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6110 and 6124 8th Avenue Traffic Impact Study

Project No. 2500254
April 30, 2025

Draft

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6110 and 6124 8th Avenue
Traffic Impact Study

Prepared For:
Rubicon, LLC
Grand Rapids, Michigan

April 24, 2025
Project No. 2500254

Review Draft

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List of Abbreviations/Acronyms

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
EB	eastbound
ITE	Institute of Transportation Engineers
LOS	Level of Service
LUC	Land Use Code
MDOT	Michigan Department of Transportation
MMUTCD	Michigan Manual on Uniform Traffic Control Devices
mph	miles per hour
NB	northbound
RIRO	right-in/right-out (driveway)
SB	southbound
sq ft	square foot/feet
TIS	traffic impact study
TMC	turning movement count
Township	Georgetown Township
WB	westbound
vpd	vehicles per day

References

Institute of Transportation Engineers, 2017, *Trip Generation Handbook*, 3rd Edition.
Institute of Transportation Engineers, 2021, *Trip Generation Manual*, 11th Edition.
Michigan Department of Transportation, 2021, *Electronic Traffic Control Device Guidelines.*
Michigan Department of Transportation, 2017, *Geometric Design Guidance*.
Michigan Department of Transportation, 2013, *Michigan Manual on Uniform Traffic Control Devices*.
Transportation Research Board, 2022, *Highway Capacity Manual,* 7th Edition.

Executive Summary

Fishbeck has completed a traffic impact study (TIS) for a mixed-use development located in the southeast (SE) quadrant of 44th Street and 8th Avenue in Georgetown Township (Township), Ottawa County, Michigan. The parcel is currently vacant. The proposed development will consist of a maximum 37 dwelling units of single-family attached housing, a 9,000-square-foot (sq ft) small office building, and a 4,200-sq-ft medical-dental office. The development will be completed in one phase, assumed to be open and fully operational in 2026.

Three proposed driveways, two along 8th Avenue and one along 44th Street will be provided to access the development. One driveway along 8th Avenue will provide access to the multi-family residential housing and the other will provide access to the office building. The driveway along 44th Street will provide access to the medical-dental office. The outbound access for this driveway is limited to eastbound right out to 44th Street only.

This study was conducted according to the methodologies and guidance published by Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), Michigan Department of Transportation (MDOT), Ottawa County Road Commission (OCRC), and Georgetown Township (Township). MDOT standards and guidelines were referenced where local standards/guidelines are not defined.

Vehicular, pedestrian, and cyclist turning movement counts (TMCs) were collected at the study intersections on Wednesday, February 5, 2025, during the weekday morning (7 a.m. to 9 a.m.) and afternoon (4 p.m. to 6 p.m.) peak periods for the roadway network.

There are no known projects in the site vicinity that would add additional traffic volumes or alter traffic patterns within the study network.

Site-generated traffic was forecast using the information and methodologies specified in the ITE *Trip Generation Manual*. Existing traffic volumes, site layout, and engineering judgement were used to develop a trip distribution model for the a.m. and p.m. peak hours for the new traffic that would be generated by the proposed development.

Operational analyses were conducted for existing, background, and total future conditions based on the *Highway Capacity Manual* (HCM) 7th Edition methodology using Synchro traffic analysis software. Synchro network models were also simulated using SimTraffic to evaluate network operations including intersection queueing.

Based on the findings of the HCM operational analyses and site traffic generation, Table 1 has the recommended background and future improvements to the study intersections to mitigate traffic operation impacts.

Table 1 – Recommended Improvements		
Intersection	Background	Future
44th Street and 8th Avenue	• Optimize traffic signal splits (keeping existing cycle length).	

The opinions, findings, and conclusions expressed in this TIS are those of Fishbeck and not necessarily those of the Owner/Applicant, MDOT, Ottawa County, or Georgetown Township.

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1.0 Introduction

1.1 Project Overview

On behalf of Rubicon, LLC, Fishbeck has conducted a traffic impact study (TIS) for a mixed-use development to be located in the SE quadrant of 44th Street and 8th Avenue in Georgetown Township, Ottawa County, Michigan. The parcel is currently vacant. The proposed development will consist of up to 37 dwelling units of multi-family residential housing, a 9,000-sq-ft small office building, and a 4,200-sq-ft medical-dental office. The development will be completed in one phase, assumed to be open and fully operational in 2026.

The project location and study intersections are displayed in Figure 1.

Figure 1 – Project Location and Study Network

1.2 Study Methodology

The objectives of this TIS were to determine what impacts the proposed project would have on adjacent roadway traffic operations, and to develop recommendations for any improvements necessary to mitigate the project impacts on the studied intersections. Study analyses were completed relative to typical weekday a.m. and p.m. peak periods.

This study was conducted according to the methodologies and guidance published by ITE, AASHTO, MDOT, OCRC, and the Township. MDOT standards and guidelines were referenced where local standards/guidelines are not defined.

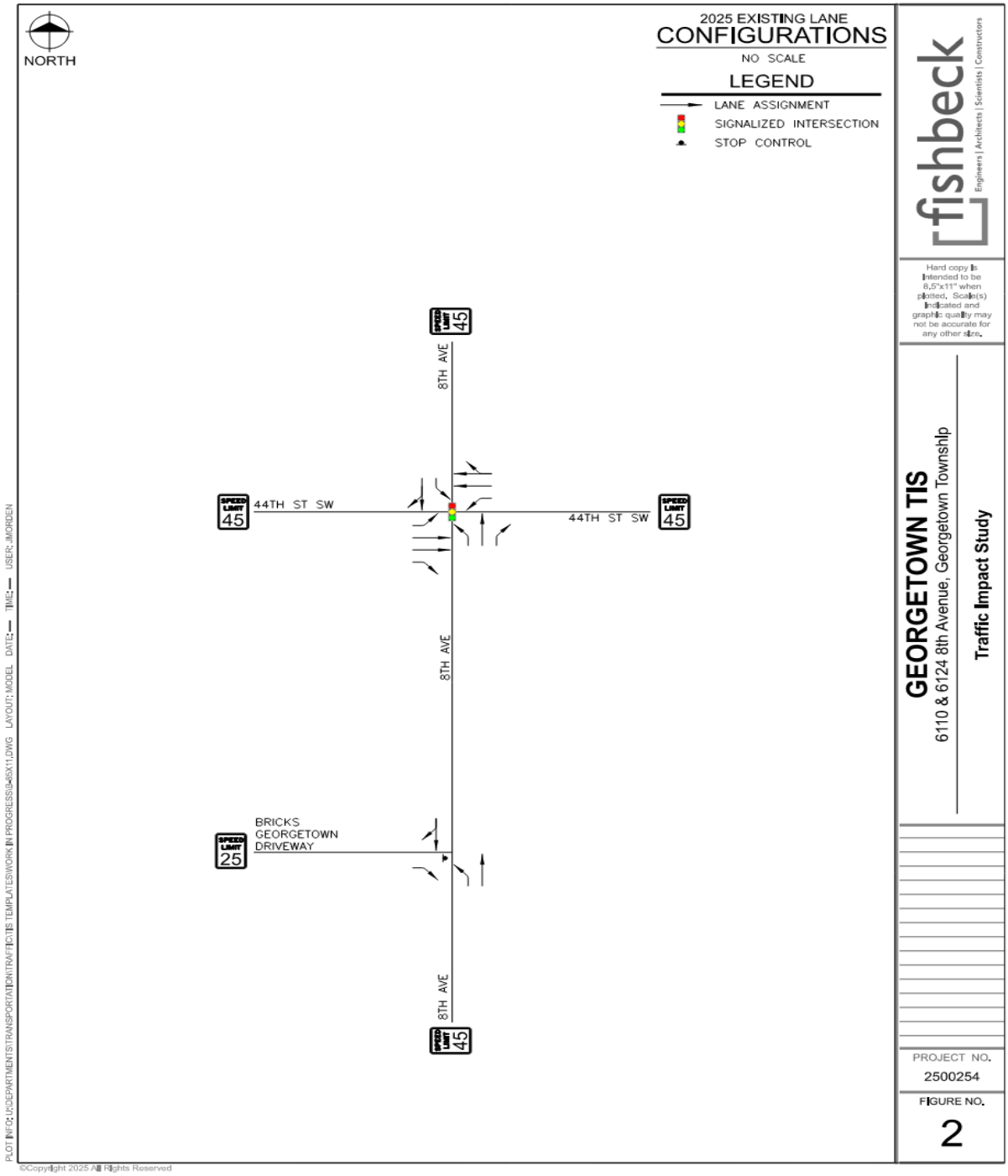
1.3 Intersection Characteristics

Based on the type and size of the proposed development and the likely area of influence for the site trips, traffic operations were analyzed for the following intersections:

- 44th Street and 8th Avenue (signalized).
- 44th Street and Medical-Dental Office Driveway (unsignalized).
- 8th Avenue and Office Driveway (unsignalized).
- 8th Avenue and Residential Driveway (unsignalized).

The existing intersection lane configurations, traffic controls, and posted speed limits are displayed in Figure 2.

Figure 2 – 2025 Existing Lane Configurations



1.4 Roadway Characteristics

The characteristics of the study area roadways and signalized intersections are described in Tables 2 and 3. The data points referenced were from the Grand Valley Metro Council Traffic Count Data System.

Table 2 – Roadway Characteristics

Roadway	Jurisdiction	Speed Limit (mph)	No. of Lanes	Roadway Classification	Location	AADT (vpd)	Year
44th Street	OCRC	45	5	Minor Arterial	West of 8th Ave	23,398	2024
					East of 8th Ave	17,449	2024
8th Avenue	OCRC	45	3	Major Collector	South of 44th St	14,228	2023
				Minor Arterial	North of 44th St	5,223	2023

AADT Average Annual Daily Traffic
mph miles per hour
vpd vehicles per day

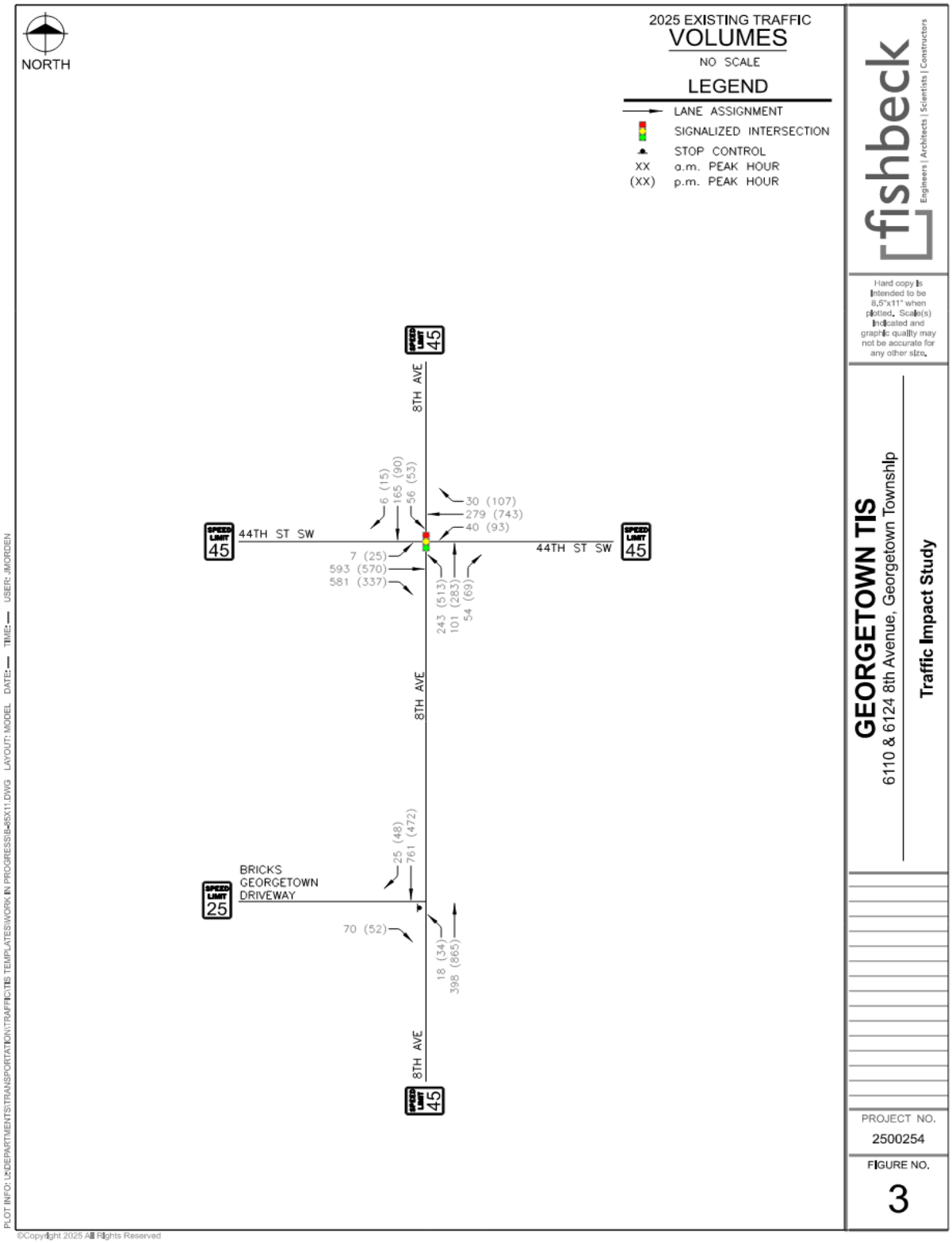
1.5 Existing Traffic Volumes

Vehicular, pedestrian, and cyclist TMCs collected at the following study intersections during the weekday morning (7 a.m. to 9 a.m.), and afternoon (4 p.m. to 6 p.m.) peak periods of the road network on February 5, 2025.

- 44th Street and 8th Avenue
- 44th Street and Bricks Georgetown Driveway

Traffic volume information can be found in Appendix 1, which includes heavy vehicle and pedestrian crossing data. The existing traffic volumes used in this study are provided in Figure 3.

Figure 3 – 2025 Existing Traffic Volumes



2.0 2025 Existing Conditions Analysis

2.1 Traffic Operations Analysis Methodology

Synchro was used to perform HCM operational analyses during the a.m. and p.m. peak hours for all intersections within this study. According to the most recent editions of the HCM, Level of Service (LOS) is a qualitative measure describing operational conditions of a traffic stream or intersection. LOS ranges from A to F, with LOS A representing desirable traffic operations characterized by low delay and LOS F representing extremely poor traffic operations characterized by excessive delays and long vehicle queues. LOS D is generally considered acceptable for most areas. Table 3 presents the HCM criteria for various LOS's for unsignalized and signalized intersections. The color coding in the table is used in the operational analysis summary tables later in this report.

Table 3 – LOS Criteria

LOS	Average Stopped Vehicle Delay (seconds)	
	Unsignalized	Signalized
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

2.2 2025 Existing Conditions Traffic Analysis

Synchro models for the existing network were created based on the existing roadway configurations and traffic controls, as observed in the field and from available aerial and street level imagery. The traffic signal timing permit for the signalized intersection was provided by OCRC for use in the models.

The resulting LOS and delay for the existing conditions are provided in Table 4.

Table 4 – LOS Analysis for 2025 Existing Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
44th Street and 8th Avenue (Signalized)				
EB 44th Street	C	28.6	C	39.8
WB 44th Street	C	20.4	D	35.7
NB 8th Avenue	D	38.9	E	61.1
SB 8th Avenue	E	64.3	D	49.4
Overall	C	32.9	D	42.7
8th Avenue and Bricks Georgetown Driveway (EB Stop-Controlled)				
EB Bricks Georgetown Driveway	C	20.5	B	12.6
NB 8th Avenue	A	0.7	A	0.6
SB 8th Avenue	Free		Free	
Overall	A	1.3	A	0.9

Further analysis of the LOS results for existing conditions revealed that most movements, approaches, and intersections are expected to operate at an acceptable LOS D or better during both the a.m. and p.m. peak hours, with the following exceptions:

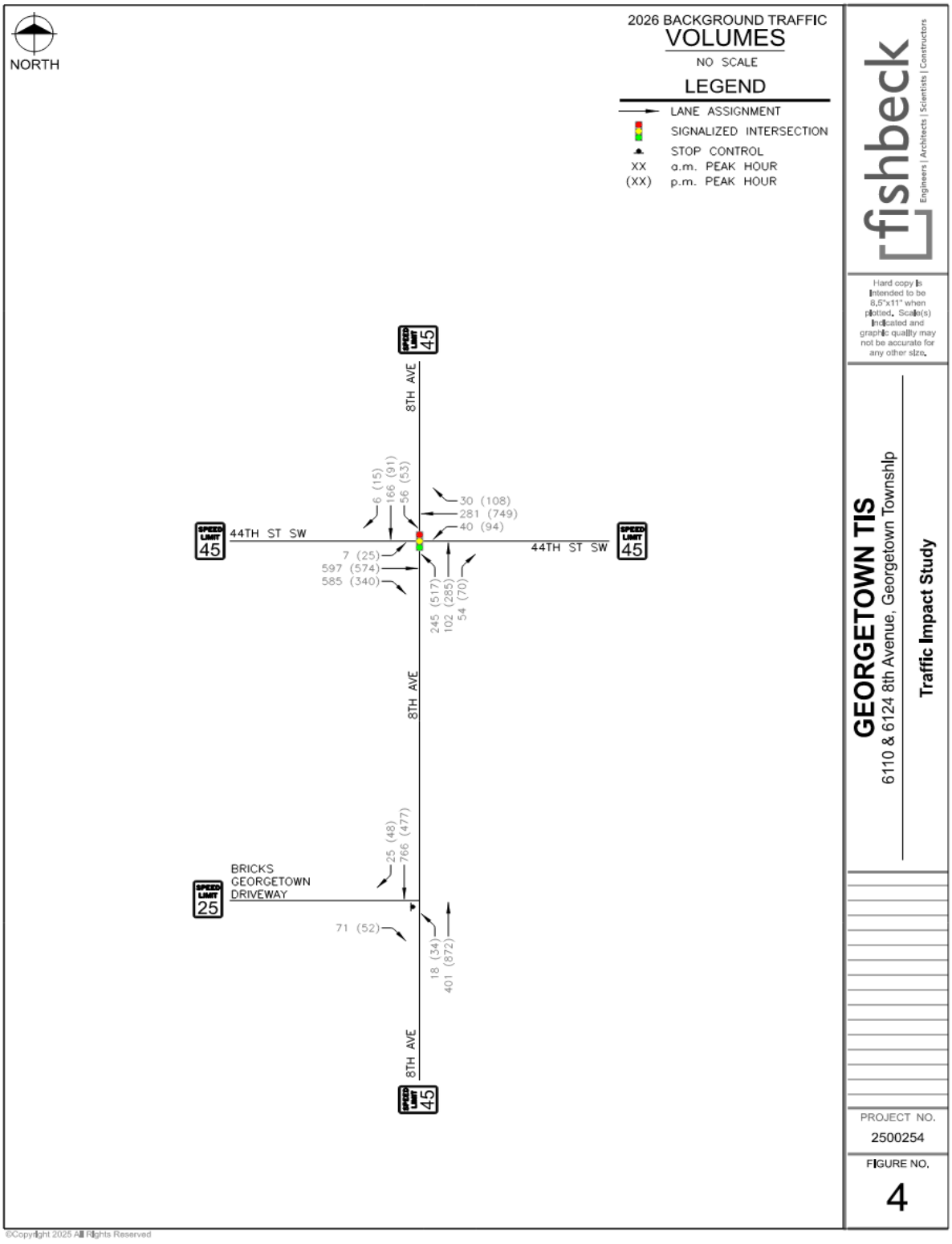
- 44th Street and 8th Avenue:
  - The SB right movement and SB approach operate at LOS E during the a.m. peak hour.
  - The EB left movement, WB left movement, and NB approach operate at LOS E during the p.m. peak hour.
  - The NB left movement operates at LOS F during the p.m. peak hour.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For existing conditions, the EB right turn experiences a 95th percentile queue of 238 feet (10 vehicles) in the a.m. peak hour, and 117 feet (5 vehicles) in the p.m. peak hour, which is longer than the existing right turn lane length of approximately 110 feet. During the p.m. peak hour, the NB left movement experiences a 95th percentile queue of 389 feet (16 vehicles), which is longer than the existing left turn lane of approximately 160 feet. The NB left turn queue length extends into the two-way center left turn lane past the existing Bricks Georgetown driveway. These queues dissipate in one signal cycle. See Appendix 2 for the existing conditions LOS reports and queueing analysis reports.

3.0 2026 Background Conditions Analysis

Historical population data from the US Census Bureau was referenced to determine the applicable growth rate for the existing traffic volumes to the project build-out year in 2026. Based on this review, a background growth rate of 0.75% was utilized. No background developments were identified. Background traffic volumes are presented in Figure 4.

Figure 4 – 2025 Background Traffic Volumes



3.1 2026 Background Conditions Traffic Analysis

The resulting LOS and delay for the background conditions are provided in Table 5.

Table 5 – LOS Analysis for 2026 Background Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
44th Street and 8th Avenue (Signalized)				
EB 44th Street	C	29.0	C	30.0
WB 44th Street	C	20.4	D	36.0
NB 8th Avenue	D	39.7	E	62.4
SB 8th Avenue	E	65.1	D	49.4
Overall	C	33.3	D	43.3
8th Avenue and Bricks Georgetown Driveway (EB Stop-Controlled)				
EB Bricks Georgetown Driveway	C	20.7	B	12.7
NB 8th Avenue	A	0.7	A	0.6
SB 8th Avenue	Free		Free	
Overall	A	1.4	A	0.9

Further analysis of the LOS results for background conditions revealed that most movements, approaches, and intersections are expected to continue to operate at an acceptable LOS D or better during both the a.m. and p.m. peak hours, with the following exceptions:

- 44th Street and 8th Avenue:
  - The SB right movement and SB approach would continue to operate at LOS E during the a.m. peak hour.
  - The EB left movement, WB left movement, and NB approach would continue to operate at LOS E during the p.m. peak hour.
  - The NB left movement would continue to operate at LOS F during the p.m. peak hour.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For background conditions, the EB right turn experiences a 95th percentile queue of 258 feet (10 vehicles) in the a.m. peak hour, and 122 feet (5 vehicles) in the p.m. peak hour, which is longer than the existing right turn lane length of approximately 110 feet. During the p.m. peak hour, the NB left movement experiences a 95th percentile queue of 379 feet (15 vehicles), which is longer than the existing left turn lane of approximately 160 feet. The NB left turn queue length extends into the two-way center left turn lane which extends past the existing Bricks Georgetown driveway. These queues dissipate in one signal cycle. See Appendix 3 for background conditions LOS reports and queueing analysis reports

3.2 2026 Background Improvement Conditions Traffic Analysis

Observations of the background traffic conditions were made, and improvements are recommended at the following intersection:

- 44th Street and 8th Avenue:
  - Traffic signal timing optimization completed keeping the existing cycle length and improving the splits.

The resulting LOS and delay for the background improvement conditions are provided in Table 6.

Table 6 – LOS Analysis for 2026 Background Improvement Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
44th Street and 8th Avenue (Signalized)				
EB 44th Street	C	30.0	C	32.0
WB 44th Street	C	20.6	D	38.9
NB 8th Avenue	D	40.0	D	49.6
SB 8th Avenue	D	42.7	D	49.9
Overall	C	31.3	D	40.9

Further analysis of the LOS results for background conditions revealed that most movements, approaches, and intersections are expected to continue to operate at an acceptable LOS D or better during both the a.m. and p.m. peak hours, with the following exceptions:

- 44th Street and 8th Avenue:
  - The EB left movement and WB left movement would continue to operate at LOS E during the p.m. peak hour.
  - The NB left movement would improve to a LOS E during the p.m. peak hour.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For background improvement conditions, the EB right turn experiences a 95th percentile queue of 266 feet (11 vehicles) in the a.m. peak hour, and 119 feet (5 vehicles) in the p.m. peak hour, which is longer than the existing right turn lane length of approximately 110 feet. During the p.m. peak hour, the NB left movement experiences a 95th percentile queue of 373 feet (15 vehicles), which is longer than the existing left turn lane of approximately 160 feet. The NB left turn queue length extends into the two-way center left turn lane which extends past the existing Bricks Georgetown driveway. These queues dissipate in one signal cycle. See Appendix 4 for background improvement conditions LOS reports and queueing analysis reports.

4.0 Site Traffic Characteristics

A representation of the current conceptual site plan is provided in Figure 5.

Figure 5 – Conceptual Site Plan

4.1 Trip Generation

Using the information and methodologies specified in the *Trip Generation Manual*, Fishbeck forecast the weekday a.m. and p.m. peak hour trips associated with the proposed development.

Table 7 presents the resulting trip generation for the development. Refer to Appendix 5 for additional information.

Table 7 – Trip Generation for Proposed Development

ITE Land Use	LUC	Units	a.m. Peak Hour			p.m. Peak Hour			Weekday
			In	Out	Total	In	Out	Total	
Single-Family Attached Housing	215	37 Dwelling Units	3	10	14	11	7	18	231
Office Building	712	9,000 SF	12	3	15	7	12	19	130
Medical-Dental Office Building	720	4,200 SF	11	3	14	4	10	14	151
Total New Trips			26	16	42	22	30	52	512

4.2 Trip Distribution

The directions that site traffic will travel to and from were based upon existing traffic patterns during the a.m. and p.m. peak hours. The existing traffic patterns reflect the gravity between origins and destinations in the study area, and therefore an accurate indication of where the proposed trips would be coming from and going to. Table 8 provides the probable distribution based on existing traffic patterns.

Table 8 – Trip Distribution

Direction	Via	New Trips			
		a.m. Peak Hour		p.m. Peak Hour	
		To	From	To	From
North	8th Avenue	6%	11%	14%	5%
South	8th Avenue	38%	19%	18%	31%
East	44th St SW	32%	16%	24%	32%
West	44th St SW	24%	54%	44%	32%

The trip distribution for the site is indicated in Figure 6.

Figure 6 – Trip Generation Volumes

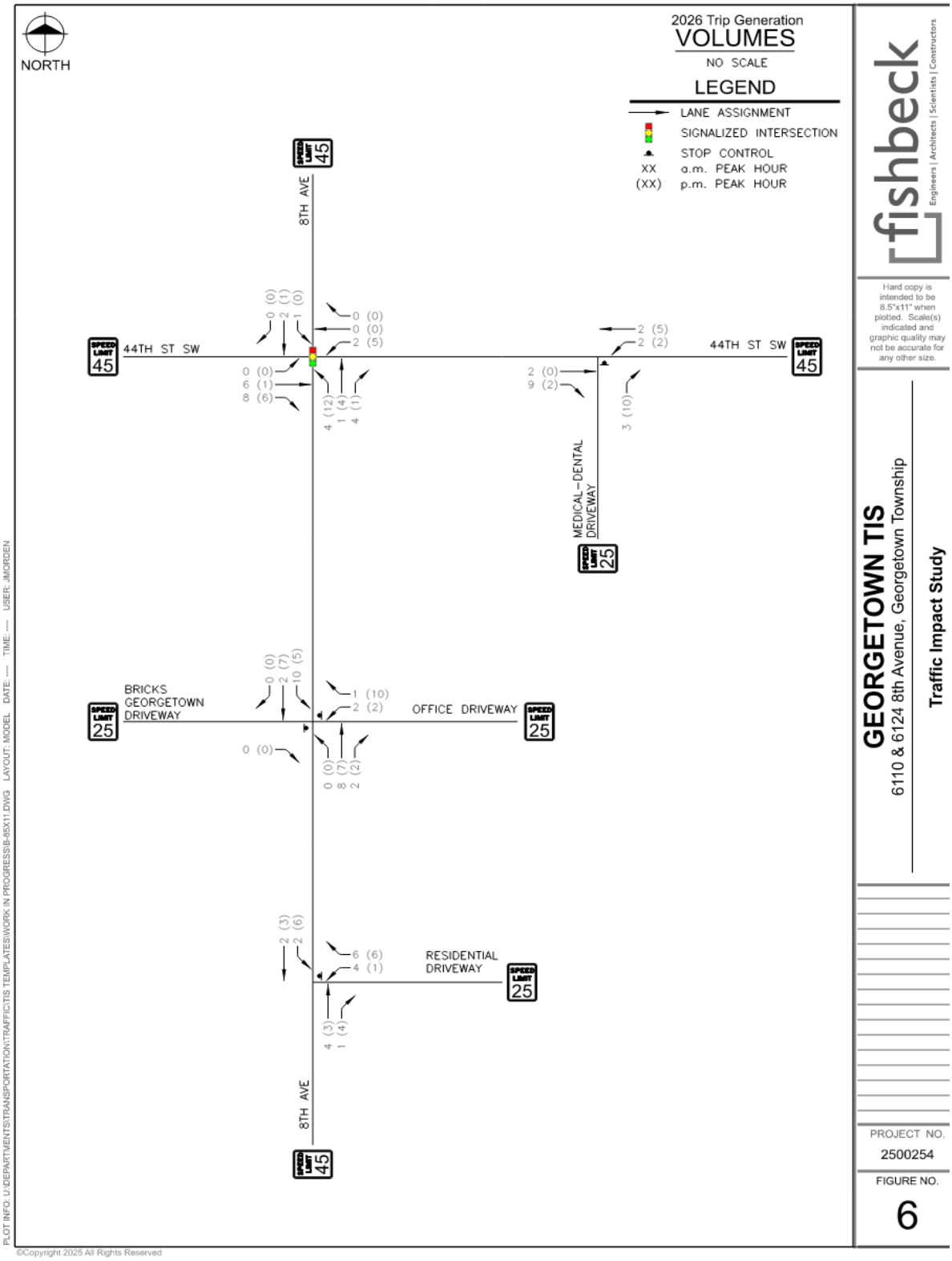
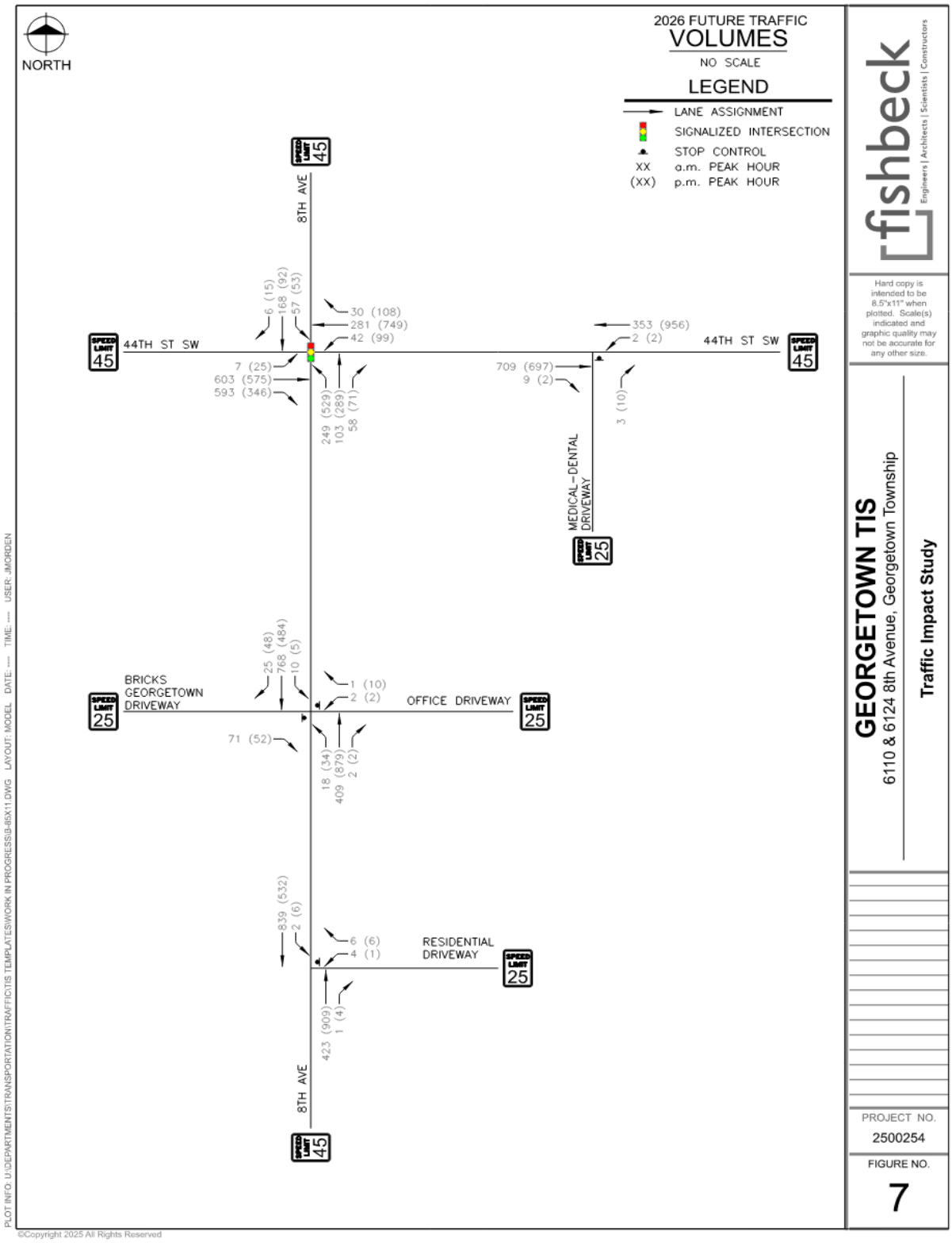


Figure 7 – 2026 Future Traffic Volumes



5.0 2026 Future Conditions Analysis

5.1 Turn Lane Evaluation

An evaluation was performed in accordance with MDOT guidance to determine if right-turn treatments are required at all the proposed driveways. The results of the analysis indicated right-turn treatments are not warranted at the proposed driveways. No left turn evaluations were performed because center left turn lanes already exist at each driveway. All right turn lane treatment charts are provided in Appendix 6. The results of the analysis are presented in Table 9.

Table 9 – Turn Lane Warrants

Intersection	Movement	Existing Treatment	Result
8th Avenue and Residential Driveway	NB Right	None	No Treatment
8th Avenue and Office Driveway	NB Right	None	No Treatment
44th St SW and Medical-Dental Office Driveway	EB Right	None	No Treatment

5.2 2026 Future Conditions Traffic Analysis

Using the existing traffic signal timing for the intersection of 44th Street and 8th Avenue, analysis of the future conditions was conducted. The resulting LOS and delay for the future conditions are presented in Table 10.

Table 10 – LOS Analysis for 2026 Future Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
44th Street and 8th Avenue (Signalized)				
EB 44th Street	C	30.1	C	30.5
WB 44th Street	C	20.6	D	36.4
NB 8th Avenue	D	41.7	E	67.5
SB 8th Avenue	E	66.7	D	49.4
Overall	C	34.5	D	45.2
8th Avenue and Bricks Georgetown Driveway/Office Driveway (EB/WB Stop-Controlled)				
EB Bricks Georgetown Driveway	C	20.6	B	13.6
WB Office Driveway	E	39.8	D	26.6
NB 8th Avenue	A	0.4	A	0.3
SB 8th Avenue	A	0.1	A	0.1
Overall	A	1.4	A	0.9
8th Avenue and Residential Driveway (WB Stop-Controlled)				
WB Residential Driveway	B	13.8	C	17.7
NB 8th Avenue	Free		Free	
SB 8th Avenue	A	0.2	A	0.1
Overall	A	0.1	A	0.1
44th Street and Medical-Dental Office Driveway (NB Stop-Controlled)				
EB 44th Street	Free		Free	
WB 44th Street	A	0.1	A	0.0
NB Medical-Dental Driveway	B	11.0	B	10.9
Overall	A	0.0	A	0.1

Further analysis of the LOS results for future conditions revealed that several movements, approaches, and intersections are expected to continue to operate at an acceptable LOS D or better during both the a.m. and p.m. peak hours, with the following exceptions:

- EB 44th Street and 8th Avenue:
  - The SB right movement and SB approach continues to operate at LOS E during the a.m. peak hour.
  - The EB left movement, WB left movement, and NB approach continue to operate at LOS E during the p.m. peak hour.
  - The NB left movement continues to operate at LOS F during the p.m. peak hour.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For future conditions, the EB right turn experiences a queue of 235 feet (9 vehicles) in the a.m. peak hour, and 123 feet (5 vehicles) in the p.m. peak hour which is longer than the existing right turn lane length of approximately 110 feet. During the p.m. peak hour, the NB left movement experiences a queue of 338 feet (14 vehicles), which is longer than the existing left turn lane of approximately 160 feet. The NB left turn queue length extends into the two-way center left turn lane which extends past the existing Bricks Georgetown driveway. These queues dissipate in one signal cycle length and occur infrequently during the peak hour. The average queue experienced by the NB left movement is 265 feet (11 vehicles), which is less than the distance from the stop bar to the Bricks Georgetown driveway. This allows the low volume of left turns to utilize the two-way left turn lane into the proposed office driveway. These queues dissipate in one signal cycle.

At the proposed office driveway on 8th Avenue, the 95th percentile queue for SB left turns into the driveway is 20 feet (1 vehicle) and 17 feet (1 vehicle) during the a.m. and p.m. peak hours, respectively. The 95th percentile queue for vehicles exiting the driveway is 18 feet (1 vehicle) and 58 feet (2 vehicles) during the a.m. and p.m. peak hours, respectively.

At the proposed residential driveway on 8th Avenue, the 95th percentile queue for SB left turns into the driveway is 4 feet (1 vehicle) and 18 feet (1 vehicle) during the a.m. and p.m. peak hours, respectively. The 95th percentile queue for vehicles exiting the driveway is 31 feet (1 vehicle) and 26 feet (1 vehicle) during the a.m. and p.m. peak hours, respectively.

At the proposed medical/dental office driveway on 44th Street, the 95th percentile queue for WB left turns into the driveway is 4 feet (1 vehicle) and 7 feet (1 vehicle) during the a.m. and p.m. peak hours, respectively. The 95th percentile queue for vehicles exiting the driveway is 14 feet (1 vehicle) and 34 feet (1 vehicle) during the a.m. and p.m. peak hours, respectively.

See Appendix 7 for the future conditions LOS reports and queueing analysis reports.

5.3 2026 Future Improvement Conditions Traffic Analysis

As discussed in section 3.2, retiming of the traffic signal splits was recommended to improve operations at the intersection of 44th Street and 8th Avenue. Similarly, optimizing the traffic signal splits while maintaining the existing cycle length is recommended in the 2026 Future Improvement Conditions.

The resulting LOS and delay for the background improvement conditions are provided in Table 11.

Table 11 – LOS Analysis for 2026 Background Improvement Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
44th Street and 8th Avenue (Signalized)				
EB 44th Street	C	31.5	C	33.6
WB 44th Street	C	21.0	D	41.0
NB 8th Avenue	D	41.5	D	47.7
SB 8th Avenue	D	42.8	D	50.0
Overall	C	32.5	D	41.5

Further analysis of the LOS results for background conditions revealed that most movements, approaches, and intersections are expected to continue to operate at an acceptable LOS D or better during both the a.m. and p.m. peak hours, with the following exceptions:

- 44th Street and 8th Avenue:
  - The EB left movement and WB left movement would continue to operate at LOS E during the p.m. peak hour.
  - The SB right movement would operate at LOS E during the p.m. peak hour.
  - The NB left movement would improve to a LOS E during the p.m. peak hour.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For future improvement conditions, the EB right turn experiences a 95th percentile queue of 256 feet (10 vehicles) in the a.m. peak hour, and 131 feet (5 vehicles) in the p.m. peak hour, which is longer than the existing right turn lane length of approximately 110 feet. During the p.m. peak hour, the NB left movement experiences a 95th percentile queue of 321 feet (13 vehicles), which is longer than the existing left turn lane of approximately 160 feet. The NB left turn queue length extends into the two-way center left turn lane which extends past the existing Bricks Georgetown driveway. These queues dissipate in one signal cycle length and occur infrequently during the peak hour. The average queue experienced by the NB left movement is 239 feet (10 vehicles), which is less than the distance from the stop bar to the Bricks Georgetown driveway. This allows the low volume of left turns to utilize the two-way left turn lane into the proposed office driveway. See Appendix 8 for background improvement conditions LOS reports and queueing analysis reports.

6.0 Findings and Recommendations

The analyses conducted for this TIS indicate the proposed development will not result in any significant operational impacts to the adjacent road network with the recommended improvements. The proposed site access configuration is appropriate and will acceptably facilitate site ingress and egress.

Based on the findings of the HCM operational analyses and site traffic generation, Table 12 includes the recommended improvements to the study intersections to mitigate traffic operation impacts.

Table 12 – Recommended Improvements

Intersection	Background	Future
44th Street and 8th Avenue	• Optimize traffic signal splits (keeping existing cycle length).	

*Figures and Tables available upon request.