



TRAFFIC IMPACT ANALYSIS

FOR

OPAL AT MAIN

LOCATED

IN

ROLESVILLE, NC

Prepared For:

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FEBRUARY 2026

DRMP Project No. 251334

Prepared By: LK

Reviewed By: CC

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Caroline Cheeves

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TRAFFIC IMPACT ANALYSIS OPAL AT MAIN

Rolesville, North Carolina

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Opal at Main development in accordance with the Rolesville (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed Opal at Main development to be located Rolesville, North Carolina. The proposed development, anticipated to be completed in 2030, is assumed to consist of 2 single-family detached homes and 71 single-family attached homes. Site access is proposed via two (2) full-movement driveways, one (1) along Young Street and one (1) along North Main Street. Refer to the attached site plan.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Rolesville (Town) and consists of the following existing intersections:

- Main Street (US 401) and Young Street
- Main Street (US 401) and Williams Street
- Young Street and Granite Falls Boulevard
- Young Street and Scarboro Street

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersection listed above, in December of 2025 by DRMP during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods. Traffic volumes were balanced between study intersections, where appropriate.

3. Future Traffic Conditions

Through coordination with the NCDOT and the Town, it was determined that an annual growth rate of 3% would be used to generate 2030 projected weekday AM and PM peak

hour traffic volumes. the following adjacent developments were identified to be included as an approved adjacent development in this study:

- Parker Ridge
- Rolesville Town Center
- Young Street PUD

Additionally, based on coordination with the NCDOT and the Town, it was determined that the roadway improvements associated with the NCDOT State Transportation Improvement Program (STIP) U-6241 should be considered in this study.

4. Site Trip Generation

Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 11.1th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	2 DU	18	2	5	2	1
Single-Family Attached Housing (215)	71 DU	467	7	20	19	14
Total Trips		485	9	25	21	15

To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2030 no-build traffic volumes to determine the 2030 build traffic volumes. The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2025 Existing Traffic Conditions
- 2030 No-Build Traffic Conditions
- 2030 Build Traffic Conditions

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2026 existing, 2030 no-build, and 2030 build conditions. Refer to Section 7 of the TIA for the capacity analysis summary performed at each study intersection.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Recommended Improvements by Developer

Young Street and Scarboro Street/Site Access A

- Construct Access A (westbound approach) as full movement access with one ingress and one egress lane (shared left-through-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the southbound left-turn movement.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the northbound left-turn movement.
- Provide stop control for the westbound approach

Main Street and Site Access B

- Construct Access B (southbound approach) as full movement access with one ingress lane and one egress lane (shared left-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 25 feet of storage for the eastbound left-turn movement into the site.
- Provide stop control for the southbound approach.

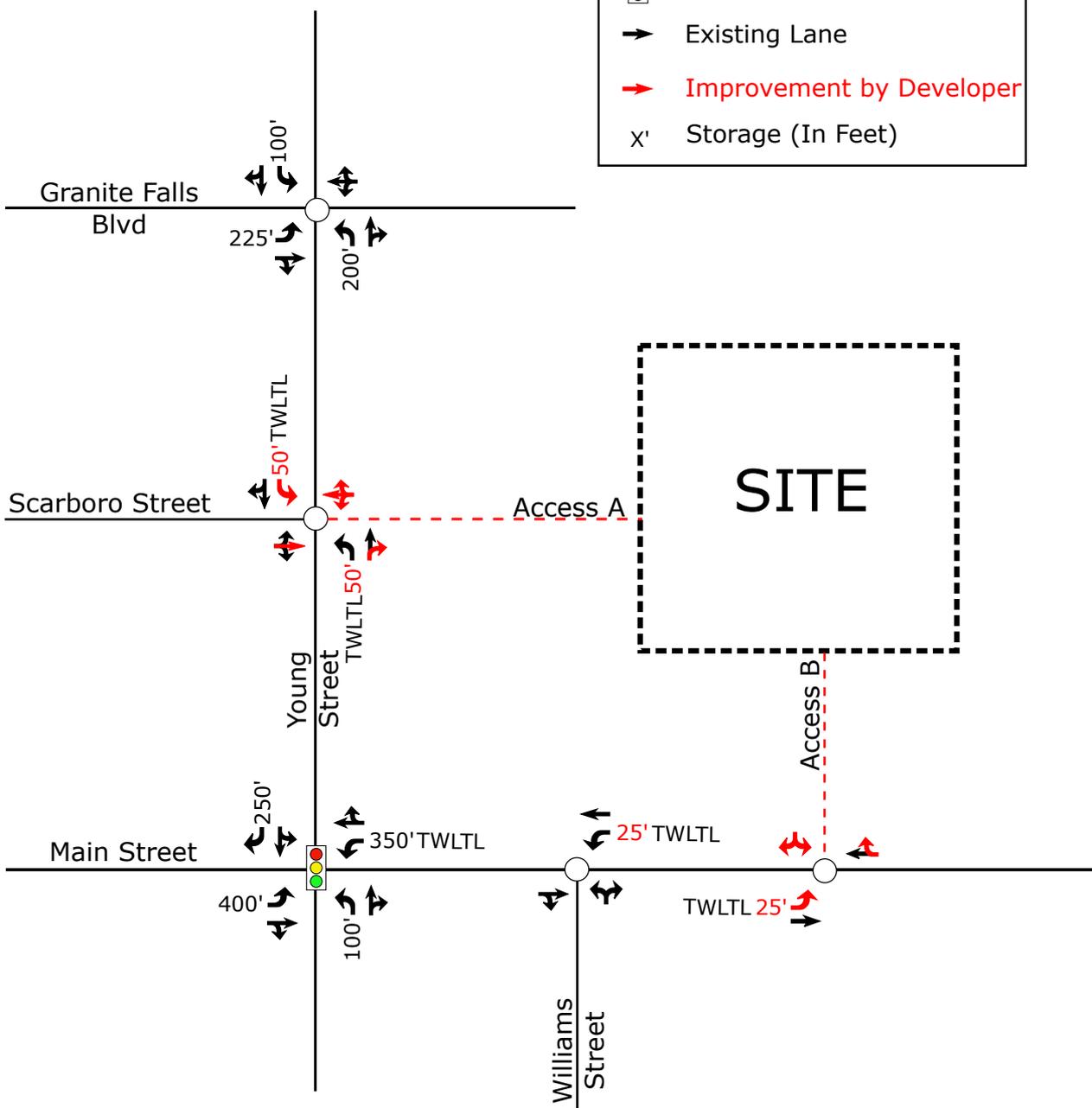
Main Street and Williams Street

- Restripe the existing 150 feet two-way left-turn lane (TWLTL) to provide 25 feet of storage for the westbound left-turn movement into Williams Street and 25 feet of storage for the eastbound left-turn movement into Site Access B.



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➡ Existing Lane
- ➡ Improvement by Developer
- x' Storage (In Feet)



	Opal at Main Rolesville, NC	Recommended Lane Configurations	
		Scale: Not to Scale	Figure E-1

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TECHNICAL APPENDIX

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Appendix B:	Traffic Counts
Appendix C:	Signal Plans
Appendix D:	Adjacent Development Information
Appendix E:	Future Roadway Improvements
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TRAFFIC IMPACT ANALYSIS

OPAL AT MAIN Rolesville, North Carolina

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Opal at Main development to be located Rolesville, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed in 2030, is assumed to consist of the following uses:

- 2 single-family detached homes
- 71 single-family attached homes

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2025 Existing Traffic Conditions
- 2030 No-Build Traffic Conditions
- 2030 Build Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located Rolesville, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Rolesville (Town) and consists of the following existing intersections:

- Main Street (US 401) and Young Street
- Main Street (US 401) and Williams Street
- Young Street and Granite Falls Boulevard
- Young Street and Scarboro Street

1.2. Proposed Land Use and Site Access

The proposed development, anticipated to be completed in 2030, is assumed to consist of 2 single-family detached homes and 71 single-family attached homes. Site access is proposed via two (2) full-movement driveways, one (1) along Young Street and one (1) along North Main Street. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of commercial and residential development, as well as undeveloped land.

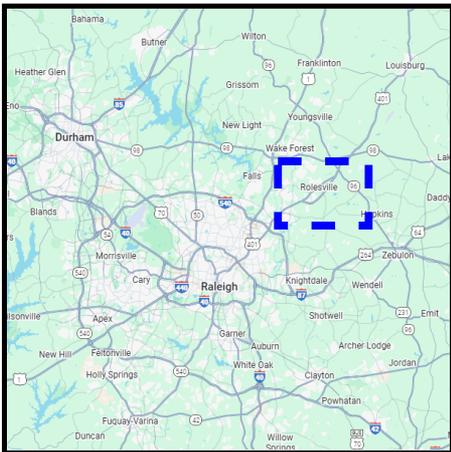
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), speed limits, storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	AADT (vpd)
Young Street	SR 1945	2-lane undivided	35 mph	10,500
Main Street	US 401	2-lane undivided	35 mph	4,100
Main Street	US 401	2-lane undivided	35 mph	12,000

*AADT based on the traffic counts from 2023 and assuming the weekday PM peak hour volume is 10% of the average daily traffic.



LEGEND

- Study Intersection
- Proposed Site Access
- Study Area



Opal at Main Rolesville, NC

Site Location Map

Scale: Not to Scale Figure 1



MCADAMS

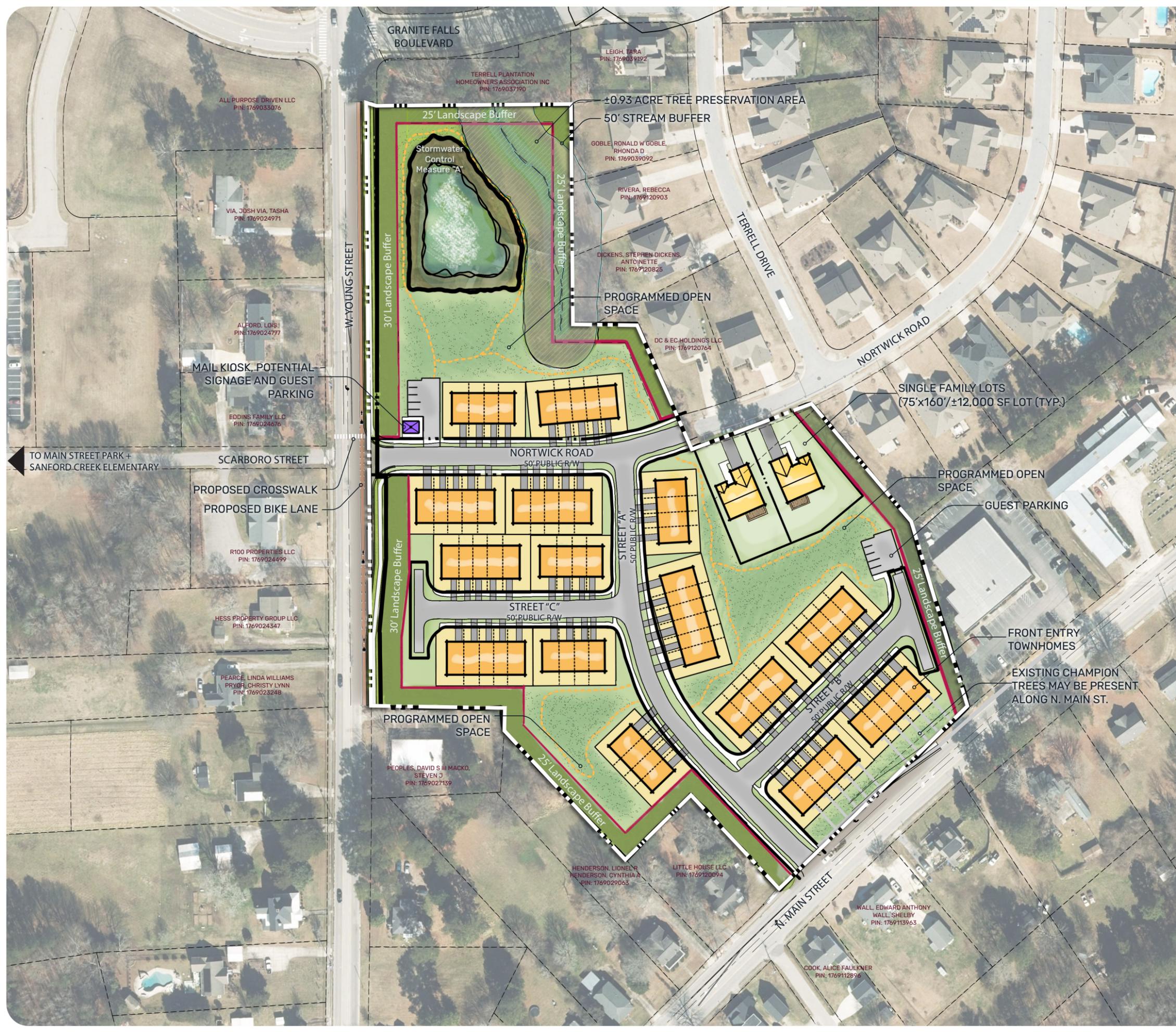
PREPARED FOR:
Fischer Homes

SITE DATA TABLE

PIN(S)	1769027985 1769029362
Total Site Area	± 11.5 acres
Current Zoning	RL
Proposed Zoning	RHD
Tree Preservation Area Required (10% Site Area)	± 0.92 acre
Tree Preservation Area Provided	± 0.93 acre
Open Space Required (15% Site Area)	± 1.72 acre
Open Space Provided	± 1.75 acre
Proposed Residential Units	± 73 DU
Townhome Units	71 units
Single Family Lots	2 lots
Maximum Density	To be determined

CONCEPT PLAN NOTES

- 01 Development on this site will comply with the Town's Unified Development Ordinance and other applicable standards and plans adopted by the Town of Rolesville
- 02 Sidewalks, trails, and open space areas shown on this plan are approximate. Final location and design to be determined at site or subdivision plan review.
- 03 Utilities and easements shown on this plan are conceptual. Final location and design to be determined at site or subdivision plan review.
- 04 Where a conflict between graphic representation and text information on this sheet is present, the text shall prevail.
- 05 All base file information taken from GIS is subject to change unless otherwise stated.
- 06 All assumptions shown herein are in accordance with current LDO standards as of the date shown on the plan. Changes to LDO standards, or jurisdictional text changes after that date may impact plan.
- 07 Lighting requirements will comply with the standards set forth in the LDO.
- 08 Master plan is conceptual, with final layout to be determined at subdivision plan.
- 09 Tree coverage areas are conceptual, with final location to be determined at subdivision plan.



Opal at Main Concept Site Plan
Rolesville, North Carolina
Rolesville Case # REZ-25-04

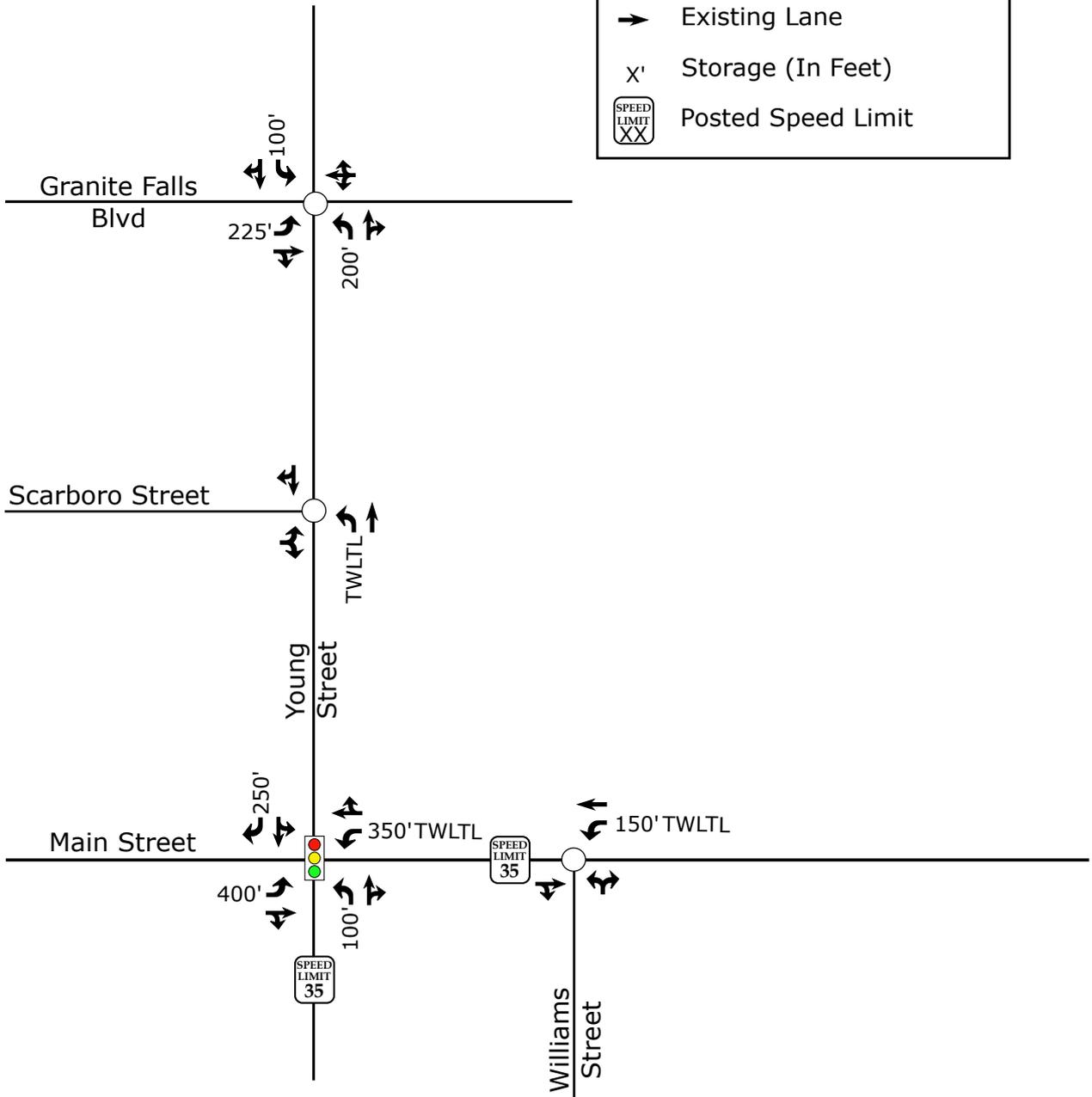


SPEC24634
10.30.2025



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➔ Existing Lane
- x' Storage (In Feet)
- 🚫 SPEED LIMIT XX Posted Speed Limit



	Opal at Main Rolesville, NC	2025 Existing Lane Configurations	
		Scale: Not to Scale	Figure 3

2. 2025 EXISTING PEAK HOUR CONDITIONS

2.1. 2025 Existing Peak Hour Traffic Volumes

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in December of 2025 by DRMP during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods:

- Main Street (US 401) and Young Street
- Main Street (US 401) and Williams Street
- Young Street and Granite Falls Boulevard
- Young Street and Scarboro Street

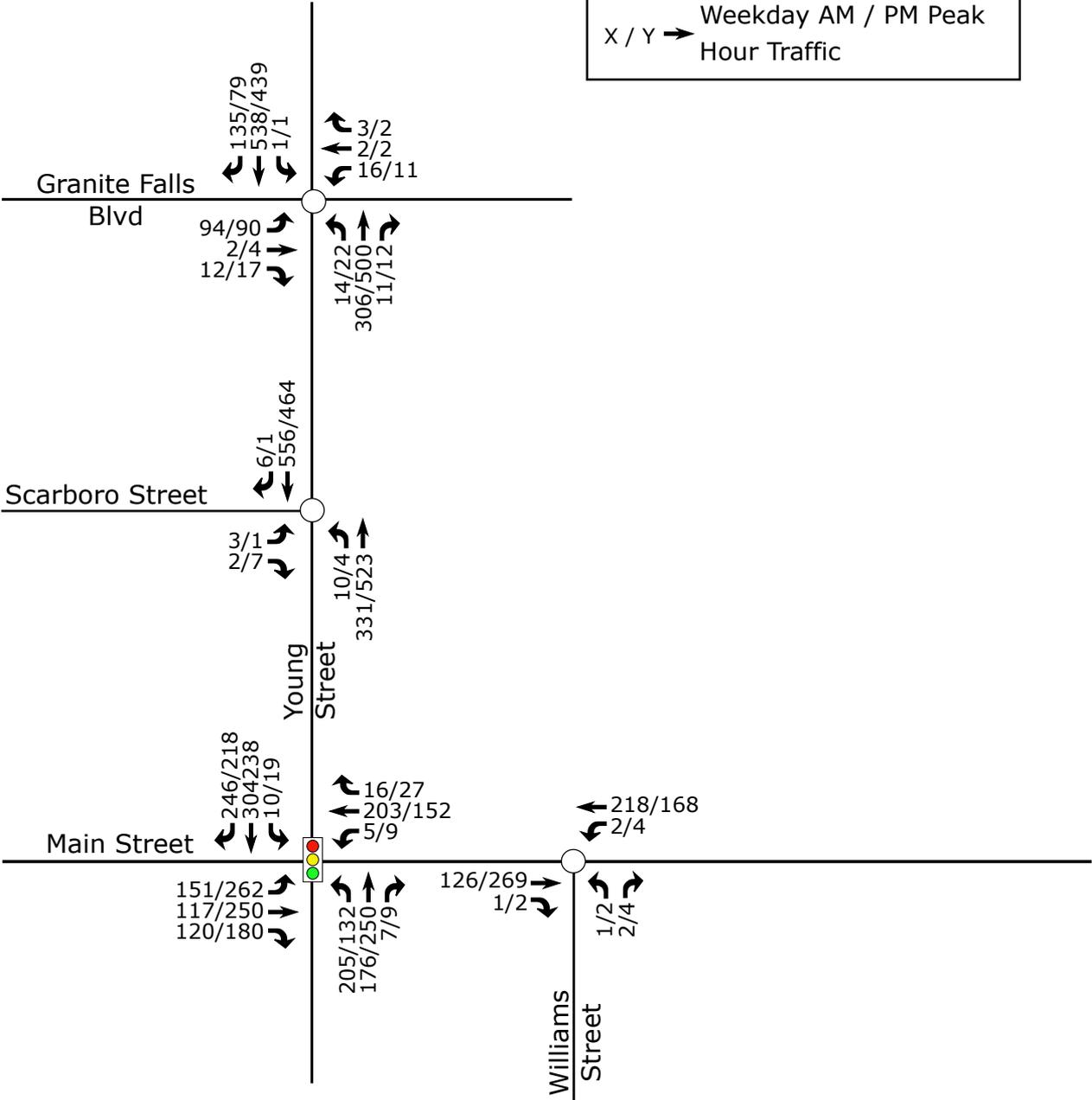
Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2025 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of 2025 Existing Peak Hour Traffic Conditions

The 2025 existing weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<p>Opal at Main Rolesville, NC</p>	<p>2025 Existing Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 4</p>

3. 2030 NO-BUILD PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, no-build traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with the NCDOT and the Town, it was determined that background traffic associated with the approved adjacent developments will be captured within the assumed 3% annual background growth rate. This growth rate was applied to develop the 2030 weekday AM and PM peak hour traffic projections. Refer to Figure 5 for the 2030 projected peak hour volumes.

3.2. Adjacent Development Traffic

Through coordination with the NCDOT and the Town, Table 2 provides a summary of the adjacent developments.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
Parker Ridge	East and west sides of Redford Place Drive, south of Main Street	2028	162 single-family homes and 114 townhomes	August 2022 by Stantec
Rolesville Town Center	West side of Rolesville Road between Rolesville High School and Fowler Road	2030	20,680 s.f. fire station	September 2025 by Stantec
Young Street PUD	Along US 401, west of Young Street	2025	210 townhomes, 525 single-family homes and 320 townhomes	June 2019 by Kimley Horn

Traffic associated with the following adjacent developments will be captured within the assumed 3% annual background growth rate:

- 1216 Rolesville Road
- 302 S Main St – Learning Experience Rolesville
- 414 S. Main Street – Pine Glo Sports complex
- 6000 Rogers Road
- A-Master Team Townhomes
- Woodlief Assemblage
- Cobblestone Village
- North Wake Eye Center
- Jones Dairy Road

3.3. Future Roadway Improvements

Based on coordination with the NCDOT and the Town, it was determined that the roadway improvements associated with the NCDOT State Transportation Improvement Program (STIP) U-6241 should be considered in this study. STIP U-6241 is expected to realign the roadway and construct a new intersection with South Main Street, along with sidewalk extensions and complete streets improvements.

The STIP U-6241 future realignment plans can be found in Appendix E.

3.4. 2030 No-Build Peak Hour Traffic Volumes

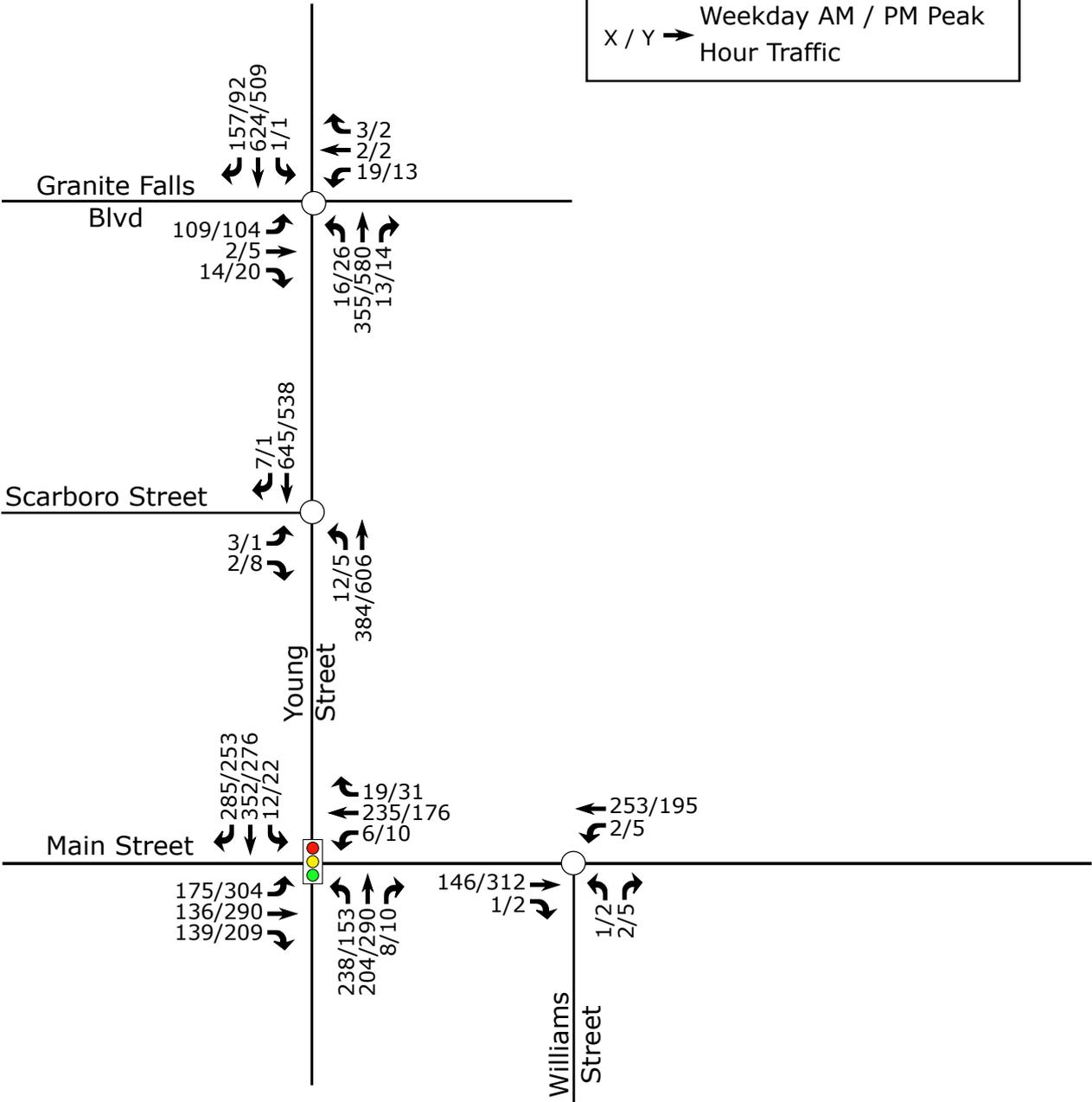
The 2030 no-build traffic volumes were determined by projecting the 2026 existing peak hour traffic to the year 2030, and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2030 no-build peak hour traffic volumes at the study intersections.

3.5. Analysis of 2030 No-Build Peak Hour Traffic Conditions

The 2030 no-build AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



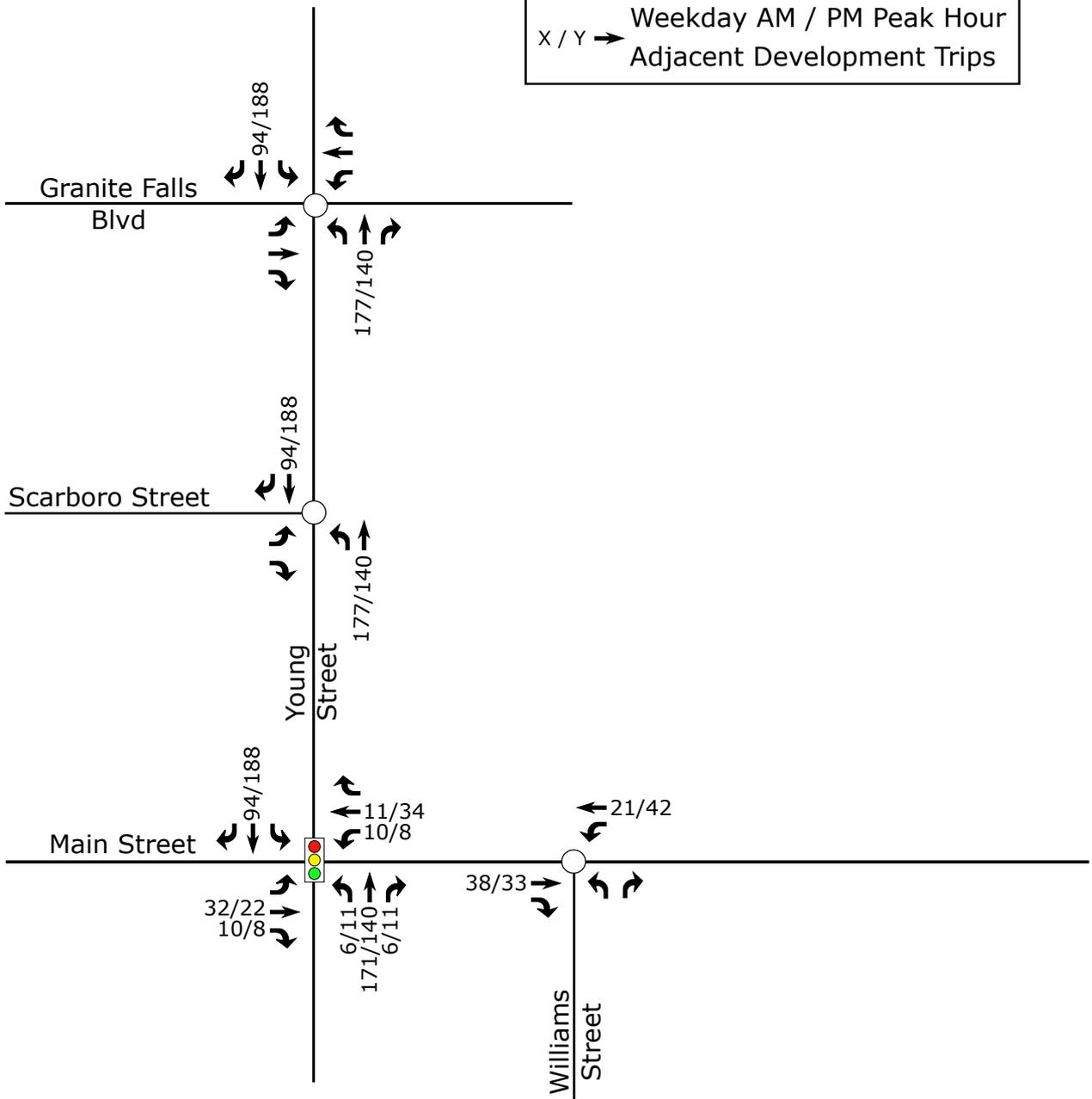
	<h2 style="margin: 0;">Opal at Main Rolesville, NC</h2>	<h3 style="margin: 0;">2030 Projected Peak Hour Traffic</h3>	
			Scale: Not to Scale

LEGEND

○ Unsignalized Intersection

🚦 Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Adjacent Development Trips



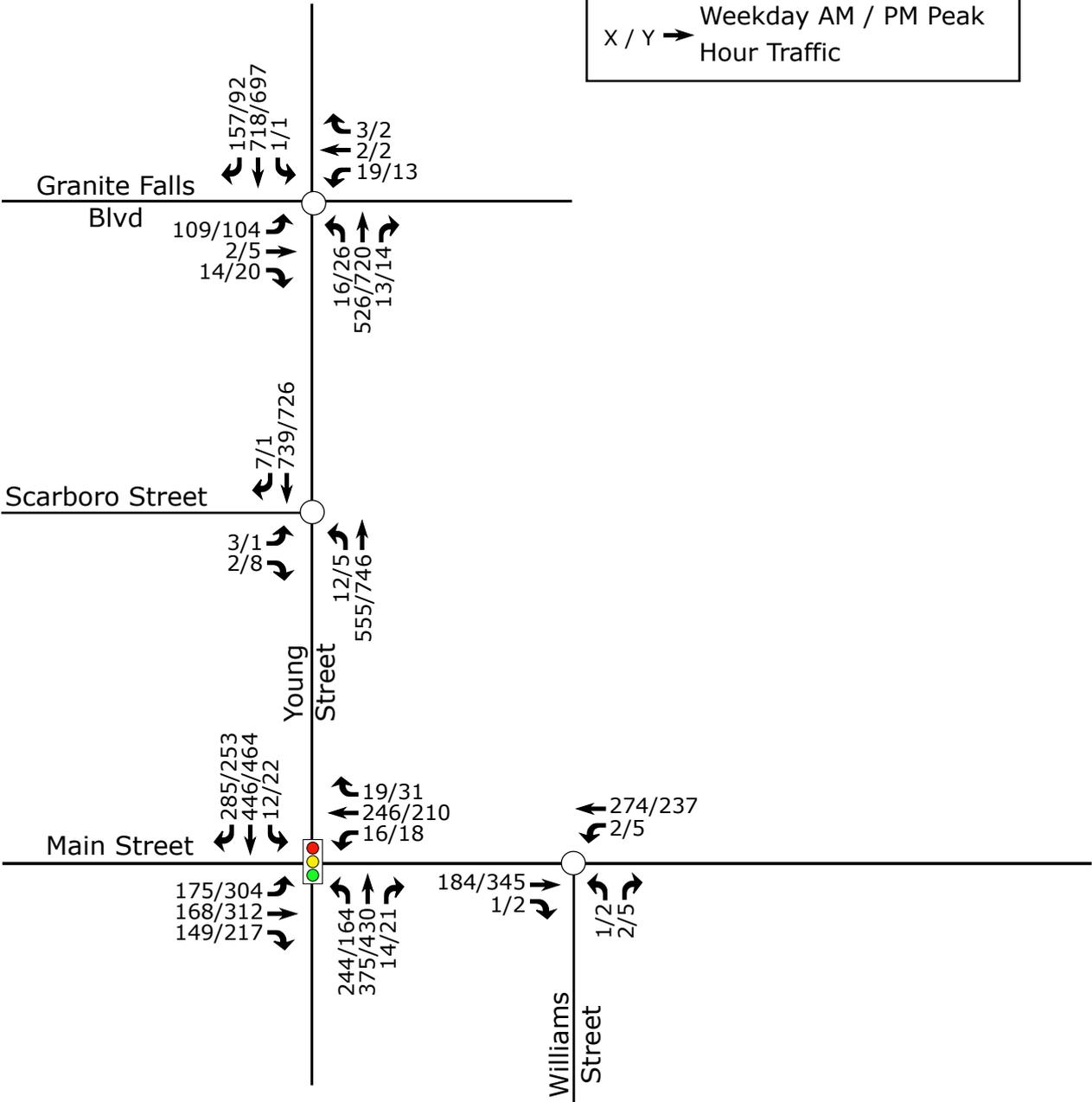
Opal at Main
Rolesville, NC

Peak Hour Adjacent
Development Trips

Scale: Not to Scale Figure 6

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<h2 style="margin: 0;">Opal at Main Rolesville, NC</h2>	<h3 style="margin: 0;">2030 No-Build Peak Hour Traffic</h3>	
			Scale: Not to Scale

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 2 single-family detached homes and 71 single-family attached homes. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 12 Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	2 DU	18	2	5	2	1
Single-Family Attached Housing (215)	71 DU	467	7	20	19	14
Total Trips		485	9	25	21	15

It is estimated that the proposed development will generate approximately 485 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 34 trips (9 entering and 25 exiting) will occur during the weekday AM peak hour and 36 trips (21 entering and 15 exiting) will occur during the weekday PM peak hour.

4.2. Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

It is estimated that the site trips will be regionally distributed as follows:

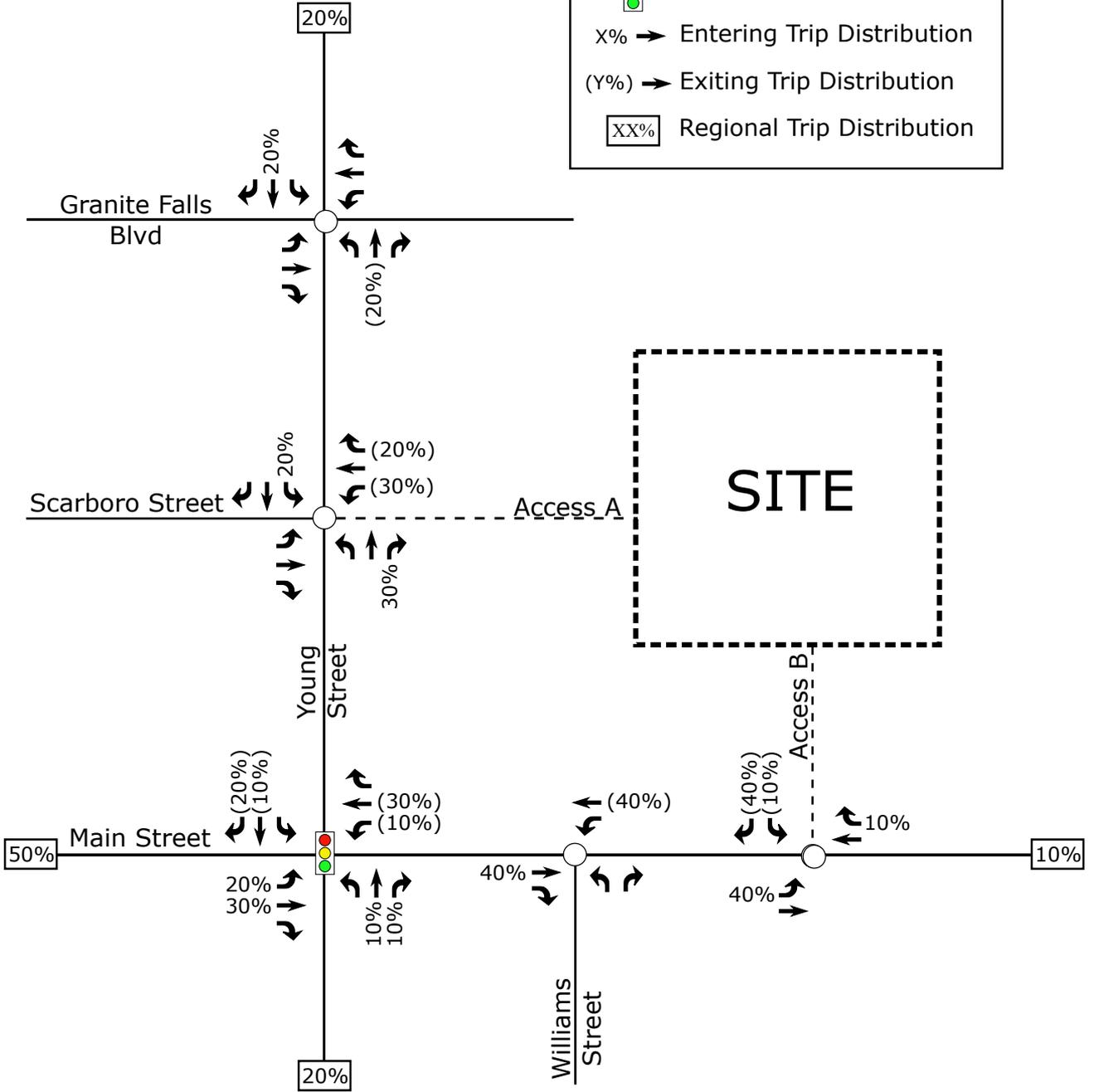
- 20% to/from the north via Young Street
- 20% to/from the south via Young Street
- 50% to/from the east via Main Street
- 10% to/from the west via Main Street

The site trip distribution is shown in Figure 8. Refer to Figure 9 for the site trip assignment.



LEGEND

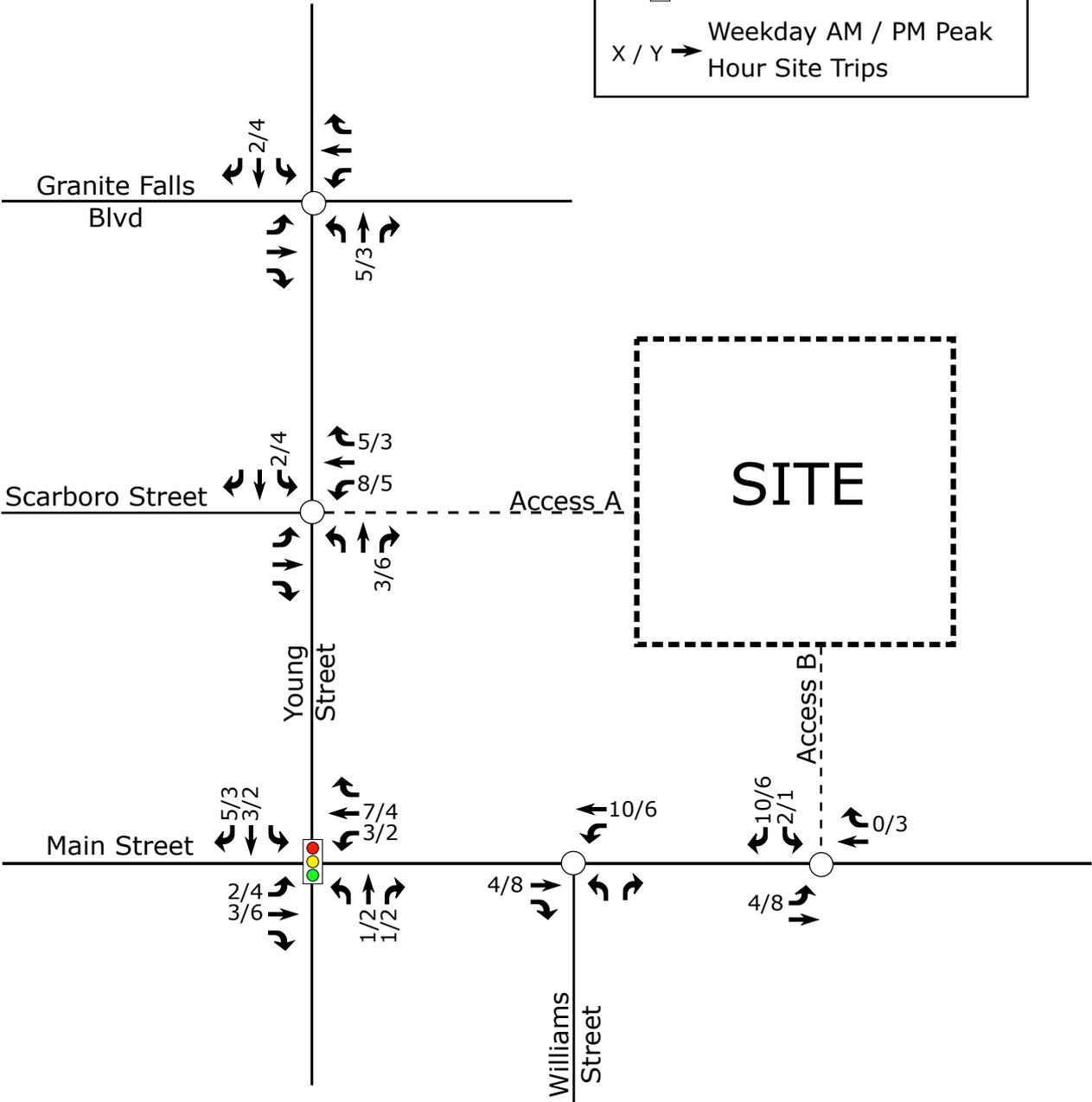
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



	Opal at Main Rolesville, NC	Site Trip Distribution	
		Scale: Not to Scale	Figure 8

LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Site Trips



	<p>Opal at Main Rolesville, NC</p>	<p>Site Trip Assignment</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 9</p>

5. 2030 BUILD TRAFFIC CONDITIONS

5.1. 2030 Build Peak Hour Traffic Volumes

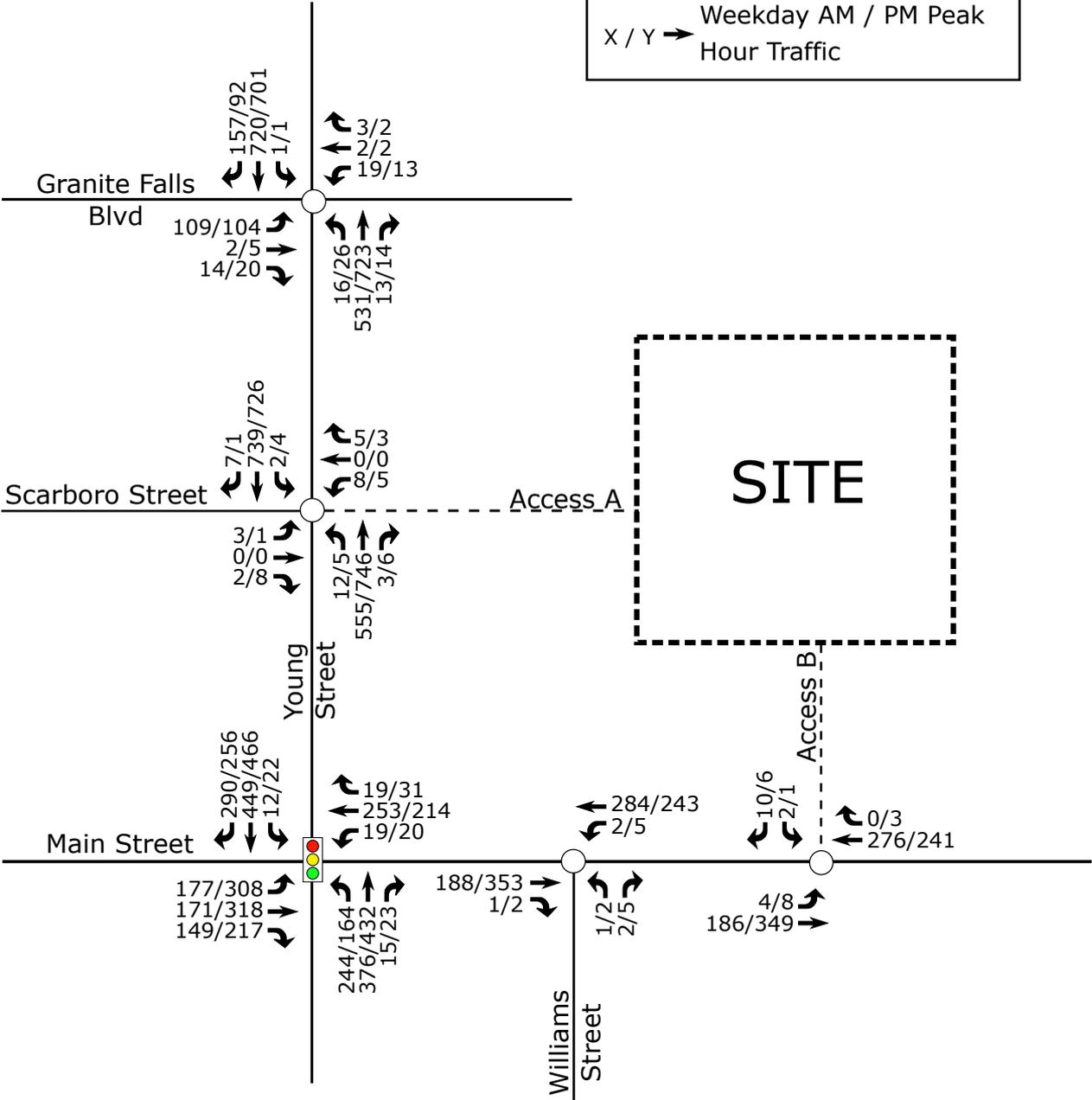
To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2030 no-build traffic volumes to determine the 2030 build traffic volumes. Refer to Figure 10 for an illustration of the 2030 build peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of 2030 Build Peak Hour Traffic Conditions

Study intersections were analyzed with the 2030 build traffic volumes using the same methodology previously discussed for existing and no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<h2 style="margin: 0;">Opal at Main Rolesville, NC</h2>	<h3 style="margin: 0;">2030 Build Peak Hour Traffic</h3>	
	<p style="margin: 0;">Scale: Not to Scale</p>		<p style="margin: 0;">Figure 10</p>

6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 11.1), was used to complete the analyses for the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.” Level of service (LOS) is a term used to represent different driving conditions and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers.” Level of service varies from Level “A” representing free flow, to Level “F” where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. An average control delay of 50 seconds at a signalized intersection results in LOS “D” operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines.

7. CAPACITY ANALYSIS

The following study intersections were analyzed under 2026 existing, 2030 no-build, and 2030 build traffic conditions:

- Main Street (US 401) and Young Street
- Main Street (US 401) and Williams Street
- Young Street and Granite Falls Boulevard
- Young Street and Scarboro Street/Site Access A
- Main Street (US 401) and Site Access B

All proposed site driveways were analyzed under 2030 build traffic conditions. Refer to Tables 5-9 for a summary of capacity analysis results. Refer to Appendices F-J for the Synchro capacity analysis reports and SimTraffic queueing reports.

capacity analysis indicates that the intersection is expected to operate at an overall Level of Service (LOS) D during the weekday AM peak hour and LOS E during the weekday PM peak hour under both 2030 no-build and build conditions. The proposed development is expected to increase queues on the westbound left-turn movement by approximately 90 feet (about four vehicles) during the PM peak hour when comparing 2030 build conditions to 2030 no-build conditions; however, the proposed development contributes only two vehicles to this movement. The overall intersection delay is projected to increase by 2.0 seconds or less, indicating minimal operational impact from the proposed development. As a result, no improvements are recommended by the developer.

7.1. Main Street and Young Street

Refer to the table below for a summary of the capacity analysis of the subject intersection during the analysis scenarios.

Table 5: Analysis Summary of Main Street and Young Street

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Existing	EB	1 LT, 1 TH-RT	C (26)	D (40)	C (30)	D (39)
	WB	1 LT, 1 TH-RT	D (37)		D (40)	
	NB	1 LT, 1 TH-RT	E (55)		D (52)	
	SB	1 LT-TH, 1 RT	D (39)		D (39)	
2030 No-Build	EB	1 LT, 1 TH-RT	D (45)	D (52)	F (87)	E (76)
	WB	1 LT, 1 TH-RT	E (57)		E (61)	
	NB	1 LT, 1 TH-RT	E (61)		F (83)	
	SB	1 LT-TH, 1 RT	D (48)		E (63)	
2030 Build	EB	1 LT, 1 TH-RT	D (46)	D (53)	F (91)	E (78)
	WB	1 LT, 1 TH-RT	E (59)		E (62)	
	NB	1 LT, 1 TH-RT	E (61)		F (85)	
	SB	1 LT-TH, 1 RT	D (49)		E (64)	

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the intersection is expected to operate at an overall Level of Service LOS D during the weekday AM peak hour and LOS E during the weekday PM peak hour under both 2030 no-build and build conditions. The overall intersection delay is expected to increase by 2 seconds or less, indicating minimal operational impact from the proposed development. As a result, which equates to a less than 3% delay increase from the proposed development.

The intersection is currently under construction as part of STIP Project U-6241 and is assumed to be completed by 2025. Accordingly, the analysis was conducted using the future lane configurations shown in the STIP U-6241 for all traffic conditions. Coordinated signal timings were not recorded due to ongoing construction; therefore, signal timings were optimized for all existing and future scenarios.

7.2. Main Street and Williams Street

Refer to the table below for a summary of the capacity analysis of the subject intersection during the analysis scenarios.

Table 6: Analysis Summary of Main Street and Williams Street

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Existing	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT-RT	-- A (8) ¹ A (10) ²	N/A	-- A (8) ¹ B (11) ²	N/A
2030 No-Build	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT-RT	-- A (8) ¹ B (10) ²	N/A	-- A (8) ¹ B (11) ²	N/A
2030 Build	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT-RT	-- A (8) ¹ B (10) ²	N/A	-- A (8) ¹ B (11) ²	N/A

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Capacity analysis indicates that the major street left turn movement and minor street approach are expected to operate at LOS B or better during the weekday AM and PM peak hours under all traffic conditions. The maximum westbound left-turn queue is approximately 25 feet during the weekday PM peak hour, which is shorter than the existing two-way left-turn lane (TWLTL) storage length. Accordingly, the effective left-turn storage length can be shortened without affecting intersection operations, allowing a portion of the TWLTL to be reallocated to provide storage for the eastbound left-turn movement into Site Access B. With the reduced storage length, major street left-turn queues are expected to remain fully contained within the TWLTL, and no queuing issues are anticipated. The following improvements are recommended by the developer under 2030 Build traffic conditions:

- Restripe the existing 150 feet of two-way left-turn lane (TWLTL) to provide 25 feet of storage for the westbound left-turn movement into Williams Street.

7.3. Young Street and Granite Falls Boulevard

Refer to the table below for a summary of the capacity analysis of the subject intersection during the analysis scenarios.

Table 7: Analysis Summary of Young Street and Granite Falls Boulevard

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Existing	EB	1 LT, 1 TH-RT	E (40) ²	N/A	E (47) ²	N/A
	WB	1 LT-TH-RT	C (24) ²		D (26) ²	
	NB	1 LT, 1 TH-RT	A (9) ¹		A (9) ¹	
	SB	1 LT, 1 TH-RT	A (8) ¹		A (9) ¹	
2030 No-Build	EB	1 LT, 1 TH-RT	F (252) ²	N/A	F (404) ²	N/A
	WB	1 LT-TH-RT	F (54) ²		F (71) ²	
	NB	1 LT, 1 TH-RT	B (10) ¹		A (10) ¹	
	SB	1 LT, 1 TH-RT	A (9) ¹		A (10) ¹	
2030 Build	EB	1 LT, 1 TH-RT	F (264) ²	N/A	F (415) ²	N/A
	WB	1 LT-TH-RT	F (56) ²		F (71) ²	
	NB	1 LT, 1 TH-RT	B (10) ¹		A (10) ¹	
	SB	1 LT, 1 TH-RT	A (9) ¹		A (10) ¹	

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the major street left turn movements are expected to operate at LOS B or better during the weekday AM and PM peak hours under all traffic conditions. The minor street approach is expected to operate at LOS F under both 2030 no-build and build conditions. Reasonable queues are expected at the minor-street approaches. Traffic on the minor street has access to alternate routes, including the two (2) proposed full-movement driveways along Young Street and North Main Street. Poor levels of service and higher delays are not uncommon for an unsignalized minor-street approach during the weekday peak hours when mainline volumes are heaviest. A traffic signal was considered at this intersection, and 2030 build peak hour traffic volumes were analyzed utilizing the criteria contained in the Manual on Uniform Traffic Control Devices (MUTCD). A traffic signal was not warranted during either weekday peak hour. The NCDOT typically prefers the 4-hour and 8-hour warrants to be met, which is highly unlikely at this intersection due to the primarily residential traffic on the minor streets.

7.4. Young Street and Scarboro Street/Site Access A

Refer to the table below for a summary of the capacity analysis of the subject intersection during the analysis scenarios.

Table 8: Analysis Summary of Young Street and Scarboro Street/Site Access A

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Existing	EB NB SB	1 LT-RT 1 LT, 1 TH 1 TH-RT	B (14) ² A (9) ¹ --	N/A	B (13) ² A (9) ¹ --	N/A
2030 No-Build	EB NB SB	1 LT-RT 1 LT, 1 TH 1 TH-RT	C (17) ² A (10) ¹ --	N/A	C (17) ² A (9) ¹ --	N/A
2030 Build	EB WB NB SB	1 LT- TH-RT 1 LT-TH-RT 1 LT, 1 TH- RT 1 LT , 1 TH-RT	D (33) ² E (36) ² A (10) ¹ A (9) ¹	N/A	E (35) ² E (44) ² A (9) ¹ A (10) ¹	N/A

Improvements to lane configurations are shown in bold.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the major street left turn movements are expected to operate at LOS A and minor street approaches are expected to operate at LOS E or better during the weekday AM and PM peak hours under 2030 build traffic conditions. No queuing issues were identified. No turn lanes are warranted based on a review of NCDOT's "Policy on Street and Driveway Access to North Carolina Highways". The following improvements are recommended by the developer under 2030 build traffic conditions:

- Construct Access A (westbound approach) as full movement access with one ingress and one egress lane (shared left-through-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the southbound left-turn movement.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the northbound left-turn movement.
- Provide stop control for the westbound approach

7.5. Main Street and Site Access B

Refer to the table below for a summary of the capacity analysis of the subject intersection during the analysis scenarios.

Table 9: Analysis Summary of Main Street and Site Access B

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2030 Build	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT-RT	A (9) ¹ -- B (11) ²	N/A	A (8) ¹ -- B (11) ²	N/A

Improvements to lane configurations are shown in bold.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the major street left turn movement and minor street approach are expected to operate at LOS B or better during the weekday AM and PM peak hours under 2030 build traffic conditions. No queuing issues were identified. Based on a review of NCDOT’s Policy on Street and Driveway Access to North Carolina Highways, no turn lanes are warranted.

NCDOT has raised concerns regarding the proximity of Site Access B to the existing Williams Street, as discussed during scoping and documented in the MOU, the intersection was analyzed as a full movement. Sim Traffic results indicate that the eastbound left-turn movement into the site generates a maximum queue length of approximately 25 feet during the weekday PM peak hour. Restriping the existing two-way left-turn lane (TWLTL) to provide 25 feet of storage for the eastbound left-turn movement is expected to fully accommodate projected queues at the intersection. The maximum queue length at the Williams Street intersection is 25 feet; therefore, the proposed restriping of the TWLTL will not affect intersection operations. The projected queue is fully contained within the TWLTL and does not extend into the functional area of the Williams Street intersection.

The following improvements are recommended by the developer under 2030 build traffic conditions:

- Construct Access B (southbound approach) as full movement access with one ingress lane and one egress lane (shared left-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 25 feet of storage for the eastbound left-turn movement into the site.
- Provide stop control for the southbound approach.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the Opal at Main development to be located Rolesville, North Carolina. The proposed development, anticipated to be completed in 2030, is assumed to consist of 2 single-family detached homes and 71 single-family attached homes. Site access is proposed via two (2) full-movement driveways, one (1) along Young Street and one (1) along North Main Street.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2025 Existing Traffic Conditions
- 2030 No-Build Traffic Conditions
- 2030 Build Traffic Conditions

Trip Generation

Primary site trips are expected to generate approximately 34 trips (9 entering and 25 exiting) during the weekday AM peak hour and 36 trips (21 entering and 15 exiting) during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 11 for an illustration of the recommended lane configuration for the proposed development.

Recommended Improvements by Developer

Young Street and Scarboro Street/Site Access A

- Construct Access A (westbound approach) as full movement access with one ingress and one egress lane (shared left-through-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the southbound left-turn movement.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 50 feet of storage for the northbound left-turn movement.
- Provide stop control for the westbound approach

Main Street and Site Access B

- Construct Access B (southbound approach) as full movement access with one ingress lane and one egress lane (shared left-right lane).
- Provide 100 feet of Internal Protected Stem (IPS) length.
- Restripe the existing two-way left-turn lane (TWLTL) to provide 25 feet of storage for the eastbound left-turn movement into the site.
- Provide stop control for the southbound approach.

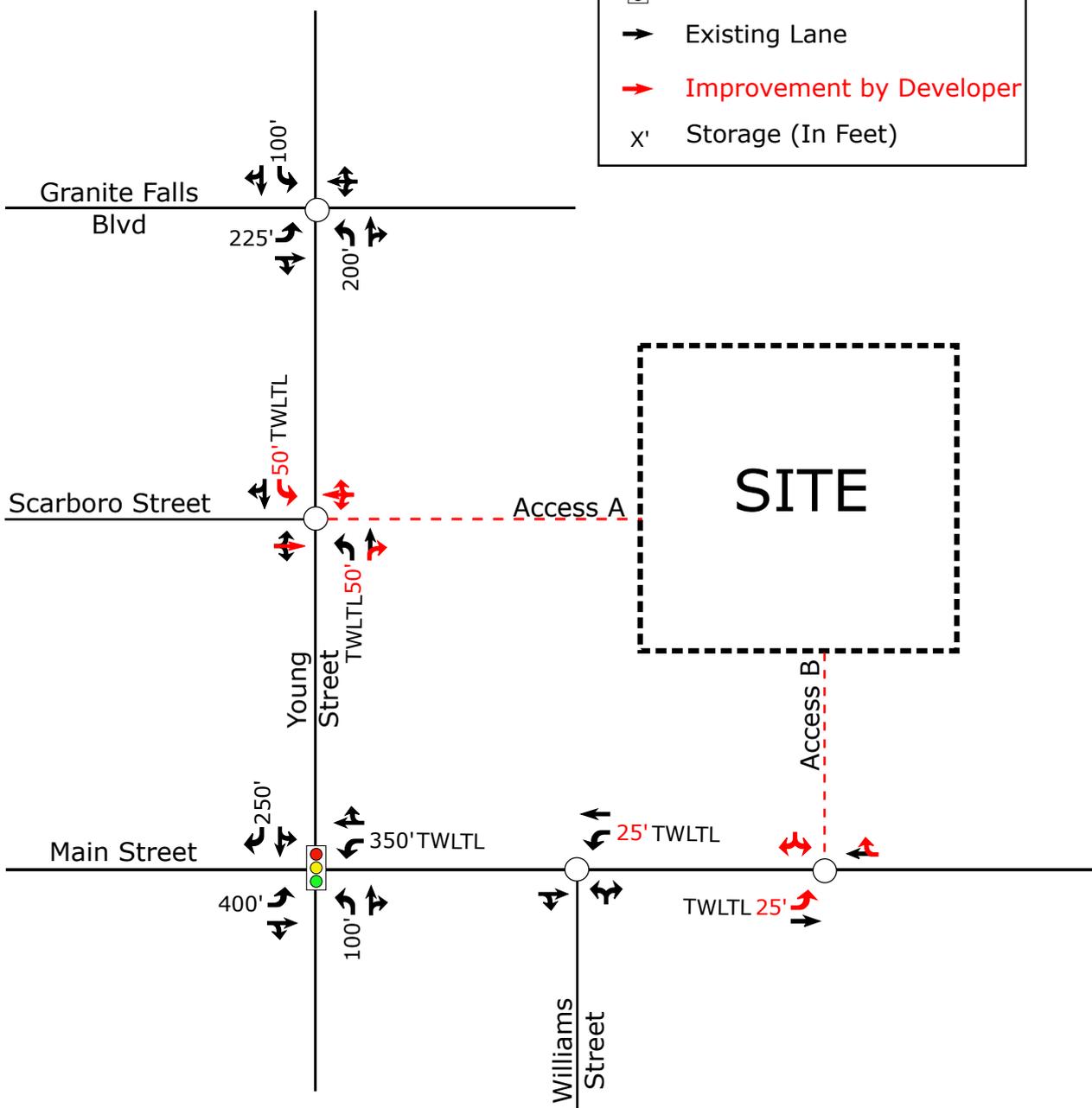
Main Street and Williams Street

- Restripe the existing 150 feet two-way left-turn lane (TWLTL) to provide 25 feet of storage for the westbound left-turn movement into Williams Street and 25 feet of storage for the eastbound left-turn movement into Site Access B.



LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- Existing Lane
- Improvement by Developer
- x' Storage (In Feet)



	Opal at Main Rolesville, NC	Recommended Lane Configurations	
		Scale: Not to Scale	Figure 11