

**STANAT'S PLACE
RESIDENTIAL DEVELOPMENT**

DRAFT TRANSPORTATION IMPACT ANALYSIS

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

March 2022



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EXECUTIVE SUMMARY - DRAFT

Project Overview

A new residential community, known as Stanat's Place, is being proposed in Chapel Hill near Homestead Road and Aquatic Drive. **Figure ES-1** shows the general location of the site. The project proposes to construct 47 individual residential townhome/condominium units and is anticipated to be fully complete and occupied by 2025. This report analyzes the full build-out scenario for Stanat's Place for the year 2026 (one year after anticipated completion), the no-build scenario for 2026, as well as 2022 existing year traffic conditions. The impacts of the proposed site at the study area intersections are evaluated during the AM, noon, and PM peak hours of an average weekday.

The current proposed site plan shows a provision for a full movement access driveway serving the site that connects to Aquatic Drive and a provision for a full movement access street connection to tie into existing Cabernet Drive in the Vineyard Square subdivision that would provide external connectivity to Weaver Dairy Road Extension via Napa Valley Way. No other external roadway vehicular access connections are proposed. **Figure ES-2** displays the overall site plan and nearby land uses and roadways. The Stanat's Place site is expected to provide individual vehicle parking spaces located as part of each condominium lot – with potential on-street parking allowed in areas where curb space permits. Several internal street parking spaces near the central neighborhood green are also proposed. This report analyzes and presents the transportation impacts that Stanat's Place will have on the following intersections in the project study area:

- Homestead Road and Weaver Dairy Road Extension
- Homestead Road and Aquatic Drive / Chapel View Apartments Driveway
- Homestead Road and NC 86 (Martin Luther King, Jr. Boulevard)
- Weaver Dairy Road Extension and Sonoma Way / Napa Valley Way
- Aquatic Drive and Proposed Site Driveway

Existing Conditions

Study Area

The site is located in north Chapel Hill north of Homestead Road. The study area contains two signalized intersections along Homestead Road at NC 86 (Martin Luther King, Jr. Boulevard) and Weaver Dairy Road Extension. Two scenarios are analyzed in this study – one assessing two access points from the site (Aquatic Drive and Cabernet Drive) and one assessing a single access at Aquatic Drive only. NC 86 (Martin Luther King, Jr. Boulevard) is a major north-south arterial providing connectivity between downtown Chapel Hill, north and south Chapel Hill, the I-40 corridor and Hillsborough. Homestead Road is a minor east-west arterial providing connectivity through northern Chapel Hill. Remaining study area network roadways are either suburban collector streets or local neighborhood/commercial access streets.

Site Traffic Generation

With the addition of new trips during the weekday AM, noon, and PM peak hours, there are potential site traffic impacts to study area intersections. **Table ES-1** shows the site trip generation details, with rates taken from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, Version 10*.

Background Traffic

Background traffic growth for the 2026 analysis years is expected to come from two sources - ambient regional traffic growth and specific development-related traffic growth. Four Town-approved sites near the project study area were considered for specific development related 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 historic growth data and taking into consideration the on-going rebound to pre-COVID traffic levels caused by the pandemic.

Table ES-1. Weekday Vehicle Trip Generation Summary

Description	Density	Daily			AM Peak			Noon Peak*			PM Peak		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Condominiums	47 Units	157	157	314	5	18	23	12	15	27	19	11	30

* - No Noon Peak ITE Data Available – Used Average of AM and PM Peak 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. The projected ambient and background development traffic growth will increase impacts by 2026. Even with the addition of peak hour site-generated trips to the projected 2026 background traffic volumes, no study area intersection is expected to experience deficient traffic operations in any peak hour and projected maximum queues at all locations are not expected to be excessive. No additional mitigation improvements to any intersection were considered necessary. 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 traffic simulation Level-of-Service (LOS_s) is shown in **Table ES-2**.

Table ES-2. Peak Hour Intersection Capacity Analysis Summary

Intersections	Peak Hour	2022 Existing		2026 No-Build		2026 Build Two Access Points		2026 Build One Access Point		2026 Mitigated	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Homestead Road & Weaver Dairy Road Extension	AM	B	15.6	A	9.0	A	9.1	A	9.0	N/A	N/A
	NOON	B	14.2	B	10.4	A	9.8	B	10.0	N/A	N/A
	PM	B	16.4	B	13.2	B	13.0	B	13.4	N/A	N/A
Homestead Road & Aquatic Drive / Chapel View Apts Driveway [#]	AM	A	7.7	A	8.2	A	8.9	A	9.6	N/A	N/A
	NOON	A	6.2	A	6.7	A	7.3	A	7.5	N/A	N/A
	PM	A	7.5	A	9.1	A	9.4	B	10.4	N/A	N/A
Homestead Road & NC 86 (Martin Luther King, Jr. Boulevard)	AM	B	17.0	B	14.2	B	14.4	B	14.3	N/A	N/A
	NOON	B	19.7	C	22.8	C	23.1	C	23.2	N/A	N/A
	PM	B	16.5	B	17.6	B	18.0	B	18.1	N/A	N/A
Weaver Dairy Road Extension & Sonoma Way / Napa Valley Way [#]	AM	A	8.3	A	8.8	A	9.1	A	8.6	N/A	N/A
	NOON	A	5.7	A	5.9	A	6.2	A	5.8	N/A	N/A
	PM	A	7.5	A	8.5	A	8.9	A	8.0	N/A	N/A
Aquatic Drive & Proposed Site Driveway [#]	AM	N/A	N/A	N/A	N/A	A	4.5	A	4.5	N/A	N/A
	NOON	N/A	N/A	N/A	N/A	A	4.6	A	4.5	N/A	N/A
	PM	N/A	N/A	N/A	N/A	A	4.6	A	4.5	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 to the project is to be accommodated at a proposed full movement local street access connecting to Aquatic Drive about 1,100 feet to the north of Aquatic Drive's intersection with the Homestead Road. The proposed driveway has single inbound and outbound lanes. A second local street access connection is also proposed to link with Cabernet Drive within the Vineyard Square subdivision. This connection would provide access between Stanat's Place and the Weaver Dairy Road Extension via Napa Valley Way. Driveway throat lengths, and intersection/driveway separation minimum criteria, as set forth in the 2003 *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and the 2017 Town of Chapel Hill Design Manual are acceptable for current site plans for the project.

Access for pedestrians is adequate in the project study area and will be improved with the construction of the Town's Homestead Road Improvements project. Crosswalk exists across the NC 86, Aquatic Drive, and Weaver Dairy Extension intersections. No specific bicycle amenities are present along Homestead Road, but bicycle lanes are present on the Weaver Dairy Road Extension and along NC 86 north of Homestead Road. Additional bicycle lanes/off-road paved paths along Homestead Road will be provided upon the completion of the Town's improvement project.

Signal Warrant Analysis

Based on projected 2026 traffic volumes and proposed access plans, no unsignalized study area intersection with Homestead Road would warrant the installation of a traffic signal, based on the Peak Hour warrant 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 2/1/2017 to 1/31/2022 for the segments of Homestead Road and Weaver Dairy Road Extension in the vicinity of the proposed site. There were 13 crashes reported along Homestead Road study area corridor between Weaver Dairy Road Extension and NC 86 over the five year period and 3 crashes along Weaver Dairy Road Extension north of Homestead Road to Sonoma Way. The primary crash type was rear end crashes and crashes were primarily clustered near the NC 86 intersection. Overall, the number and severity of crashes along Homestead Road and Weaver Dairy Road Extension in the project study area is lower than state-wide averages for similar 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 TransModeler maximum queue length estimates for the 2026 Build Scenario. At the intersection of Homestead Road and Weaver Dairy Road Extension, the southbound right-turn lane queue may exceed its existing storage regardless of site traffic impacts. Adjustments to signal timing may be necessary to mitigate this issue. No other intersection maximum queue results indicate potential queue spillback.
Appropriateness of Acceleration/Deceleration Lanes	With low posted neighborhood speed limits and relatively light traffic turning volumes, no additional acceleration/decelerations lanes are necessary in the vicinity of the project. Existing roadway facilities have appropriate auxiliary turn lanes to facilitate traffic flow.



Analysis	Comment
Pedestrian and Bicycle Analysis	Existing pedestrian access and connectivity is adequate along the Homestead Road corridor just south of the site, though some gaps exist on both sides of the road in certain areas. Bicycle lanes extend along NC 86 north of Homestead Road and along the Weaver Dairy Road Extension with bicycle sharrows present on Aquatic Drive, but no bicycle facilities exist along Homestead Road within the project study area. The Town's Homestead Road Improvements project will considerably improve pedestrian and bicycle facilities along Homestead Road to the west of the project study 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 NC 86 and Homestead Road proximate to the site.

Mitigation Measures/Recommendations

Planned Improvements

There are no North Carolina Department of Transportation improvement projects for study area roadway facilities within the analysis year time frame of 2022-2026. The Town of Chapel Hill has a transportation improvement project currently slated for construction prior to the 2026 site build-out year. The Homestead Road Improvements project (U-4726 IK) will create a consistent three-lane roadway cross-section west of the Weaver Dairy Road Extension intersection, as well as construct pedestrian and bicycle facility improvements between Seawell School Road and Weaver Dairy Road Extension. Improvements related to this project are shown schematically 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 2028. As final design details are not complete as of the submittal of this TIA, no specific lane usage changes along NC 86 were analyzed as part of this study.

Background Committed Improvements

Several traffic impact studies for development projects in and near the study area recommended signal timing reoptimization for signalized intersections along the NC 86 corridor by their respective build-out years. It is assumed that signal timing reoptimization will occur for the NC 86 corridor and for the Homestead Road/Weaver Dairy Road intersection by the year 2026, whether or not specifically needed by any of the proposed background traffic generating developments included in this study.

Applicant Committed Improvements

Based on the preliminary site plans and supporting development information provided, there are several specific transportation-related improvements proposed for the Stanat's Place project. Internal and external improvements (shown schematically in **Figure ES-3**) include:

- Provision of a primary full movement access street connecting to Aquatic Drive with a proposed unsignalized crosswalk to access existing sidewalk on the eastern side of Aquatic Drive. Sidewalk on at least one side of this access street, along with all other proposed access streets within Stanat's Place will be provided.
- Provision of a multi-use path along the southern property frontage that ties into the proposed sidewalk described above and would allow future connection to undeveloped properties to the west near the Weaver Dairy Road Extension.
- Construction of a full access minor street connection to existing Cabernet Drive with an accompanying extension of existing sidewalk along Cabernet Drive to connect to internal sidewalk in the Stanat's Place development.

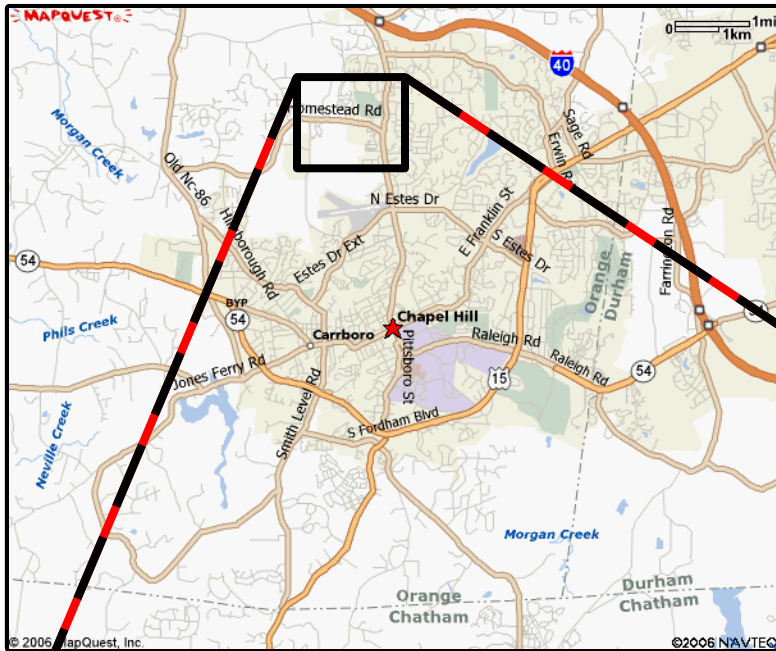


Necessary Improvements





Based on traffic capacity analyses for the 2026 design year with one access point or two access points for the Stanat's Place development and analyses of existing study area turning bay storage lengths and site access, the following improvement is recommended as being necessary for adequate transportation network operations and safety (see **Figure ES-3**).

- The proposed local access connection between the site and Cabernet Drive is not expected to cause excessive additional traffic demands through the existing Vineyard Square neighborhood, nor conversely to attract excessive traffic demand from the existing neighborhood through the Stanat's Place development. To help ensure that traffic traveling between the two neighborhoods maintains appropriate speeds using the connection, it is recommended that a traffic calming measure – such as a raised speed table – be constructed in the vicinity of the proposed connection along Cabernet Drive, along with appropriate upstream warning signage in both directions for the speed table. Coupled with the nearby curvature of the Cabernet Drive extension into Stanat's Place and the presence of on street parked vehicles in the Vineyard Square subdivision, these measures should mitigate any excessive vehicle speeds in the vicinity of this proposed connection.



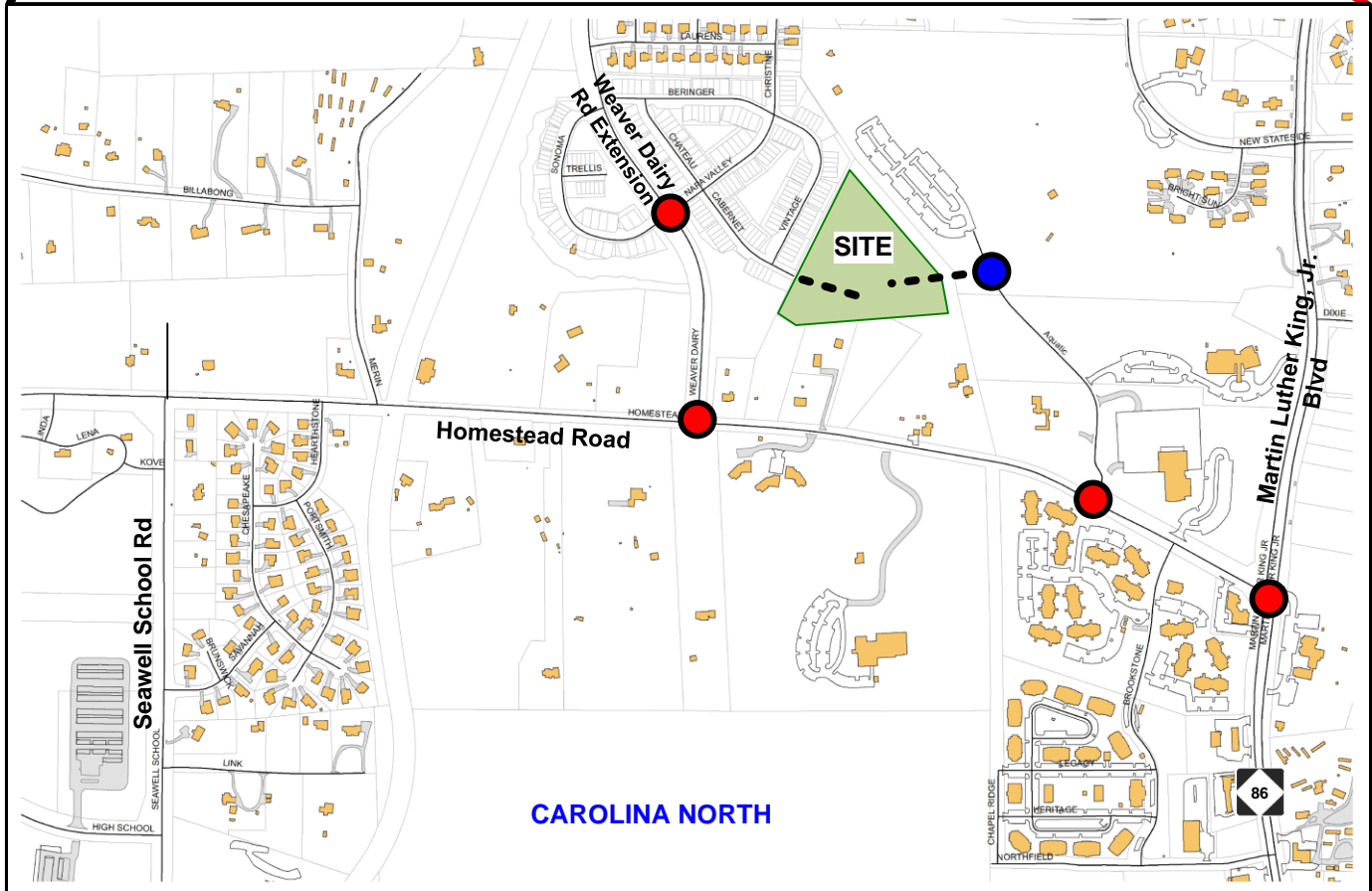


LEGEND

-  = Existing Building Footprint
-  = Existing Study Area Intersection
-  = Proposed Site Driveway
-  = Proposed 2200 Homestead Site



NOT TO SCALE



Source: Town of Chapel Hill GIS Files

DRAFT



**Stanat's Place Residential
Transportation Impact Analysis**

PROJECT STUDY AREA

DATE: March 2022

FIGURE ES-1

LEGEND

← → = PROPOSED SITE ACCESS

EXISTING POND:	0.084 AC
RIGHT OF WAY:	1.294 AC
TOTAL LAND AREA NOT COUNTED:	3.429 AC
APPLICABLE LAND AREA:	4.734 AC
TREE CANOPY REQUIRED: 4.734 AC X 30% =	1.420 AC
EXISTING TREE CANOPY TO REMAIN:	1.139 AC
ADDITIONAL TREE CANOPY REQUIRED:	0.281 AC
REQUIRED REPLACEMENT TREES (1 PER 500 SF):	25 TREES = 0.287 AC
PROPOSED STREET TREES:	26 TREES
OTHER SITE TREES:	4 TREES
TOTAL TREES:	30 TREES

CODED NOTES

- (A) CENTRAL GREEN AREA WITH TURF GRASS
- (B) HERITAGE TREE ON SMALL HILL
- (C) CHAPEL HILL STONE RETAINING/DEAT WALL
- (D) MULCHED AREA WITH SHRUBS
- (E) BENCHES
- (F) GATHERING SPACE #1 CHILDREN'S PLAY STRUCTURE WITH BENCH TABLES
- (G) GATHERING SPACE #2 FIRE PIT WITH CHAPEL HILL GRIT SURFACE
- (H) 4' BRICK WALKWAY
- (I) FENCE

TOWN OF CHAPEL HILL FIRE DEPARTMENT NOTES:

- A NOTE SHALL BE REQUIRED ON THE FINAL PLAN THAT STATES "ALL LOCAL STREETS WITHIN THE BRIDGEPOINT SUBDIVISION SHALL NOT ALLOW ON-STREET PARKING IN ACCORDANCE WITH SECTION 0103 OF THE 2018 NORTH CAROLINA FIRE PREVENTION CODE."
- ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THE REQUIRED RECREATION SPACE HAS BEEN MET AND EXCEEDED. SEE SITE DATA TABLE ON THIS SHEET.
- ALL TRASH FOR TOWNHOMES WILL BE COLLECTED BY ROLL-OUT CURBSIDE PICK UP AND SERVICE SHALL BE PROVIDED BY TOWN OF CHAPEL HILL.
- EACH SINGLE FAMILY TOWNHOME LOT WILL HAVE A MAXIMUM ALLOWABLE IMPERVIOUS SURFACE AREA OF 1,500 SF. THIS AMOUNT IS SUBJECT TO CHANGE AND WILL BE FINALIZED WITH THE FINAL ZONING COMPLIANCE PLANS.
- SEE SHEET 16 FOR STREET TYPICAL SECTION DETAILS.
- ALL PROPOSED STREETS ARE PUBLIC.
- TWELVE (12) BICYCLE PARKING SPACES REQUIRED. TWO (2) PROVIDED NEAR MAIL HOOK. TEN (10) GARAGES PROVIDED WITH SINGLE BICYCLE HOOKS.
- A DEVELOPMENT IDENTIFICATION SIGN FOR THE NEIGHBORHOOD IS PROPOSED AT THE EASTERN ENTRANCE OF THE SITE AS IT INTERSECTS WITH AQUATIC DRIVE. THE IDENTIFICATION SIGN MAY BE INCLUDED AS PART OF THE ENTRY FEATURE.
- TREE PROTECTION FENCING SHALL BE INSPECTED BY ADAM NICHOLSON PRIOR TO ANY LAND DISTURBANCE. ADAM CAN BE REACHED AT 919-369-5006 OR ANICHLSON@TOWNOFCHAPELHILL.ORG.

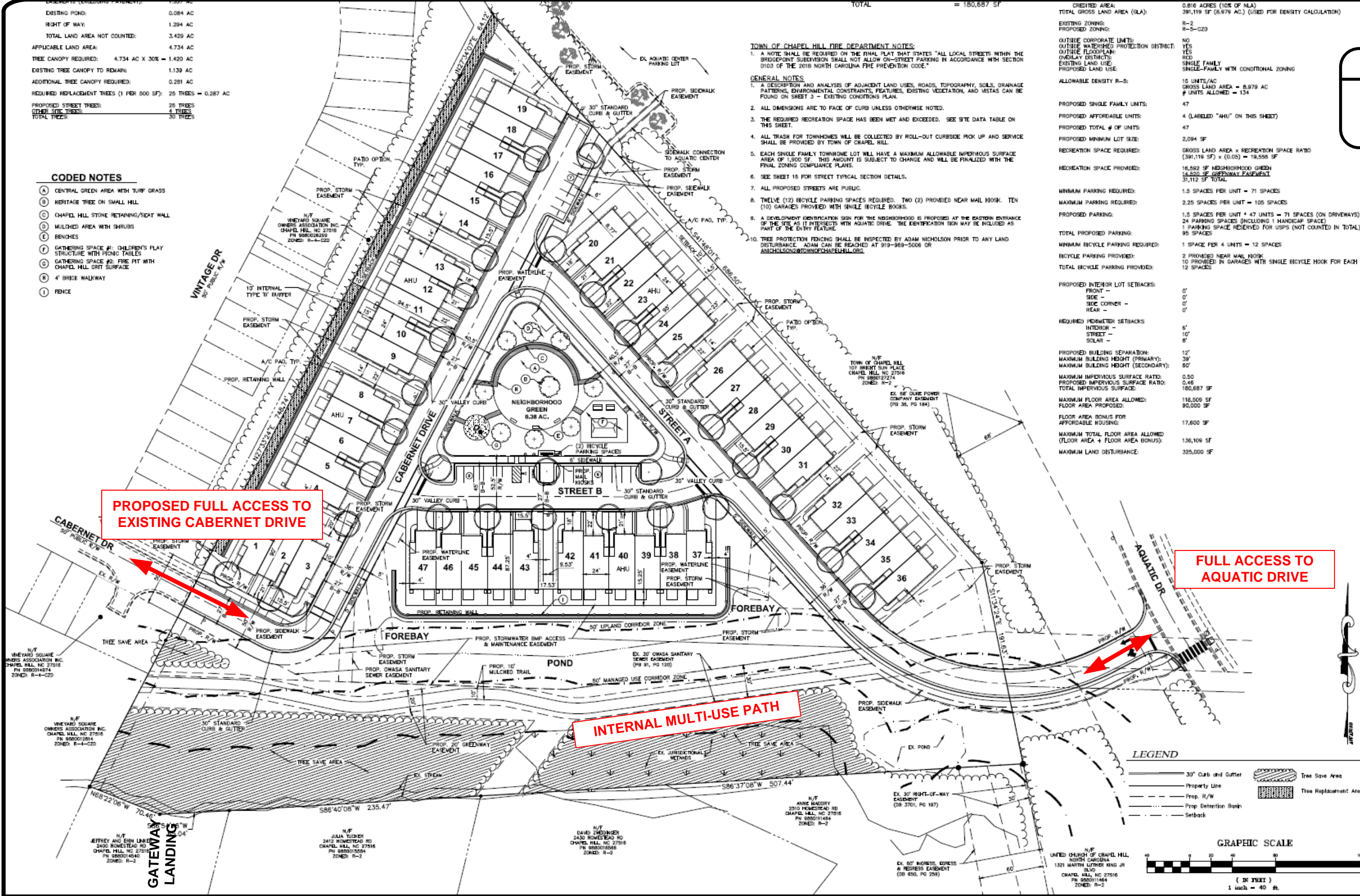
GENERAL NOTES:

CREATED AREA:	0.816 ACRES (10% OF NLA)
TOTAL GROSS LAND AREA (GLA):	391,119 SF (8,979 AC.) (USED FOR DENSITY CALCULATION)
EXISTING ZONING:	R-2
PROPOSED ZONING:	R-5-C20
OUTSIDE CORPORATE LIMITS:	NO
OUTSIDE WATERSHED PROTECTION DISTRICT:	YES
OUTSIDE FLOODPLAIN:	YES
OVERLAY DISTRICTS:	NO
EXISTING LAND USE:	SINGLE FAMILY
PROPOSED LAND USE:	SINGLE-FAMILY WITH CONDITIONAL ZONING
ALLOWABLE DENSITY R-5:	15 UNITS/AC
GROSS LAND AREA = 8,979 AC	# UNITS ALLOWED = 134
PROPOSED SINGLE FAMILY UNITS:	47
PROPOSED AFFORDABLE UNITS:	4 (LABELED "AHU" ON THIS SHEET)
PROPOSED TOTAL # OF UNITS:	47
PROPOSED MINIMUM LOT SIZE:	2,094 SF
RECREATION SPACE REQUIRED:	GROSS LAND AREA x RECREATION SPACE RATIO (391,119 SF) x (0.05) = 19,558 SF
RECREATION SPACE PROVIDED:	18,592 SF NEIGHBORHOOD GREEN 14,500 SF SIDEWALK EASEMENT 31,112 SF TOTAL
MINIMUM PARKING REQUIRED:	1.5 SPACES PER UNIT = 71 SPACES
MAXIMUM PARKING REQUIRED:	2.25 SPACES PER UNIT = 105 SPACES
PROPOSED PARKING:	1.5 SPACES PER UNIT * 47 UNITS = 71 SPACES (ON DRIVEWAYS) 24 PARKING SPACES (INCLUDING 1 HANDICAP SPACE) 1 PARKING SPACE RESERVED FOR USPS (NOT COUNTED IN TOTAL) 95 SPACES
TOTAL PROPOSED PARKING:	95 SPACES
MINIMUM BICYCLE PARKING REQUIRED:	1 SPACE PER 4 UNITS = 12 SPACES
BICYCLE PARKING PROVIDED:	2 PROVIDED NEAR MAIL HOOK 10 PROVIDED IN GARAGES WITH SINGLE BICYCLE HOOK FOR EACH 12 SPACES
TOTAL BICYCLE PARKING PROVIDED:	12 SPACES
PROPOSED INTERIOR LOT SETBACKS:	FRONT - 0' SIDE - 0' REAR - 0'
REQUIRED SETBACKS:	INTERIOR - 5' STREET - 10' SOLAR - 8'
PROPOSED BUILDING SEPARATION:	12'
MAXIMUM BUILDING HEIGHT (PRIMARY):	39'
MAXIMUM BUILDING HEIGHT (SECONDARY):	60'
MAXIMUM IMPERVIOUS SURFACE RATIO:	0.50
PROPOSED IMPERVIOUS SURFACE RATIO:	0.48
TOTAL IMPERVIOUS SURFACE:	180,687 SF
MAXIMUM FLOOR AREA ALLOWED:	118,509 SF
FLOOR AREA PROPOSED:	90,000 SF
FLOOR AREA BONUS FOR AFFORDABLE HOUSING:	17,600 SF
MAXIMUM TOTAL FLOOR AREA ALLOWED (FLOOR AREA + FLOOR AREA BONUS):	136,109 SF
MAXIMUM LAND DISTURBANCE:	325,000 SF

PROPOSED FULL ACCESS TO EXISTING CABERNET DRIVE

FULL ACCESS TO AQUATIC DRIVE

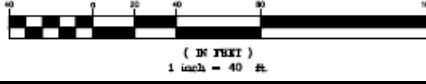
INTERNAL MULTI-USE PATH



LEGEND

- 30" Curb and Gutter
- Property Line
- Prop. R/W
- Prop. Detention Basin
- Setback
- Tree Save Area
- Tree Replacement Area

GRAPHIC SCALE



NOT TO SCALE

Stanat's Place Residential Transportation Impact Analysis

PRELIMINARY SITE PLAN




DATE: March 2022

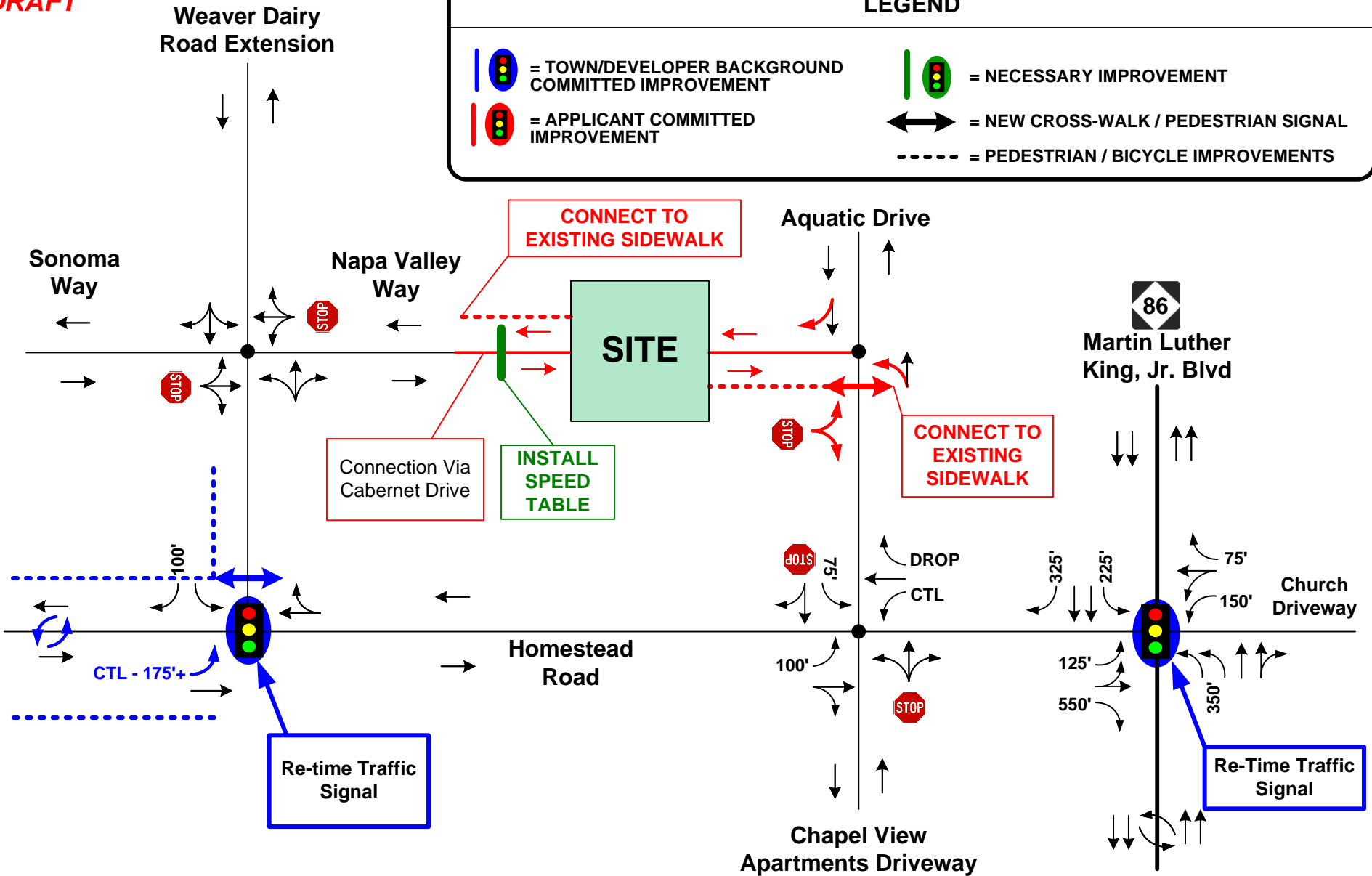
FIGURE ES-2

DRAFT

LEGEND

-  = TOWN/DEVELOPER BACKGROUND COMMITTED IMPROVEMENT
-  = APPLICANT COMMITTED IMPROVEMENT

-  = NECESSARY IMPROVEMENT
-  = NEW CROSS-WALK / PEDESTRIAN SIGNAL
-  = PEDESTRIAN / BICYCLE IMPROVEMENTS



NOT TO SCALE

Stanat's Place Residential Transportation Impact Analysis

COMMITTED AND RECOMMENDED IMPROVEMENTS

DATE: March 2022

FIGURE ES-3