Volume 1 – Traffic Impact Analysis

2727 Turtle Creek Boulevard

Dallas, Texas

June 18, 2018

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Traffic Impact Analysis

2727 Turtle Creek Boulevard Dallas, Texas

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EXECUTIVE SUMMARY

The proposed 2727 Turtle Creek development is located at 2727 Turtle Creek Boulevard in Dallas, TX. This study is intended to identify traffic generation characteristics, identify potential traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The site as proposed will replace the vacant office with 310 multifamily units, 40 condominium units, a 250-key hotel, and 300,000 SF office. The analysis volumes in the TIA will also cover other alternative development totals with lower traffic totals, such as cases where residential units replace office space, or where condo units replace hotel rooms.

The following existing intersections were selected to be part of this study:

- Turtle Creek Boulevard at Maple Avenue:
- Turtle Creek Boulevard at Cedar Springs Road;
- Turtle Creek Boulevard at Fairmount Street;
- Enid Street at Fairmount Street:
- Turtle Creek Boulevard at Mansion Driveway:
- Turtle Creek Boulevard at Gillespie Street; and
- Sale Street at Gillespie Street.

The analysis also included the following proposed driveways:

- Drive 1, which is a full-access driveway to Turtle Creek Boulevard;
- Drive 2, which is a full-access driveway to Turtle Creek Boulevard;
- Drive 3, which is a full-access driveway to Turtle Creek Boulevard;
- Drive 4, which is a full-access driveway to the intersection of Enid Street and Brown Street; and
- Drive 5, which is a full-access driveway to Gillespie Street, directly opposite Sale Street.

In this report, Drive 2 represents both the driveway serving the central street of the development and the nearby small driveway serving the condominium residents. Similarly, Drive 3 represents the driveway serving the multifamily building and the adjacent fire lane access driveway on the eastern site boundary. Combining driveways for the analysis will result in a conservative analysis of conditions.

Traffic operations were analyzed at the study intersections for existing volumes, 2020 and 2025 background traffic volumes, and 2020 and 2025 background plus site-generated traffic volumes. The future years correspond to the expected buildout year of the site and a key future study year. Conditions were analyzed for the weekday AM and PM peak hours.

The background traffic conditions included existing traffic with compound growth rates, plus explicit modeling of the following development in the vicinity:

 3000 Turtle Creek site, a development consisting of 170,000 SF office located on the westbound approach to the intersection of Turtle Creek Boulevard and Cedar Springs Road.

The proposed 2727 Turtle Creek development is expected to generate approximately 653 new weekday AM peak hour one-way trips and 662 new weekday PM peak hour one-way trips at buildout. The distribution of the site-generated traffic volumes onto the street system was



based on the surrounding roadway network, existing traffic patterns, and the project's proposed access locations.

Based on the analysis presented in this report, the proposed 2727 Turtle Creek development, can be successfully incorporated into the surrounding roadway network. The proposed site driveways provide the appropriate level of access for the development. The site-generated traffic does not significantly affect the existing vehicle traffic operations.

Each approach leg of the intersection of Fairmount Street and Turtle Creek Boulevard currently has an approximate width of 40'. Each of those legs currently operates as a one-lane approach. The intersection delays are increasing with the existing traffic in the neighborhood, and the site traffic adds some further additional delay. It is recommended that the intersection be restriped to provide two lanes for each of the approaches. This small change will restore favorable conditions for all approaches to the four-way stop-controlled intersection. When the restriping is performed, the opportunity should be used to also add marked pedestrian crossings.

May 15, 2018 Update Note:

This analysis and report has been updated throughout to reflect the current site plan and address comments from the TIA review dated March 23, 2018. The comments and the responses to each comment are included in the first section of the **Appendix**.

June 18, 2018 Update Note:

Section III.C Traffic Equivalency Table has been added to direct how the land uses of the district can be modified within the traffic limits set by this analysis.



I. INTRODUCTION

A. Purpose

Kimley-Horn was retained to conduct a Traffic Impact Analysis (TIA) of future traffic conditions associated with the development of the 2727 Turtle Creek Hotel site located at 2727 Turtle Creek Boulevard. A site vicinity map is provided as **Exhibit 1**. **Exhibit 2** shows the proposed conceptual site plan. This study is intended to identify traffic generation characteristics, identify potential traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts.

B. Methodology

Traffic operations were analyzed at the study intersections for AM and PM peak hours for the following scenarios.

- 2017 existing traffic
- 2020 background traffic
- 2020 background plus site traffic
- 2025 background traffic
- 2025 background plus site traffic

The capacity analyses were conducted using the *Synchro*TM software package and its associated *Intersection* reports for signalized intersections and *Highway Capacity Manual* reports for unsignalized intersections.

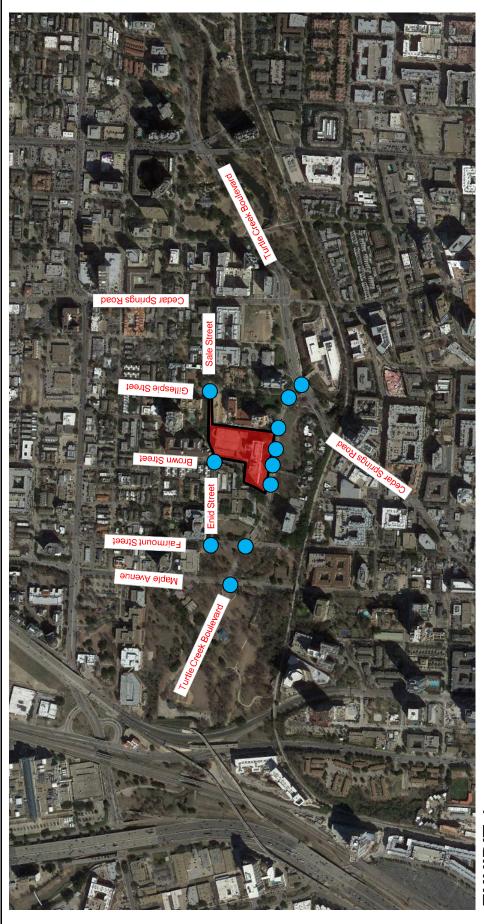
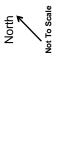
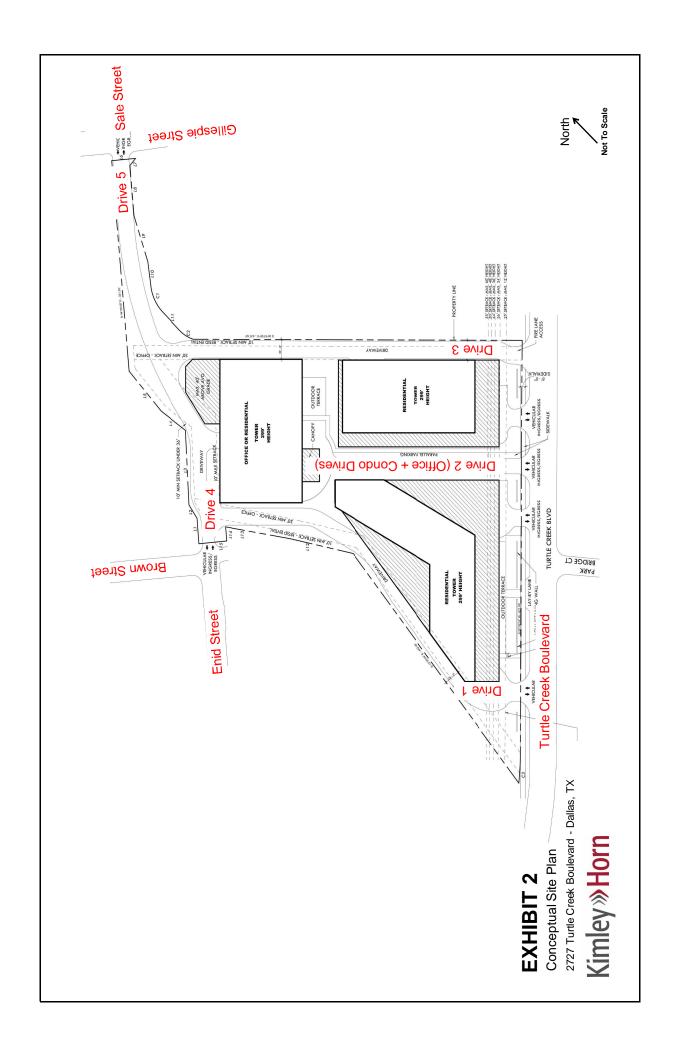


EXHIBIT 1Vicinity Map
2727 Turtle Creek Boulevard - Dallas, TX











II. EXISTING AND FUTURE AREA CONDITIONS

A. Roadway Characteristics

The following signalized intersections were evaluated as part of this study:

- Turtle Creek Boulevard at Maple Avenue
- Turtle Creek Boulevard at Cedar Springs Road

The following unsignalized intersections were evaluated as part of this study:

- Turtle Creek Boulevard at Fairmount Street
- Enid Street at Fairmount Street
- Turtle Creek Boulevard at Mansion Driveway
- Turtle Creek Boulevard at Gillespie Street
- Sale Street at Gillespie Street

The major study area roadways are described below.

<u>Turtle Creek Boulevard</u> – is generally a wide two-lane, undivided road that runs northeast-southwest along Turtle Creek in the vicinity of the project. In the project vicinity, Turtle Creek Boulevard has intersections with Maple Avenue, Fairmount Street, Gillespie Street, Cedar Springs Road, and other commercial driveways. On the City of Dallas Thoroughfare Plan, this segment of Turtle Creek Boulevard is not classified. The speed limit near the site is 30 mph. Parking is allowed only on the southern side of the roadway.

<u>Maple Avenue</u> – is a four-lane, undivided road that runs southeast-northwest from the uptown area to the Love Field area. In the project vicinity, Maple Avenue has intersections with the Katy Trail and Turtle Creek Boulevard. On the City of Dallas Thoroughfare Plan, Maple Avenue is designated as a Community Collector, and is planned to not exceed its current four-lane dimensions. The speed limit near the site is 30 mph. The 029 DART bus has a stop just southeast of the intersection of Maple Avenue and Turtle Creek Boulevard.

<u>Fairmount Street</u> – is a two-lane, undivided road that runs southeast-northwest from the uptown area to Oak Lawn Avenue, where it terminates. In the project vicinity, Fairmount Street has intersections with the Katy Trail, Turtle Creek Boulevard, and Enid Street. On the City of Dallas Thoroughfare Plan, Fairmount Street is not classified. The speed limit near the site is 30 mph.

<u>Gillespie Street</u> – is a two-lane, undivided road that runs southeast-northwest from Turtle Creek Boulevard to Oak Lawn Avenue, where it terminates. In the project vicinity, Gillespie Street has intersections with Turtle Creek Boulevard and Sale Street. On the City of Dallas Thoroughfare Plan, Gillespie Street is not classified. The speed limit near the site is assumed to be 30 mph. Parking is allowed only in specific areas of Gillespie Street, and these areas are widened intentionally for parking.



<u>Cedar Springs Road</u> – is a six-lane, divided road that runs north-south from the uptown area to Bowen Street, which is just to the north of the project site. In the project vicinity, Cedar Springs Road has an intersection Turtle Creek Boulevard and passes under the Katy Trail. On the City of Dallas Thoroughfare Plan, Cedar Springs Road is designated as a minor arterial that is not expected to exceed its existing lane geometry. The speed limit near the site is assumed to be 30 mph.

<u>Enid Street</u> – is a two-lane, undivided road that runs northeast-southwest. Enid Street has intersections with Fairmount Street and Brown Street, among other local streets and residential driveways. On the City of Dallas Thoroughfare Plan, Enid Street is not classified. The speed limit near the site is assumed to be 20 mph. Parking is prohibited both sides of Enid Street near the intersection of Enid Street and Brown Street. Between Fairmount Street and Brown Street, parking is generally allowed on Enid Street.

<u>Sale Street</u> – is a two-lane, undivided road that runs northeast-southwest. Sale Street has an intersection with Gillespie Street among other local streets and residential driveways. On the City of Dallas Thoroughfare Plan, Sale Street is not classified. The speed limit near the site is assumed to be 20 mph. Parking is specifically prohibited on the southern side of the roadway. At the intersection of Sale Street and Gillespie Street, parking is prohibited on both sides of Sale Street.

<u>Mansion Driveway</u> – is an existing, two-way driveway that runs serves the Rosewood Mansion Hotel. The Mansion driveway has access to and from Turtle Creek Boulevard.

Exhibit 3 illustrates the existing intersection geometry used for the traffic analysis.

B. Existing Study Area

The property is located within PD 193 and it contains SUP 1293. The property currently contains an unoccupied office building site and parking structure.

C. Proposed Site Improvements

The site as proposed will replace the vacant office with 310 multifamily units, 40 condominium units, a 250-key hotel, and 300,000 SF office.

The site would have access via a total of six driveways, but the two central driveways accessing Turtle Creek Boulevard were combined for the report and are analyzed as Drive 2. The five driveways to be modeled in this analysis are as follows:

<u>Drive 1</u> – would be a full-access driveway to Turtle Creek Boulevard approximately 600 feet east of the intersection of Turtle Creek Boulevard and Fairmount Street. One lane will be constructed for the inbound movement, and one lane will be constructed for the outbound movement. Drive 1 will primarily serve the hotel uses of the proposed site.

<u>Drive 2</u> – would be a full-access driveway to Turtle Creek Boulevard approximately 250 feet east of the intersection of Turtle Creek Boulevard and Drive 1. One lane will be constructed for the inbound movement, and one lane will be constructed for the outbound movement. Drive 2 will primarily serve the office uses of the proposed site. Additionally, Drive 2 in this report includes the traffic from the minor driveway serving the



condominium users. The condominium driveway and the office driveway were consolidated into one driveway for a conservative analysis.

<u>Drive 3</u> – would be a full-access driveway to Turtle Creek Boulevard approximately 150 feet east of the intersection of Turtle Creek Boulevard and Drive 2. One lane will be constructed for the inbound movement, and one lane will be constructed for the outbound movement. Drive 3 will primarily serve the multifamily uses of the proposed site. Drive 3 in this report includes the traffic from the adjacent fire lane which runs north from Turtle Creek Boulevard along the eastern boundary of the site.

<u>Drive 4</u> – would be a full-access driveway that would create a third leg to the existing intersection of Brown Street and Enid Street. There is currently an existing driveway that is similar to the proposed Drive 4, but it appears to not have been a public entrance. One lane will be constructed for the inbound movement, and one lane will be constructed for the outbound movement. Drive 4 will primarily serve the office uses of the proposed site.

The intersection of Drive 4, Brown Street, and Enid Street can be signed in several ways. It could be signed as it exists today, with Enid Street and Brown Street being uncontrolled and the newly constructed Drive 4 being stop-controlled. It could be signed as a formal T-intersection with Brown Street being stop-controlled and Enid Street and Drive 4 being uncontrolled. Lastly, the intersection could be signed as an all-way stop-controlled intersection. This would be most favorable to pedestrians and the surrounding neighbors. In the following analysis, the intersection was modelled as an all-way stop-controlled intersection as this is the most desirable of the three options.

<u>Drive 5</u> – is be a full-access driveway that would create a fourth leg to the existing intersection of Gillespie Street and Sale Street. There is currently an existing driveway that is similar to the proposed Drive 5. One lane will be constructed for the inbound movement, and one lane will be constructed for the outbound movement. Drive 5 will primarily serve the office and multifamily uses of the proposed site.

Intersection sight distance at the proposed driveways are acceptable, with each on flat and relatively straight segments of their respective roadway.



D. Existing Traffic Volumes

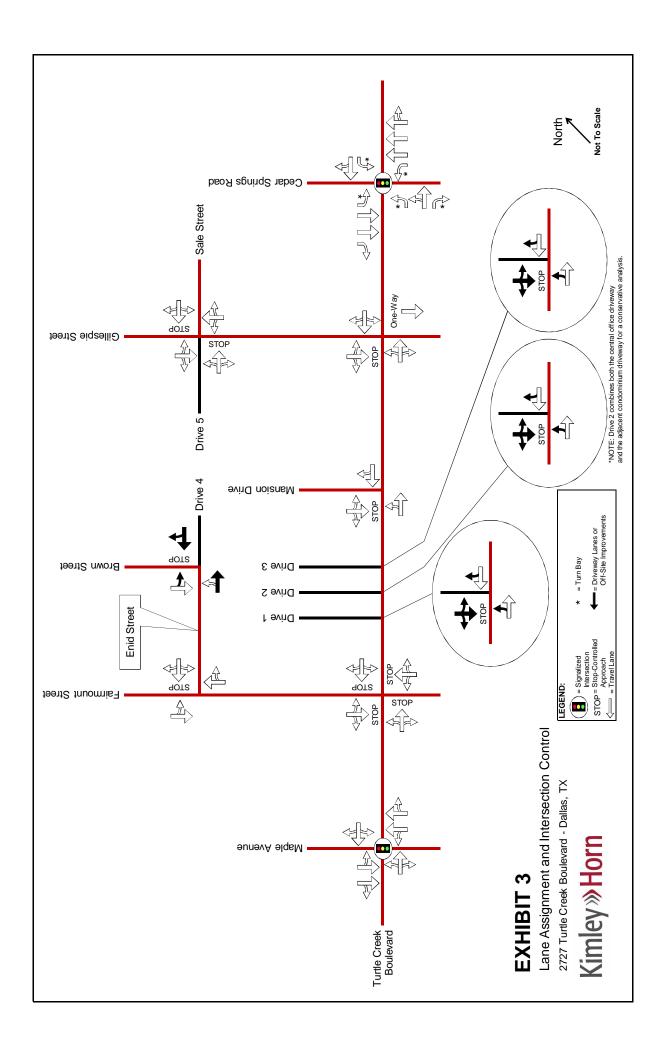
24-hour machine counts were collected adjacent to the site on Turtle Creek Boulevard, Gillespie Street, Brown Street and Enid Street. **Exhibit 4** shows the existing weekday AM and PM peak hour traffic volumes. The raw count sheets are provided in the **Appendix**, as well as a comparison between the 24-hour volumes collected and previous 24-hour counts.

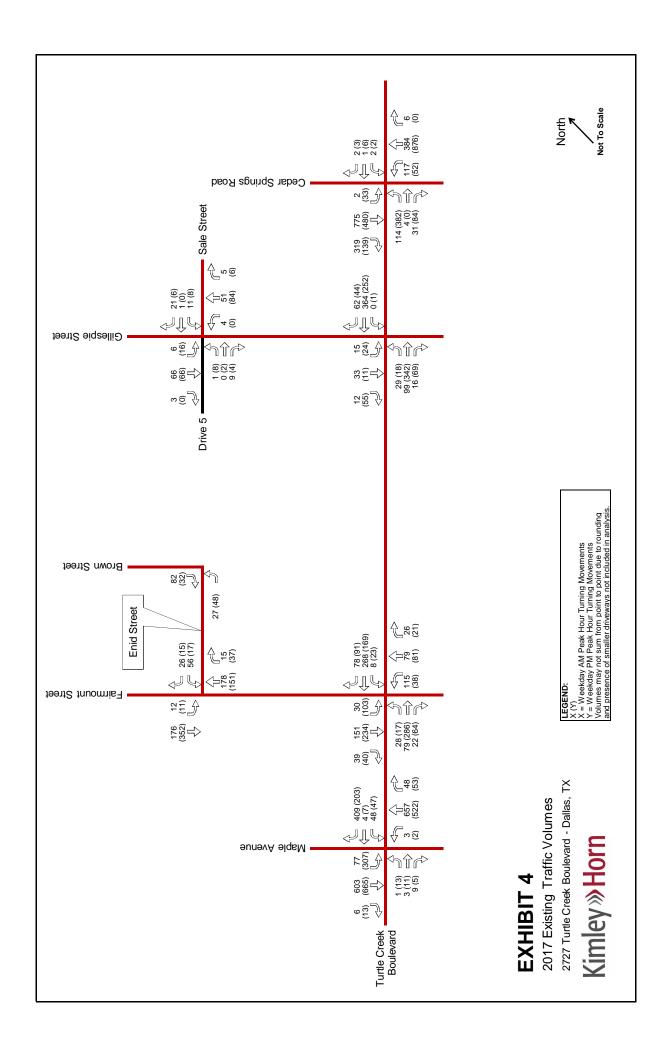
There was construction on Gillespie Street just south of the counting location. While these counts are included below, they may not be indicative of the future traffic volumes associated with the location and were analyzed accordingly. While AM peak hour turning movement counts were able to be collected, PM peak hour turning movement counts were collected by hand and were used instead of the counts taken during construction.

The 24-hour count showed the daily volume on the roadway link as follows:

Turtle Creek Boulevard: 6,316 vehicles per day (vpd)

Gillespie Street: 614 vpdBrown Street: 653 vpdEnid Street: 917 vpd







III. PROJECT TRAFFIC CHARACTERISTICS

A. Site-Generated Traffic

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the 10th edition of *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. The trips indicated are actually one-way trips or *trip ends*, where one vehicle entering and exiting the site is counted as one inbound trip and one outbound trip.

Reductions to the base trip generation estimates are sometimes applied due to internal capture. Internal capture is the tendency for customers or tenants to visit several parts of the mixed-use development in one trip, but be counted twice in the trip generation since the formulae assume the residential, hotel, and office developments are isolated. Internal capture reductions are applied based on the procedures in the 2014 3rd edition of the *Trip Generation Handbook*, a companion manual to *Trip Generation Manual* also published by ITE. The internal capture worksheets are included in the **Appendix**. Internal capture reduces the number of trips leaving the site, and results in a projection of internal trips and external trips.

No reductions were taken for pass-by trips or multimodal use.

The site hotel has approximately 13,000 SF of meeting space, which is less than 10% of the total hotel floor area. The ITE *Trip Generation Manual* specifically notes that meeting space is considered an accessory use to a hotel, and this is especially true when the meeting space makes up a small portion of the floor area like the current site. Therefore, the meeting space in the hotel was not analyzed separately from the hotel. Furthermore, due to the site configuration, any attendees of the meeting space will use the same vehicle paths as the general hotel guests. The hotel drop-off area is significantly larger than comparable hotels around Dallas, providing an ample number of stacking and staging spaces for event vehicles.

The analysis volumes in the TIA will also cover other alternative development totals with lower traffic totals, such as cases where residential units replace office space, or where condo units replace hotel rooms.

Table 1 shows the resulting daily and weekday AM and PM peak hour trip generation for the proposed development, showing new external trips.



Table 1	- Trip	Gene	ration
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		I able I	iiip c	ciiciai	1011						
			ITE	Daily	AN	/ Peak Ho	our	PM Peak Hour			
Land Uses	Amount	Units		One-Way	Or	ne-Way Tr	ips	One-Way Trips			
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL	
Multifamily Housing (High-Rise)	350	Units	222	1,558	26	83	109	77	49	126	
Hotel	250	Rooms	310	2,090	73	62	135	89	64	153	
General Office Building	300,000	SF	710	3,080	385	52	437	63	332	395	
Development Totals											
	Ra	w Trip Generati	on Total:	6,728	484	197	681	229	445	674	
Internal Capture Total: 148 14 14 28 6 6 12											
	Total	Net New Extern	nal Trips:	6,580	470	183	653	223	439	662	

Trip Generation rates based on ITE's Trip Generation Manual, 10th Edition.

B. Trip Generation Comparison

By right, with no zoning change, the 2727 Turtle Creek Development can be built out in a few different scenarios. Comparisons between the desired scenario and the As-of-Right scenarios are analyzed below.

1. Multifamily As-of-Right Scenario

850 multifamily units can be built per the existing zoning. The trip generation is listed below.

Table 2 – Trip Generation for the Multifamily As-of-Right Scenario

Land Uses	Amount Units ITE		Amount Units ITE Code		Daily One-Way		l Peak H e-Way 1			l Peak I e-Way 1	
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL	
Multifamily Housing (High-Rise)	850	Units	222	3,783	63	201	264	187	119	306	
Development Totals											
	otal Net Ne	w Extern	al Trips:	3,783	63	201	264	187	119	306	

Trip Generation rates based on ITE's Trip Generation Manual, 10th Edition.

Table 3 – Comparison between Proposed Zoning and the Multifamily Scenario

Landling		- -	ITE	Daily		Peak F			Peak H				
Land Uses	-		-	-	Codo	- Codo	Codo	One-Way	On	e-Way T	rips	One	e-Way T
			Code		IN	OUT	TOTAL	IN	OUT	TOTAL			
Mixed-Use Master Plan	-	-	Varies	6,580	470	183	653	223	439	662			
Multifamily - As of Right	-	-	222	3,783	63	201	264	187	119	306			
Development Totals													
Difference in External Trips: -2,797 -407 18 -389 -36 -320 -356													
Percent Change from Mixed-Use Plan to	Multifar	nily - As	of Right:	-43%	-87%	10%	-60%	-16%	-73%	-54%			

The comparison between the desired Mixed-Use Master Plan and the Multifamily As-of-Right scenario shows that the multifamily scenario produced fewer trips in the daily, AM peak hour, and PM peak hour.

Internal Capture procedure from ITE Trip Generation Handbook, 3rd Edition (2014).



2. Office As-of-Right Scenario

By right, 928,367 SF office can be built on the development site. The trip generation is shown below, with a comparison between the desired land use plan and the as-of-right scenario to follow.

Table 4 - Trip Generation for the Office As-of-Right Scenario

Land Uses	Amount	Units ITE		Daily One-Way		Peak H e-Way T			Peak le-Way 1	
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL
General Office Building	928,367	SF	710	9,213	1,038	142	1,180	174	913	1,087
Development Totals										
	Nev	v Extern	al Trips:	9,213	1,038	142	1,180	174	913	1,087

Trip Generation rates based on ITE's Trip Generation Manual, 10th Edition.

Table 5 – Comparison between Proposed Zoning and the Office Scenario

Land Uses	-		ITE	Daily One-Way		Peak H e-Way 1			Peak He-Way T	
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL
Mixed-Use Master Plan	-	•	Varies	6,580	470	183	653	223	439	662
Office - As of Right	-	ı	710	9,213	1,038	142	1,180	174	913	1,087
Development Totals	Development Totals									
Difference in External Trips: 2,633 568 -41 527 -49 474 425										
Percent Change from Mixed-Use P									64%	

When compared to the desired Mixed-Use Master Plan, the Office As-of-Right scenario produces many more vehicle trips. The peak hour trips for both peak hours range from 1.5 to 2 times higher in the office scenario.

3. Office Expansion Scenario

If the office currently existing on the site were expanded to make full use of the existing parking garage, the resulting office would be approximately 400,000 SF, which is also allowed by the zoning for the site. The trip generation for this scenario is displayed below and then is compared to the proposed zoning.

Table 6 – Trip Generation for the Office Expansion Scenario

Land Uses	Amount	Units ITE		Daily One-Way		Peak H e-Way T			Peak I e-Way T	
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL
General Office Building	400,000	SF	710	4,071	495	68	563	81	424	505
Development Totals										
	Nev	w Extern	al Trips:	4,071	495	68	563	81	424	505

Trip Generation rates based on ITE's Trip Generation Manual, 10th Edition.



Table 7 -	Comparison	hetween Pr	onosed Zonii	ng and the C	Office Expans	sion Scenario
I able I -	- Collipai isoli	DerMeelli	ODOSCU ZUIII	iiu aiiu tiie C	JIIICE EXDAII:	Sivii Occiialio

Land Uses	-	- ITE		–	- (Daily One-Way		Peak He-Way 1			Peak le-Way T	
			Code	Trips	IN	OUT	TOTAL	IN	OUT	TOTAL						
Mixed-Use Master Plan	-	-	Varies	6,580	470	183	653	223	439	662						
Office Expansion Plan	-	-	710	4,071	495	68	563	81	424	505						
Development Totals																
Difference in External Trips: -2,509 25 -115 -90 -142 -15 -157										-157						
Percent Change from Mixed-Use Plan	to Office	Expans	ion Plan:	-38%	5%	-63%	-14%	-64%	-3%	-24%						

The comparison between the desired Mixed-Use Master Plan and the Office Expansion Plan shows that the Office Expansion Plan produced fewer trips in the daily, AM peak hour, and PM peak hour.

C. Traffic Equivalency Table

Modifications to the land uses within this planned development district are allowed, provided that the floor area or traffic equivalents of the uses originally studied in the traffic impact analysis (TIA) dated June 18, 2018 are not exceeded.

Development in this planned development district must not exceed the sum of the land uses shown in **Table 8**, or traffic equivalents as calculated in accordance with this section:

Table 8 - Base Land Uses for June 18, 2018 TIA

Land Use*	Amount	Unit
Residential Uses	350	Dwelling Units
Lodging Uses	250	Rooms
Office Uses	300,000	Square Feet

^{*}The land use categories correspond to the zoning categories.

The traffic equivalency factors in **Table 9** must be used to calculate permitted floor areas for land uses. The traffic equivalency factors may be used to convert between any of the land uses listed. Each of the land uses is subject to the maximum limit shown in **Table 10**.

Examples: 100 residential dwelling units are equivalent to 60 lodging rooms or 31,300 SF of office uses. 1,000 SF of office floor area is equivalent to 3.2 residential DU or 1.9 lodging rooms.

Table 9 – Traffic Equivalency Factors

One (1.0) Residential		Quantity	Use (ITE Land Use)
Dwelling Unit (ITE Land Use 222)	equivalent to	0.6 Guest Room	Lodging Uses (310)
		313 SF	Office Uses (710)

Table 10 – Maximum Land Uses Per Category

Land Use	Amount	Unit
Residential Uses	900	Dwelling Units
Lodging Uses	500	Rooms
Office Uses	538,047	Square Feet



Table 9 was developed by comparing the average PM peak hour trip generation for each use, using data for PM peak hour of adjacent streets in urban/suburban areas from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition.* Traffic equivalencies for other land uses reflected in the table may be made by citing the data in the latest edition of the *Trip Generation Manual.*

D. Trip Distribution and Assignment

The distribution of the site-generated traffic volumes into and out of the site driveways and onto the street system was based on the area street system characteristics, existing traffic patterns, relative residential density, and the locations of the proposed driveway access to/from the site.

The corresponding inbound and outbound traffic assignment, where the directional distribution is applied using the most probable paths to and from the site, can be found in **Exhibit 5**.

Exhibit 6 shows the resulting site-generated weekday AM and weekday PM peak hour turning movements after multiplying the new external trip generation for each phase by the respective traffic assignment percentages.

E. Other Development Traffic Modelling

Using the same procedure as was used to develop the 2727 Turtle Creek site-generated traffic and distribute that traffic on the roadway network, traffic was developed and distributed for the 3000 Turtle Creek site as well. The distribution and volumes for each of these developments can be found in the **Appendix**.

F. Development of 2020 Background Traffic

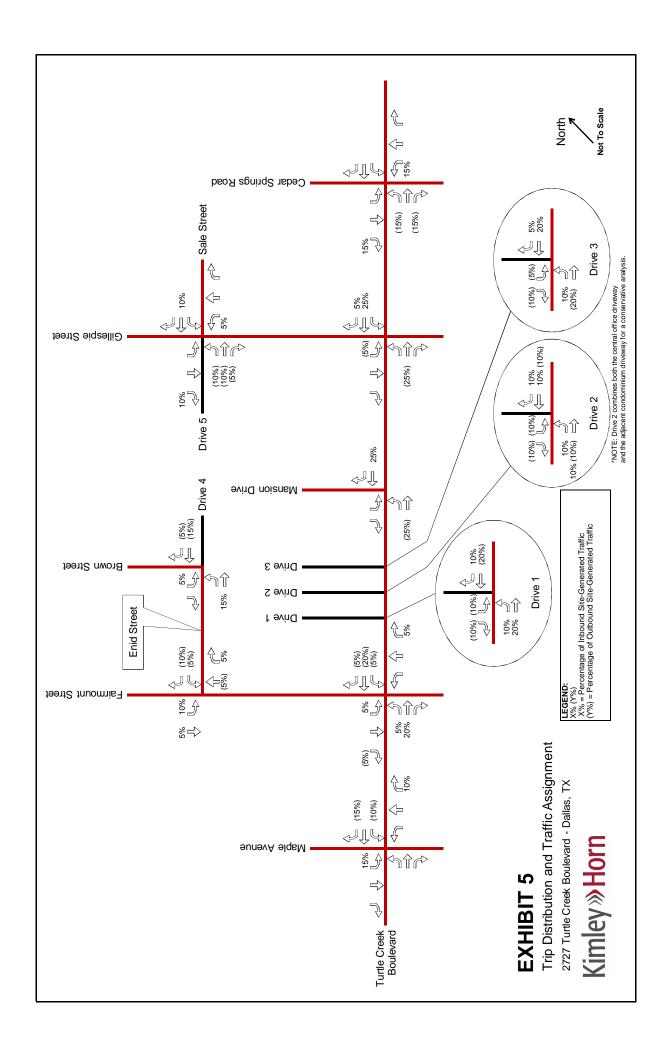
In order to obtain 2020 background traffic, the existing traffic counts and historic counts near the site were compared to find expected growth trends within the study area. Based on the recent growth in the area, an annual growth rate of 1% was assumed for the background traffic through 2020. To calculate the 2020 background traffic, the existing 2017 traffic counts were grown by 1% annually for three years. The resulting 2020 background weekday AM and PM peak hour traffic volumes are shown in **Exhibit 7**.

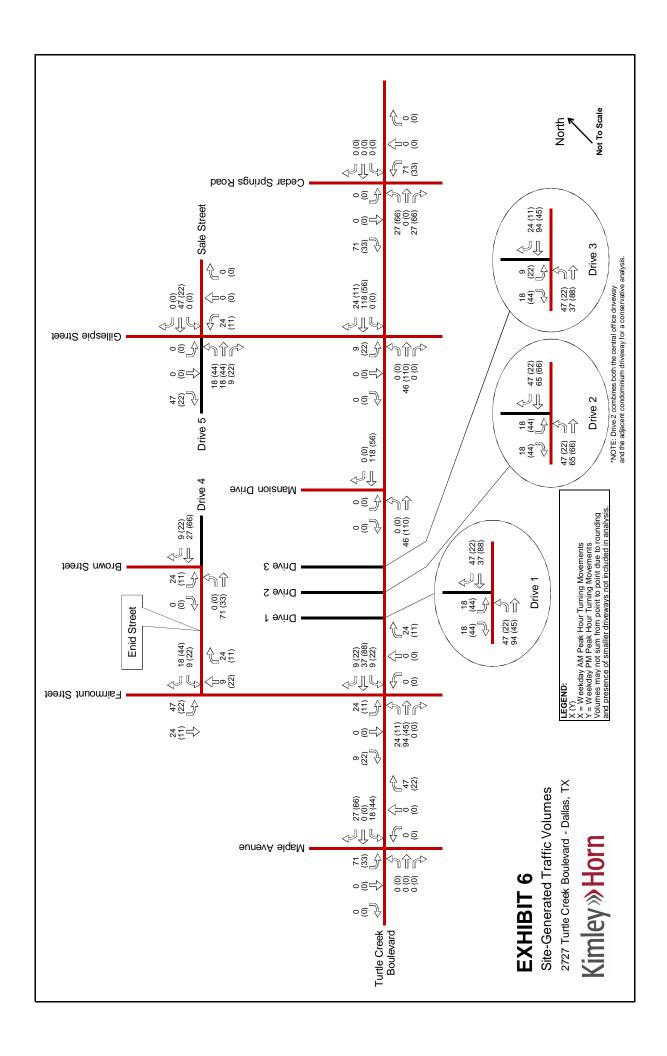
G. Development of 2020 Total Traffic

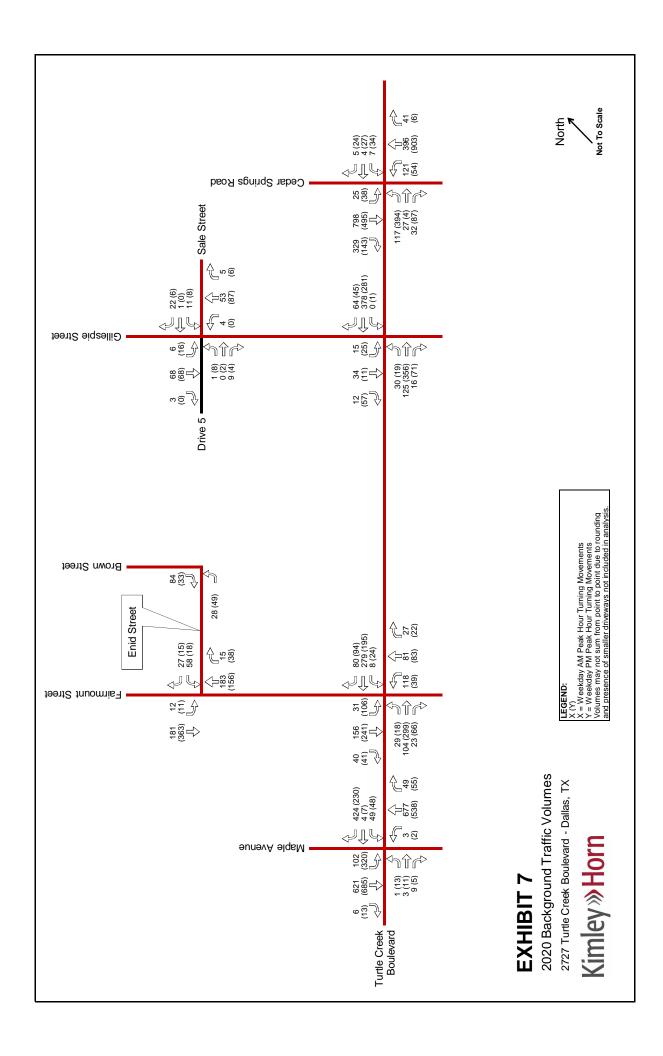
Site traffic volumes were added to the background volumes to represent the estimated total (background plus site-generated) traffic conditions for the 2020 study year after completion of the proposed development. **Exhibit 8** shows the resulting 2020 weekday AM and PM peak hour total traffic volumes.

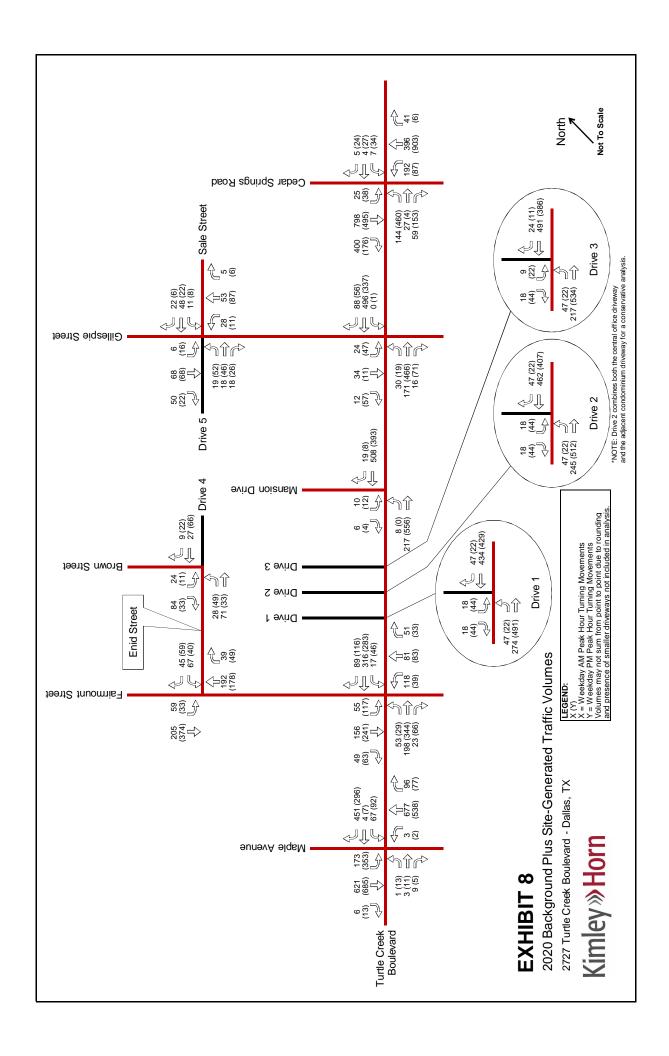
H. Development of 2025 Background and Total Traffic

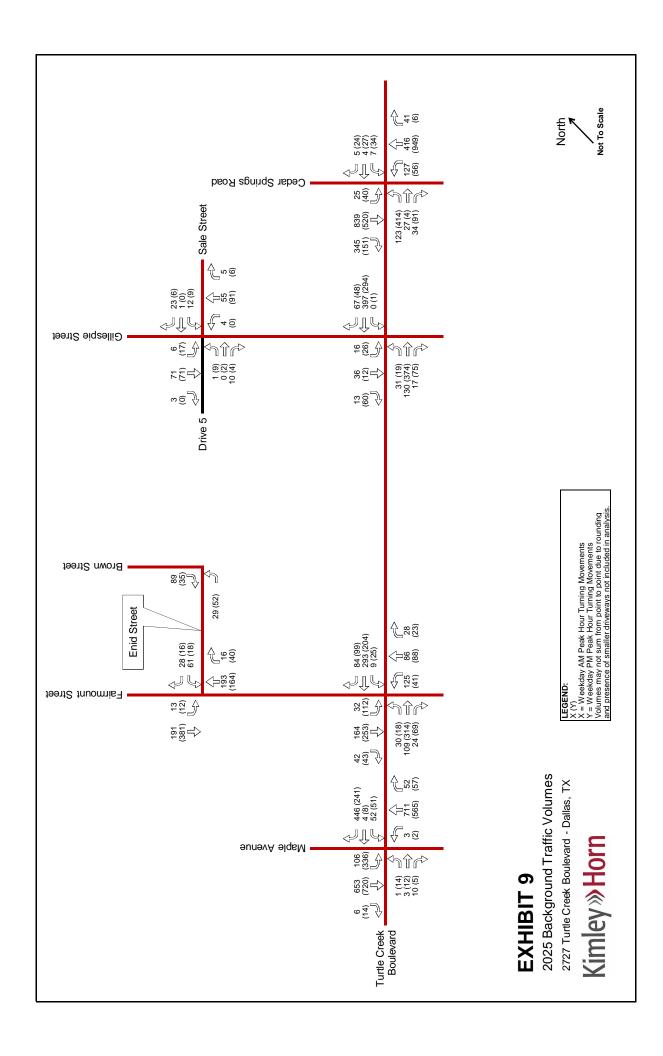
The background and total traffic volumes in the 2025 study year were calculated in a similar manner to the 2020 traffic volumes by adding five years of 1% growth over the 2020 background volumes. **Exhibit 9** shows the resulting 2025 weekday AM and PM peak hour background traffic volumes, and **Exhibit 10** shows the resulting 2025 weekday AM and PM peak hour total traffic volumes after the addition of the sitegenerated traffic.

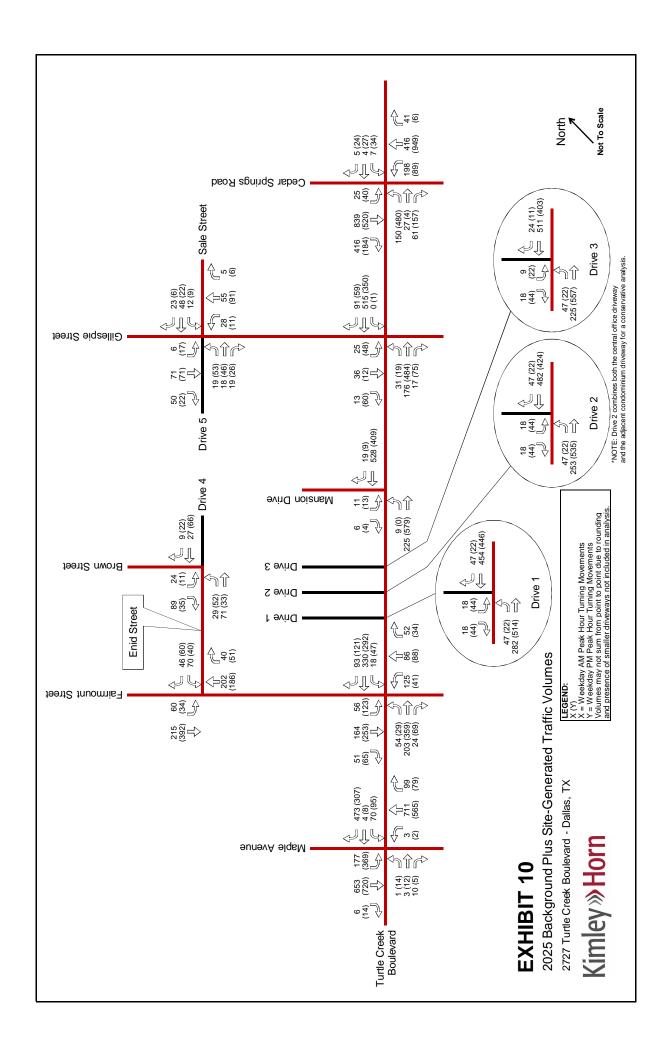














IV. TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn conducted a traffic operations analysis to determine potential capacity deficiencies in the 2017, 2020 and 2025 study years at the study intersections. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual*.

A. Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). **Table 11** shows the definition of level of service for signalized and unsignalized intersections.

Table 11 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
Α	≤10	≤10
В	>10 and ≤20	>10 and ≤15
С	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
Е	>55 and ≤80	>35 and ≤50
F	>80	>50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. For the unsignalized analysis, the level of service (LOS) for a two-way stop-controlled intersection is defined for each movement. Unlike signalized intersections which define LOS for each approach and for the intersection as a whole, LOS for two-way stop-controlled intersections is not defined as a whole.

Signal timings for the signalized intersections are taken from timings provided by the City that are scheduled to be implemented in 2018. In the future scenarios, timing adjustments were made to accommodate changes in traffic volumes due to background growth and site traffic, replicating how City staff will periodically review signal operations in the future.

Calculations for the level of service at the key intersections identified for study are provided in the **Appendix**. The analyses assumed the lane geometry and intersection control shown in **Exhibit 3**.

B. Analysis Results

Table 12 and **Table 13** show the intersection operational results for the weekday AM and PM peak hours, respectively.



Table 12 - Traffic Operational Results - Weekday AM Peak Hour

	Table 12	Haili	o opera	I	.couita	III	AUY AIVI	. can ill	, ui		
INTERSECTION	APPROACH	2017 Background Traffic		2020 Background Traffic		2020 Background plus Site Traffic		2025 Background Traffic		2025 Background plus Site Traffic	
		AM Pea	ak Hour	AM Pea	AM Peak Hour		AM Peak Hour		AM Peak Hour		ak Hour
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
	EB	6.2	Α	6.2	Α	6.2	Α	6.5	Α	6.5	Α
	WB	39.2	D	44.2	D	55.0	D	59.7	Е	75.6	Е
Maple Avenue @ Turtle Creek Boulevard	NB	6.3	Α	6.6	Α	6.7	Α	6.8	Α	6.9	Α
Tartie Greek Bodievard	SB	8.6	Α	9.5	Α	12.3	В	9.9	Α	13.4	В
	Overall	15.7	В	17.3	В	21.3	С	21.6	С	27.2	С
	EB	48.0	D	49.3	D	45.5	D	48.7	D	45.8	D
	WB	39.4	D	37.9	D	36.3	D	37.4	D	36.1	D
Cedar Springs Road @ Turtle Creek Boulevard	NB	3.0	Α	4.4	Α	6.6	Α	4.7	Α	7.2	Α
Turile Oreck Bodievard	SB	4.2	Α	4.7	Α	5.1	Α	5.0	Α	5.4	Α
	Overall	7.4	Α	8.7	Α	10.0	Α	8.9	Α	10.3	В
	NB*	12.8	В	13.8	В	19.9	С	14.9	В	23.6	С
_	EB*	10.9	В	11.9	В	20.9	С	12.5	В	24.6	С
Fairmount Street @ Turtle Creek Boulevard	WB*	16.0	С	18.2	С	38.6	Е	20.7	С	55.5	F
Turile Oreck Bodievard	SB*	12.5	В	13.5	В	20.9	С	14.5	В	24.1	С
	Overall	13.7	В	15.1	С	26.8	D	16.6	С	35.1	Е
Fairmount Street @	WB*	11.5	В	11.7	В	13.6	В	12.0	В	14.0	В
Enid Street	SBL	7.7	Α	7.7	А	7.9	Α	7.7	Α	7.9	Α
Drive 1 @	EBL	-	-	-	-	8.6	Α	-	-	8.7	Α
Turtle Creek Boulevard	SB*	-	-	-	-	15.3	С	-	-	15.8	С
Drive 2 @	EBL	-	-	-	-	8.7	Α	-	-	8.8	Α
Turtle Creek Boulevard	SB*	-	-	-	-	15.5	С	-	-	15.9	С
Drive 3 @	EBL	-	-	-	-	8.8	Α	-	-	8.8	Α
Turtle Creek Boulevard	SB*	-	-	-	-	14.1	В	-	-	14.5	В
	EB*	-	-	-	-	7.9	Α	-	-	7.9	Α
Brown Street @ Drive 4 / Enid Street	WB*	-	-	-	-	7.3	Α	_	-	7.3	Α
Brive 47 Erila Otrect	EB*	-	-	-	-	7.4	Α	-	-	7.1	Α
Mansion Drive @	EBL	8.2	Α	8.3	Α	8.6	Α	8.3	Α	8.7	Α
Turtle Creek Boulevard	SB*	12.2	В	12.6	В	14.5	В	13.0	В	15.1	С
Gillespie Street @	EBL	8.4	Α	8.5	Α	9.0	Α	8.5	Α	9.1	Α
Turtle Creek Boulevard	SB*	12.5	В	12.9	В	16.0	С	13.3	В	16.6	С
	NBL	7.4	Α	7.4	Α	7.5	Α	7.4	Α	7.5	А
Gillespie Street @	EB*	8.8	Α	8.8	Α	10.6	В	8.8	Α	10.6	В
Drive 5 / Sale Street	WB*	9.1	Α	9.1	Α	10.9	В	9.1	Α	10.9	В
	SBL	7.3	А	7.3	Α	7.3	Α	7.4	Α	7.4	А
	* Stop-Controlled				Signa	alized	Unsign	nalized			

⁻ No movements in Time Period



Table 13 - Traffic Operational Results - Weekday PM Peak Hour

INTERSECTION	APPROACH	2017 Background Traffic PM Peak Hour DELAY		2020 Background Traffic PM Peak Hour DELAY		2020 Background plus Site Traffic PM Peak Hour DELAY		2025 Background Traffic PM Peak Hour DELAY		2025 Background plus Site Traffic PM Peak Hour DELAY	
		(SEC/VEH)	LOS	(SEC/VEH)	LOS	(SEC/VEH)	LOS	(SEC/VEH)	LOS	(SEC/VEH)	LOS
	EB	40.2	D	40.1	D	34.1	С	40.3	D	34.3	С
Maple Avenue @	WB	27.2	С	26.3	С	29.2	С	26.4	С	32.3	С
Turtle Creek Boulevard	NB	2.4	Α	2.5	Α	4.0	Α	2.6	Α	4.2	Α
	SB	3.8	Α	4.2	Α	8.0	Α	5.1	Α	9.5	Α
	Overall	7.6	Α	7.8	Α	11.6	В	8.4	Α	12.9	В
	EB	55.3	E	69.2	E	65.4	E	64.6	E	72.0	E
	WB	31.7	С	38.5	D	37.3	D	37.1	D	37.8	D
Cedar Springs Road @ Turtle Creek Boulevard	NB	7.1	Α	8.1	Α	8.9	Α	8.7	Α	9.1	Α
Tartie Greek Bodievard	SB	4.9	Α	5.3	Α	6.0	Α	5.9	Α	6.3	Α
	Overall	17.0	В	21.2	С	23.0	С	20.6	С	24.7	С
	NB*	14.1	В	15.3	С	21.2	С	17.3	С	22.8	С
	EB*	26.3	D	32.9	D	94.7	F	47.5	Е	112.4	F
Fairmount Street @ Turtle Creek Boulevard	WB*	18.9	С	23.5	С	96.5	F	30.6	D	111.8	F
Turtie Creek Boulevaru	SB*	29.0	D	35.9	Е	81.1	F	52.3	F	101.4	F
	Overall	23.9	С	29.4	D	83.5	F	41.2	Е	99.4	F
Fairmount Street @	WB*	11.7	В	11.8	В	13.0	В	12.0	В	13.4	В
Enid Street	SBL	7.7	А	7.7	А	7.8	Α	7.7	Α	7.9	Α
Drive 1 @	EBL	-	-	-	-	8.4	Α	-	-	8.5	Α
Turtle Creek Boulevard	SB*	-	-	-	-	19.6	С	-	-	20.7	С
Drive 2 @	EBL	-	-	-	-	8.4	Α	-	-	8.4	Α
Turtle Creek Boulevard	SB*	-	-	-	-	19.4	С	-	-	20.5	С
Drive 3 @	EBL	-	-	-	-	8.3	А	-	-	8.3	Α
Turtle Creek Boulevard	SB*	-	-	_	-	15.6	С	-	-	16.2	С
	EB*	-	-	-	-	7.7	А	-	-	7.8	Α
Brown Street @	WB*	-	-	-	-	7.4	Α	-	-	7.4	Α
Drive 4 / Enid Street	EB*	-	-	-	-	7.1	Α	-	-	7.2	Α
Mansion Drive @	EBL	-	-	-	-	-	-	-	-	-	-
Turtle Creek Boulevard	SB*	14.4	В	15.0	В	17.7	С	15.8	С	18.7	С
Gillespie Street @	EBL	8.0	Α	8.1	Α	8.3	Α	8.1	Α	8.3	Α
Turtle Creek Boulevard	SB*	12.4	В	12.9	В	17.3	С	13.3	В	18.1	С
	NBL	-	-	-	-	7.4	А	-	-	7.4	Α
Gillespie Street @	EB*	9.7	Α	9.7	Α	11.4	В	9.8	Α	11.5	В
Drive 5 / Sale Street	WB*	9.5	А	9.5	А	10.8	В	9.6	Α	10.9	В
	SBL	7.4	Α	7.4	Α	7.4	Α	7.5	Α	7.5	Α
	* Stop-Controlled					alized		nalized			

^{*} Stop-Controlled Approach

⁻ No movements in Time Period



C. 2017 Existing Traffic Operations

The analysis of the 2017 existing traffic operations shows the signalized intersections operating with moderate delay in both peak hours. Both the intersection of Maple Avenue and Turtle Creek Boulevard and that of Cedar Springs Road and Turtle Creek Boulevard operate at LOS B or better during the both peak hours.

All but three of the approaches to the unsignalized study intersections operate at LOS B or better. The westbound approach to the intersection of Fairmount Street and Turtle Creek Boulevard operates at LOS C during both peak hours. The east- and southbound approaches to the same intersection operate at LOS D during the PM peak hour. Overall, the intersection of Fairmount Street and Turtle Creek Boulevard operates at LOS B and C during the AM and PM peak hours, respectively.

D. 2020 Background Traffic Operations

The signalized intersections experience more delay with three years of background growth and the traffic from the 3000 Turtle Creek development added to the network. The intersection of Cedar Springs Road and Turtle Creek Boulevard changes from LOS B to C during the PM peak hour but remains at LOS A during the AM peak hour.

The unsignalized intersections experience added delays with the additional years of background traffic growth as well, with two changes in level of service. There are no changes in level of service during the AM peak hour. During the PM peak hour, the northbound approach of the intersection of Fairmount Street and Turtle Creek Boulevard changes from LOS B to C, and the southbound approach changes from LOS D to E. The intersection as a whole changes from LOS B to C during the AM peak hour and from LOS C to D during the PM peak hour.

E. 2020 Background Plus Site-Generated Traffic Operations

The addition of the site-generated traffic to the 2020 background traffic results in some additional delay at the existing signalized intersections, with both intersections remaining in the favorable range of operations. The intersection of Maple Avenue and Turtle Creek Boulevard changes from LOS B to C and from LOS A to B during the AM and PM peak hours, respectively.

With the addition of site-generated traffic, there are some changes in level of service in both peak hours at the unsignalized intersections. Other than the intersection of Turtle Creek Boulevard and Fairmount Street, all unsignalized intersections operate within favorable conditions. During the AM peak hour, the westbound approach to the intersection of Fairmount Street and Turtle Creek Boulevard changes from LOS C to E while the other three approaches change from LOS B to C. During the PM peak hour, the east-, west-, and southbound approaches to the intersection of Fairmount Street and Turtle Creek Boulevard change from LOS D to F, LOS C to F, and LOS E to F, respectively. While these conditions are not failures due to the delay remaining reasonable for an urban area, a mitigation analysis is included later in this report for the intersection of Fairmount Street and Turtle Creek Boulevard.

The site driveways all operate at LOS C or better during both peak hours.

The Mansion Drive is unaffected in either peak hour, operating at LOS C or better.



F. 2025 Background Traffic Operations

The analysis of the 2025 Background Traffic operations shows the signalized intersections have only one change in level of service with the addition of five more years of background traffic growth. The intersection of Maple Avenue and Turtle Creek Boulevard changes from LOS B to C during the AM peak hour, and there are no changes during the PM peak hour.

For the unsignalized approaches of the study intersections, there are some changes in level of service with the additional background traffic. There are no changes in level of service during the AM peak hour, but during the PM peak hour the east-, west-, and southbound approaches to the intersection of Fairmount Street and Turtle Creek Boulevard change from LOS D to E, LOS C to D, and LOS E to F, respectively. The intersection as a whole changes from LOS D to E. The southbound approach of the intersection of the Mansion Drive and Turtle Creek Boulevard changes from LOS B to C.

2025 Background Plus Site-Generated Traffic Operations

The addition of the site-generated traffic to the 2025 background traffic results in some additional delay at the signalized intersections, with both intersections remaining in the favorable range of operations. The given signalization and lane usage at the signalized study intersections is appropriate for the projected buildout volumes.

There are some changes in level of service in both peak hours at the unsignalized intersections with the addition of site-generated traffic. Other than the intersection of Turtle Creek Boulevard and Fairmount Street, all unsignalized intersections operate within favorable conditions. During the AM peak hour, the westbound approach to the intersection of Fairmount Street and Turtle Creek Boulevard changes from LOS C to E, and each of the other approaches changes from LOS B to C. The intersection as a whole changes from LOS C to E.

During the PM peak hour, the east- and westbound approaches to the intersection of Fairmount Street and Turtle Creek Boulevard change from LOS E to F and LOS D to F, respectively. The intersection as a whole changes from LOS E to F, and a mitigation analysis is included later in this report.

The site driveways all operate favorably at LOS C or better during both peak hours.

The Mansion Drive is unaffected in either peak hour, operating at LOS C or better.



H. Link Volume Analysis

The link capacity analysis examines the operating conditions of roadway links rather than intersections, using the daily and peak hour volumes passing a fixed point. The operating condition is defined by the ratio of link volume to link capacity, or V/C. The V/C of the different roadway links that would be impacted by the proposed development's traffic was calculated for the 2017 existing traffic, 2020 background and background plus site traffic scenarios. The daily link capacity for each roadway is taken from the NCTCOG model capacity volumes, with a capacity of 475 vphpl for an undivided collector such as Turtle Creek Boulevard, Fairmount Street, Gillespie Street, and Enid Street.

The link analyses, displayed below in **Table 14**, show that Turtle Creek Boulevard currently operates at LOS D. With the addition of background traffic, which includes the 3000 Turtle Creek development and a 1% growth rate, Turtle Creek Boulevard remains at LOS D for both the 2020 and 2025 background scenarios. After site-generated traffic is added to the network, Turtle Creek Boulevard changes to LOS E in both the 2020 and 2025 total traffic scenarios. Turtle Creek Boulevard is here categorized as a two-lane collector road due to its classification in the City Thoroughfare Plan. Turtle Creek Boulevard has sufficient lane width that it acts like a three-lane road when a vehicle desires to make a left-turn – drivers have enough room to navigate around the turning driver in a safe manner. Because of this, Turtle Creek could be categorized as a three-lane roadway with a center two-way left-turn lane, which would significantly increase the theoretical capacity of the boulevard. Therefore, though LOS E was obtained through this analysis, Turtle Creek does not have a capacity problem with the addition of site-generated traffic.

Gillespie Street currently operates at LOS A/B and continues to do so through the 2025 background plus site-generated traffic scenario. Gillespie Street was under construction when the 24-hour counts were taken. Therefore, the 2009 count collected by TxDOT was used for this analysis. To obtain a 2017 value, the 2009 count was grown by 1% for 8 years.

Enid Street and Brown Street currently operate at LOS A/B and do so through the 2025 background plus site-generated traffic scenario.



Table 14 - Link Operational Results

Road	dway Link	201	2017 Existing 2020 Background					2020 Site-G	2020 Site-Generated			2020 Background+Site		
From	To	Volume	V/C Ratio	LOS	Assignment	Daily	Total	V/C Ratio	108	Assignment	Daily		V/C Ratio	
		Volume	V/C Rail0	LU3	Assignment	Volume	Volume	V/C Rail0	LUS	Assignment	Volume	Volume	V/C Ratio	103
Turtle Creek Boulev														
Fairmount Street	Mansion Driveway	6,316	0.66	D	3000 Turtle Creek Site	178	6,685	0.70	D	30.0%	1,974	8,659	0.91	Е
Volume Limit 2 Lanes :	= 9.500				10.0%	1% growt	h for 3 yea	are						
Gillespie Street	_ 0,000					170 growt	irioi o yce	213						
Welborn Street	Oak Lawn Avenue	1,538	0.16	A/B	3000 Turtle Creek Site	0	1.585	0.17	A/B	12.5%	823	2.408	0.25	A/B
		See Note			0.0%		,					,		
Volume Limit 2 Lanes :	= 9,500					1% growt	h for 3 yea	ars						
Brown Street														
Enid Street	Hood Street	653	0.07	A/B	3000 Turtle Creek Site	0	673	0.07	A/B	5.0%	329	1,002	0.11	A/B
Volume Limit 2 Lanes :	- 0.500				0.0%	10/ aroust	h for 3 yea	aro.						
Enid Street	= 9,300					1% growt	ii ioi 3 yea	115						
Fairmount Street	Brown Street	917	0.10	A/B	3000 Turtle Creek Site	0	945	0.10	A/B	15.0%	987	1,932	0.20	A/B
					0.0%	Ü	0.0	00	,,,,	10.070	00.	1,002	0.20	
Volume Limit 2 Lanes :	= 9,500					1% growt	h for 3 yea	ars						
Road	dway Link				2025 Background				2025 Site-Generated		2025 Background+Site			
From	То				Assignment		Volume	V/C Ratio	LOS	Assignment	Volume	Volume	V/C Ratio	LOS
Turtle Creek Boulev														
Fairmount Street	Mansion Driveway				3000 Turtle Creek Site	178	7,017	0.74	D	30.0%	1,974	8,991	0.95	Е
\/=\:	9.500				10.0%	40/	h fan F ada	المسادة						
Volume Limit 2 Lanes = Gillespie Street	9,500					1% growt	n ior 5 add	ditional year	S					
Welborn Street	Oak Lawn Avenue				3000 Turtle Creek Site	0	1.665	0.18	A/B	12.5%	823	2.488	0.26	A/B
Weiboin Oucci	Ouk Luwii Avenue				0.0%	O	1,000	0.10	ND	12.570	023	2,400	0.20	ND
Volume Limit 2 Lanes =							h for E ode	ditional year	·e					
Volume Limit 2 Lanes =	9,500					1% growt	n ioi 5 auc	allional year	J					
Brown Street	9,500					1% growt	11101 5 800	ullioriai yeai	3					
	9,500 Hood Street				3000 Turtle Creek Site	1% growt 0	707	0.07	A/B	5.0%	329	1,036	0.11	A/B
Brown Street Enid Street	Hood Street				3000 Turtle Creek Site 0.0%	0	707	0.07	A/B	5.0%	329	1,036	0.11	A/B
Brown Street Enid Street Volume Limit 2 Lanes =	-,					0	707		A/B	5.0%	329	1,036	0.11	A/B
Brown Street Enid Street Volume Limit 2 Lanes = Enid Street	Hood Street				0.0%	0 1% growt	707 h for 5 add	0.07 ditional year	A/B ·s			,,,,,,		
Brown Street Enid Street Volume Limit 2 Lanes =	Hood Street					0	707	0.07	A/B	5.0% 15.0%	329 987	1,036	0.11	A/B A/B

Volume Limit Based on NCTCOG DFWRTM Hourly Capacity Per Lane



V. MITIGATION ANALYSIS

The intersection of Fairmount Street and Turtle Creek Boulevard was selected for a Mitigation Analysis due to the intersection approaches reaching LOS F during the 2020 and 2025 scenarios. The intersection of Maple Avenue and Turtle Creek Boulevard was also selected for analysis. Though the intersection as a whole operates favorably, the westbound approach changes to LOS E during the AM peak hour. Furthermore, a discussion on the intersection of Turtle Creek Boulevard and Cedar Springs Road and the intersection's effect of Gillespie Street is included.

A. Lane Geometry – Turtle Creek Boulevard at Fairmount Street

The intersection of Fairmount Street and Turtle Creek Boulevard is currently striped as having one lane for all approaches, so it was modeled in the same fashion. Each of the four legs of the intersection have 40' widths, allowing for at least two approach lanes for each leg using standard 10' lane widths. The worst-case scenario from the analysis recorded in Section IV of this report was the PM peak hour of the 2025 background plus site traffic scenario where the intersection as a whole experienced LOS F. The analysis below, shown in **Table 15**, uses these same volumes with two-lane approaches.

INTERSECTION	APPROACH	2025 Background plus Site Traffic MITIGATION PM Peak Hour			
		DELAY (SEC/VEH)	LOS		
	NBTL*	14.6	В		
	NBTR*	13.4	В		
	EBTL*	18.7	С		
F: .00	EBTR*	20.7	С		
Fairmount Street @ Turtle Creek Boulevard	WBTL*	17.8	С		
. a.a.o c.com Boulovara	WBTR*	21.8	С		
	SBTL*	24.0	С		
	SBTR*	16.9	С		
	Overall	19.6	С		

^{*} Stop-Controlled Approach

After the intersection of Fairmount Street and Turtle Creek Boulevard is restriped to have two-lane approaches in each direction – with no other improvements made – all approaches operate at LOS C or better during the worst-case scenario analyzed in this report.



B. Signal Retiming – Turtle Creek Boulevard at Maple Avenue

The intersection of Maple Avenue and Turtle Creek Boulevard currently operates favorably at LOS C during the AM peak hour. The westbound approach to the intersection, with a 5% increase in volume due to site traffic, changes from 59.7 seconds of delay (LOS E) to 75.6 seconds of delay (LOS E).

The traffic signal at the intersection currently operates on a 60-second cycle. 19 seconds of green time are dedicated to the Turtle Creek Boulevard approaches, and the remaining 41 seconds are dedicated to the Maple Avenue approaches. The mitigation performed for this intersection took 2 seconds of green time from the Maple Avenue approaches and gave them to the Turtle Creek Boulevard approaches for a total of 21 seconds of green time. The results are summarized below in **Table 16**.

Table 16 – Mitigation Analysis Results – Maple at Turtle Creek

INTERSECTION	APPROACH	Backg Tra	25 round Iffic	Backg plus Tra	25 round Site offic	2025 Background plus Site traffic With Signal Mod AM Peak Hour		
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	
	EB	6.5	Α	6.5	Α	5.9	Α	
	WB	59.7	E	75.6	E	56.8	Е	
Maple Avenue @ Turtle Creek Boulevard	NB	6.8	Α	6.9	Α	8.2	Α	
	SB	9.9	Α	13.4	В	16.5	В	
	Overall	21.6	С	27.2	С	23.8	С	

After the intersection of Maple Avenue and Turtle Creek Boulevard is retimed by just a two-second shift in greet time, the delay experienced by westbound drivers is improved to better conditions than in the 2025 background scenario. The overall intersection remains favorable.

C. Turtle Creek Boulevard, Cedar Springs Road, and Gillespie Street

The analysis included the unsignalized intersection of Turtle Creek Boulevard at Gillespie Street, which operates favorably in all time periods when considered by itself. The southbound left-turn or through movement is blocked in some PM peak hour cycles by the eastbound left-turning queue extending back from the signal at Cedar Springs Road and Turtle Creek Boulevard if the eastbound vehicles do not respect the Gillespie intersection by leaving gaps. Unfortunately, there is no way to quantify this impact with the standard analysis tools.

At its present location so close to Cedar Springs Road, there is no meaningful mitigation available for the Gillespie intersection. A "Do Not Block Intersection" sign is already installed for the eastbound traffic.



Adjustment of the signal timing at Turtle Creek Boulevard and Cedar Springs Road has the potential for improving the eastbound operations to reduce the number of times the eastbound left-turning queue would extend back to Gillespie Street. Currently the Turtle Creek Boulevard approaches are given only 31 seconds out of each 120-second cycle in the PM peak hour. Increasing the proportion of the signal cycle available to Turtle Creek Boulevard would reduce the eastbound queue lengths and reduce number of queue spillbacks to Gillespie Street. Considering the Cedar Springs Road coordinated signal timing, the intersection with Turtle Creek Boulevard has more time dedicated to the Cedar Springs Road approaches than do the adjacent signals at Carlisle Street or Bowen Street. This would indicate that some of the signal cycle can be redistributed to the Turtle Creek Boulevard approach without negatively affecting the Cedar Springs Road coordinated phase or "green band".



VI. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, the proposed 2727 Turtle Creek development, located at 2727 Turtle Creek Boulevard in Dallas, TX, can be successfully incorporated into the surrounding roadway network. The proposed site driveways provide the appropriate level of access for the development. The site-generated traffic does not significantly affect the existing vehicle traffic operations.

Each approach leg of the intersection of Fairmount Street and Turtle Creek Boulevard currently has an approximate width of 40'. Each of those legs currently operates as a one-lane approach. The intersection delays are increasing with the existing traffic in the neighborhood, and the site traffic adds some further additional delay. It is recommended that the intersection be restriped to provide two lanes for each of the approaches. This small change will restore favorable conditions for all approaches to the four-way stop-controlled intersection. When the restriping is performed, the opportunity should be used to also add marked pedestrian crossings.