

LINK ROSEMARY APARTMENTS

TRANSPORTATION IMPACT ANALYSIS - **DRAFT**

EXECUTIVE SUMMARY



Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

HNTB North Carolina, PC

*343 East Six Forks Road
Suite 200
Raleigh, NC 27609*

NCBELS License #: C-1554

January 2022



LINK ROSEMARY APARTMENTS

TRANSPORTATION IMPACT ANALYSIS - **DRAFT**

EXECUTIVE SUMMARY



Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

HNTB North Carolina, PC

*343 East Six Forks Road
Suite 200
Raleigh, NC 27609*

NCBELS License #: C-1554

January 2022



EXECUTIVE SUMMARY - DRAFT

Project Overview

A residential redevelopment known as the Link Rosemary Apartments, located at the intersection of E. Rosemary Street and NC 86 (N. Columbia Street), is being proposed in Chapel Hill. The project proposes to construct a new seven story apartment building featuring 150 units on the existing PNC Bank parcel and adjacent surface parking lot on the northeast corner of the Rosemary Street intersection with NC 86. **Figure ES-1** shows the general location of the site. The project is anticipated to be fully complete by late 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 site concept plan shows two vehicular access points for an internal service driveway. An “enter-only” driveway will be located on E. Rosemary Street. A connecting “exit-only” driveway would provide access to NC 86 (N. Columbia Street). No parking will be allowed along the service driveway aisles, with the exception of short-term service vehicle access along the north side of the building. **Figure ES-2** displays the preliminary concept plan of the Link Rosemary Apartments and nearby land uses and roadways. The project is expected to provide 138 leased parking spaces in the adjacent E. Rosemary Street Parking Deck facility, which is currently under construction.

Study Area Summary

This report analyzes and presents the transportation impacts that the Link Rosemary Apartments will have on the following intersections in the project study area:

- NC 86 (Martin Luther King Jr. Boulevard) and North Street / N. Columbia Street
- NC 86 (N. Columbia Street) and Rosemary Street
- NC 86 (Columbia Street) and Franklin Street
- E. Rosemary Street and Proposed 150 E. Rosemary Street Office Building Site Driveway
- E. Rosemary Street and Proposed Parking Deck Main Site Driveway
- North Street and Proposed Parking Deck Access Driveway

The site is located in downtown Chapel Hill along E. Rosemary Street in the northeast quadrant of its intersection with NC 86. The study area contains two signalized intersections along NC 86 and one unsignalized intersection. It also includes future driveway intersections along E. Rosemary Street near the site. NC 86 and Franklin Street are major arterial facilities providing connectivity between the UNC Main Campus/downtown area, Carrboro, 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

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 adjusted, as appropriate, for the estimated effects of transit/pedestrians/bicycles, along with the consideration that a substantial proportion of site trips have been accounted for in methodologies for estimating E. Rosemary Parking Deck site trip generation in previous transportation impact analyses. A detailed analysis of deck parking space allocation and estimates related to the impact of shifting space allocation and usage for the proposed apartment project are included in the full TIA report. No specific analysis or estimation of site trips using the proposed service driveway internal loop on the site was made for this study.



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
RAW TRIPS GENERATED	557	557	1,114	14	38	52	33	38	71	50	36	86
<i>Transit/Ped/Bike Reduction (15%)</i>	-84	-84	-167	-2	-6	-8	-5	-6	-11	-8	-5	-13
VEHICLE TRIPS TO/FROM E. ROSEMARY DECK	473	473	947	12	32	44	28	32	60	42	31	73
NET ADDITIONAL TRIPS TO/FROM DECK NOT INCLUDED IN PREVIOUS DECK TRIP GENERATION	101	101	203	3	24	27	6	7	13	32	7	39

* - No ITE Data Available, Assumed Averages of Individual Land Use AM/PM Peak Hour Data

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. Four Town-approved development projects (Union Chapel Hill Apartments, E. Rosemary Street Parking Deck, 150 E. Rosemary Street Office Building, and W. Rosemary Street Hotel) in or near the project study area are expected to contribute to background traffic growth by 2025. All remaining estimated traffic growth in the area is assumed to occur due to overall region-wide ambient growth. To account for this, an ambient area-wide traffic growth percentage of 1.0 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 consistent with recent traffic impact studies completed near the project study area.

Impact Analysis

Peak Hour Intersection Level-of-Service (LOS)

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 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 throughout the project study area. One intersection, NC 86 and Franklin Street, is expected to operate at/over capacity (LOS E) in the 2025 PM peak hour. 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 Level-of-Service (LOS) is shown in **Table ES-2**.

Access Analysis

Primary vehicular site access is to be provided by access driveways to leased parking spaces in the E. Rosemary Street parking deck. Additional access for Link Rosemary Apartments service vehicles and residential drop-off/pick-ups is proposed to be accommodated via two proposed site driveway connections to adjacent roadway facilities. An enter-only driveway is proposed along E. Rosemary Street approximately 150 feet east of the signalized intersection with NC 86 (N. Columbia Street). A connecting exit-only driveway (with allowance for left and right-turns) is proposed on NC 86 approximately 200 feet north of the signalized intersection. Driveway throat lengths and intersection separation meet Town and NCDOT standards.



Access for pedestrians is currently excellent, with continuous sidewalk on both sides of all study area roadways and crosswalk/pedestrian signalization at all signalized study area intersections. Bicycle access is available to and from the site via bicycle and sharrow lanes along Rosemary Street.

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) & N. Columbia Street / North Street	AM	C*	15.1*	B	11.9	B	12.6	N/A	N/A
	NOON	B*	14.6*	B	19.8	C	20.0	N/A	N/A
	PM	F*	85.5*	C	23.8	C	23.9	N/A	N/A
W. Rosemary Street & NC 86 (N. Columbia Street)	AM	C	25.4	C	25.3	C	25.7	N/A	N/A
	NOON	C	32.3	C	28.4	C	28.6	N/A	N/A
	PM	C	34.6	D	42.3	D	42.8	N/A	N/A
Franklin Street & NC 86 (N. Columbia Street)	AM	C	33.1	C	30.3	C	30.5	N/A	N/A
	NOON	D	40.8	D	41.9	D	41.9	N/A	N/A
	PM	D	49.8	E	66.7	E	67.7	N/A	N/A
E. Rosemary Street & 150 E. Rosemary Office Building RIRO Driveway	AM	N/A	N/A	A*	9.9*	A*	9.9*	N/A	N/A
	NOON	N/A	N/A	B*	10.0*	B*	10.0*	N/A	N/A
	PM	N/A	N/A	B*	10.1*	B*	10.2*	N/A	N/A
E. Rosemary Street & Parking Deck Main Driveway Access	AM	N/A	N/A	B*	14.4*	B*	14.8*	N/A	N/A
	NOON	N/A	N/A	C*	16.5*	C*	16.8*	N/A	N/A
	PM	N/A	N/A	C*	17.1*	C*	17.9*	N/A	N/A
North Street & Parking Deck Access Driveway	AM	N/A	N/A	A*	8.9*	A*	9.0*	N/A	N/A
	NOON	N/A	N/A	A*	9.4*	A*	9.4*	N/A	N/A
	PM	N/A	N/A	B*	10.3*	B*	10.4*	N/A	N/A

N/A – Not Applicable or No Improvements Necessary

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

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

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 will add less than 200 new “net” daily trips to the study area network above what was already assumed in daily traffic growth for activity related to the proposed parking deck, no long-range planning-level analyses of daily traffic impacts were conducted for this study.
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using Synchro and HCM 95 th percentile (max) queue length estimates 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. Several existing or future auxiliary turn lane lengths may not provide enough storage to accommodate future estimated maximum peak hour queue estimates – a condition that occurs regardless of the Link Rosemary Apartments



Analysis	Comment
	project. In these cases, signal timings need to be monitored and adjusted as necessary to mitigate queue spillback.
Appropriateness of Acceleration/ Deceleration Lanes	Given the existing location and configuration of site driveways, and the lane geometrics, traffic patterns and posted speeds on E. Rosemary Street and NC 86, no special acceleration or deceleration lanes are required due to the proposed Link Rosemary Apartments redevelopment.
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 lanes and sharrows are present on East and West Rosemary Street along/near the site frontage.
Public Transportation Analysis	Public transportation service to the site is excellent, with an on-street bus stops located less than 200 feet away from the site and multiple routes serving the study area.

Mitigation Measures/Recommendations

Planned Improvements

There are no planned transportation improvement projects by NCDOT expected to be complete between 2021 and 2025 in the immediate project study area. The Town of Chapel Hill is in the process of designing and implementing the West Franklin Street Lane Reallocation project to reduce the number of through travel lanes on West Franklin Street west of NC 86. Both West and East Franklin Streets currently have temporary lane closures delineated by sections of portable median barrier. The temporary condition is expected to be removed from E. Franklin Street east of NC 86 in 2022. The portion west of NC 86 will likely remain in place until the final reallocation project construction changes are implemented. The reallocated lanes will be used for parking, loading zones, bicycle lanes and other amenities. This project is expected to be complete by the 2025 analysis year and is also assumed to include signal retiming throughout the downtown area to account for vehicular flow changes in the lane reallocation vicinity. Details are shown on **Figure ES-3**.

The Town also has the North-South Bus Rapid Transit Project, which will provide dedicated lanes for transit along the NC 86 corridor, along with other transit amenity improvements scheduled for construction in 2022. As final design details are not complete as of the submittal of this TIA, no specific lane usage changes were analyzed as part of this study.

Background Committed Improvements

Numerous background committed and/or recommended improvements for the E. Rosemary Street Parking Deck and 150 E. Rosemary Street Office Building redevelopments were considered to be constructed and complete by the completion of the Link Rosemary Apartments project. These improvements are noted on **Figure ES-3** for adjacent and nearby intersections affected by the traffic impacts related to these two sites.

Applicant Committed Improvements

Based on the preliminary site plan provided by the Applicant, the proposed Link Rosemary Apartments redevelopment will utilize two access driveways and a one-way single lane internal driveway loop with the entrance connection located along E. Rosemary Street and the exit connection along NC 86 (N. Columbia Street). No long-term parking along the internal driveway loop will be provided – only a loading/unloading bay for service vehicles on the north side of the building and a short curb widening for drop-offs/pick-ups on the east side of the building.



Necessary Improvements

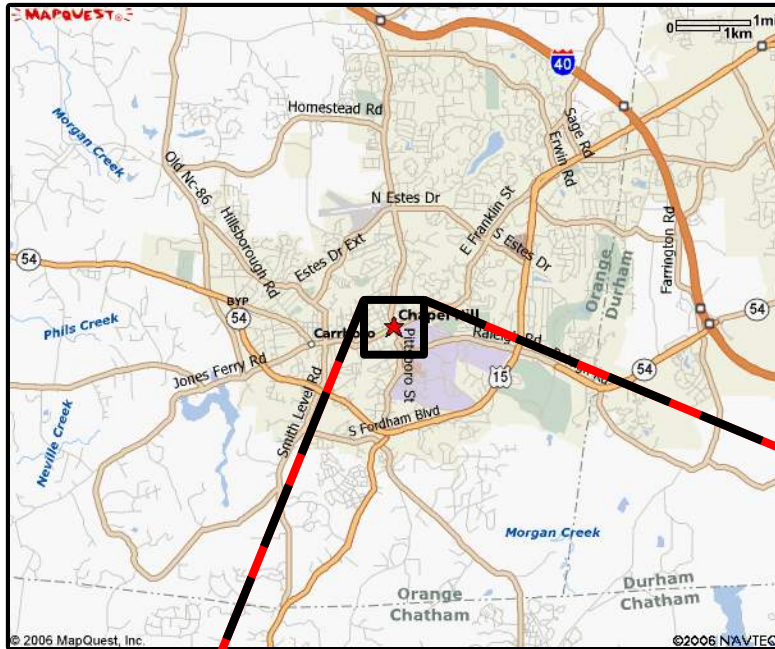
Based on traffic capacity analyses for the 2025 design year, and review of the proposed Link Rosemary Apartments potential site access with the one-way internal circulation driveway, the following improvements are recommended as being necessary for adequate transportation network operations (see **Figure ES-3**). These improvements are made with the assumptions that the E. Rosemary Street Parking Deck and 150 E. Rosemary Street Office Building committed and recommended improvements listed above are all completed by the 2025 analysis year for the proposed redevelopments.

- 1) To avoid vehicular conflict issues with ingress to the internal site driveway loop along E. Rosemary Street, it is recommended that the internal driveway one-way pattern be reversed to allow ingress on NC 86 (N. Columbia Street) and egress on E. Rosemary Street. Left-turn access along E. Rosemary Street may be blocked at peak periods during the day by westbound queued traffic on E. Rosemary Street and vehicles attempting to enter the Service Driveway at the site may block eastbound traffic on E. Rosemary Street near the signalized intersection at NC 86.





The reversal of the one-way pattern allows a higher anticipated percentage of service vehicle or resident drop-off/pick-up trips to make a right-turn into the site along NC 86 and also allows the use of the southbound center turn-lane on NC 86 for entry trips from the north. This turn lane does not face the same potential queuing issues as are anticipated for the critical segment along E. Rosemary Street. Similarly, a higher anticipated percentage of vehicles are likely to exit the internal driveway and make a right-turn into the westbound E. Rosemary Street traffic stream, a maneuver creating less conflicts than a left-turn in at this location.

The reversal of the one-way internal pattern may also discourage local traffic on E. Rosemary Street heading westbound from using the driveway as a cut-through to NC 86 northbound as may occur with the current site plan. It would be unlikely that cut-throughs in the opposite direction (requiring two left-turns) would occur with the recommended reversal.

- 2) The implementation of the reversed internal driveway travel pattern would necessitate moving the service vehicle loading zone further to the east along the northern building frontage to avoid a situation where a service vehicle present at the existing loading bay location may block ingress to the internal driveway.

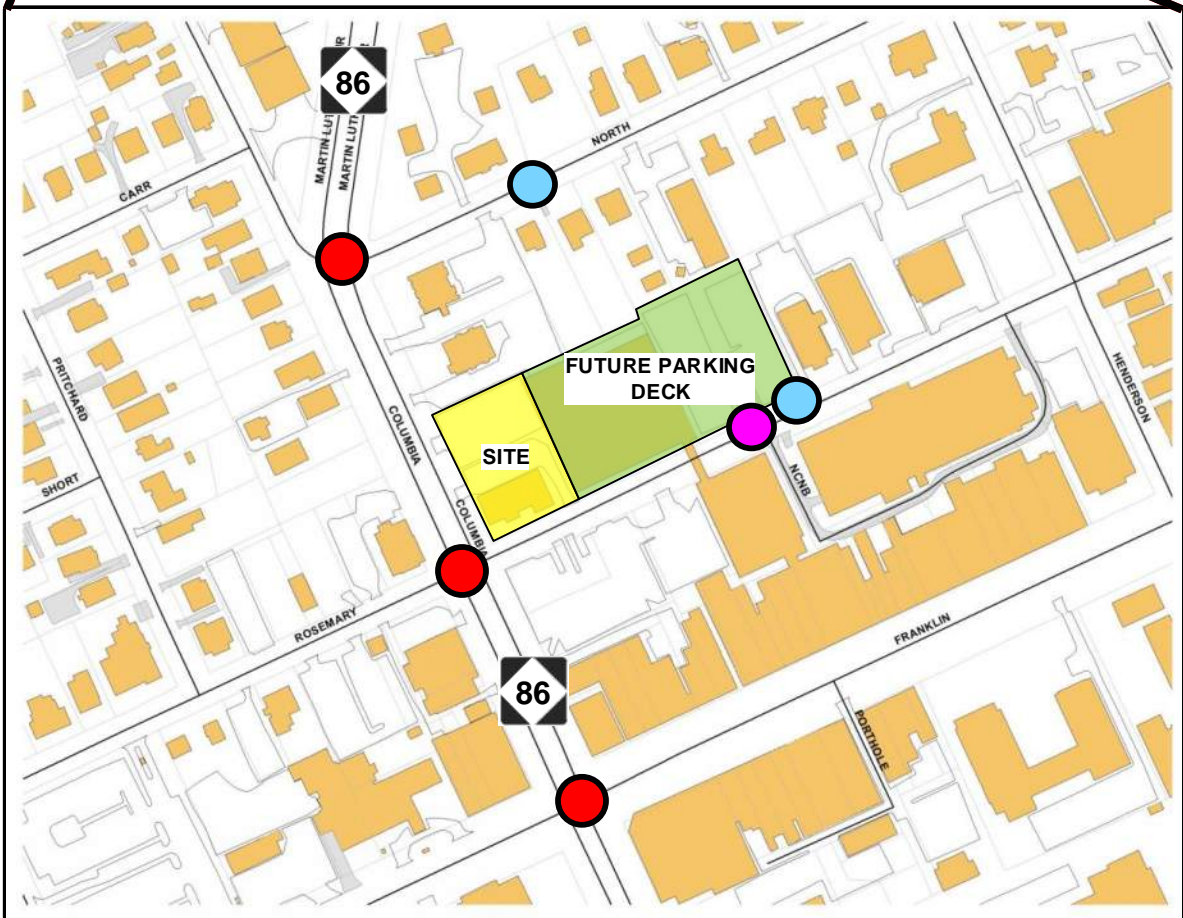


LEGEND

-  = Existing Study Area Intersections
-  = Proposed Parking Deck Access Driveway for All Site Traffic
-  = Proposed 150 E. Rosemary Office Bldg RIRO Access Driveway
-  = Existing Building Footprints



NOT TO SCALE



Source: Town of Chapel Hill GIS Files

DRAFT



**Link Rosemary Apartments
Transportation Impact Analysis**

PROJECT STUDY AREA MAP

DATE: January 2022

FIGURE ES-1

DRAFT



PROPOSED NORTH STREET ACCESS CONNECTION TO PARKING DECK

PROPOSED EXIT-ONLY SERVICE DRIVEWAY

N. COLUMBIA STREET

**PROPOSED E. ROSEMARY PARKING DECK
ALL SITE PARKING IN DECK**

E. ROSEMARY STREET

PROPOSED ENTER-ONLY DRIVEWAY - SERVICE VEHICLES ONLY

PROPOSED MAIN ACCESS CONNECTION TO PARKING DECK (EAST OF IMAGE BOUNDARY)



NOT TO SCALE

HNTB

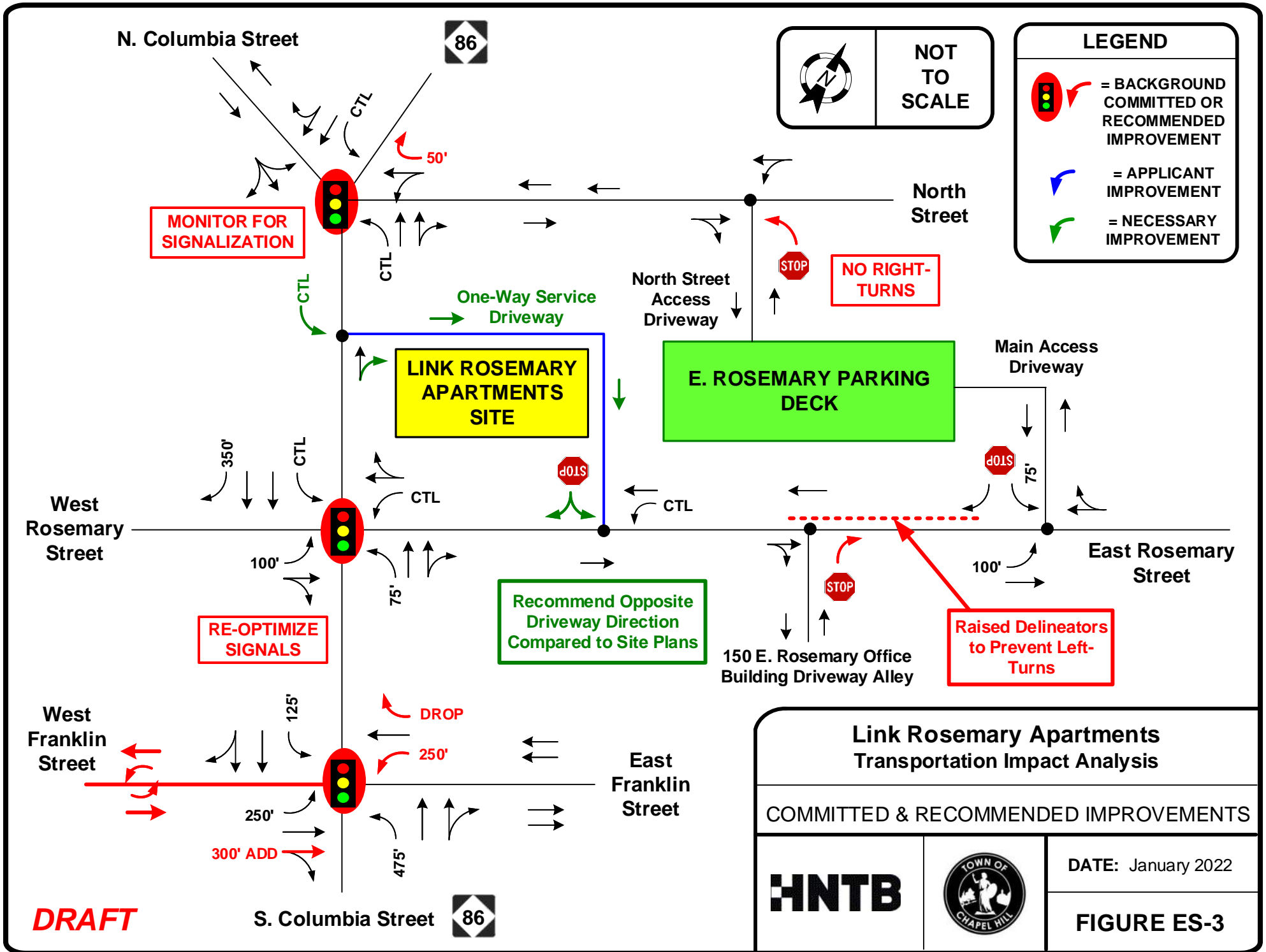


**Link Rosemary Apartments
Transportation Impact Analysis**

PRELIMINARY SITE PLAN

DATE: January 2022

FIGURE ES-2



DRAFT

MONITOR FOR SIGNALIZATION

NO RIGHT-TURNS

RE-OPTIMIZE SIGNALS

Recommend Opposite Driveway Direction Compared to Site Plans

Raised Delineators to Prevent Left-Turns

Link Rosemary Apartments Transportation Impact Analysis

COMMITTED & RECOMMENDED IMPROVEMENTS



DATE: January 2022

FIGURE ES-3