Revised
Traffic Impact Analysis

Johnson Hyundai of Wake Forest

Wake Forest, NC

Prepared for:

Johnson Automotive

Kimley»Horn

Revised Traffic Impact Analysis for

Johnson Hyundai of Wake Forest

Wake Forest, North Carolina

Prepared for:

Johnson Automotive
Raleigh, North Carolina

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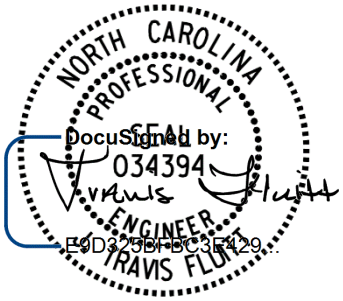


Executive Summary

Kimley-Horn and Associates, Inc. has revised the Traffic Impact Analysis originally dated October 10, 2023 for the Johnson Hyundai of Wake Forest development, which is proposed to be located north of Burlington Mills Road and east of US 1 (Capital Boulevard) in Wake Forest, NC, to address comments received from the Town of Wake Forest and changes to the proposed site plan. The property is proposed to consist of an automobile sales dealership of approximately 48,500 square feet (SF). Build-out of the development is anticipated by 2026.

The site currently consists of several commercial uses served by two driveways on Burlington Mills Road and two driveways on US 1. All of these commercial uses will be removed with the proposed dealership. The southern existing driveway on US 1 and both existing driveways on Burlington Mills Road are proposed to be removed with this development. The site is proposed to be accessed by the northern existing right-in/right-out driveway on US 1 and one new full-movement driveway connection to the intersection of Burlington Mills Road at Urial Drive.

The proposed Johnson Hyundai of Wake Forest site development is in the immediate vicinity of NCDOT Project # U-5307 which proposes to convert the existing intersection of US 1 at Burlington Mills Road to an interchange. Plans for this project are not yet finalized; therefore, per discussions with NCDOT and the Town of Wake Forest, NCDOT Project # U-5307 will not be analyzed in this study. The existing site driveway along US 1 that is proposed to remain will be removed, and the full-movement driveway on Burlington Mills Road will be restricted to right-in/right-out access with the completion of U-5307. With STIP project U-5307, the site will have access to the future Stroller Ridge Drive extension.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2023) traffic condition and the projected (2026) background and build-out traffic conditions. The weekday AM and PM peak hours were studied.

As shown in Table ES-1, the proposed development has the potential to generate 1,360 net new daily trips, 100 net new trips during the AM peak hour, and 121 net new trips during the PM peak hour on a typical weekday. No reductions were taken for pass-by traffic already on the network or for existing uses to be removed.

Table ES-1
ITE Traffic Generation (Vehicles)

Land Use Code	Land Use	Intensity		Daily		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out	In	Out
840	Automobile Sales (New)	48,500	SF	680	680	54	46	56	65

Capacity analyses were performed using Synchro Version 11 software. Table ES-2 summarizes the operation of the study intersections for the AM and PM peak hour traffic conditions.

Table ES-2 - Level of Service Summary									
Intersection and Approach/Movement	Traffic Control	Existing (2023) Traffic		Background (2026) Traffic		Build-out (2026) Traffic		Build-out (2026) Traffic - with Improvements	
		AM	PM	AM	PM	AM	PM	AM	PM
US 1 at Burlington Mills Road	Signalized	D (54.5)	D (45.4)	F (98.5)	E (67.0)	F (101.6)	E (70.5)	F (101.6)	E (70.6)
Eastbound		F (98.8)	F (127.8)	F (96.9)	F (130.5)	F (97.0)	F (130.6)	F (97.0)	F (130.6)
Westbound		F (92.5)	F (117.2)	F (89.9)	F (122.8)	F (89.6)	F (123.4)	F (89.6)	F (123.4)
Northbound		D (48.8)	C (32.3)	F (89.1)	D (53.5)	F (94.5)	E (55.3)	F (94.5)	E (60.1)
Southbound		D (48.1)	D (39.7)	F (109.8)	E (62.0)	F (111.8)	E (68.0)	F (111.8)	E (63.2)
Burlington Mills Road at Urial Drive/Site Driveway 1	Unsignalized/ Signalized	- (-)	- (-)	B (12.9)	B (10.5)	B (14.4)	B (12.4)	B (13.8)	B (11.9)
Eastbound		N/A		A (9.6)	A (8.6)	B (11.1)	B (10.4)	B (10.1)	A (9.6)
Westbound*		A (8.5)	A (8.8)	B (12.1)	A (9.4)	B (13.0)	B (11.0)	B (12.8)	B (10.7)
Northbound		C (24.5)	C (22.9)	C (25.1)	C (20.5)	C (27.1)	C (22.6)	C (26.5)	C (22.1)
Southbound		N/A		N/A		C (23.9)	C (20.5)	C (23.3)	C (20.1)
Burlington Mills Road at 1 World Way	Signalized	B (14.9)	B (12.2)	C (23.7)	B (14.8)	C (22.8)	B (14.6)	N/A	
Eastbound		A (8.1)	A (7.5)	C (24.0)	A (8.3)	C (22.4)	A (8.2)		
Westbound		B (16.5)	B (17.2)	C (21.8)	B (19.8)	C (21.3)	B (19.3)		
Southbound		C (20.3)	B (15.4)	C (26.8)	C (20.3)	C (26.2)	C (20.0)		
US 1 at Frontline Auto Sales Driveway	Unsignalized	- (-)	- (-)	- (-)	- (-)	N/A		N/A	
Westbound		C (23.9)	E (44.2)	D (26.6)	F (62.3)				
US 1 at Wakefield Automotive Driveway (Site Driveway 2)	Unsignalized	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	N/A	
Westbound		C (19.8)	C (21.4)	C (23.2)	D (26.6)	C (24.9)	D (29.9)		
Burlington Mills Road BP Driveway/Frontline Auto Sales Driveway	Unsignalized	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
Northbound		C (16.4)	C (15.5)	D (25.1)	C (21.1)	C (18.4)	C (17.0)	C (18.4)	C (17.0)
Southbound		C (22.5)	C (21.8)	E (39.0)	E (37.3)	N/A		N/A	
Eastbound Left		B (11.6)	B (10.7)	B (13.1)	B (12.6)				
Westbound Left		A (8.7)	A (8.7)	A (9.7)	A (9.2)	A (9.7)	A (9.3)	A (9.7)	A (9.3)
Burlington Mills Road at Wakefield Auto Truck and Van Driveway	Unsignalized	- (-)	- (-)	- (-)	- (-)	N/A		N/A	
Southbound		C (18.5)	C (19.2)	C (21.7)	C (22.7)				
Eastbound Left		A (9.4)	A (8.7)	B (10.4)	A (9.6)				

*Major street left-turn movements analyzed in unsignalized scenarios.

The following roadway improvements are committed to be performed by the Burlington Mills Residential development:

Burlington Mills Road at Urial Drive:

- Install a traffic signal when warranted
- Provide exclusive northbound left and right-turn lanes on Urial Drive extending back to Site Driveway 2 of this development
- Widen Burlington Mills Road to provide two eastbound lanes along the site frontage with the outside lane dropping as a right-turn lane at Urial Drive

The following roadway improvements are recommended to be performed to accommodate existing traffic and the projected Johnson Hyundai of Wake Forest site traffic for the study year 2026 based on the capacity analysis presented herein:

US 1 at Burlington Mills Road:

- Modify signal timings to meet v/c ratio thresholds outlined in the Town's UDO
- Extend the existing through/right lane back along the site frontage (maximum storage estimated to be approximately 550 feet plus 100-foot taper)

Burlington Mills Road at Urial Drive/Site Driveway 1:

- Construct a full-movement site driveway for the planned development north of Burlington Mills Road with one ingress and one egress lane
- Provide an eastbound left-turn lane with approximately 100 feet of storage and appropriate deceleration and taper
- Provide frontage widening to be striped as a westbound right-turn lane (maximum storage estimated to be approximately 125 feet plus 100-foot taper)
- Modify the traffic signal, if installed, to accommodate the recommended laneage

US 1 at Wakefield Automotive Driveway

- Improve this driveway connection to a full right-in/right-out access

Analysis indicates that with the recommended improvements in place, all the study intersections are expected to operate at an acceptable LOS in the projected (2026) build-out traffic condition except US 1 at Burlington Mills Road. The intersection of US 1 at Burlington Mills Road is projected to operate at LOS F in the AM peak hour and LOS E in the PM peak hour in the projected (2026) traffic condition with or without the proposed development in place. Signal timing modifications improve the v/c ratio for the southbound left-turn movement and intersection as a whole to acceptable levels, per the Town's UDO.

The recommended extension of the existing westbound though/right lane from US 1 along the site frontage is expected to significantly reduce the westbound queues and delays along this section of Burlington Mills Road. SimTraffic simulations indicate that westbound queues on this section of Burlington Mills Road may be reduced by approximately ***45 percent in the AM peak hour*** and ***21 percent in the PM peak hour*** compared to the background condition. Table ES-3 shows a comparison of the maximum reported queues from SimTraffic at each intersection for the projected (2026) background

and build-out improved traffic conditions for the westbound through movement along Burlington Mills Road.

Table ES-3 SimTraffic Maximum Queues - Westbound Burlington Mills Road				
Intersection	**Background**	**Build-out + Improvements**	**Difference (Build-out + Imp. vs. Background)**	**% Difference (Build-out + Imp. vs. Background)**
AM Peak Hour				
US 1	154’	168’	+14	+9.1%
BP Driveway	210’	398’	+188	+89.5%
Urial Drive/Site Dwy 1	1,469’	297’	-1,172	-79.8%
1 World Way	954’	668’	-286	-30.0%
Total	**2,787’**	**1,531’**	**-1,256**	**-45.1%**
PM Peak Hour				
US 1	137’	159’	+22	+16.1%
BP Driveway	210’	406’	+196	+93.3%
Urial Drive/Site Dwy 1	1,476’	991’	-485	-32.9%
1 World Way	993’	669’	-324	-32.6%
Total	**2,816’**	**2,225’**	**-591**	**-21.0%**

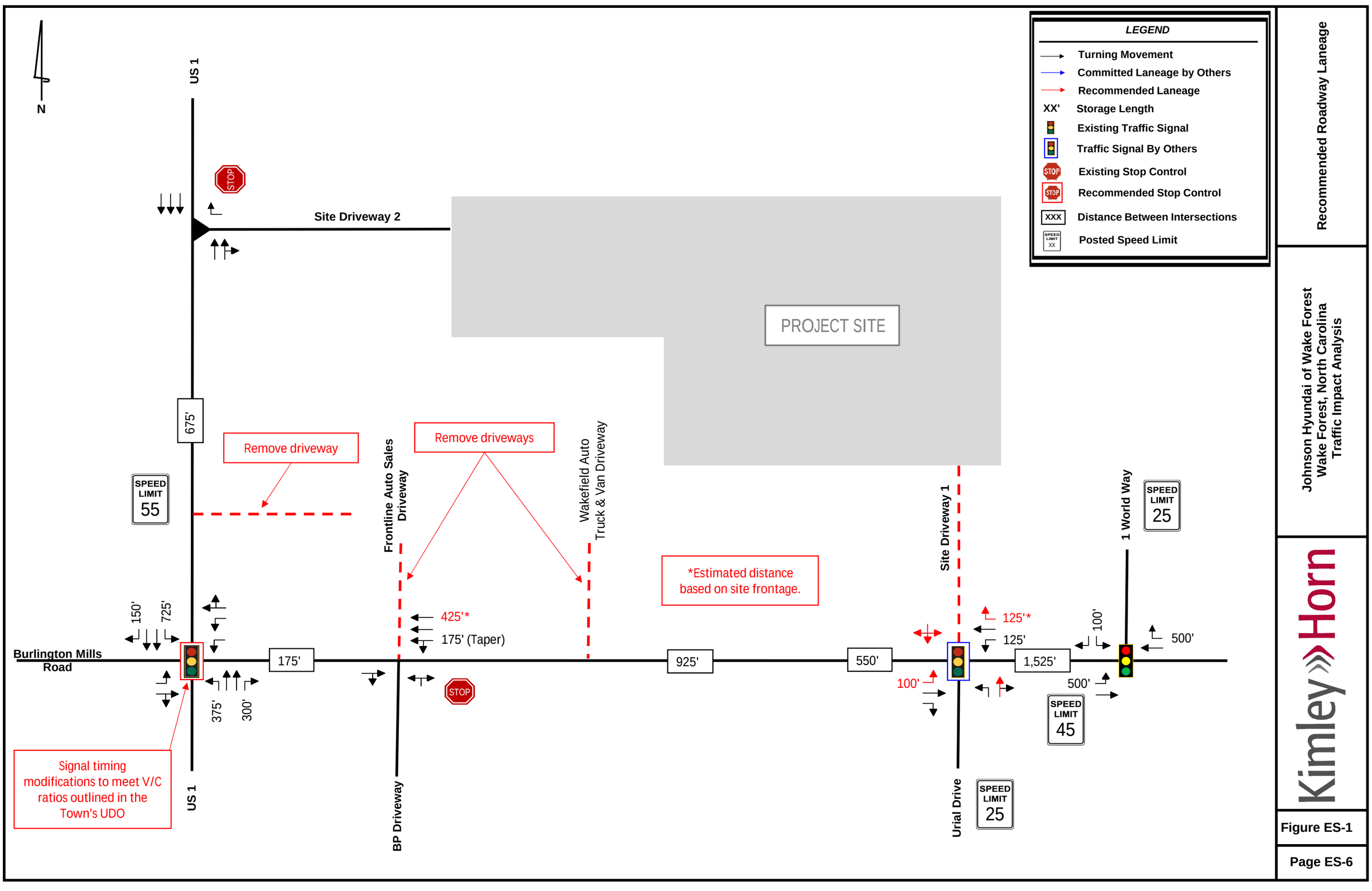
SimTraffic arterial reports for westbound Burlington Mills Road also show that the travel time on westbound Burlington Mills Road may be reduced by approximately ***66 percent in the AM peak hour*** and ***67 percent in the PM peak hour***. Additionally, delay per vehicle may be reduced by approximately ***67 percent in the AM peak hour*** and by ***63 percent in the PM peak hour***. Table ES-4 shows a comparison of the travel times and delays per vehicle between the projected (2026) background and build-out improved traffic conditions for the westbound through movement along Burlington Mills Road.

Table ES-4 SimTraffic Arterial Results - Westbound Burlington Mills Road				
Scenario	**AM Peak Hour**		**PM Peak Hour**	
	Travel Time (sec)	**Delay (sec/veh)**	**Travel Time (sec)**	**Delay (sec/veh)**
Background	648.9	500.5	1125.4	830.8
Build-out + Improvements	219.8	166.5	370.7	310.4
Difference (Build-out + Imp vs. Background)	**-429.1**	**-334.0**	**-754.7**	**-520.4**
% Difference (Build-out + Imp vs. Background)	**-66.1%**	**-66.7%**	**-67.1%**	**-62.6%**

While not reflected in the intersection LOS and delays, the decrease in queues, travel times, and delays per vehicle in the westbound direction represent significant improvements in operations on Burlington Mills Road and are expected to more than offset any impacts from projected site traffic. Therefore, no

additional mitigation is recommended to be performed at this intersection as part of the Johnson Hyundai of Wake Forest project.

The recommended laneage is shown on **Figure ES-1**.



Recommended Roadway Laneage

Johnson Hyundai of Wake Forest
Wake Forest, North Carolina
Traffic Impact Analysis

Kimley»Horn

Figure ES-1