ASPEN STUDENT HOUSING

TRANSPORTATION IMPACT ANALYSIS - DRAFT

EXECUTIVE SUMMARY

Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

HNTB North Carolina, PC

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Suite 200
Raleigh, NC 27609

NCBELS License #: C-1554

November 2021

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Project Overview

A residential development known as Aspen Student Housing, located at the intersection of Longview Street and NC 86 (Martin Luther King Jr. Boulevard), is being proposed in Chapel Hill. The project proposes to construct a new residential multi-story building featuring 109 units (approximately 300 beds) on two existing parcels in the northwest quadrant of the intersection. **Figure ES-1** shows the general location of the site. The project is anticipated to be fully complete by 2024. This report analyzes the complete build-out scenario for the year 2025 (one year after anticipated completion), the no-build scenario for 2025, as well as 2021 existing year traffic conditions.

The proposed preliminary site plan shows one vehicular access point along Longview Street. This access driveway will serve a proposed two-story on-site parking deck. **Figure ES-2** displays the preliminary concept plan of the Aspen Student Housing and nearby land uses and roadways. The project is expected to provide approximately 125 parking spaces in the on-site parking garage.

Study Area Summary

This report analyzes and presents the transportation impacts that the Aspen Student Housing development will have on the following intersections in the project study area:

- NC 86 (Martin Luther King Jr. Boulevard) and Umstead Drive / Hillsborough Street
- NC 86 (Martin Luther King Jr. Boulevard) and Longview Street / Mill Creek Apartments Driveway
- NC 86 (Martin Luther King Jr. Boulevard) and North Street / N. Columbia Street
- Longview Street and Proposed Site Full Access Driveway

The site is located north of downtown Chapel Hill along NC 86 (Martin Luther King, Jr. Boulevard) in the northwest quadrant of its intersection with Longview Street. The study area contains two signalized intersections along NC 86. NC 86 is a major arterial facility providing connectivity between the UNC Main Campus/downtown area, north Chapel Hill, and the region. Remaining study area network roadways are either collector streets or local neighborhood access streets. The existing study area transportation network features numerous bus routes and connected sidewalks and bicycle facilities.

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 and methodologies taken from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, Version 10* and was compared with existing driveway traffic counts at similar student housing developments along the NC 86 corridor in the site vicinity.

Table ES-1. Weekday Vehicle Trip Generation Summary

Trip Generation Statistic	Daily			AM Peak Hour			Noon Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Off-Campus Student Housing – Less Than ½ Mile From Campus (ITE LUC 225)	482	482	964	14	21	35	22	29	51	37	38	75

Background Traffic

Background traffic growth for the 2025 analysis year is expected to come from two sources - ambient regional traffic growth and specific development-related traffic growth. Based on existing information, three Town-approved development projects (Aura, E. Rosemary Street Parking Deck and Office Building, W. Rosemary Street Hotel) in or near the project study area are expected to background traffic growth by the 2025 analysis year. All remaining estimated traffic growth in the area is assumed to occur due to overall region-wide ambient growth and a continuing rebound of traffic activity affected by COVID 19. To account for this, an ambient area-wide traffic growth percentage of 2.0 percent per year was applied to existing traffic volumes based on information from the historic daily traffic growth patterns in the project study (NCDOT and Town daily traffic information) and comparison of current 2021 traffic count data to pre-COVID conditions.

Impact Analysis

Peak Hour Intersection Traffic Simulation Level-of-Service (LOS_S)

Study results indicate existing traffic operations at all study area intersections are acceptable during the AM and noon weekday peak hours but drop to a LOS_S F for one study area intersection in the 2021 PM peak hour. 2025 build-out year+1 background traffic growth impacts are mitigated by Town of Chapel Hill planned and committed transportation improvement projects. The addition of peak hour site-generated trips to the projected 2025 background traffic volumes, do not cause any additional study area intersections to experience deficient traffic operations in any peak hour. 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 simulation Level-of-Service (LOS_S) is shown in **Table ES-2.**

Table ES-2. LOS and Delay (Seconds/Vehicle) Summary

Intersections	Peak Hour	2021 Existing		2025 No-Build		2025 Build		2025 Mitigated	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
NC 86 (Martin Luther King, Jr. Blvd) & Umstead Drive / Hillsborough Street	AM	A	9.9	A	9.4	A	9.8	N/A	N/A
	NOON	B	12.5	B	12.1	B	11.9	N/A	N/A
	PM	B	19.2	C	21.2	B	19.9	N/A	N/A
NC 86 (Martin Luther King, Jr. Blvd) & Longview Street / Mill Creek Apartments Driveway	AM	A	6.2	A	6.2	A	6.9	N/A	N/A
	NOON	A	6.1	A	5.1	A	6.5	N/A	N/A
	PM	A	7.6	A	8.2	A	9.8	N/A	N/A
NC 86 (Martin Luther King, Jr. Blvd) & N. Columbia Street / North Street	AM	B*	13.1*	A	8.2	A	8.1	N/A	N/A
	NOON	E*	46.1*	B	16.0	B	16.0	N/A	N/A
	PM	***F****	***137.2****	B	10.3	B	10.1	N/A	N/A
Longview Street & Proposed Site Driveway	AM	N/A	N/A	N/A	N/A	B	12.5	N/A	N/A
	NOON	N/A	N/A	N/A	N/A	B	11.7	N/A	N/A
	PM	N/A	N/A	N/A	N/A	C	19.1	N/A	N/A

N/A – Not Applicable or No Improvements Necessary
BOLD/ITALICS – Critical Movement or Overall Intersection Requires Mitigation Per Town TIA Guidelines
* - Worst-Case LOS/Delay for Unsignalized/Stop-Controlled Critical Movement

Access Analysis

Vehicular site access is to be accommodated via one proposed site driveway connection to Longview Street located approximately 100 feet from the signalized intersection of NC 86 and Longview Street. Driveway throat length as shown on the proposed site concept plan (approximately 50 feet) should not

impede vehicular operations in the immediate vicinity of the driveway connection with the external street system. Driveway distance from the signalized intersection at Longview Street and NC 86 (Martin Luther King Jr. Boulevard) is acceptable (100 feet), based on recommendations of 100 foot minimum corner clearance as set forth in the 2003 *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and 50 foot minimum along local streets as required in the 2017 *Town of Chapel Hill Public Works Engineering Design Manual*. Individual driveway spacing between the site driveway and adjacent driveways meets the 50 foot minimum driveway spacing requirement in the Town Design Manual.

Crash Analysis

Data from the NCDOT Traffic Safety Unit TEAAS software database was compiled for the recent five-year period for the study area intersection of Longview Street and NC 86 adjacent to the site and for the NC 86 corridor in the study area. Crash rates for the NC 86 corridor indicates that the frequency of crashes for the facility are generally lower than North Carolina statewide average for similar facilities. Crashes are generally clustered at high volume intersections, with some crashes occurring at existing mid-block pedestrian crossings and private driveway intersections along the corridor. The signalized intersection of NC 86 and Longview Street adjacent to the site experienced only three crashes in the five year period.

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
Long-Range Daily Volume-Capacity Analysis	Since the proposed site is expected to add less than 1,000 new daily trips to the study area network, no long-range planning-level analyses of daily traffic impacts were conducted for this study. Existing daily traffic volumes on NC 86 are approximately 16,000 and its daily roadway capacity is approximately 40,000 vehicles.
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using TransModeler to generate estimated maximum queue lengths for the 2025 Build Scenario. In most cases, existing storage for turn lanes is adequate in the project study area, and can be managed with signal timing adjustments, if necessary. Extending existing or proposed future turn lane storage may require additional right-of-way to construct and was not analyzed for this study.
Appropriateness of Acceleration/ Deceleration Lanes	Given the proposed location and configuration of the site driveway, and the lane geometrics, traffic patterns and posted speeds on Longview Street and NC 86, no special acceleration or deceleration lanes are required due to the proposed Aspen Student Housing development.
Pedestrian and Bicycle Analysis	Existing pedestrian access and connectivity is excellent through the study area. Continuous sidewalk and intersections with crosswalks/pedestrian signals are present throughout the downtown Chapel Hill area. Designated bicycle “sharrow” lanes are present on NC 86 along the site frontage.
Public Transportation Analysis	Public transportation service to the site is excellent, with on-street bus stops located less than 200 feet away from the site on either side of NC 86 and multiple bus routes serving the study area.

Mitigation Measures/Recommendations

Planned Improvements

The Town *North-South Corridor Bus Rapid Transit (NSBRT)* project includes additional transit amenities for the NC 86 corridor through the study area, as well as potential cross-section widening and reallocation

for dedicated transit lanes. Since final design details are not complete, the changes associated with this project were not explicitly considered to be complete for the purposes of this study.

There are no NCDOT improvement projects for study area roadway facilities within the analysis year time frame of 2021-2025.

Background Committed Improvements
The *E. Rosemary Street Parking Deck and Office Building Transportation Impact Analysis* (HNTB, November 2021) lists the following as necessary improvements for that study which have specific impacts on study area intersections (details on page 32, and Appendix A – Figures 16 & 16A):

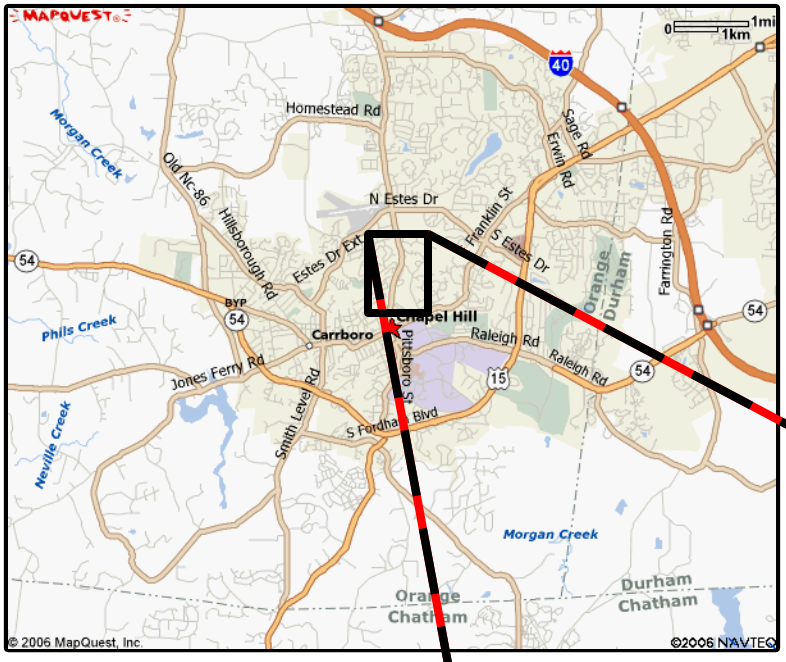
- At the NC 86 intersection with North Street/Martin Luther King Jr. Boulevard - to reduce projected queues along North Street westbound that would include parking deck egress traffic, provide a right-turn bay (making the westbound approach a stop-controlled shared left-turn/through lane and right-turn lane) with at least 50 feet of vehicle storage is recommended to reduce overall approach delays and queues at this location. The currently skewed minor street intersection approaches for North Street and Martin Luther King Jr. Boulevard should be realigned to better align through movements. Monitor the intersection for signalization if operational or safety issues result from the additional traffic produced by the parking deck/office building.

These committed improvements are shown on **Figure ES-3**. It was assumed that a traffic signal would be installed at this location by the 2025 future analysis year in all scenarios. There are no other known background committed improvements at study area intersections from any of the other background traffic generators analyzed in this report.

Applicant Committed Improvements
Based on the preliminary site concept plans and supporting development information provided, there are no external transportation-related improvements proposed adjacent to the Aspen Student Housing – other than the addition of the proposed access driveway along the Longview Street and provision of internal sidewalk connecting to the NC 86 existing sidewalk along the site frontage.

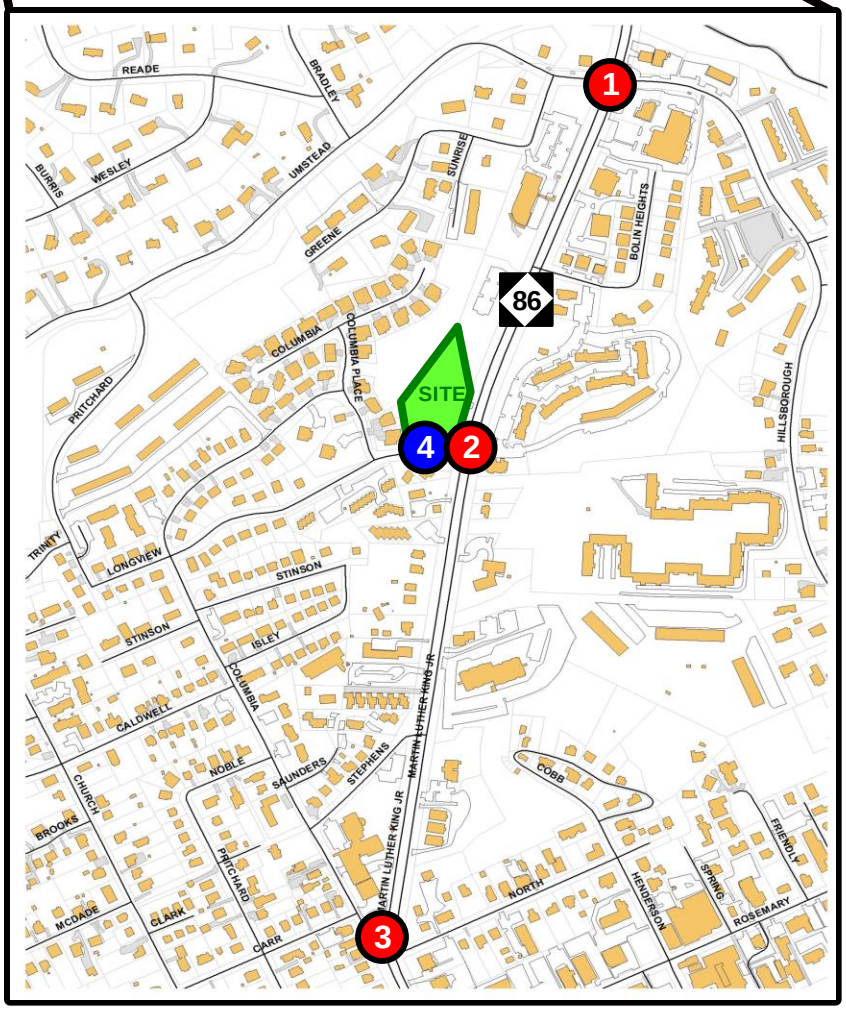
Necessary Improvements
Based on the 2025 design year peak hour intersection capacity analyses, no study area intersections expected to be over capacity (overall LOS_S E or F) in any of the three weekday peak hours studied in this report.

- One recommended improvement shown in **Figure ES-3**, unrelated to intersection capacity analysis Level-of-Service results, but related to potential queue spillback issues on minor street approaches (eastbound Longview Street and eastbound Umstead Drive at the signalized intersections with NC 86 (Martin Luther King, Jr. Boulevard), would be to monitor operations at these intersections and adjust coordinated signal timings, particularly in the 2025 PM peak hour, to allow more green time to these signal phases to reduce potential queuing issues.



LEGEND

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



NOT TO SCALE

DRAFT

HNTB

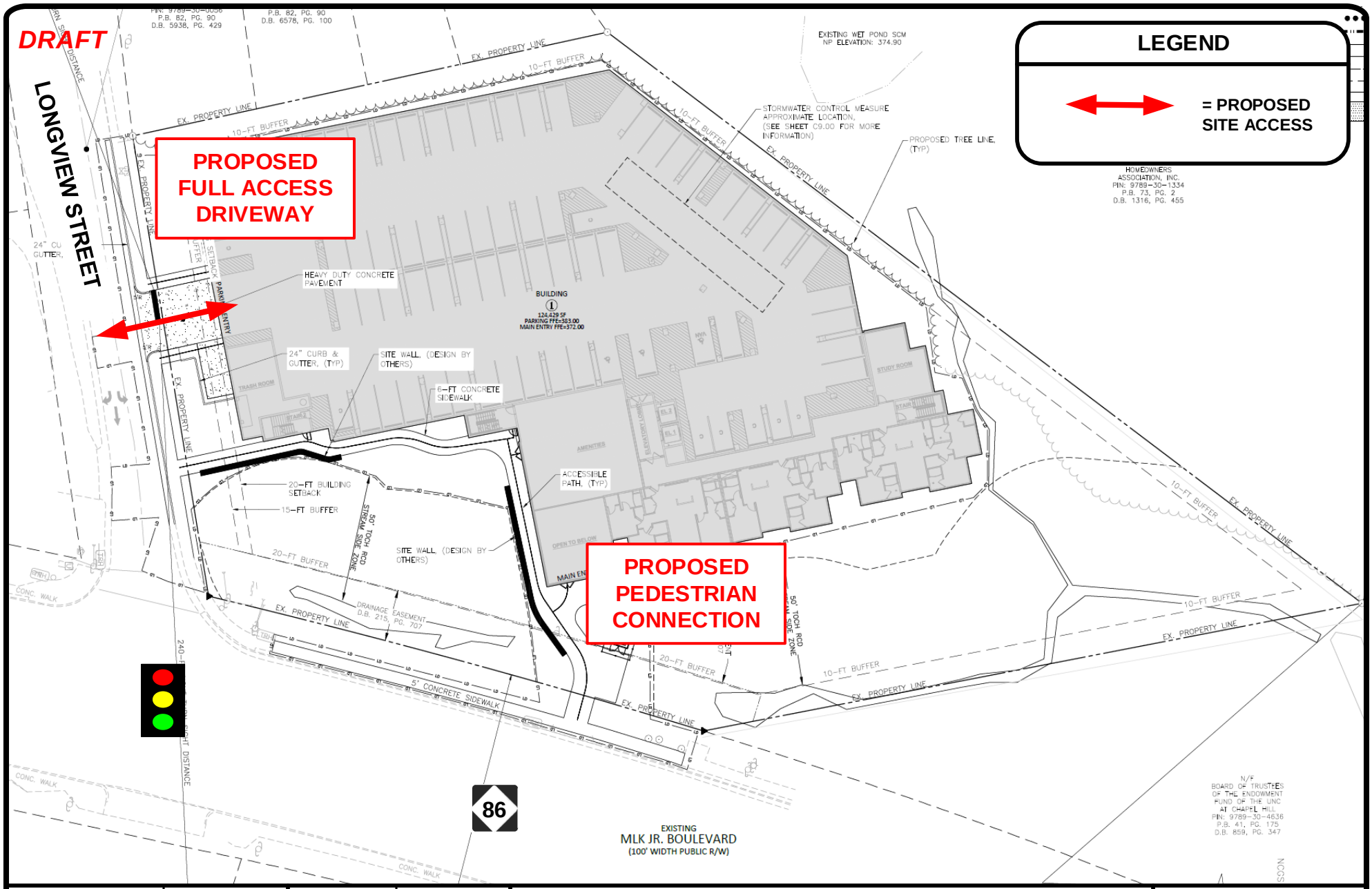
TOWN OF CHAPEL HILL

Aspen Student Housing
Transportation Impact Analysis

DATE: November 2021

PROJECT STUDY AREA MAP

FIGURE ES-1



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TOWN OF CHAPEL HILL

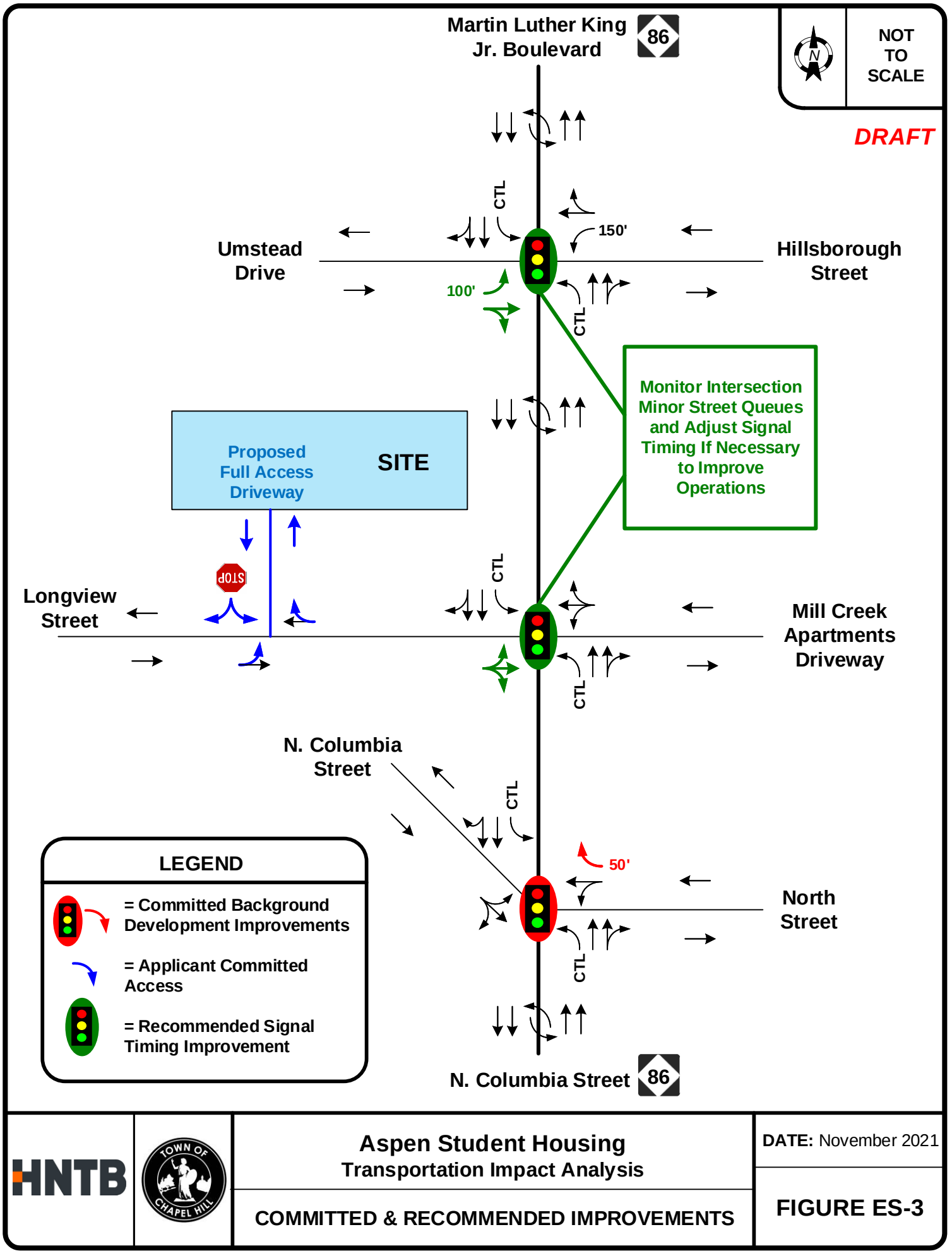
NOT TO SCALE

Aspen Student Housing
Transportation Impact Analysis

PRELIMINARY SITE PLAN

DATE: November 2021

FIGURE ES-2



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TOWN OF CHAPEL HILL

Aspen Student Housing
Transportation Impact Analysis

DATE: November 2021

COMMITTED & RECOMMENDED IMPROVEMENTS

FIGURE ES-3