

**UNC HEALTH CARE
EASTOWNE MEDICAL OFFICE BUILDING**

TRAFFIC IMPACT STUDY

EXECUTIVE SUMMARY



Prepared for:

The Town of Chapel Hill
Public Works Department – Traffic Engineering

Prepared by:

HNTB North Carolina, PC

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Suite 200
Raleigh, NC 27609*

NCBELS License #: C-1554

June 2018

HNTB

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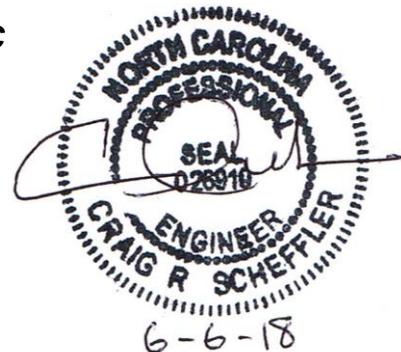
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EXECUTIVE SUMMARY

Project Overview

The redevelopment of the existing UNC Health Care Medical Office Buildings (MOB) complex, located along the US 15-501 (Durham-Chapel Hill Road) and Eastowne Drive, into a larger medical clinic facility with a structured parking deck is being proposed in Chapel Hill. The project proposes to demolish four existing buildings with a total size of 77,484 square feet and construct one new building on the existing parcel with an approximate 150,000 square foot size. **Figure ES-1** shows the general location of the site. The project is anticipated to be fully complete by late 2020. This report analyzes the transportation impacts for the build-out scenario for the year 2021 (one year after anticipated completion), the no-build scenario for the 2021 analysis year, as well as 2018 existing base year traffic conditions.

The proposed site concept plans show several minor transportation network changes from existing conditions, including a new access point along Eastowne Drive to serve the new building and proposed structured parking deck and closure of existing driveways serving existing surface parking lot facilities. **Figure ES-2** displays the preliminary concept plans of the UNC Healthcare Eastowne MOB development, transportation network changes, and nearby land uses and roadways. The project is expected to provide on-site structured parking with a total of approximately 580 spaces in one five story parking deck. This report analyzes and presents the transportation impacts that the UNC Healthcare Eastowne MOB redevelopment will have on the following existing and future intersections in the project study area:

- US 15-501 and Sage Road / Scarlett Drive
- US 15-501 and Eastowne Drive (South) / Service Road
- US 15-501 and Eastowne Drive (North) / Lakeview Drive
- Eastowne Drive and Old Sterling Drive / UNC Health Care Building #5 Driveway
- Eastowne Drive and Future Parking Deck Driveway Access
- Eastowne Drive and Pinegate Circle / UNC Health Care Driveway
- Eastowne Drive and Dobbins Drive

The impacts of the proposed site at the study area intersections were evaluated during the AM, noon, and PM peak hours of an average weekday.

Existing Conditions

Study Area

The site is located in northeast Chapel Hill along US 15-501 in the Eastowne Business Park. The study area contains three signalized intersections along US 15-501 at Sage Road, Eastowne Drive/Service Road and Eastowne Drive/Lakeview Drive. All future site traffic is expected use a proposed full access site driveway along Eastowne Drive. Internal driveways shown on the preliminary site plan will circulate site traffic to structured and surface parking. US 15-501 is a major arterial facility providing connectivity between Chapel Hill, Durham and the I-40 corridor. Remaining study area network roadways are either minor arterial/collector facilities or local neighborhood access streets.

Site Traffic Generation

With the addition of new peak hour trips during the weekday AM, noon, and PM peak hours, there are potential site traffic impacts to the study area intersections. **Table ES-1** shows the site trip generation details, with generation rates taken from the Institute of Transportation Engineers (ITE) *Trip Generation*



Manual, Version 10. Trips for the existing UNC Health Care facilities on the site were also generated to establish a “full occupancy” future No-Build Scenario. The redevelopment “net” trips were then calculated by subtracting full occupancy trips from the total estimate site trip generation from the new medical clinic.

Table ES-1. Weekday Vehicle Trip Generation Summary

Description	Daily			AM Peak			Noon Peak			PM Peak		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
BUILD-OUT TOTAL	1,145	1,145	2,290	178	52	230	98	78	175	83	154	237
Existing Site (Full Occupancy)	414	414	828	85	14	99	25	22	47	14	75	89
NET INCREASE OVER EXISTING SITE FULL OCCUPANCY	731	731	1,462	93	38	131	73	56	128	69	79	148

Background Traffic

Background traffic growth for the 2021 analysis year is expected to come from three sources - ambient regional traffic growth, specific development-related traffic growth and the assumption that the existing UNC Health Care buildings are fully occupied in the No-Build Scenario. One Town-approved site (Wegmans Supermarket Redevelopment) in the project study area is expected to contribute to specific background traffic generator growth. All remaining estimated traffic volume increases are assumed to occur due to overall region-wide ambient growth (assumed 1.5 percent per year based on NCDOT/Town provided historic growth data).

Impact Analysis

Peak Hour Intersection Level of Service

Existing traffic operations at all study area intersections are acceptable during all three peak hours analyzed, though several intersections along US 15-501 are at capacity during peak travel periods. The projected ambient and background development traffic growth will increase impacts by 2021 but these will be mitigated by proposed mitigation improvements stemming from the Wegmans Supermarket development. Even with the addition of peak hour site-generated “net” trips to the projected 2021 background traffic volumes, no study area intersections are expected to experience deficient traffic operations in any peak hour. Proposed geometric and signal timing improvements are expected to mitigate anticipated deficient LOS conditions throughout the study area and improve queue storage and safety, as well.

A summary of the traffic operations for each intersection, related to vehicular delays (intersection average as a whole if signalized, critical movement if stop-controlled) and the corresponding Level-of-Service (LOS) is shown in **Table ES-2**.



Table ES-2. Peak Hour Intersection Capacity Analysis Summary

Intersections	Peak Hour	2018 Existing		2021 No-Build		2021 Build		2021 Mitigated	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
US 15-501 and Sage Road / Scarlett Drive	AM	D	46.5	D	47.4	D	47.6	N/A	N/A
	NOON	D	42.5	D	40.8	D	40.7	N/A	N/A
	PM	D	52.2	D	50.6	D	50.9	N/A	N/A
US 15-501 and Eastowne Drive (South) / Service Road	AM	B	10.0	B	14.2	B	18.8	N/A	N/A
	NOON	B	14.6	B	13.2	B	15.8	N/A	N/A
	PM	B	16.8	B	14.9	B	18.1	N/A	N/A
US 15-501 and Eastowne Drive (North) / Lakeview Drive	AM	C	26.3	B	17.7	B	18.2	N/A	N/A
	NOON	B	19.8	B	19.3	B	19.9	N/A	N/A
	PM	D	50.5	C	34.3	D	35.3	N/A	N/A
Eastowne Drive and Old Sterling Drive / UNC Health Care Building #5 Driveway#	AM	B	11.6	B	12.7	B	13.7	N/A	N/A
	NOON	B	12.0	B	12.5	B	13.5	N/A	N/A
	PM	B	11.4	B	12.0	B	12.9	N/A	N/A
Eastowne Drive and Future Parking Deck Driveway Access#	AM	N/A	N/A	N/A	N/A	B	11.2	N/A	N/A
	NOON	N/A	N/A	N/A	N/A	B	10.7	N/A	N/A
	PM	N/A	N/A	N/A	N/A	B	11.3	N/A	N/A
Eastowne Drive and Pinegate Circle / UNC Health Care Driveway#	AM	A	9.5	B	10.5	A	9.9	N/A	N/A
	NOON	A	9.6	A	9.9	B	10.1	N/A	N/A
	PM	A	9.7	B	10.2	B	10.4	N/A	N/A
Eastowne Drive and Dobbins Drive#	AM	B	10.1	B	11.0	B	11.8	N/A	N/A
	NOON	A	9.7	B	10.0	B	10.6	N/A	N/A
	PM	A	9.9	B	10.5	B	11.3	N/A	N/A

BOLD/ITALICS – Critical Movement or Overall Intersection Requires Mitigation Per Town TIS Guidelines

- Worst-Case LOS/Delay for Unsignalized/Stop-Controlled Critical Movement



Access Analysis

Vehicular site access is to be accommodated by one proposed full movement access driveway connecting to Eastowne Drive for entry/exit to the proposed structured parking and on-site surface drop-off areas. An additional grass paved access for fire truck is shown connecting to US 15-501 southbound on **Figure ES-2**. Design details related to driveway throat lengths are shown on the site plan and provide over 200 feet of driveway throat length, which should be sufficient based on capacity analysis queue estimates for all exiting stop-controlled movements.

Access for pedestrians and bicyclists is limited in the project study area. Sidewalk is present on most study area facilities, but connectivity is impaired due to lack of continuous sidewalk in some areas and adequate crossings of the US 15-501 corridor. Crosswalk and pedestrian signals exist across the US 15-501 intersection with Eastowne Drive (south). Bicycle lanes do exist on Sage Road and Old Sterling Drive, and the cross-section width of Eastowne Drive is does not inhibit bicycling, but there is no bicycling connectivity on or paralleling the US 15-501 corridor.

Signal Warrant Analysis

Based on projected 2021 traffic volumes and proposed access plans, no unsignalized intersection in the project study area would warrant the installation of a traffic signal, based on the methodology found in the *2009 Manual on Uniform Traffic Control Devices (MUTCD)*.

Crash Analysis

Data from the NCDOT Traffic Safety Unit was provided for the five-year period 3/1/2013 to 2/28/2018 for the US 15-501 and Eastowne Drive road segments in the vicinity of the proposed site. There were 178 crashes reported along the US 15-501 study area corridor between Sage Road and Eastowne Drive/Lakeview Drive over the five year period, with 17 crashes on Eastowne Drive. The primary crash type was rear end crashes and crashes were primarily clustered near the three signalized intersections. Overall, the number and severity of crashes along US 15-501 in the project study area is similar to state-wide averages for similar US highway facilities.

Other Transportation-Related Analyses

Other transportation-related analyses relevant to the 2001 Town of Chapel Hill Guidelines for the preparation of Traffic Impact Studies were completed as appropriate. The following topics listed in **Table ES-3** are germane to the scope of this study.



Table ES-3. Other Transportation-Related Analyses

Analysis	Comment
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using Synchro 95 th percentile (max) queue length estimates for the 2021 Build Scenario. No unsignalized intersection is expected to have excessive peak hour queues or conditions that exceed existing turn lane storage. Recommendations to improve turn lane storage were made for the US 15-501 and Eastowne Drive/Service Road intersection – as this location will have the highest degree of site traffic impact. Storage issues not due to site-related traffic impacts are not easily correctable at other upstream/downstream intersections, given the high traffic volumes along the US 15-501 corridor.
Appropriateness of Acceleration/Deceleration Lanes	The site concept plan shows no specifics related to acceleration/deceleration lanes. Due to the low speed limit on Eastowne Drive (25 mph) and the presence of some on-street parking in the vicinity, no acceleration/deceleration lanes are recommended for site access. Existing intersections along US 15-501 currently have left-turn and right-turn auxiliary deceleration lanes. No other specific acceleration/deceleration lane issues were analyzed in the project study area.
Pedestrian and Bicycle Analysis	Existing pedestrian access and connectivity is limited in the project study area, though sidewalk exists along several roadways on at least one side of the road. Bicycle lanes extend along Sage Road and Old Sterling Drive, and will be extended to Old Durham Road, but no bicycle facilities exist along/parallel to the US 15-501 corridor within the project study area. The site plan shows additional sidewalk developed along site frontage. Additional pedestrian upgrades at the US 15-501 and Eastowne Drive/Service Road intersection are needed to connect this sidewalk to the adjacent side of the corridor to connect to Wegmans / SECU area.
Public Transportation Analysis	Public transportation service to the study area, and to the proposed site is adequate, with bus stops and multiple local and regional bus routes on both Eastowne Drive and US 15-501 proximate to the site. Additional amenities for the existing bus stop on Eastowne Drive at the site are recommended.

Mitigation Measures/Recommendations

Planned Improvements

There is one Town of Chapel Hill / North Carolina Department of Transportation improvement project affecting study area roadway facilities within the analysis year time frame of 2018-2021. NCDOT STIP project EB-4707B is currently beginning construction along Old Durham Road/Old Chapel Hill Road east of the project study area and will include pedestrian and bicycle improvements connecting to the US 15-501 corridor at the Sage Road/Scarlett Drive intersection. The US 15-501 corridor is currently being studied for capacity improvements as part of NCDOT STIP U-5304, but these improvements are not known at this time and were not considered to be complete by the 2021 analysis year.

Background Committed Improvements

The redevelopment of the current Performance Motors campus along US 15-501 into a Wegmans Supermarket has been approved by the Town, and the project will include several geometric and signal timing improvements to intersections along the US 15-501 corridor highlighted in **Figure ES-3**.

Applicant Committed Improvements

Based on the preliminary site plans and supporting development information provided, there are no specific transportation-related improvements proposed external to the UNC Health Care Eastowne MOB site. There are several internal improvements including the following:

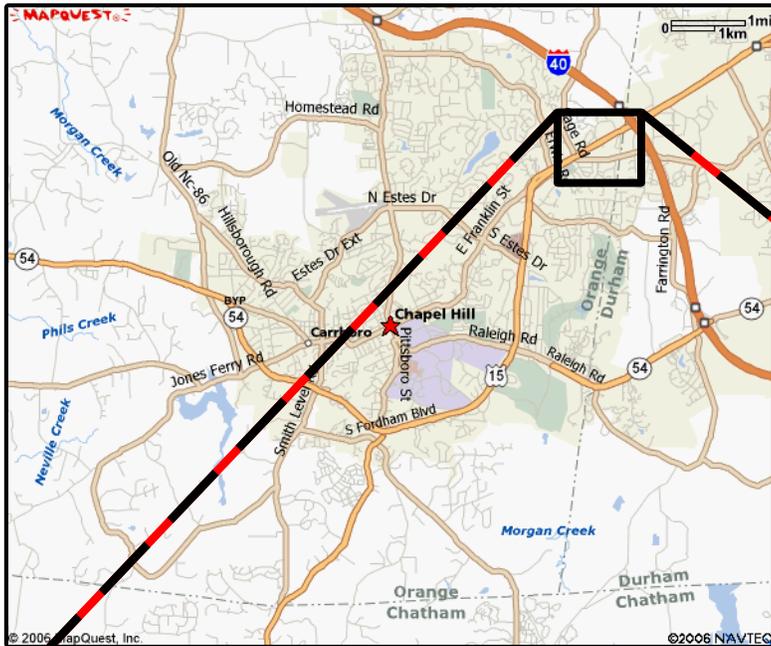


- Provision of internal roadway circulation to/from parking deck and drop-off areas
- Improvements to internal sidewalk and development of sidewalk/side paths along Eastowne Drive and US 15-501 on site frontage
- Closure of two existing surface parking lot driveways and consolidation of driveway access to a single access point for future proposed structured parking.

Necessary Improvements

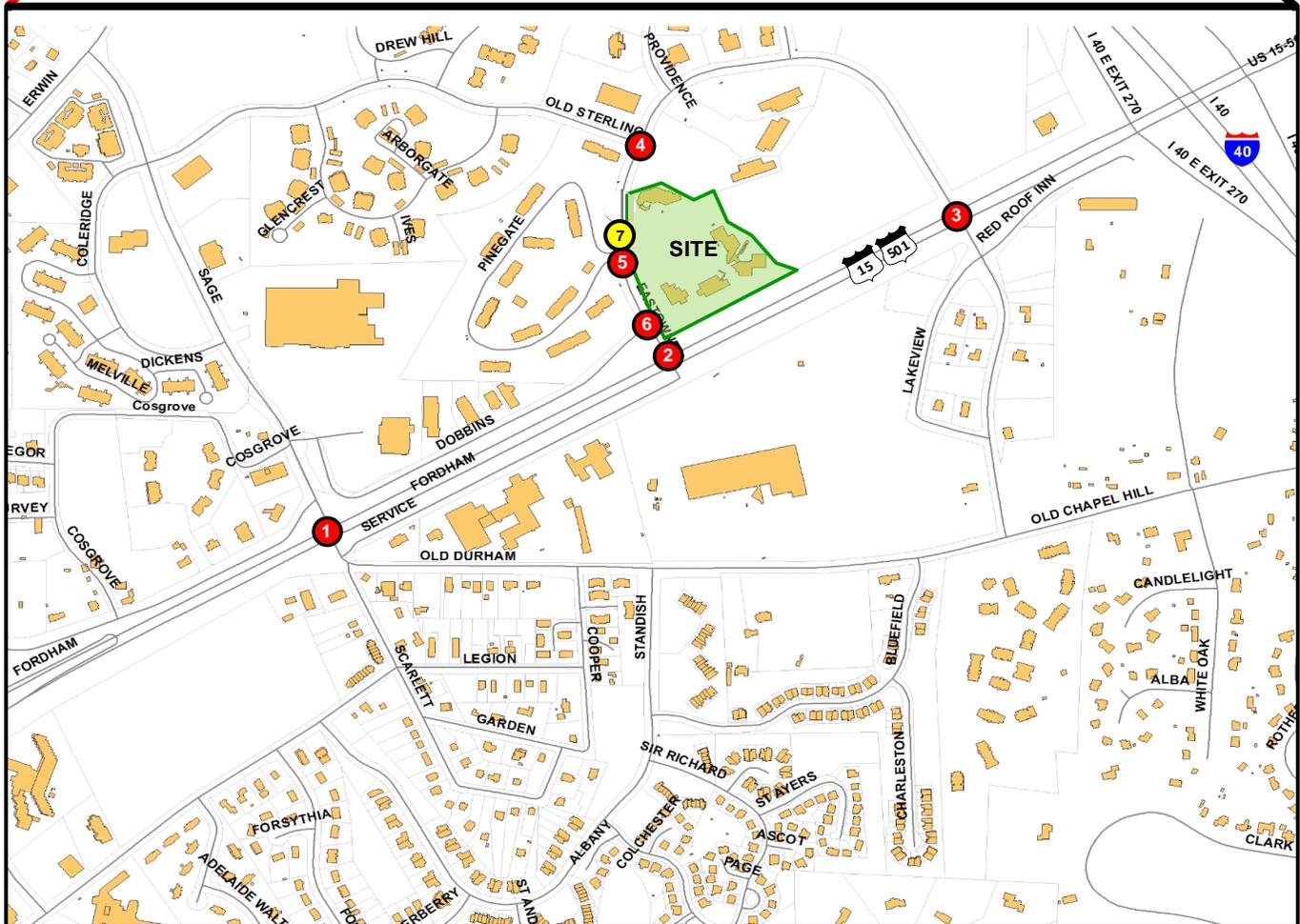
Based on traffic capacity analyses for the 2021 design year, and analyses of existing study area turning bay storage lengths and site access, the following improvements (see **Figure ES-3**) are recommended as being necessary for adequate transportation network operations:

- 1) To manage projected maximum queue lengths on southbound Eastowne Drive at the US 15-501 signalized intersection, it is recommended that the existing left-turn lane be extended to provide 300 feet of vehicle storage (thus creating a three-lane cross-section on Eastowne Drive at least 300 feet upstream of the traffic signal. This will result in two southbound travel lanes crossing the Dobbins Drive intersection.
- 2) To manage access and improve safety at the Dobbins Drive intersection with Eastowne Drive, an additional "Do Not Block Intersection" sign should be installed on southbound Eastowne Drive in the landscaped median.
- 3) A pedestrian crosswalk and pedestrian signal heads should be installed across the southbound approach of the US 15-501 and Eastowne Drive/Service Road signalized intersection. This would provide connectivity between the site and areas across US 15-501, as there is an existing pedestrian signalized crossing in the western quadrant of the intersection.
- 4) Additional bus amenities, such as a bus shelter, should be built at the existing bus stop location along Eastowne Drive directly along site frontage.
- 5) Due to potential peak hour queue spillback issues, the eastbound left-turn lane on US 15-501 at the Eastowne Drive / Service Road intersection should be extended to 400 feet of full storage. Signal timings at this intersection should be reoptimized to prevent left-turn queue spillbacks along US 15-501 and ensure the additional traffic volumes on Eastowne Drive can be cleared in one signal cycle.



LEGEND

- = Existing Building Footprint
- = Existing Study Area Intersection
- = Proposed Site Driveway
- = Proposed Site Parcel

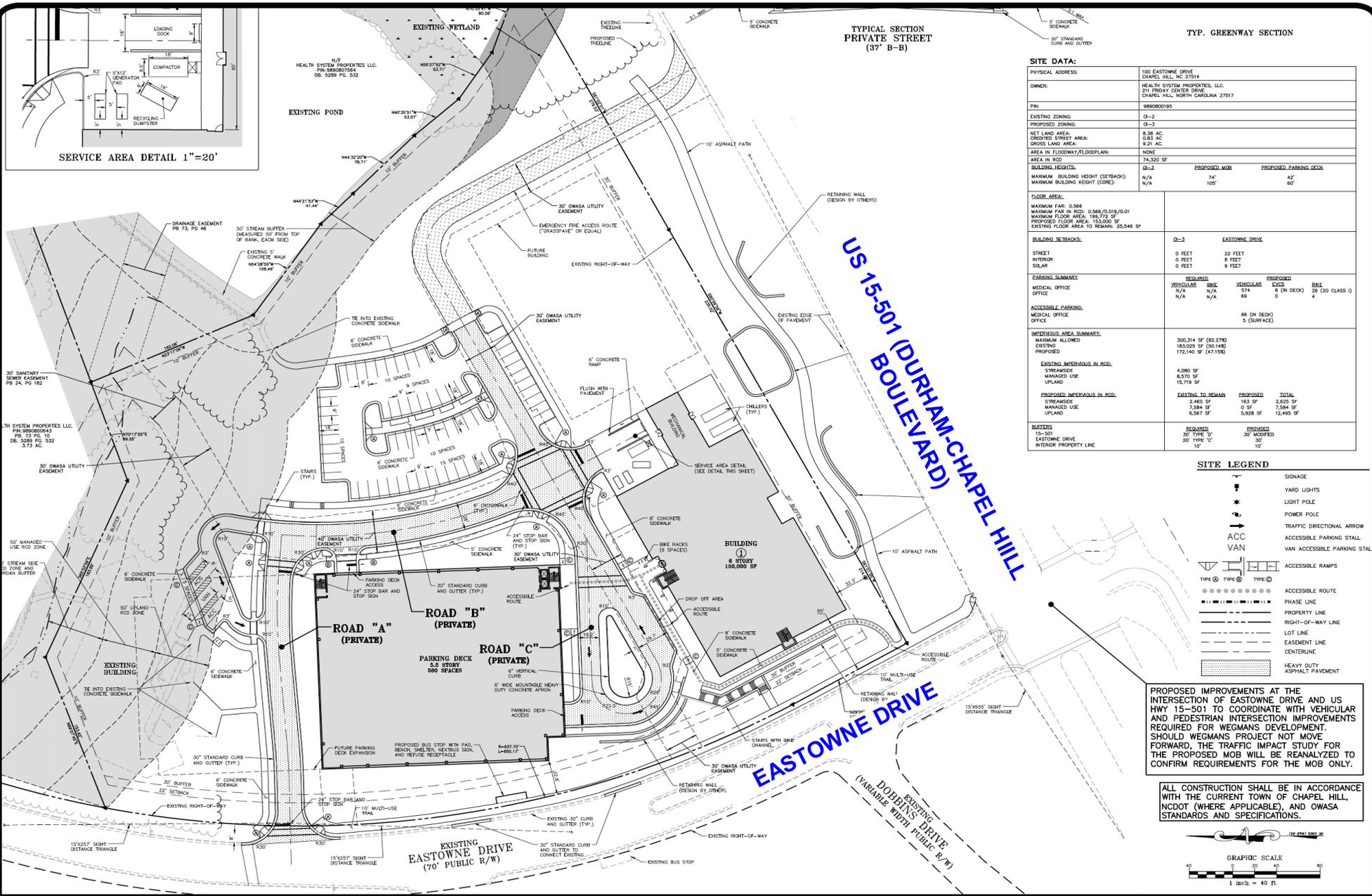


**UNC Health Care Eastowne MOB
Traffic Impact Study**

PROJECT STUDY AREA

DATE: June 2018

FIGURE ES-1



SITE DATA:

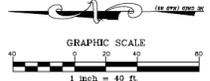
PHYSICAL ADDRESS:	100 EASTOWNE DRIVE CHAPEL HILL, NC 27514		
OWNER:	HEALTH SYSTEM PROPERTIES, LLC 311 FRESH CENTER DRIVE CHAPEL HILL, NORTH CAROLINA 27517		
FIN:	88080105		
EXISTING ZONING:	O1-2		
PROPOSED ZONING:	O1-3		
NET LAND AREA:	8.38 AC		
CREDITED STREET AREA:	0.83 AC		
GROSS LAND AREA:	9.21 AC		
AREA IN FLOODWAY/FLOODPLAIN:	NONE		
AREA IN RCD:	74,320 SF		
BUILDING HEIGHT:	81-3	PROPOSED MOB	PROPOSED PARKING DECK
MAXIMUM BUILDING HEIGHT (SETRACK):	N/A	74'	42'
MAXIMUM BUILDING HEIGHT (CORE):	N/A	100'	60'
FLOOR AREA:	MAXIMUM FAR: 0.566 MAXIMUM FAR IN RCD: 0.566/0.019/0.01 MAXIMUM FLOOR AREA: 199,772 SF PROPOSED FLOOR AREA: 133,000 SF EXISTING FLOOR AREA TO REMAIN: 25,546 SF		
BUILDING SETBACKS:	O1-3	EASTOWNE DRIVE	
STREET INTERIOR SOLAR:	0 FEET	22 FEET	8 FEET
PARKING SUMMARY:	REQUIRED	PROPOSED	
MEDICAL OFFICE OFFICE:	VEHICULAR	BIKE	VEHICULAR
	N/A	N/A	6 (ON DECK)
ACCESSIBLE PARKING:			28 (100 CLASS 0)
MEDICAL OFFICE OFFICE:			66 (80 DECK)
			5 (SURFACE)
IMPERVIOUS AREA SUMMARY:	MAXIMUM ALLOWED: 300,314 SF (82,276%) EXISTING: 183,209 SF (50,148%) PROPOSED: 172,140 SF (47,158%)		
EXISTING IMPERVIOUS IN BCD:	4,000 SF		
STORMWATER MANAGED USE UPLAND:	8,970 SF		
PROPOSED IMPERVIOUS IN BCD:	5,465 SF	183 SF	2,629 SF
STORMWATER MANAGED USE UPLAND:	7,584 SF	0 SF	7,584 SF
	6,567 SF	0,508 SF	12,495 SF
BUFFER:	REQUIRED	PROPOSED	
15-501 EASTOWNE DRIVE:	30' TYPE 'C'	30' MOVED	
INTERIOR PROPERTY LINE:	10' TYPE 'C'	10'	

SITE LEGEND

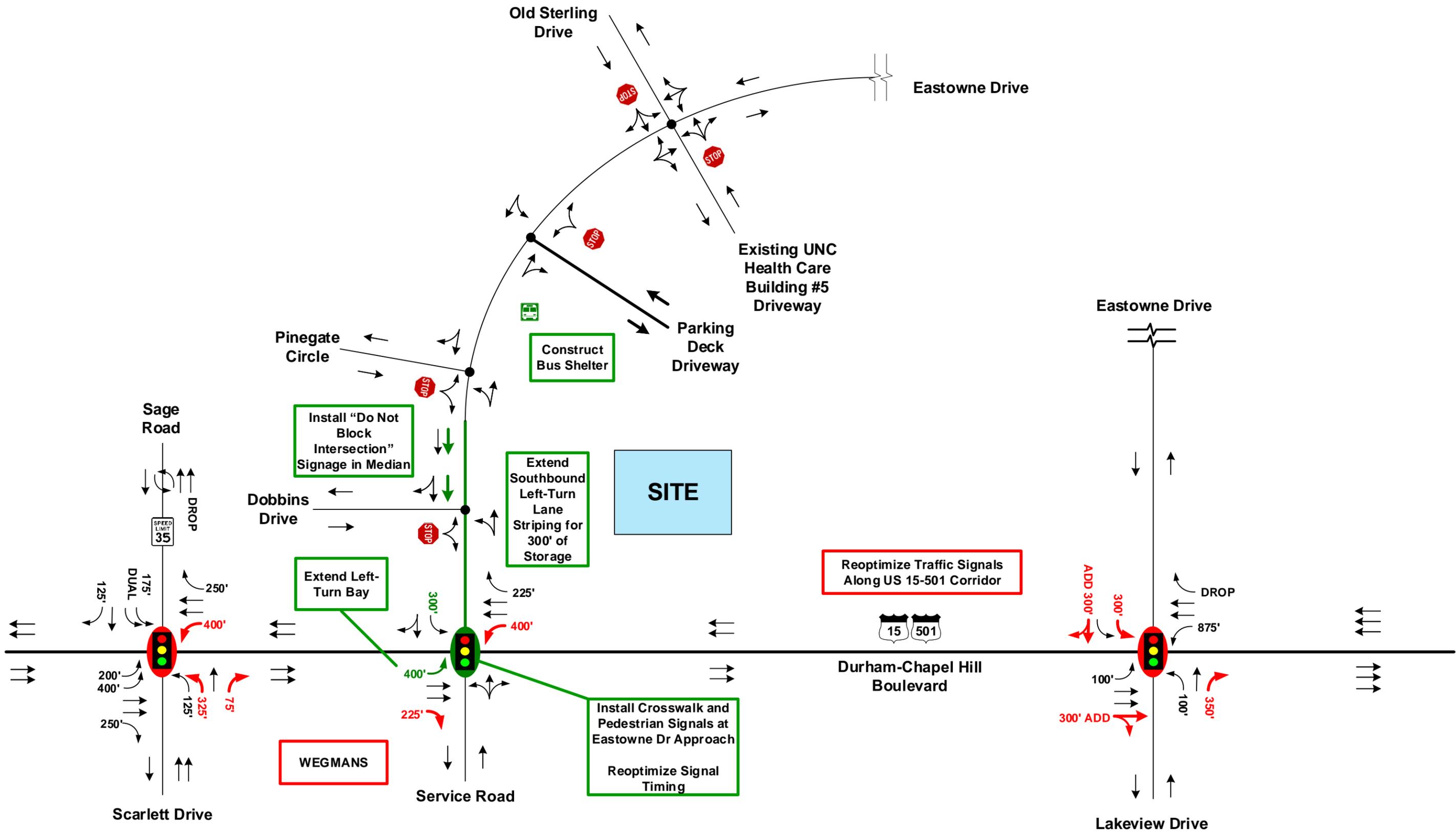
- SIGNAGE
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACCESSIBLE PARKING STALL
- VAN ACCESSIBLE PARKING STALL
- ACCESSIBLE RAMPS
- TYPE 1 TYPE 2
- ACCESSIBLE ROUTE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT

PROPOSED IMPROVEMENTS AT THE INTERSECTION OF EASTOWNE DRIVE AND US HWY 15-501 TO COORDINATE WITH VEHICULAR AND PEDESTRIAN INTERSECTION IMPROVEMENTS REQUIRED FOR WEGMANS DEVELOPMENT. SHOULD WEGMANS PROJECT NOT MOVE FORWARD, THE TRAFFIC IMPACT STUDY FOR THE PROPOSED MOB WILL BE REANALYZED TO CONFIRM REQUIREMENTS FOR THE MOB ONLY.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL, NCDOT (WHERE APPLICABLE), AND OWASA STANDARDS AND SPECIFICATIONS.



		<p>NOT TO SCALE</p>	<h2 style="margin: 0;">UNC Health Care Eastowne MOB</h2> <h3 style="margin: 0;">Traffic Impact Study</h3> <p style="margin: 10px 0 0 0;">PRELIMINARY SITE PLAN</p>	<p>DATE: June 2018</p>	<h2 style="margin: 0;">FIGURE ES-2</h2>
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HNTB

NOT TO SCALE

LEGEND

= COMMITTED SIGNAL TIMING & GEOMETRIC IMPROVEMENT

= NECESSARY IMPROVEMENT

UNC Health Care Eastowne MOB
Traffic Impact Study

COMMITTED AND RECOMMENDED IMPROVEMENTS

DATE: June 2018

FIGURE ES-3