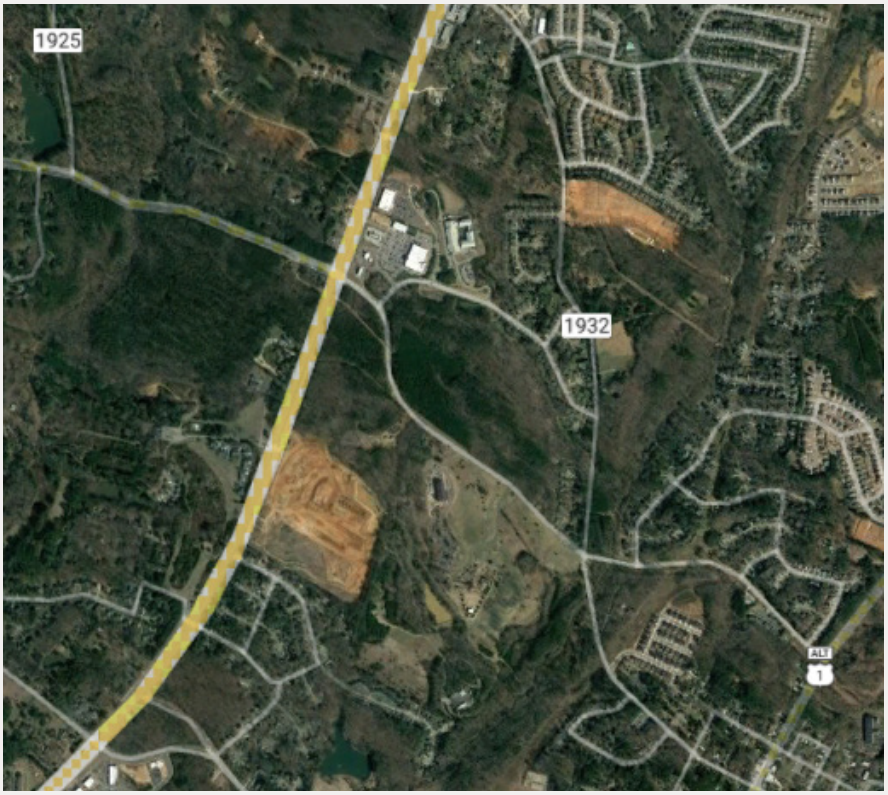
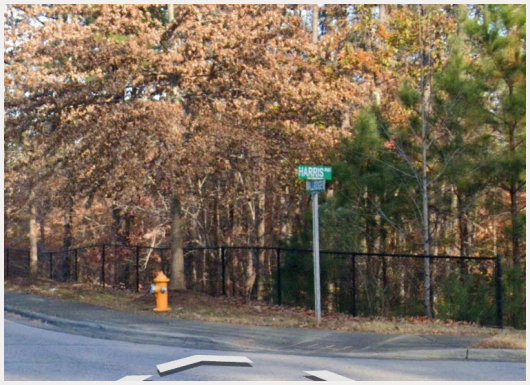
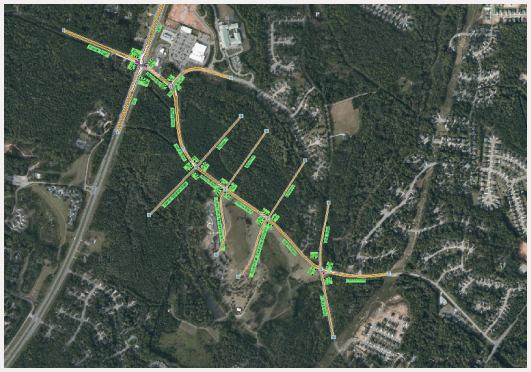
RAMEY KEMP ASSOCIATES

TOGETHER WE ARE LIMITLESS







Harris Road Residential

Traffic Impact Analysis

Wake Forest, North Carolina

rameykemp.com

TRAFFIC IMPACT ANALYSIS

FOR

HARRIS ROAD RESIDENTIAL

LOCATED

IN

WAKE FOREST, NORTH CAROLINA

Prepared For:
Church Street Company
4001 Barrett Drive, Suite 104
Raleigh, NC 27609

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

6/20/22

June 2022

RKA Project No. 22076

Prepared By: GH

Reviewed By: RS

TRAFFIC IMPACT ANALYSIS
HARRIS ROAD RESIDENTIAL
WAKE FOREST, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Harris Road Residential development in accordance with the Town of Wake Forest (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located in the northeastern quadrant of the intersection of Harris Road and Wallridge Road in Wake Forest, North Carolina. The proposed development is expected to consist of 215 single-family homes and 191 townhomes and estimated to be built out in 2027. Access to the development is proposed via two (2) full movement driveways along Harris Road. The easternmost site access will form a southbound approach with the existing Joyner Park Easternmost Access, converting the existing intersection from a three-leg intersection to a four-leg intersection once the site is built out. The westernmost site access will align with the Devon Square Access, along Harris Road.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with NCDOT and the Town and consists of the following existing intersections:

- Capital Boulevard (US 1) and Harris Road
- Harris Road and Wallridge Road
- Harris Road and Westernmost Joyner Park Access
- Harris Road and Easternmost Joyner Park Access
- Harris Road and Wall Road / W Oak Avenue

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in March of 2022 by Burns Service, Inc. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods:

- Capital Boulevard (US 1) and Harris Road

- Harris Road and Wallridge Road
- Harris Road and Westernmost Joyner Park Access
- Harris Road and Easternmost Joyner Park Access
- Harris Road and Wall Road / W Oak Avenue

Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate.

3. Site Trip Generation

The proposed development is assumed to consist of 191 townhomes and 215 single-family 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*, 11th 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 TRIPS (VPD)	WEEKDAY AM PEAK HOUR (VPH)		WEEKDAY PM PEAK HOUR (VPH)	
			Enter	Exit	Enter	Exit
Single-Family Homes (210)	215 DU	2,041	39	111	129	75
Multi-Family Housing (Low-Rise) (220)	191 DU	1,300	20	62	65	38
Total Trips		**3,341**	**59**	**173**	**194**	**113**

4. Future Traffic Conditions

Through coordination with NCDOT and the Town, it was determined that an annual growth rate of 3% would be used to generate 2027 projected weekday AM and PM peak hour traffic volumes. The following adjacent developments were identified to be considered under future conditions:

- Devon Square
- Live Oaks
- Holding Mills (formerly Townes on Main)
- Kinsley Residential

- Mason Oaks (formerly Glen Oaks)

Based on coordination with the NCDOT and the Town, right-of-way acquisition for STIP U-5307D is funded in 2028 which is after the build out year for the proposed development. It should be noted that STIP U-5703D is not funded for construction at this time. Due to STIP U-5307D not being funded for construction and the right-of-way acquisition taking place after the buildout of the proposed development, roadway improvements associated with STIP U-5703D were not included in this study. Future roadway improvements associated with the Devon Square development are to be included in this study under future traffic conditions.

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

- 2022 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions
- 2027 Build Traffic Conditions with Improvements

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2022 existing, 2027 no-build, 2027 build, and 2027 build – improved traffic conditions. Refer to Table E-2 on the following page for the capacity analysis summary performed at each study intersection.

Table E-2: Capacity Analysis Summary

Intersection	Approach	2022 Existing Conditions		2027 No-Build Conditions		2027 Build Conditions		2027 Build - Improved Conditions	
		AM	PM	AM	PM	AM	PM	AM	PM
US 1 and Harris Road / Purnell Road	EB	E	C	F	D	F	D	F	F
	WB	E	D	F	E	F	F	F	F
	NB	B	F	B	F	B	F	C	E
	SB	C	E	E	F	E	F	F	D
	Overall	C (32)	F (82)	F (97)	F (174)	F (134)	F (175)	F (92)	E (76)
Harris Road and Wallridge Road	EB	A[1]	A[1]	A[1]	A[1]	A[1]	B[1]	--	--
	WB	--	--	--	--	--	--	--	--
	SB	B[2]	C[2]	C[2]	F[2]	C[2]	F[2]	--	--
Harris Road and Joyner Park Westernmost Access	EB	--	--	--	--	--	--	--	--
	WB	A[1]	A[1]	A[1]	A[1]	A[1]	A[1]	--	--
	NB	B[2]	B[2]	C[2]	D[2]	C[2]	D[2]	--	--
Harris Road and Joyner Park Easternmost Access / Access B	EB	--	--	--	--	A[1]	A[1]	--	--
	WB	A[1]	A[1]	A[1]	A[1]	A[1]	A[1]	--	--
	NB	B[2]	B[2]	C[2]	C[2]	C[2]	F[2]	--	--
	SB	N/A		N/A		C[2]	D[2]	--	--
Harris Road and Wall Road / W Oak Avenue	EB	B[1]	C[1]	D[1]	F[1]	F[1]	F[1]	B	C
	WB	B[1]	B[1]	F[1]	F[1]	F[1]	F[1]	B	B
	NB	A[2]	B[2]	B[2]	D[2]	C[2]	E[2]	B	D
	SB	B[2]	B[2]	C[2]	D[2]	C[2]	D[2]	B	C
	Overall	**B[3] (11)**	**B[3] (15)**	**E[3] (44)**	**F[3] (146)**	**F[3] (52)**	**F[3] (177)**	**B (15)**	**C (22)**
Harris Road and Devon Square Access / Access A	EB	N/A		--	--	A[1]	A[1]	--	--
	WB			A[1]	A[1]	A[1]	A[1]	--	--
	NB			C[2]	C[2]	E[2]	F[2]	--	--
	SB			N/A		C[2]	E[2]	--	--

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.
3. All-way stop-control, approach level of service.

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.

Committed Improvements by Devon Square

US 1 and Harris Road / Purnell Road

- Extend the northbound US 1 left turn lane to provide 400 feet of storage and appropriate taper length.

Recommended Improvements by Developer

US 1 and Joyner Park Easternmost Access / Access B

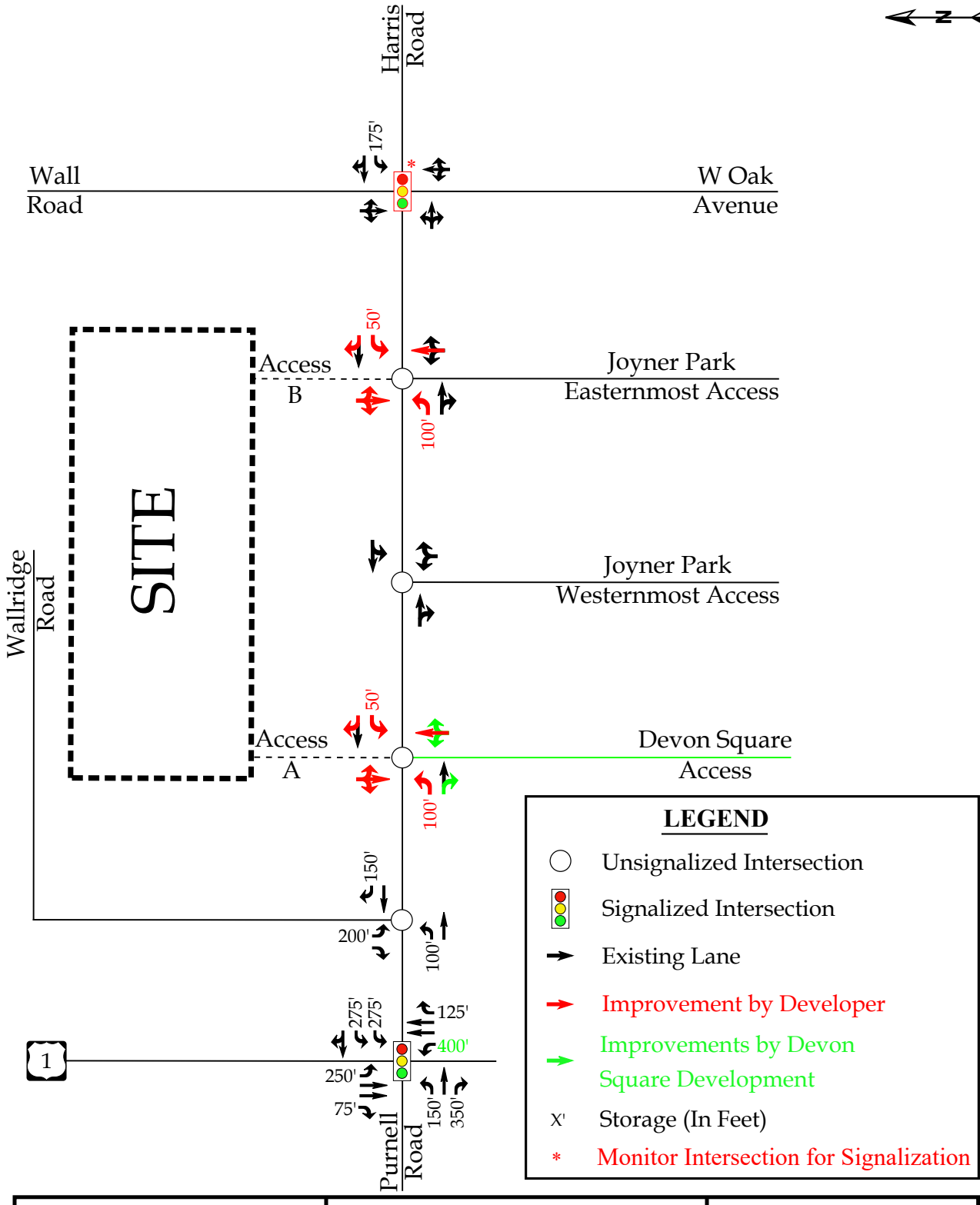
- Construct Access B with one ingress and one egress lane (shared left-through-right lane).
- Construct an exclusive eastbound left turn lane on Harris Road with 100 feet of storage and appropriate taper length.
- Due to the widening of Harris Road to accommodate an eastbound left turn lane into the site, it is recommended that an exclusive westbound left turn lane be constructed on Harris Road with 50 feet of storage and appropriate taper length.

Harris Road and Wall Road / W Oak Avenue

- Monitor the intersection for signalization and install signal once warrants are met.

Harris Road and Devon Square Access / Access A

- Construct Access A with one ingress and one egress lane (shared left-through-right lane).
- Construct an exclusive eastbound left turn lane on Harris Road with 100 feet of storage and appropriate taper length.
- Due to the widening of Harris Road to accommodate an eastbound left turn lane into the site, it is recommended that an exclusive westbound left turn lane be constructed on Harris Road with 50 feet of storage and appropriate taper length.



RAMEY KEMP ASSOCIATES

Harris Road Residential
Wake Forest, NC

Recommended Lane Configurations

Scale: Not to Scale | Figure E-1