

Transportation Impact Study

# The Gallery at City Center

City of Fairfax, Virginia

April 7, 2026

**Revised: July 29, 2026**

**Prepared for:**

The Christopher Companies  
10461 White Granite Drive, Suite 250  
Oakton, VA 22124

**GOROVE SLADE**  
Transportation Planners and Engineers

**Prepared by:**



4114 Legato Road, Suite 650, Fairfax, VA 22033

1140 Connecticut Ave NW, Suite 1010, Washington, DC 20036

4951 Lake Brook Drive, Suite 250, Glen Allen, VA 23060

4550 Montgomery Avenue, Suite 400, Bethesda, MD 20814

300 E Main Street, Norfolk, Virginia 23510

**[www.goroveslade.com](http://www.goroveslade.com)**

This document, together with the concepts and designs presented herein, as an instrument of services, is intended for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization by Gorove/Slade Associates, Inc., shall be without liability to Gorove/Slade Associates, Inc.

## TABLE OF CONTENTS

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
| Executive Summary .....                                                        | 6  |
| Site Location and Study Area .....                                             | 6  |
| Description of Proposed Development .....                                      | 6  |
| Principal Findings and Conclusions .....                                       | 7  |
| Introduction .....                                                             | 8  |
| Background Information: Existing Development and Nearby .....                  | 9  |
| Description of the Existing Site .....                                         | 9  |
| Site Location and Description of Parcel .....                                  | 9  |
| Site Location within Jurisdiction and Region .....                             | 9  |
| Comprehensive Plan Recommendations .....                                       | 9  |
| Zoning for the Site and Nearby Uses .....                                      | 9  |
| Description of Geometric Scope and Limits of the Study Area .....              | 14 |
| Existing Roadways .....                                                        | 14 |
| Planned Future Transportation Improvements .....                               | 14 |
| South Street Extension .....                                                   | 14 |
| Old Town Streetscape Plan & Standards and Main Street Streetscape Design ..... | 14 |
| Signal Improvements .....                                                      | 14 |
| Bicycle and Pedestrian Improvements .....                                      | 14 |
| Existing Conditions (2024) .....                                               | 16 |
| Existing Transit Service .....                                                 | 16 |
| Existing Bicycle Facilities .....                                              | 20 |
| Existing Pedestrian Facilities .....                                           | 22 |
| Existing Roadway Network .....                                                 | 24 |
| Historical Crash Data .....                                                    | 24 |
| Existing Traffic Volumes .....                                                 | 25 |
| Existing (2024) Intersection Analysis .....                                    | 28 |
| Future Conditions without Development (2029) .....                             | 33 |
| Future Conditions without Development (2029) Traffic Volumes .....             | 33 |
| Future without Development (2029) Intersection Analysis .....                  | 42 |
| Future Conditions with Development (2029) .....                                | 47 |
| Site Description .....                                                         | 47 |
| Site Access .....                                                              | 47 |
| Site Generated Traffic .....                                                   | 47 |
| Site Trip Distribution .....                                                   | 48 |

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
| Future with Development (2029) Traffic Volumes .....                           | 49 |
| Future with Development (2029) Intersection Analysis .....                     | 52 |
| Overall Comparison of Intersection Capacity and Queuing Analysis Results ..... | 57 |
| Conclusions.....                                                               | 62 |

## APPENDICES

|                                                                                 |  |
|---------------------------------------------------------------------------------|--|
| Appendix A – Scoping Document                                                   |  |
| Appendix B – Crash Data                                                         |  |
| Appendix C – Existing Turning Movement Counts                                   |  |
| Appendix D – LOS description                                                    |  |
| Appendix E – Intersection Capacity Analysis – Existing (2024)                   |  |
| Appendix F – Excerpts from Background Traffic Studies                           |  |
| Appendix G – Intersection Capacity Analysis – Future without Development (2029) |  |
| Appendix H – Intersection Capacity Analysis – Future with Development (2029)    |  |

## LIST OF FIGURES

|                                                                                              |    |
|----------------------------------------------------------------------------------------------|----|
| Figure 1: Study Intersections.....                                                           | 10 |
| Figure 2: Parcel Map .....                                                                   | 11 |
| Figure 3: Jurisdiction Location (Source: City of Fairfax 2035 Comprehensive Plan) .....      | 12 |
| Figure 4: Zoning Map .....                                                                   | 13 |
| Figure 6: Proposed Multimodal Network (Source: City of Fairfax 2035 Comprehensive Plan)..... | 15 |
| Figure 7: Existing CUE Bus Routes (Source: City of Fairfax).....                             | 17 |
| Figure 8: Existing Metrobus Route F23 (Source: WMATA) .....                                  | 18 |
| Figure 9: Existing Metrobus Route F50 (Source: WMATA) .....                                  | 19 |
| Figure 10: Existing Fairfax Connector Route 610 (Source: Fairfax Connector).....             | 20 |
| Figure 11: Approximate Bicycle Travel Times .....                                            | 21 |
| Figure 12: Existing Pedestrian Facilities.....                                               | 22 |
| Figure 13: Approximate Pedestrian Travel Times .....                                         | 23 |
| Figure 14: Existing (2024) – Lane Configuration .....                                        | 26 |
| Figure 15: Existing (2024) – Peak Hour Traffic Volumes.....                                  | 27 |
| Figure 16: Existing (2024) – Levels of Service .....                                         | 32 |
| Figure 17: Background Growth (2024 - 2029) .....                                             | 35 |
| Figure 18: One University Background Development Net Trips .....                             | 36 |
| Figure 19: Phase 1 of FCJC Background Development Net Trips .....                            | 37 |
| Figure 20: City Centre West Background Development Net Trips .....                           | 38 |
| Figure 21: 4131 Chain Bridge Road Background Development Net Trips .....                     | 39 |

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
| Figure 22: Total Background Development Trips .....                            | 40 |
| Figure 23: Future without Development (2029) – Peak Hour Traffic Volumes ..... | 41 |
| Figure 24: Future without Development (2029) – Levels of Service .....         | 46 |
| Figure 25: Directional Distribution .....                                      | 49 |
| Figure 26: Site Trips (2029).....                                              | 50 |
| Figure 27: Future with Development (2029) – Peak Hour Traffic Volumes .....    | 51 |
| Figure 28: Future with Development (2029) – Levels of Service .....            | 56 |

# LIST OF TABLES

|                                                                                                      |    |
|------------------------------------------------------------------------------------------------------|----|
| Table 1: Existing Road Network .....                                                                 | 24 |
| Table 2: Crash Data (January 2020 – December 2025).....                                              | 24 |
| Table 3: Existing (2024) – Intersection Analysis.....                                                | 29 |
| Table 4: Historical Growth Rate .....                                                                | 33 |
| Table 5: Future without Development (2029) – Intersection Analysis.....                              | 43 |
| Table 6: Trip Generation for Full-Build, 2029 (ITE 11th Edition; Peak Hour of Adjacent Street) ..... | 47 |
| Table 7: Future with Development (2029) – Intersection Analysis .....                                | 53 |
| Table 8: Delay Comparison Table .....                                                                | 58 |
| Table 9: Queue Comparison Table .....                                                                | 60 |

## 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
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 29,479 square feet of new office space, 7,747 square feet of retail use, and 394 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 Drive/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, 218 trips during the PM peak hour, and 2,210 daily trips on a typical weekday.
- The proposed development is anticipated to generate approximately 41 fewer net new trips during the AM peak hour, 22 fewer net new trips during the PM peak hour, and 602 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***

- Five (5) 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 29,479 square feet of new office space, 7,747 square feet of retail use, and 394 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) 6<sup>th</sup> Edition methodology. HCM 2000 methodology was used if HCM 6<sup>th</sup> 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 Drive/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.

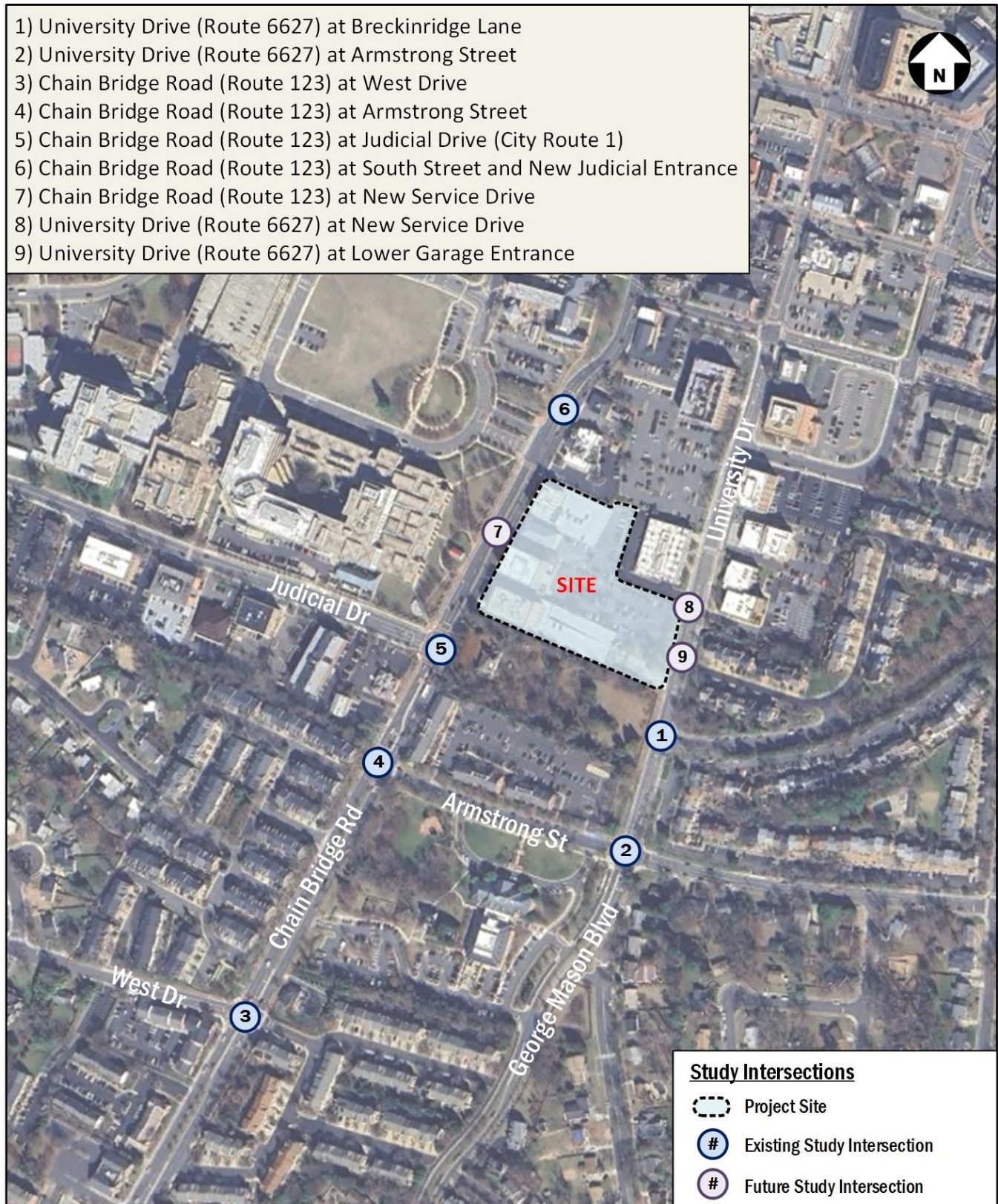


Figure 1: Study Intersections



Figure 2: Parcel Map

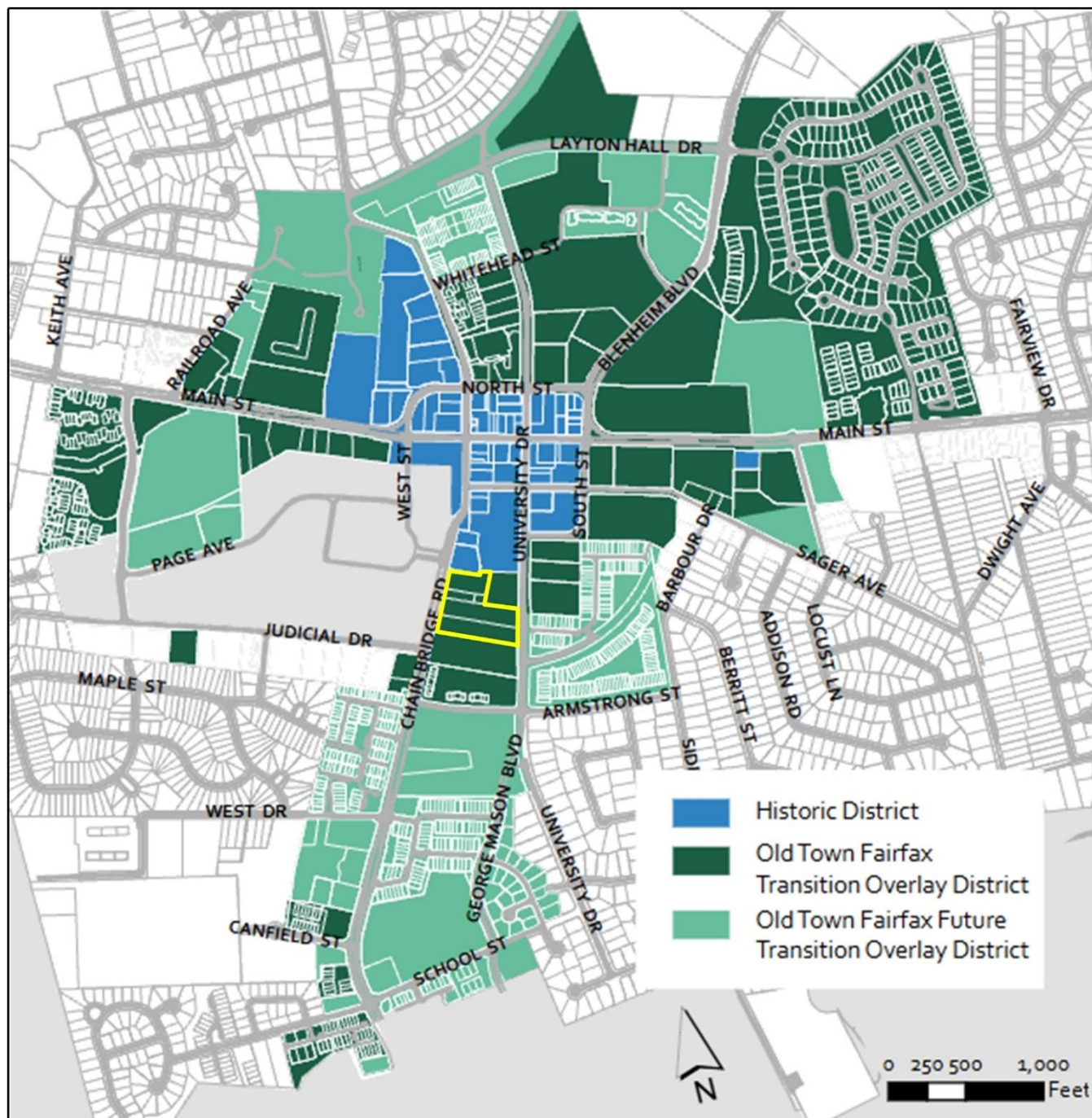


Figure 3: Jurisdiction Location (Source: City of Fairfax 2035 Comprehensive Plan)

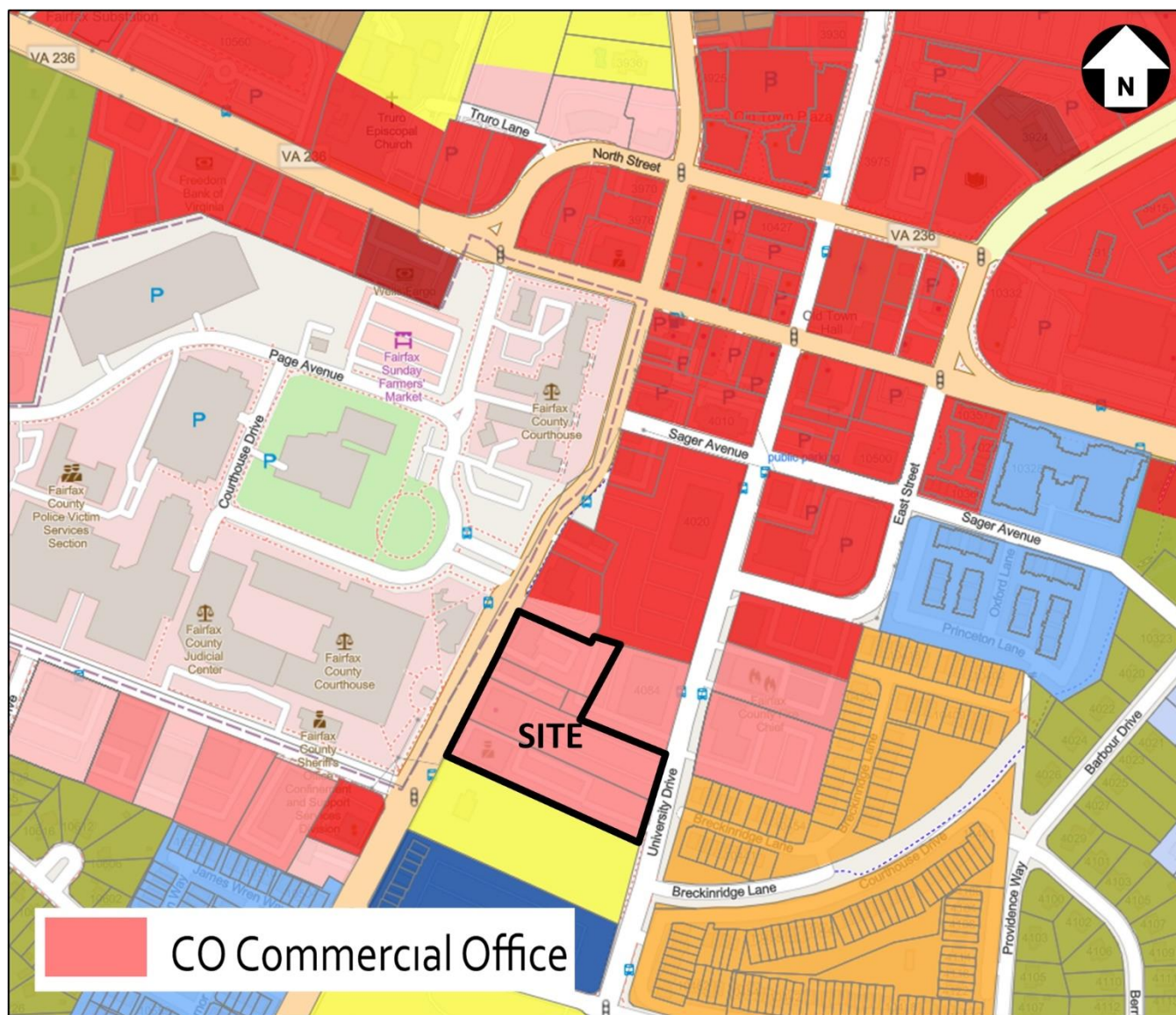


Figure 4: Zoning Map

## ***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 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
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 extension is aligned with the City's plans with 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.

### ***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.

### ***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 5 shows the City's proposed network for bicycle travel.

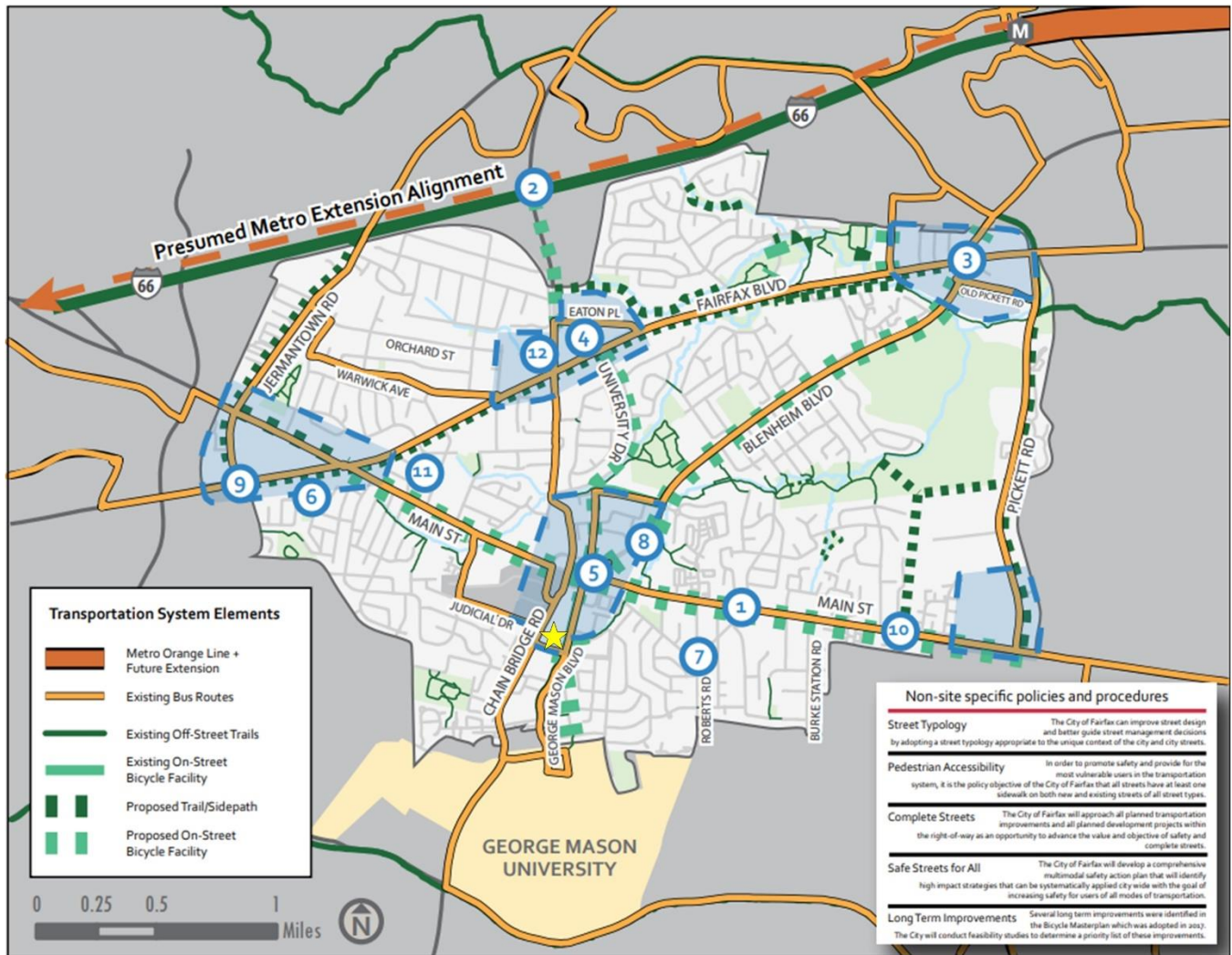


Figure 5: Proposed Multimodal Network (Source: City of Fairfax 2035 Comprehensive Plan)

## Existing Conditions (2024)

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

### ***Existing Transit Service***

Five (5) 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, and F50; and Fairfax Connector Routes 610. The existing bus routes are shown in Figure 6 through Figure 9.



Figure 6: Existing CUE Bus Routes (Source: City of Fairfax)

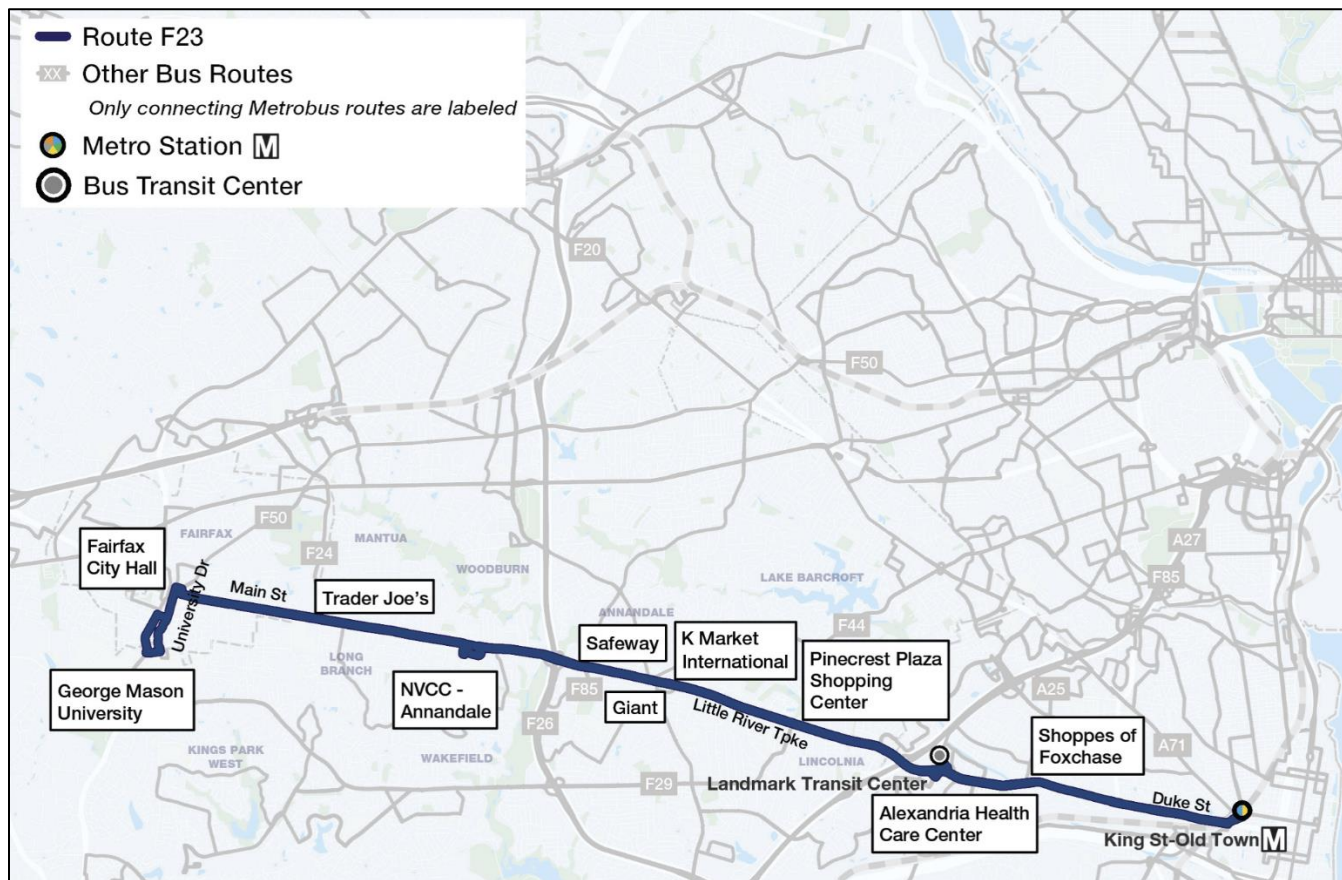


Figure 7: Existing Metrobus Route F23 (Source: WMATA)

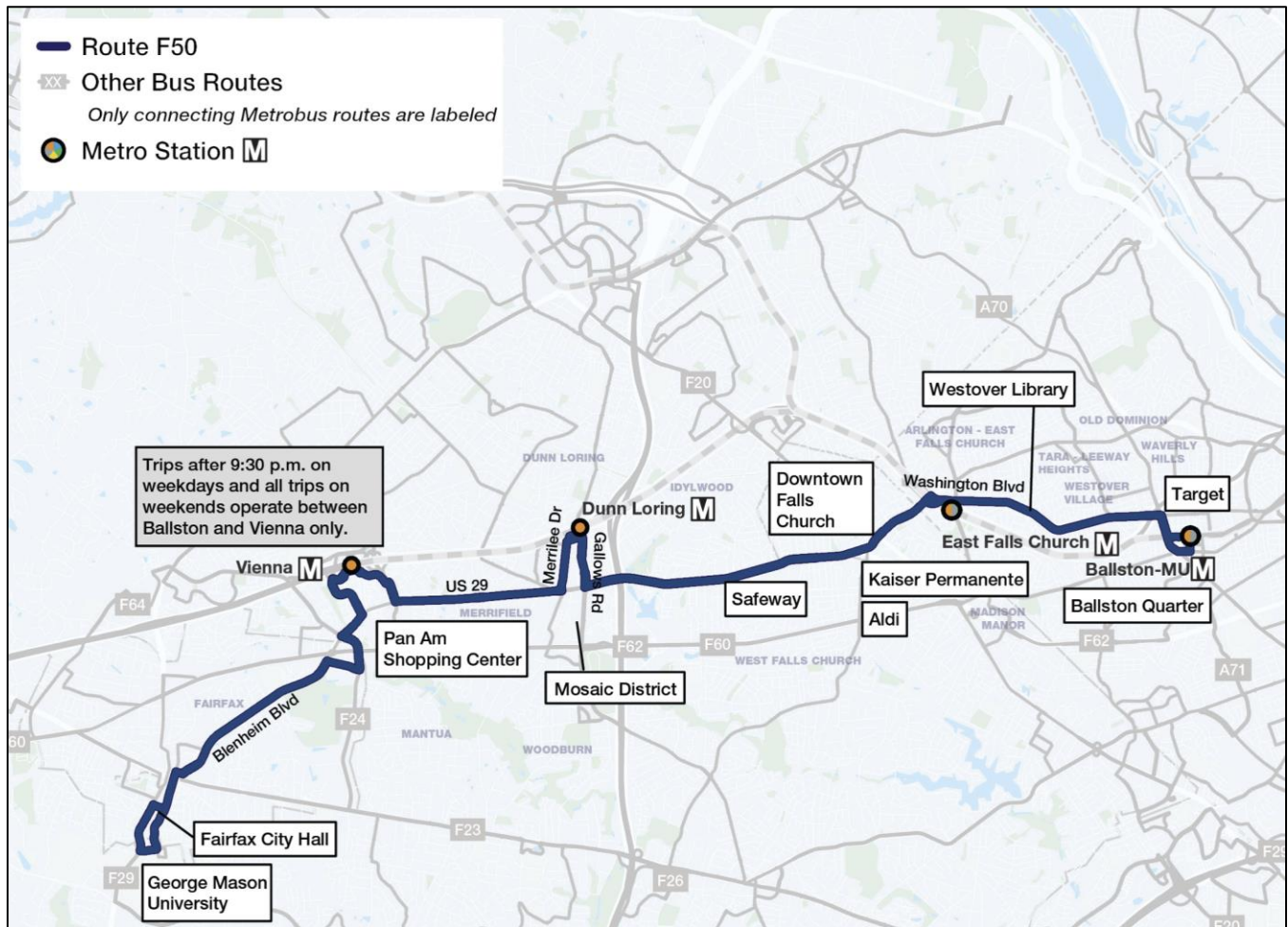
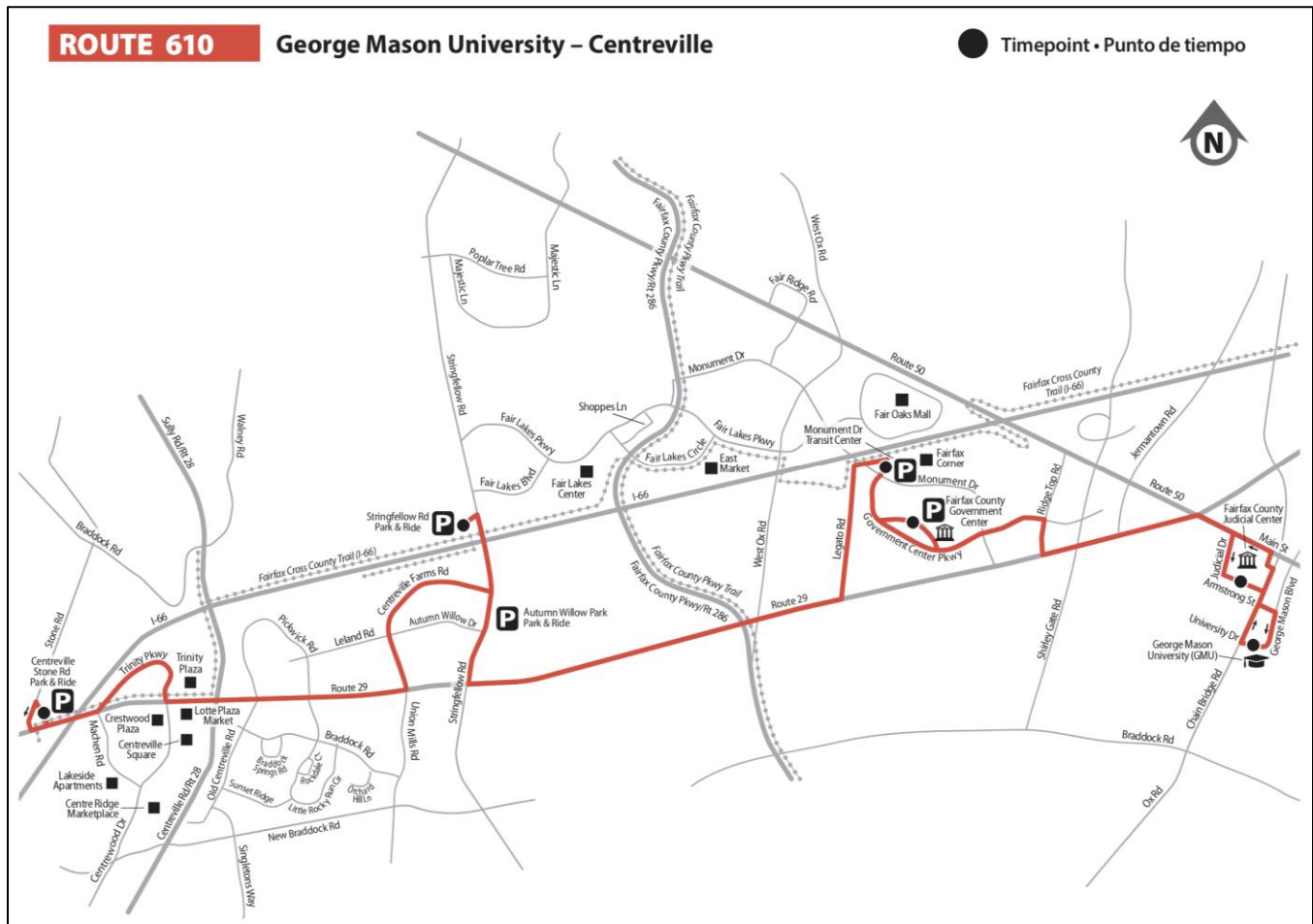


Figure 8: Existing Metrobus Route F50 (Source: WMATA)



**Figure 9: 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 10. 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.

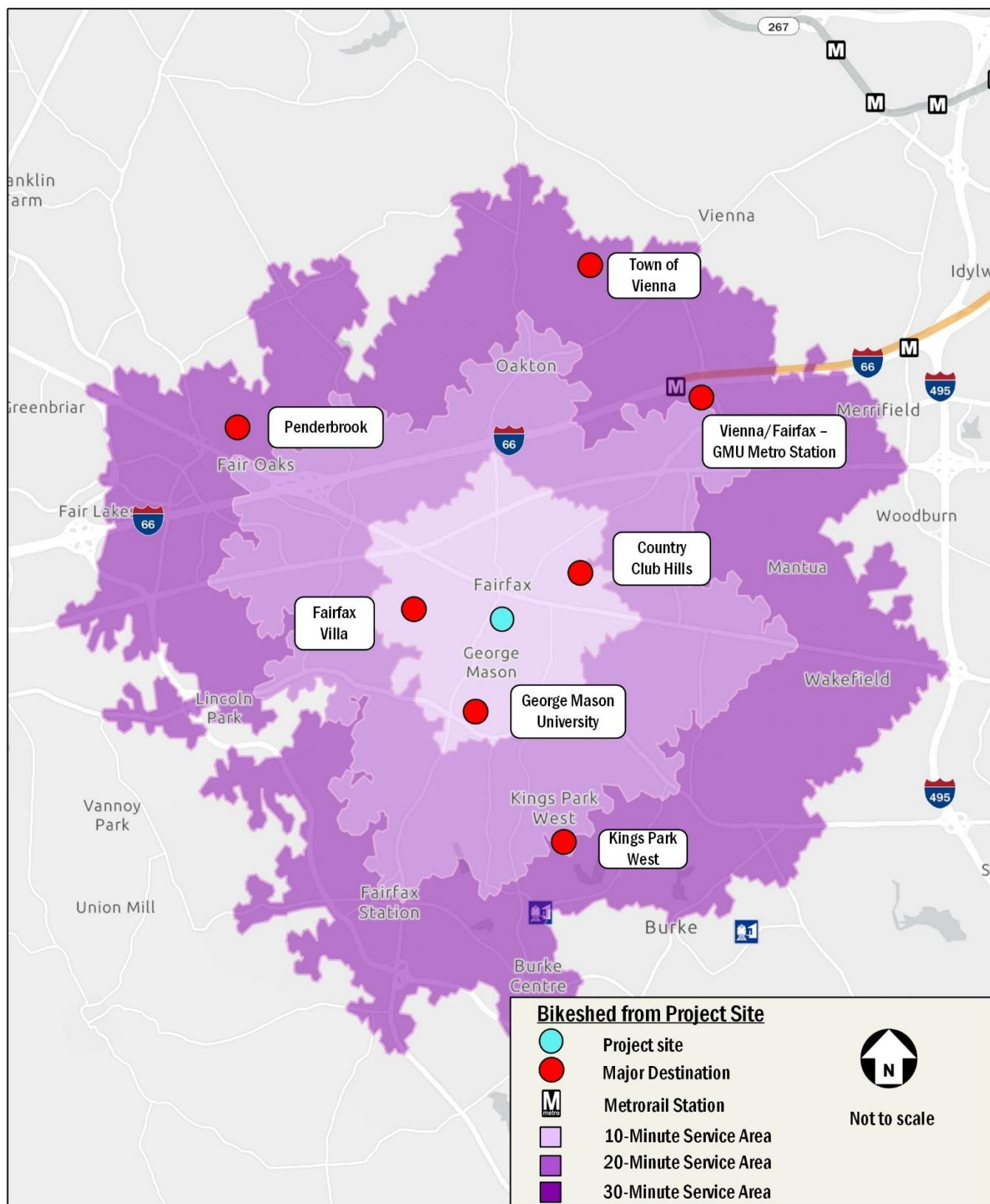


Figure 10: Approximate Bicycle Travel Times

## 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 & City Fire Station #3 have marked crosswalks in place.

The existing pedestrian infrastructure facilities, including curb ramps, marked striped crossings, and any observed deficiencies are depicted in Figure 11. 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 12. 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.

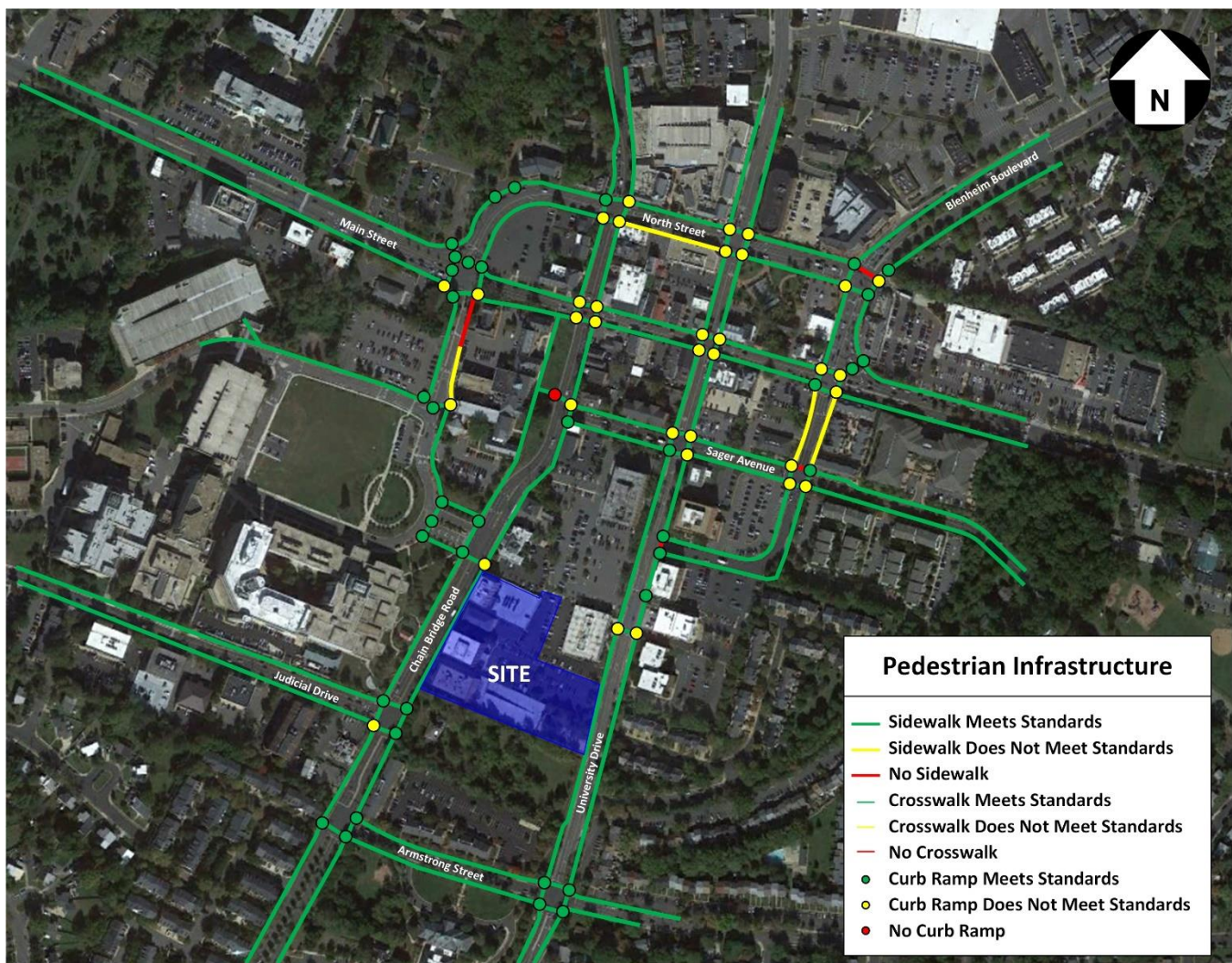


Figure 11: Existing Pedestrian Facilities

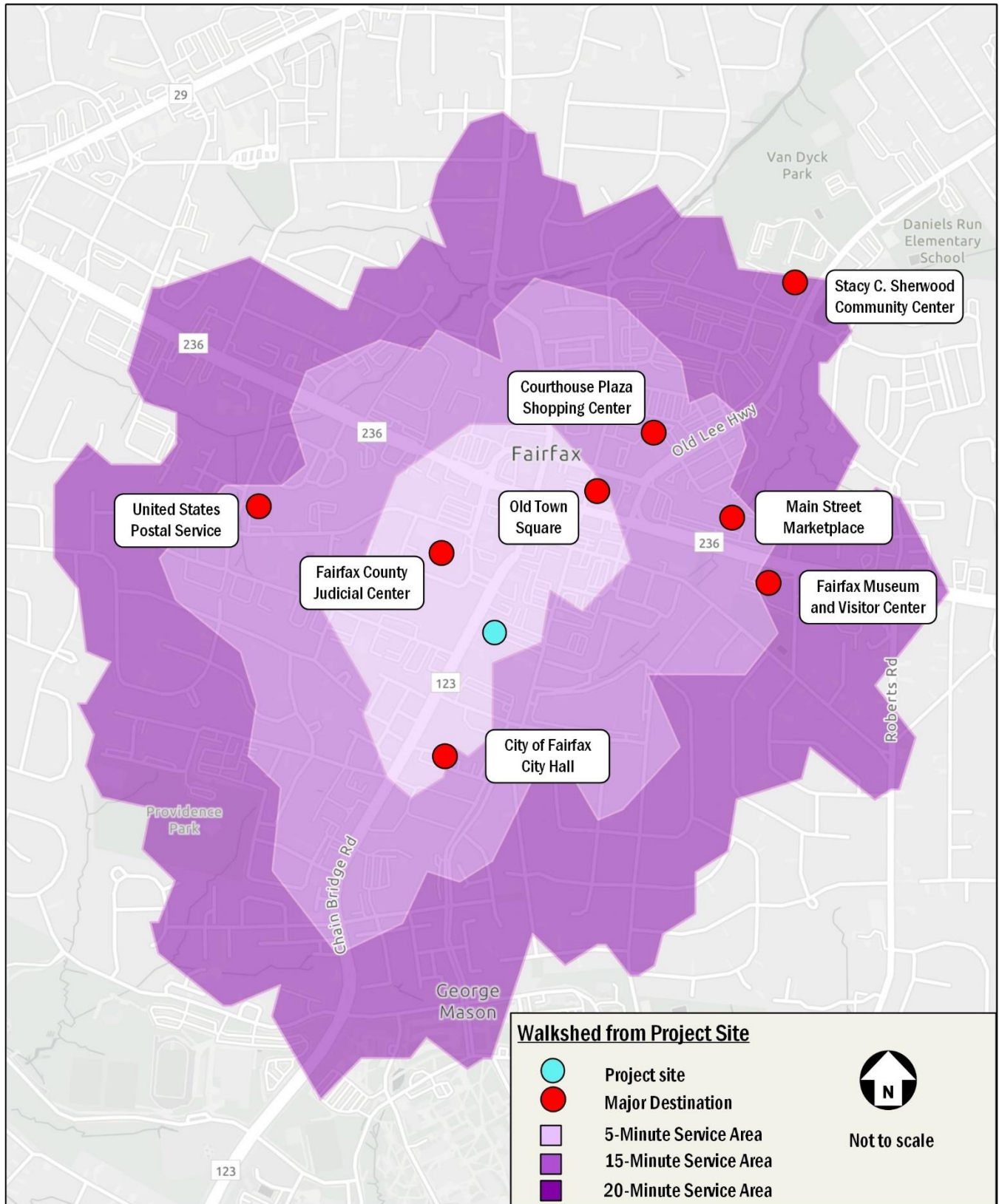


Figure 12: Approximate Pedestrian Travel Times

## 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 13.

**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 Drive 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 Drive and Lower Garage Entrance | 0                       | 0                                 | 0                                     | 0                     | 0.00                                                        |
| <b>Total</b>                                 | <b>71</b>               | <b>53</b>                         | <b>18</b>                             | <b>0</b>              |                                                             |

\* 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 14. The raw existing turning movement counts are included in Appendix C.



Figure 13: Existing (2024) – Lane Configuration

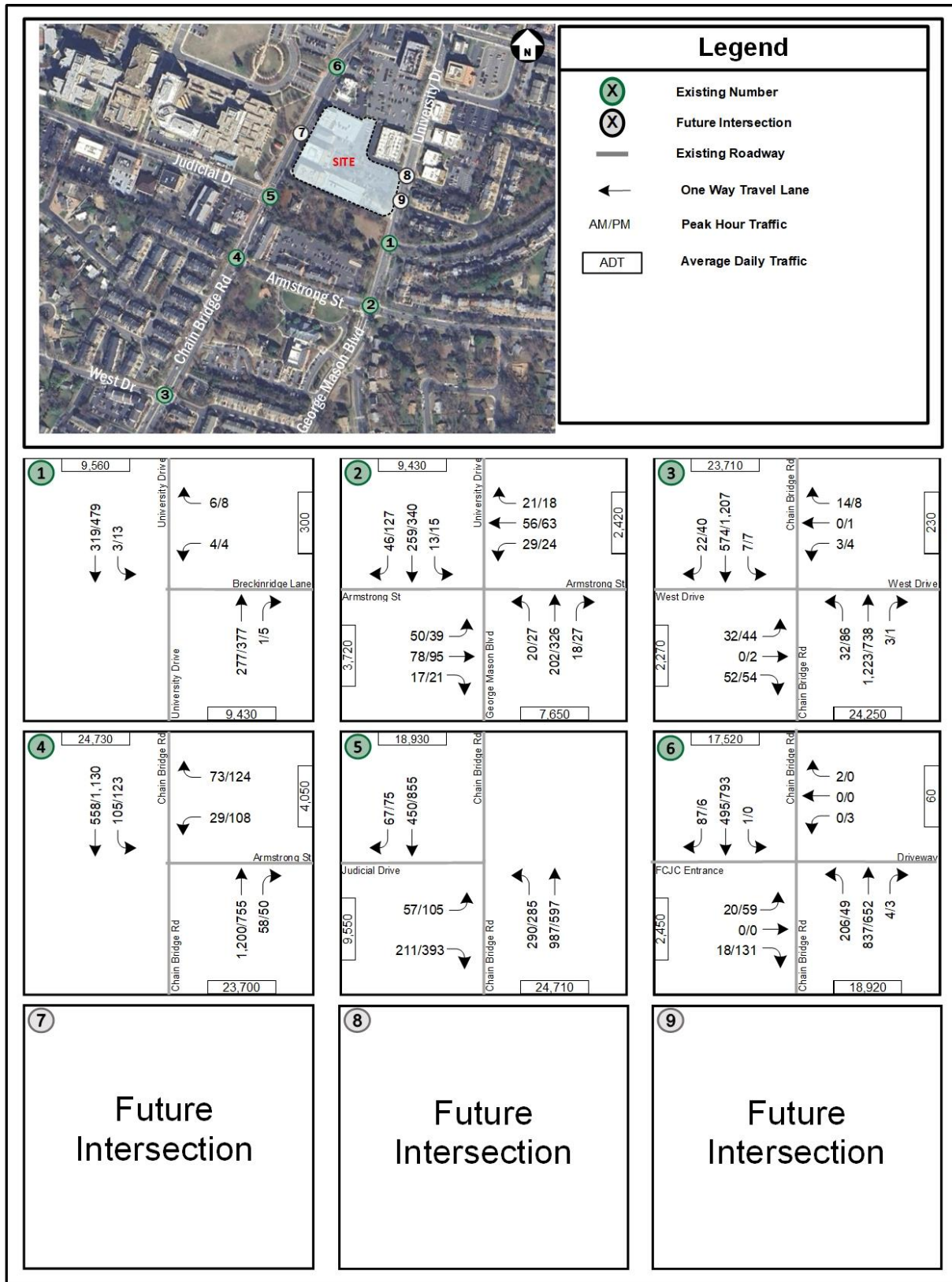


Figure 14: Existing (2024) – Peak Hour Traffic Volumes

### ***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 6<sup>th</sup> 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 15. 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 95<sup>th</sup> 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)                       | <b>Overall (Unsignalized)</b> |                                    |               |             |                                  |              |             |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>B</b>      | <b>11.6</b> |                                  | <b>B</b>     | <b>13.7</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | B             | 11.6        | 3                                | B            | 13.7        | 3                                |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | -             | -           |                                  | -            | -           |                                  |
|    |                                                                    | Southbound Left               |                                    | A             | 7.9         | 0                                | A            | 8.4         | 0                                |
| 2  | George Mason Boulevard/University Drive & Armstrong Street (HCM 6) | <b>Overall (Signalized)</b>   |                                    | <b>B</b>      | <b>13.4</b> |                                  | <b>B</b>     | <b>14.3</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>C</b>      | <b>21.6</b> |                                  | <b>C</b>     | <b>24.8</b> |                                  |
|    |                                                                    | Eastbound Left/Thru/Right     |                                    | C             | 21.6        | 102                              | C            | 24.8        | 119                              |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>C</b>      | <b>20.0</b> |                                  | <b>C</b>     | <b>22.7</b> |                                  |
|    |                                                                    | Westbound Left/Thru/Right     |                                    | C             | 20.0        | 74                               | C            | 22.7        | 81                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>A</b>      | <b>9.6</b>  |                                  | <b>A</b>     | <b>9.9</b>  |                                  |
|    |                                                                    | Northbound Left               | 160                                | A             | 7.7         | 12                               | A            | 7.0         | 14                               |
|    |                                                                    | Northbound Thru/Right         |                                    | A             | 9.7         | 120                              | B            | 10.1        | 188                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>      | <b>10.4</b> |                                  | <b>B</b>     | <b>12.6</b> |                                  |
|    |                                                                    | 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)                          | <b>Overall (Signalized)</b>   |                                    | <b>C</b>      | <b>20.0</b> |                                  | <b>C</b>     | <b>20.3</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>      | <b>55.4</b> |                                  | <b>E</b>     | <b>55.5</b> |                                  |
|    |                                                                    | Eastbound Left                |                                    | E             | 56.3        | 60                               | E            | 56.5        | 76                               |
|    |                                                                    | Eastbound Thru/Right          |                                    | D             | 54.9        | 0                                | D            | 54.8        | 42                               |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>      | <b>55.9</b> |                                  | <b>E</b>     | <b>55.9</b> |                                  |
|    |                                                                    | Westbound Left                |                                    | E             | 55.9        | 12                               | E            | 56.0        | 15                               |
|    |                                                                    | Westbound Thru/Right          | 315                                | E             | 55.9        | 0                                | E            | 55.9        | 18                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>C</b>      | <b>20.8</b> |                                  | <b>B</b>     | <b>16.8</b> |                                  |
|    |                                                                    | Northbound Left               | 165                                | B             | 10.6        | 35                               | C            | 20.5        | 76                               |
|    |                                                                    | Northbound Thru/Right         |                                    | C             | 21.1        | #745                             | B            | 16.4        | 360                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>      | <b>12.4</b> |                                  | <b>B</b>     | <b>19.4</b> |                                  |
|    |                                                                    | 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)                    | <b>Overall (Signalized)</b>   |                                    | <b>B</b>      | <b>11.3</b> |                                  | <b>C</b>     | <b>24.5</b> |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>      | <b>64.8</b> |                                  | <b>E</b>     | <b>74.5</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | E             | 64.8        | 88                               | E            | 74.5        | 289                              |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>      | <b>10.6</b> |                                  | <b>C</b>     | <b>26.1</b> |                                  |
|    |                                                                    | Northbound Thru/Right         |                                    | B             | 10.6        | 249                              | C            | 26.1        | 423                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>A</b>      | <b>4.3</b>  |                                  | <b>B</b>     | <b>14.2</b> |                                  |
|    |                                                                    | 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)                      | <b>Overall (Signalized)</b>   |                                    | <b>C</b>      | <b>22.2</b> |                                  | <b>C</b>     | <b>30.7</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>D</b>      | <b>51.2</b> |                                  | <b>D</b>     | <b>47.4</b> |                                  |
|    |                                                                    | Eastbound Left                | 440                                | E             | 61.0        | 100                              | E            | 57.1        | 152                              |
|    |                                                                    | Eastbound Right               |                                    | D             | 48.6        | 85                               | D            | 44.8        | 144                              |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>      | <b>17.6</b> |                                  | <b>C</b>     | <b>24.0</b> |                                  |
|    |                                                                    | Northbound Left               | 150                                | B             | 17.7        | 229                              | D            | 45.2        | #304                             |
|    |                                                                    | Northbound Thru               |                                    | B             | 17.6        | 365                              | B            | 13.9        | 116                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>      | <b>18.5</b> |                                  | <b>C</b>     | <b>28.1</b> |                                  |
|    |                                                                    | 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) | <b>Overall (Unsignalized)</b> |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>                   | <b>42.3</b> |                                  | <b>E</b>     | <b>35.2</b> |                                  |
|    |                                                    | Eastbound Left                |                                    | F                          | 70.8        | 25                               | F            | 82.4        | 75                               |
|    |                                                    | Eastbound Right               |                                    | B                          | 10.6        | 3                                | B            | 13.9        | 25                               |
|    |                                                    | <b>Westbound Approach</b>     |                                    | <b>B</b>                   | <b>11.6</b> |                                  | <b>E</b>     | <b>49.0</b> |                                  |
|    |                                                    | Westbound Left/Thru/Right     |                                    | B                          | 11.6        | 0                                | E            | 49.0        | 3                                |
|    |                                                    | <b>Northbound Approach</b>    |                                    | -                          | -           |                                  | -            | -           |                                  |
|    |                                                    | Northbound Left               | 235                                | A                          | 9.9         | 23                               | B            | 10.4        | 5                                |
| 7  | Chain Bridge Road & New Service Drive (HCM 6)      | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b> |             |                                  |              |             |                                  |
|    |                                                    | <b>Westbound Approach</b>     |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | Westbound Right               |                                    |                            |             |                                  |              |             |                                  |
| 8  | University Drive & New Service Drive (HCM 6)       | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b> |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | Eastbound Left/Right          |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | <b>Northbound Approach</b>    |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | Northbound Left/Thru          |                                    |                            |             |                                  |              |             |                                  |
| 9  | University Drive & Lower Garage Entrance (HCM 6)   | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b> |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | Eastbound Left/Right          |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | <b>Northbound Approach</b>    |                                    |                            |             |                                  |              |             |                                  |
|    |                                                    | 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)

The high levels of delay at the intersections of Chain Bridge Road and West Drive (Intersection 3) and Chain Bridge Road and Armstrong Street (Intersection 4) are primarily attributable to the signal cycle lengths required to maintain coordination with the nearby intersection of Chain Bridge Road and Judicial Drive (Intersection 5). While this coordination improves overall operations along the Chain Bridge Road corridor, the resulting longer cycle lengths increase delays for side street movements at these intersections.

Based on the queuing analysis performed for Existing Conditions (2024), the turning movements at the study intersections are anticipated to have 95<sup>th</sup> 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)

The northbound left-turn queues at Chain Bridge Road and Judicial Drive (Intersection 5) exceed the available storage length during the AM and PM peak hours. This condition is primarily attributable to the substandard spacing between adjacent signalized intersections, which limits the available storage distance for queued vehicles, rather than deficiencies in signal timing or intersection operations.



Figure 15: 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 Drive/George Mason Boulevard at Armstrong Street as shown in Figure 16.

Table 4: Historical Growth Rate

| Route                                | From             | To                    | AADT   |        | Annual % Change<br>(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) to replace the concurrent demolition of 61,965 SF of office uses and 15,690 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 16 and the background development volumes for One University, Fairfax County Judicial Complex, City Centre West, and 4131 Chain Bridge Road are shown in Figure 17, Figure 18, Figure 19, and Figure 20

respectively. The total background development volumes are shown in Figure 21. 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 22.

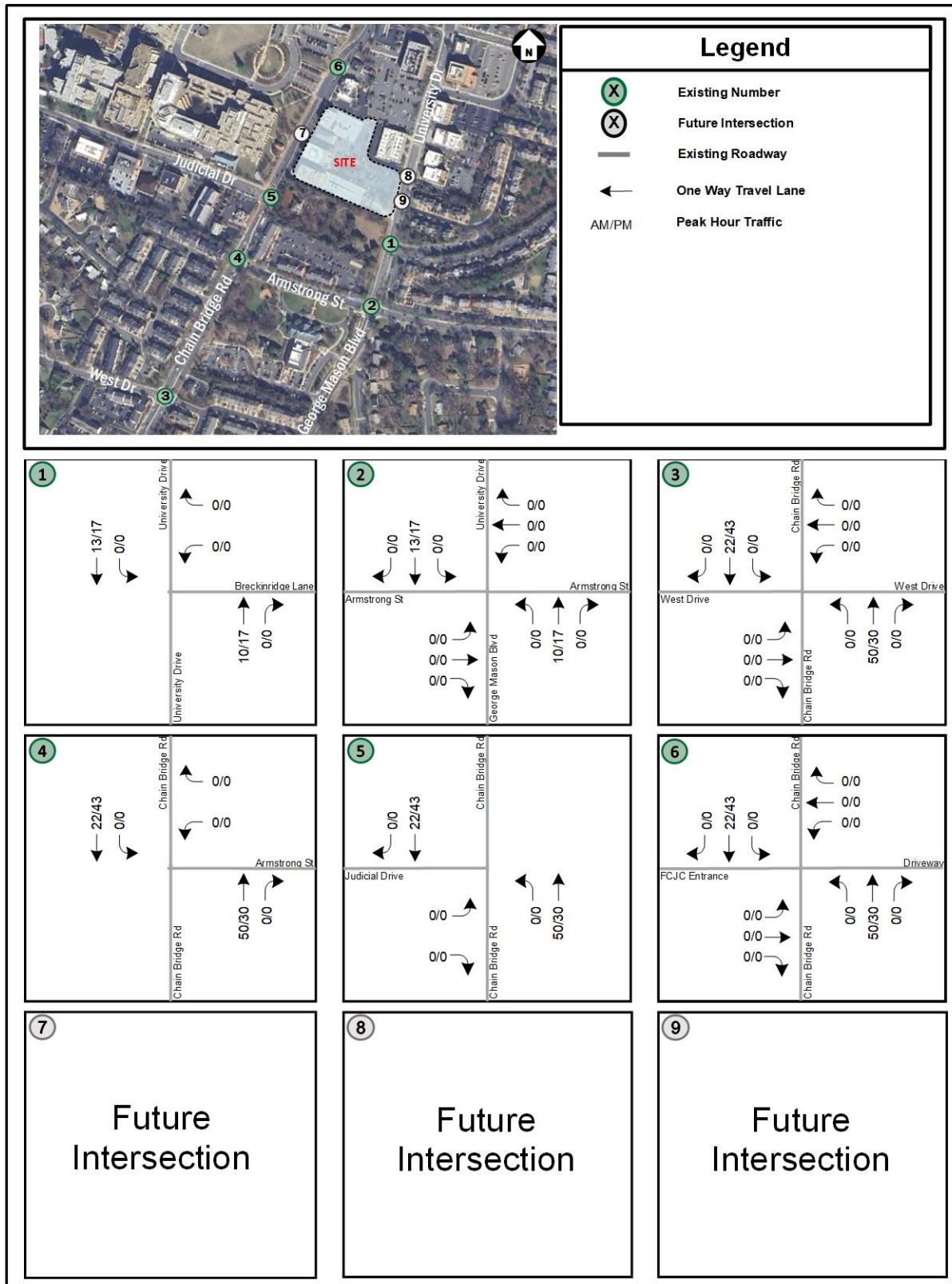


Figure 16: Background Growth (2024 - 2029)

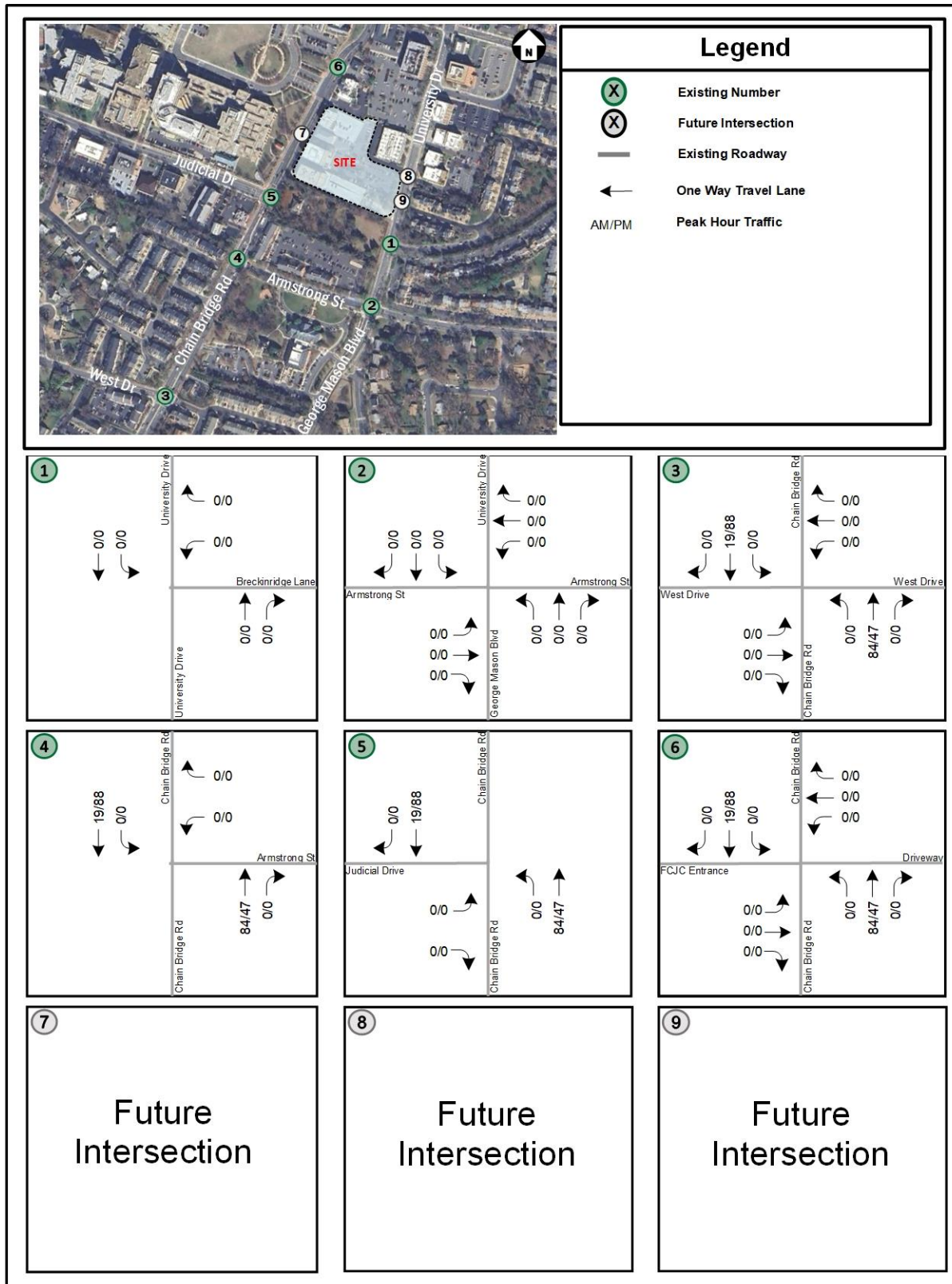


Figure 17: One University Background Development Net Trips

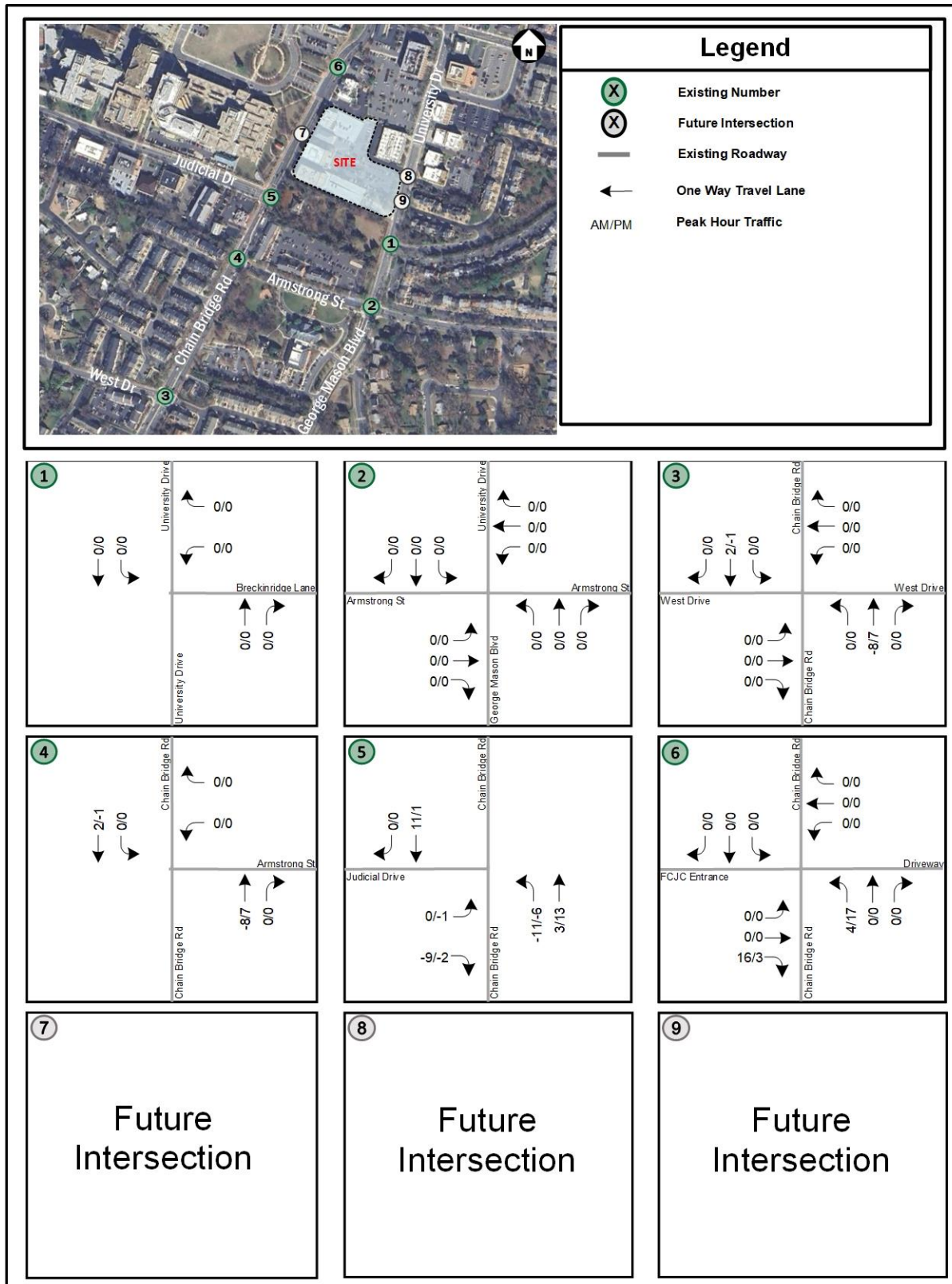


Figure 18: Phase 1 of FCJC Background Development Net Trips

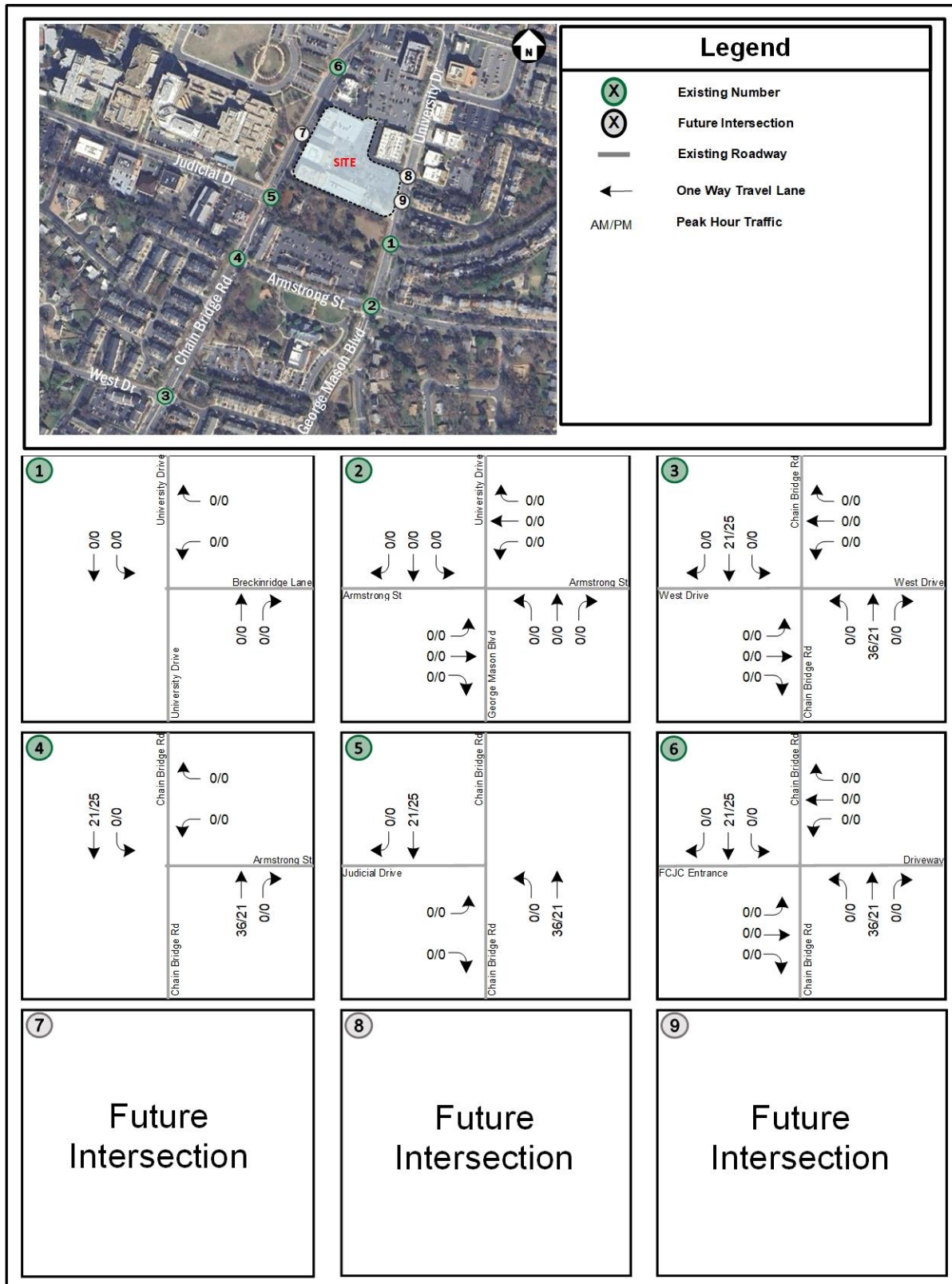


Figure 19: City Centre West Background Development Net Trips

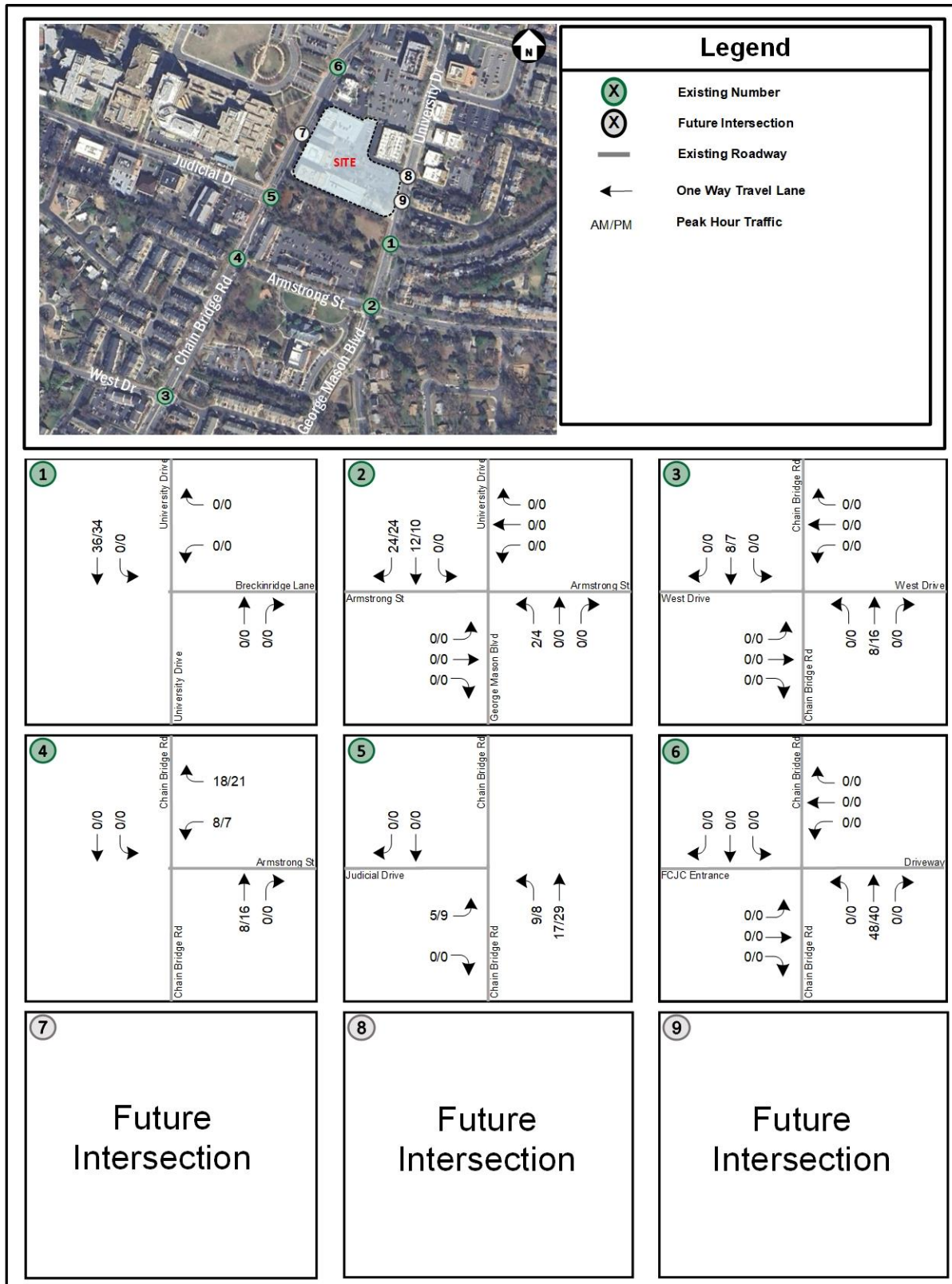


Figure 20: 4131 Chain Bridge Road Background Development Net Trips

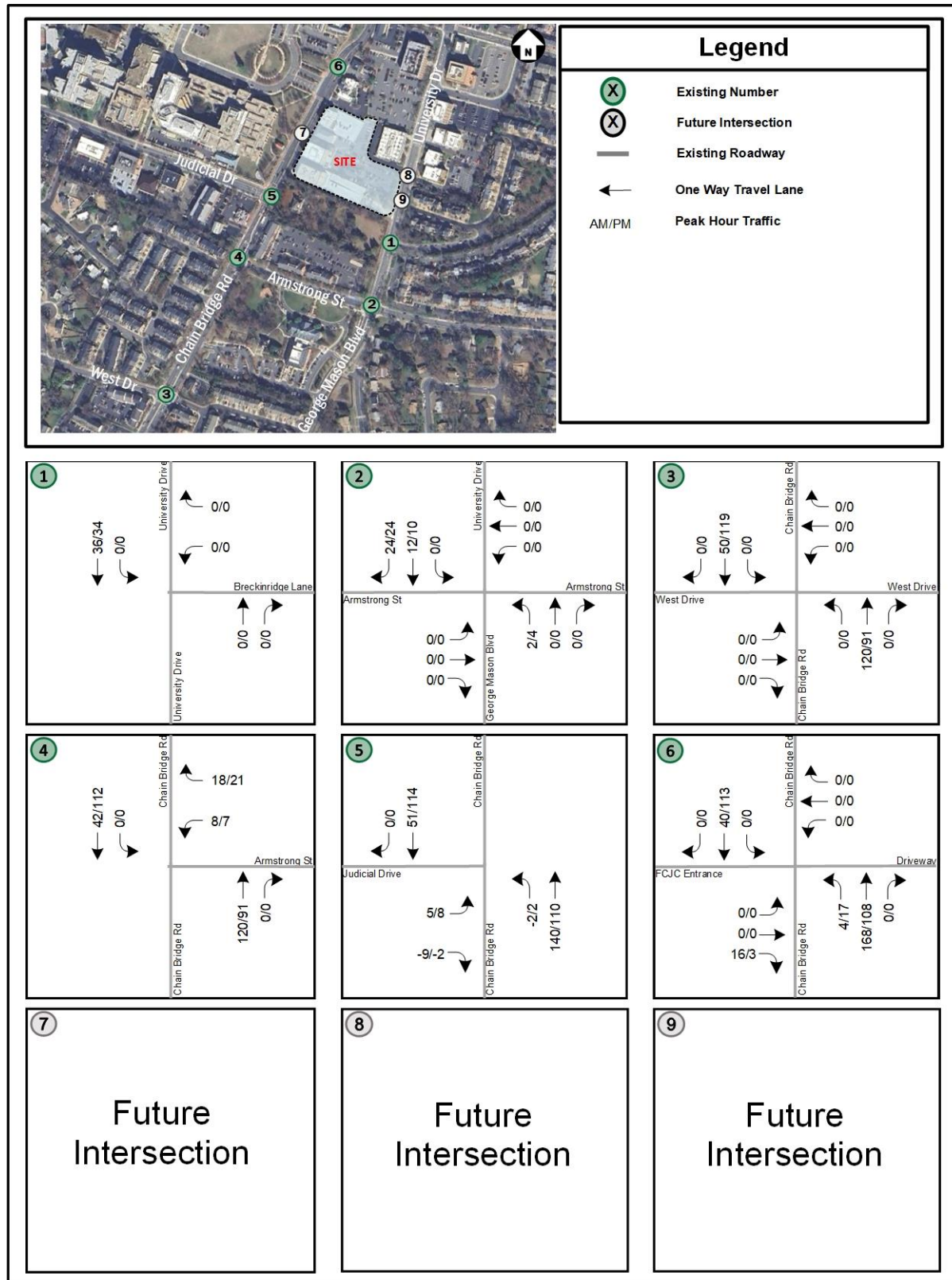


Figure 21: Total Background Development Trips<sup>1</sup>

<sup>1</sup> 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.

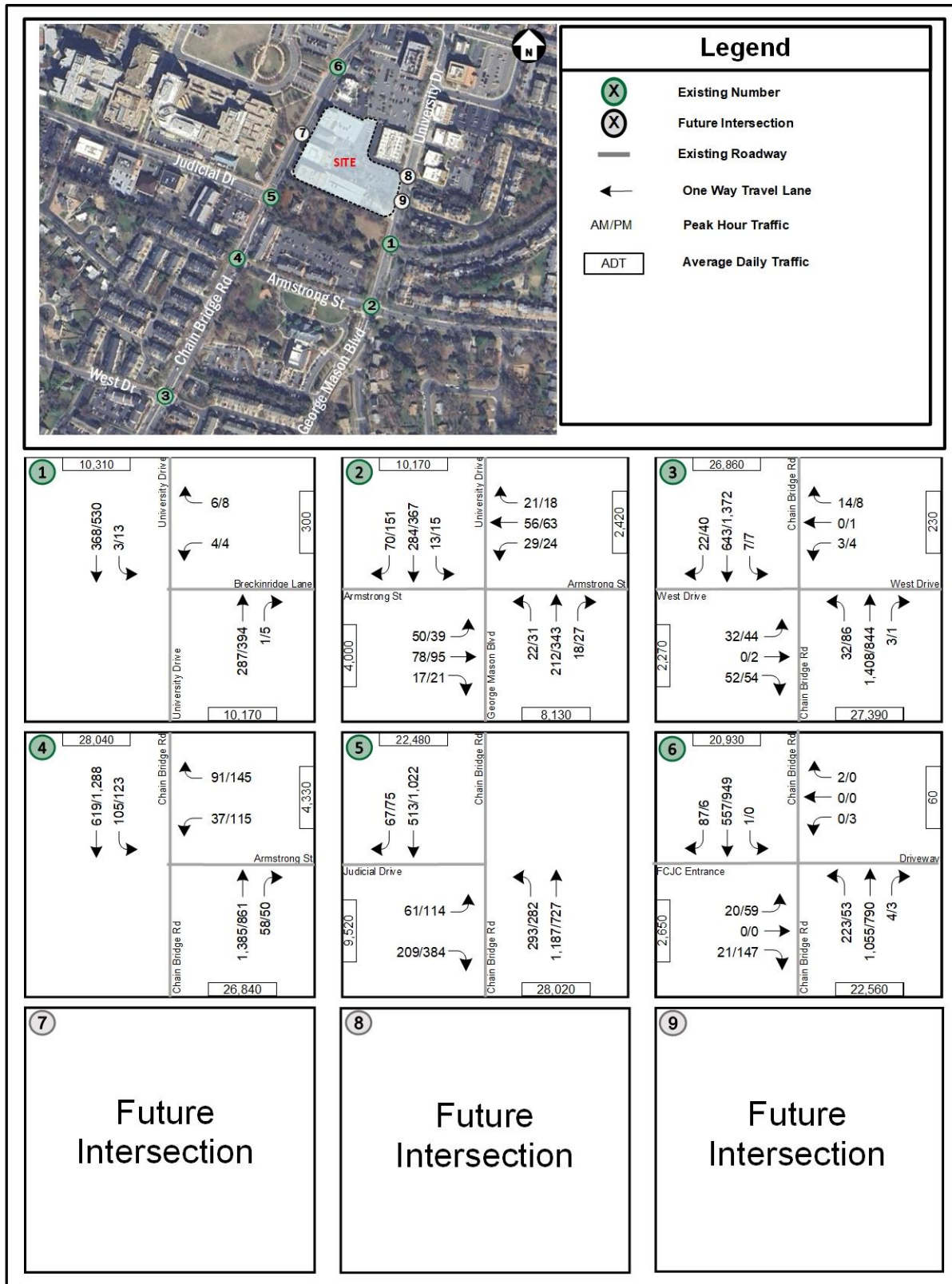


Figure 22: Future without Development (2029) – Peak Hour Traffic Volumes

### ***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 6<sup>th</sup> 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 23. 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 95<sup>th</sup> 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)                       | <b>Overall (Unsignalized)</b> |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>B</b>                        | <b>11.8</b> |                                  | <b>B</b>     | <b>14.3</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | B                               | 11.8        | 3                                | B            | 14.3        | 3                                |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | -                               | -           |                                  | -            | -           |                                  |
|    |                                                                    | Southbound Left               |                                    | A                               | 7.9         | 0                                | A            | 8.5         | 0                                |
| 2  | George Mason Boulevard/University Drive & Armstrong Street (HCM 6) | <b>Overall (Signalized)</b>   |                                    | <b>B</b>                        | <b>13.2</b> |                                  | <b>B</b>     | <b>14.7</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>C</b>                        | <b>21.6</b> |                                  | <b>C</b>     | <b>25.9</b> |                                  |
|    |                                                                    | Eastbound Left/Thru/Right     |                                    | C                               | 21.6        | 103                              | C            | 25.9        | 119                              |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>C</b>                        | <b>20.1</b> |                                  | <b>C</b>     | <b>23.7</b> |                                  |
|    |                                                                    | Westbound Left/Thru/Right     |                                    | C                               | 20.1        | 75                               | C            | 23.7        | 81                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>A</b>                        | <b>9.4</b>  |                                  | <b>A</b>     | <b>9.9</b>  |                                  |
|    |                                                                    | Northbound Left               | 160                                | A                               | 7.7         | 12                               | A            | 7.3         | 15                               |
|    |                                                                    | Northbound Thru/Right         |                                    | A                               | 9.6         | 125                              | B            | 10.1        | 200                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                        | <b>10.5</b> |                                  | <b>B</b>     | <b>13.3</b> |                                  |
|    |                                                                    | 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)                          | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                        | <b>21.1</b> |                                  | <b>C</b>     | <b>21.3</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>                        | <b>55.4</b> |                                  | <b>E</b>     | <b>55.5</b> |                                  |
|    |                                                                    | Eastbound Left                |                                    | E                               | 56.3        | 60                               | E            | 56.5        | 76                               |
|    |                                                                    | Eastbound Thru/Right          |                                    | D                               | 54.9        | 0                                | D            | 54.8        | 42                               |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                        | <b>55.9</b> |                                  | <b>E</b>     | <b>55.9</b> |                                  |
|    |                                                                    | Westbound Left                |                                    | E                               | 55.9        | 12                               | E            | 56.0        | 15                               |
|    |                                                                    | Westbound Thru/Right          | 315                                | E                               | 55.9        | 0                                | E            | 55.9        | 18                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>C</b>                        | <b>23.7</b> |                                  | <b>B</b>     | <b>18.1</b> |                                  |
|    |                                                                    | Northbound Left               | 165                                | B                               | 10.8        | 35                               | C            | 27.6        | 101                              |
|    |                                                                    | Northbound Thru/Right         |                                    | C                               | 24.0        | #946                             | B            | 17.2        | 420                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                        | <b>10.2</b> |                                  | <b>C</b>     | <b>20.6</b> |                                  |
|    |                                                                    | 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)                    | <b>Overall (Signalized)</b>   |                                    | <b>B</b>                        | <b>15.0</b> |                                  | <b>C</b>     | <b>25.1</b> |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                        | <b>65.2</b> |                                  | <b>E</b>     | <b>76.3</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | E                               | 65.2        | 117                              | E            | 76.3        | #338                             |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>                        | <b>13.6</b> |                                  | <b>C</b>     | <b>29.5</b> |                                  |
|    |                                                                    | Northbound Thru/Right         |                                    | B                               | 13.6        | 350                              | C            | 29.5        | 478                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>A</b>                        | <b>9.0</b>  |                                  | <b>B</b>     | <b>12.9</b> |                                  |
|    |                                                                    | 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)                      | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                        | <b>20.9</b> |                                  | <b>C</b>     | <b>29.2</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>D</b>                        | <b>50.8</b> |                                  | <b>D</b>     | <b>47.6</b> |                                  |
|    |                                                                    | Eastbound Left                | 440                                | E                               | 61.5        | 108                              | E            | 58.3        | 166                              |
|    |                                                                    | Eastbound Right               |                                    | D                               | 47.7        | 80                               | D            | 44.5        | 142                              |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>                        | <b>17.8</b> |                                  | <b>C</b>     | <b>27.7</b> |                                  |
|    |                                                                    | Northbound Left               | 150                                | B                               | 18.7        | 242                              | E            | 62.8        | m#316                            |
|    |                                                                    | Northbound Thru               |                                    | B                               | 17.6        | 414                              | B            | 14.0        | 160                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                        | <b>14.9</b> |                                  | <b>C</b>     | <b>22.3</b> |                                  |
|    |                                                                    | 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) | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                        | <b>24.2</b> |                                  | <b>C</b>     | <b>33.6</b> |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>                        | <b>61.8</b> |                                  | <b>E</b>     | <b>64.5</b> |                                  |
|    |                                                    | Eastbound Left/Thru           |                                    | E                               | 56.9        | 43                               | E            | 57.8        | 100                              |
|    |                                                    | Eastbound Right               |                                    | E                               | 61.9        | 0                                | E            | 67.6        | 65                               |
|    |                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                        | <b>60.4</b> |                                  | <b>D</b>     | <b>53.5</b> |                                  |
|    |                                                    | Westbound Left/Thru/Right     |                                    | E                               | 60.4        | 0                                | D            | 53.5        | 12                               |
|    |                                                    | <b>Northbound Approach</b>    |                                    | <b>A</b>                        | <b>0.6</b>  |                                  | <b>A</b>     | <b>1.0</b>  |                                  |
|    |                                                    | Northbound Left               | 235                                | A                               | 0.1         | 242                              | A            | 7.5         | 88                               |
|    |                                                    | Northbound Thru/Right         |                                    | A                               | 0.8         | 121                              | A            | 0.5         | 73                               |
|    |                                                    | <b>Southbound Approach</b>    |                                    | <b>E</b>                        | <b>68.5</b> |                                  | <b>E</b>     | <b>55.7</b> |                                  |
|    |                                                    | 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)      | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b>      |             |                                  |              |             |                                  |
|    |                                                    | <b>Westbound Approach</b>     |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | Westbound Right               |                                    |                                 |             |                                  |              |             |                                  |
| 8  | University Drive & New Service Drive (HCM 6)       | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b>      |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | Eastbound Left/Right          |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | <b>Northbound Approach</b>    |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | Northbound Left/Thru          |                                    |                                 |             |                                  |              |             |                                  |
| 9  | University Drive & Lower Garage Entrance (HCM 6)   | <b>Overall (Unsignalized)</b> |                                    | <b>Future Intersection</b>      |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | Eastbound Left/Right          |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | <b>Northbound Approach</b>    |                                    |                                 |             |                                  |              |             |                                  |
|    |                                                    | 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)

The high levels of delay at the intersections of Chain Bridge Road and West Drive (Intersection 3) and Chain Bridge Road and Armstrong Street (Intersection 4) are primarily attributable to the signal cycle lengths required to maintain coordination with the nearby intersection of Chain Bridge Road and Judicial Drive (Intersection 5). While this coordination improves overall operations along the Chain Bridge Road corridor, the resulting longer cycle lengths increase delays for side street movements at these intersections. This issue is the same as under Existing Conditions (2026).

Based on the queuing analysis performed for the Future Conditions without Development (2029), the turning movements at the study intersections are anticipated to have 95<sup>th</sup> 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)

The northbound left-turn queues at Chain Bridge Road and Judicial Drive (Intersection 5) exceed the available storage length during the AM and PM peak hours. This condition is primarily attributable to the substandard spacing between adjacent signalized intersections, which limits the available storage distance for queued vehicles, rather than deficiencies in signal timing or intersection operations. This issue is the same as under Existing Conditions (2026).



Figure 23: Future without Development (2029) – Levels of Service

## Future Conditions with Development (2029)

### Site Description

The proposed site is a mixed-use development consisting of 29,479 square feet of new office space, 7,747 square feet of retail use, and 394 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 |             |
| <b>Existing (to Be Removed)</b>                                                      |          |                   |                      |     |       |              |     |       |             |
| 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         |
| <b>Total Existing Trips</b>                                                          |          |                   | 207                  | 28  | 235   | 44           | 199 | 240   | 1,608       |
| <b>Proposed</b>                                                                      |          |                   |                      |     |       |              |     |       |             |
| <b>Residential</b>                                                                   |          |                   |                      |     |       |              |     |       |             |
| Multifamily Housing (Mid-Rise) <sup>[1]</sup>                                        | 221      | 394 DU            | 37                   | 125 | 162   | 94           | 60  | 154   | 1,833       |
| Total Residential Trips without Reductions                                           |          |                   | 39                   | 125 | 162   | 95           | 60  | 154   | 1,833       |
| Internal Trip Reduction (Residential to Commercial) <sup>[2]</sup>                   |          | 10% All Periods   | -1                   | -1  | -2    | -3           | -3  | -6    | -56         |
| Internal Trip Reduction (Residential to Office) <sup>[2]</sup>                       |          | 10% All Periods   | -1                   | -5  | -6    | -5           | -1  | -6    | -40         |
| Subtotal Residential Trips with Internal Capture Reductions                          |          |                   | 37                   | 119 | 154   | 87           | 56  | 142   | 1,737       |
| TDM / Mode Split Reduction                                                           |          | 15% All Periods   | -5                   | -18 | -23   | -13          | -8  | -21   | -261        |
| Subtotal Residential Trips with Internal Capture and TDM Reductions                  |          |                   | 32                   | 101 | 131   | 74           | 48  | 121   | 1,476       |
| <b>Commercial</b>                                                                    |          |                   |                      |     |       |              |     |       |             |
| 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) <sup>[2]</sup>                   |          | 10% All Periods   | -1                   | -1  | -2    | -3           | -3  | -6    | -56         |
| Internal Trip Reduction (Commercial to Office) <sup>[2]</sup>                        |          | 10% All Periods   | -1                   | -1  | -2    | -3           | -1  | -4    | -40         |
| Subtotal Commercial Trips with Internal Trip Reduction                               |          |                   | 12                   | 8   | 20    | 26           | 29  | 55    | 461         |
| <b>Office</b>                                                                        |          |                   |                      |     |       |              |     |       |             |
| Office                                                                               | 710      | 29.479 kSF of GFA | 52                   | 7   | 59    | 10           | 50  | 60    | 401         |
| Total Office Trips without Reductions                                                |          |                   | 52                   | 7   | 59    | 10           | 50  | 60    | 401         |
| Internal Trip Reduction (Office to Residential) <sup>[2]</sup>                       |          | 10% All Periods   | -5                   | -1  | -6    | -1           | -5  | -6    | -40         |
| Internal Trip Reduction (Office to Commercial) <sup>[2]</sup>                        |          | 10% All Periods   | -1                   | -1  | -2    | -1           | -3  | -4    | -40         |
| Subtotal Office Trips with Internal Trip Reduction                                   |          |                   | 46                   | 5   | 51    | 8            | 42  | 50    | 321         |
| TDM / Mode Split Reduction                                                           |          | 15% All Periods   | -7                   | -1  | -8    | -1           | -6  | -8    | -48         |
| Subtotal Office Trips with Internal Capture and TDM Reductions                       |          |                   | 39                   | 4   | 43    | 7            | 36  | 42    | 273         |
| <b>Proposed Trips without Reductions (Internal, Transit)</b>                         |          |                   | 103                  | 142 | 245   | 136          | 143 | 279   | 2,791       |
| <b>Proposed Trips with Reductions (Internal, Transit)</b>                            |          |                   | 83                   | 113 | 194   | 107          | 113 | 218   | 2,210       |
| <b>Net Total Trips without Reductions (Proposed Minus Existing)</b>                  |          |                   | -103                 | 114 | 10    | 92           | -56 | 39    | 1,183       |
| <b>Net Total Trips with Reductions (Internal, Transit) (Proposed Minus Existing)</b> |          |                   | -125                 | 85  | -41   | 62           | -86 | -22   | 602         |

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, 218 new trips during the PM peak hours, and 2,210 new daily trips on a typical weekday.

The proposed development is anticipated to generate approximately 41 fewer net new trips during the AM peak hour, 22 fewer net new trips during the PM peak hour, and 602 additional net new daily trips on a typical weekday compared to the existing use.

### ***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 24. The traffic assignment for the site trips at the study intersections are shown in Figure 25.

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 Drive) 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). Parking management can be implemented such there will be next to zero trips due to people changing levels.

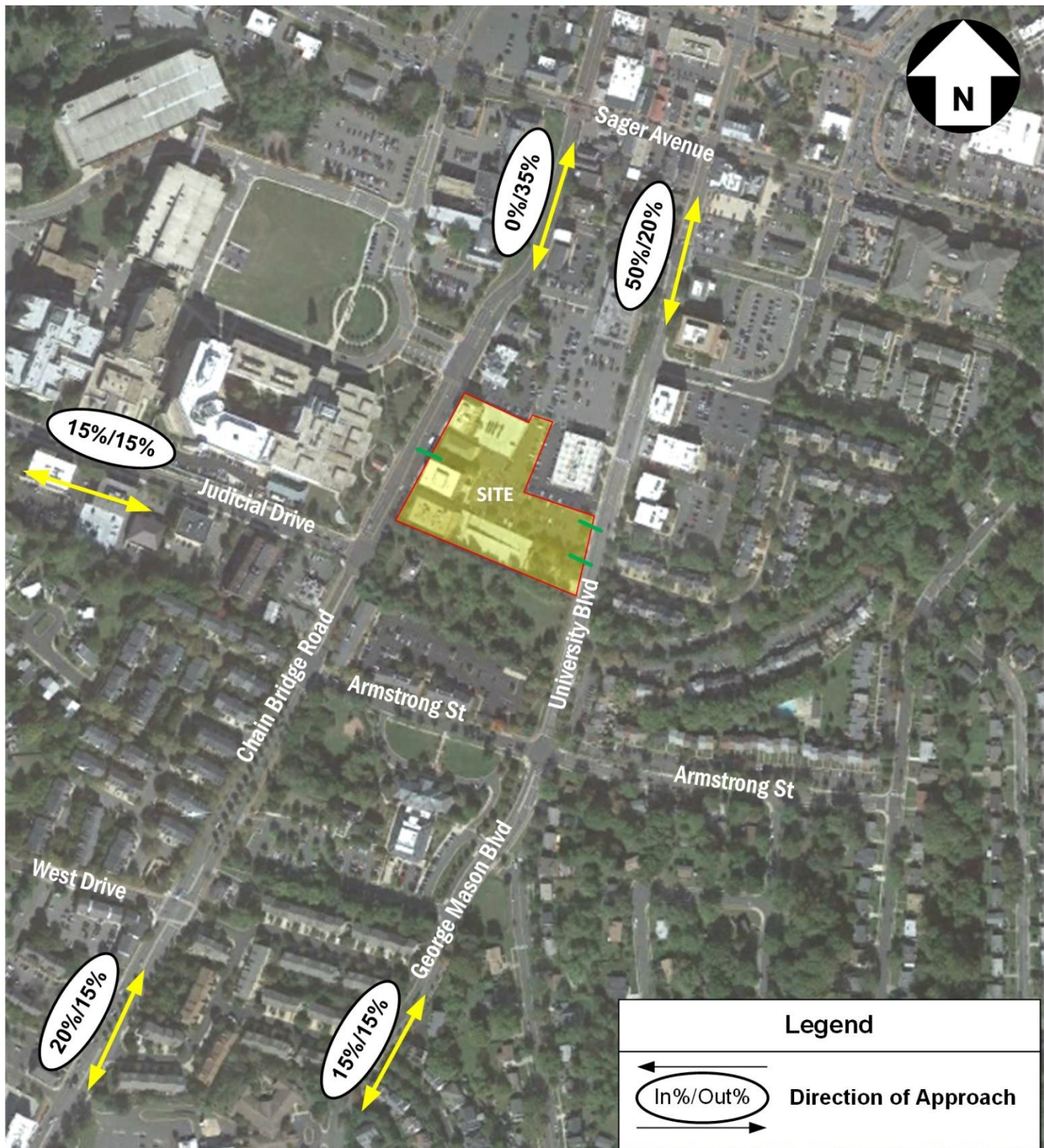


Figure 24: Directional Distribution

### 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 26. Trips associated with the existing site were not removed from the network, making the analysis more conservative.

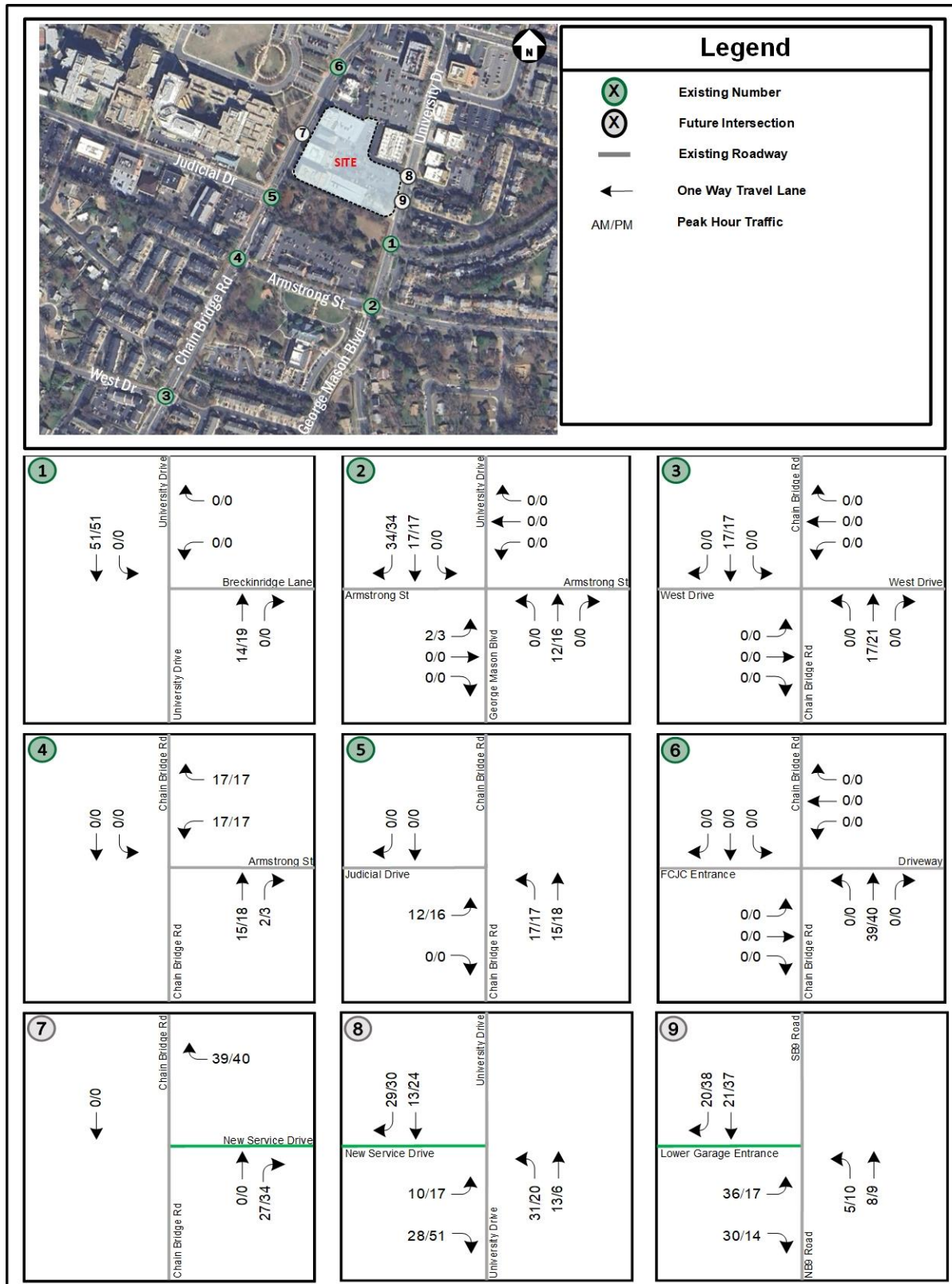


Figure 25: Site Trips (2029)

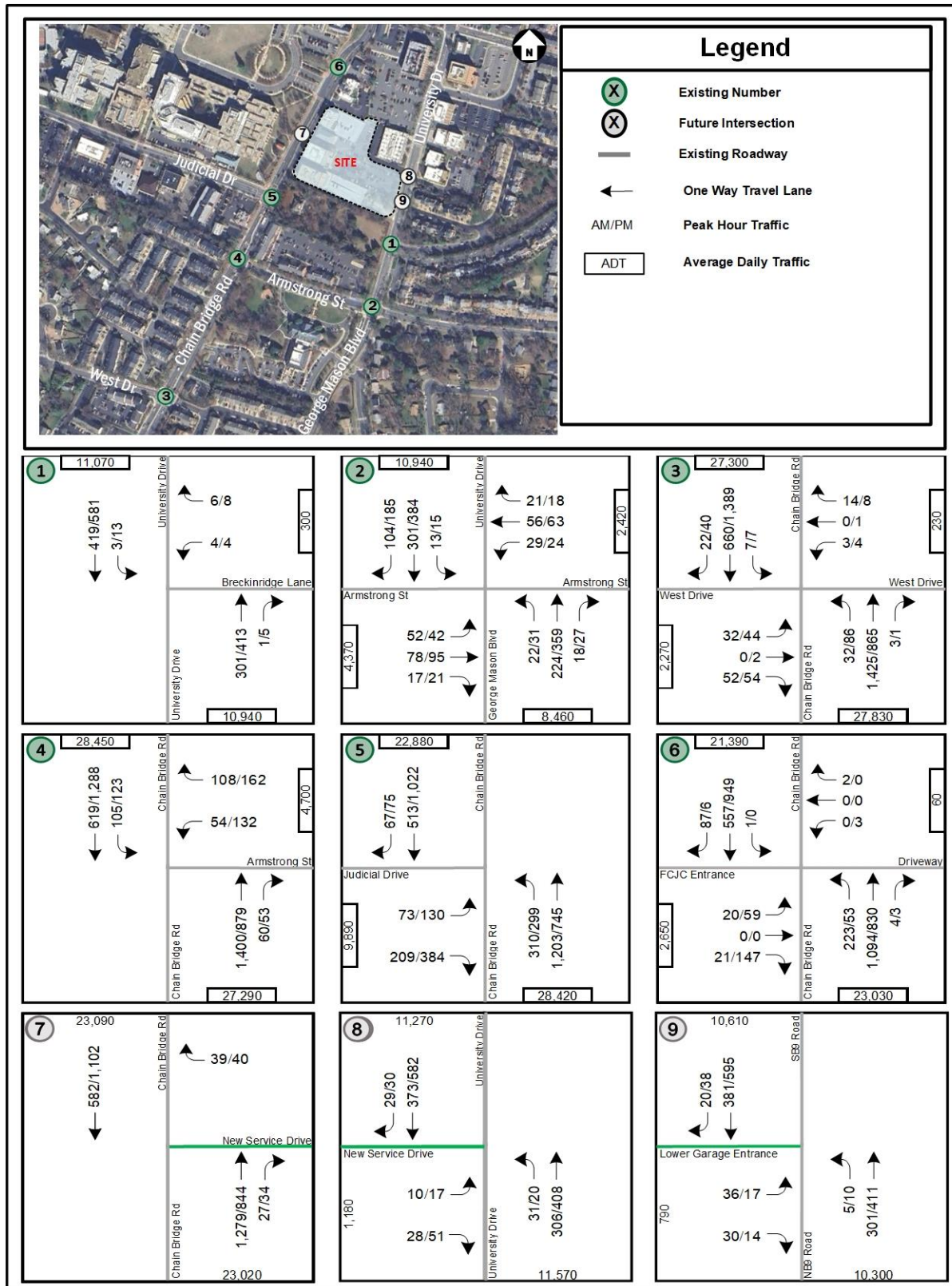


Figure 26: Future with Development (2029) – Peak Hour Traffic Volumes

### ***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 6<sup>th</sup> 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 27. 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 95<sup>th</sup> 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)                       | <b>Overall (Unsignalized)</b> |                                    |                              |             |                                  |              |             |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>B</b>                     | <b>12.3</b> |                                  | <b>C</b>     | <b>15.0</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | B                            | 12.3        | 3                                | C            | 15.0        | 3                                |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | -                            | -           |                                  | -            | -           |                                  |
|    |                                                                    | Southbound Left               |                                    | A                            | 8.0         | 0                                | A            | 8.5         | 0                                |
| 2  | George Mason Boulevard/University Drive & Armstrong Street (HCM 6) | <b>Overall (Signalized)</b>   |                                    | <b>B</b>                     | <b>14.0</b> |                                  | <b>B</b>     | <b>15.5</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>C</b>                     | <b>23.9</b> |                                  | <b>C</b>     | <b>26.5</b> |                                  |
|    |                                                                    | Eastbound Left/Thru/Right     |                                    | C                            | 23.9        | 114                              | C            | 26.5        | 121                              |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>C</b>                     | <b>21.9</b> |                                  | <b>C</b>     | <b>24.1</b> |                                  |
|    |                                                                    | Westbound                     |                                    | C                            | 21.9        | 81                               | C            | 24.1        | 81                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>A</b>                     | <b>9.0</b>  |                                  | <b>B</b>     | <b>10.1</b> |                                  |
|    |                                                                    | Northbound Left               | 160                                | A                            | 7.0         | 13                               | A            | 7.6         | 15                               |
|    |                                                                    | Northbound Thru/Right         |                                    | A                            | 9.2         | 132                              | B            | 10.3        | 212                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                     | <b>11.5</b> |                                  | <b>B</b>     | <b>14.8</b> |                                  |
|    |                                                                    | 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)                          | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                     | <b>21.1</b> |                                  | <b>C</b>     | <b>21.3</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>                     | <b>55.4</b> |                                  | <b>E</b>     | <b>55.5</b> |                                  |
|    |                                                                    | Eastbound Left                |                                    | E                            | 56.3        | 60                               | E            | 56.5        | 76                               |
|    |                                                                    | Eastbound Thru/Right          |                                    | D                            | 54.9        | 0                                | D            | 54.8        | 42                               |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                     | <b>55.9</b> |                                  | <b>E</b>     | <b>55.9</b> |                                  |
|    |                                                                    | Westbound Left                |                                    | E                            | 55.9        | 12                               | E            | 56.0        | 15                               |
|    |                                                                    | Westbound Thru/Right          | 315                                | E                            | 55.9        | 0                                | E            | 55.9        | 18                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>C</b>                     | <b>24.0</b> |                                  | <b>B</b>     | <b>18.4</b> |                                  |
|    |                                                                    | Northbound Left               | 165                                | B                            | 10.9        | 35                               | C            | 28.9        | 103                              |
|    |                                                                    | Northbound Thru/Right         |                                    | C                            | 24.3        | #965                             | B            | 17.3        | 434                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>A</b>                     | <b>9.8</b>  |                                  | <b>C</b>     | <b>20.6</b> |                                  |
|    |                                                                    | 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)                    | <b>Overall (Signalized)</b>   |                                    | <b>B</b>                     | <b>17.1</b> |                                  | <b>C</b>     | <b>28.0</b> |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                     | <b>69.5</b> |                                  | <b>F</b>     | <b>83.5</b> |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | E                            | 69.5        | 169                              | F            | 83.5        | #415                             |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>                     | <b>14.6</b> |                                  | <b>C</b>     | <b>31.6</b> |                                  |
|    |                                                                    | Northbound Thru/Right         |                                    | B                            | 14.6        | #884                             | C            | 31.6        | 490                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                     | <b>10.4</b> |                                  | <b>B</b>     | <b>14.2</b> |                                  |
|    |                                                                    | 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)                      | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                     | <b>21.8</b> |                                  | <b>C</b>     | <b>30.4</b> |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    | <b>D</b>                     | <b>50.3</b> |                                  | <b>D</b>     | <b>48.2</b> |                                  |
|    |                                                                    | Eastbound Left                | 440                                | E                            | 62.0        | 122                              | E            | 60.1        | 183                              |
|    |                                                                    | Eastbound Right               |                                    | D                            | 46.2        | 74                               | D            | 44.2        | 138                              |
|    |                                                                    | <b>Northbound Approach</b>    |                                    | <b>B</b>                     | <b>18.6</b> |                                  | <b>C</b>     | <b>30.0</b> |                                  |
|    |                                                                    | Northbound Left               | 150                                | C                            | 20.6        | m282                             | E            | 70.1        | m#349                            |
|    |                                                                    | Northbound Thru               |                                    | B                            | 18.1        | 453                              | B            | 13.9        | m175                             |
|    |                                                                    | <b>Southbound Approach</b>    |                                    | <b>B</b>                     | <b>16.2</b> |                                  | <b>C</b>     | <b>22.5</b> |                                  |
|    |                                                                    | 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) | <b>Overall (Signalized)</b>   |                                    | <b>C</b>                     | <b>23.8</b> |                                  | <b>C</b>     | <b>32.9</b> |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    | <b>E</b>                     | <b>61.8</b> |                                  | <b>E</b>     | <b>64.5</b> |                                  |
|    |                                                    | Eastbound Left/Thru           |                                    | E                            | 56.9        | 43                               | E            | 57.8        | 100                              |
|    |                                                    | Eastbound Right               |                                    | E                            | 61.9        | 0                                | E            | 67.6        | 65                               |
|    |                                                    | <b>Westbound Approach</b>     |                                    | <b>E</b>                     | <b>60.4</b> |                                  | <b>D</b>     | <b>53.5</b> |                                  |
|    |                                                    | Westbound Left/Thru/Right     |                                    | E                            | 60.4        | 0                                | D            | 53.5        | 12                               |
|    |                                                    | <b>Northbound Approach</b>    |                                    | <b>A</b>                     | <b>0.7</b>  |                                  | <b>A</b>     | <b>1.0</b>  |                                  |
|    |                                                    | Northbound Left               | 235                                | A                            | 0.1         | 256                              | A            | 7.5         | 90                               |
|    |                                                    | Northbound Thru/Right         |                                    | A                            | 0.8         | 138                              | A            | 0.6         | 85                               |
|    |                                                    | <b>Southbound Approach</b>    |                                    | <b>E</b>                     | <b>68.5</b> |                                  | <b>E</b>     | <b>55.7</b> |                                  |
|    |                                                    | 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)      | <b>Overall (Unsignalized)</b> |                                    |                              |             |                                  |              |             |                                  |
|    |                                                    | <b>Westbound Approach</b>     |                                    | <b>C</b>                     | <b>15.8</b> |                                  | <b>B</b>     | <b>12.3</b> |                                  |
|    |                                                    | Westbound Right               |                                    | C                            | 15.8        | 10                               | B            | 12.3        | 8                                |
| 8  | University Drive & New Service Drive (HCM 6)       | <b>Overall (Unsignalized)</b> |                                    |                              |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    | <b>B</b>                     | <b>12.7</b> |                                  | <b>C</b>     | <b>17.4</b> |                                  |
|    |                                                    | Eastbound Left/Right          |                                    | B                            | 12.7        | 8                                | C            | 17.4        | 20                               |
|    |                                                    | <b>Northbound Approach</b>    |                                    | -                            | -           |                                  | -            | -           |                                  |
|    |                                                    | Northbound Left/Thru          |                                    | A                            | 8.3         | 3                                | A            | 9.0         | 3                                |
| 9  | University Drive & Lower Garage Entrance (HCM 6)   | <b>Overall (Unsignalized)</b> |                                    |                              |             |                                  |              |             |                                  |
|    |                                                    | <b>Eastbound Approach</b>     |                                    | <b>B</b>                     | <b>14.4</b> |                                  | <b>C</b>     | <b>19.2</b> |                                  |
|    |                                                    | Eastbound Left/Right          |                                    | B                            | 14.4        | 15                               | C            | 19.2        | 10                               |
|    |                                                    | <b>Northbound Approach</b>    |                                    | -                            | -           |                                  | -            | -           |                                  |
|    |                                                    | 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)**

As mentioned throughout this TIS, the high levels of delay at the intersections of Chain Bridge Road and West Drive (Intersection 3) and Chain Bridge Road and Armstrong Street (Intersection 4) are primarily attributable to the signal cycle lengths required to maintain coordination with the nearby intersection of Chain Bridge Road and Judicial Drive (Intersection 5). While this coordination improves overall operations along the Chain Bridge Road corridor, the resulting longer cycle lengths increase delays for side street movements at these intersections. This issue is the same as under Existing Conditions (2026) and Future without Development Conditions (2029).

Based on the queuing analysis performed for the Future Conditions with Development (2029), the turning movements at the study intersections are expected to have 95<sup>th</sup> 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 northbound left-turn queues at Chain Bridge Road and Judicial Drive (Intersection 5) exceed the available storage length during the AM and PM peak hours. This condition is primarily attributable to the substandard spacing between adjacent signalized intersections, which limits the available storage distance for queued vehicles, rather than deficiencies in signal timing or intersection operations. This issue is the same as under Existing Conditions (2026) and Future without Development Conditions (2029).

With that said, 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 95<sup>th</sup> 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.

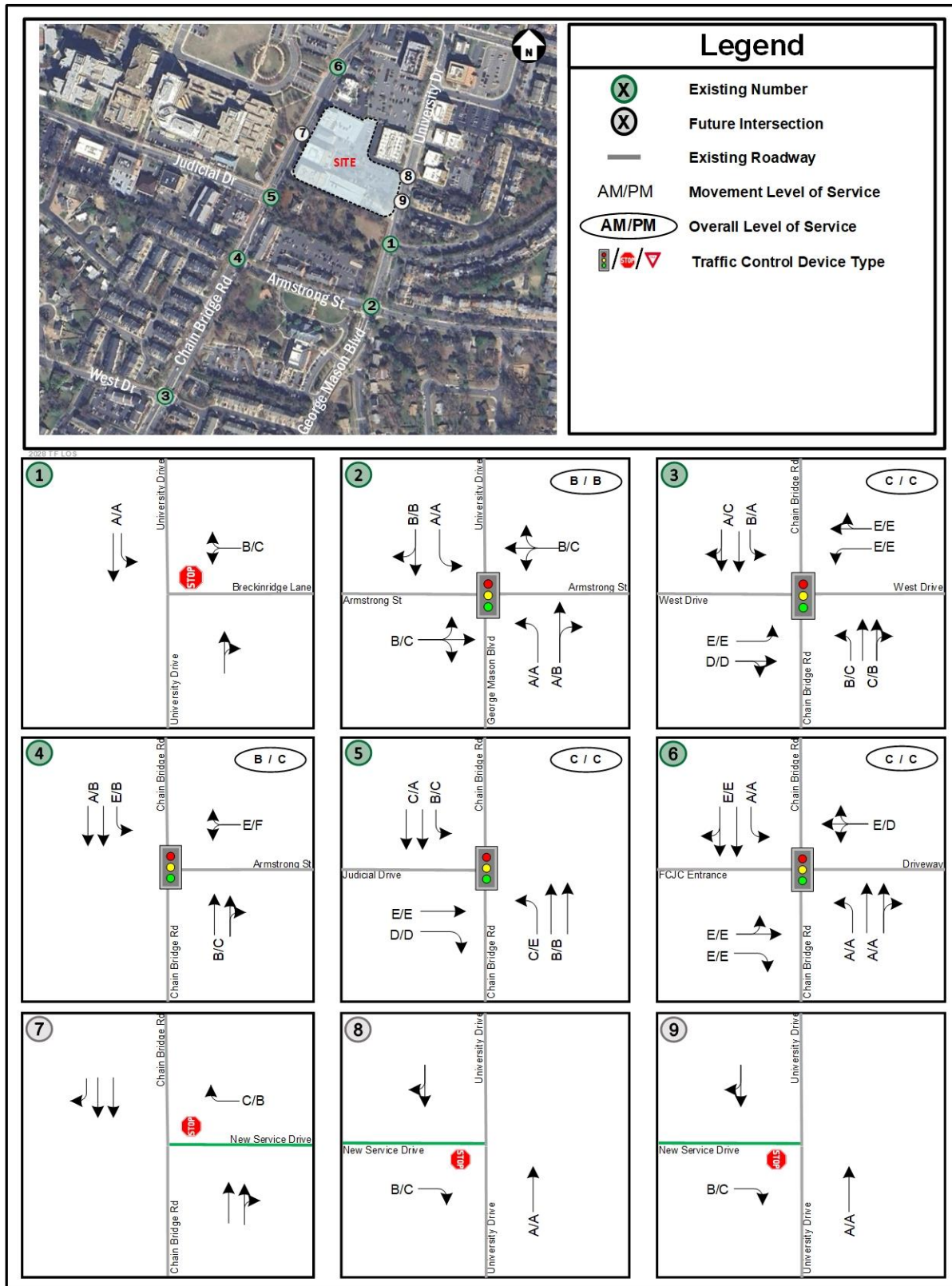


Figure 27: Future with Development (2029) – Levels of Service

## 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)                       | <b>Overall (Unsignalized)</b> |               |             |              |             |                                 |             |              |             |                              |             |              |             |
|    |                                                                    | <b>Westbound Approach</b>     | <b>B</b>      | <b>11.6</b> | <b>B</b>     | <b>13.7</b> | <b>B</b>                        | <b>11.8</b> | <b>B</b>     | <b>14.3</b> | <b>B</b>                     | <b>12.3</b> | <b>C</b>     | <b>15.0</b> |
|    |                                                                    | Westbound Left/Right          | B             | 11.6        | B            | 13.7        | B                               | 11.8        | B            | 14.3        | B                            | 12.3        | C            | 15.0        |
|    |                                                                    | <b>Southbound Approach</b>    | -             | -           | -            | -           | -                               | -           | -            | -           | -                            | -           | -            | -           |
|    |                                                                    | 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) | <b>Overall (Signalized)</b>   | <b>B</b>      | <b>13.4</b> | <b>B</b>     | <b>14.3</b> | <b>B</b>                        | <b>13.2</b> | <b>B</b>     | <b>14.7</b> | <b>B</b>                     | <b>14.0</b> | <b>B</b>     | <b>15.5</b> |
|    |                                                                    | <b>Eastbound Approach</b>     | <b>C</b>      | <b>21.6</b> | <b>C</b>     | <b>24.8</b> | <b>C</b>                        | <b>21.6</b> | <b>C</b>     | <b>25.9</b> | <b>C</b>                     | <b>23.9</b> | <b>C</b>     | <b>26.5</b> |
|    |                                                                    | Eastbound Left/Thru/Right     | C             | 21.6        | C            | 24.8        | C                               | 21.6        | C            | 25.9        | C                            | 23.9        | C            | 26.5        |
|    |                                                                    | <b>Westbound Approach</b>     | <b>C</b>      | <b>20.0</b> | <b>C</b>     | <b>22.7</b> | <b>C</b>                        | <b>20.1</b> | <b>C</b>     | <b>23.7</b> | <b>C</b>                     | <b>21.9</b> | <b>C</b>     | <b>24.1</b> |
|    |                                                                    | Westbound                     | C             | 20.0        | C            | 22.7        | C                               | 20.1        | C            | 23.7        | C                            | 21.9        | C            | 24.1        |
|    |                                                                    | <b>Northbound Approach</b>    | <b>A</b>      | <b>9.6</b>  | <b>A</b>     | <b>9.9</b>  | <b>A</b>                        | <b>9.4</b>  | <b>A</b>     | <b>9.9</b>  | <b>A</b>                     | <b>9.0</b>  | <b>B</b>     | <b>10.1</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Southbound Approach</b>    | <b>B</b>      | <b>10.4</b> | <b>B</b>     | <b>12.6</b> | <b>B</b>                        | <b>10.5</b> | <b>B</b>     | <b>13.3</b> | <b>B</b>                     | <b>11.5</b> | <b>B</b>     | <b>14.8</b> |
|    |                                                                    | 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)                          | <b>Overall (Signalized)</b>   | <b>C</b>      | <b>20.0</b> | <b>C</b>     | <b>20.3</b> | <b>C</b>                        | <b>21.1</b> | <b>C</b>     | <b>21.3</b> | <b>C</b>                     | <b>21.1</b> | <b>C</b>     | <b>21.3</b> |
|    |                                                                    | <b>Eastbound Approach</b>     | <b>E</b>      | <b>55.4</b> | <b>E</b>     | <b>55.5</b> | <b>E</b>                        | <b>55.4</b> | <b>E</b>     | <b>55.5</b> | <b>E</b>                     | <b>55.4</b> | <b>E</b>     | <b>55.5</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Westbound Approach</b>     | <b>E</b>      | <b>55.9</b> | <b>E</b>     | <b>55.9</b> | <b>E</b>                        | <b>55.9</b> | <b>E</b>     | <b>55.9</b> | <b>E</b>                     | <b>55.9</b> | <b>E</b>     | <b>55.9</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Northbound Approach</b>    | <b>C</b>      | <b>20.8</b> | <b>B</b>     | <b>16.8</b> | <b>C</b>                        | <b>23.7</b> | <b>B</b>     | <b>18.1</b> | <b>C</b>                     | <b>24.0</b> | <b>B</b>     | <b>18.4</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Southbound Approach</b>    | <b>B</b>      | <b>12.4</b> | <b>B</b>     | <b>19.4</b> | <b>B</b>                        | <b>10.2</b> | <b>C</b>     | <b>20.6</b> | <b>A</b>                     | <b>9.8</b>  | <b>C</b>     | <b>20.6</b> |
|    |                                                                    | 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)                    | <b>Overall (Signalized)</b>   | <b>B</b>      | <b>11.3</b> | <b>C</b>     | <b>24.5</b> | <b>B</b>                        | <b>15.0</b> | <b>C</b>     | <b>25.1</b> | <b>B</b>                     | <b>17.1</b> | <b>C</b>     | <b>28.0</b> |
|    |                                                                    | <b>Westbound Approach</b>     | <b>E</b>      | <b>64.8</b> | <b>E</b>     | <b>74.5</b> | <b>E</b>                        | <b>65.2</b> | <b>E</b>     | <b>76.3</b> | <b>E</b>                     | <b>69.5</b> | <b>F</b>     | <b>83.5</b> |
|    |                                                                    | Westbound Left/Right          | E             | 64.8        | E            | 74.5        | E                               | 65.2        | E            | 76.3        | E                            | 69.5        | F            | 83.5        |
|    |                                                                    | <b>Northbound Approach</b>    | <b>B</b>      | <b>10.6</b> | <b>C</b>     | <b>26.1</b> | <b>B</b>                        | <b>13.6</b> | <b>C</b>     | <b>29.5</b> | <b>B</b>                     | <b>14.6</b> | <b>C</b>     | <b>31.6</b> |
|    |                                                                    | Northbound Thru/Right         | B             | 10.6        | C            | 26.1        | B                               | 13.6        | C            | 29.5        | B                            | 14.6        | C            | 31.6        |
|    |                                                                    | <b>Southbound Approach</b>    | <b>A</b>      | <b>4.3</b>  | <b>B</b>     | <b>14.2</b> | <b>A</b>                        | <b>9.0</b>  | <b>B</b>     | <b>12.9</b> | <b>B</b>                     | <b>10.4</b> | <b>B</b>     | <b>14.2</b> |
|    |                                                                    | 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)                      | <b>Overall (Signalized)</b>   | <b>C</b>      | <b>22.2</b> | <b>C</b>     | <b>30.7</b> | <b>C</b>                        | <b>20.9</b> | <b>C</b>     | <b>29.2</b> | <b>C</b>                     | <b>21.8</b> | <b>C</b>     | <b>30.4</b> |
|    |                                                                    | <b>Eastbound Approach</b>     | <b>D</b>      | <b>51.2</b> | <b>D</b>     | <b>47.4</b> | <b>D</b>                        | <b>50.8</b> | <b>D</b>     | <b>47.6</b> | <b>D</b>                     | <b>50.3</b> | <b>D</b>     | <b>48.2</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Northbound Approach</b>    | <b>B</b>      | <b>17.6</b> | <b>C</b>     | <b>24.0</b> | <b>B</b>                        | <b>17.8</b> | <b>C</b>     | <b>27.7</b> | <b>B</b>                     | <b>18.6</b> | <b>C</b>     | <b>30.0</b> |
|    |                                                                    | 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        |
|    |                                                                    | <b>Southbound Approach</b>    | <b>B</b>      | <b>18.5</b> | <b>C</b>     | <b>28.1</b> | <b>B</b>                        | <b>14.9</b> | <b>C</b>     | <b>22.3</b> | <b>B</b>                     | <b>16.2</b> | <b>C</b>     | <b>22.5</b> |
|    |                                                                    | 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) | <b>Overall (Unsignalized EX, Signalized FB and TF)</b> | A                   | 2.2       | A            | 4.3       | C                               | 24.2      | C            | 33.6      | C                            | 23.8      | C            | 32.9      |
|    |                                                    | <b>Eastbound Approach</b>                              | 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      |
|    |                                                    | <b>Westbound Approach</b>                              | 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      |
|    |                                                    | <b>Northbound Approach</b>                             | -                   | -         | -            | -         | 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       |
|    |                                                    | <b>Southbound Approach</b>                             | -                   | -         | -            | -         | 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)      | <b>Overall (Unsignalized)</b>                          | Future Intersection |           |              |           | Future Intersection             |           |              |           |                              |           |              |           |
|    |                                                    | <b>Westbound Approach</b>                              |                     |           |              |           |                                 |           |              |           | C                            | 15.8      | B            | 12.3      |
|    |                                                    | Westbound Right                                        |                     |           |              |           |                                 |           |              |           | C                            | 15.8      | B            | 12.3      |
| 8  | University Drive & New Service Drive (HCM 6)       | <b>Overall (Unsignalized)</b>                          | Future Intersection |           |              |           | Future Intersection             |           |              |           |                              |           |              |           |
|    |                                                    | <b>Eastbound Approach</b>                              |                     |           |              |           |                                 |           |              |           | B                            | 12.7      | C            | 17.4      |
|    |                                                    | Eastbound Left/Right                                   |                     |           |              |           |                                 |           |              |           | B                            | 12.7      | C            | 17.4      |
|    |                                                    | <b>Northbound Approach</b>                             |                     |           |              |           |                                 |           |              |           | -                            | -         | -            | -         |
|    |                                                    | Northbound Left/Thru                                   |                     |           |              |           |                                 |           |              |           | A                            | 8.3       | A            | 9.0       |
| 9  | University Drive & Lower Garage Entrance (HCM 6)   | <b>Overall (Unsignalized)</b>                          | Future Intersection |           |              |           | Future Intersection             |           |              |           |                              |           |              |           |
|    |                                                    | <b>Eastbound Approach</b>                              |                     |           |              |           |                                 |           |              |           | B                            | 14.4      | C            | 19.2      |
|    |                                                    | Eastbound Left/Right                                   |                     |           |              |           |                                 |           |              |           | B                            | 14.4      | C            | 19.2      |
|    |                                                    | <b>Northbound Approach</b>                             |                     |           |              |           |                                 |           |              |           | -                            | -         | -            | -         |
|    |                                                    | 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)                       | <b>Overall (Unsignalized)</b> |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | 3                                | 3                                | 3                                | 3                                | 3                                | 3                                |
|    |                                                                    | <b>Southbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Southbound Left               |                                    | 0                                | 0                                | 0                                | 0                                | 0                                | 0                                |
| 2  | George Mason Boulevard/University Drive & Armstrong Street (HCM 6) | <b>Overall (Signalized)</b>   |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Eastbound Left/Thru/Right     |                                    | 102                              | 119                              | 103                              | 119                              | 114                              | 121                              |
|    |                                                                    | <b>Westbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Westbound                     |                                    | 74                               | 81                               | 75                               | 81                               | 81                               | 81                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Northbound Left               | 160                                | 12                               | 14                               | 12                               | 15                               | 13                               | 15                               |
|    |                                                                    | Northbound Thru/Right         |                                    | 120                              | 188                              | 125                              | 200                              | 132                              | 212                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | 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)                          | <b>Overall (Signalized)</b>   |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Eastbound Left                |                                    | 60                               | 76                               | 60                               | 76                               | 60                               | 76                               |
|    |                                                                    | Eastbound Thru/Right          |                                    | 0                                | 42                               | 0                                | 42                               | 0                                | 42                               |
|    |                                                                    | <b>Westbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Westbound Left                |                                    | 12                               | 15                               | 12                               | 15                               | 12                               | 15                               |
|    |                                                                    | Westbound Thru/Right          | 315                                | 0                                | 18                               | 0                                | 18                               | 0                                | 18                               |
|    |                                                                    | <b>Northbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Northbound Left               | 165                                | 35                               | 76                               | 35                               | 101                              | 35                               | 103                              |
|    |                                                                    | Northbound Thru/Right         |                                    | #745                             | 360                              | #946                             | 420                              | #965                             | 434                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | 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)                    | <b>Overall (Signalized)</b>   |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | <b>Westbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Westbound Left/Right          |                                    | 88                               | 289                              | 117                              | #338                             | 169                              | #415                             |
|    |                                                                    | <b>Northbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Northbound Thru/Right         |                                    | 249                              | 423                              | 350                              | 478                              | #884                             | 490                              |
|    |                                                                    | <b>Southbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | 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)                      | <b>Overall (Signalized)</b>   |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | <b>Eastbound Approach</b>     |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Eastbound Left                | 440                                | 100                              | 152                              | 108                              | 166                              | 122                              | 183                              |
|    |                                                                    | Eastbound Right               |                                    | 85                               | 144                              | 80                               | 142                              | 74                               | 138                              |
|    |                                                                    | <b>Northbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | Northbound Left               | 150                                | 229                              | #304                             | 242                              | m#316                            | m282                             | m#349                            |
|    |                                                                    | Northbound Thru               |                                    | 365                              | 116                              | 414                              | 160                              | 453                              | m175                             |
|    |                                                                    | <b>Southbound Approach</b>    |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                                    | 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) | <b>Overall (Unsignalized EX, Signalized FB and TF)</b> |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | <b>Eastbound Approach</b>                              |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Eastbound Left                                         |                                    | 25                               | 75                               | -                                | -                                | -                                | -                                |
|    |                                                    | Eastbound Left/Thru                                    |                                    | -                                | -                                | 43                               | 100                              | 43                               | 100                              |
|    |                                                    | Eastbound Right                                        |                                    | 3                                | 25                               | 0                                | 65                               | 0                                | 65                               |
|    |                                                    | <b>Westbound Approach</b>                              |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Westbound Left/Thru/Right                              |                                    | 0                                | 3                                | 0                                | 12                               | 0                                | 12                               |
|    |                                                    | <b>Northbound Approach</b>                             |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Northbound Left                                        | 235                                | 23                               | 5                                | 242                              | 88                               | 256                              | 90                               |
|    |                                                    | Northbound Thru/Right                                  |                                    | -                                | -                                | 121                              | 73                               | 138                              | 85                               |
|    |                                                    | <b>Southbound Approach</b>                             |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | 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)      | <b>Overall (Unsignalized)</b>                          |                                    | Future Intersection              |                                  | Future Intersection              |                                  |                                  |                                  |
|    |                                                    | <b>Westbound Approach</b>                              |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Westbound Right                                        |                                    |                                  |                                  |                                  |                                  | 10                               | 8                                |
| 8  | University Drive & New Service Drive (HCM 6)       | <b>Overall (Unsignalized)</b>                          |                                    | Future Intersection              |                                  | Future Intersection              |                                  |                                  |                                  |
|    |                                                    | <b>Eastbound Approach</b>                              |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Eastbound Left/Right                                   |                                    |                                  |                                  |                                  |                                  | 8                                | 20                               |
|    |                                                    | <b>Northbound Approach</b>                             |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Northbound Left/Thru                                   |                                    |                                  |                                  |                                  |                                  | 3                                | 3                                |
| 9  | University Drive & Lower Garage Entrance (HCM 6)   | <b>Overall (Unsignalized)</b>                          |                                    | Future Intersection              |                                  | Future Intersection              |                                  |                                  |                                  |
|    |                                                    | <b>Eastbound Approach</b>                              |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | Eastbound Left/Right                                   |                                    |                                  |                                  |                                  |                                  | 15                               | 10                               |
|    |                                                    | <b>Northbound Approach</b>                             |                                    |                                  |                                  |                                  |                                  |                                  |                                  |
|    |                                                    | 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 Drive/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, 218 trips during the PM peak hour, and 2,210 daily trips on a typical weekday.
- The proposed development is anticipated to generate approximately 41 fewer net new trips during the AM peak hour, 22 fewer net new trips during the PM peak hour, and 602 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*

- Five (5) 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