



Horse Creek
Traffic Impact Analysis
Wake Forest, North Carolina

TRAFFIC IMPACT ANALYSIS

FOR

HORSE CREEK MIXED-USE

LOCATED

IN

WAKE FOREST, NORTH CAROLINA

Prepared For:
MCRT SFR Investment LLC
101 W. Washington Avenue
Charlotte, North Carolina

Prepared By:
Infrastructure Consulting Services, Inc.
dba

Ramey Kemp Associates
5808 Faringdon Place
Raleigh, NC 27609
License #F-1489



7/11/22

A handwritten signature in black ink, appearing to read "Ramey G. Stephenson", written over the date.

JULY 2022

RKA Project No. 21674

Prepared By: DT

Reviewed By: RS

TRAFFIC IMPACT ANALYSIS
HORSE CREEK
WAKE FOREST, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Horse Creek development in accordance with the 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 southwest quadrant at the intersection of Jenkins Road / Stadium Drive and US Highway 1 / Capital Boulevard in Wake Forest, North Carolina. The proposed development is expected to consist of the following land uses and be built out by 2026:

- 240 multifamily housing units
- 9,600 square foot (sq. ft.) day care center
- 3,000 sq. ft. drive-in bank
- 7,200 sq. ft. high-turnover sit-down restaurant
- 7,800 sq. ft. fast-food restaurant with drive-through
- 2,400 sq. ft. automated car wash

Site access is proposed via three (3) full-movement driveways along Jenkins Road. Site Drive 1, the easternmost access is designed as a future service road for NCDOT STIP U-5307 which will convert US 1 to a freeway with full access control. Site Drive 1 will serve as the primary access for the commercial area of the proposed development. The location of Site Drive 1 was reviewed by the NCDOT to verify that the location can be accommodated by the US 1 freeway design plans as they are developed in the future.

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

- 2022 Existing Traffic Conditions
- 2026 No-Build Traffic Conditions
- 2026 Build Traffic Conditions

2. Existing Traffic Conditions

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

- Jenkins Road / Stadium Drive and US Highway 1 / Capital Boulevard
- Wake Union Church Road / Agora Drive and US Highway 1 / Capital Boulevard
- Jenkins Road and Chilmark Avenue
- Country Club Drive / Templeridge Road and US Highway 1 / Capital Boulevard
- Country Club Drive and Wake Union Church Road / Country Club Drive

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2022 by Quality Counts during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods while schools were in session for in-person learning:

- Jenkins Road / Stadium Drive and US Highway 1 / Capital Boulevard
- Wake Union Church Road / Agora Drive and US Highway 1 / Capital Boulevard
- Jenkins Road and Chilmark Avenue
- Country Club Drive / Templeridge Road and US Highway 1 / Capital Boulevard
- Country Club Drive and Wake Union Church Road / Country Club Drive

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 240 townhomes, a 9,600 sq. ft. day care center, a 3,000 sq. ft. drive-in bank, a 7,200 sq. ft. high-turnover sit-down restaurant, a 7,800 sq. ft. fast-food restaurant with drive-through, and a 2,400 sq. ft. automated car wash. 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, on the next page, 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
Multifamily Housing (Low-Rise) (220)	240 units	1,614	23	74	78	46
Day Care Center (565)	9,600 sq. ft.	457	56	50	50	57
Drive-In Bank (912)	3,000 sq. ft.	301	17	13	31	32
High-Turnover (Sit-Down) Restaurant (932)	7,200 sq. ft.	772	38	31	40	25
Fast-Food Restaurant w/ Drive-Thru (934)	7,800 sq. ft.	3,646	177	171	134	124
Automated Car Wash (948)	2,400 sq. ft.	340*	--	--	17	17
Total Trips		7,130	311	339	350	301
<i>Internal Capture (7% Entering AM & 6% Exiting AM) (24% Entering PM & 26% Existing PM)</i>			-22	-20	-84	-78
Total External Trips			289	319	266	223
<i>Pass-By Trips:</i>			-4	-4	-11	-11
<i>Drive-In Bank (29% AM, 35% PM)</i>			--	--	-11	-11
<i>HTSD (44% PM)</i>			-82	-82	-53	-53
<i>Fast-Food Restaurant with Drive-Thru (50% AM, 55% PM)</i>						
Total Primary Trips			203	233	191	148

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 3% would be used to generate 2026 projected weekday AM and PM peak hour traffic volumes. The following adjacent developments were identified to be considered under future conditions:

- Tru Hotel
- Devon Square

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2022 existing, 2026 no-build, and 2026 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

Jenkins Road / Stadium Drive and US Highway 1 / Capital Boulevard

- Convert the intersection to a reduced conflict intersection (superstreet) with side streets restricted to right turns only.
- Provide a new exclusive eastbound right-turn lane with approximately 500 feet of storage and appropriate taper length. The right turn taper is anticipated to begin immediately east of Site Drive 1.
- Stripe the eastbound approach of Jenkins Road to provide dual right turn lanes.
- Restripe the westbound approach of Stadium Drive to provide dual right turn lanes.
- Extend the existing northbound left-turn lane on US Highway 1 to provide a minimum of 450 feet of storage plus appropriate deceleration and taper length.
- Modify the existing traffic signal to accommodate the new configuration and coordinate the signal with the new U-turn intersections.

Northern U-Turn and US Highway 1 / Capital Boulevard

- Construct a new northbound U-turn lane on US Highway 1 with a minimum of 425 feet of storage and appropriate deceleration and taper.
- Construct a bulb out on US Highway 1 to accommodate U-turning vehicles.
- Install a traffic signal at the intersection with wooden poles and coordinate the new traffic signal with the intersection at US Highway 1 and Jenkins Road / Stadium Drive.

Southern U-Turn and US Highway 1 / Capital Boulevard

- Construct a new southbound U-turn lane on US Highway 1 with a minimum of 425 feet of storage and appropriate deceleration and taper. Depending on the exact location of the new U-turn, it may be ideal to start the taper for the southbound U-turn lane at/near the intersection with Jenkins Road.
- Construct a bulb out on US Highway 1 to accommodate U-turning vehicles.

- Install a traffic signal at the intersection with wooden poles and coordinate the new traffic signal with the intersection at US Highway 1 and Jenkins Road / Stadium Drive.

Jenkins Road and Site Drive 1

- Construct the northbound approach with one (1) ingress lane and one (1) egress lane.
- Provide an exclusive westbound left-turn lane with a minimum of 175 feet of storage and appropriate deceleration and taper length.
- Provide stop-control for the northbound approach.

Jenkins Road and Site Drive 2

- Construct the northbound approach with one (1) ingress lane and one (1) egress lane.
- Provide an exclusive westbound left-turn lane with a minimum of 75 feet of storage and appropriate deceleration and taper length.
- Provide stop-control for the northbound approach.

Jenkins Road and Chilmark Avenue / Site Drive 3

- Construct the northbound approach with one (1) ingress lane and one (1) egress lane.
- Provide an exclusive westbound left-turn lane with a minimum of 50 feet of storage and appropriate deceleration and taper length.
- Provide stop-control for the northbound approach.

Improvements Needed to Meet Town's UDO Requirements

Wake Union Church Road / Agora Drive and US Highway 1 / Capital Boulevard

- Convert the intersection to a reduced conflict intersection (superstreet) with side streets restricted to right turns onto US Highway 1.
- Construct new exclusive U-turn lanes and median openings on US Highway 1 north of the intersection and south of the intersection.

