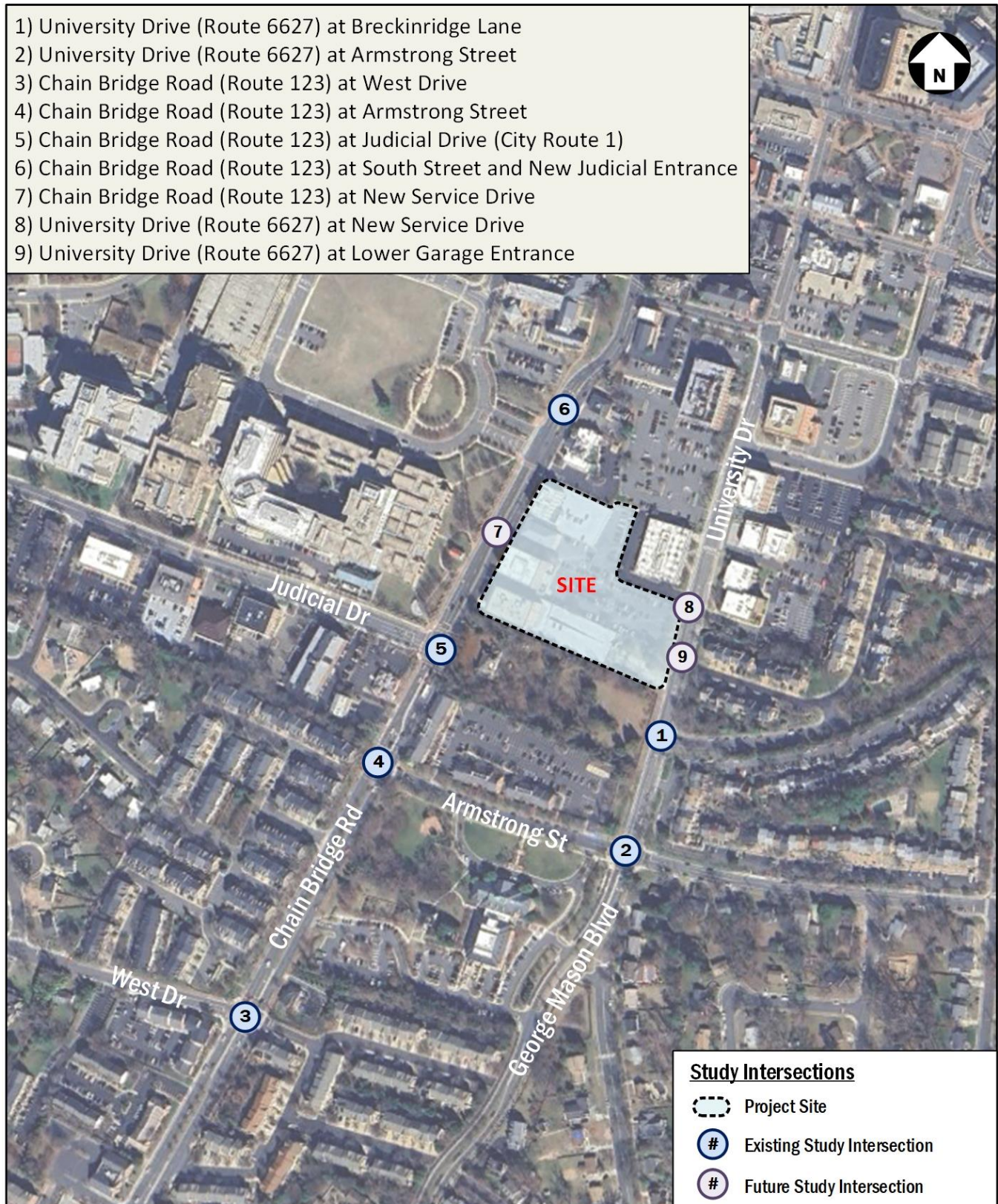


Figure 1: Study Intersections



Figure 2: Parcel Map

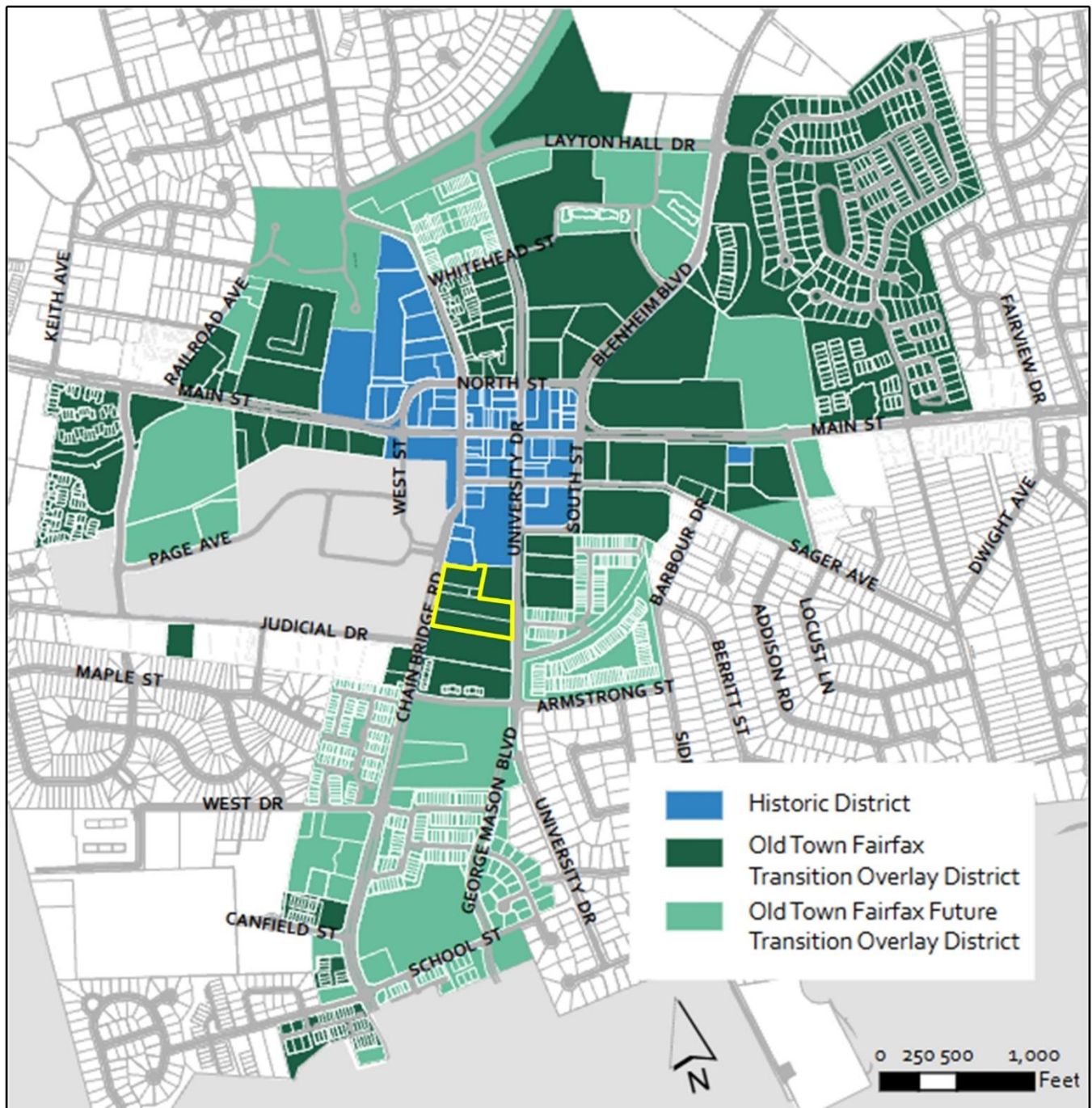
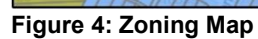


Figure 3: Jurisdiction Location (Source: City of Fairfax 2035 Comprehensive Plan)



Description of Geometric Scope and Limits of the Study Area

The geographic scope of the study area was developed in accordance with the City of Fairfax guidance.

Existing Roadways

The site is located east of Chain Bridge Road, south of office developments, west of University Drive, and north of 4131 Chain Bridge Road, in the City of Fairfax, Virginia.

The existing study area includes six (6) existing intersections along Chain Bridge Road and University Drive.

Detailed roadway descriptions are provided in the 2024 Existing Conditions section of this study.

The vehicular study area includes the following existing intersections:

1. University Boulevard (Route 6627) at Breckinridge Lane
2. University Boulevard (Route 6627) at Armstrong Street
3. Chain Bridge Road (Route 123) at West Drive
4. Chain Bridge Road (Route 123) at Armstrong Street
5. Chain Bridge Road (Route 123) at Judicial Drive (City Route 1)
6. Chain Bridge Road (Route 123) and Page Avenue/Future FCJC Entrance

Planned Future Transportation Improvements

South Street Extension

The City's recommended extension of South Street to West Street between University Drive and Chain Bridge Road will reroute traffic and relieve congestion on Main Street through Old Town. The extension will also permit the continuation of pedestrian facilities through Old Town. The proposed South Street Extension will provide access to the City Centre site, and as such, will be completed as part of the development of the City Centre site.

The extension is aligned with the City's plans, and thus has a completion date of 2031. The traffic volumes and analysis contained herein are based on the assumption that the South Street extension will be completed by 2031, consistent with the site access plans for the City Centre redevelopment.

Old Town Streetscape Plan & Standards and Main Street Streetscape Design

The Main Street Streetscape Design is part of an overall effort to prepare an Old Town Streetscape Plan and Standards that would improve the appearance and experience of Old Town Fairfax as a destination. These improvements are to be completed by others.

Signal Improvements

A traffic signal at the future intersection of Chain Bridge Road and Fairfax County Judicial Complex (FCJC) Entrance is the only planned improvement in the study area that will be completed by 2029.

Transit Improvements

According to the City of Fairfax 2035 Comprehensive Plan, bus improvements and bus transfer improvements are proposed in the vicinity of the site. Figure 5 shows the City's proposed transit network enhancements.

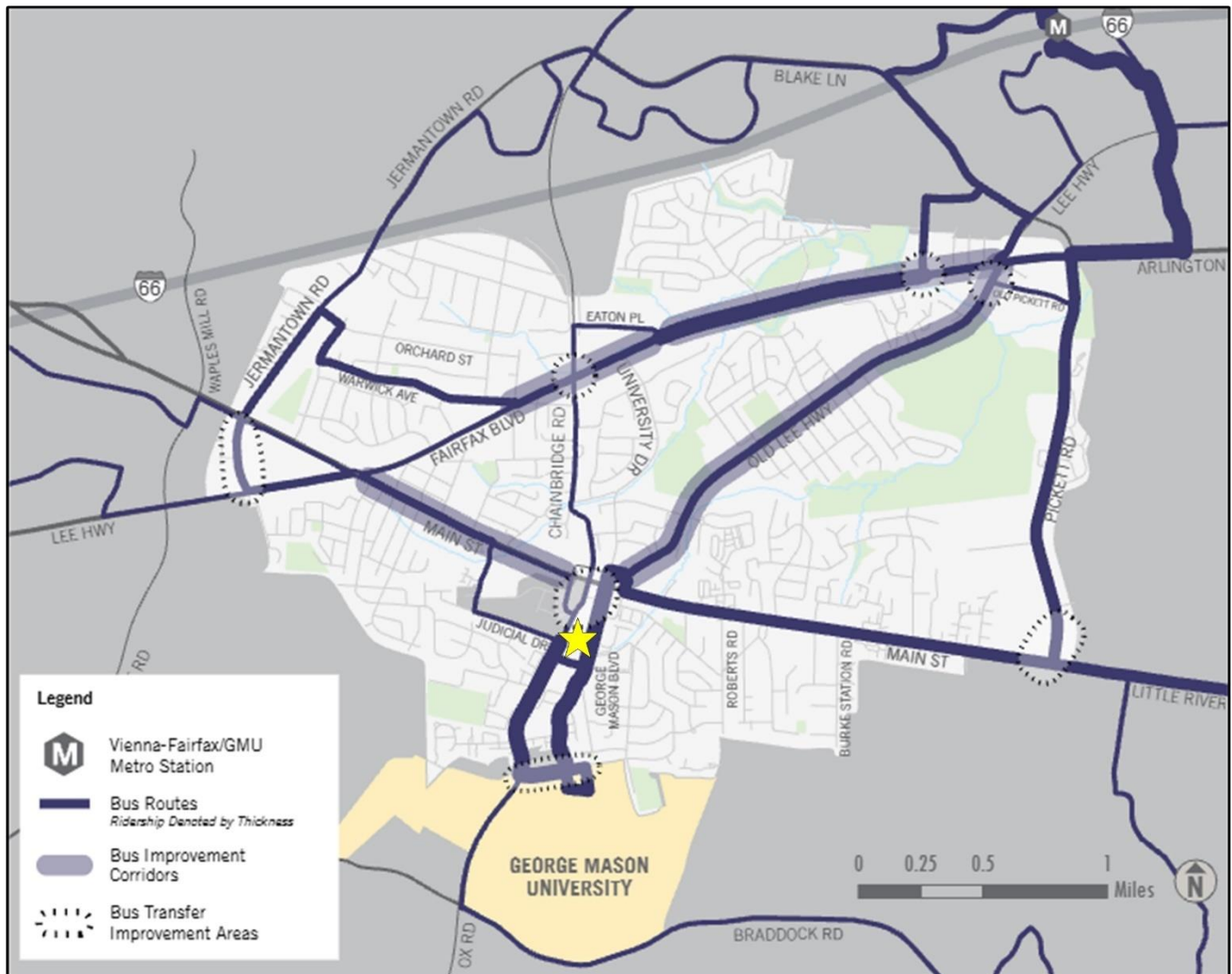


Figure 5: Proposed Transit Network Enhancements (Source: City of Fairfax 2035 Comprehensive Plan)

Bicycle and Pedestrian Improvements

According to the City of Fairfax 2035 Comprehensive Plan, on-street bike facilities and concentrated bicycle supportive infrastructure are proposed along and near Main Street and University Drive in the vicinity of the site. Figure 6 shows the City's proposed network for bicycle travel.

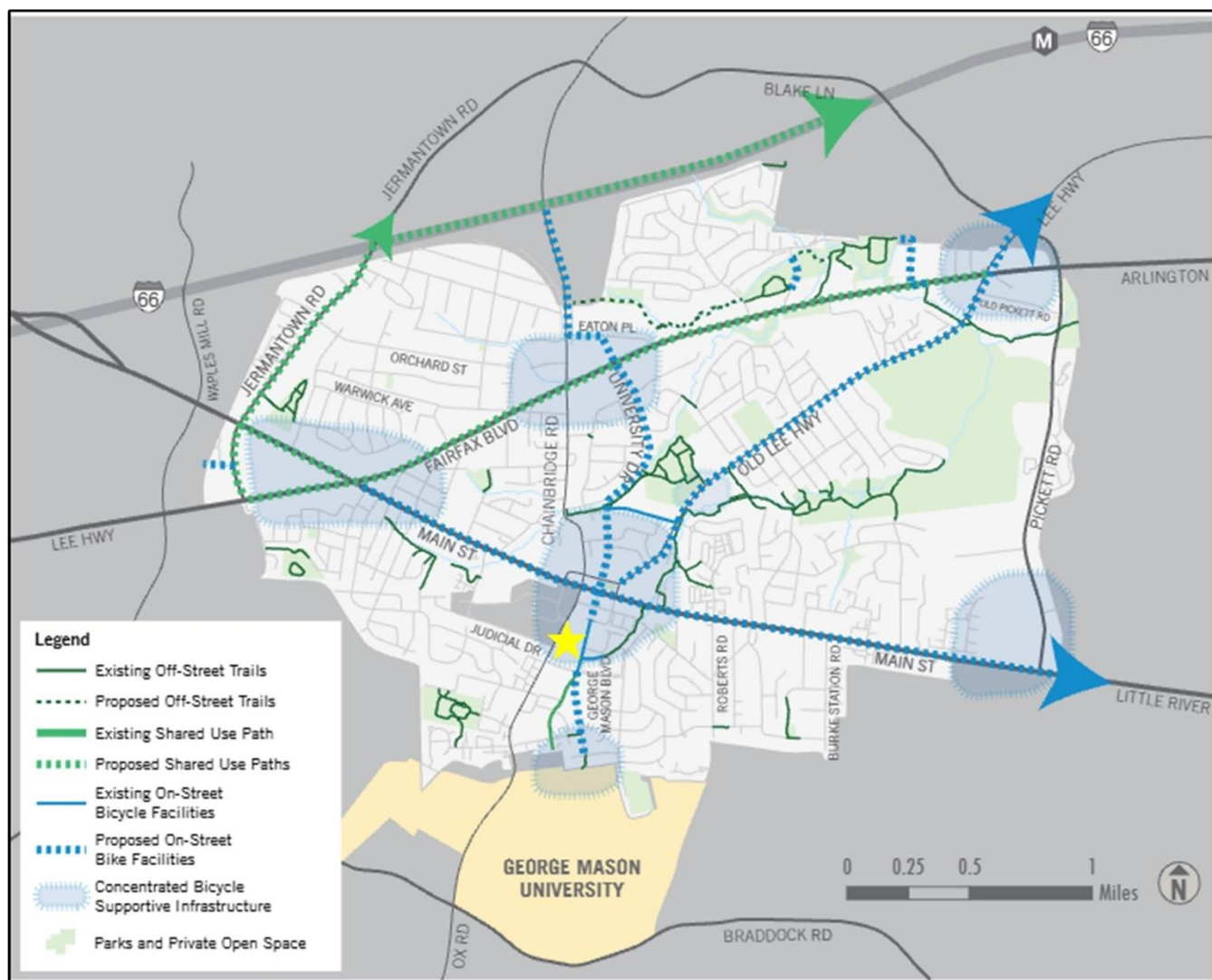


Figure 6: Proposed Network for Bicycle Travel (Source: City of Fairfax 2035 Comprehensive Plan)

Existing Conditions (2024)

In order to project future traffic conditions, it was necessary to create an existing scenario.

Existing Transit Service

Seven (7) bus routes currently serve the site area on Armstrong Street, Judicial Drive Chain Bridge Road (Route 123), and University Drive. Bus service is provided by the City of Fairfax CUE Gold and Green Routes; Metrobus Routes F23, F29, and F50; and Fairfax Connector Routes 306 and 610. The existing bus routes are shown in Figure 7 through Figure 12.

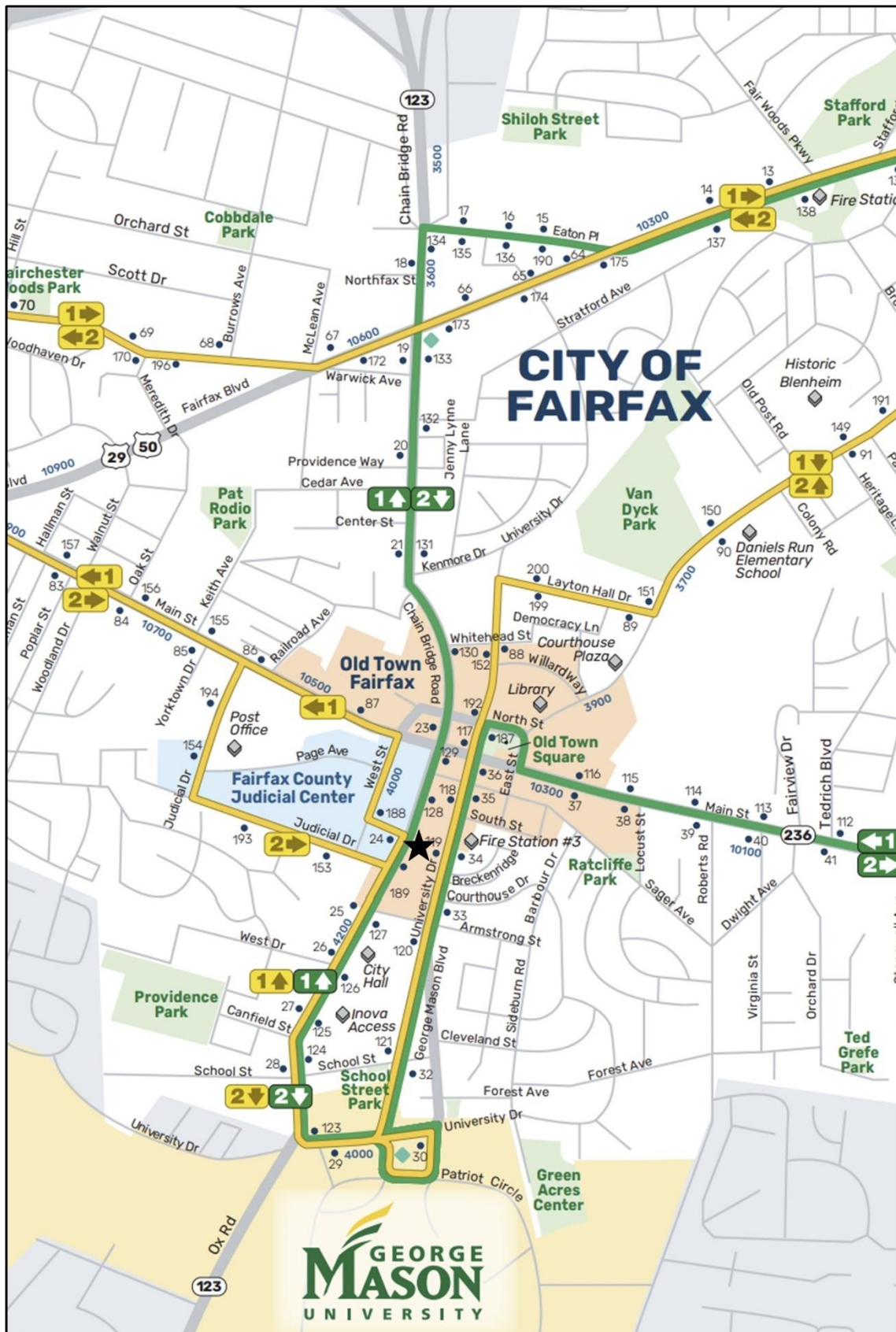


Figure 7: Existing CUE Bus Routes (Source: City of Fairfax)

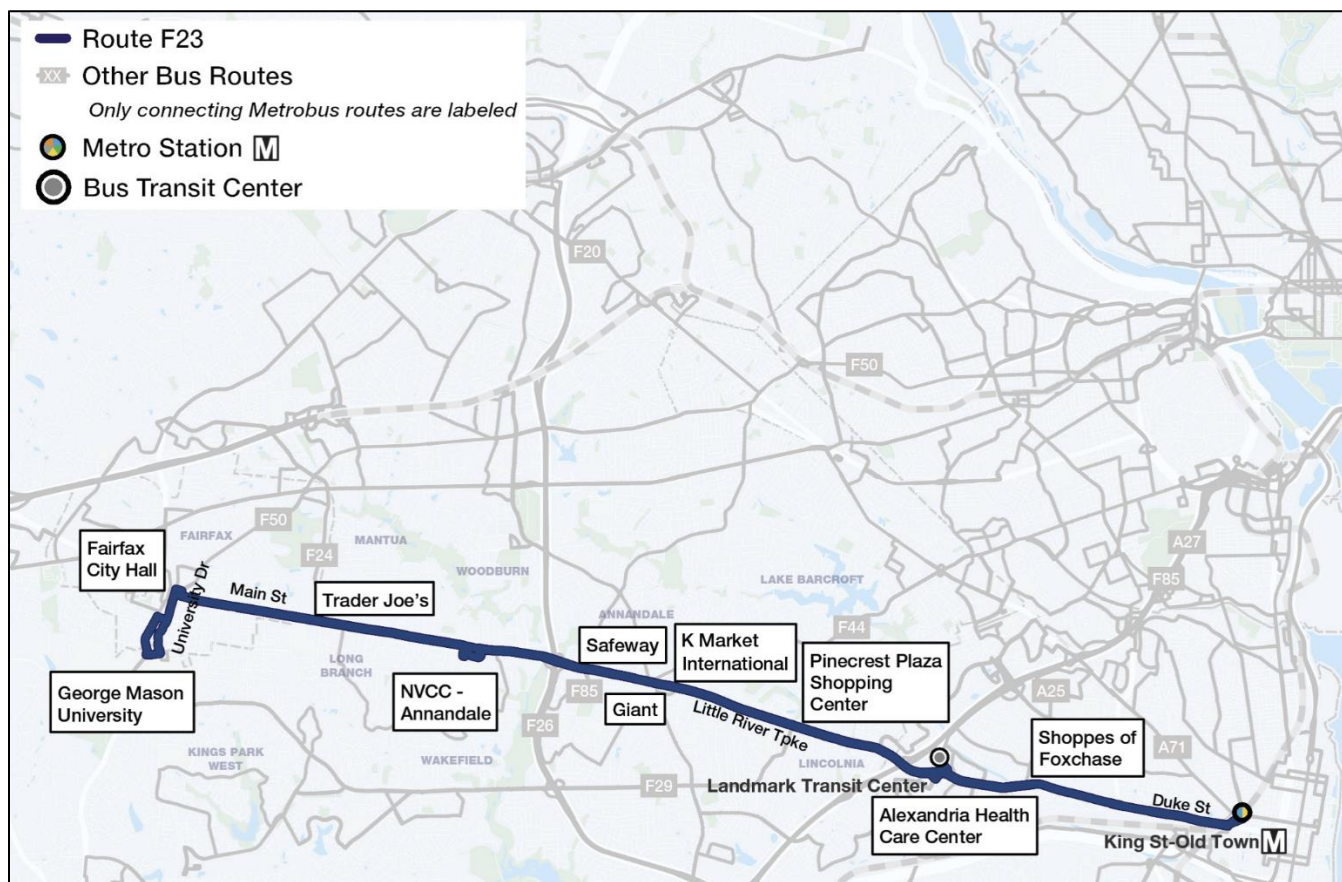


Figure 8: Existing Metrobus Route F23 (Source: WMATA)

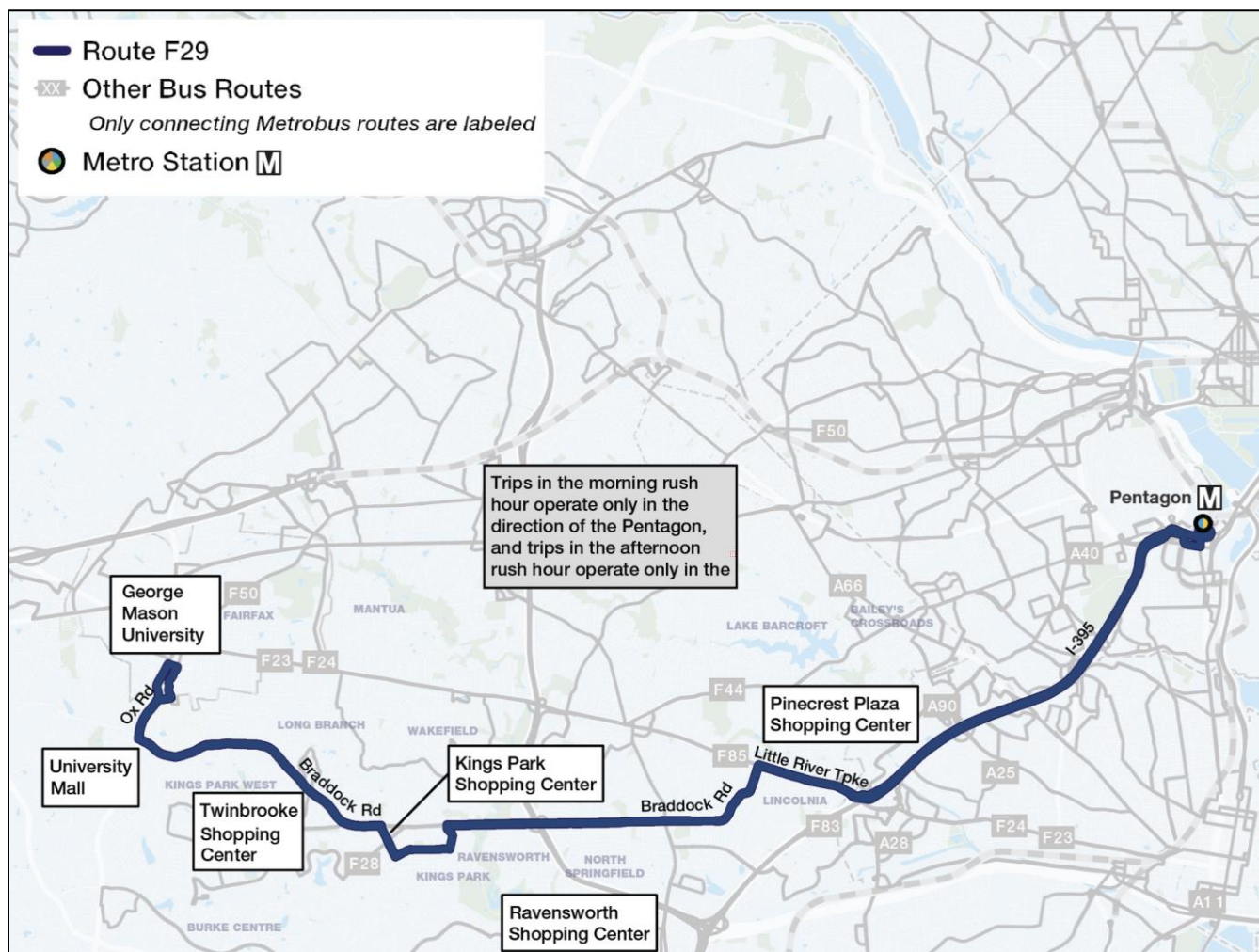


Figure 9: Existing Metrobus Route F29 (Source: WMATA)

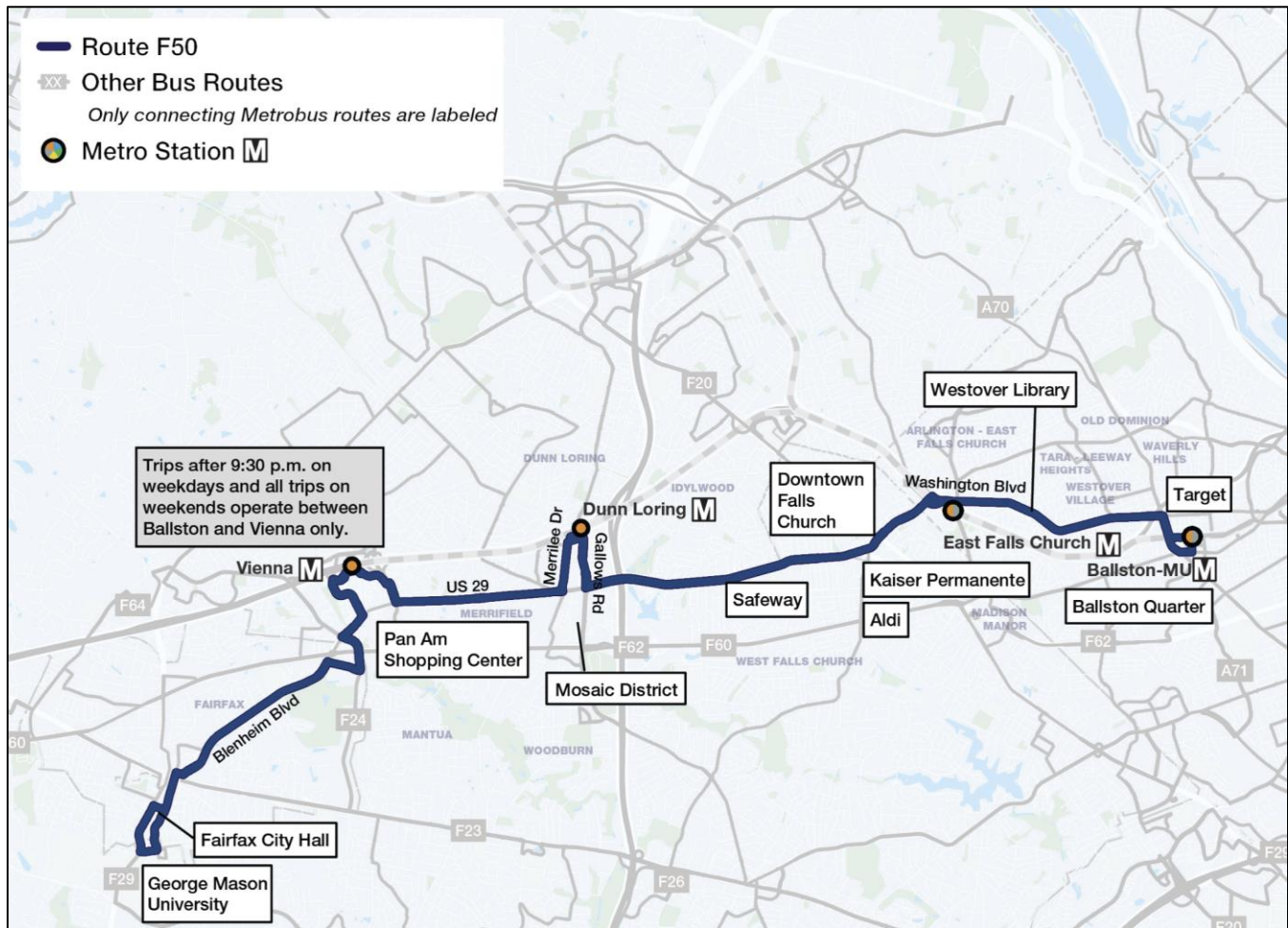


Figure 10: Existing Metrobus Route F50 (Source: WMATA)

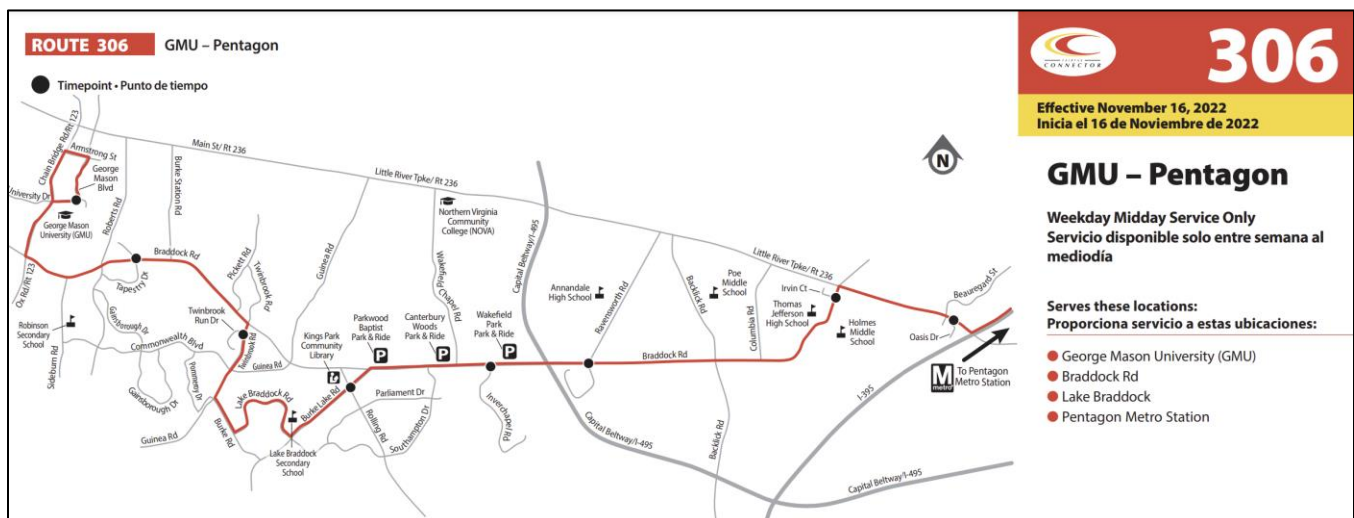


Figure 11: Existing Fairfax Connector Route 306 (Source: Fairfax Connector)

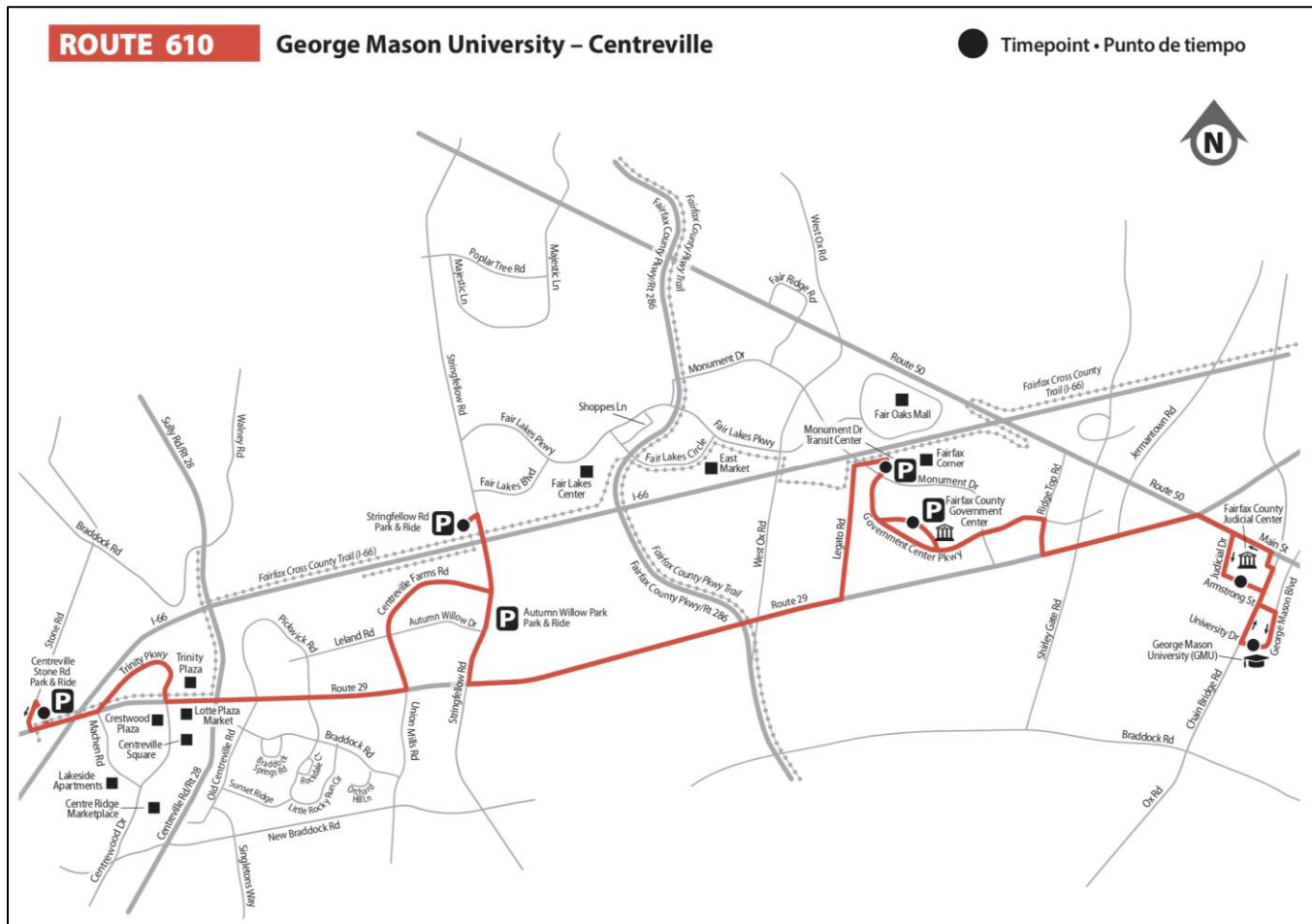


Figure 12: Existing Fairfax Connector Route 610 (Source: Fairfax Connector)

Existing Bicycle Facilities

The roadways adjacent to the site are considered comfortable bicycling routes per the Fairfax County Bicycle Map (which includes the City of Fairfax). Sager Avenue and Armstrong Street are considered “Most Comfortable,” University Drive is considered “Somewhat Comfortable,” and Chain Bridge Road is considered “Less Comfortable.” Main Street is considered a “Use Caution” bicycling route.

The 10-minute, 20-minute, and 30-minute bicycle travel shed for the proposed development is shown in Figure 13. Within a 10-minute bicycle ride, the proposed development has access to several destinations including George Mason University, public transportation stops, residential neighborhoods, retail zones, and community amenities. Within a 20-minute bicycle ride, the proposed development has access to destinations in Fairfax County including residential neighborhoods and retail zones. Within a 30-minute bicycle ride, the proposed development has access to Penderbrook, the Town of Vienna, the Mosaic District, and is accessible to the Vienna/Fairfax-GMU Metro Station served by the Orange Line.

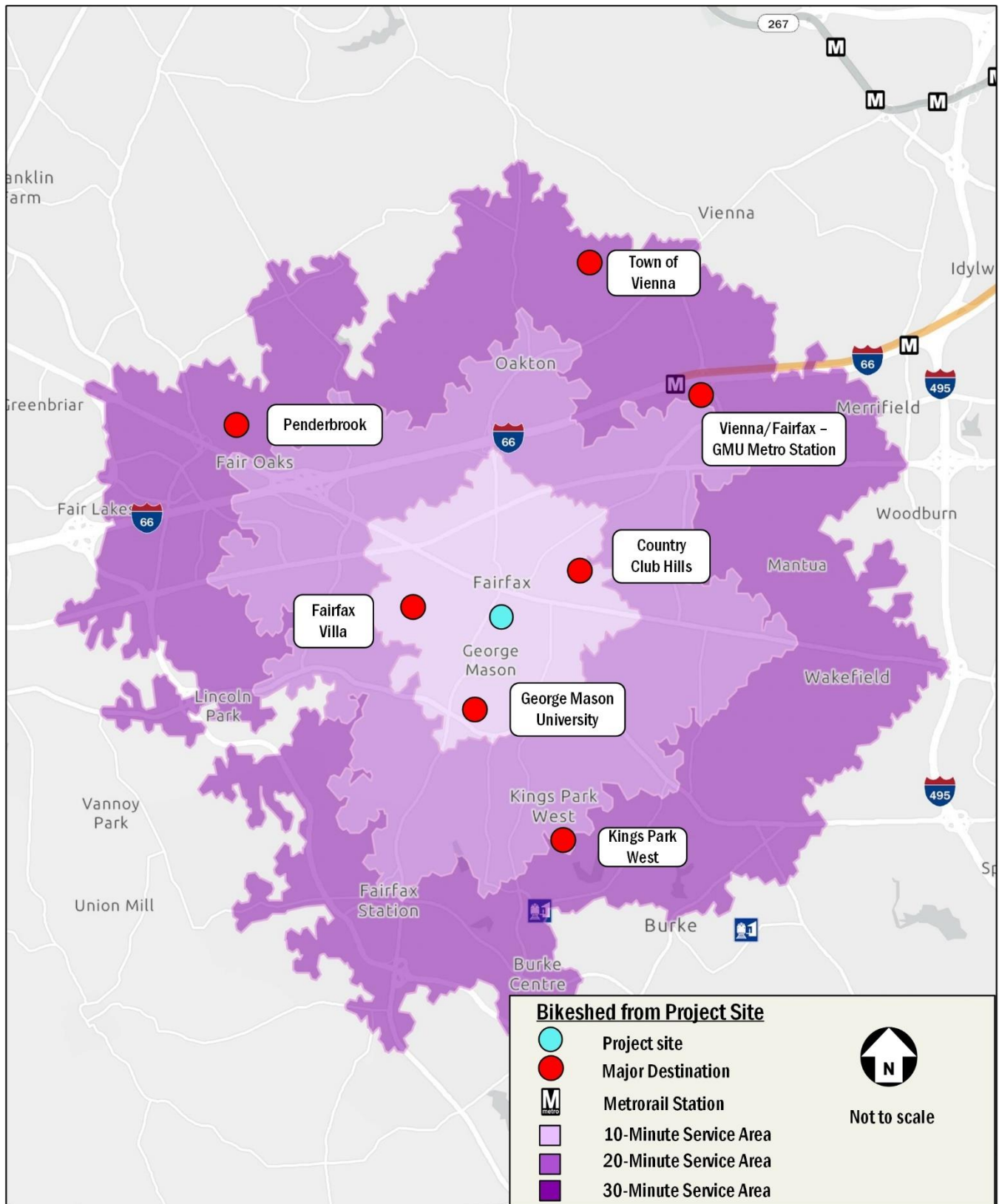


Figure 13: Approximate Bicycle Travel Times

Existing Pedestrian Facilities

Sidewalks and curb ramps generally exist along the corridors adjacent to and within the vicinity of the site. Sidewalks exist on both sides of Chain Bridge Road and both sides of University Drive and Sager Avenue along the perimeter of the site, but most driveways lack crosswalks. The signalized intersection of University Drive & Sager Avenue has marked crosswalks with pedestrian signal heads and call buttons in place. The unsignalized intersections of Chain Bridge Road & Sager Avenue and University Drive & Fairfax Volunteer Fire Department Entrance have marked crosswalks in place.

The existing pedestrian infrastructure facilities, including curb ramps, marked striped crossings, and any observed deficiencies are depicted in Figure 14. Of note, this graphic includes these items within a quarter-mile radius walkshed of the site.

The 5-minute, 15-minute, and 20-minute walk travel shed for the proposed development is shown in Figure 15. Within a 5-minute walk, the proposed development has access to several destinations including the Fairfax County Judicial Center, City Hall, public transportation stops, nearby residential neighborhoods, and retail zones. Within a 15-minute walk, the proposed development has access to destinations including the United States Postal Service, residential neighborhoods, and retail zones. Within a 20-minute walk, the proposed development has access to destinations including the Stacy C. Sherwood Community Center, the Fairfax Museum and Visitor Center, and residential neighborhoods.

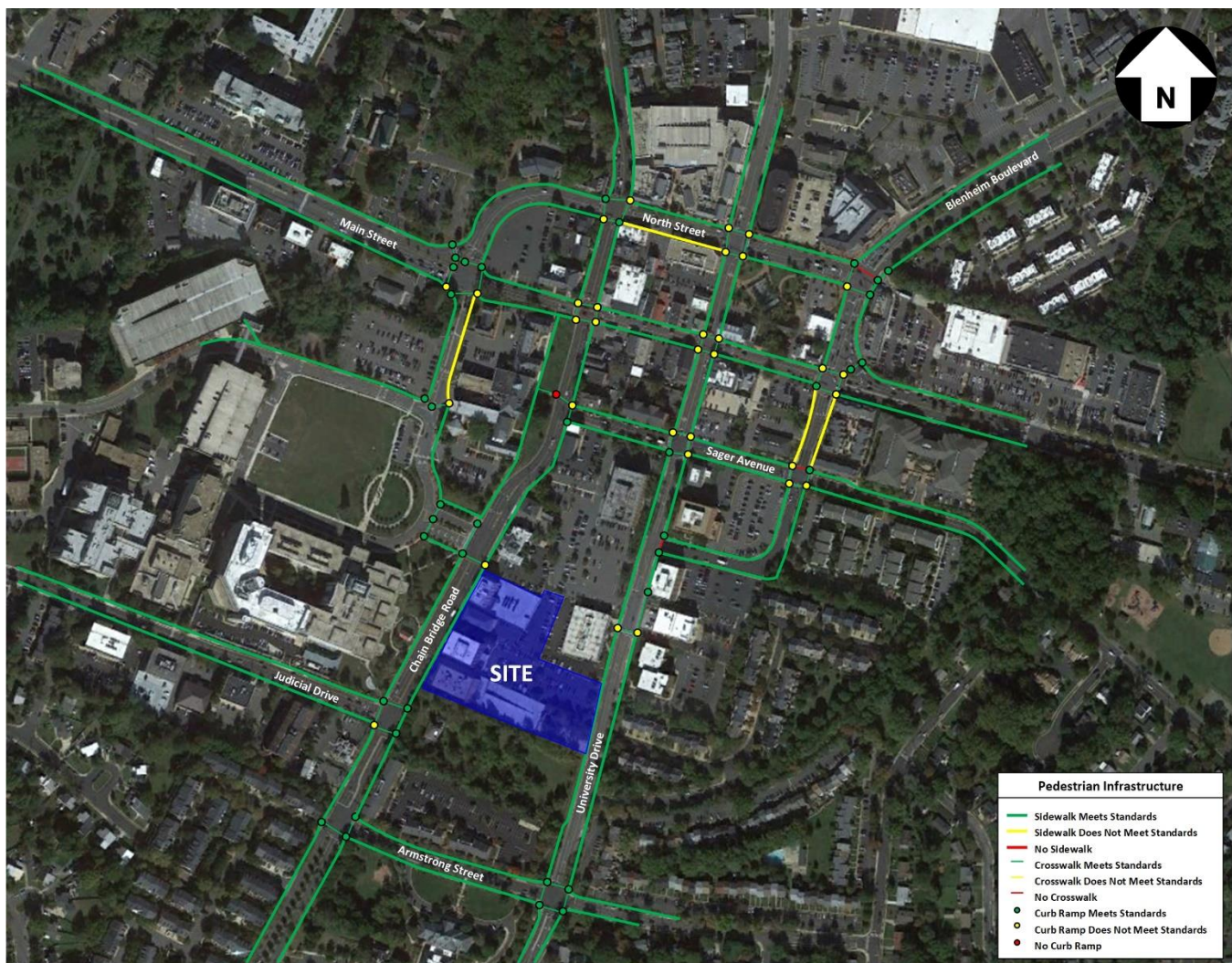


Figure 14: Existing Pedestrian Facilities

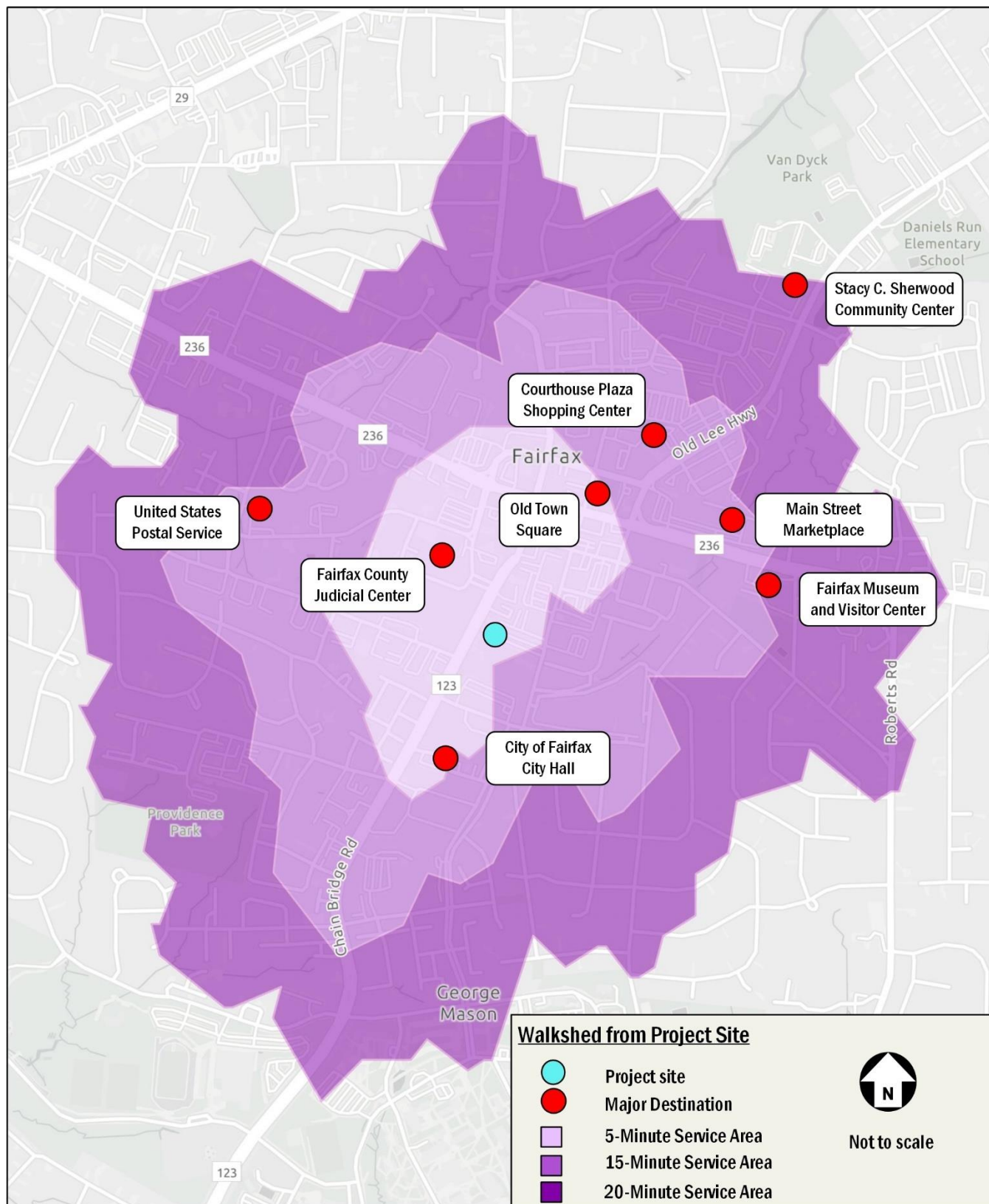


Figure 15: Approximate Pedestrian Travel Times

Existing Roadway Network

A description of the major roadways within the study area is presented in Table 1. The existing lane configurations and traffic control devices at the study intersections are shown on Figure 16.

Table 1: Existing Road Network

Roadway	From	To	VDOT Classification	Lanes	Speed (mph)	On-Street Parking	AADT (vpd)*
Chain Bridge Road	SCL Fairfax	Judicial Drive	Other Principal Arterial	4	30	No	28,000
Chain Bridge Road	Judicial Drive	Main Street	Other Principal Arterial	4	30	No	22,000
Judicial Drive	Page Avenue	Chain Bridge Road	Major Collector	2	25	No	9,000
University Drive	SCL Fairfax	Armstrong St	Major Collector	4	25	No	10,000
University Drive	Armstrong St	South St	Major Collector	4	25	No	15,000
University Drive	South St	SR 236 Main St	Major Collector	4	25	No	11,000
Armstrong Street	Chain Bridge Road	University Drive	Local Road	2	25	Yes	N/A

* VDOT 2019 Annual Average Daily Traffic (AADT) Data

Historical Crash Data

Historical crash data at the existing study intersections was obtained from VDOT for 2020 through 2025. Crash data for the most recent six (6) years (January 2020 to December 2025) is summarized in Table 2.

Table 2: Crash Data (January 2020 – December 2025)

Intersection	Total Number of Crashes	Number of Property Damage Crashes	Number of Crashes Resulting in Injury	Number of Fatal Crash	Intersection Crash Rate (Crashes/million entering vehicles)
1 University Boulevard and Breckinridge Lane	0	0	0	0	0.00
2 University Drive and Armstrong Street	4	1	3	0	0.16
3 Chain Bridge Road and West Drive	4	2	2	0	0.07
4 Chain Bridge Road and Armstrong Street	20	15	5	0	0.32
5 Chain Bridge Road and Judicial Drive	31	27	4	0	0.45
6 Chain Bridge Road and FCJC Entrance	10	8	2	0	0.23
7 Chain Bridge Road and New Service Drive	1	0	1	0	0.03
8 University Drive and New Service Drive	1	0	1	0	0.05
9 University Boulevard and Lower Garage Entrance	0	0	0	0	0.00
Total	71	53	18	0	

* There were one pedestrian injury crash included in number of crashes resulting in injury at Intersections 2, 3, and 6

As shown in Table 2, the intersection of Chain Bridge Road and Judicial Drive had the highest number of reported crashes (31) during the six-year study period. The most common crash type was angle.

The intersection of Chain Bridge Road and Armstrong Street had the second highest number of reported crashes (20). The most common crash type was angle.

All existing intersections have a crash rate of less than 1.0 crashes per Million Entering Vehicles (MEV) and are not considered high crash intersections.

The crash rates shown for each intersection are calculated as crashes per one million entering vehicles (MEV), and were calculated based on the following formula:

$$Rate_{intersection} = \frac{1,000,000 * \# \text{ of Crashes}}{\# \text{ of Years} * 365 \left(\frac{\text{days}}{\text{year}} \right) * ADT_{approach}}$$

The approach ADT for an intersection is calculated as the sum of each leg, divided by 2.

The crash data provided by VDOT is included in Appendix B.

Existing Traffic Volumes

Turning movement counts were collected at the study area intersections on Wednesday, November 20, 2024, and Thursday, December 5, 2024 as noted in the scope. The traffic volumes were balanced using traffic trends in the area and engineering judgment due to two different data collection dates, as appropriate. Analysis of the traffic data found the following system peak hours:

- Weekday Morning (AM) Peak Hour: 8:00 AM to 9:00 AM
- Weekday Afternoon (PM) Peak Hour: 4:15 PM to 5:15 PM

The existing peak hour traffic volumes for the study area intersections are presented in Figure 17. The raw existing turning movement counts are included in Appendix C.



Figure 16: Existing (2024) – Lane Configuration

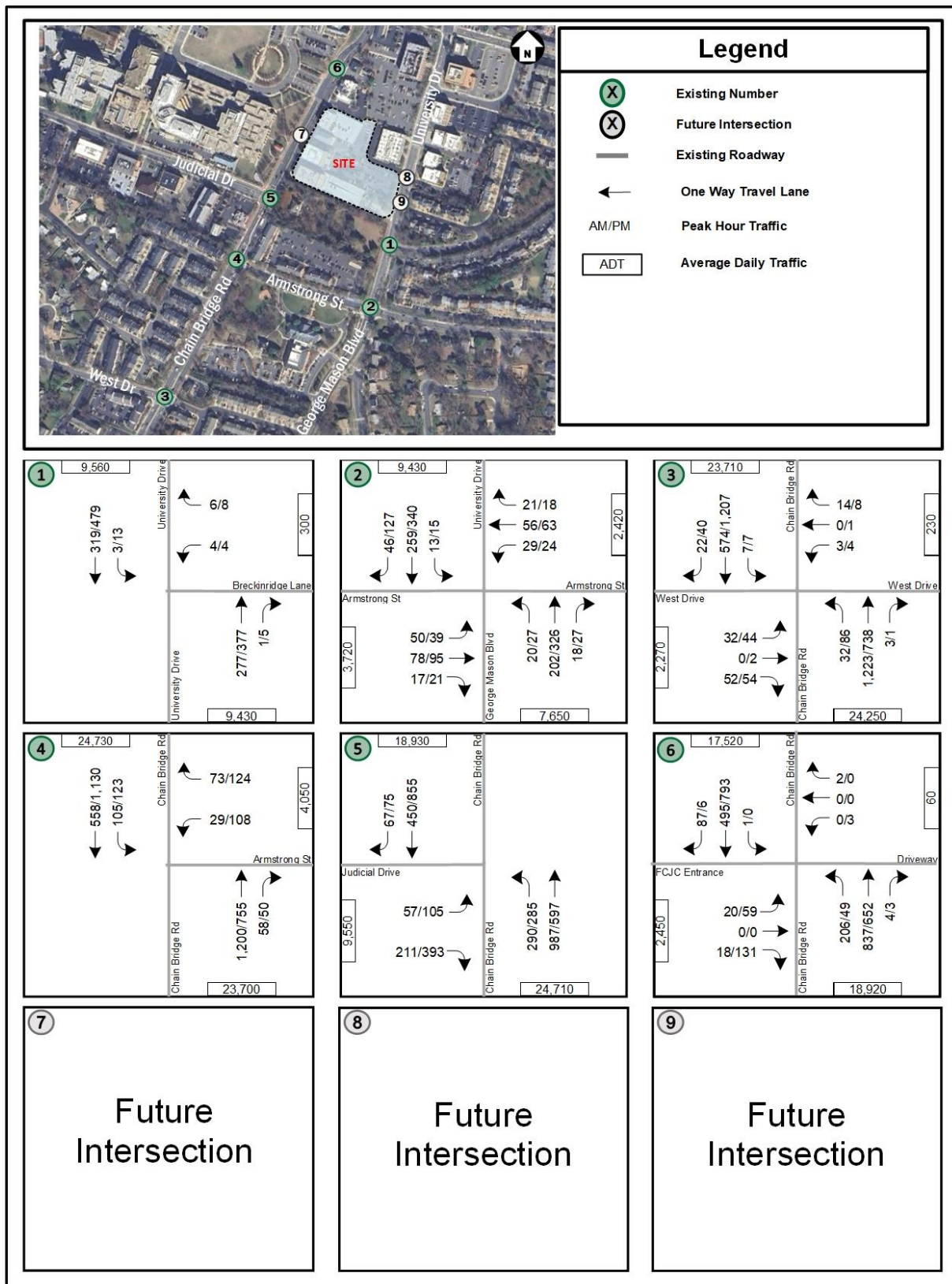


Figure 17: Existing (2024) – Peak Hour Traffic Volumes

Existing (2024) Intersection Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and weekday PM hours under Existing Conditions (2024). *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) is used. The analysis herein includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Existing signal timings were provided by the city and used as a base for the existing analysis. Existing peak hour factors found in the field were used, except where the field peak hour factor was lower than 0.85 in which case a minimum value of 0.85 was used, consistent with VDOT analysis guidelines. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups.

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 3 and graphically on Figure 18. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections, per approach, and per lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

The 95th percentile queues were also determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The description of different LOS and delay are included in Appendix D. The detailed analysis worksheets of 2024 Existing Conditions are contained in Appendix E.

Table 3: Existing (2024) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2024 Existing					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
1	University Drive & Breckinridge Lane (HCM 6)	Overall (Unsignalized)							
		Westbound Approach		B	11.6		B	13.7	
		Westbound Left/Right		B	11.6	3	B	13.7	3
		Southbound Approach		-	-		-	-	
		Southbound Left		A	7.9	0	A	8.4	0
2	George Mason Boulevard/University Drive & Armstrong Street (HCM 6)	Overall (Signalized)		B	13.4		B	14.3	
		Eastbound Approach		C	21.6		C	24.8	
		Eastbound Left/Thru/Right		C	21.6	102	C	24.8	119
		Westbound Approach		C	20.0		C	22.7	
		Westbound Left/Thru/Right		C	20.0	74	C	22.7	81
		Northbound Approach		A	9.6		A	9.9	
		Northbound Left	160	A	7.7	12	A	7.0	14
		Northbound Thru/Right		A	9.7	120	B	10.1	188
		Southbound Approach		B	10.4		B	12.6	
		Southbound Left		A	7.6	9	A	7.8	9
		Southbound Thru/Right		B	10.5	166	B	12.7	267
3	Chain Bridge Road & West Drive (HCM 2000)	Overall (Signalized)		C	20.0		C	20.3	
		Eastbound Approach		E	55.4		E	55.5	
		Eastbound Left		E	56.3	60	E	56.5	76
		Eastbound Thru/Right		D	54.9	0	D	54.8	42
		Westbound Approach		E	55.9		E	55.9	
		Westbound Left		E	55.9	12	E	56.0	15
		Westbound Thru/Right	315	E	55.9	0	E	55.9	18
		Northbound Approach		C	20.8		B	16.8	
		Northbound Left	165	B	10.6	35	C	20.5	76
		Northbound Thru/Right		C	21.1	#745	B	16.4	360
		Southbound Approach		B	12.4		B	19.4	
		Southbound Left		B	11.8	m6	A	3.5	m1
		Southbound Thru/Right		B	12.5	151	B	19.5	#849
4	Chain Bridge Road & Armstrong Street (HCM 2000)	Overall (Signalized)		B	11.3		C	24.5	
		Westbound Approach		E	64.8		E	74.5	
		Westbound Left/Right		E	64.8	88	E	74.5	289
		Northbound Approach		B	10.6		C	26.1	
		Northbound Thru/Right		B	10.6	249	C	26.1	423
		Southbound Approach		A	4.3		B	14.2	
		Southbound Left	90	C	20.4	53	B	13.1	64
		Southbound Thru		A	1.3	44	B	14.3	242
5	Chain Bridge Road & Judicial Drive (HCM 2000)	Overall (Signalized)		C	22.2		C	30.7	
		Eastbound Approach		D	51.2		D	47.4	
		Eastbound Left	440	E	61.0	100	E	57.1	152
		Eastbound Right		D	48.6	85	D	44.8	144
		Northbound Approach		B	17.6		C	24.0	
		Northbound Left	150	B	17.7	229	D	45.2	#304
		Northbound Thru		B	17.6	365	B	13.9	116
		Southbound Approach		B	18.5		C	28.1	
		Southbound Thru		B	18.8	212	C	28.7	440
		Southbound Right	240	B	16.5	33	C	21.1	42

Table 3: Existing (2024) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2024 Existing					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
6	Chain Bridge Road & FCJC Entrance/Driveway (HCM 6)	Overall (Unsignalized)							
		Eastbound Approach		E	42.3		E	35.2	
		Eastbound Left		F	70.8	25	F	82.4	75
		Eastbound Right		B	10.6	3	B	13.9	25
		Westbound Approach		B	11.6		E	49.0	
		Westbound Left/Thru/Right		B	11.6	0	E	49.0	3
		Northbound Approach		-	-		-	-	
		Northbound Left	235	A	9.9	23	B	10.4	5
7	Chain Bridge Road & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Westbound Approach							
		Westbound Right							
8	University Drive & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Eastbound Approach							
		Eastbound Left/Right							
		Northbound Approach							
		Northbound Left/Thru							
9	University Drive & Lower Garage Entrance (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Eastbound Approach							
		Eastbound Left/Right							
		Northbound Approach							
		Northbound Left/Thru							

Notes:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

The intersection capacity analysis results show that the following three (3) intersections have one or more approaches that operate below acceptable levels of service during one or more peak hours under Existing Conditions (2024):

- Intersection 3: Chain Bridge Road and West Drive
 - Eastbound Approach (AM and PM Peaks)
 - Westbound Approach (AM and PM Peaks)
- Intersection 4: Chain Bridge Road and Armstrong Street
 - Westbound Approach (AM and PM Peaks)
- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - Eastbound Approach (AM and PM Peaks)
 - Westbound Approach (PM Peak)

Based on the queuing analysis performed for Existing Conditions (2024), the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays, except for the following movements:

- Intersection 5: Chain Bridge Road and Judicial Drive
 - Northbound Left (AM and PM Peaks)



Figure 18: Existing (2024) – Levels of Service

Future Conditions without Development (2029)

Future Conditions without Development (2029) Traffic Volumes

The proposed Gallery at City Center redevelopment is anticipated to be completed in 2029. The future background traffic volumes were projected by increasing the existing volumes to 2029 using an inherent growth rate. Historical AADT data is shown in Table 4. As determined based on discussions with the City, a 1.0% per year regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Drive as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street as shown in Figure 19.

Table 4: Historical Growth Rate

Route	From	To	AADT		Annual % Change (2018 - 2023)
			2018	2023	
Chain Bridge Road	SCL Fairfax	Judicial Drive	28,000	23,000	-3.9%
Chain Bridge Road	Judicial Drive	Main Street Route 236	21,000	19,000	-2.0%
University Drive (George Mason Blvd)	SCL Fairfax	Armstrong Street	10,000	9,400	-1.2%
University Drive	Armstrong Street	South Street	14,000	9,400	-7.7%
University Drive	South Street	Main Street Route 236	11,000	9,400	-3.1%
Judicial Drive	Page Avenue	Chain Bridge Road	9,000	7,500	-3.6%
Overall			93,000	77,700	-3.5%

Source: VDOT Traffic Data (<http://www.virginiadot.org/info/ct-trafficcounts.asp>)

In addition to the regional background growth, three planned developments in the vicinity of the site were taken into consideration. As discussed at the scoping meeting, the following developments were included in the 2029 analysis:

- **One University** – One University is a 10.8-acre site located adjacent to the George Mason University campus in Fairfax County. For the purposes of this analysis, the One University site was anticipated to build 240 affordable senior independent dwelling units and 333 student housing dwelling units. This development is now complete, but counts were collected prior to its completion.
- **Fairfax County Judicial Complex** – The Judicial Complex is a 47.8-acre portion of Fairfax County surrounded by the City of Fairfax. A new Master Plan for the complex was completed in January 2021 and a Traffic Impact study was submitted on January 18, 2024. Phase One of the redevelopment project was assumed to be in place by 2029. For the purposes of this analysis, Phase One was anticipated to include 89,683 SF of office uses and 60,317 SF of government related uses (records and evidence storage).
- **City Centre West** – The City Centre West site is currently occupied by a vacant 3,721 SF bank, a vacant 4,408 SF restaurant, and 11,340 SF of office that will all be removed. For the purposes of this analysis, the proposed redevelopment consists of 79 multifamily units, 27,793 SF of general office, 8,584 SF of retail, a 3,510 SF bank, and a 3,865 SF restaurant. The redevelopment was assumed to be in place by 2029 and a Traffic Impact Study was submitted on June 30, 2023.
- **4131 Chain Bridge Road** – The 4131 Chain Bridge Road is a 2.67-acre site is currently occupied by a single single-family dwelling unit. The proposed redevelopment consists of 276 multi-family residential apartment dwelling units, 6,608 square feet of retail use, and 4,188 square feet of office. The redevelopment was assumed to be in place by 2029 and a Traffic Impact Study was submitted on May 22, 2025.

The background growth is shown in Figure 19 and the background development volumes for One University, Fairfax County Judicial Complex, City Centre West, and 4131 Chain Bridge Road are shown in Figure 20, Figure 21, Figure 22, and Figure 23

respectively. The total background development volumes are shown in Figure 24. The details outlining the methodologies for volume calculation are provided in Appendix F.

The trips generated by background growth and background development were added to the existing volumes in order to generate Future Conditions without Development (2029) traffic volumes presented in Figure 25.

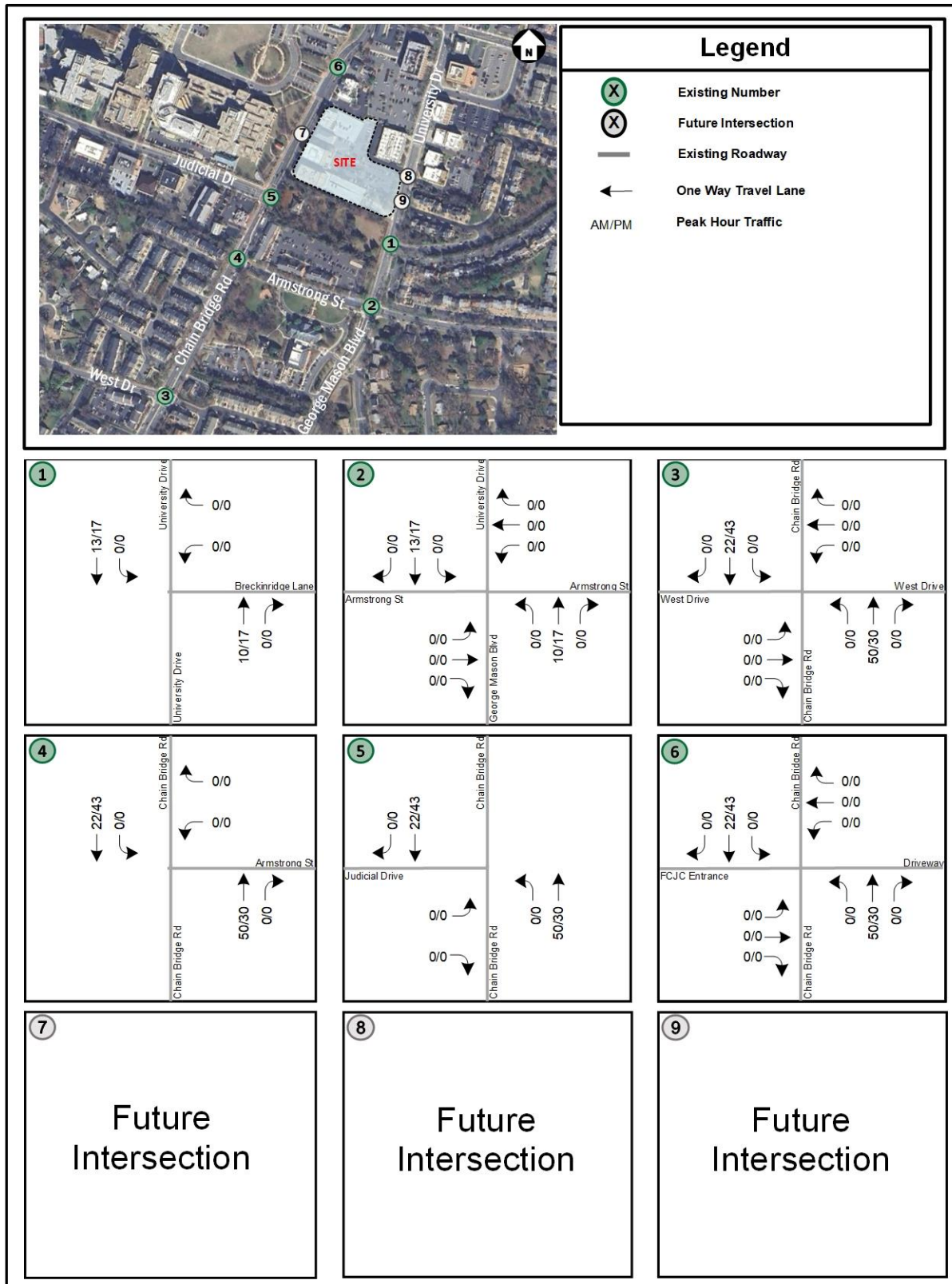


Figure 19: Background Growth (2024 - 2029)

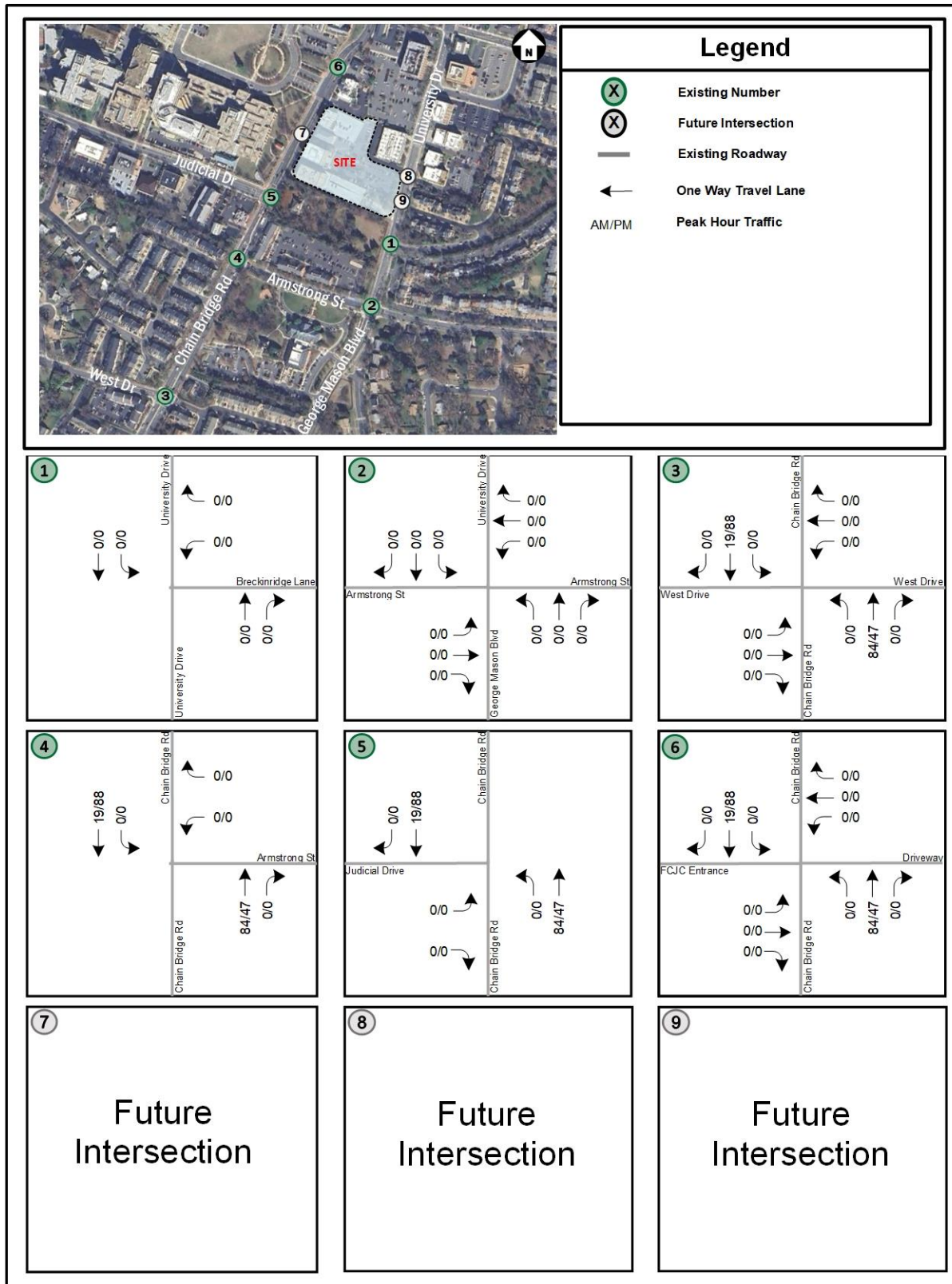


Figure 20: One University Background Development Net Trips

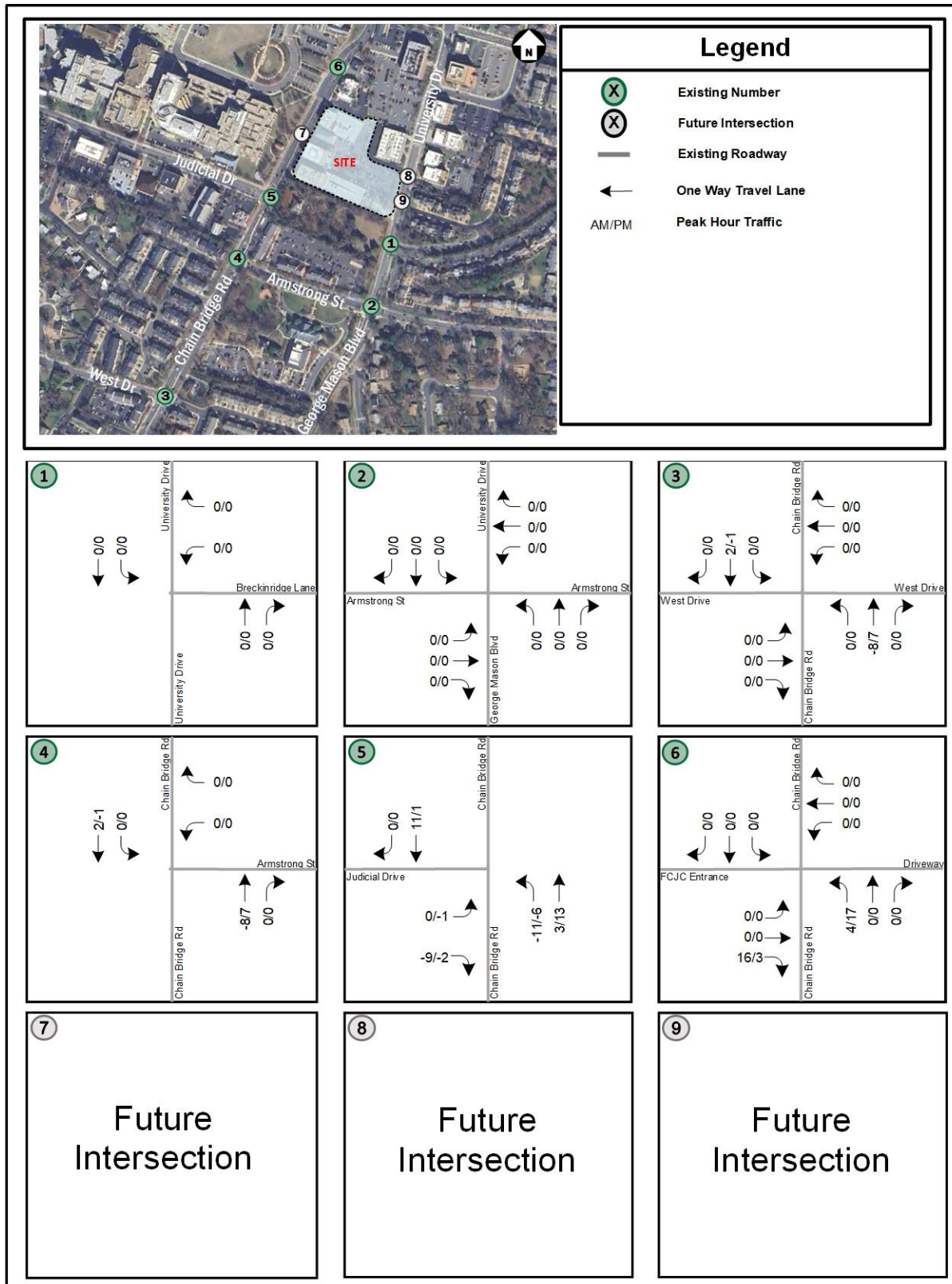


Figure 21: Phase 1 of FCJC Background Development Net Trips

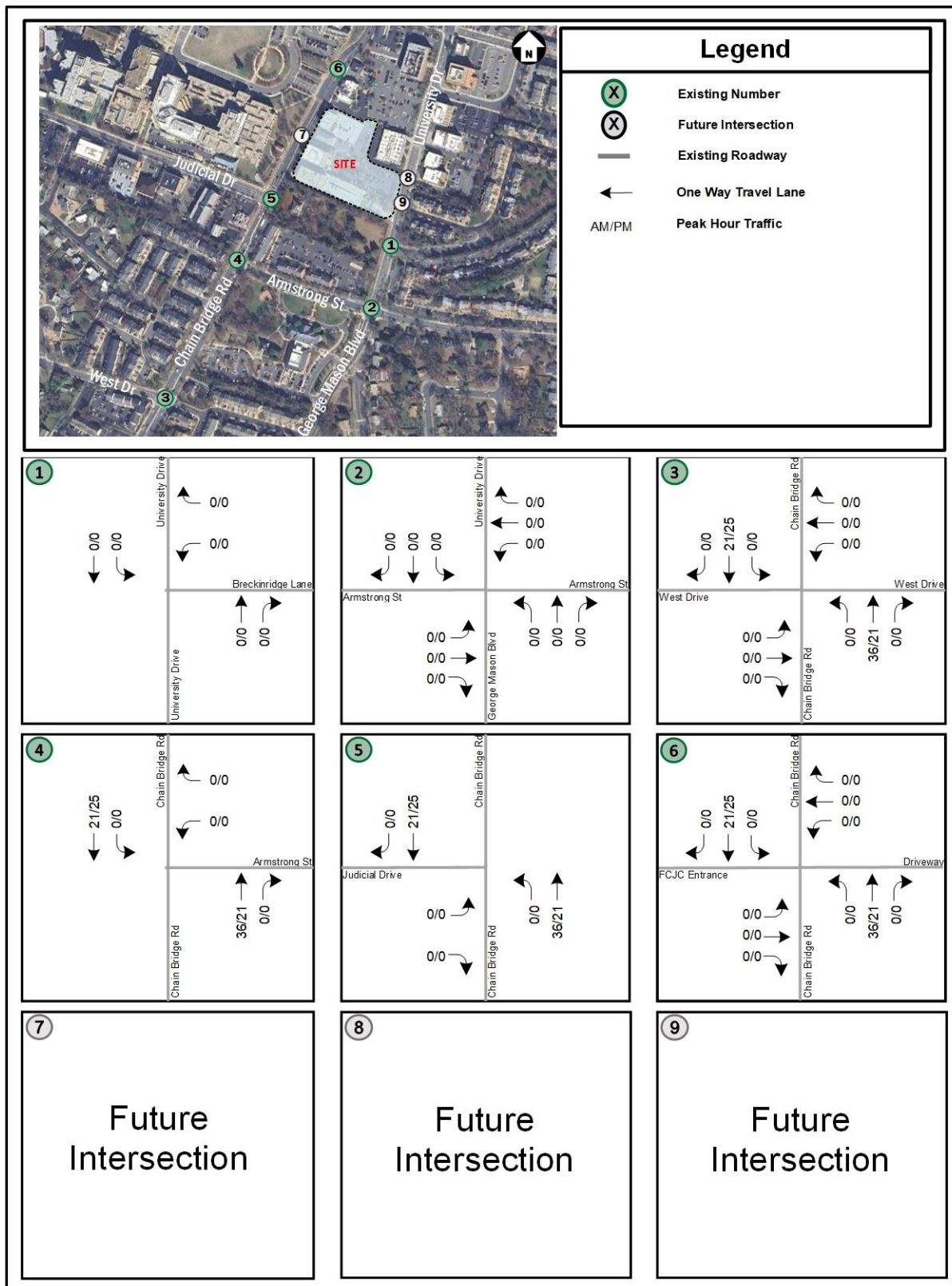


Figure 22: City Centre West Background Development Net Trips

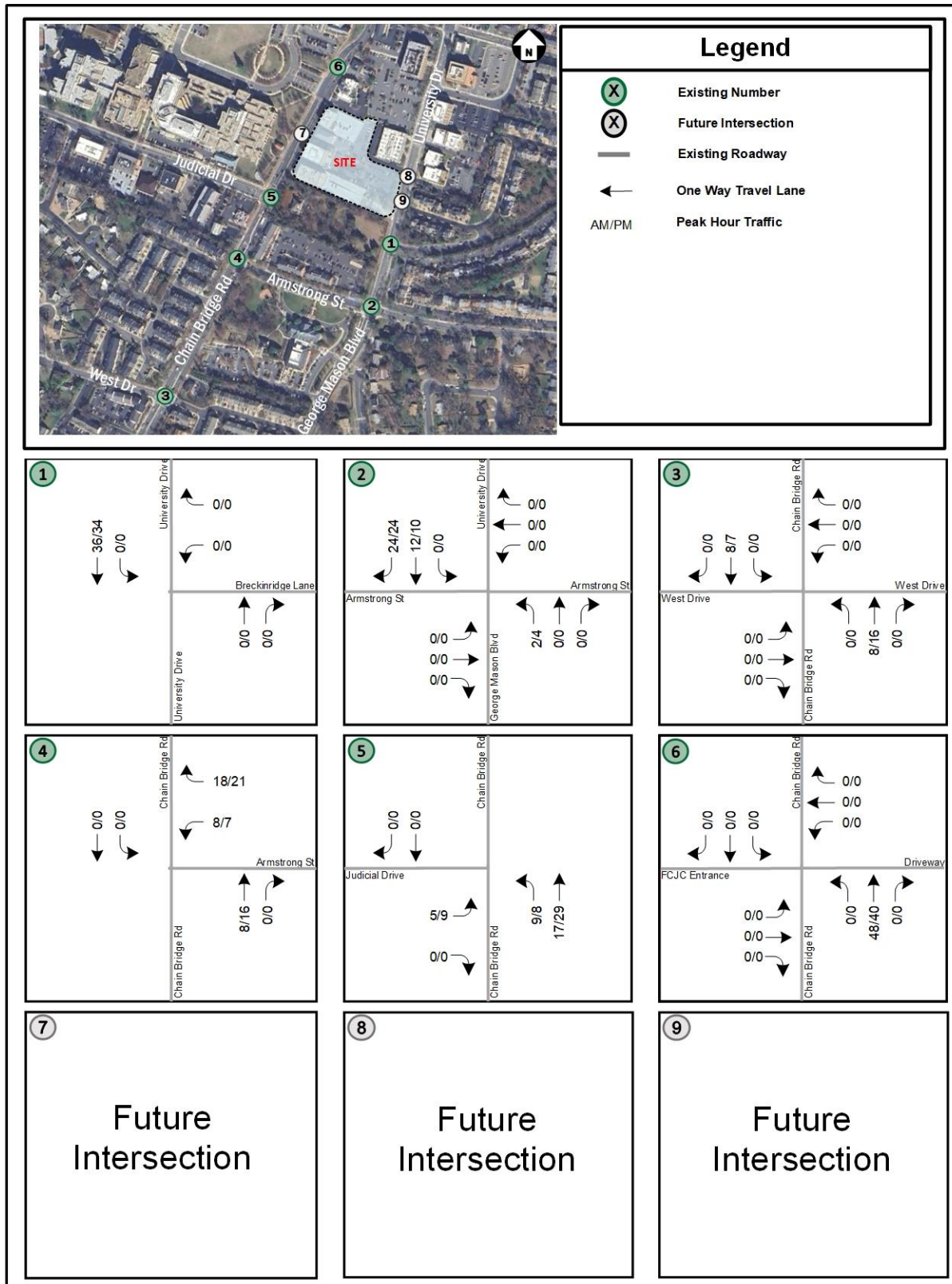


Figure 23: 4131 Chain Bridge Road Background Development Net Trips

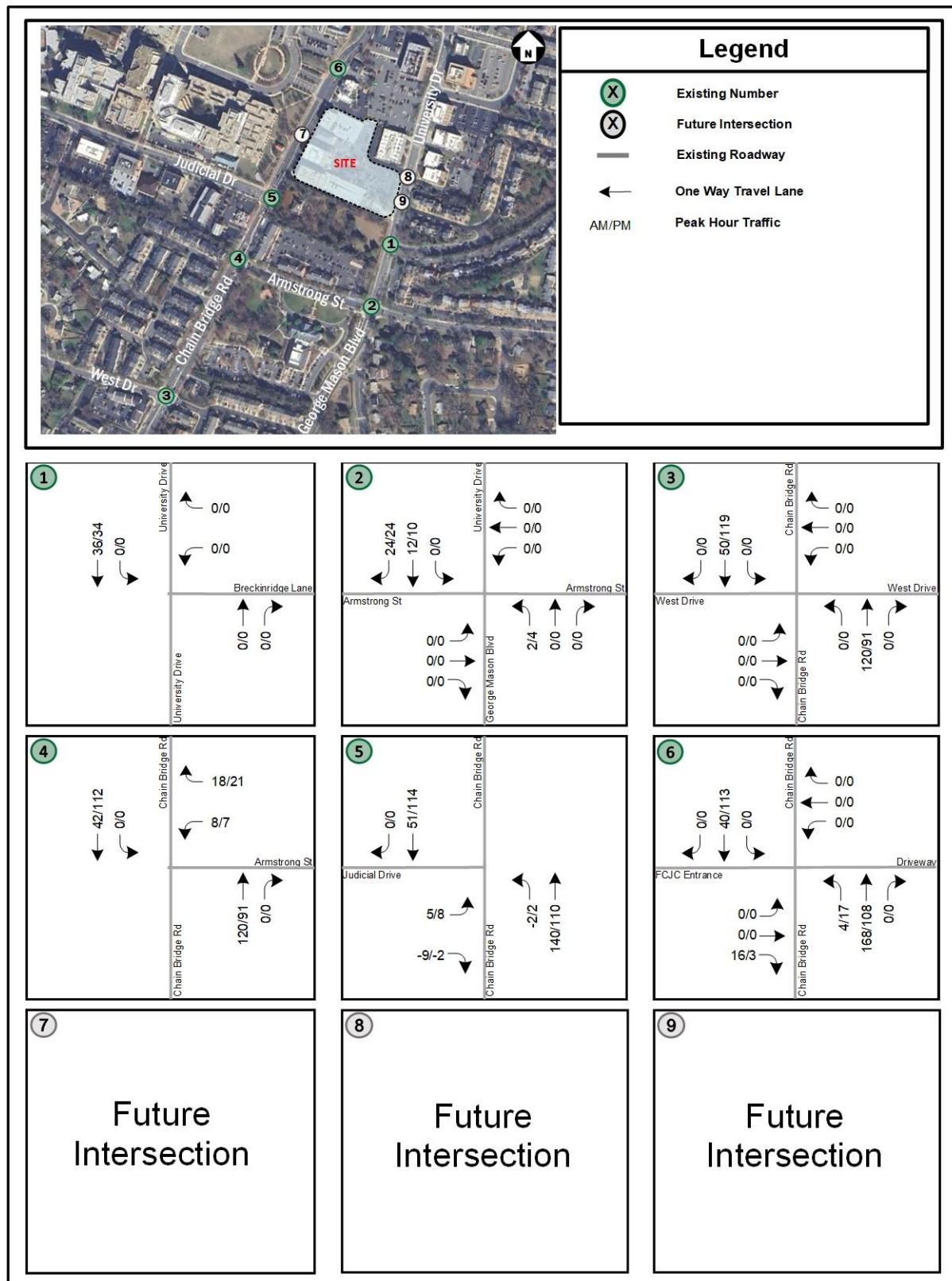


Figure 24: Total Background Development Trips¹

¹ Note: The volumes above reflect a total of the rerouting of existing trips, addition of pass-by trips of the background developments, and addition of the background development site trips, consistent with methodology of the respective traffic studies; therefore, volumes presented above may be shown as negative. Detailed informations and assumptions are provided in the Appendix F.

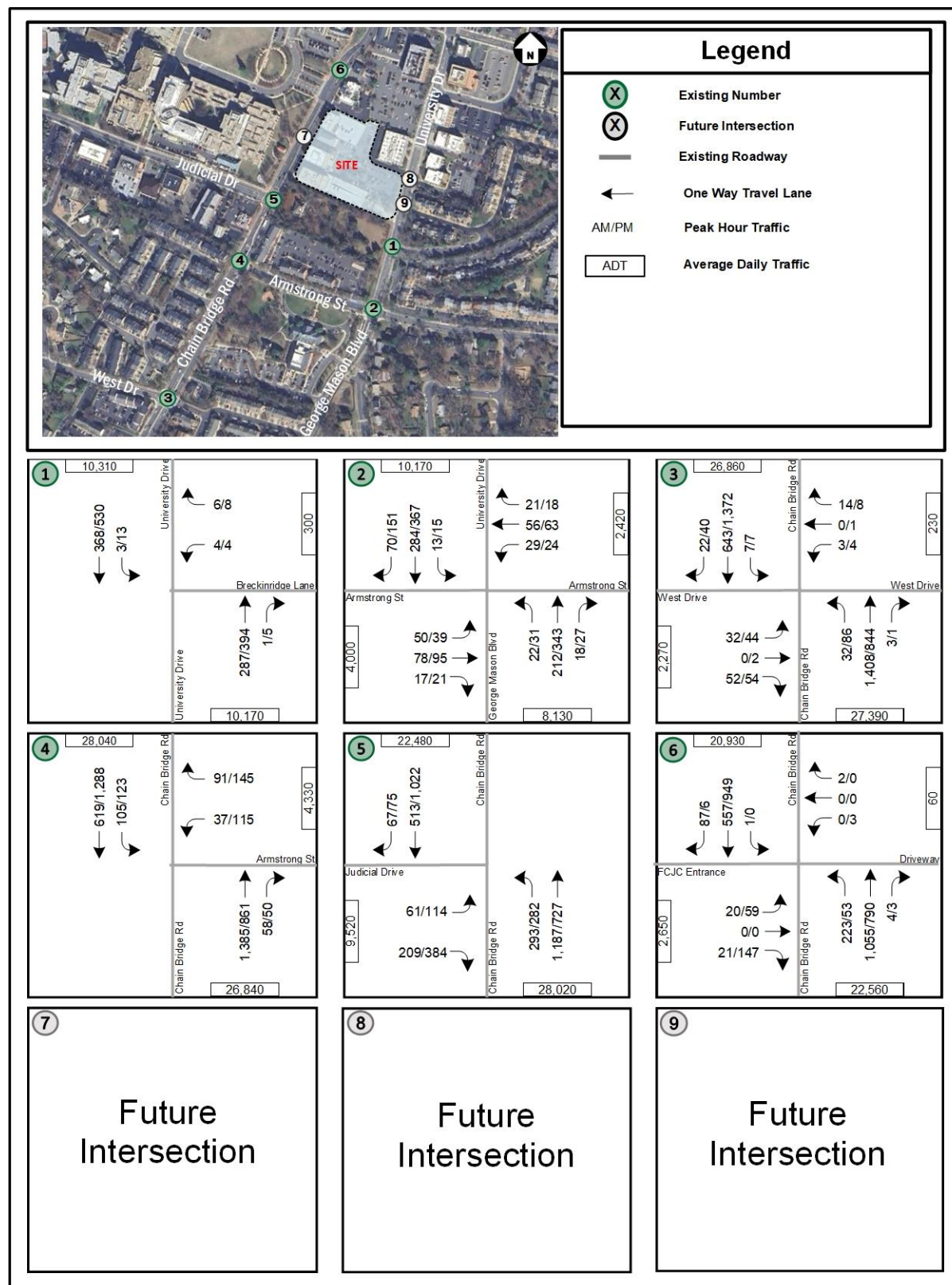


Figure 25: Future without Development (2029) – Peak Hour Traffic Volumes

Future without Development (2029) Intersection Analysis

Intersection capacity analysis was performed at the intersections within the study area during the weekday AM and weekday PM hours under Future Conditions without Development (2029). *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, the HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) is used. The analysis herein includes the level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Signal phasing and timings were not changed from the existing conditions, with the exception of the addition of the new traffic signal at the intersection of Chain Bridge Road and the FCJC Entrance that is anticipated to be completed by 2029. A peak hour factor of 0.92 was used unless the peak hour collected in the field was higher. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups.

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity analysis are presented in Table 5 and graphically on Figure 26. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections, per approach, and per lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

The 95th percentile queues were also determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The detailed analysis worksheets are included in Appendix G.

Table 5: Future without Development (2029) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2029 Future without Development					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
1	University Drive & Breckinridge Lane (HCM 6)	Overall (Unsignalized)							
		Westbound Approach		B	11.8		B	14.3	
		Westbound Left/Right		B	11.8	3	B	14.3	3
		Southbound Approach		-	-		-	-	
		Southbound Left		A	7.9	0	A	8.5	0
2	George Mason Boulevard/University Drive & Armstrong Street (HCM 6)	Overall (Signalized)		B	13.2		B	14.7	
		Eastbound Approach		C	21.6		C	25.9	
		Eastbound Left/Thru/Right		C	21.6	103	C	25.9	119
		Westbound Approach		C	20.1		C	23.7	
		Westbound Left/Thru/Right		C	20.1	75	C	23.7	81
		Northbound Approach		A	9.4		A	9.9	
		Northbound Left	160	A	7.7	12	A	7.3	15
		Northbound Thru/Right		A	9.6	125	B	10.1	200
		Southbound Approach		B	10.5		B	13.3	
		Southbound Left		A	7.6	9	A	7.6	9
		Southbound Thru/Right		B	10.7	197	B	13.5	308
3	Chain Bridge Road & West Drive (HCM 2000)	Overall (Signalized)		C	21.1		C	21.3	
		Eastbound Approach		E	55.4		E	55.5	
		Eastbound Left		E	56.3	60	E	56.5	76
		Eastbound Thru/Right		D	54.9	0	D	54.8	42
		Westbound Approach		E	55.9		E	55.9	
		Westbound Left		E	55.9	12	E	56.0	15
		Westbound Thru/Right	315	E	55.9	0	E	55.9	18
		Northbound Approach		C	23.7		B	18.1	
		Northbound Left	165	B	10.8	35	C	27.6	101
		Northbound Thru/Right		C	24.0	#946	B	17.2	420
		Southbound Approach		B	10.2		C	20.6	
		Southbound Left		B	10.6	m5	A	3.3	m1
		Southbound Thru/Right		B	10.2	146	C	20.7	#1017
4	Chain Bridge Road & Armstrong Street (HCM 2000)	Overall (Signalized)		B	15.0		C	25.1	
		Westbound Approach		E	65.2		E	76.3	
		Westbound Left/Right		E	65.2	117	E	76.3	#338
		Northbound Approach		B	13.6		C	29.5	
		Northbound Thru/Right		B	13.6	350	C	29.5	478
		Southbound Approach		A	9.0		B	12.9	
		Southbound Left	90	D	54.1	#101	B	13.6	m60
		Southbound Thru		A	1.4	46	B	12.8	226
5	Chain Bridge Road & Judicial Drive (HCM 2000)	Overall (Signalized)		C	20.9		C	29.2	
		Eastbound Approach		D	50.8		D	47.6	
		Eastbound Left	440	E	61.5	108	E	58.3	166
		Eastbound Right		D	47.7	80	D	44.5	142
		Northbound Approach		B	17.8		C	27.7	
		Northbound Left	150	B	18.7	242	E	62.8	m#316
		Northbound Thru		B	17.6	414	B	14.0	160
		Southbound Approach		B	14.9		C	22.3	
		Southbound Thru		B	13.9	270	C	23.2	557
		Southbound Right	240	C	22.5	69	A	9.1	17

Table 5: Future without Development (2029) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2029 Future without Development					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
6	Chain Bridge Road & FCJC Entrance/Driveway (HCM 6)	Overall (Signalized)		C	24.2		C	33.6	
		Eastbound Approach		E	61.8		E	64.5	
		Eastbound Left/Thru		E	56.9	43	E	57.8	100
		Eastbound Right		E	61.9	0	E	67.6	65
		Westbound Approach		E	60.4		D	53.5	
		Westbound Left/Thru/Right		E	60.4	0	D	53.5	12
		Northbound Approach		A	0.6		A	1.0	
		Northbound Left	235	A	0.1	242	A	7.5	88
		Northbound Thru/Right		A	0.8	121	A	0.5	73
		Southbound Approach		E	68.5		E	55.7	
		Southbound Left	180	A	2.6	2	A	0.0	0
		Southbound Thru/Right		E	68.8	245	E	56.0	303
7	Chain Bridge Road & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Westbound Approach							
		Westbound Right							
8	University Drive & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Eastbound Approach							
		Eastbound Left/Right							
		Northbound Approach							
		Northbound Left/Thru							
9	University Drive & Lower Garage Entrance (HCM 6)	Overall (Unsignalized)		Future Intersection					
		Eastbound Approach							
		Eastbound Left/Right							
		Northbound Approach							
		Northbound Left/Thru							

Notes:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

In order to achieve the acceptable levels of service and improve traffic operations conditions, the following roadway improvements have been approved to be in place by 2029:

- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - Install a traffic signal and relocate the future South Street access point off of Chain Bridge Road. This traffic signal has already been approved and therefore a signal warrant analysis is not required.

The intersection capacity analysis results show that the following three (3) intersections have approaches that operate below acceptable levels of service during one or more peak hours under Future Conditions without Development (2029). Approaches in **bold** operate below acceptable levels of service under Existing Conditions (2024):

- Intersection 3: Chain Bridge Road and West Drive
 - **Eastbound Approach (AM and PM Peaks)**
 - **Westbound Approach (AM and PM Peaks)**
- Intersection 4: Chain Bridge Road and Armstrong Street
 - **Westbound Approach (AM and PM Peaks)**

- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - **Eastbound Approach (AM and PM Peaks)**
 - **Westbound Approach (AM Peak)**
 - Southbound Approach (AM and PM Peaks)

Based on the queuing analysis performed for the Future Conditions without Development (2029), the turning movements at the study intersections are anticipated to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays, except for the following movements (**bolded** movements exceed the available storage lengths of turn bays in Existing Conditions (2024)):

- Intersection 4: Chain Bridge Road and Armstrong Street
 - Southbound Left (AM Peak)
- Intersection 5: Chain Bridge Road and Judicial Drive
 - **Northbound Left (AM and PM Peaks)**
- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - Northbound Left (AM Peak)



Figure 26: Future without Development (2029) – Levels of Service

Future Conditions with Development (2029)

Site Description

The proposed site is a mixed-use development consisting of 29,639 square feet of new office space, 7,747 square feet of retail use, and 395 residential apartments. The full redevelopment of the site is anticipated to be complete by 2029.

Site Access

Access to the redeveloped site will be provided via one **partial-movement right-in/right-out (RIRO)** entrance along Chain Bridge Road and two (2) **full-movement** entrances along University Drive. One of the entrances on University Drive and the entrance on Chain Bridge Road are connected via an internal new access drive on-site while the remaining entrance on University Drive connects to the lower level of the garage.

Site Generated Traffic

The Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition was used to determine the future trips generated by the proposed development as shown in Table 6. A Mode Split/TDM reduction of 15 percent was applied to the residential and office uses along with a 10 percent reduction for internal capture between commercial, residential, and office, based on guidance from City staff.

Table 6: Trip Generation for Full-Build, 2029 (ITE 11th Edition; Peak Hour of Adjacent Street)

Land Use	ITE Code	Size	----- Week day -----						Daily Total
			AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	
Existing (to Be Removed)									
4085 Chain Bridge Road Office	710	25,194 kSF of GFA	45	6	51	9	44	53	350
4101 Chain Bridge Road Office	710	11,340 kSF of GFA	23	3	26	5	22	27	175
4103 Chain Bridge Road Office	710	48,000 kSF of GFA	78	11	89	15	75	90	613
4117 Chain Bridge Road Office	710	35,400 kSF of GFA	61	8	69	12	58	70	470
Total Existing Trips			207	28	235	44	199	240	1,608
Proposed									
Residential									
Multifamily Housing (Mid-Rise) ^[1]	221	395 DU	37	125	162	94	60	154	1,838
Total Residential Trips without Reductions			39	125	162	95	60	154	1,838
Internal Trip Reduction (Residential to Commercial) ^[2]			-1	-1	-2	-3	-3	-6	-56
Internal Trip Reduction (Residential to Office) ^[2]			-1	-5	-6	-5	-1	-6	-40
Subtotal Residential Trips with Internal Capture Reductions			37	119	154	87	56	142	1,742
TDM / Mode Split Reduction			-5	-18	-23	-13	-8	-21	-261
Subtotal Residential Trips with Internal Capture and TDM Reductions			32	101	131	74	48	121	1,481
Commercial									
Shopping Center (<40 kSF)	822	7,747 kSF of GFA	14	10	24	32	33	65	557
Total Commercial Trips without Reductions			14	10	24	32	33	65	557
Internal Trip Reduction (Commercial to Residential) ^[2]			-1	-1	-2	-3	-3	-6	-56
Internal Trip Reduction (Commercial to Office) ^[2]			-1	-1	-2	-3	-1	-4	-40
Subtotal Commercial Trips with Internal Trip Reduction			12	8	20	26	29	55	461
Office									
Office	710	29,639 kSF of GFA	52	7	59	10	51	61	403
Total Office Trips without Reductions			52	7	59	10	51	61	403
Internal Trip Reduction (Office to Residential) ^[2]			-5	-1	-6	-1	-5	-6	-40
Internal Trip Reduction (Office to Commercial) ^[2]			-1	-1	-2	-1	-3	-4	-40
Subtotal Office Trips with Internal Trip Reduction			46	5	51	8	43	51	323
TDM / Mode Split Reduction			-7	-1	-8	-1	-6	-8	-48
Subtotal Office Trips with Internal Capture and TDM Reductions			39	4	43	7	37	43	275
Proposed Trips without Reductions (Internal, Transit)			103	142	245	136	144	280	2,798
Proposed Trips with Reductions (Internal, Transit)			83	113	194	107	114	219	2,217
Net Total Trips without Reductions (Proposed Minus Existing)			-103	114	10	92	-55	40	1,190
Net Total Trips with Reductions (Internal, Transit) (Proposed Minus Existing)			-125	85	-41	62	-85	-21	609

Notes:

[1]: For Multifamily Housing, ITE 11 does not differentiate between apartment, and condo; per ITE, subcategory of not near rail transit selected.

[2]: The internal trip reduction is based on the smaller of 10% of trips between residential and commercial uses.

As shown in the table above after reductions, the proposed development will generate approximately 194 new trips during the AM peak hour, 219 new trips during the PM peak hours, and 2,217 new daily trips on a typical weekday.

Site Trip Distribution

The distribution of site trips was based on the 2045 Metropolitan Council of Governments (MWCOC) model as well as existing and anticipated traffic patterns with guidance and input from the city staff. The directional distribution percentages are shown in Figure 27. The traffic assignment for the site trips at the study intersections are shown in Figure 28.

As the two levels of the garage are not connected, trips were assigned to each garage entrance separately. The lower level of the garage (accessed on University Boulevard) will be meant for residents only, while the upper level (accessed on the New Service Drive) will be meant for all retail and office users and the remaining residents. Retail and office trips were thus assigned to this level along with 35% of residential trips (the other 65% of residents have spaces in the lower level as calculated by the required spaces needed for residents). Spaces for residents can be assigned and retail and office users will be directed to the upper level so there will be next to no trips due to people changing levels.

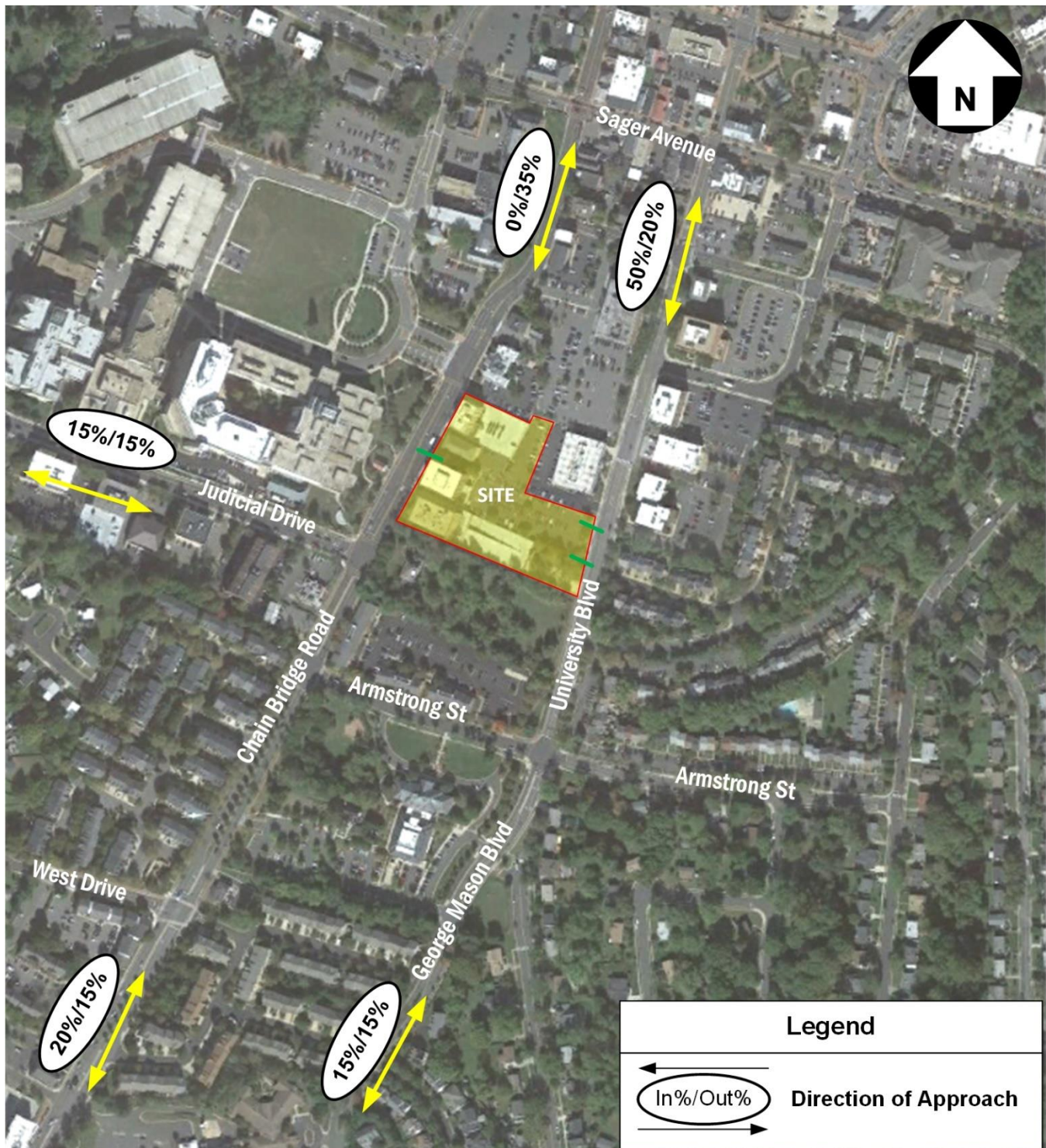


Figure 27: Directional Distribution

Future with Development (2029) Traffic Volumes

In order to determine the Future Conditions with Development (2029) traffic volumes, the site-generated traffic volumes were added to the Future without Development (2029) traffic volumes. The Future with Development (2029) peak hour traffic volumes are presented in Figure 29. Trips associated with the existing site were not removed from the network, making the analysis more conservative.

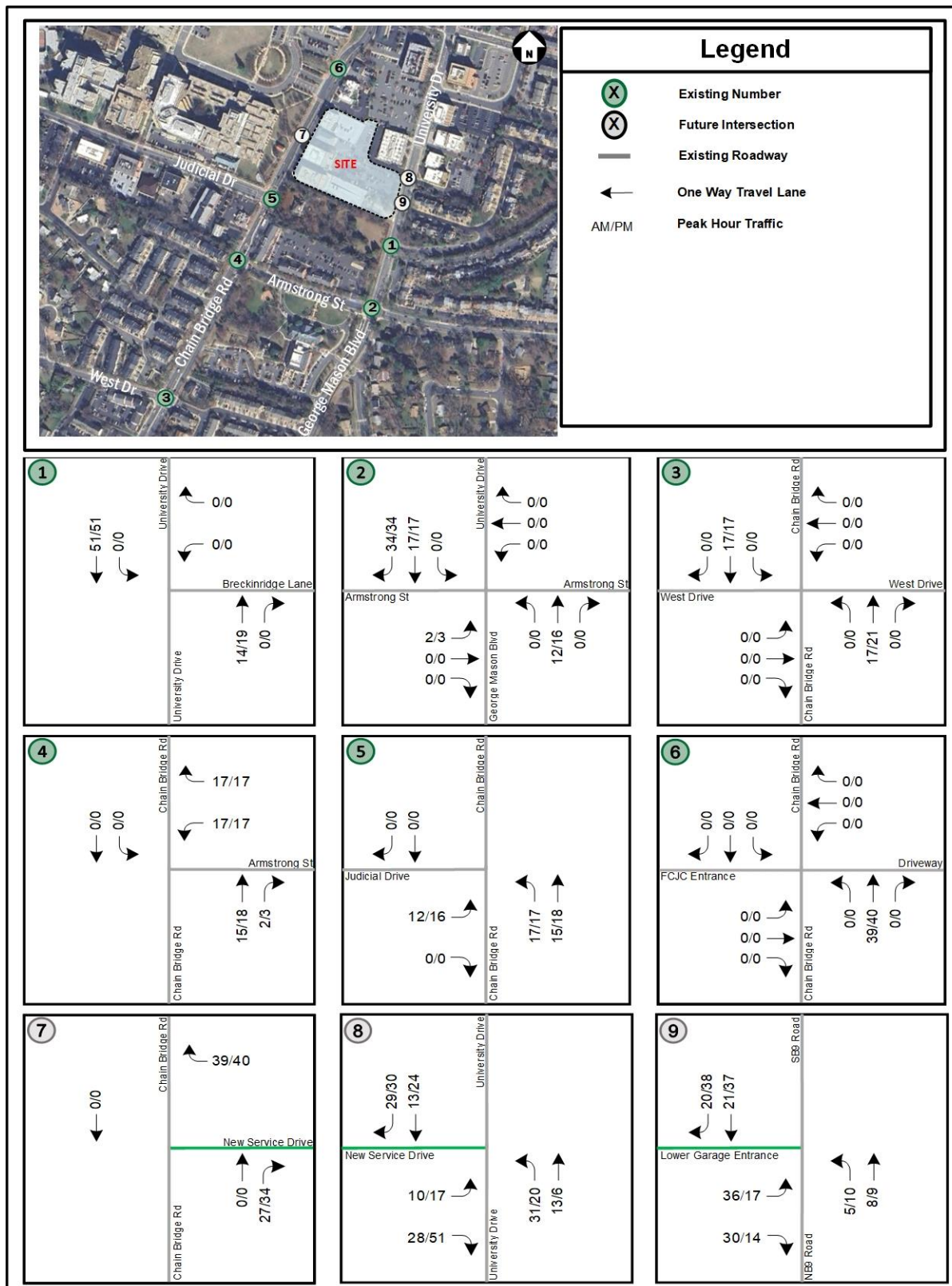


Figure 28: Site Trips (2029)

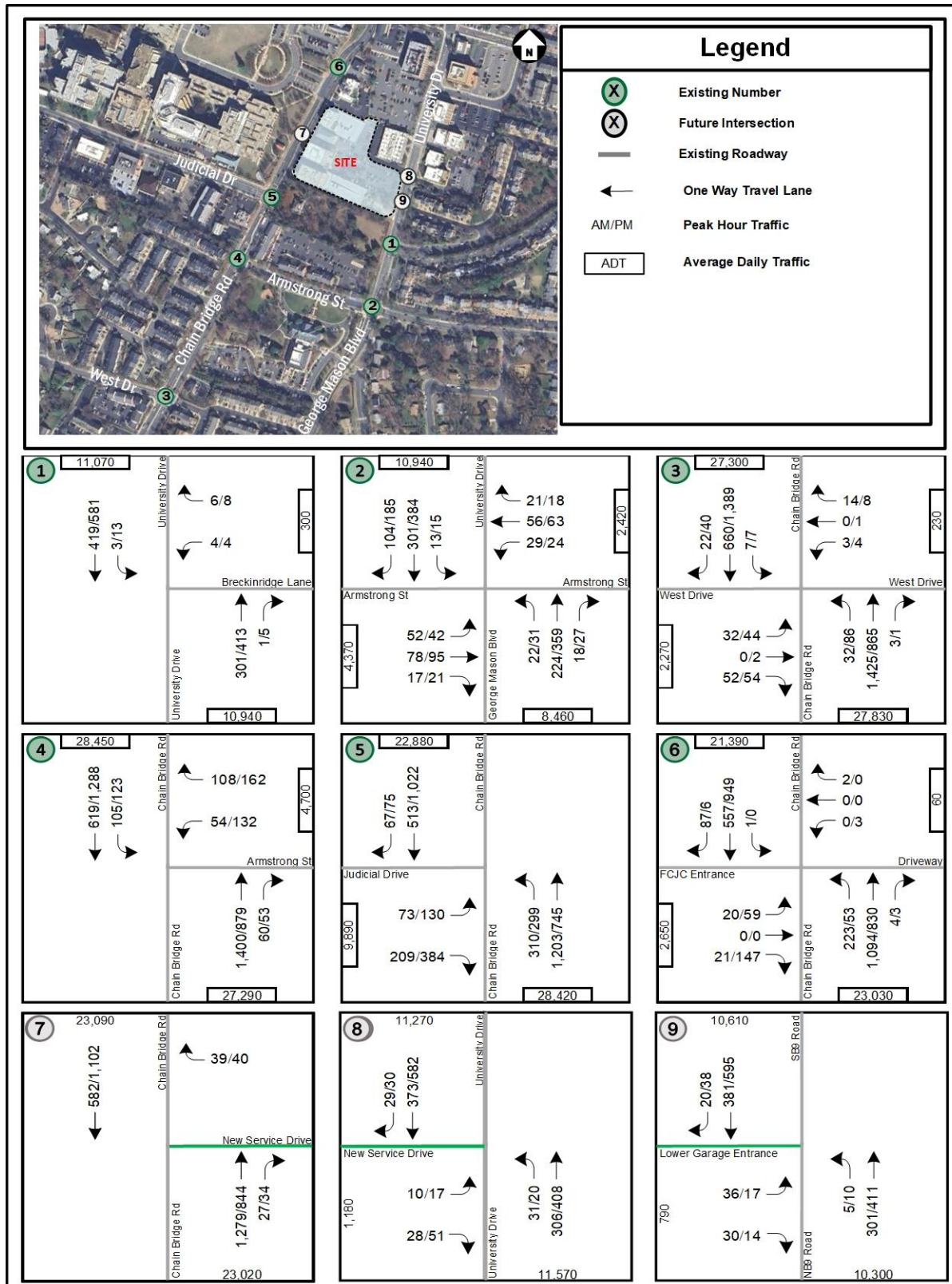


Figure 29: Future with Development (2029) – Peak Hour Traffic Volumes

Future with Development (2029) Intersection Analysis

Intersection capacity analysis was performed in a manner consistent with the methodology used for the Future Conditions without Development (2029) analysis. *Synchro Version 11* was used to analyze the study intersections based on the HCM 6th edition, and if the output is not available, the HCM 2000 methodology presented in the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) is used. The analysis herein includes the level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

Signal phasing and timings were not changed from the future conditions without development. A peak hour factor of 0.92 was used unless the peak hour collected in the field was higher. As discussed in the scope, the heavy vehicle percentages (HV%) were based on the existing counts and a default *Synchro* HV% of 2.0% was utilized for all other lane groups.

Per the scoping meeting with the City staff, it would be considered acceptable and/or desirable to achieve LOS D or better for traffic operations using HCM methodology. The results of the intersection analysis are presented in Table 7 and graphically on Figure 30. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections, per approach, and per lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

The 95th percentile queues were also determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The detailed analysis worksheets are included in Appendix H.

Table 7: Future with Development (2029) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2029 Future with Development					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
1	University Drive & Breckinridge Lane (HCM 6)	Overall (Unsignalized)							
		Westbound Approach		B	12.3		C	15.0	
		Westbound Left/Right		B	12.3	3	C	15.0	3
		Southbound Approach		-	-		-	-	
		Southbound Left		A	8.0	0	A	8.5	0
2	George Mason Boulevard/University Drive & Armstrong Street (HCM 6)	Overall (Signalized)		B	14.0		B	15.5	
		Eastbound Approach		C	23.9		C	26.5	
		Eastbound Left/Thru/Right		C	23.9	114	C	26.5	121
		Westbound Approach		C	21.9		C	24.1	
		Westbound		C	21.9	81	C	24.1	81
		Northbound Approach		A	9.0		B	10.1	
		Northbound Left	160	A	7.0	13	A	7.6	15
		Northbound Thru/Right		A	9.2	132	B	10.3	212
		Southbound Approach		B	11.5		B	14.8	
		Southbound Left		A	7.9	9	A	7.7	10
		Southbound Thru/Right		B	11.7	233	B	15.0	#377
3	Chain Bridge Road & West Drive (HCM 2000)	Overall (Signalized)		C	21.1		C	21.3	
		Eastbound Approach		E	55.4		E	55.5	
		Eastbound Left		E	56.3	60	E	56.5	76
		Eastbound Thru/Right		D	54.9	0	D	54.8	42
		Westbound Approach		E	55.9		E	55.9	
		Westbound Left		E	55.9	12	E	56.0	15
		Westbound Thru/Right	315	E	55.9	0	E	55.9	18
		Northbound Approach		C	24.0		B	18.4	
		Northbound Left	165	B	10.9	35	C	28.9	103
		Northbound Thru/Right		C	24.3	#965	B	17.3	434
		Southbound Approach		A	9.8		C	20.6	
		Southbound Left		B	10.1	m5	A	3.4	m1
		Southbound Thru/Right		A	9.8	100	C	20.7	#1035
4	Chain Bridge Road & Armstrong Street (HCM 2000)	Overall (Signalized)		B	17.1		C	28.0	
		Westbound Approach		E	69.5		F	83.5	
		Westbound Left/Right		E	69.5	169	F	83.5	#415
		Northbound Approach		B	14.6		C	31.6	
		Northbound Thru/Right		B	14.6	#884	C	31.6	490
		Southbound Approach		B	10.4		B	14.2	
		Southbound Left	90	E	60.7	#132	B	17.4	m74
		Southbound Thru		A	1.8	51	B	13.9	226
5	Chain Bridge Road & Judicial Drive (HCM 2000)	Overall (Signalized)		C	21.8		C	30.4	
		Eastbound Approach		D	50.3		D	48.2	
		Eastbound Left	440	E	62.0	122	E	60.1	183
		Eastbound Right		D	46.2	74	D	44.2	138
		Northbound Approach		B	18.6		C	30.0	
		Northbound Left	150	C	20.6	m282	E	70.1	m#349
		Northbound Thru		B	18.1	453	B	13.9	m175
		Southbound Approach		B	16.2		C	22.5	
		Southbound Thru		B	15.1	282	C	23.5	566
		Southbound Right	240	C	24.9	69	A	9.3	22

Table 7: Future with Development (2029) – Intersection Analysis

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2029 Future with Development					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]	LOS	Delay (s)	Queue Length 95th % (ft) [2] [3]
6	Chain Bridge Road & FCJC Entrance/Driveway (HCM 6)	Overall (Signalized)		C	23.8		C	32.9	
		Eastbound Approach		E	61.8		E	64.5	
		Eastbound Left/Thru		E	56.9	43	E	57.8	100
		Eastbound Right		E	61.9	0	E	67.6	65
		Westbound Approach		E	60.4		D	53.5	
		Westbound Left/Thru/Right		E	60.4	0	D	53.5	12
		Northbound Approach		A	0.7		A	1.0	
		Northbound Left	235	A	0.1	256	A	7.5	90
		Northbound Thru/Right		A	0.8	138	A	0.6	85
		Southbound Approach		E	68.5		E	55.7	
		Southbound Left	180	A	2.6	2	A	0.0	0
		Southbound Thru/Right		E	68.8	245	E	56.0	303
7	Chain Bridge Road & New Service Drive (HCM 6)	Overall (Unsignalized)							
		Westbound Approach		C	15.8		B	12.3	
		Westbound Right		C	15.8	10	B	12.3	8
8	University Drive & New Service Drive (HCM 6)	Overall (Unsignalized)							
		Eastbound Approach		B	12.7		C	17.4	
		Eastbound Left/Right		B	12.7	8	C	17.4	20
		Northbound Approach		-	-		-	-	
		Northbound Left/Thru		A	8.3	3	A	9.0	3
9	University Drive & Lower Garage Entrance (HCM 6)	Overall (Unsignalized)							
		Eastbound Approach		B	14.4		C	19.2	
		Eastbound Left/Right		B	14.4	15	C	19.2	10
		Northbound Approach		-	-		-	-	
		Northbound Left/Thru		A	8.2	0	A	9.0	0

Notes:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

The intersection capacity analysis results show that the following three (3) intersections have approaches that operate below acceptable levels of service during one or more peak hours under Future Conditions with Development (2029). Approaches in **bold** operate below acceptable levels of service under Future Conditions without Development (2029):

- Intersection 3: Chain Bridge Road and West Drive
 - **Eastbound Approach (AM and PM Peaks)**
 - **Westbound Approach (AM and PM Peaks)**
- Intersection 4: Chain Bridge Road and Armstrong Street
 - **Westbound Approach (AM and PM Peaks)**
- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - **Eastbound Approach (AM and PM Peaks)**

- **Westbound Approach (AM Peak)**
- **Southbound Approach (AM and PM Peaks)**

Based on the queuing analysis performed for the Future Conditions with Development (2029), the turning movements at the study intersections are expected to have 95th percentile queues that can be accommodated within the available storage lengths of the turn bays after mitigations, except for the following movements (**bolded** movements exceed the available storage lengths of turn bays in Future Conditions without Development (2029)):

- Intersection 4: Chain Bridge Road and Armstrong Street
 - **Southbound Left (AM Peak)**
- Intersection 5: Chain Bridge Road and Judicial Drive
 - **Northbound Left (AM and PM Peaks)**
- Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway
 - **Northbound Left (AM Peak)**

The intersection capacity analysis results are similar to background conditions. The same six (6) approaches at the same three (3) intersections that currently operate below acceptable levels of service are expected to continue to operate unacceptably, and the same movements that have 95th percentile queues greater than the storage lengths are expected to do so under Future Conditions with Development (2029).

It is to be noted that no signal timing adjustments have been proposed as a mitigation measure for the signalized intersections along Chain Bridge Road. This is because all signals along Chain Bridge Road are coordinated, and the side street movements run under split phasing. Any adjustment would impact the overall performance of the intersection and the corridor. These conditions are typical for commuter corridors in Northern Virginia and reflect the prioritization of traffic along the mainlines in order to accommodate the largest possible volume in the area. Therefore, it has a better overall traffic operation than prioritizing all movements equally.

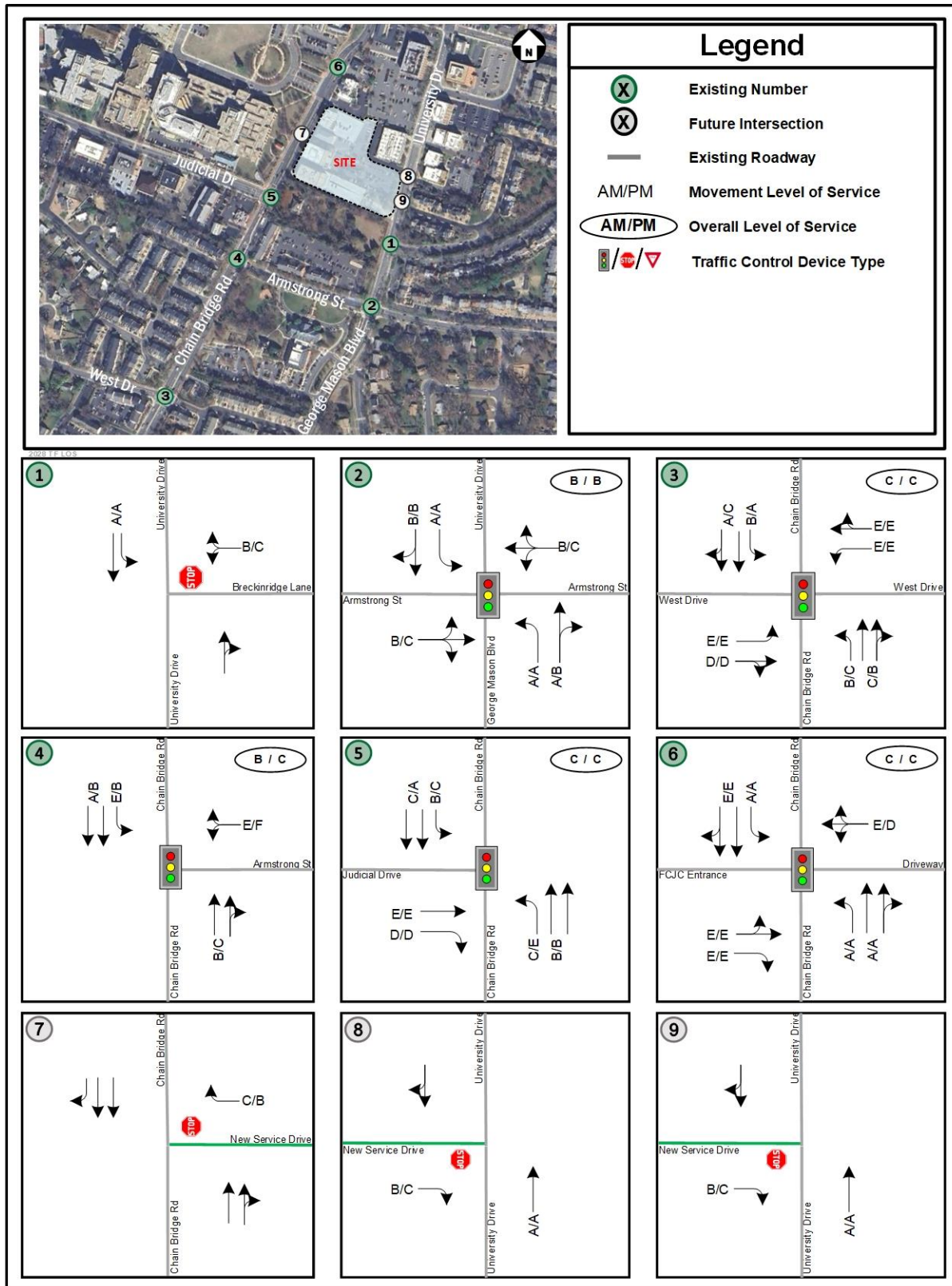


Figure 30: Future with Development (2029) – Levels of Service

Overall Comparison of Intersection Capacity and Queuing Analysis Results

As described in the previous sections, vehicular capacity analysis was performed for the following seven scenarios:

- **Existing (2024) Scenario** – assumes existing traffic volume based on the counts.
- **Future without Development (2029)** – assumes exiting traffic volume plus additional traffic due to a 1% annual growth rate plus traffic due to planned yet unbuilt four (4) background developments at the time of counts.
- **Future with Development (2029)** – assumes existing traffic plus additional traffic due to a one percent annual growth rate plus traffic due to planned yet unbuilt background developments plus traffic generated by the Gallery at City Center redevelopment.

A comparison of the delays and LOS results is presented in Table 8 and the queue comparison for the study scenarios is included in Table 9.

Table 8: Delay Comparison Table

ID	Intersection	Movement	2024 Existing				2029 Future without Development				2029 Future with Development			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1	University Drive & Breckinridge Lane (HCM 6)	Overall (Unsignalized)												
		Westbound Approach	B	11.6	B	13.7	B	11.8	B	14.3	B	12.3	C	15.0
		Westbound Left/Right	B	11.6	B	13.7	B	11.8	B	14.3	B	12.3	C	15.0
		Southbound Approach	-	-	-	-	-	-	-	-	-	-	-	-
		Southbound Left	A	7.9	A	8.4	A	7.9	A	8.5	A	8.0	A	8.5
2	George Mason Boulevard/University Drive & Armstrong Street (HCM 6)	Overall (Signalized)	B	13.4	B	14.3	B	13.2	B	14.7	B	14.0	B	15.5
		Eastbound Approach	C	21.6	C	24.8	C	21.6	C	25.9	C	23.9	C	26.5
		Eastbound Left/Thru/Right	C	21.6	C	24.8	C	21.6	C	25.9	C	23.9	C	26.5
		Westbound Approach	C	20.0	C	22.7	C	20.1	C	23.7	C	21.9	C	24.1
		Westbound	C	20.0	C	22.7	C	20.1	C	23.7	C	21.9	C	24.1
		Northbound Approach	A	9.6	A	9.9	A	9.4	A	9.9	A	9.0	B	10.1
		Northbound Left	A	7.7	A	7.0	A	7.7	A	7.3	A	7.0	A	7.6
		Northbound Thru/Right	A	9.7	B	10.1	A	9.6	B	10.1	A	9.2	B	10.3
		Southbound Approach	B	10.4	B	12.6	B	10.5	B	13.3	B	11.5	B	14.8
		Southbound Left	A	7.6	A	7.8	A	7.6	A	7.6	A	7.9	A	7.7
		Southbound Thru/Right	B	10.5	B	12.7	B	10.7	B	13.5	B	11.7	B	15.0
3	Chain Bridge Road & West Drive (HCM 2000)	Overall (Signalized)	C	20.0	C	20.3	C	21.1	C	21.3	C	21.1	C	21.3
		Eastbound Approach	E	55.4	E	55.5	E	55.4	E	55.5	E	55.4	E	55.5
		Eastbound Left	E	56.3	E	56.5	E	56.3	E	56.5	E	56.3	E	56.5
		Eastbound Thru/Right	D	54.9	D	54.8	D	54.9	D	54.8	D	54.9	D	54.8
		Westbound Approach	E	55.9	E	55.9	E	55.9	E	55.9	E	55.9	E	55.9
		Westbound Left	E	55.9	E	56.0	E	55.9	E	56.0	E	55.9	E	56.0
		Westbound Thru/Right	E	55.9	E	55.9	E	55.9	E	55.9	E	55.9	E	55.9
		Northbound Approach	C	20.8	B	16.8	C	23.7	B	18.1	C	24.0	B	18.4
		Northbound Left	B	10.6	C	20.5	B	10.8	C	27.6	B	10.9	C	28.9
		Northbound Thru/Right	C	21.1	B	16.4	C	24.0	B	17.2	C	24.3	B	17.3
		Southbound Approach	B	12.4	B	19.4	B	10.2	C	20.6	A	9.8	C	20.6
		Southbound Left	B	11.8	A	3.5	B	10.6	A	3.3	B	10.1	A	3.4
		Southbound Thru/Right	B	12.5	B	19.5	B	10.2	C	20.7	A	9.8	C	20.7
4	Chain Bridge Road & Armstrong Street (HCM 2000)	Overall (Signalized)	B	11.3	C	24.5	B	15.0	C	25.1	B	17.1	C	28.0
		Westbound Approach	E	64.8	E	74.5	E	65.2	E	76.3	E	69.5	F	83.5
		Westbound Left/Right	E	64.8	E	74.5	E	65.2	E	76.3	E	69.5	F	83.5
		Northbound Approach	B	10.6	C	26.1	B	13.6	C	29.5	B	14.6	C	31.6
		Northbound Thru/Right	B	10.6	C	26.1	B	13.6	C	29.5	B	14.6	C	31.6
		Southbound Approach	A	4.3	B	14.2	A	9.0	B	12.9	B	10.4	B	14.2
		Southbound Left	C	20.4	B	13.1	D	54.1	B	13.6	E	60.7	B	17.4
		Southbound Thru	A	1.3	B	14.3	A	1.4	B	12.8	A	1.8	B	13.9
5	Chain Bridge Road & Judicial Drive (HCM 2000)	Overall (Signalized)	C	22.2	C	30.7	C	20.9	C	29.2	C	21.8	C	30.4
		Eastbound Approach	D	51.2	D	47.4	D	50.8	D	47.6	D	50.3	D	48.2
		Eastbound Left	E	61.0	E	57.1	E	61.5	E	58.3	E	62.0	E	60.1
		Eastbound Right	D	48.6	D	44.8	D	47.7	D	44.5	D	46.2	D	44.2
		Northbound Approach	B	17.6	C	24.0	B	17.8	C	27.7	B	18.6	C	30.0
		Northbound Left	B	17.7	D	45.2	B	18.7	E	62.8	C	20.6	E	70.1
		Northbound Thru	B	17.6	B	13.9	B	17.6	B	14.0	B	18.1	B	13.9
		Southbound Approach	B	18.5	C	28.1	B	14.9	C	22.3	B	16.2	C	22.5
		Southbound Thru	B	18.8	C	28.7	B	13.9	C	23.2	B	15.1	C	23.5
		Southbound Right	B	16.5	C	21.1	C	22.5	A	9.1	C	24.9	A	9.3

Table 8: Delay Comparison Table

ID	Intersection	Movement	2024 Existing				2029 Future without Development				2029 Future with Development			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
6	Chain Bridge Road & FCJC Entrance/Driveway (HCM 6)	Overall (Unsignalized EX, Signalized FB and TF)	A	2.2	A	4.3	C	24.2	C	33.6	C	23.8	C	32.9
		Eastbound Approach	E	42.3	E	35.2	E	61.8	E	64.5	E	61.8	E	64.5
		Eastbound Left	F	70.8	F	82.4	-	-	-	-	-	-	-	-
		Eastbound Left/Thru	-	-	-	-	E	56.9	E	57.8	E	56.9	E	57.8
		Eastbound Right	B	10.6	B	13.9	E	61.9	E	67.6	E	61.9	E	67.6
		Westbound Approach	B	11.6	E	49.0	E	60.4	D	53.5	E	60.4	D	53.5
		Westbound Left/Thru/Right	B	11.6	E	49.0	E	60.4	D	53.5	E	60.4	D	53.5
		Northbound Approach	-	-	-	-	A	0.6	A	1.0	A	0.7	A	1.0
		Northbound Left	A	9.9	B	10.4	A	0.1	A	7.5	A	0.1	A	7.5
		Northbound Thru/Right	-	-	-	-	A	0.8	A	0.5	A	0.8	A	0.6
		Southbound Approach	-	-	-	-	E	68.5	E	55.7	E	68.5	E	55.7
		Southbound Left	A	9.8	A	0.0	A	2.6	A	0.0	A	2.6	A	0.0
		Southbound Thru/Right	-	-	-	-	E	68.8	E	56.0	E	68.8	E	56.0
7	Chain Bridge Road & New Service Drive (HCM 6)	Overall (Unsignalized)	Future Intersection				Future Intersection							
		Westbound Approach									C	15.8	B	12.3
		Westbound Right									C	15.8	B	12.3
8	University Drive & New Service Drive (HCM 6)	Overall (Unsignalized)	Future Intersection				Future Intersection							
		Eastbound Approach									B	12.7	C	17.4
		Eastbound Left/Right									B	12.7	C	17.4
		Northbound Approach									-	-	-	-
		Northbound Left/Thru									A	8.3	A	9.0
9	University Drive & Lower Garage Entrance (HCM 6)	Overall (Unsignalized)	Future Intersection				Future Intersection							
		Eastbound Approach									B	14.4	C	19.2
		Eastbound Left/Right									B	14.4	C	19.2
		Northbound Approach									-	-	-	-
		Northbound Left/Thru									A	8.2	A	9.0

Table 9: Queue Comparison Table

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2024 Existing		2029 Future without Development		2029 Future with Development	
				AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
				Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]
1	University Drive & Breckinridge Lane (HCM 6)	Overall (Unsignalized)							
		Westbound Approach							
		Westbound Left/Right		3	3	3	3	3	3
		Southbound Approach							
		Southbound Left		0	0	0	0	0	0
2	George Mason Boulevard/University Drive & Armstrong Street (HCM 6)	Overall (Signalized)							
		Eastbound Approach							
		Eastbound Left/Thru/Right		102	119	103	119	114	121
		Westbound Approach							
		Westbound		74	81	75	81	81	81
		Northbound Approach							
		Northbound Left	160	12	14	12	15	13	15
		Northbound Thru/Right		120	188	125	200	132	212
		Southbound Approach							
		Southbound Left		9	9	9	9	9	10
		Southbound Thru/Right		166	267	197	308	233	#377
3	Chain Bridge Road & West Drive (HCM 2000)	Overall (Signalized)							
		Eastbound Approach							
		Eastbound Left		60	76	60	76	60	76
		Eastbound Thru/Right		0	42	0	42	0	42
		Westbound Approach							
		Westbound Left		12	15	12	15	12	15
		Westbound Thru/Right	315	0	18	0	18	0	18
		Northbound Approach							
		Northbound Left	165	35	76	35	101	35	103
		Northbound Thru/Right		#745	360	#946	420	#965	434
		Southbound Approach							
		Southbound Left		m6	m1	m5	m1	m5	m1
		Southbound Thru/Right		151	#849	146	#1017	100	#1035
4	Chain Bridge Road & Armstrong Street (HCM 2000)	Overall (Signalized)							
		Westbound Approach							
		Westbound Left/Right		88	289	117	#338	169	#415
		Northbound Approach							
		Northbound Thru/Right		249	423	350	478	#884	490
		Southbound Approach							
		Southbound Left	90	53	64	#101	m60	#132	m74
		Southbound Thru		44	242	46	226	51	226
5	Chain Bridge Road & Judicial Drive (HCM 2000)	Overall (Signalized)							
		Eastbound Approach							
		Eastbound Left	440	100	152	108	166	122	183
		Eastbound Right		85	144	80	142	74	138
		Northbound Approach							
		Northbound Left	150	229	#304	242	m#316	m282	m#349
		Northbound Thru		365	116	414	160	453	m175
		Southbound Approach							
		Southbound Thru		212	440	270	557	282	566
		Southbound Right	240	33	42	69	17	69	22

Table 9: Queue Comparison Table

ID	Intersection	Movement	Effective Storage Length (ft.) [1]	2024 Existing		2029 Future without Development		2029 Future with Development	
				AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
				Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]	Queue Length 95th % (ft) [2] [3]
6	Chain Bridge Road & FCJC Entrance/Driveway (HCM 6)	Overall (Unsignalized EX, Signalized FB and TF)							
		Eastbound Approach							
		Eastbound Left		25	75	-	-	-	-
		Eastbound Left/Thru		-	-	43	100	43	100
		Eastbound Right		3	25	0	65	0	65
		Westbound Approach							
		Westbound Left/Thru/Right		0	3	0	12	0	12
		Northbound Approach							
		Northbound Left	235	23	5	242	88	256	90
		Northbound Thru/Right		-	-	121	73	138	85
		Southbound Approach							
		Southbound Left	180	0	0	2	0	2	0
		Southbound Thru/Right		-	-	245	303	245	303
7	Chain Bridge Road & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection		Future Intersection			
		Westbound Approach							
		Westbound Right						10	8
8	University Drive & New Service Drive (HCM 6)	Overall (Unsignalized)		Future Intersection		Future Intersection			
		Eastbound Approach							
		Eastbound Left/Right						8	20
		Northbound Approach							
		Northbound Left/Thru						3	3
9	University Drive & Lower Garage Entrance (HCM 6)	Overall (Unsignalized)		Future Intersection		Future Intersection			
		Eastbound Approach							
		Eastbound Left/Right						15	10
		Northbound Approach							
		Northbound Left/Thru						0	0

Notes:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[3] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Conclusions

This report presented the findings of a Transportation Impact Study (TIS) conducted for the proposed development of the Gallery at City Center redevelopment in the City of Fairfax, Virginia. The analysis presented in this report supports the following major findings:

- The intersection capacity analysis results for the Future Conditions with Development are similar to Future Conditions without Development. Therefore, the development will have a minimal impact on the traffic operations and safety of the street network.

Additional assumptions, findings, and conclusions are as follows:

TIA Components

- As determined based on discussions with the City, 1.0% regional growth was applied to the Chain Bridge Road / University Drive mainline through movements at the intersection of Chain Bridge Road at Judicial Drive as well as at the intersection of University Boulevard/George Mason Boulevard at Armstrong Street volumes.
- A mode split/TDM reduction of 15 percent was applied to the residential and office uses, as agreed upon with the City.
- The internal trip reduction is based on 10 percent trips between residential, office, and commercial uses, as agreed upon with the City.
- The proposed development is anticipated to generate approximately 194 trips during the AM peak hour, 219 trips during the PM peak hour, and 2,217 daily trips on a typical weekday
- The proposed development is anticipated to generate approximately 41 fewer net new trips during the AM peak hour, 21 fewer net new trips during the PM peak hour, and 609 additional net new daily trips on a typical weekday compared to the existing use.

Infrastructure

- Existing vehicular access is provided on Chain Bridge Road as well as on University Drive.
- Access to the redeveloped site will be provided via one **partial-movement right-in/right-out (RIRO)** entrance along Chain Bridge Road and two (2) **full-movement** entrances along University Drive. One of the entrances on University Drive and the entrance on Chain Bridge Road are connected via an internal new access drive on-site while the remaining entrance on University Drive connects to the lower level of the garage.
- The two levels of the garage are not connected. Retail, office, and approximately 35% of residential trips are assumed to route to the upper level of the garage while the rest of the residential uses the lower level of the garage.
- A traffic signal at the future intersection of Chain Bridge Road and the Fairfax County Judicial Complex (FCJC) Entrance is a planned improvement in the study area that will be completed by 2029.
- The City Centre West private redevelopment has been approved but a completion year has not yet been determined.
- The 4131 Chain Bridge Road site has been approved but a completion year has not yet been determined.
- Finally, the One University development has been completed, but traffic counts for the following study were conducted before the development was completed. Usage of these counts has been approved in the Scope with City of Fairfax Staff.

Non-SOV Elements

- Seven (7) bus routes provide service in the vicinity of the site, providing regional access to the area.
- Immediately adjacent to the site, sidewalks are currently present along Chain Bridge Road as well as University Drive.

Analysis Results

- Three (3) intersections within the study area have approaches that operate below acceptable levels of service under all three (3) conditions studied in this analysis:
 - Intersection 3: Chain Bridge Road and West Drive
 - Intersection 4: Chain Bridge Road and Armstrong Street
 - Intersection 6: Chain Bridge Road and FCJC Entrance/Driveway